Permitting Decisions – Variation

Document recording our decision-making process following the requirement for waste and wastewater sewerage treatment activities permitted as an installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2016 (as amended)

We have decided to grant the variation for Maple Lodge Sludge Treatment Centre operated by Thames Water Utilities Limited.

The permit number is EPR/FP3435LA/V006.

Purpose of this document

On 2 April 2019, the Environment Agency confirmed to the Water and Sewerage Companies (WaSCs) operating in England that their sewage sludge anaerobic digestion (AD) facilities needed to comply with the Industrial Emissions Directive (IED).

The IED entered into force on 6 January 2011 and was transposed into UK law on 20 February 2013. The IED recast the Directive on integrated pollution prevention and control (IPPC) and introduced a revised schedule of industrial activities falling within the scope of its permitting requirements. The schedule of waste management activities includes the recovery of non-hazardous waste with a capacity exceeding 75 tonnes per day involving biological treatment, but excludes activities covered by the Urban Waste Water Treatment Directive (UWWTD).

In July 2014 we deferred the need for the WaSCs to submit permit applications for these facilities to allow for further consideration of whether they were already covered under the UWWTD. All the UK environmental regulators subsequently concluded this was not the case, and therefore they come within the scope of the IED.

The IED seeks to achieve a high level of protection for the environment, taken as a whole, from the harmful effects of industrial activities. It does so by requiring each of the industrial installations to be operated under a permit with conditions based around the use of best available techniques (BAT).

The IED set a deadline of 7 January 2014 for existing installations to obtain an environmental permit. Therefore, the implementation of this aspect of the IED

had been delayed for over five years at the point of our confirmation to the WaSCs on 2 April 2019.

The BAT Conclusions for Waste Treatment was published on 17 August 2018 following a European Union wide review of BAT, implementing decision (EU) 2018/1147 of 10 August 2018. BAT applies to new waste sewage sludge treatment not covered by the UWWTD. The installation operations at Maple Lodge Sludge Treatment Centre are existing but will be brought under environmental regulation for the first time and are required to operate using BAT.

Given the delay in implementing the IED in England, we subsequently have sought to ensure that all sewage sludge AD facilities obtain and operate under an environmental permit in as short a timescale as can reasonably be achieved. We asked the WaSCs to provide a definitive list of all facilities used to carry out biological treatment of sewage sludge. A submission schedule was provided to the WaSCs, allowing applications for these facilities to be submitted to us in stages between 1 April 2021 and 1 October 2022. This application is part of this programme of work.

This application was due to be submitted on 01/07/2021 and was received on 01/07/2021, however this application could not be duly made and was withdrawn by the applicant. A new application was submitted on the 01/08/2022.

The application is for the variation of the existing waste activity to add a Section 5.4 A(1) (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. The existing engines currently permitted are now directly associated activities (DAA) to the Section 5.4 anaerobic digestion activity. Other DAAs now part of the permit include;

- Raw materials storage
- Digestate storage and treatment
- Emergency flare operation
- Gas storage
- Physical treatment of waste (including screening, pressing, thickening, centrifugation / dewatering)
- Steam and electrical power generation utilising biogas produced on site.
- Uncontaminated surface water collection for reuse, and discharge
- Air collection and treatment prior to release to the atmosphere.

The application also requested the addition of two waste activities for the receipt of waste to the head of works, and for the temporary storage of digested cake produced at other Thames water sites.

We consider in reaching this decision that we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

This decision document provides a record of the decision-making process. It:

- summarises the decision making process in the decision considerations section to show how the main relevant factors have been taken into account
- highlights key issues in the determination
- shows how we have considered the consultation responses

Unless the decision document specifies otherwise, we have accepted the operator's proposals.

This permitting decision should be read in conjunction with the environmental permit.

Key issues of the decision

Best Available Techniques (BAT)

Article 3(12) of the IED defines BAT conclusions as:

a document containing the parts of a BAT reference document [BREF] laying down the conclusions on best available techniques, their description, information to assess their applicability, the emission levels associated with the best available techniques, associated monitoring, associated consumption levels and, where appropriate, relevant site remediation measures.

The *emission levels associated with the best available techniques* (BAT-AELs) in IED BAT conclusions are mandatory emission levels. These are generally numerical limits on point source emissions to water and air. We recognise that many sludge treatment facilities were constructed prior to the current permitting requirements and their design may not be readily compatible with the best available techniques as described in the BREF and BAT conclusions. Where this is the case, risk assessments and alternative proposals can be used to demonstrate that an equivalent level of environmental protection is being or can be achieved. Where an operator is not yet compliant with relevant BAT conclusions, we may accept an application where the operator describes how they will meet the required BAT conclusion within an acceptable timeframe. The Waste Treatment (2018) BREF provides a minimum standard of operation across the waste industrial sector. Alongside BAT-AELs, the BREF outlines general BAT conclusions, which apply to all waste sectors. It also contains BAT conclusions specifically for waste sectors which waste water treatment works operate within, namely; the biological treatment of waste and the treatment of water-based liquid wastes.

Thames Water Utilities Limited (referred to in this document as the 'operator') provided supporting information with their application to demonstrate that their methods of operating are in accordance with the relevant BAT conclusions. We have assessed these documents. In this *Key issues* section, we provide a commentary of the following areas which helped determine how the operator will operate in accordance with the relevant BAT conclusions:

- Secondary containment (BAT conclusion 19)
- Minimise defuse emissions to air (BAT conclusion 14)
- Inventory of waste waters (BAT conclusion 3)
- Point source emissions to water – indirect emissions (BAT conclusions 7 and 20)
- Odour management (BAT conclusion 12)

Where this document does not discuss a BAT conclusion in detail, we have accepted the operator's supporting information and justifications that they are compliant with the respective BAT conclusion.

Bespoke permit conditions

The technical determination of this application identified key issues where the operator struggled to show how they would meet the relevant BAT conclusion requirements. These are standard pieces of information and evidence which would be expected upon receipt of a new bespoke permit application for a new anaerobic digestion installation facility. In this application, we identified that the operator was unable to provide detailed supporting evidence that key issues would achieve BAT conclusion requirements. These key issues were:

- Sufficient secondary containment measures (permit conditions 3.2.3 and 3.2.4).
- Enclosure of waste storage tanks (permit conditions 3.2.5 and 3.2.6).
- Enclosure of tanks storing and treating digestate still generating biogas (permit conditions 3.2.7 and 3.2.8).

We have performed an assessment of these aspects during the permit determination. A detailed account of these assessments is outlined in the sections below. Where we have not been able to fully assess the operator's proposals to meet BAT conclusion requirements but have received commitments to implement BAT, we have set time sensitive improvement conditions alongside backstop bespoke permit conditions.

Improvement conditions alone would not contain sufficient legal certainty to require an operator to have BAT in place. However, we acknowledge that this application is for an existing activity which has been operating for several years and we recognised that a pragmatic approach was needed to bring this unpermitted installation activity into environmental regulation.

To issue permits without agreeing that an activity fully meets BAT is in essence a permitted local enforcement position (LEP). LEPs are used by the Environment Agency for activities operating outside of a permit. This method will be implemented by setting prescriptive bespoke conditions in the permit for the outstanding BAT issue. These bespoke conditions include the definitive requirement plus a deadline for those techniques to be implemented – a backstop. We have also set improvement conditions for the timely submissions of detailed plans. Should an operator not comply with an improvement condition, a bespoke condition will be in place for the Environment Agency to enforce against.

For these improvement conditions, we have set a final deadline of 31 March 2025. It should be noted that the implementation date for operators to be compliant with the Waste Treatment BAT conclusions was 17 August 2022. Our deadline specified in the improvement condition provides a sufficient timeframe in which the operator can produce detailed plans to meet BAT and a timetable for their implementation. Where operators do not satisfy the requirements of the improvement condition by 31 March 2025, the Environment Agency may

commence enforcement action against the WaSC. Failure of the WaSCs to achieve BAT or failure to take steps to implement BAT by the backstop will be at the operator's risk.

Secondary containment

Secondary containment is a fundamental principle of pollution prevention at industrial sites and waste management facilities. We assess secondary containment provision when determining permit applications. Secondary/tertiary containment is an appropriate protective measure and is a standard requirement of an environmental permit. The Waste Treatment BREF includes BAT conclusion 19 which identifies several relevant techniques *to prevent or, where that is not practicable, to reduce emissions to soil and water*.

WaSC anaerobic digestion facilities store and treat significant volumes of waste sludge and liquids that have the potential to cause pollution to land, air and water and to impact detrimentally on any nearby sensitive habitats or areas of human occupation (also known as sensitive receptors). These facilities are co-located with wastewater treatment works (WwTW) and, by the nature of these operations, are usually located near to watercourses. They have tended to have little in the way of secondary containment, such as impermeable surfacing or bunding, that would protect the environment in the event of a loss of containment.

The most common receptors we consider could be impacted by a loss of containment include groundwater (aquifers), water courses, designated conservation areas (such as Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites), the adjacent WwTW and nearby human receptors such as residential and commercial premises.

Given the number, significance and complexity of the WaSC's sludge AD facilities, we have provided advice on what they should have regard to when assessing their facilities. We consider that this advice, and the timescales afforded to the WaSCs to submit information in support of their permit applications, is above and beyond that which would typically be given to permit applicants.

We advised the WaSCs to provide two main components of assessment aimed at clearly identifying where a facility has sufficient measures in place to protect sensitive receptors, and where improvements may need to be implemented.

The two components were:

- Containment assessment against the recommendations of CIRIA C736 guidance - *Containment systems for the prevention of pollution: Secondary, tertiary and other measures for industrial and commercial premises* (2014).
- Completion of the ADBA tool to identify sources, pathways and receptors, and risks.

We also advised applicants to submit spill modelling as supporting evidence to demonstrate the effectiveness of current containment measures and assess any identified necessary improvements.

We advised the WaSCs (including this operator) of the requirements of containment assessments on multiple occasions, including:

- At a workshop held by Water UK in February 2020 (Water UK members are UK water and wastewater service suppliers for England, Scotland, Wales and Northern Ireland, the operator is a member of Water UK) – Presentation Title: Permitting Overview – Including section on containment – Surfacing, bunding and capacity, presented by a Senior Permitting Officer of the Environment Agency National Permitting Service.

- Written advice sent in March 2021 by us including.
    - Sector specific pre-application advice note.
    - BAT gap analysis template tool.

- Presentation on 14 July 2021, delivered to Water UK, titled, *IED Permitting TaF + Spill Modelling*, which the operator attended, in which spill modelling was specifically discussed, along with a reiteration of application requirements. Spill modelling seminar presented by a Member of the Project Steering Group of CIRIA C736.

There are also various additional references to containment in guidance that is widely disseminated in the industry including:

- Waste Treatment BAT Conclusions.
- *Environmental permitting guidance on the control of emissions* (gov.uk).
- *How to comply with your environmental permit. Additional guidance for: Anaerobic Digestion* Reference LIT 8737 Report version 1.0 dated November 2013.
- *Appropriate measures for the biological treatment of waste* – consultation document and response comments.
- *Biological waste treatment: appropriate measures for permitted facilities* - Guidance - GOV.UK (www.gov.uk)
- *Emissions control - Non-hazardous and inert waste: appropriate measures for permitted facilities* - This is not directly applicable to biological treatment but will be replicated in the appropriate measures as mentioned in the above bullet point.
- SR2021 No 10: anaerobic digestion of non-hazardous sludge at a waste water treatment works, including the use of the resultant biogas. This specifically applies to sludge AD facilities.

CIRIA C736

CIRIA C736 is considered the industry containment assessment standard of choice and is based on the source-pathway-receptor approach to risk

assessment. It provides a clear methodology for demonstrating BAT, appropriate measures and compliance with permit conditions.

It is applicable for identifying and managing the risk of storing substances which may be hazardous to the environment and applies to activities ranging from small commercial premises to large chemical facilities. It primarily considers the potential consequences of tank failure and provides a risk assessment methodology to support a classification system for containment, providing different levels of performance for different risks. The aim is to break the pathway between source and receptor.

The guidance provides containment options and examples of good practice, but it is not prescriptive and there may be circumstances where it could be appropriate to use other methods where at least an equivalent level of environmental protection is provided.

Due to the nature of sewage sludge, waste cake or waste liquors, it is clear that this would be considered to be both a short and long-term hazard to the environment if released. Given the locations of sites that deal with these materials generally, it is reasonable to conclude that any major tank failure at an individual site will have the potential to cause significant damage to sensitive receptors.

Where CIRIA C736 measures are not considered to be relevant or appropriate for a specific facility, an explanation should be provided using a risk-based approach. For existing facilities where measures cannot easily be achieved, we expect alternative measures to be proposed which achieve at least an equivalent standard to provide at least the same level of environmental protection. It should be recognised however that CIRIA C736 includes specific guidance for operators who need to implement secondary containment provisions at existing facilities.

Newly built facilities and assets should be designed and built to CIRIA C736 report recommendations or to at least an equivalent approved standard. Newly built facilities and assets not designed and built to CIRIA C736 report recommendations, or to at least an equivalent approved standard would not be considered to provide suitable primary and secondary containment, and as such would not comply with BAT. Existing facilities may be unlikely to be compliant with CIRIA C736 due to the viability of retrofitting to meet the recommendations. However, the same containment assessments are still required, and improvements should be proposed to demonstrate at least equivalent appropriate measures of environmental protection.

ADBA tool and guidance

The ADBA tool and guidance have been specifically designed as a guide for secondary containment for anaerobic digestion. The guide states “Both the guide and the classification tool draw upon the principles and methodologies within CIRIA C736. The principles within CIRIA C736 are generally accepted as good

practice in the design and construction of containment systems. The principles of CIRIA C736 are distilled into this accessible guide, which attempts to draw out the parts relevant to the AD sector".

The tool itself is clearly set out to provide an inventory of sources, pathways and receptors and aligns with the containment system class types in CIRIA C736. It provides risk ratings and allows mitigation measures to be considered.

Alternative assessment methods

Where our guidance refers to CIRIA C736 it also allows for other equivalent approved standards. This does provide operators with the option of using other approved standards, but they must offer at least the same level of environmental protection.

Where CIRIA C736 and ADBA tool assessments, or equivalent approved standards, are not provided, it is difficult or impossible to satisfactorily assess permit applications for compliance with BAT, appropriate measures or an environmental permit.

Assessment of this facility

The operator did submit an assessment which has given regard to CIRIA C736, including proposals for improvements.

- The operator did submit a completed ADBA tool.
- The operator did submit spill modelling.
- The operator provided initial secondary containment proposals in accordance with Environment Agency guidance, *Control and monitor emissions for your environmental permit*.
- Detailed secondary containment design will be provided to the Environment Agency in response to improvement condition IC13

The containment options proposed by Maple Lodge Sludge Treatment Centre (STC) included the installation of bund walls, and impermeable surfacing at modelled locations in order to prevent a loss of containment beyond the Maple Lodge STC and adjacent WwTW. The spill model is based upon the failure of a primary digester and secondary digester, the largest process vessel by capacity in the proposed separate areas. The proposed solution met the requirements of section 4.2.1 of CIRIA 736 that requires "Where two or more tanks are installed within the same bund, the recommended capacity of the bund is the greater of:

1) 110% of the capacity of the largest tank within the bund.
2) 25% of the total capacity of all the tanks within the bund, except where tanks are hydraulically linked in which case they should be treated as if they were a single tank.

The final containment volume provides 25% of the total capacity of all the tanks within the bunds identified.

Reasons for accepting secondary containment proposals

The Environment Agency recognises that the operator's proposals for secondary containment measures at the installation are not complete. Our established environmental permitting process outlines that where information is missing or insufficient, that information can be requested. Where information is unsatisfactory, we may proceed to return an application as not duly made or refuse a duly made application. Our processes state that we generally don't set improvement conditions that require BAT to be demonstrated at some date after the permit application has been consulted on and determined. Generally, we should be satisfied whether operations will use BAT at the appropriate time, and we should make that assessment at the time we issue any permit or variation.

However, we recognise that this industrial activity is already existing and being undertaken and consider it appropriate, where possible, to bring these activities into environmental regulation as an installation. While the current operations are a pollution risk, the operator is not introducing new risks to the environment. It is important to note that any applications including new plant and bulk tanks would require a demonstration that secondary containment is designed in line with CIRIA C736 (or possible equivalent alternative) before a permit could be issued.

While detailed secondary containment infrastructure design was not supplied, the proposals describe what they plan to implement and follow the primary requirements for bund design (as outlined in our guidance *Control and monitor emissions for your environmental permit*). The operator has also confirmed that the secondary containment measures will be designed in compliance with CIRIA C736 by a qualified structural engineer. We have received an effective risk assessment which demonstrates the extent and impact of bulk tank failure on the receiving environment. This was via a spill modelling assessment J840 – STC IED Containment – Maple Lodge STC – Containment Options Report, Dated October 2023 based on the failure of worst-case tanks. These risk assessments/spill models show that the proposed containment strategies would contain effluent/digestate on site.

The section, *Bespoke permit conditions* of this document, provides a general explanation why we have issued this permit without a full determination of various key issues with the application.

We have included an improvement condition in the permit for the operator to progress the proposals submitted within the application and to provide additional details as they are developed and implemented. We require that the proposals must be implemented by 31 March 2025.

Uncontrolled biogas and waste gas emissions – open treatment or storage tanks

Anaerobic digestion is a biological treatment of waste 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.

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….., as listed in the BAT Conclusion.

An extract from the appropriate techniques listed in BAT Conclusion 14 for the prevention, or where that is not practicable, the reduction of diffuse emissions to air from open tanks is set out in Table 1 below.

Table 1

Technique		**Description**	**Applicability**
d	Containment, collection and treatment of diffuse emissions	This includes techniques such as: • storing, treating and handling waste and material that may generate diffuse emissions in enclosed buildings and/or enclosed equipment (e.g. conveyor belts); • maintaining the enclosed equipment or buildings under an adequate pressure; • collecting and directing the emissions to an appropriate abatement system, via an air extraction system and/or air suction systems close to the emission sources.	The use of enclosed equipment or buildings may be restricted by safety considerations such as the risk of explosion or oxygen depletion. The use of enclosed equipment or buildings may also be constrained by the volume of waste.

BAT require that waste stored which produces waste gases must be enclosed. Gases must then be appropriately abated. Section 2.3.5.5 of the Waste Treatment BREF states:

Because flaring is both a source of pollution and leads to the burning of a potentially valuable product, its use should be limited to non-routine, momentary stoppages or emergency releases. Uncontrolled emissions (especially VOCs)

from vents and relief valves should be routed to recovery systems, with flares serving only as a backup system.

This section of the BREF is in reference to the flaring of biogas and not directly relevant to open tanks. However, it is important to stress that due to the pollution potential from uncontrolled emissions of biogas, it is essential that these emissions are collected and utilised either as a fuel, in storage or for further treatment to refine the biogas. It is not appropriate to store or treat digestate producing biogas within open tanks.

We acknowledge that BAT conclusion 14d provides limits on the applicability for enclosing waste where there is a potential risk from explosion. Storage of unstable digestate will release unspecified quantities of combustible gases. However, the standard industry practice within the commercial anaerobic digestion sector is to minimise unstable digestate storage by typically using longer residence times within sealed digesters to maximise biogas generation.

The Health and Safety Executive (HSE) provide general guidance on bulk storage tank design:

Design Codes – Plant
https://www.hse.gov.uk/comah/sragtech/techmeasplant.htm

Storage of flammable liquids in tanks
Storage of flammable liquids in tanks HSG176 (hse.gov.uk)

We have been advised that, in the view of the HSE, the competent installation of tank covers is possible using current tank standards. We believe it is possible to design and modify tanks that meet both the specific circumstances and relevant engineering standards.

We also recognise that the covering of tanks may have an impact on whether the site needs to consider the requirements of the Control of Major Accident Hazards (COMAH) Regulations 2015. The creation of additional enclosed space(s) in the site (inside the newly enclosed tanks and any associated new abatement equipment) where dangerous substances are present (or anticipated to be present) would have the consequence of increasing the COMAH inventory, which could in turn move a site from *Lower* to *Upper* Tier or bring a site into the scope of the regulations. An operator will need to consider these requirements when producing plans and designs for tank covers.

The Environment Agency considers the covering of tanks generating biogas (and channelling the gas to utilisation plant/storage) as BAT. It must be undertaken by any operators treating waste via anaerobic digestion (and subsequent storage). Any alternative approach to this must form part of a permit application supported by evidence-based justifications.

This installation currently uses eight floating roof primary digester tanks to undertake anaerobic digestion. The floating roofs are not completely sealed and therefore waste gases, including biogas will be emitted from the tank to atmosphere. The site's annual throughput of waste treated via anaerobic digestion is 552,610 tonnes per year, or 1,514m^3 per day. The waste undergoes this treatment in these tanks with a Hydraulic Retention Time (HRT) of between 12 and 15 days. HRT is defined as the working volume of the digester divided by the rate of feeding as volume per unit time and is expressed in days. It is a fundamental design parameter and is typically a determining factor in sizing the AD plant. Biogas produced during this stage is collected in the floating roofs of the primary digester tanks and subsequently channelled via sealed pipework to gas utilisation structures. This site uses two combined heat of power engines (CHPs) and four boilers to combust the biogas to use the energy generated on site. The treated waste, described as sludge or digestate is discharged into one of fourteen secondary digester tanks. This tank is uncovered, therefore, any waste gases, including biogas will be emitted from the tank to atmosphere.

The operator is not able to identify the levels of biogas that may be discharged to atmosphere during the secondary digester steps as no evidence or analysis has been conducted. The large quantities of waste feedstock and relatively short HRT indicate that the digestate stored in the secondary digesters could be unstable and be still producing biogas after it has been discharged into the open. The operator did not submit evidence to show whether the digestate in the open tanks at the installation is stable.

We therefore asked the operator to provide written confirmation that they will commit to covering the secondary digester tanks, and enclosing the primary digester tanks and a description that shows the tank enclosure will be in line with guidance, *Biological waste treatment: appropriate measures for permitted facilities* and BAT. We also asked how biogas generated from the primary and secondary digester tanks will be utilised as a fuel or stored for utilisation off site. The Environment Agency recognises that the use of open tanks across the wastewater industry is widespread. While the operator did not provide detailed proposals to enclose tanks with unstable digestate, they have committed to meeting the requirements of BAT. They also stated that *"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."*

We do not accept that deadlines for BAT compliance, required as a result of the already materially overdue national implementation of the IED, should be based on Water Company price review periods rather than a pragmatic, proportionate and reasonable timescale for completing an improvement condition taking into account the ongoing risks to the environment and human health. These are not new or innovative proposals or techniques. In this context, 'Best Available Techniques' means the economically and technically viable available techniques

which are the best for preventing or minimising emissions and impacts on the environment as a whole. Availability is assessed on a sectoral basis, not on the claims of one WaSC. The fact the rest of the WaSCs will implement these techniques, coupled with their specific inclusion in the BAT Conclusions documents, strongly indicates that they are indeed ‘available’. In the absence of approved alternatives, they are a requirement of Article 11 IED which we must ensure compliance with under paragraph 5 of schedule 7 EPR. We do not consider reference to PR24 or subsequent price review discussions to be appropriate or relevant to this determination.

We have therefore set a final deadline of 31 March 2025 for these ICs. It should be noted that the implementation date for operators to be compliant with the Waste Treatment BAT conclusions was 17 August 2022. We believe that the deadline specified in the improvement condition provides a sufficient timeframe in which the operator can produce and implement detailed plans to meet BAT. Where operators do not satisfy the requirements of the improvement condition by 31 March 2025, the Environment Agency may commence enforcement action for that failure the WaSC. Failure of the operator to achieve BAT or failure to take steps to implement BAT by the backstop will be at the operator’s risk.

We consider the adoption of this more flexible approach to be pragmatic and proportionate, securing adequate progress towards, and delivery of, BAT within a reasonable timescale. Allowing a longer timescale would not, in our view, be acceptable because of the ongoing risks to the environment and human health. A stricter approach would most likely have meant that we would refuse the application.

To ensure the operator implements these changes, we have set improvement conditions IC14 and IC15.

For IC14 we require the operator submit a written ‘Primary anaerobic digestion vessel cover’ plan. The Environment Agency considers the covering of tanks generating biogas (and channelling the gas to utilisation plant/storage) as BAT. It must be undertaken by any operators treating waste via anaerobic digestion (and subsequent storage). Any alternative approach to this must form part of a permit application supported by evidence-based justifications.

For IC15 there are two stages to this improvement condition. The first stage IC15a requires the operator to demonstrate that the anaerobic digestion process is stable and that the digestate has minimal potential for biogas production. The IC requires evidence that the digestion process is stable by producing an assessment of the digester’s operating conditions through evaluating key parameters. These parameters are outlined in BAT conclusion 38 within the Waste Treatment BREF:

- pH and alkalinity
- operating temperature

- hydraulic and organic loading rate of the digester feed
- volatile fatty acid (VFA) and ammonia concentration
- biogas quantity, composition and pressure
- liquid and foam levels

Our guidance, *How to comply with your environmental permit. Additional guidance for: Anaerobic Digestion*, sets out indicative parameters and values that generally indicate a successful digestion process (Table 5). Where the operator's monitoring indicates that process parameters are within these indicative values, we would expect the digestion process to be stable and reduce the likelihood for biogas generation during the post digestion storage and treatment stages.

The indicative ranges specified in the above guidance are general values based on our experience. The Environment Agency recognises that operating parameters will vary on a site-by-site basis. However, it is the responsibility of the operator to justify that the values derived from process monitoring represent the optimal operating conditions for the anaerobic digestion plant.

The IC also requires the operator to determine the residual biogas potential within the digestate. The operator can use an assessment of digester stability and an assessment of residual biogas potential to provide justification that a digestate is stable. Residual biogas potential can be worked out by using the methodology, OFW004-005 [N6] as outlined within *BSI PAS 110: Producing Quality Anaerobic Digestate or an equivalent methodology for determining digestate stability*. We have not specified a threshold for residual biogas potential. The threshold defined within PAS 110 is part of a published standard operators use for producing an 'end-of-waste' digestate and not necessarily for establishing a definitive assessment of the potential for biogas generation. However, establishing the residual biogas potential will contribute to the operator's understanding of how stable the anaerobic digestion process has been.

The stability of the digestate depends on numerous factors, including type of feedstock, pre-treatment and digestion process and how this is managed in terms of organic load and residence time. For example, shortening residence times will increase the organic load and reduce the degree to which organic matter within the digester is converted to gas. Where this happens the digestate will be more active and capable of further biodegradation.

This IC will allow the operator to gather evidence and produce an evaluation of their process and digestate. There are no definitive thresholds for the operator to meet. A clear understanding of their optimal conditions in the digester will enable the operator to determine what tank cover and gas infrastructure they must implement. Should the operator not show that the digestion process is stable, and that biogas generation is minimised, the operator must implement a plan to

enclose the unstable digestate storage/treatment tanks and channel gases to gas utilisation plant or gas storage infrastructure. This step is a requirement of the second IC (IC15b).

Should the report approved under IC15a conclude that the digestion process is stable and the digestate has 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. We have therefore imposed a further IC15c.

IC15c requires the operator to produce a 'waste water and digestate storage enclosure plan'. The plan requires the operator to include detailed design information on tank cover design and associated waste gas abatement systems. The operator has confirmed their commitment to enclosing their storage tanks for stabilised digestate storage.

Uncontrolled waste gas emissions – open treatment or storage tanks pre-AD.

The process includes prior to AD the thickening and dewatering of indigenous and imported sewage sludge which is a directly associated activity (DAA) of the AD process.

The BREF defines this activity as the 'Treatment of water-based liquid waste' providing 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, NH3 and organic compounds to air, BAT is to apply BAT 14d, which requires the 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.

The applicant identified open tanks and processes within this DAA which included four picket fence thickeners, a surplus activated sludge tank, a reception tank and sludge blending tank.

We therefore asked the operator to provide written confirmation that they will undertake the installation of enclosures/covers and associated emission abatement systems in line with BAT 14 and BAT 53 for storage and treatment tanks pre-anaerobic digestion identified as the 4 picket fence thickeners, the surplus activated sludge tanks, the reception tank, and the sludge blending tank.

The Environment Agency recognises that the use of open tanks across the wastewater industry is widespread. While the operator did not provide detailed proposals to enclose tanks, they have committed to meeting the requirements of BAT. They also stated that *"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."*

We do not accept that deadlines for BAT compliance, required as a result of the already materially overdue national implementation of the IED, should be based on Water Company price review periods rather than a pragmatic, proportionate and reasonable timescale for completing an improvement condition taking into account the ongoing risks to the environment and human health. These are not new or innovative proposals or techniques. In this context, 'Best Available Techniques' means the economically and technically viable available techniques which are the best for preventing or minimising emissions and impacts on the environment as a whole. Availability is assessed on a sectoral basis, not on the claims of one WaSC. The fact the rest of the WaSCs will implement these techniques, coupled with their specific inclusion in the BAT Conclusions documents, strongly indicates that they are indeed 'available'. In the absence of approved alternatives, they are a requirement of Article 11 IED which we must ensure compliance with under paragraph 5 of schedule 7 EPR. We do not consider reference to PR24 or subsequent price review discussions to be appropriate or relevant to this determination.

We have therefore set a final deadline of 31 March 2025 for this IC of 31 March 2025. It should be noted that the implementation date for operators to be compliant with the Waste Treatment BAT conclusions was 17 August 2022. We believe that the deadline specified in the improvement condition provides a sufficient timeframe in which the operator can produce and implement detailed plans to meet BAT. Where operators do not satisfy the requirements of the improvement condition by 31 March 2025, the Environment Agency may commence enforcement action for that failure the WaSC. Failure of the operator to achieve BAT or failure to take steps to implement BAT by the backstop will be at the operator's risk.

We consider the adoption of this more flexible approach to be pragmatic and proportionate, securing adequate progress towards, and delivery of, BAT within a reasonable timescale. Allowing a longer timescale would not, in our view, be acceptable because of the ongoing risks to the environment and human health. A stricter approach would most likely have meant that we would refuse the application.

The permit also includes bespoke permit conditions alongside the ICs. These bespoke permit condition requires the operator to have the appropriate infrastructure installed on the site by 31 March 2025. Should the operator fail to implement the changes required by that deadline, the Environment Agency may undertake enforcement proceedings against the operator. This position is in

place to facilitate the opportunity for operators to become BAT compliant and install necessary infrastructure. The Environment Agency recognises that this approach is different to standard environmental permitting processes. However, we consider that the operator has provided sufficient commitment that they will undertake the necessary improvements to prevent uncontrolled biogas emissions and/or other waste gas emissions from open tanks. Backstop conditions in the permit will ensure this is achieved.

The section, *Bespoke permit conditions* of this document, provides a general explanation as to why we have issued this permit without a full determination of various key issues with the application.

Emissions to air – Combustion

Biogas generated through the anaerobic digestion of waste contains a high quantity of methane and is often used to provide energy to onsite operations. Biogas is commonly combusted within on-site combined heat and power engines (CHP) or boilers. CHP engines produce heat and electricity. Heat is used to provide energy in the form of steam or hot water and is directed to the anaerobic digestion plant processes, while electricity can be utilised to power other plant on site.

Combustion of biogas or other fuels such as natural gas produces waste gas emissions which are discharged to the atmosphere via a stack. The combustion of biogas releases the following products of combustion; oxides of nitrogen (expressed as NO_2), sulphur dioxide (SO_2), carbon monoxide (CO) and volatile organic compounds (VOC).

While the WaSC anaerobic digestion activity has not until now been regulated under the Environmental Permitting (England and Wales) Regulations 2016 (EPR) as an installation, across the sector, the combustion plant may have been permitted. Some combustion plant in this sector will already have permits as standalone medium combustion plant. If emissions have previously been assessed, our approach is not to undertake any additional assessment unless there is a site-specific reason to do so. If emissions had not been previously assessed, or there had been subsequent changes, we would require a WaSC to undertake a new quantitative air risk assessment during determination.

This installation uses combustion plant to provide power and heat to the plant and AD process. Maple Lodge STC is authorised to combust biogas from two combined heat and power (CHP) engines with a thermal input of 3.76 MWth each, and four dual fuel boilers with a thermal input of 1.034 MWth each.

The CHP engines produce heat and electricity as a result of combustion. Heat is used to provide energy in the form of steam or hot water which is directed to the AD plant processes, while electricity can be utilised to power other plant on site

or in some cases can be exported to the electricity grid. Maple Lodge STC utilises electricity produced on-site and can export offsite if required. The boilers provide additional heat support to the AD process when required.

The emissions from the combustion plant at Maple Lodge STC have been previously assessed and we are not aware of any subsequent changes to plant. Therefore, we gave not carried out any further assessments.

We have ensured that individual combustion plant is subject to the required emission limit value (ELV) as stated in the permit. This includes those required by the Medium Combustion Plant Directive (MCPD) which are currently in effect, or which have a future effective date. See Table S3.1 in the permit.

We have included improvement condition IC18 in the permit which requires the Operator to assess methane slip resulting from the combustion of biogas via the CHP engines. Following an assessment of the data, the Environment Agency shall consider whether emission limits for volatile organic compounds are applicable for this installation.

Indirect emissions of waste water

AD installations produce a series of liquid wastes. These waste waters (also known as ‘liquid digestate’ or ‘liquors’) are discharged to the adjacent WwTW. As explained at the start of this document, WwTW are regulated under separate legislation, the Urban Waste Water Treatment Directive (UWWTD) and does not form part of this installation. The discharge of waste waters to the WwTW is therefore a point source emission and classed under the Waste Treatment BREF as an indirect emission to water. This AD has been in operation for several years but previously unpermitted as an installation as explained above. The activity at this facility was previously regulated as a waste operation.

The waste water discharged to the WwTW is not currently subject to monitoring or control. Waste waters, after discharge to the WwTW and treatment under UWWTD are discharged to surface waters (rivers, streams) or in some cases direct to the sea. Across the sewage sludge industry, a wide variety of incoming wastes, trade effluents and indigenous sewage sludges are treated via anaerobic digestion (combined they are subject to regulation under the EPR). Once discharged into the main WwTW, any pollutants within the discharge will be diluted with no control over the level of pollutants emitted to the works. This means that across the sewage sludge industry, there is no knowledge of the extent of pollutants entering the main works for treatment. This lack of knowledge means that WaSCs do not know if their WwTW are capable of treating the waste waters produced at an AD installation.

Description of waste water discharge

Effluent is generated on site during the dewatering and thickening of indigenous and imported sludges prior to the anaerobic digestion process, the dewatering of digestate following the anaerobic digestion process and the production of biogas condensate.

The waste waters are discharged to the adjacent Maple lodge WwTW. Any treatment of this effluent once it arrives at the WwTW is currently regulated under the UWWTD process, not under control of an environmental permit. However, the effluent being discharged from the WwTW is controlled by a permit. As the UWWTD waste water is discharged to a watercourse, we consider the effluent generated through the AD process and DAA activities constitutes an indirect discharge to water.

As such operators of an installation must establish and maintain inventories, including information about the characteristics and composition of waste waters in accordance with BAT conclusion 3 of the Waste Treatment BREF. BAT conclusion 3 states:

In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system, that incorporates all of the following features which are identified for waste water as:

Information about the characteristics of the waste water streams, such as:

- *average values and variability of flow, pH, temperature, and conductivity;*
- *average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances / micropollutants);*
- *data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge))*

The operator did not have this data prior to submitting their application for a bespoke installation permit. The Environment Agency has found that across the waste water sector, WaSCs have not undertaken a comprehensive analysis of their emissions from the installation activities to the WwTW. In general, WaSC installations accept trade effluents (via consented discharges in the catchment), indigenous sludges and separate waste streams via road tanker. The waste materials treated via the AD plant are potentially diverse and the composition of the feedstock and treated digestates could contain significant variation in pollutants.

Operators of installations under the Waste Treatment BREF must establish an emissions inventory. The operator should be compliant with this BAT conclusion requirement at the point of submitting a permit application. The waste water emissions inventory informs treatment methodologies, environmental risk assessments and monitoring requirements. However, across the sector, this

information is not available. The Environment Agency recognises that the operator's emissions discharged to the WwTW have never been fully quantified, and therefore, accept that emissions to the WwTW have not been subject to a quantitative risk assessment. In addition, the operator also cannot demonstrate that they are compliant with BAT AELs for indirect discharges to water (as specified within BAT conclusion 20 of the Waste Treatment BREF).

The waste water discharged to the WwTW is treated via the requirements under the UWWTD. However, this approach may not effectively treat all the pollutants that could enter the WwTW after discharge from the installation. For example, characteristic treatment methods at WwTW do not typically treat and remove heavy metals or other specified pollutants from the waste water.

We understand and recognise that this industrial activity is already existing and consider it appropriate, where possible, to bring these activities into environmental regulation as an installation. While the operations are a pollution risk, the operator is not introducing new risks to the environment. It is important to note that any applications including a new emission to water would require a demonstration that emissions would not adversely impact any receiving waters, or breach relevant BAT AELs before a permit could be issued.

Our guidance, *Surface water pollution risk assessment for your environmental permit*, indicates that establishing a representative composition of the waste water streams requires a number of samples over a long period (12 – 36 samples). The scope of pollutants to be identified in the waste water depends on what substances are likely to be within the waste water at the point it is discharged from the installation. To determine what is in the waste water, the operator will need to examine and have a good understanding of the inputs to the installation.

To establish a waste water inventory and to facilitate a quantitative risk assessment from this indirect emission point, we have set improvement conditions. Our processes state that we generally don't set improvement conditions that require BAT to be demonstrated at some date after the permit application has been consulted on and determined. Generally, we should be satisfied whether operations will be BAT at the appropriate time, and we should make that assessment at the time we issue any permit or variation. However, for the reasons set out above, this assessment is not possible due to the lack of data in this area across the WaSC sector. We consider setting improvement conditions as a pragmatic approach to identify what is in the waste water to then implement future improvements.

The permit includes improvement conditions IC17a, IC17b and IC17c. There are three stages to this improvement programme. The first IC17a requires the operator to submit and carry out a sampling and analysis program and gather the relevant data on the waste water. In accordance with the Waste Treatment BREF, the IC requires the operator to determine the composition of the pollutants

which have BAT-AELs (these include heavy metals). Due to the variety of inputs to the waste treatment process and the unknown composition of the waste waters proposed for discharge to the WwTW, we cannot consider this effluent as straightforwardly a ‘biodegradable waste’. Therefore, the IC also sets the requirement on the operator to establish an inventory of pollutants of ‘all relevant substances’. The scope of pollutants the operator must identify depends on what substances are likely to be within the waste water at the point it is discharged from the installation. To determine what is in the waste water, the operator will need to examine and have a good understanding of the inputs to the installation. This installation accepts waste inputs from indigenous and imported sludges. Due to this variety of inputs and the requirements for a minimum of 12 samples, we have specified that this monitoring period be for at least a year to determine a representative understanding of the discharge.

The Environment Agency recognises that 12 months is a long period but establishing the composition of the waste water will facilitate long term improvements and ensure that all potential pollutants are able to be controlled.

On completion of IC17a, IC17b requires the operator to undertake a full assessment of the results providing a summary of the sample results, a completed H1 risk assessment(s) and detailed modelling (where necessary) with an assessment made against the parameters specified in the relevant environmental standards as specified within our guidance. We also require the operator to submit proposals and/or additional measures required to prevent or minimise any significant emissions from the installation along with timescales for implementation. IC17c requires the implementation of any relevant improvements identified.

The operator has provided written confirmation that it will initiate a sampling programme to determine the composition of the waste water.

The overarching aim of the improvement programme is to establish comprehensively what the operators of AD installations discharge to WwTW and to drive long term improvements. The lack of existing data across the industry means that the Environment Agency, rather than refusing environmental permit applications, facilitates a process for WaSC operators to achieve BAT and to meet environmental standards for long term environmental protection.

Odour management

The Waste Treatment BREF outlines techniques for minimising the impact from odour pollution from operations which are likely to cause odour. Anaerobic digestion and the handling/storage of various waste sludges and organic wastes can be highly odorous. The Waste Treatment BREF includes general BAT conclusions which operators must implement (BAT 10 and 12 where odour

nuisance at sensitive receptors is expected and/or has been substantiated). These include:

- BAT 10 – Monitoring of odour emissions
- BAT 12 – Odour management plan
- BAT 13 – Techniques to reduce odour emissions
- BAT 14 – Reduce diffuse emissions to air

Odour and BAT

BAT requires that processing and treatment of odorous wastes be carried out in a sealed system. This means that tank(s)/vessel or area(s) must be connected to an odour abatement system. Odorous gas streams are to be directed to the abatement plant to be treated prior to release to the atmosphere via emission stack(s).

BAT-associated emission levels (BAT-AELs) for the treatment of water based liquid wastes (the dewatering and thickening activity identified as a directly associated activity of the AD process) are identified as Hydrogen chloride (HCl), Ammonia ($NH_{3)}$, and Total volatile organic compounds (TVOC), however the monitoring only applies when the substance concerned is identified as relevant in the waste gas stream based on the inventory mentioned in BAT 3.

Maple Lodge STC does not currently have in place odour control units due to the open nature of the existing site. We have therefore implemented IC13 which requires the installation of enclosures/covers and associated emission abatement systems in line with BAT 14 and BAT 53 for storage and treatment tanks pre-anaerobic digestion identified as the 4 picket fence thickeners, the surplus activated sludge tanks, the reception tank, and the sludge blending tank, and IC15 which requires the implementation schedule for the installation of enclosures/covers (and associated waste gas abatement systems) for waste water/stable digestate storage tanks identified as the eight secondary digester tanks.

The Environment Agency recognises that the operator's proposals for the implementation of odour control units at the installation are not complete. Our established environmental permitting process outlines that where information is missing or insufficient, that information can be requested. Where information is unsatisfactory, we may proceed to return an application as not duly made or refuse a duly made application. Our processes state that we generally do not set improvement conditions that require BAT to be demonstrated at a later date beyond which the permit application has been consulted on and determined. Generally, we should be satisfied whether operations will use BAT at the appropriate time, and we should make that assessment at the time we issue any permit or variation.

However, we recognise that this industrial activity is already existing and being undertaken and consider it appropriate, where possible, to bring these activities into environmental regulation as an installation. While the current operations are a pollution risk, the operator is not introducing new risks to the environment. It is important to note that any applications including new plant and bulk tanks would require a demonstration that OCUs are implemented and meet BAT before a permit could be issued.

We have included an improvement condition in the permit for the operator to progress the proposals submitted subject to the enclosure and covering of tanks design. We require that the proposals must be implemented by 31 March 2025.

Odour management plan

The site is required to have an odour management plan in place that details the measures and procedures to prevent or otherwise minimise, odour releases from the site. The plan forms part of the permit.

Odour conclusions

Based upon the information in the application we are satisfied that the appropriate measures will be in put into place through the implementation of the ICs and implementation of the existing OMP to prevent or where that is not practicable to minimise odour and to prevent pollution from odour.

Bioaerosols

Site-specific bioaerosols risk assessments (SSBRA) are required where:

- The operational area (including abatement plant) is located within 250 metres of sensitive receptors: or
- Where area or point source emissions may pose a risk to the nearest sensitive receptor's location.

SSBRAs demonstrate that the process and/or abatement measures adequately prevent, or where this is not possible, significantly reduce the risk of bioaerosols release, and that the resulting activity will be unlikely to expose the nearest sensitive receptor to elevated concentrations of bioaerosols.

There are external site operational processes within 250 metres of a sensitive receptor.

We consider it appropriate to insert the bioaerosols monitoring requirements in the permit in accordance with our guidance TGN M9 Environmental monitoring of bioaerosols at regulated facilities (version 2, July 2018). The operator is required to comply with the new monitoring requirements from the date of permit issue.

Improvement conditions

Primary tank/vessel condition

We recognise that many sludge storage and treatment vessels were constructed prior to the current permitting requirements and their design may not be compatible with BAT as described in the relevant BREF documents. The operator provided an inventory of their tanks and described the condition of those assets. Comprehensive evidence was not provided to assess the condition of the tanks and determine whether they are suitable for containing potentially polluting wastes and waste waters. However, as these tanks are already existing and perform an ongoing industrial operation, we have set an improvement condition in the permit to address any potential deficiencies in the existing site's primary containment.

IC16 requires the operator to review (undertaken by an appropriately qualified engineer) the physical condition of the primary containment and establish a program of works to implement any necessary individual measures to ensure that the primary containment is fit for purpose. The Environment Agency will review these submissions with regard to the guidance, *CIRIA C736 Containment systems for the prevention of pollution*.

Methane slip

We have included improvement condition IC18 in the permit which requires the operator to assess methane slip resulting from the combustion of biogas via the CHP engines. Following an assessment of the data, the Environment Agency shall consider whether emission limits for volatile organic compounds are applicable for this installation.

Head of works

This permit also allows a further bespoke waste operation relating to the import of industrial sludge and liquid waste to the *head of works* (HoW). HoW means the discharge location where separately imported wastes are discharged into the WwTW. The waste operations associated with the head of works is either via the direct discharge of tankered waste into the WwTW or the temporary storage (and blending) of waste in a storage tank before discharge of the waste liquids into the WwTW. Once the discharged wastes enter the WwTW, this emission leaves regulatory control of The Environmental Permitting (England & Wales) Regulations 2016. The discharged waste is mixed with liquids in the WwTW and is regulated separately under the requirements of the Urban Waste Water Treatment Directive. The HoW activity undertaken at Maple Lodge STC involves the acceptance of tankered waste at the import point and direct discharge into the WwTW. The discharge from the HoW is therefore classed as an indirect emission to water. This activity is not related to the on-site anaerobic digestion installation

The operator [applied for this as an additional regulated activity as part of the IED permitting process. This variation ensures that the activity reflects up-to-date permit conditions.

Across the waste water treatment sector, existing HoW permits allow for the reception and discharge of waste into the WwTW without the appropriate controls for a point source emission to sewer. The imported wastes discharged to the WwTW is treated via the requirements under the UWWTD. However, this approach may not effectively treat all the pollutants that could enter the WwTW after discharge from HoW activity.

We understand and recognise that this industrial activity is already existing and consider it appropriate, where possible, to bring these activities into up-to-date environmental regulation. While the operations are a pollution risk, this permit does not introduce new risks to the environment. The operator submitted a list of waste codes for discharge to sewer as part of the HoW activity. We requested that the operator indicate which wastes are currently accepted and those codes which would be newly requested as part of the HoW activity. To ensure that this HoW is not introducing new environmental risks we have restricted the waste codes accepted to the HoW activity to those already accepted. A quantitative environmental risk assessment was not submitted to determine the impact from the discharge of the new codes to the River Colne after passing through the WwTW. As the operator provided no evidence of the environmental impact from the new codes, we are not able to approve this aspect of their application. [The codes were withdrawn from the application by the operator. A list of the rejected codes can be found in the *Decision considerations* section of this document.

It is important to note that any applications adding new waste codes would change the emission to sewer and would require a demonstration that emissions would not adversely impact any receiving waters, or breach relevant environmental standards before a permit could be issued.

This variation ensures that the HoW activity and associated discharge are permitted to modern standards by implementing the following:

- Included the HoW activity as a bespoke waste operation within the new IED permit.

- Added an emission point for the discharge of HoW waste to the main wastewater treatment works (WwTW). This will facilitate sampling and monitoring of the discharge. This discharge is classed as an indirect emission to water.

- Included all the HoW waste codes applied for where already accepted.

- Added improvement conditions requiring the operator to determine the composition[1] of the wastewater stream discharged into the WwTW

[1] 'Composition' means:
- Average values and variability of flow, pH, temperature and conductivity.
- Average concentration and load values of all relevant substances and their variability.
- Data on bioeliminability.

(monitoring over 12 months). It will also require the operator to perform a quantitative risk assessment of the impact of this wastewater downstream at the main river and implement improvements to prevent pollution to the watercourse.

As similarly outlined in the Key issues section, *Indirect emissions to waste water*, this application does not include a demonstration that the existing indirect discharge via the HoW to the River Colne is not causing pollution. Across the WaSC sector, there is little or no data available to determine the impacts from HoW activities. Therefore, to establish a waste water inventory and to facilitate a quantitative risk assessment from this indirect emission point we have set improvement conditions. Our processes state that we generally should perform risk assessments at the time we issue any permit or variation. However, for the reasons set out above, we consider setting improvement conditions as a pragmatic approach to identify what pollutants are present in the HoW discharge to then implement future improvements.

The permit includes improvement conditions IC19a, IC19b and IC19c. There are three stages to this improvement programme. The first IC19a requires the operator to submit and carry out a sampling and analysis program and gather the relevant data on the waste water discharge. In accordance with our guidance, Non-hazardous and inert waste: appropriate measures for permitted facilities - Guidance - GOV.UK (www.gov.uk), the IC requires the operator to determine the composition of the discharge. The scope of pollutants the operator must identify depends on what substances are likely to be within the incoming waste at the HoW. Due to the variety of industrial wastes accepted and the requirements for a minimum of 12 samples, we have specified that this monitoring period be for at least a year to determine a representative understanding of the discharge.

The Environment Agency recognises that 12 months is a long period but establishing the composition of the discharge from the HoW will facilitate long term improvements and ensure that all potential pollutants are able to be controlled.

On completion of IC19a, IC19b requires the operator to undertake a full assessment of the results providing a summary of the sample results, a completed H1 risk assessment(s) and detailed modelling (where necessary) with an assessment made against the parameters specified in the relevant environmental standards as specified within our guidance. We also require the operator to submit proposals and/or additional measures required to prevent or minimise any significant emissions from the installation along with timescales for implementation. IC19c requires the implementation of any relevant improvements identified and may require the operator to limit wastes accepted at the HoW.

The operator has provided written confirmation that it will initiate a sampling programme to determine the composition of the waste water. The lack of existing data across the industry means that the Environment Agency, rather than

refusing an environmental permit application, facilitates a process for WaSC operators to understand their emissions and to meet environmental standards for long term environmental protection. This process will enable the Environment Agency to set environmental limits on the discharge for substances of concern. In addition, implementing permit conditions and establishing that the movement of waste from the HoW to the WwTW is a point source emission, corrects historic irregular permitting arrangements.

Bespoke waste activities and other issues

The Operator also applied for a waste activity in relation to the temporary storage of cake. Digested cake produced at other Thames water sites will be stored in designated bays prior to transfer off site. Cake that is temporarily stored on site will not undergo any treatment, and must be kept separate from any cake produced as a result of activities AR1 to AR9 referenced in table S1.1.

Decision considerations

Confidential information

A claim for commercial or industrial confidentiality has not been made.

The decision was taken in accordance with our guidance on confidentiality.

Identifying confidential information

We have not identified information provided as part of the application that we consider to be confidential.

The decision was taken in accordance with our guidance on confidentiality.

Consultation

The consultation requirements were identified in accordance with the Environmental Permitting (England and Wales) Regulations (2016) and our public participation statement.

The application was publicised on the GOV.UK website.

- Local authority Environmental Protection Department – No response received.
- Food standards agency – No response received.
- Health and Safety Executive – No response received.
- UK Health Security Agency (Previously Public Health England) and the relevant Director of Public Health – See consultation responses section.

The comments and our responses are summarised in the consultation responses section.

Operator

We are satisfied that the operator is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with our guidance on legal operator for environmental permits.

The regulated facility

We considered the extent and nature of the facility at the site in accordance with RGN2 ‘Understanding the meaning of regulated facility’, Appendix 2 of RGN2 ‘Defining the scope of the installation’, Appendix 1 of RGN 2 ‘Interpretation of Schedule 1’, guidance on waste recovery plans and permits.

The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.

The site

The operator has provided plans which we consider to be satisfactory.

The plans show the location of the part of the installation to which this permit applies on that site.

The plan is included in the permit.

Site condition report

The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive

Nature conservation, landscape, heritage and protected species and habitat designations

We have checked the location of the application to assess if it is within the screening distances we consider relevant for impacts on nature conservation, landscape, heritage and protected species and habitat designations. The application is not within our screening distances for these designations.

We have assessed the application and its potential to affect sites of nature conservation, landscape, heritage and protected species and habitat designations identified in the nature conservation screening report as part of the permitting process.

We consider that the application will not affect any site of nature conservation, landscape and heritage, and/or protected species or habitats identified.

We provided an assessment of the habitats which we provided to Natural England for information only.

The decision was taken in accordance with our guidance.

Environmental risk

We have reviewed the operator's assessment of the environmental risk from the facility.

The operator’s risk assessment is unsatisfactory and required additional Environment Agency assessment.

The operators risk assessment was unsatisfactory and required additional Environment Agency assessment. Please see the key issues for more information. We were unable to fully assess all elements of the operators' risk assessment during determination of the variation. The facility is, however, already existing and has not been regulated as an installation prior to this application. We have included conditions in the permit that require the operator to provide additional information as part of an improvement programme. The improvement programme requires that the operator provide updated risk assessments including but not limited to the following elements:

- Secondary containment – The improvement programme requires the operator to submit a finalised containment solution in compliance with CIRIA C736, fully worked up and signed off by competent individuals. The improvement programme requires the submission of timeframes for the implementation of any additional containment measures identified as being necessary as part of the risk assessment. This requirement is to ensure that the site meets the requirements of BAT conclusions for containment namely BATc 19 of the Waste Treatment BREF.

- Discharge of process wastewater to a WwTW – Effluent is produced at different stages of the sludge treatment operations at Maple Lodge STC. At the time of application, an analysis of the effluent streams had not been undertaken or submitted. To ensure that the wastewater streams are fully characterised and an analysis of any pollutants of concern is carried out, we have included improvement conditions requiring a sampling programme, analysis, and proposals for any additional measures required to prevent or minimise any significant emissions from the installation along with timescales for implementation, for Environment Agency approval, with measures to be implemented as approved. The BAT associated emission levels (BAT-AEL) have been applied to the emission points S1, S2 and S3 on the permit. The limits only apply if a pollutant of concern is identified in the waste water characterisation. The emission limits can be found in table S3.2

- Discharge of waste to the HoW – Waste is currently accepted and discharged to the HoW. At the time of application, an analysis of the impact of acceptance of these wastes had not been undertaken or submitted. To ensure that the fate of the impact on receiving water bodies is assessed, we have included improvement conditions requiring a sampling programme, analysis, and proposals for any additional measures required to prevent or minimise any significant emissions from the receipt of waste to the HoW along with timescales for implementation, for Environment Agency approval, with measures to be implemented as approved.

- Open processes and/or storage tanks – The improvement programme requires that the operator undertake an assessment of the open tanks at Maple Lodge STC, and an assessment of the effectiveness of the main anaerobic digestion process. The operator must undertake an additional risk assessment to understand the stability and emissions potential of the contents of the tanks. Should the assessment conclude that the tanks give rise to emissions of odour and/or biogas, the operator must undertake measures to prevent or, where not practicable, adequately reduce the emissions being produced which may include the addition of abatement.

General operating techniques

We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.

Where there are measures approaching BAT, we have where appropriate implemented an improvement programme. The improvements set out in table S1.3 must be completed by the times stipulated in that table or the backstop conditions identified in the permit.

We have reviewed the techniques against the Best Available Techniques (BAT) Reference Document for Waste Treatment (BAT conclusions), Biological waste treatment: appropriate measures for permitted facilities - 1. When appropriate measures apply - Guidance - GOV.UK (www.gov.uk) and Non-hazardous and inert waste: appropriate measures for permitted facilities.

The operating techniques that the operator must use are specified in table S1.2 in the environmental permit.

Operating techniques for emissions that do not screen out as insignificant

The combustion plant at this facility remains unchanged from the existing permit EPR/ FB3809MM /V002. The engines and boilers will not change as a result of this permit variation.

We consider that the emission limits included in the installation permit reflect the BAT for the sector.

Indirect emissions to water

Indirect emissions to water arising from sludge treatment operations cannot be screened out as insignificant due to insufficient information available at the time of determination of the permit. To establish if any emissions are of significance or may have an impact on the receiving waters, we have included improvement conditions that provide a framework for the operator to carry out sampling,

analysis and to submit proposals to prevent or minimise any significant emissions from the installation along with timescales for implementation, with proposals to be implemented as approved. The permit includes the emission limits for substances with BAT associated emission levels (BAT-AEL). The limits apply if the sampling program identifies the listed substances as present in the discharge (emission points S1, S2 and S3). The parameters and limits may be found in table S3.2 of the permit.

The permit conditions enable compliance with relevant BAT reference documents (BREFs) and BAT Conclusions, and Emission Limit Values (ELVs) deliver compliance with BAT-AEL. We consider that the emission limits included in the installation permit reflect the BAT for the sector.

National Air Pollution Control Programme

We have considered the National Air Pollution Control Programme as required by the National Emissions Ceilings Regulations 2018. By setting emission limit values in line with technical guidance we are minimising emissions to air. This will aid the delivery of national air quality targets. We do not consider that we need to include any additional conditions in this permit.

Odour management

We have reviewed the odour management plan in accordance with our guidance on odour management.

We consider that the odour management plan is satisfactory and we approve this plan.

We have approved the odour management plan as we consider it to be appropriate measures based on information available to us at the current time. The operator should not take our approval of this plan to mean that the measures in the plan are considered to cover every circumstance throughout the life of the permit.

The operator should keep the plans under constant review and revise them annually or if necessary sooner if there have been complaints arising from operations on site or if circumstances change. This is in accordance with our guidance ‘Control and monitor emissions for your environmental permit’.

While we consider that the plan is satisfactory, we have included an improvement condition IC13 and IC15 to review the requirement for the implementation of OCUs in line with BAT 34 and BAT 53. Where further improvements are identified, the operator is required to implement these measures in accordance with Environment Agency approval or a variation to the permit if required.

Use of conditions other than those from the template

Based on the information in the application, we consider that we need to include conditions other than those in our permit template. See the Key issues section for more details on the bespoke permit conditions we have set in this permit.

Raw materials

We have specified limits and controls on the use of raw materials and fuels.

Waste types

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.

We are satisfied that the operator can accept these wastes for the following reasons:

- they are suitable for the proposed activities
- the proposed infrastructure is appropriate; and
- the environmental risk assessment is acceptable.

We have excluded the following wastes with agreement from the operator for acceptance to the head of works waste activity as a quantitative environmental risk assessment was not submitted to determine the impact from the discharge of the new codes to the River Colne after passing through the WwTW. As the operator provided no evidence of the environmental impact from the new codes, we are not able to approve this aspect of their application. A list of the withdrawn codes is provided below.

19	**Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use**
19 06	**wastes from anaerobic treatment of waste**
19 06 99	wastes not otherwise specified (waste from de-gritting AD digester)
19 09	**wastes from the preparation of water intended for human consumption or water for industrial use**
19 09 02	sludges from water clarification
19 09 03	sludges from decarbonation
19 09 06	solutions and sludges from regeneration of ion exchangers
19 13	**wastes from soil and groundwater remediation**
19 13 08	Aqueous liquid wastes and aqueous concentrates from groundwater remediation

Improvement programme

Based on the information on the application, we consider that we need to include an improvement programme. See the Key issues section for more details on the bespoke permit conditions we have set in this permit.

Emission Limits

Emission Limit Values (ELVs) and equivalent parameters or technical measures based on Best Available Techniques (BAT) have been added for emissions to air and indirect discharges of waste water to surface waters.

Emission limit values are derived from:

- Waste Treatment BREF for BAT associated emission limits.
- Schedule 25A of the Environmental Permitting (England and Wales) (Amendment) Regulations 2018.

Emissions to air

Combustion appliances

Biogas is produced as a result of the AD process. Combustion of the produced biogas takes place in two combined heat and power (CHP) engine and four boilers. The engine produces heat and electricity that may be used to power on site processes while boilers provide additional heat to the AD processes. The boilers also utilise gas oil as a backup fuel. Combustion of biogas discharges pollutants to the air via stacks and exhausts. We have therefore applied emission limits to the following substances;

- Nitrogen oxides
- Sulphur dioxide
- Carbon monoxide

For further detail of emission limits, refer to table S3.1 of the permit.

Emissions to water

There are no emissions of waste waters direct to a receiving water body. The operator will discharge waste waters to the waste water treatment works prior to discharge to the River Colne. The Waste Treatment BREF specifies BAT AELs for indirect emissions to a water body. Where non-hazardous wastes are imported for storage, blending or treatment prior to discharge into the wastewater treatment works, the permitted waste operation ceases once the waste is mixed with the waste waters in the WwTW. BAT AELs or emission limits will be applied to the discharge into the wastewater treatment works for substances of concern.

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 including dewatering, thickening treatment through AD and the subsequent discharge to the waste water treatment works will be subject to the BAT AELs specified within BAT conclusion 20 (Table 6.2 of the Waste Treatment BREF).

As outlined within the Key issues section, *Indirect emissions of waste water*, the operator did not provide a composition of the waste water (in line with BAT conclusion 3), therefore, all BAT AELs have been applied. We have set improvement condition IC17 for the operator to determine the composition of the waste in a waste inventory. The limits will only apply when the substance concerned is identified as relevant in the waste water inventory.

Until the operator has completed IC17a, the permit specifies limits for:

- Hydrocarbon oil index (HOI) (mg/l).
- Free cyanide (CN^-) (mg/l).
- Adsorbable organically bound halogens (AOX) (mg/l).
- Metals and metalloids; arsenic (expressed as As), cadmium (expressed as Cd), chromium (expressed as Cr), hexavalent chromium (expressed as Cr(VI)), copper (expressed as Cu), lead (expressed as Pb), nickel (expressed as Ni), mercury (expressed as Hg), zinc (expressed as Zn) (µg/l).

Monitoring

We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.

We made these decisions in accordance with the waste treatment Best available techniques BAT conclusions.

Based on the information in the application we are satisfied that the operator’s techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.

Reporting

We have specified reporting in the permit. We made these decisions in accordance with the Waste Treatment BAT conclusions.

Management System

We are not aware of any reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.

The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.

Technical Competence

Technical competence is required for activities permitted.

The operator is a member of the CIWM/WAMITAB scheme. The operator is relying on the grace period to provide technical competence.

We are satisfied that the operator will be technically competent.

Previous performance

We have assessed operator competence. There is no known reason to consider the operator will not comply with the permit conditions.

We have checked our systems to ensure that all relevant convictions have been declared.

Relevant convictions were found and declared in the application. We considered relevant convictions as part of the determination process.

Financial competence

There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.

Growth duty

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.

Paragraph 1.3 of the guidance says:

“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all

specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation."

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.

We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

Consultation Responses

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public, and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section:

Response received from UK Health Security Agency

Brief summary of issues raised:

We request that the Environment Agency takes account of the following concerns when considering appropriate permit conditions:

The applicant notes: “The site has received occasional odour complaints from local residents.” However, the frequency of these and the operational circumstances under which complaints have occurred are not given in the application. It is also not clear therefore what steps were taken by the applicant to prevent future complaints. It is therefore recommended that the EA satisfies itself that the operator has taken all possible steps to prevent offsite odour annoyance under normal operating conditions.

Summary of actions taken:

Odour conditions will be included in the permit should the activities give rise to odour beyond the site boundary. As a result, the operator would be required to submit for approval within a specified period, a revised odour management plan which would look to identify and minimise any risk of odour. We have also included improvement conditions for the effective covering and abatement of existing open assets in line with best available techniques.

No other responses were received to our consultation exercise.

Gregory, Claire

From: Karen Fuller <karen.fuller@thameswater.co.uk>
Sent: 24 October 2023 17:06
To: Raymond, Sarah
Cc: Ashley Jonas; Gareth 1 Parry; Nicola Telcik
Subject: TW Response to Maple Lodge IED Application (EPR/FP3435LA/V006) - 24/10/23 - Part 1 of 2
Attachments: B22849AZ-JA-MAPLS1ZZ-100-RP-Z-0001.pdf; B22849AZ-JA-MAPLS1ZZ-LSX-DR-P-0003.pdf; C.231024-1.docx; TW_STC_EPR_08a_MPL_AppH.pdf

Hi Sarah,

Please find attached our response (C.231024-1) to your Final Opportunity RFI on Maple Lodge IED permit application (EPR/FP3435LA/V006) sent on the 26th September 2023.

With this RFI response we also submit attachments of the following revised documents:

1. revised Leak Detection (LDAR) - TW_STC_EPR_08a_MPL_APPH", version 2 August 2023
2. revised Maple Lodge Process Flow Diagram (PFD) B22849AZ-JA-MAPLS1ZZ-LSX-DR-P-0003 rev P06
3. Maple Lodge Odour Management Plan (AM-OMP) with revised PFD P06 (part 2 email)

In addition, to our responses to your specific queries raised 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.

Kind Regards,
Karen

Karen Fuller
Permitting & Regulatory Support Manager

karen.fuller@thameswater.co.uk

Clearwater Court, Vastern Road, Reading, RG1 8DB

Gregory, Claire

From: Raymond, Sarah <Sarah.Raymond@environment-agency.gov.uk>
Sent: 19 March 2024 11:47
To: Rachel Fox
Cc: Nicola Telcik
Subject: RE: EPR/FP3435LA/V006 Review of Draft Permit Documents CRM:0355042 - TWUL response 13/03/24
Attachments: FINAL - Maple Lodge Permit 19032024.pdf; Application Variation Draft operator review EA response 19032024.pdf

Hello Rachel,

Thank you for your comments on the draft permit. I have made the relevant changes required and provided comments on the points you have raised.

Please find attached a tracked change PDF version of the permit to identify the changes made. Please note I will be issuing this permit on the 25/03/2024.

Should you wish to discuss any of the points then please do not hesitate to contact me.

Kind regards

Sarah Raymond

From: Rachel Fox <Rachel.Fox@thameswater.co.uk>
Sent: Wednesday, March 13, 2024 4:14 PM
To: Raymond, Sarah <Sarah.Raymond@environment-agency.gov.uk>
Cc: Nicola Telcik <Nicola.Telcik@thameswater.co.uk>
Subject: EPR/FP3435LA/V006 Review of Draft Permit Documents CRM:0355042 - TWUL response 13/03/24

Good afternoon Sarah,

Thank you for forwarding through the draft IED AD Permit for Maple Lodge STC.

We have reviewed the IED AD draft permit (attached).

We have attached a list of comments and queries with regards to sections of the draft permit ('C.240313-1 TWUL Comments').

We would like to request a second draft of this permit, on the understanding of a 24hr or 48hr reply, as our review has identified some text, which will need amendment before final issue, for example, on the testing approach for the dual fuel boilers (please see 8th item from bottom of table in attached TWUL comments pdf).

We would like to reiterate 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.

Kind Regards

Rachel

Rachel Fox (She/her)

Environmental Permitting Manager

07747 645 346

rachel.fox@thameswater.co.uk

Please note my working days are Monday to Wednesday.

Thames Water

It's everyone's water

From: SM-Defra-RESP-notifications (DEFRA) <RESP-notifications@defra.gov.uk>
Sent: Wednesday, February 28, 2024 8:47 AM
To: McAree, Mark <Mark.McAree@jacobs.com>
Subject: [EXTERNAL] EPR/FP3435LA/V006 Review of Draft Permit Documents CRM:0355042

GOV.UK

Dear Mark McAree

Environmental Permitting (England and Wales) Regulations 2016

Application reference: EPR/FP3435LA/V006

Operator: THAMES WATER UTILITIES LIMITED

Facility: Maple Lodge Sludge Treatment Centre, Denham Way, Rickmansworth, WD3 9SQ

I enclose a draft of your permit variation and consolidation. I'm sending it to you so you can check we've stated your details correctly and it covers the activities you applied for. We're not asking for comments on the conditions we've used or how the permit is presented.

If you've concerns about the conditions we've chosen please discuss this with me and I can explain why they've been included. These wording of these conditions is standard. We will only consider changes to the wording in very exceptional circumstances.

The draft notice shows the changes we'll make to your permit. The reasons for these are as a result of your application.

If the permit variation is granted, your subsistence charge will change as a result of your application. Your new annual subsistence charge will be £16,813. We'll make a pro-rata adjustment for this financial year.

We have included improvement conditions in your permit variation. Please note that charges apply where our assessment or approval of information is required. These charges are applicable.

You can find further information on charging in our charging scheme:
https://www.gov.uk/government/publications/environmental-permits-and-abstraction-licences-tables-of-charges

and charging guidance:
https://www.gov.uk/government/publications/environmental-permitting-charges-guidance/environmental-permitting-charges-guidance

If you consider that there are any errors in your details or the activities stated, or if it refers to matters which you regard as being confidential or affecting national security, please let me know by 13/03/2024. You can email me at sarah.raymond@environment-agency.gov.uk.

Please phone me on 07557 139052 if you have any questions.

Yours sincerely,

Sarah Raymond

Department for Environment, Food and Rural Affairs (Defra) This email and any attachments is intended for the named recipient only. If you have received it in error you have no authority to use, disclose, store or copy any of its contents and you should destroy it and inform the sender. Whilst this email and associated attachments will have been checked for known viruses whilst within Defra systems we can accept no responsibility once it has left our systems. Communications on Defra's computer systems may be monitored and/or recorded to secure the effective operation of the system and for other lawful purposes.

Cathryn Ross
Interim Co-Chief Executive Officer

Cathryn.Ross@thameswater.co.uk

Georgina Collins,
Director Regulated Industry,
Environment Agency

CC - Chris Walters, Ofwat
David Hallam, DEFRA (Director floods & water)
Tim Griffiths, Ofwat

29 June 2023

By email

Industrial Emissions Directive (IED)

Dear Georgina,

Thank you for your letter of 7th June 2023 regarding the Industrial Emissions Directive (IED) and the important issue of obtaining environmental permits for sludge treatment centres (STCs).

I can confirm that Thames Water supports the objectives of the IED in delivering environmental protection, but we cannot commit to meeting all the requirements set out in the 'Appropriate Measures' guidance (issued September 2022), by December 2024. In addition, we have concerns regarding the overall value for money for customers of this work, in the context of other planned environmental improvements. I would also note that, given the constraints we face in terms of what we are able to deliver, we will inevitably need to focus the capacity we have on those things that matter most for our customers and the environment. The resource that would be required to undertake the full scale of the work envisaged by an extensive interpretation of the IED would mean displacing work to be undertaken on other priority areas.

We accept that the Environment Agency confirmed the need to obtain environmental permits for sludge treatment in July 2019. However, this was confirmed after the industry PR19 price review process and was therefore, not a directly funded activity within the AMP7 period (2020-2025).

Since the guidance was clarified we have been undertaking a gap analysis of the requirements at each site to understand the implications and scale of investment and activity required to develop a programme of works we can commit to. We are now undertaking a range of enabling activities to inform our approach and assess risks. These include:

- Odour emissions data collection and dispersion modelling for the sludge treatment areas for each site
- Developing the liquor monitoring programme
- Undertaking ambient bioaerosol monitoring
- Undertaking Residual Biogas Potential (RBP) testing at an initial five Sludge Treatment Centres
- Continuing to develop the waste acceptance procedures for inter-site sludge, cake, and liquors and for third-party waste imports

In terms of what we need to deliver, and by when, it is already clear to us that we will not be able to comply fully with the 'Appropriate Measures' guidance issued in September 2022. The highly prescriptive approach set out in the measures goes far beyond the original BAT requirements to achieve compliance.

Our current estimate is that the cost of implementing IED aligned with the 'Appropriate Measures' guidance will be in the region of £480m Capex and a £40m increase in Opex per annum. This is a significant change to the assumptions made back in 2019. We need to do further work to scope out the detail of what is required, but a programme of this size will need to be delivered over more than one AMP, especially when considering the requirement to maintain overall treatment capacity during construction activity and the wide range of other infrastructure improvements that will be required in AMP8.

The constraints on delivering more quickly include the availability of skilled resources and additional capability to manage such a large investment programme, and the ability of the supply chain to ramp up to the rates required. We and other companies will need to do significant work to create the necessary pathways and recruit the required skilled individuals to support this programme. Feedback from other companies indicates that the whole industry is already experiencing stretch from key Tier 1 suppliers in delivering existing programmes.

An additional important aspect that is causing us concern is the cost benefit of the requirements now being specified. As we mentioned in our letter to David Dangerfield of 15th May, we are concerned that we are collectively at risk of delivering poor value for our customers' money, at a time when their ability to pay is stretched and when there are many other environmental improvements that will require to be funded in AMP 8.

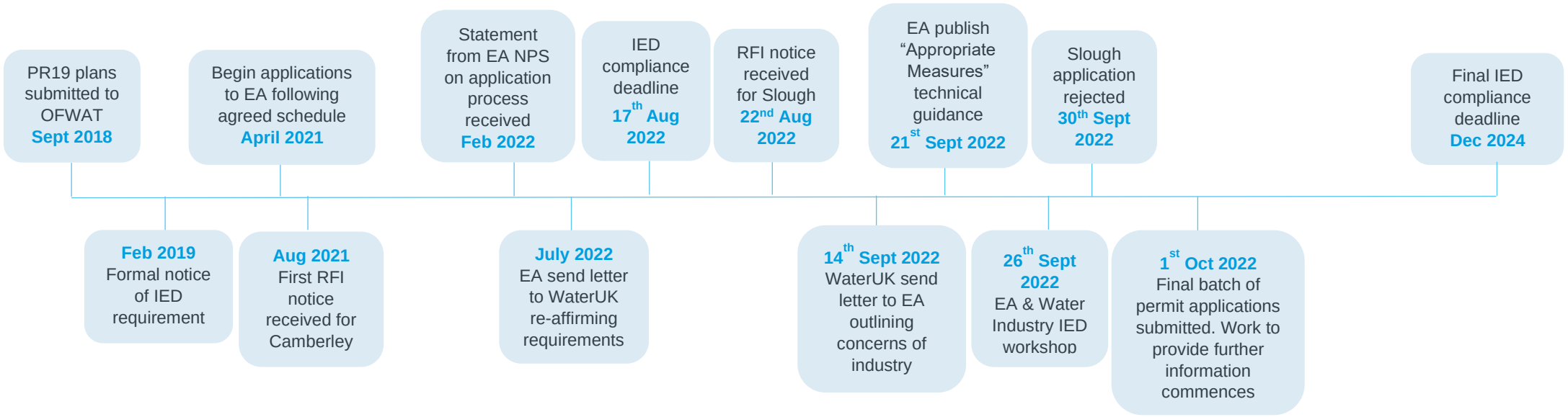
Against this background, I want to leave you in no doubt that we are fully aligned with the Environment Agency in supporting its wider environmental improvement aims. However, the requirements and timescales set out in the draft permits we have received are not achievable. This is clearly an important issue for both our organisations, and we are keen to meet with yourselves, WaterUK and the wider industry to work towards a solution to achieve the objectives of IED as soon as practicably possible.

Yours sincerely

Cathryn Ross
Interim Co-Chief Executive Officer

Appendix

Timeline



Chris Weston
Chief Executive Officer
chris.weston@thameswater.co.uk

Philip Duffy
Chief Executive
Environment Agency

By email

1 March 2024

Dear Philip

Thank you for your letter of 21 February, in which you helpfully set out more information relating to the joint Environment Agency and Defra announcement on increased water company inspections.

Whilst I am only eight weeks into my role as the new CEO of Thames Water, I want to reassure you that I am committed to improving our environmental performance. I joined Thames Water because it is a business that matters – to our customers, to the communities that we serve and to the environment. Whilst I am still getting my feet under the desk, I know that I join the organisation at a critical time and there is a lot that needs to be achieved. In the short time that I have been in post, I am heartened by the passion and commitment shown by all who work at Thames Water to deliver great service and improve the environment – this provides a solid foundation from which I can build.

As I set out in a recent letter to Simon Hawkins, my three immediate priorities are the health and safety of our people (and the customers that we serve), the delivery of the reprioritised turnaround plan ('TAP2') and securing a settlement for PR24 that enables the company to drive forward long-term, sustainable performance improvement.

Over the last few years, Thames Water has made some progress in terms of embedding the foundations of a turnaround in our performance. However, we now need to accelerate the speed of performance improvement. Whist I know that all stakeholders are keen for Thames Water to do better, it must also be recognised that we cannot solve our performance issues overnight. Many of the challenges we face have been decades in the making and will not be resolved quickly.

I am fully committed to delivering TAP2 which was signed-off by the Board in November. TAP2 will drive faster improvements in key performance areas, most acutely health and safety, leakage and pollutions. I have restructured my Executive Team to support this focus and have created a Chief Operating Officer post who will be responsible for the asset life cycle as a whole. The Director responsible for leading on TAP2 delivery now also reports directly to me.

I want to work with all our regulators to improve the environment, but I am concerned that there are currently several areas of significant disconnect across regulators and the sector, which we will need to work collaboratively to address. A great example of this, is the investment needed to deliver compliance with the Industrial Emissions Directive ('IED').

Although the IED was transposed in England and Wales by amendments to the Environmental Permitting Regulations in February 2013, there was initial uncertainty surrounding the applicability of this directive to sewage sludge treatment and management. The EA carried out a review to determine the applicability of the IED to Sewage Treatment Works ('STWs') undertaking the biological treatment of sewage sludge and set out an interim position which deferred the need for water companies to apply for IED-EPR permits. Subsequently, on 9 July 2019, Water and Sewerage Companies received an official letter from the EA formally confirming the requirement to apply for permits.

Although we received notice to apply for permits, it was unclear what investment would be required at sludge treatment centres ('STCs'). As such, any request to Ofwat at PR19 for funding to implement IED permits was rejected. The industry subsequently received notification from the EA that full compliance was expected by December 2024, despite the standards having not been finalised nor funding being allowed by Ofwat. Even though no funding was agreed, during AMP7 the industry has applied for permits and worked with the EA to establish the standards required at STC's. These requirements have only just been finalised through WaterUK and the permitting process.

We now find ourselves in a position where permits are being issued requiring full compliance by March 2025 – irrespective of the scale of investment required. For Thames Water the overall programme is estimated between £500 million - £600 million and we believe will take between 5 and 10 years to fully implement. In the meantime, we await Ofwat's decision on funding as part of PR24 (with final determinations expected in December 2024). Furthermore, the EA has started inspections against the new standards issuing non-conformances and requesting compliance by 2025, reserving the right to take enforcement action. Given we have not yet secured the funding, and practically it will take years to deliver all the investment, we currently have no option but to appeal all permits and potentially consider legal challenges.

Further, given the scale of investment needed in the water sector and the priorities regarding river health, we are surprised IED is being considered such high priority, especially when you consider the requirements have not been aligned to the periodic review process with Ofwat, as would be the case with the Water Industry National Environment Programme.

This inability for water companies, the EA and Ofwat to gain alignment on the requirements, practical timescales for implementation and the funding, has ended in conflict between the sector and the EA, with companies more focused on managing upcoming enforcement action.

I wanted to share this with you, as this is a real example which poses significant risk to Thames Water and other water companies and demonstrates the extent of work needed to gain alignment across the sector. I would very much welcome the opportunity to meet with you as a matter of some urgency to discuss this and other challenges that we currently face, the work we are doing to overcome them and the constraints that still exist. I have asked my team to contact your office to make arrangements.

Yours sincerely,

Chris Weston

Chief Executive Officer

Chris Weston
Chief Executive Officer
chris.weston@thameswater.co.uk

Georgina Collins
Director, Regulated Industry
Environment Agency

By email

24 April 2024

Dear Georgina,

I write in response to your letter of 18 March 2024 regarding implementation of the Industrial Emissions Directive ('IED'), in which you reiterate the Environment Agency's expectation that waste and sewerage companies obtain and comply with the standards detailed in the Waste Treatment Best Available Techniques ('BAT') reference document by 31 March 2025.

I want to start by saying very clearly that, as the incoming CEO of Thames Water, I take compliance with our environmental obligations very seriously, and the company's intention is to comply as far as possible with those obligations.

As you will be aware, although the IED was transposed in England and Wales by amendments to the Environmental Permitting Regulations ('EPR') in February 2013, there was initial uncertainty surrounding the applicability of this directive to sewage sludge treatment and management. As you note in your letter, this meant that implementation was delayed whilst the EA carried out a review to determine the applicability of the IED to Sewage Treatment Works ('STWs') undertaking the biological treatment of sewage sludge. Whilst this work was done, the EA set out an interim position which deferred the need for water companies to apply for IED-EPR permits.

Subsequently, on 9 July 2019, companies received an official letter from the EA formally confirming the requirement to apply for permits. Although we received notice to apply for permits, it was unclear what investment would be required at sludge treatment centres ('STCs'). As such, any request to Ofwat at PR19 for funding to implement IED permits was rejected.

The industry subsequently received notification from the EA in a letter dated 15 December 2022 that full compliance was expected by December 2024, despite the standards having not been finalised nor funding being allowed by Ofwat. Notwithstanding this, during AMP7 the industry has applied for permits and continues to work with the EA to establish the BAT requirements at STCs through WaterUK and the permitting process.

We are now in a position where permits are being issued requiring full compliance by March 2025 – irrespective of the scale of investment required and our ability to deliver that investment within the next 12 months. The EA has now started inspections against the new standards, issuing non-conformances and requesting compliance by 31 March 2025, reserving the right to take enforcement action.

Noting the seriousness with which we take our environmental obligations, we have begun work on a detailed delivery plan to achieve compliance. The plan sees us work through some of the very

practical challenges we see in achieving compliance with the EA's requirements at some of our STCs. The timescales in our plan are also partly dependent on the permit conditions that are imposed as we progress each permit application, and they may be affected by the expectations set out and the funding allowed as a result of Ofwat's PR24 process (with final determinations expected in December 2024).

As we develop and work through the implementation of our compliance delivery plan, we currently have no option but to appeal the new permits we receive where those permits require us to do things and do them to a timescale that we are unable to achieve. These appeals in no way contradict our intention to do everything we can to comply with the requirements of IED; we simply cannot accept obligations in these permits that we believe we cannot deliver. As I am sure you are aware, we submitted our first Statement of Case to the Planning Inspectorate regarding the Reading Sludge Treatment Centre permit on 11 April highlighting particular concerns regarding the EA's refusal to consider our proposed site-specific assessment of Best Available Techniques and the compliance time limits that have been imposed.

To avoid a situation of successive permit appeals, I would very much like to work with the EA on our compliance delivery plan. This would see us set out what we can do, where and when to comply with the requirements of IED. If we could produce such a plan, I would hope that it could then provide the basis on which permit requirements could be adjusted over time, enabling the EA to hold us to account against an ambitious but practicable timeline.

I am also keen that we work with the EA and Ofwat and across the industry to ensure that future price review processes enable a more holistic and joined-up view of the various statutory requirements placed on companies so that we can get greater clarity on these earlier on in the process, to support more effective business plan and, ultimately, accountability.

In the meantime, we will continue to work with your permitting team and use our best endeavours to achieve compliance with all our environmental obligations, including IED as far is practically possible.

Yours sincerely,

Chris Weston
Chief Executive Officer

BY EMAIL

Helen Wakeham
Deputy Director, Water Industry Regulation, Environment Agency

cc. Harvey Bradshaw, Executive Director of Environment and Business, Environment Agency

cc. Tim Griffiths, Program Director, Ofwat

3rd Floor
36 Broadway
London SW1H 0BH
0207 344 1844
www.water.org.uk

14 September 2022

Dear Helen,

Thank you for your letter, dated 11th July 2022 which reaffirmed the Environment Agency's position in relation to the obligations of the water and sewerage companies (WaSCs) in England to meet the requirements of the Industrial Emissions Directive (IED). I have discussed this with the companies concerned and wanted to confirm that they are all fully committed to meeting the requirements of IED and continuing to work closely with you to deliver compliance.

Despite the efforts of both WaSCs and the Environment Agency, the 17th August 2022 deadline which had been set for IED compliance has now passed, and no IED permits have yet been issued to any WaSC. The industry has ensured that all permit applications were submitted in line with the tranches set out by the EA, starting in March 2021. Until permits addressing the following practical problems are issued to companies by the EA, the industry is unable to progress the construction of solutions.

As an industry, we are now unclear where this leaves us in terms of IED compliance, particularly as there remain a number of issues common across the industry where we still do not have a clear and consistent view of the Environment Agency's expectations.

As the 17th August deadline has passed, I want to request a meeting with you and other colleagues to find a clear approach for addressing the practical problems and inconsistencies outlined below, and to set agreed construction deadlines that we can all be confident are achievable. Following conversations between multiple companies, the industry requests the EA to consider a staged approach to construction of secondary containment and covers for tanks.

We would like to arrange a date with you for the meeting discussed in principle at SWQWPG on the 8th of September to determine a practical way forward. Some of the specific underlying causes for delay that we would like to address at an industry level are as follows. These are supported by the evidence presented in the Appendix:

Topics for discussion at an Industry meeting on IED

Open Tanks

Covering tanks is a Best Available Technology (BAT) requirement under IED, but in the context of sludge holding tanks this has the potential to create an explosive atmosphere which has to be carefully managed to avoid significant health and safety risks. BAT 14 D of the Best Available Techniques

reference documents (BREFs) conclusions state that "The use of enclosed equipment may be restricted by safety considerations such as risk of explosion" and, although this risk has been highlighted by companies, we do not feel it has been fully considered through the IED permitting process so far.

To date, companies have had different and inconsistent advice from the Environment Agency as to what would be acceptable proposals for the treatment of open tanks under the IED. This ranges from submitting a monitoring plan, to a suggestion that clay balls should be used to cover the surface of the sludge (something referred to in the Covering Slurry Lagoons' guidance for Intensive farming, but which is untested in the Water Industry). We are concerned about the lack of clear guidance on what would be an acceptable approach to covering tanks, and potentially that WaSCs are expected to adopt novel, untested technologies at a site-by-site level.

As an industry, we would like to come to a common agreement with the Environment Agency on how we can consistently monitor and evaluate the environmental benefit of covering tanks and the potential safety risks associated with this. This should be the first step and would allow us to make proportionate decisions about when covering tanks is appropriate (or should be restricted in line with BAT 14D). It would also better inform us all about which solutions would deliver BAT and enable timescales for this activity to be agreed.

Secondary Containment

Spill modelling is underway across the industry to identify appropriate secondary containment options. This is something that the industry has not had to implement previously, and there is a reliance on specialist consultants to guide the development of what secondary containment would be appropriate. We would welcome the opportunity to work more closely with the Environment Agency to understand your expectations before applications are determined, so that we do not lose time reworking solutions after permits have been refused/rejected, which could otherwise be spent designing and delivering this requirement.

Funding

We note your position with regards to funding, namely, that this is a matter for the industry to discuss with Ofwat. Ofwat have maintained that they are unable to fund activity that does not have a regulatory driver in AMP8, and this continues to be incompatible with the Environment Agency's position that IED must be delivered in AMP7. As an industry we request the EA to consider a staged approach to implementation with the investment associated with secondary containment and covering of tanks, moved to circa 2027.

PR19 plans were submitted to Ofwat in September 2018, and at that time no formal communication of the introduction of IED for the biological treatment of sludge had been received and there was no inclusion or mention of possible IED requirements in the PR19 WINEP programme. The first direct communication to the water industry was the paper presented at Strategic Steering Group in April 2019, two months after Ofwat's initial assessment of business plans in February 2019. It should be noted that there is no mechanism to add additional requirements into business plans after submission, in this case in September 2018. Companies received formal notice on 18th July 2019, informing them that they would need to submit IED permit applications, some five months after Ofwat's initial assessment of business plans.

The industry and Environment Agency have experienced a steep learning curve in the process of implementing the IED on sludge treatment assets. Our collective understanding of what would be

required for IED compliance has grown significantly since the need was first confirmed, and the initial expectation that a risk assessment-based approach would suffice in the majority of cases has proven not to be the case. The industry wants to successfully deliver IED compliance as quickly as possible, but the lack of engagement from the national Environment Agency team on key issues affecting all WaSCs is frustrating the process. After much collective effort we are still yet to see any IED permits successfully issued, so we request an urgent meeting with the Environment Agency to review the key blockers to progress and agree a joint way forward.

I look forward to hearing from you on this matter.

Yours Sincerely,

Samuel Larsen
Director of Programmes and Planning

Appendix of Supporting Evidence

1. Strategic Steering Group (SSG) by Clive Humphreys. April 2019.

Confirmation of the requirement to implement IED across the water industry's sludge treatment centres was presented in a paper to the Strategic Steering Group (SSG) by Clive Humphreys in April 2019. The paper states:

"We recognise that many sludge treatment facilities were constructed prior to the current permitting requirements and their design may not be compatible with the best available techniques as described in the EU BAT reference documents. Where this is the case risk assessments can be used to demonstrate that an equivalent level of environmental protection is being or can be achieved. Where additional measures are required, we will use improvement conditions within permits to allow time to achieve the BAT standard"

The position at the time was that a risk assessment would be sufficient, however the requirements of IED compliance have escalated over time to our current position.

It's now clear that there has been a steady increase in investment requirement to achieve IED compliance since the need was first confirmed, and an ongoing lack of clarity over the exact scope and specification of those requirements. This has resulted in it simply not being possible for the industry to achieve compliance by August 2022. Issues also remain in relation to funding and the availability of resources to complete the very significant investment now required to meet compliance.

2. IED Workshop presentation slides by Darren Legge. February 2020.

An IED workshop was arranged in February 2020, hosted by Water UK and attended by WaSCs, EA and consultancy representatives and included a presentation from Darren Legge (EA). The slide pack presented focused on compliance to CIRIA 736 which pertains to new build sites. Discussion at this workshop reiterated that compliance at existing sites would be a based around a risk assessment approach, to ensure environmental protection, with subsequent monitoring inspections thereafter.

3. Excerpt from Waste and Recycling Network Meeting Minutes. August 2018.

Prior to the 2019 SSG paper, the possibility of IED being applied to sludge treatment centres was discussed at Waste and Recycling Network (WRN) in August 2018 [3] where WASCs highlighted that the submission of PR19 plans were imminent, and no funding had been allocated to either assess its implications or to comply with any new interpretation. PR19 plans were submitted to Ofwat in September 2018, and at that time no formal communication of the introduction of IED for the biological treatment of sludge had been received and there was no inclusion or mention of possible IED requirements in the PR19 WINEP programme. The first direct communication to the water industry was the paper presented at Strategic Steering Group in April 2019, 2 months after Ofwat's initial assessment of business plans in February 2019.

4. Competition and Markets Authority Final Report. March 2021.

Following final determination of business plans, 3 of the 10 WASCs opted to refer the outcome to the Competition and Markets Authority (CMA); Anglian Water, Northumbrian Water, and Yorkshire Water. Northumbrian and Yorkshire Water included IED in their statement of case to the CMA. Anglian Water did not because IED arose after the PR19 business plan had been submitted and significant uncertainty over requirements remained. After the CMA reviewed all the evidence presented, the CMA's Provisional Findings dated 17th March 2021 state:

"In general, we observed that IED compliance costs appear highly sensitive to the assessment of detailed requirements at specific sites. This accords with the Environment Agency's view that 'accurate estimates of the costs attributable to IED will only be available once all the site and company specific factors have been assessed and the review or issue of permits has been completed.'"

The CMA's final decision includes:

"It is clear from the extensive evidence collected that the Environment Agency is still in the process of spelling out the compliance requirements and that these costs will be site specific in nature."

5. EA Pre Application Letter. March 2021.

The installation of secondary containment will be one of the most significant costs associated with IED compliance. The pre application letter dated March 2021 (just weeks before the Tranche 1 deadline) highlighted that a ***"a detailed assessment of site infrastructure should be provided"*** in relation to CIRIA 736 guidance to risk assess current assets against a catastrophic tank failure, as part of each application.

In June 2021, Clive Humphreys then confirmed via email that spill modelling is also required to model flows in the event of a catastrophic failure, whilst reiterating that containment is a keystone of environmental protection. This new requirement resulted in the industry having to seek specialist consultancy resource, causing further delays in terms of the application process.

Spill modelling will allow companies to develop containment options, however the industry shouldn't be expected to commit to secondary containment options proposed by consultancies without confirmation by the EA, that they will be sufficient to meet BAT. Lack of feedback in relation to applications, directly and via network groups thus far has been felt across all companies. Given the lack of clarity in relation to requirements, the ongoing delay in responding to applications, and the scale of investment now required to meet compliance across multiple sites, the August 2022 deadline has proven unrealistic.

6. Excerpt from IED BAT Conclusions 14 D

Covering all STC tanks is a BAT requirement, however, this creates significant health and safety risks. The health and safety of our processes is paramount, to protect our employees and other affected stakeholders. Investment of this nature requires careful design and planning and cannot be rushed. The health and safety concerns, associated with covering tanks, are addressed in BAT 14 D of the BREF conclusions; ***"The use of enclosed equipment may be restricted by safety considerations such as risk of explosion"*** [7]

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Consultation on the transposition of the industrial emissions Directive in England and Wales

March 2012

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Welsh Government

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Food and Rural Affairs

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Richard Vincent, 5F, Industrial Pollution, Ergon House, Horseferry Road, London. SW1P 2AL

Contents

Scope of the consultation

Topic of this consultation:	Transposition of the industrial emissions Directive (2010/75/EU) through amendment of the Environmental Permitting (England and Wales) Regulations 2010
Scope of this consultation:	Several specific points about the Directive, notably how to use derogations and flexibilities which it makes available. Also the application of Directive requirements to activities which are not specified in the Directive but which appear in the current Regulations.
Geographical scope:	England and Wales. (The administrations in Scotland and Northern Ireland are making separate arrangements for transposition. Separate arrangements are being made by the Department of Energy and Climate Change in respect of UK offshore installations)
Impact Assessment:	A draft impact assessment accompanies this consultation paper: views on it are sought.

Basic Information

To:	Operators of industrial installations which are subject to the Directive, and anyone with an interest in how those installations are regulated.
Body/bodies responsible for the consultation:	Department for Environment, Food and Rural Affairs and the Welsh Government
Duration:	12 March to 6 June 2012

Enquiries:	David Demain – 020 7238 1687 - Control.Pollution@defra.gsi.gov.uk
How to respond:	By post to Defra, Area 5F Ergon House, 17 Smith Square, London SW1P 3JR. By E-mail to Control.Pollution@defra.gsi.gov.uk .
Additional ways to become involved:	As this is a largely technical issue with largely specialist interests, this is a written exercise, although we shall be happy to respond to any questions you may have about it.
After the consultation:	When this consultation ends, we intend to put a copy of the responses, subject to any for which confidentiality is justified, in the Defra library at Ergon House, London. The responses will help us draft the amending Regulations for which we shall seek Parliamentary approval in the autumn of 2012. The responses will also help us finalise the impact assessment and the draft guidance.

Introduction

1. The industrial emissions Directive[1] is a Recast[2] of seven existing Directives: those concerning integrated pollution prevention and control (2008/1/EC[3]), large combustion plants (2001/80/EC), waste incineration (2000/76/EC), solvent emissions (1999/13/EC) and three concerning waste from the titanium dioxide industry[4]. Material from those Directives is to be found in Chapters II to VI respectively of the industrial emissions Directive. All those Directives – the "component Directives" - are currently transposed in England and Wales through the Environmental Permitting (England and Wales) Regulations 2010 (SI 2010. No. 675)[5] – usually abbreviated in this consultation paper as "EPR". In this paper and its accompanying material, the industrial emissions Directive is generally referred to simply as "the Directive".

2. As much of the material in the recast Directive remains substantively unchanged from the component Directives, we consider that the EPR provide the most appropriate vehicle through which to transpose the industrial emissions Directive. Draft amending Regulations have therefore been drawn up and **the primary purpose of this consultation paper is to seek your views on particular points** which have arisen in doing so.

3. Please note that the Welsh Government is consulting[6] on proposals to create a single environment body for Wales. The body will exercise a range of functions currently conferred on the Environment Agency, the Countryside Council for Wales and the Forestry Commission. These amendments to the EPR are proposed in the expectation that the new body will take over the Environment Agency's statutory duties in relation to the industrial emissions Directive at a future date.

4. **Please note that this consultation refers only to England and Wales**. The administrations in Scotland and Northern Ireland will be transposing the Directive separately. If you have interests there, please watch out for separate

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[1] A short summary of the industrial emissions Directive, containing a link to the Directive itself, is at http://europa.eu/legislation_summaries/environment/air_pollution/ev0027_en.htm .

[2] The Recast was made under Inter-institutional Agreement of 28 November 2001 on a more structured use of the recasting technique for legal acts (2002/C 77/01). This states that 'recasting shall consist in the adoption of a new legal act which incorporates in a single text both the substantive amendments which it makes to an earlier act and the unchanged provisions of that act. The new legal act replaces and repeals the earlier act'.

[3] Directive 2008/1/EC is a codified version of the original IPPC Directive, 96/61/EC.

[4] Directives 78/176/EEC, 82/883/EEC and 92/112/EEC.

[5] At http://www.legislation.gov.uk/uksi/2010/675/contents/made .

[6] See http://wales.gov.uk/consultations/environmentandcountryside/singlebody/?lang=en . The consultation period ends on 2 May 2012.

consultations. Please note also that the Directive applies to offshore installations. The Department of Energy and Climate Change will be consulting separately on UK transposition arrangements in respect of the limited range of Directive activities which are carried out at offshore oil or gas installations.

5. Although specific questions are put to you below, **please consider the draft amending Regulations as a whole and comment on any perceived deficiencies or uncertainties.** Please note that there are three main components to the draft amending Regulations:

   - amendments to the main body of the EPR – these are relatively few in number and arise from various features of the Directive;

   - amendments to Schedule 1 – these make quite extensive changes, in particular to Part 2 of the Schedule which describes the activities subject to integrated pollution prevention and control ("IPPC" hereinafter) – these are listed under Part A(1) and Part A(2). Some of these amendments are driven by changes to the coverage of the IPPC Directive, but more are driven by the consideration of "legacy" activities – that is to say, activity descriptions which are not to be found in Annex I of the industrial emissions Directive – see section 32 of this paper; and

   - amendments in respect of Schedules 7, 13, 14, 15 and 17 – all of these are needed to transpose Chapters II – VI of the industrial emissions Directive, just as the current versions of those Schedules transpose the component Directives, largely through reference to the various Articles of the industrial emissions Directive with which the regulator must ensure compliance. This "referential" system in effect transposes the exact words of the Articles.

6. The draft amending Regulations also contain a replacement Schedule 8 which concerns the regulation of emissions to air from activities described under Part B of Part 2 of Schedule 1. This system of regulation is unaffected by the industrial emissions Directive[7], but the current Schedule 8 refers to Articles in the IPPC Directive which will be repealed by the industrial emissions Directive from 7 January 2014. It is therefore proposed to replace Schedule 8 as part of this set of amendments, in a way which preserves unchanged the provisions of the current Schedule 8. **Do you have any concerns about the proposed replacement Schedule 8?**

7. Other points to note about the effect of the draft amending Regulations are set out in Appendix A to this consultation paper.

8. In order to help your consideration of the draft amending Regulations, we have provided "marked up" versions of the main regulations and of Schedule 1 which accompany this consultation paper. Please note that the "base" material in these

[7] Although the solvent emission activities covered by the Directive are currently listed as Part B in Section 7 of Part 2 of Schedule 1 to the EPR, the draft amending Regulations remove them to a separate listing in the proposed Schedule 14.

versions is that which would be in existence if the amending Regulations[8] first proposed in late 2010 enter force from April 2012. The small amount of material which is dependent on that entry into force is clearly identified. However, the changes made by the proposed amending Regulations will in any case be unaffected.

9. For further background to the industrial emissions Directive, **you should read the draft impact assessment which accompanies this consultation paper**. To aid the preparation of the final impact assessment which will accompany the finalised amending Regulations, **you are particularly invited to respond to the questions which are contained in that draft** and which, for convenience, are listed in Section 34 of this consultation paper.

10. Also accompanying this consultation paper is draft guidance from Defra and the Welsh Government in respect of Part A installations. This builds on the current Part A guidance in the series of EPR guidance documents[9]. The draft guidance is included with this consultation because the changes made by the industrial emissions Directive are most extensive in relation to Part A activities. Draft revised guidance in respect of large combustion plants also accompanies this consultation, as an aid to understanding the changes made by the Directive. This draft guidance may aid your understanding of the context of the amending Regulations and of how particular provisions of them are proposed to be implemented. **We shall be grateful for comments on the form and content of that draft guidance**.

11. The current EPR guidance on waste incineration is much less affected by the industrial emissions Directive and arrangements will be made within the next few months for the necessary amendments. Revision of the current EPR guidance on activities using solvents will depend upon the outcome of this consultation (see sections 28 to 30 of this consultation paper) and so a draft of that revision will be proposed late in 2012 when the final form of the amending Regulations is known.

12. The remaining sections of this paper set out the particular points upon which Defra and Welsh Government would be particularly grateful to receive comments. The sections are ordered according to the Directive Article number to which they refer, with sections thereafter dealing with a few issues which are not immediately connected with the Directive.

Directive Chapter I – 'Common Provisions'

13. Please note that Articles 1 to 9 of the Directive apply to the Directive as a whole. Sections 14 and 15 of this consultation paper highlight particular points amongst those Articles, but respondents – particularly those with installations not subject

[8] See http://archive.defra.gov.uk/corporate/consult/env-permitting-regs/

[9] EPR guidance is available through http://archive.defra.gov.uk/environment/policy/permits/guidance.htm .

to the IPPC provisions in the Directive's Chapter II - should examine Chapter I as a whole in some detail.

14. *Permits for operators of parts of an installation*

14.1. Article 4(3) provides the option for a single permit to cover 'several parts of an installation operated by different operators', provided that the permit specifies the responsibilities of each operator.

14.2. Under the current EPR, a permit can only be granted to a person who is in control of the operation of the installation, or a part of the installation. So where there:

- is a sole operator of an entire installation, one permit is issued to that operator;
- are joint operators of an entire installation (*ie* more than one person operating in partnership or in some other form of joint enterprise), one permit for the entire installation is issued to the "person" of the joint operators as defined in the partnership or joint enterprise agreement; or where there
- are sole operators of different parts of an installation (for example, one person operates the main activity, another a directly associated activity forming part of the installation), a permit is issued to each of the sole operators in respect of the activity or activities they operate.

14.3. Thus the EPR already allow for the possibility of more than one operator of an installation. However, the EPR do not provide for a single permit to be issued to operators who are not acting in partnership or other form of joint enterprise. A permit covering the activities of more than one distinct operator would still need to make the responsibilities of each operator within the installation completely clear, so that appropriate conditions could be included and, in the event of non-compliance, enforcement action could be taken in the same way as would be the case if the permit covered only a single operator. Only in that way could environmental protection be satisfactorily provided. A permit covering different operators would be highly complex in terms both of its content and the processes needed in making and determining the application.

14.4. Defra and the Welsh Government are therefore currently not minded to amend the EPR so as to accommodate the option contained in Article 4(3) of the Directive. **Are you content with that? If not, can you demonstrate from a real example that allowing a permit to cover several parts of an installation operated by different operators will reduce overall regulatory burden whilst maintaining the environmental protection required by the Directive**?

15. *Incidents and accidents*

15.1. Article 7(c) requires the competent authority, in the event of any incident or accident significantly affecting the environment, to require 'the operator to take any appropriate complementary measures that the competent authority considers necessary to limit the environmental consequences and to prevent further possible incidents or accidents'. This Article applies to all activities covered by the industrial emissions Directive, not only those which are subject to IPPC.

15.2. Regulation 36 of the EPR already provides regulators with the power to serve an enforcement notice which can specify steps to be taken if an operator 'has contravened, is contravening, or is likely to contravene' a permit condition. Those steps may be directed towards limiting environmental consequences and the prevention of further incidents or accidents.

15.3. However, it is conceivable that an incident or accident significantly affecting the environment may arise in circumstances where there is no breach or likely breach of a permit condition. Regulation 15 of the draft amending Regulations therefore empowers the regulator to issue enforcement notices in those circumstances. **Do you agree with this approach**. **If not, why not?**

16. *Energy efficiency requirements upon installations in the EU-ETS*

16.1. Article 9(2) continues the provision in the IPPC Directive that energy efficiency requirements need not be applied in the case of installations which are also subject to the EU emissions trading system (EU-ETS). However, paragraph 5(2)(a) of Schedule 7 to the EPR currently instructs the regulator to ignore that provision, with the effect that energy efficiency requirements are applied to such installations, albeit in a less specific manner than employed in relation to other installations. The Environment Agency's current approach is set out in its draft Horizontal Guidance Note IPPC H2 on *Energy Efficiency*[10].

16.2. The proposed Schedule 7 is drafted in such a way that regulators must exercise their relevant functions so as to comply with Article 9(2), meaning that, from the time that the proposed Schedule comes into force, they will be able exercise discretion on the application of energy efficiency requirements to EU-ETS installations. Before that time we shall develop guidance for the regulators on how to exercise that discretion. **Are you content with the proposed way of transposing Article 9(2)? What guidance do you consider Ministers should issue?**

[10] At http://www.environment-agency.gov.uk/static/documents/Business/interimenergy.pdf .

16.3. It should be noted that Article 9(2) applies not only to Chapter II (IPPC) requirements but also to Chapters III, IV, V and VI. The relevant Schedules therefore contain the same provision, although its relevance may be limited.

Directive Chapter II – installations subject to IPPC

17. *Preamble*

17.1. Chapter II of the Directive contains requirements which apply to the conduct of any of the industrial activities listed in the Directive's Annex I. They are largely very similar to those in the current IPPC Directive, but some clarify or extend those existing requirements. We propose to transpose them mainly through the proposed Schedule 7 of the draft amending Regulations which, like the current Schedule 7, requires the regulator to exercise its functions so as to ensure compliance with specified Articles of the Directive.

17.2. Please note that the existing Schedule 7 will remain in force until 7 January 2014 so as to maintain the transposition of the current IPPC Directive to the date where it is repealed by the industrial emissions Directive. This is particularly relevant to existing installations subject to IPPC which, under Article 82(1) of the industrial emissions Directive, are not subject to Chapter II until that date. The replacement Schedule 7 will enter force from 7 January 2013 and be immediately applicable to any new installations. It will become applicable to existing IPPC installations from 7 January 2014, and to any existing installations in respect of the activities newly subject to IPPC listed in Article 82(2) (listed in paragraph A1.1 of Appendix A to this consultation paper) from 7 July 2015.

18. *Emission limit values*

18.1. Article 15(3) requires the competent authority to set emission limit values that ensure that, under normal operating conditions, emissions do not exceed the emission levels associated with the best available techniques (BAT) as laid down in the decisions on BAT conclusions. Article 15(4) enables the competent authority, in specific cases, to set less strict emission limit values, but only where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT conclusions would lead to disproportionately higher costs compared to the environmental benefits due to (a) the geographical location or the local environmental conditions of the installation concerned; or (b) the technical characteristics of the installation concerned. Article 24(1)(c) applies public participation requirements to the exercise of the derogation provided by Article 15(4) and the reasons for the derogation have to documented in an annex to the permit.

18.2. We propose to transpose the requirements of Article 15(3) and (4) through the proposed Schedule 7 which requires the regulator to exercise its functions so as to ensure compliance with them. To aid the regulator,

paragraphs 4.26 to 4.38 of the draft Part A guidance accompanying this consultation paper addresses these requirements. **Is that guidance clear and sufficient**? Note also that Annex A of the draft Impact Assessment accompanying this consultation paper provides further background.

18.3. Please note that Article 24(1)(c), requiring public participation in respect of the proposed application of Article 15(4), will be transposed through the requirement in the proposed Schedule 7 for the regulator to exercise its functions so as to meet the requirements of the whole of Article 24 and hence Annex IV of the Directive.

19. *General binding rules*

19.1. Taken together, Articles 3(8), Article 6 (unchanged) and Article 17 allow Member States to set "general binding rules" (GBRs). Defra and the Welsh Government consider that Chapter 4 of the EPR on "standard rules" already provides a framework which is consistent with these GBR provisions. It should be noted that Article 17(1) maintains the requirement of Article 9(8) of the IPPC Directive by requiring Member States to 'ensure [through the use of GBRs] an integrated approach and a high level of environmental protection equivalent to that achievable with individual permit conditions'. **Do you consider that, in particular sectors, further use of this approach could be made**?

20. *Baseline reports and site closure*

20.1. Article 3(1)(f) of the IPPC Directive requires that installations are operated in such a way that 'the necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory state'. The Environment Agency accordingly already requires a 'site condition report', on the basis that, without it, there would be no means of assessing whether the site of operation has been returned to a satisfactory state in compliance with that requirement of the current IPPC Directive. Article 11(h) of the industrial emissions Directive maintains that requirement and so in principle no change is brought about by the latter. However, that Article refers to 'satisfactory state' defined in accordance with Article 22.

20.2. Much of Article 22 reflects the already-established practice of the Environment Agency and local authorities. Article 22(2) explicitly requires the preparation of a "baseline report", as defined in Article 3(19), but only where 'the activity at the installation involves the use, production or release of relevant hazardous substances and having regard to the possibility of soil and groundwater contamination at the site of the installation'. That means that a baseline report will <u>not</u> necessarily be required for every installation subject to the IPPC requirements in Chapter II: even if 'relevant hazardous

substances' are involved, the regulator has to take a view on whether they could actually cause contamination.

20.3. The site condition report, dating from the time the IPPC permit was first applied for, should generally remain valid even when the permit is subsequently updated. There should therefore be no need for submission of a completely new baseline report when an existing permit is updated for the first time after 7 January 2013. But it must be noted that Article 22(2) requires the baseline report to contain the information necessary to enable a quantified comparison to be made between the state of the site at cessation of activity and the baseline state. Regulators will need to check this when permits receive their first review under the requirements of Article 21. **Do you currently envisage it being necessary to strengthen existing site condition reports? If so, in what way or ways, and at what cost?** Operators should in any case bear in mind that it is in their interests to have a report which contains detail sufficient to minimise the risk of their being held responsible for contamination which in fact predated their permitted activity.

20.4. Guidance already exists from the Environment Agency[11] and in respect of local authorities[12] on site condition reports. It should be noted that the European Commission is obliged by Article 22(2) to establish guidance on baseline reports, but by the end of February 2012 no material had been produced. The regulators' guidance may need to be further revised in the light of the Commission's guidance.

21. *Emerging techniques*

21.1. Article 3(14) defines "emerging techniques" as 'a novel technique for an industrial activity that, if commercially developed, could provide either a higher general level of protection of the environment or at least the same level of protection of the environment and higher cost savings than existing best available techniques'. Article 27(1) requires Member States, where appropriate, to encourage the development and application of emerging techniques.

21.2. The proposed Schedule 7 would require regulators, where appropriate, to exercise their functions so as to encourage the application of emerging techniques, in particular for those identified in BAT reference documents. We consider that regulators can do this primarily through their dealings with operators who seek either new or varied permits for an activity in which an emerging technique is to be employed: regulators will note that Articles 14(5) and (6) provide the basis for their permitting decisions in such situations. **Do you have views on how regulators can encourage the development and application of emerging techniques**? The development and application of

[11] Guidance on site condition reports is at http://www.environment-agency.gov.uk/static/documents/Business/h5_scr_guidance_2099540.pdf .

[12] Guidance on site assessment is the Guidance Manual at http://www.defra.gov.uk/publications/files/env-permitting-general-guidance-a.pdf

emerging techniques is in line with the Coalition Government's wish to promote green industries[13]. Note also that Article 27(2) requires the European Commission to 'establish guidance to assist Member States' in that regard, but that no draft of such guidance had been issued by the Commission by the end of February 2012.

22. *Waste management activities*

22.1. Point 5.3(b) of the Directive's Annex I extends the coverage of non-hazardous waste management activities by IPPC to include specified recovery activities. Point 5.1 of that Annex specifies hazardous waste management activities by direct description rather than by reference to Annex II of what is now Directive 2008/98/EC on waste. These descriptions are in the proposed replacement Section 5.3 of Part 2 of EPR Schedule 1.

22.2. The Directive's definition of "waste" in Article 3(37) uses that in Article 3(1) of Directive 2008/98/EC on waste: ''waste' means any substance or object which the holder discards or intends or is required to discard'. Please note that there is no reference to Article 2 of Directive 2008/98/EC which excludes certain specified wastes from the scope of that Directive: technical units treating any material which is waste according to Article 3(1) of 2008/98/EC are subject to IPPC if their capacity exceeds the relevant threshold, even if the material is covered by the waste Directive's exclusions The wastes concerned are listed in paragraph A3.1 of Appendix A to this consultation paper.

22.3. The IPPC Directive contains a provision[14] which has been interpreted in England and Wales as meaning that IPPC does not apply to any waste operation exempted from the permitting requirement of what is now Directive 2008/98/EC – that is to say, any waste operation registered as exempt under the provisions of regulations 4 and 5 and Schedules 2 and 3 of the EPR. That provision has not been included in the industrial emissions Directive, with the consequence that IPPC must be applied to installations conducting a waste management activity with a capacity above the relevant threshold of IPPC even if the unit is registered as an exempt waste operation. To clarify the situation, regulation 49 of the draft amending Regulations would amend EPR Schedule 3 to remove the waste exemption if the activity is one described in Chapter 5 of Part 2 of Schedule 1 to the EPR. It is expected that activities described in the exemptions listed below are most likely to be affected.

[13] See, for example, https://online.businesslink.gov.uk/Horizontal_Services_files/Enabling_the_transition_to_a_Green_Economy__Main_D.pdf

[14] At the head of Section 5 of Annex I of the IPPC Directive, listing waste treatment activities subject to the Directive: 'Without prejudice to Article 11 of Directive 2006/12/EC or Article 3 of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste'.

Code	Description
T4	Preparatory treatments (baling, sorting, shredding etc.)
T9	Recovery of scrap metal
T11	Repair or refurbishment of waste electrical and electronic equipment
T12	Manual treatment of waste
T14	Crushing and emptying waste vehicle oil filters
T20	Treatment of waste at a water treatment works
T21	Recovery of waste at a water treatment works
T23	Aerobic compositing and associated prior treatment
T24	Anaerobic digestion at premises used for agriculture and burning of resultant biogas
T25	Anaerobic digestion at premises not used for agriculture and burning of resultant biogas
S2	Storage of waste in a secure place

22.4. In view of what is described in paragraphs 22.1*ff*, and also in the draft Impact Assessment, **do you have any uncertainties about which waste management activities are now subject to IPPC requirements? If so, how would you like them remedied?**

23. *Preservation of wood and wood products*

23.1. Point 6.10 of Annex I to the Directive adds wood preservation to the list of activities subject to IPPC. The draft amending Regulations which this consultation accompanies assign this activity to Part A(2) on the grounds that some 40 installations are already regulated by local authorities because they conduct a “timber activity” as described under Part B of Section 6.6 of EPR Schedule 1. **Do you agree with the assignment of the wood preservation activity as described in the Directive to local authorities?**

Directive Chapter IV – waste incineration

24. *Preamble*

24.1. With the small exception noted in Appendix A (paragraph A9) to this consultation paper, Chapter IV and Annex VI of the industrial emissions Directive maintain without generally significant change the requirements of the waste incineration Directive. The proposed replacement Schedule 13 to the EPR will transpose those requirements, largely through reference to the relevant Articles.

24.2. Note that, as under the current waste incineration Directive, the Chapter IV requirements apply to all waste incineration and co-incineration activities other than those specifically excluded by Article 42(2). There is no lower capacity threshold. Note also that the Chapter IV requirements are self-contained: they do not bring in any IPPC requirements from Chapter II. But activities above the relevant threshold in point 5.2 of Annex I of the industrial emissions Directive are additionally subject to IPPC and that may possibly drive more stringent permit conditions.

25. *Regulator for non-hazardous waste co-incineration activities*

25.1. The proposed replacement Schedule 13 simplifies the current prescription of regulator for waste incineration and co-incineration activities by making the relevant local authority the regulator for all such activities – irrespective of whether hazardous or non-hazardous waste is involved - which are below the relevant threshold[15] for the IPPC requirements in Chapter II of the Directive, with the Environment Agency the regulator for all such activities above the threshold. **Do you have any comments about this assignment of regulator?** We are aware that some 10 plants may thus qualify for transfer to local authority regulation and we expect that to be addressed administratively by the regulators in discussion with the operators concerned.

26. *Removal of BAT requirements from incineration and co-incineration installations not subject to IPPC*

26.1. Activities subject to the current waste incineration Directive are all currently assigned to Part A in Part 2 of Schedule 1 to the EPR, thus subjecting them to IPPC even if the installation's capacity is below the IPPC threshold. There are some 10 installations in that position. However, the amended Part 2 of Schedule 1 will apply only to installations above the relevant thresholds[16] in Annex I of the industrial emissions Directive. The proposed Schedule 13 requires the regulator to apply only the requirements of Chapter IV and Annex VI of the industrial emissions Directive (which are almost entirely unchanged from the corresponding material in the current waste incineration Directive) to installations with capacities below the IPPC

[15] The IPPC capacity thresholds for incineration/co-incineration activities are 3 tonnes per hour for non-hazardous waste and 10 tonnes per day for hazardous waste.

[16] See footnote 15.

thresholds. **Do you agree with this proposal? What environmental consequences and compliance cost savings may arise?**

27. *PCB and PAH monitoring*

27.1. Paragraph 2.1(c) of Part 6 of Annex VI of the Directive maintains the requirement of Article 11(2)(c) of the waste incineration Directive in respect of monitoring for heavy metals and furans. However, in transposing the waste incineration Directive, the words "dioxin-like polychlorinated biphenyls and poly-cyclic aromatic hydrocarbons" were added to this requirement and that remains the position under the current Schedule 13 to the EPR.

27.2. For all except the very small waste incineration or waste co-incineration plants not subject to IPPC requirements, it is in any case for the Environment Agency (as proposed sole regulator of such plants) to take a view on what pollutants are likely to be emitted in significant quantities and to set permit and monitoring conditions accordingly. In order to remove the possibility of environmentally unjustified monitoring requirements, particularly from installations with an already demonstrably sustained low emissions of these substances, the proposed Schedule 13 therefore contains no explicit requirement in respect of monitoring for dioxin-like polychlorinated biphenyls and poly-cyclic aromatic hydrocarbons. **Do you agree with this proposal? If not, why not?**

Directive Chapter V – activities using solvents

28. *Preamble*

28.1. Chapter V and Annex VII of the Directive maintain without significant change the requirements of the current "solvent emissions" Directive. The proposed replacement Schedule 14 to the EPR will transpose those requirements, largely through reference to the relevant Articles.

28.2. Please note that the Chapter V requirements are self-contained: they do not bring in any IPPC requirements from Chapter II. But where activities using solvents – even if they lie below the solvent consumption thresholds in Part 2 of Annex VII - are also covered by an activity description in Annex I of the industrial emissions Directive, the resulting IPPC requirements may possibly drive more stringent permit conditions.

28.3. So as better to reflect the self-contained nature of the Chapter requirements, the listing of activities, consumption thresholds and emission limit values are copied from the industrial emissions Directive into the proposed Schedule 14, thus removing them from their current designation as "Part B" activities within Part 2 of Schedule 1. This also facilitates the proposed removal of BAT and other requirements which currently apply to them additionally (see section 30).

29. *Registration option for solvent activities*

29.1. Article 4(1) of the Directive maintains an option available in the solvent emissions Directive by stating that 'by way of derogation from the first subparagraph, Member States may set a procedure for the registration of installations covered only by Chapter V'. That Chapter contains the provisions of the current solvent emissions Directive virtually unchanged.

29.2. Solvent activities currently need a permit from the regulator, which in nearly all cases is the relevant local authority. Annual permit subsistence charges range from £76 pa for a dry cleaning installation assessed as "low risk" to £1,672 pa for a "high risk" standard installation.

29.3. We need to consider whether it would be any less onerous for operators and regulators if the current permitting system for solvent activities were to be replaced by a registration system, and what the implications would be for checking compliance. Part 3 of Schedule 14 of the draft amending Regulations sets out provisions for the registration system. With a few exceptions, it would be available in respect of all installations at which solvent use is the only activity carried on – that is to say, it would not be available where any activity listed in Part 2 of Schedule 1 is also carried on. Appendix B to this consultation paper explains how this would work in detail,

29.4. We propose that the operator of a new activity using solvents would merely have to notify the local authority regulator of their name and address and basic information about the type of activity to be registered. There would be no application process. There might be a small registration fee to cover administrative costs. We envisage that, for new registrations, regulators may decide subsequently to visit the installation to verify the registration information and to collect information hitherto provided in a permit application. For existing operators, the registration system as proposed would deem their permits to be registrations unless the operator notified the regulator of a wish to remain permitted rather than registered.

29.5. Through the amendments made to EPR Schedule 2 by the draft amending Regulations, registered solvent activities would become "exempt facilities" meaning that they would need an environmental permit. The proposed paragraph 3A of that Schedule would establish, mainly by reference to the proposed Schedule 14, that exempt solvent emission activities must meet the requirements set out in Chapter V of the Directive. Failure to comply with any of those requirements would mean that the activity could no longer be regarded as exempt, and would thus become an unpermitted regulated facility. Continued operation would therefore amount to the regulation 38(1) offence of operating a regulated facility without a permit. We consider that, as now, the regulator would undertake a risk-based level of supervision and inspection of registered activities on a continuing basis, although regulators will bear in mind that, like the solvent emissions Directive, Chapter V of the Directive does not contain any explicit requirements regarding inspections.

29.6. With these considerations in mind, it is not clear whether the introduction of a registration system would enable, in either the short or longer term, any savings to be made in regulators' costs and so allow annual charges to be lower than those under the current permitting system. For the registration of new installations, it is possible that charges might be somewhat higher in the first year to reflect the possible need for verification of registration details, although operators would clearly be spared the costs associated with a permit application. And a registration system would reduce the possibility of costs arising from the need for permit variation if the nature of the operation changed substantially.

29.7. If introduced, all qualifying existing permits would be deemed, through a provision which would be inserted in the finalised amending Regulations, to be registrations from 1 April 2014 unless the permit holder notifies the regulator of a wish to retain the permit. There would be powers for local authorities to charge for new registrations and to make annual charges to cover the costs of checking compliance.

29.8. **Do you consider that the introduction of a registration system for solvent activities would be worthwhile in the short and longer term? Can you suggest any alternative form of registration?**

29.9. Please note that the activity descriptions in Part B of Sections 6.4 (coating activities etc.) and 6.5 (Manufacture of dyestuffs, printing ink and coating materials) of Part 2 of EPR Schedule 1 are expressed in terms of solvent usage. There is no direct linkage between these and the solvent activities listed in the industrial emissions Directive but, if a registration system is introduced, we could extend it to those Part B activities.

30. *Removal of BAT requirement from solvent activities*

30.1. Solvent activities are currently regulated as a "Part B" activity, meaning that they are subject to BAT-based requirements in respect of any emissions to air which are likely to be significant, whether or not they are of volatile organic compounds (VOCs). This goes beyond what is required by the current solvent emissions Directive and also by Chapter V of the industrial emissions Directive: the use of BAT is mentioned only in relation to item 19 of the table in Part 2 of Annex VII of the Directive and in the context of the derogations provided by Article 59(2) and (3) of the Directive.

30.2. Initial indications from operators and regulators are that, in general, the BAT requirement does not add much or anything by way of compliance costs which would not in any case be necessary to meet the relevant solvent emission limit values. For the some 3,460 dry cleaning installations, plainly likely to have no other significant emissions to air than VOCs, the BAT requirement adds nothing. Amongst some 2,400 other installations, the BAT requirement is assessed to cost some £550,000 pa. Further details are in Annex C of the draft impact assessment which accompanies this consultation paper. The removal of the BAT requirement could result in

businesses taking less care in controlling emissions of some pollutants (mainly particulate matter, oxides of nitrogen, and carbon monoxide) other than solvents from the installations in question.

30.3. The proposed draft amending regulations would therefore remove BAT requirements from installations carrying out nothing but solvent activities. **Do you agree with this proposal? What are your views on the environmental consequences and compliance cost savings which may arise?**

Directive Chapter VII - transitional arrangements

31. *Timetable for permit applications*

31.1. Operators of installations carrying out activities newly subject to IPPC need to be operating in compliance with a permit by 7 July 2015. Those activities are tabulated in Appendix A to this consultation paper (section A1) and installations carrying them out are referred to as "2015 installations".

31.2. Whilst it is unlikely that any single local authority will receive more than a single figure number of applications, the Environment Agency may have to deal with some 500 applications and so we have to consider what can be done to avoid the Agency becoming overwhelmed by last minute applications. But we are reluctant to impose a statutory timetable for submission of applications (as was done when IPPC was first introduced over the years 2000 to 2007).

31.3. If a "2015 installation" has not received a permit by that date, then its continued operation would constitute an offence under regulation 38(1) of the EPR. But the amending Regulations would insert into regulation 40 a defence in any proceedings under that regulation that a duly made application for a permit was submitted to the regulator by 24 November 2014. In that way, there would be some incentive (if any should be needed) upon the regulator to determine all permit applications received by 24 November 2014, because it would be unlikely to succeed in carrying through enforcement action against "2015 installation" operators for operation without a permit after 7 July 2015 until it had done so. Similarly, there would be some incentive for operators to apply by 24 November 2014. But please note that, even with this incentive, operators should make every effort to make permit applications considerably before November 2014. **Have you any comments upon this proposed means of incentivising permit applications in respect of new IPPC activities? Can you suggest any non-regulatory means by which the flow of permit applications to the Environment Agency can be spread?**

31.4. Operators should note that new or varied permits granted in respect of "2015 installations" will be brought into effect only from 7 July 2015 (or thereafter), even though the majority of applications will have been determined before that date. Similarly, the expectation is that permit charges will commence only from that date, although that and any other permit

charging provision in respect of such activities will be the subject of separate consultation on the permit charging schemes operated by the Environment Agency and by local authorities.

Activities not subject to the industrial emissions Directive

32. *"Legacy" activities*

32.1. Part 2 of Schedule 1 to the EPR lists industrial activities, with those in Part A subject to IPPC whilst those in Part B are subject only to controls upon emissions to air. As well as covering all the activities specified in Annex I of the Directive, Part A also includes 62 activity descriptions which have no foundation in EU requirements. They originate from the system of integrated pollution control which was set up under the Environmental Protection Act 1990 (and which was influential upon the making of the IPPC Directive in 1996). For the purposes of this consultation they are referred to as "**legacy activities**"

32.2. An assessment of these legacy activities has been carried out. In summary, four categories have been identified:

32.2.1. There are 15 instances of "moribund" descriptions" meaning that no extant Part A permits contain them and that it is considered very unlikely that any instances of these activities un-associated with other Directive Annex I activities will arise in future. These descriptions are tabulated in Appendix C.

32.2.2. There are 27 instances of descriptions which are superfluous because they are in fact covered by Directive Annex I activities for which a permit is needed in any case. These descriptions are separately tabulated in Appendix C.

32.2.3. In 13 cases, involving 137 permits, the activities are not covered in Directive Annex I, but there are considered to be sound environmental protection reasons for **maintaining** Part A regulation. These descriptions, together with a short justification for retention, are listed in Appendix D. The justifications for retention are informed by the Environment Agency, drawing upon its regulatory experience and concerns about the risks which might arise if Part A regulation ceased. It is of course not possible to quantify what would happen if that regulation were removed.

32.2.4. There may be a case for **removal** of controls under EPR Schedule 1 Part A from seven activity descriptions, currently accounting for 25 permits. These descriptions, together with a short commentary, are listed in Appendix E.

32.3. The draft amending Regulations therefore contain amendments which would remove the descriptions tabulated in Appendix C, and which would

adjust the descriptions tabulated in Appendix E . > **Do you consider that any of the descriptions proposed for deletion or adjustment should in fact be retained? If so, please provide reasons.** Please note that, if consultation responses support deletions of activity descriptions which are included in extant "Part A" permits, it will be for the regulator to determine, in consultation with the operators concerned on an individual basis, whether permits need to be varied or revoked by the same regulator or transferred between regulators (as could happen if the installation continues to operate a Part B activity). It would be for the regulator and operator to agree a reasonable period of time, necessarily starting from the date that the amended Schedule 1 enters force, in which to make necessary changes to permits.

32.4. Please note that the Climate Change Agreement (CCA) scheme[17] relies upon the current Part A activity descriptions for defining the industry sectors for which CCAs are available. There are 40 sectors whose eligibility for Climate Change Agreements (CCAs) is based on such processes. Our analysis suggests that, on this basis, the proposals to delete descriptions set out above would result in one sector (slag grinders – described in Section 3.1 A(2) (a) and (b)) no longer remaining eligible for a CCA and associated climate change levy discount. Additionally, there may be a number of facilities holding CCAs in a small number of sectors which may be at risk of losing eligibility. If these facilities do not also undertake another Part A activity, they would not be able to hold a Climate Change Agreement in the future.

32.5. The draft amending Regulations are such that the descriptions tabulated in Appendix D would be retained within Part A regulation. > **Do you agree that the retention of the "legacy" descriptions tabulated in Appendix D is justified? Have you any evidence which either supports or refutes the need for retention?**

33. *Mobile plant*

33.1. The EPR currently require the application of IPPC to any mobile plant carrying out Part A activities. But the industrial emissions Directive applies only to installations which, by the definition in its Article 3(3), are stationary. The draft amending Regulations therefore contain amendments which would remove mobile plant from IPPC. In practice, instances of mobile plant "Part A" permits are numbered in single figures. > **>Do you agree with the proposal to end IPPC requirements for mobile plant**?

[17] See http://www.decc.gov.uk/en/content/cms/emissions/ccas/ccas.aspx

34. Consultation questions

34.1. Listed below are all the specific questions raised in this consultation paper and in the accompanying draft impact assessment. We would be grateful for responses to any or all of the questions, preferably supported by evidence drawn from practical experience. We would also be grateful to receive any more general questions or comments on the proposed transposition arrangements.

34.2. Please consider the draft amending Regulations as a whole and comment on any perceived deficiencies or uncertainties. (See paragraph 5.)

34.3. Do you have any concerns about the proposed replacement Schedule 8? (See paragraph 6.)

34.4. We shall be grateful for comments on the form and content of the draft guidance which accompanies this consultation. (See paragraph 10.)

34.5. Are you content with the proposal not to transpose the option for a single permit to cover several parts of an installation operated by different operators? If not, can you demonstrate from a real example that allowing a permit to cover several parts of an installation operated by different operators will reduce overall regulatory burden whilst maintaining the environmental protection required by the Directive? (See paragraph 14.4.)

34.6. Do you agree with our proposed transposition of Article 7(c) concerning incidents and accidents? If not, why not? (See paragraph 15.3.)

34.7. Are you content with the proposed way of transposing the Article 9(2) option not to apply energy efficiency requirements to EU-ETS installations? What guidance on that issue do you consider Ministers should issue? (See paragraph 16.2.)

34.8. Is the “Part A” guidance concerning Articles 15(3) and(4) (setting emission limit values where there are BAT conclusions and derogation from that requirement) clear and sufficient? (See paragraph 18.2.)

34.9. Do you consider that, in particular sectors, further use of standard rules could be made? (See paragraph 19.1.)

34.10. Do you currently envisage it being necessary to strengthen existing site condition reports? If so, in what way or ways, and at what cost? (See paragraph 20.3.)

34.11. Do you have views on how regulators can encourage the development and application of emerging techniques? (See paragraph 21.2.)

34.12. Do you have any uncertainties about which waste management activities are now subject to IPPC requirements? If so, how would you like them remedied? (See paragraph 22.4.)

34.13. Do you agree with the assignment of the wood preservation activity as described in the Directive to local authorities? (See paragraph 23.1.)

34.14. Do you have any comments about the assignment of local authorities as regulators for all waste incineration and co-incineration activities which are below the capacity thresholds in Annex I of the Directive? (See paragraph 25.1.)

34.15. Do you agree with the proposal to remove BAT requirements from incineration and co-incineration installations not subject to IPPC? What environmental consequences and compliance cost savings may arise? (See paragraph 26.1.)

34.16. Do you agree with the proposal to remove obligatory PCB and PAH monitoring from WI? If not, why not? (See paragraph 27.2.)

34.17. Do you consider that the introduction of a registration system for solvent activities would be worthwhile in the short and longer term? Can you suggest any alternative form of registration? (See paragraph 29.8.)

34.18. Do you agree with the proposal to remove BAT requirements from solvent activities? In What are your views on the environmental consequences and compliance cost savings which may arise? (See paragraph 30.3.)

34.19. Have you any comments upon the proposed means of incentivising permit applications in respect of “2015 installations”? Can you suggest any non-regulatory means by which the flow of permit applications to the Environment Agency can be spread? See paragraph 31.3.)

34.20. Do you consider that any of the “legacy” activity descriptions proposed in Appendices C and E for deletion or adjustment should in fact be retained? If so, please provide reasons. (See paragraph 32.3.)

34.21. Do you agree that the retention of the “legacy” descriptions tabulated in Appendix D is justified? Have you any evidence which either supports or refutes the need for retention? (See paragraph 32.5.)

34.22. Do you agree with the proposal to end IPPC requirements for mobile plant? (See paragraph 33.1.)

34.23. You are invited to respond to the questions which are contained in the draft impact assessment which accompanies this consultation. For convenience these are:

34.23.1. Please present any information you may have in respect of the impact of the inclusion of more waste management activities in IPPC on the delivery of waste policy (draft IA paragraph 17, and see also section 22 of this paper).

34.23.2. Please comment on the assessment of the impact upon the industry sector(s) in which you are interested of the substantive changes

discussed in the draft impact assessment, and of any other changes which you consider potentially significant. In all cases, quantified information on costs and information, quantified if possible, on benefits would be particularly welcome (draft IA paragraph 20).

34.23.3. Please submit any quantified information on impacts you may have already identified as arising from the recent adoption[18] of BAT Conclusions for the glass and the iron & steel sectors (draft IA paragraph 21).

34.23.4. Please consider in detail the impact of the components added in Option 2 described in paragraph 39 of the draft impact assessment. Quantified information on changes in costs to operators changes which would result from the proposals within this option would be particularly welcome (draft IA paragraph 40).

[18] BAT conclusions for these sectors were adopted at a meeting on 21 November 2011 and are expected to be published by the European Commission in the early spring of 2012.

APPENDIX A - Other points to note about the Directive

A1. *Activities newly subject to IPPC – the "2015 installations"*

A1.1. As noted in paragraph 17.2, Article 82(2) lists, by reference to the Directive's Annex I, activities which need to be permitted only from 7 July 2015 if they are carried out at installations which were in operation before 7 January 2013. Such installations are referred to here as the "2015 installations". The activity descriptions concerned would be, in Part 2 of Schedule 1 to the EPR as proposed to be amended, as follows:

Directive Annex I point:	**EPR Part 2 of Schedule 1 (as amended), Section:**	**Affecting installations carrying out:**
1.4(b)	1.2 Part A(1) (d)	gasification insofar as fuels other than coal are concerned
4.1-4.6	4.1 – 4.4 and 4.6	chemical production but only insofar as any biological processing activities are not already permitted.
5.1	5.3 Part A(1) (a)(i)-(iv) and (xi)	only recovery operations involving one or more of the following treatments of hazardous waste: biological treatment; physico-chemical treatment; blending or mixing or repackaging prior to submission to any of the other activities listed in Section 5.3 Part A(1)(a) or in Part A(1) of Section 5.1; or surface impoundment.
5.2	5.1	waste incineration or co-incineration above the relevant thresholds if not already permitted.
5.3(a)(iii) to (v)	5.4 Part A(1) (a)(iii) to (v)	only one or more of the following disposal activities for non-hazardous waste: pre-treatment waste for incineration or co-incineration; treatment of slags and ashes; and treatment in shredders of metal waste.
5.3(b)	5.4 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 Directive 91/271/EEC: biological treatment; pre-treatment of waste for incineration or co-incineration; treatment of slags and ashes; or treatment in shredders of metal waste.
5.5	5.5 Part A(1) (a)-	temporary storage of hazardous waste with capacity above 50 tonnes (excluding on the site where the waste is generated).

Directive Annex I point:	EPR Part 2 of Schedule 1 (as amended), Section:	Affecting installations carrying out:
5.6	5.5 Part A(1) (b)	underground storage of hazardous waste with a total capacity exceeding 50 tonnes.
6.1(c)	6.1 Part A(2) (a)	manufacturing board if not already permitted.
6.4(b)	6.8 Part A(1)(d)(iii)	food production from mixed animal and vegetable materials if not already permitted.
6.10	6.6 Part A(2)(a)	wood preservation.
6.11	5.6 Part A(1) (a)	independently operated treatment of waste water not covered by Directive 91/271/EEC and discharged by an installation carrying out any other Part A(1) or A(2) activity.

A1.2. Note that, for several of the activities tabulated above, some installations may already have IPPC permits as a result of interpretations already in place within England and Wales, or because the installations concerned are already carrying out other Part A activities.

A2. *IPPC "general principle" on waste prevention*

A2.1. Article 11(e) modifies the IPPC Directive's general principle concerning waste from IPPC installations so as to align with Directive 2008/98/EC. Whereas they previously had to be operated such that

> 'where waste is produced, it is recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment',

under the industrial emissions Directive, installations must be operated such that

> 'where waste is generated, it is, in order of priority and in accordance with Directive 2008/98/EC, prepared for re use, recycled, recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment'.

A3. *Wastes not excluded from subjection to the Directive*

A3.1. As described in paragraph 22.1 of this document, wastes excluded from the scope of the waste Directive (2008/98/EC) by its Article 2 are not

excluded from the relevant requirements of the industrial emissions Directive. Those requirements are in Chapter II – through the inclusion of waste management activities in Annex I – and in Chapter IV on waste incineration and co-incineration. The wastes concerned are:

- In all cases:

  (a) gaseous effluents emitted into the atmosphere;

  (b) land (in situ) including unexcavated contaminated soil and buildings permanently connected with land;

  (c) uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated;

  (d) radioactive waste;

  (e) decommissioned explosives; and

  (f) faecal matter, if not covered by paragraph (b), straw and other natural non-hazardous agricultural or forestry material used in farming, forestry or for the production of energy from such biomass through processes or methods which do not harm the environment or endanger human health.

- To the extent that they are covered by other EU legislation:

  (a) waste waters;

  (b) animal by-products including processed products covered by Regulation (EC) No 1069/2009, except those which are destined for incineration, landfilling or use in a biogas or composting plant;

  (c) carcasses of animals that have died other than by being slaughtered, including animals killed to eradicate epizootic diseases, and that are disposed of in accordance with Regulation(EC) No 1069/2009; and

  (d) waste resulting from prospecting, extraction, treatment and storage of mineral resources and the working of quarries covered by Directive 2006/21/EC on the management of waste from extractive industries.

- Without prejudice to obligations under other relevant Community legislation, sediments relocated inside surface waters for the purpose of managing waters and waterways or of preventing floods or mitigating the effects of floods and droughts or land reclamation if it is proved that the sediments are non-hazardous.

A4. *Site closure*

A4.1. Article 22(3) requires the operator to remediate contamination identified as such by reference to the baseline report, although no deadline for remediation is given. Article 22(4) applies where the operator has not been required to produce a baseline report (for example, because the activity was deemed not to involve relevant hazardous substances) and similarly requires remediation to deal with contamination resulting from the permitted activities.

A4.2. These Article 22(3) and (4) requirements are already embodied in current regulatory practice in England and Wales. Regulation 25(2) of the EPR states that 'by application to the regulator, an operator may surrender an environmental permit, or that part of a permit, to which this regulation applies'. Paragraph 14 of Schedule 5 applies in respect of the application and states that 'the regulator must accept an application for the surrender of an environmental permit in whole or in part under regulation 25(2) if it is satisfied that the necessary measures have been taken (a) to avoid a pollution risk resulting from the operation of the regulated facility; and (b) to return the site of the regulated facility to a satisfactory state, having regard to the state of the site before the facility was put into operation'. So the permit remains in force – and with it the enforceable obligation to comply with all its conditions and to pay annual subsistence charges – until the regulator is satisfied that any necessary remediation is complete. We therefore consider that the current provisions in regulation 25 and Schedule 5 of the EPR effectively transpose Article 22.

A5. *Chemical industry – production on an 'industrial scale'*

A5.1. Chapter 4 of Part 2 of Schedule 1 to the EPR currently has an interpretation that '"producing" means producing in a chemical plant by chemical processing for commercial purposes substances or groups of substances listed [in Chapter 4]'. The draft Regulations omit this in favour of direct copy out of the corresponding interpretation at the head of Point 4 in Annex I of the Directive: 'production …. means the production on an industrial scale by chemical or biological processing of substances or groups of substances listed [in Point 4].' Existing guidance[19] from the European Commission on the interpretation of "production on an industrial scale" remains relevant.

A6. *Disposal or recovery of non-hazardous waste – exclusion of activities covered by the urban waste water treatment Directive*

A6.1. Point 5.3(a) and (b) of Annex I of the industrial emissions Directive each exclude activities covered by the urban waste water treatment

[19] At http://ec.europa.eu/environment/air/pollutants/stationary/ippc/general_guidance.htm#5

Directive[20]. Our view is that this excludes all activities conducted at sewage works for the treatment of 'domestic waste water or the mixture of domestic waste water with industrial waste water and/or run-off rain water[21]' and 'residual sludge, whether treated or untreated, from urban waste water treatment plants[22]' so long as they are dedicated to that treatment. Anaerobic digestion plants used for sludge treatment will therefore be covered by the exclusion, unless those plants also treat other waste material not derived from the sewage treatment process. However, the European Commission may express a view on this issue.

A7. *Installations producing foodstuffs with both animal and vegetable ingredients*

A7.1. Point 6.4(b) of Annex I clarifies how the threshold for such installations must be determined. What is prescribed is very similar to the approach the Environment Agency already takes. The draft impact assessment addresses the consequences.

A8. *Definition of poultry*

A8.1. Under Article 3(23) of the industrial emissions Directive, "poultry" is defined, by reference to other EU legislation[23], as 'fowl, turkeys, guinea fowl, ducks, geese, quails, pigeons, pheasants and partridges reared or kept in captivity for breeding, the production of meat or eggs for consumption, or re-stocking supplies of game'. The inclusion of that definition plainly has no consequences for the current application of IPPC to the rearing of chicken laying hens and broilers, turkeys, ducks or Guinea fowls, where there are more than 40,000 places in a technical unit. But it is necessary to consider whether the game birds mentioned in this definition are subject to IPPC through point 6.6(a) of Annex I of the industrial emissions Directive.

A8.2. Initial investigations indicate that in most instances of the rearing of game, a combination of an exceptionally short season (typically some seven weeks in late spring/early summer), stocking densities that are significantly lower than any covered by animal welfare recommendations, and limited access to housing which is in nearly all cases only temporary in nature, make it unlikely that any significant environmental pollution would result. Defra and the Welsh Government therefore take the view that only

[20] 91/271/EEC .

[21] The definition of "urban waste water" in Article 2(1) of the urban waste water treatment Directive.

[22] The definition of "sludge" in Article 2(10) of the urban waste water treatment Directive.

[23] Point 1 of Article 2 of Council Directive 90/539/EEC.

those game bird farms which are similar in nature (in terms of length of rearing season, stocking density, and nature of housing) to poultry farms already regulated by the Environment Agency as Part A installations, may become subject to the industrial emissions Directive. Defra and the Welsh Government understand that very few game bird farms are of such similar nature.

A9. *Waste incineration provisions*

A9.1. Article 42(1) removes the waste incineration provisions from gasification and pyrolysis plants 'if the gases resulting from this thermal treatment of waste are purified to such an extent that they are no longer a waste prior to their incineration and they can cause emissions no higher than those resulting from the burning of natural gas'. It should be noted that such plants may still be subject to the IPPC requirements in Chapter II of the industrial emissions Directive if the activity they carry out falls within Annex I – for example, point 1.1 (combustion with a rated thermal input of 50 MW or more), 1.4(b) (gasification in an installation with a rated thermal input of 20 MW or more) or points 5.1(a) or 5.3(a)(ii) (physico-chemical treatment of waste).

A10. *Large combustion plants – transitional national plan*

A10.1. The establishment of a transitional national plan for the United Kingdom is being taken forward separately by Defra[24], in consultation with the devolved administrations in Wales, Northern Ireland and Scotland.

A11. *Large combustion plants – limited life time derogation*

A11.1. Operators of existing large combustion plants which qualify for the derogation provided by Article 33 are reminded that they have unti1 January 2014 to provide a written declaration to the Environment Agency of their intention to take it.

A12. *Large combustion plants – aggregation rules*

A12.1. Article 29(3) changes the aggregation rules so that plants with a rated thermal input below 15 MW shall not be considered when calculating the total rated thermal input of a candidate large combustion plant. However, it should be noted that such plants will still need to be taken into account by the

[24] A letter to operators participating in the current National Emission Reduction Plan and to representatives other large combustion plant interests was sent by Defra on 28 December. 2011. This is available at http://www.defra.gov.uk/environment/quality/industrial/eu-international/lcpd/ under the heading "Recent developments".

regulator when determining the aggregate rated thermal input to establish whether a combustion plant has a rated thermal input of 50 MW or more and so subject to the IPPC requirements of Chapter II of the Directive, in accordance with the first introductory sentence to Annex I.

A13. *Transitional arrangements*

A13.1. Much of the material in the industrial emissions Directive is substantively unchanged from that in the component Directives. Nevertheless, Article 80 of the Directive lists an array of Articles and parts of Annexes which, for various reasons, have to be transposed (or confirmed as already transposed) by Member States. The transposition deadline is 7 January 2013 and the transposed material has to be applied from the same date. The draft amending Regulations, taken with the relevant unchanged material in the EPR, are considered to achieve that.

A13.2. The Directive recognises the need for a period of transition for installations already in existence[25] at 7 January 2013 . Under Article 82(1), existing installations carrying out any of the activities listed in Annex I of the IPPC Directive – that is to say, those (other than "legacy" activities) described in Part A of Part 2 of EPR Schedule 1 – have until 7 January 2014 to meet any new requirements arising from the transposition.

A13.3. Defra and the Welsh Government, advised by the Environment Agency, consider that few, if any, changes to current permits and regulatory practice will be needed within that transition period. The periodic reconsideration of permits which will be required under Article 21 of the industrial emissions Directive will in any case provide a means of identifying the need for and making any adjustments. If the regulator identifies any particular cases which need more urgent attention, the existing EPR provisions in respect of permit variation will be sufficient to deal with them.

A13.4. A consequence of the transitional arrangements for existing IPPC installations is that the current EPR Schedule 7, with its references to Articles of the IPPC Directive – will need to remain in force until 7 January 2014 to cover the transitional period. But a replacement is needed from 7 January 2013 to achieve transposition and to cover installations which are new after that date. For that reason, the draft amending Regulations propose a new Schedule 7 which, under regulation 2 of the draft amending Regulations, would come into force from 7 January 2013 for new installations and from a year later for existing installations.

A13.5. Article 82(2) of the Directive deals with the additional activities which it has placed under IPPC through inclusion in Annex I of the Directive. These are tabulated in paragraph A1 of this Appendix, Installations which were in

[25] That is to say, already in operation by 7 January 2013 or for which a permit application has been made by that date, provided the installation is put into operation within a year of that date.

operation before 7 January 2013[26] - referred to in this consultation paper and the draft amending Regulations as “2015 installations” - have until 7 July 2015 to be operating in accordance with a permit for which the operator will need to apply according to the procedure in the current EPR. Section 31 above seeks views on ways of incentivising the making of applications sufficient early to avoid the Environment Agency becoming overwhelmed in the run-up to that date.

A13.6. Article 82(3) provides that the requirements of Chapter III apply to existing large combustion plants only from 1 January 2016. For that reason, the current EPR Schedule 15 will remain in force until that date, when it is replaced by the proposed Schedule 15A (which will have been in force from 7 January 2013 for new plants). However, it should be noted that all those plants are also subject to IPPC under the provisions of Chapter II and that any changed IPPC requirements will therefore need to be met from 7 January 2014.

A13.7. Article 82(4) applies Chapter III from 7 January 2013 to any large combustion plant not in operation or the subject of a permit application by that date – hence the proposed Schedule 15A will apply from that date. It should be noted that Chapter II requirements will apply also.

A14. *Review of the Regulations*

A14.1. A guiding principle of the Government’s approach to transposition of EU Directives is that there should be a statutory duty for ministerial review of the transposition every five years.

A14.2. Subject to the will of Parliament, amendments to the EPR are likely to take effect in April 2012 which will insert requirements within the EPR for the EPR as a whole (i) to be reviewed and a report published by 6 April 2017, and (ii) for review reports thereafter to be published at intervals not exceeding five years. Through being done by amendment of the EPR, the transposition of the industrial emissions Directive will thus be subject to those requirements.

[26] Note that there is no provision in Article 82(2) for installations for which a permit has been applied for before that date.

APPENDIX B – registration system for solvent activities

B1. The registration option would:

- be available only for installations at which nothing other than a solvent activity (currently specified in Section 7 of Part 2 of Schedule 1 of EPR but proposed to be moved to the replacement Schedule 14) is carried out;
- not be available to any operator which considers itself likely to make use of either of the derogations set out in Article 59(2) and Article 59(3) of the industrial emissions Directive;
- not be available in the specific case of an operator carrying out vegetable oil extraction or refining activities on individual batches of seeds and vegetable matter other than those specifically listed in item 19 of Part 2 of Annex VII of the industrial emissions Directive (because the regulator has to set emission limit values on the basis of BAT);
- compel the operator to notify the regulator (the local authority in all cases) of an intention to operate an installation at which a solvent activity is to be carried out, with the notification containing:
    - the name, address and post code of the installation where the solvent activity is to be carried out;
    - the name, address and post code of the operator if different from that of the installation itself;
    - the details of which of the solvent activities (as listed in Table 1 of the replacement Schedule 14) are to be carried out there;
    - a statement of which of the alternative means of complying with its obligations (see paragraph B5) the operator will use.

B2. The local authority would be given, by amendment of EPR Schedule 2, the duty to maintain a publicly-available register of all the registered solvent activities for which it is the regulator. The existing provisions of Schedule 2 in respect of the register would apply .

B3. A registered operator would be required to comply with Article 7(a) and (b) of the Directive in respect of incidents and accidents. The regulator would be empowered to serve a notice upon a registered operator to secure compliance with Article 7(c). The operator would have the right of appeal if aggrieved by the notice. Failure to comply with the notice would constitute an offence and attract the enforcement provisions of regulation 36.

B4. The operator would be obliged to meet Article 58 requirements for the replacement of certain particularly hazardous classes of solvent. .

B5. Under Article 59, a registered operator of a solvent activity would be obliged either:

- to ensure that the emission of volatile organic compounds from installations does not exceed the emission limit values in waste gases and the fugitive emission limit values, or the total emission limit values, and other requirements laid down in Parts 2 and 3 of Annex VII of the Directive; or
- to comply with the requirements of the reduction scheme set out in Part 5 of Annex VII provided that an equivalent emission reduction is achieved compared to that achieved through the application of the emission limit values referred to in point (a).

B6. A registered operator of a solvent activity would also be obliged:

- to take all appropriate precautions to minimise emissions of volatile organic compounds during start-up and shut-down operations; and
- as relevant, to comply with the requirements of Article 59(5) and Article 59(6).

B7. A registered operator of a solvent activity would be obliged either to:

- measure its emissions in accordance with Part 6 of Annex VII of the Directive; or
- to supply the competent authority, on request, with data enabling the competent authority to verify compliance with either of the following:
    - emission limit values in waste gases, fugitive emission limit values and total emission limit values; or
    - the requirements of the reduction scheme under Part 5 of Annex VII.

B8. The data supplied by the registered operator for compliance verification may include a solvent management plan prepared in accordance with Part 7 of Annex VII. An information notice provision would enable the regulator to require a plan if one is not provided by the operator.

B9. An operator of a registered solvent activity would be obliged to report to the regulator any substantial change to the installation, where “substantial change” is defined as set out in Article 63(1) of the Directive.

B10. Failure to meet the obligations upon the operator of a registered solvent activity would become an offence through regulation 38(1), with the provisions as regards penalties and defences in regulations 39 and 40 thus applying.

B11. Each registration would remain in place until the operator notifies the regulator that it is no longer required, or until revoked by the regulator. The regulator would have the power to require a permit application from any operator which does not comply with its obligations under registration.

B12. Existing permits for installations carrying out only a solvent activity would be regarded as registrations with effect from 1 April 2014, with permit conditions not required under the proposed amended EPR Schedule 14 not applicable from that date, unless the operator informs the regulator by that date of a wish to retain permitted, rather than registered, status.

B13. EPR regulation 65 would be amended to provide local authorities with the power to prescribe fees payable for (i) the registration of a solvent activity, and (ii) the subsistence of a registration. The actual prescription of fees for the former and, if required, the latter, would be the subject of a separate consultation. An annual subsistence charge is likely to be required in order to cover reasonable costs of local authorities in checking compliance with registration conditions and in handling annual emission reports from registered operators, and may therefore be very similar to those currently applied to permits covering only solvent activities. However, the scope for reduction would be kept under review.

APPENDIX C – legacy activities – “moribund and superfluous”

The activity descriptions tabulated here are proposed to be removed from Part A in the amended Part 2 of Schedule 1 to the EPR because the activities are (i) not practiced and are considered unlikely to be (“moribund”), or (ii) in practice covered by other Part A activity descriptions (“superfluous”).

EPR Sch. 1, Part 2, Section…	**“Moribund” activities - short description** (The section heading under which the activity is listed is quoted in *italics*)
	[15 activity descriptions]
1.2 A(1) (e)	*Gasification, liquefaction and Refining* - producing gas from oil or other carbonaceous material.
1.2 A(1) (h)(iii)	*Gasification, liquefaction and Refining* - loading/storage/treatment etc of crude shale oil.
1.2 A(1) (h)(v)	*Gasification, liquefaction and Refining* - loading/storage/treatment etc of emulsified hydrocarbons intended for use as a fuel.
1.2 A(1) (i)	*Gasification, liquefaction and Refining* - further refining or conversion.
2.2 A(1) (g)	*Non-Ferrous Metals* - mining zinc or tin-bearing ores where the activity may result in the release into water of cadmium or any compound of cadmium in a concentration which is greater than the background concentration.
3.2 A(1) (c)	*Activities Involving Asbestos* - destroying a railway vehicle by burning.
4.1 A(1) (f)(i)	*Organic Chemicals* - recovering carbon disulphide.
4.2 A(1) (g)(i)	*Organic Chemicals* – recovering etc. sulphuric acid.
4.2 A(1) (g)(ii)	*Organic Chemicals* – recovering etc. nitric acid.
4.2 A(1) (i)	*Inorganic Chemicals* - recovering ammonia.

EPR Sch. 1, Part 2, Section…	**"Moribund" activities - short description** (The section heading under which the activity is listed is quoted in *italics*)
4.2 A(1) (j)	*Inorganic Chemicals* - extracting any magnesium compound from sea water.
4.5 A(1) (b)	*Pharmaceutical Production* - formulating if there may be releases of specified substances to water.
5.1 A(1) (d)	*Incineration and Co-incineration of Waste* – incineration of hazardous waste in a plant that is not an incinerator.
5.1 A(1) (e)	*Incineration and Co-incineration of Waste* – incineration of non-hazardous waste in a plant that is not an incinerator.
6.3 A(1) (a)(ii)	*Tar and Bitumen Activities* – manufacture of electrodes or carbon-based refractory materials.

EPR Sch. 1, Part 2, Section…	**"Superfluous" activities - short description** (The section heading under which the activity is listed is quoted in *italics*)
	[27 activity descriptions]
1.1 A(1) (b)(i)	*Combustion activities* – burning waste oil.
1.1 A(1) (b)(ii)	*Combustion activities* – burning recovered oil.
1.1 A(1) (b)(iii)	*Combustion activities* – burning fuel manufactured from or comprising waste.
1.2 A(1) (b)	*Gasification, liquefaction and Refining* - reforming natural gas.
1.2 A(1) (f)	*Gasification, liquefaction and Refining* - purifying or refining products.
1.2 A(1) (h)(iv)	*Gasification, liquefaction and Refining* - handling etc. any gas or condensate associated with crude oil etc..

EPR Sch. 1, Part 2, Section…	**"Superfluous" activities - short description** (The section heading under which the activity is listed is quoted in *italics*)
1.2 A(1) (k)	*Gasification, liquefaction and Refining* - odorising gas where related to a Part A activity.
2.2 A(1) (c)	*Non-Ferrous Metals* – refining any non-ferrous metal, other than copper.
2.2 A(1) (d)	*Non-Ferrous Metals* – melting etc. lead.
2.2 A(1) (e)	*Non-Ferrous Metals* – recovering gallium *et al*..
2.2 A(1) (h)	*Non-Ferrous Metals* - use of beryllium or selenium.
2.2 A(1) (i)	*Non-Ferrous Metals* –pelletising etc. any non-ferrous metal ore.
3.1 A(1) (b)(ii)	*Production of Cement And Lime* - producing lime with input >5,000 tonnes in 12 months.
4.1 A(1) (b)	*Organic Chemicals* - producing any other organic compounds not described in paragraph (a).
4.1 A(1) (c)	*Organic Chemicals* - polymerising etc. unsaturated hydrocarbons.
4.1 A(1) (d)	*Organic Chemicals* – use of toluene di-isocyanate.
4.1 A(1) (f)(ii)	*Organic Chemicals* - recovering pyridines.
4.1 A(1) (g)	*Organic Chemicals* - recovering or purifying acrylic acids.
4.2 A(1) (c)	*Inorganic Chemicals* - using hydrogen cyanide or hydrogen sulphide.
4.2 A(1) (g)(iii)	*Inorganic Chemicals* - purifying phosphoric acid.
4.3 A(1) (b)	*Chemical Fertiliser Production* - converting into granules.
4.7 A(1) a)	*Manufacturing Activities Involving Carbon Disulphide Or Ammonia* – use of carbon disulphide.
5.4 A(1) (b)	*Recovery Of Waste*; cleaning/regenerating carbon *et al..*
5.5 A(1) (a)	*The Production of Fuel From Waste* - making solid fuel from waste by using heat.

EPR Sch. 1, Part 2, Section…	**“Superfluous” activities - short description** (The section heading under which the activity is listed is quoted in *italics*)
6.1 A(1) (c)	*Paper, Pulp And Board Manufacturing Activities* - making paper with possible release of scheduled substances to water.
6.4 A(1) (c)	*Coating Activities, Printing and Textile Treatments* – treating textiles with possible release of scheduled substances to water.
6.8 A(1) (f)	*The Treatment of Animal and Vegetable Matter and Food Industries* - processing, storing or drying.

APPENDIX D – legacy activities – environmentally justified

The activity descriptions tabulated here are proposed to be retained in the amended Part 2 of Schedule 1 to the EPR.

EPR Sch. 1, Part 2, Section…	**Environmentally justified activities** (The section heading under which the activity is listed is quoted in *italics.* Justification for retention is given in ***bold italics*** after each description.)
	[13 activity descriptions]
1.2 A(1) (h)(i)	*Gasification, Liquefaction and Refining Activities* – loading, unloading, handling or storage, or the physical, chemical or thermal treatment of crude oil. ***37 permits – significant releases of methane, non-methane volatile organic compounds and other organic compounds to air, and of toluene and benzene to water. Obvious potential for environmental damage if not regulated.***
1.2 A(1) (h)(ii)	*Gasification, Liquefaction and Refining Activities* – loading, unloading, handling or storage, or the physical, chemical or thermal treatment of stabilised crude petroleum. ***2 permits – activity very similar to that involving crude oil***
1.2 A(1) (j)	*Gasification, Liquefaction and Refining Activities* – pyrolysis, carbonisation, distillation, liquefaction, gasification, partial oxidation or other heat treatment of coal, oil or other carbonaceous material. ***8 permits – potentially polluting in view both of the raw material and the intensive treatment applied to it.***
2.1 A(1) (d)	*Ferrous Metals* – loading, unloading or otherwise handling or storing more than 500,000 tonnes in any 12-month period of iron ore. ***3 permits – the activity has given rise to considerable local concern.***

EPR Sch. 1, Part 2, Section…	**Environmentally justified activities** (The section heading under which the activity is listed is quoted in *italics.* Justification for retention is given in ***bold italics*** after each description.)
2.2 A(1) (f)	*Non-Ferrous Metals* – producing, melting or recovering cadmium or mercury or any alloy containing more than 0.05% of either metal or of both in aggregate. ***7 permits – significant releases of cadmium to air. There is no other suitable environmental control upon these activities which use very notorious pollutants.***
3.2 A(1) (b)	*Activities Involving Asbestos* – stripping asbestos from railway vehicles ***2 permits – no other suitable means of environmental regulation in respect of this highly notorious pollutant.***
4.2 A(1) (b)	*Inorganic Chemicals* – activity (other than water treatment and other specified activities) likely to release halogens (chlorine *et al.*), interhalogens or hydrogen halides to air. ***20 permits – chlorine and the other halogens are notoriously toxic and they and the compounds covered are potentially damaging to all three media if released.***
4.2 A(1) (d)	*Inorganic Chemicals* – use of any compound of a range of metallic elements (including arsenic and lead) where the activity may result in releases of the elements or their compounds to air or to water. ***24 permits – significant releases to both air and water. The elements covered and their compounds are toxic.***
4.2 A(1) (f)	*Inorganic Chemicals* – use of mercury or cadmium or any compound thereof which may result in releases to air. ***18 permits –significant releases of cadmium to water and the need to maintain regulation of activities involving these very notorious substances justify retention of IPPC.***

EPR Sch. 1, Part 2, Section…	**Environmentally justified activities** (The section heading under which the activity is listed is quoted in *italics.* Justification for retention is given in ***bold italics*** after each description.)
4.2 A(1) (h)	*Inorganic Chemicals* – any activity, other than combustion or incineration of carbonaceous material, which is likely to result in the release to air of any acid-forming oxide of nitrogen. ***9 permits – potentially significant releases of nitrogen oxides to air are controlled under present arrangements.***
4.7 A(1) (b)	*Manufacturing Activities Involving Carbon Disulphide or Ammonia* – any activity for the manufacture of a chemical which may result in the release of ammonia into the air other than a refrigeration activity. ***5 permits – potentially significant releases of ammonia to air controlled under present arrangements.***
5.1 A(1) (f)	*Incineration and Co-incineration of Waste* - incineration of any gaseous compound containing halogens in a plant which is not an incineration plant or co-incineration plant. ***No current permits, but needed to cover the possibility that the activity might arise from removal of CFCs and similar compounds from refrigeration and air conditioning plant – particularly since the requirements concerning waste incineration of Chapter IV of the Directive do not apply to gaseous waste.***
6.3 A(1) (a)(i)	*Tar and Bitumen Activities* – distilling tar or bitumen in connection with any process of manufacture. ***2 permits – highly significant releases of naphthalene to air: no other suitable means of environmental regulation.***

APPENDIX E – legacy activities – “remove from Part A”

The activity descriptions tabulated here are proposed to be removed from Part A in the amended Part 2 of Schedule 1 to the EPR and hence from IPPC.

EPR Sch. 1, Part 2, Section…	**Activities to be removed - short description** (The section heading under which the activity is listed is quoted in *italics*)
	[Seven activity descriptions]
3.1 A(2) (a) and (b)	*Production of Cement and Lime* – grinding cement clinker or metallurgical slag. ***8 permits – the activity descriptions are proposed for insertion in Part B of Section 3.1.***
3.3 A(1)(a)	*Manufacturing Glass and Glass Fibre* – manufacturing glass fibre in an installation with a capacity of 20 tonnes/day or less. ***5 permits – the installations concerned operate below the threshold in the Directive and would fall from regulation unless carrying out an activity described elsewhere in Part 2 of EPR Schedule 1.***
3.3 A(1)(b)	*Manufacturing Glass and Glass Fibre* – manufacturing glass frit or enamel frit and its use in any activity where that activity is related to its manufacture and the aggregate quantity of such substances is likely to be 100 tonnes or more in any 12-month period. ***4 permits – this activity is already listed under Part B of Section 3.3 without the capacity threshold***.
3.4 A(1)(b)	*Production of Other Mineral Fibres* – producing any fibre from any mineral. ***1 permit – installation with minimal impact.***
4.1 A(1) (e)	*Organic Chemicals* – flame bonding of polyurethane foams or polyurethane elastomers. ***3 permits – activity similar to that described in 4.1 B (b) which will be amended to cover this.***

EPR Sch. 1, Part 2, Section…	**Activities to be removed - short description** (The section heading under which the activity is listed is quoted in *italics*)
4.4 A(1) (b)	*Plant Health Products and Biocides* - formulating products if this may result in the release to water of specified substances. ***1 permit - regulation solely as water discharge activities (under Schedule 21 of the EPR) is considered sufficient.***
6.4 A(1) (a)	*Coating Activities, Printing and Textile Treatments* – applying or removing organo-tin compounds. ***3 permits – organo-tin compounds no longer used.***

Strategic Steering Group Meeting
Item No.SSG19.02.04-02

Subject: Implementation of the Industrial Emissions Directive for biological treatments of sewage sludge

SSG is asked to note that the Environment Agency:

1. has determined that the Industrial Emissions Directive applies to the biological treatment of sewage sludge
2. will be discussing the timetable and process for permit applications through the Water UK waste and recycling network

1.0 Background

1.1 Directive 2010/75/EU on industrial emissions (the IED) entered into force on 6 January 2011 and was transposed into UK law on 20 February 2013[1]. The IED recast the Directive on integrated pollution prevention and control (IPPC) and introduced a revised schedule of industrial activities falling within scope of its permitting requirements. The schedule of waste management activities includes the recovery of non-hazardous waste with a capacity exceeding 75 tonnes per day involving biological treatment, but excludes activities covered by the Urban Waste Water Treatment Directive[2] (UWWTD).

1.2 There was much discussion about whether the biological treatment of sewage sludge is an activity covered by the UWWTD. In July 2014 we deferred the need to submit permit applications for sewage sludge digestion at sewage treatment works to allow further consideration of the question. All of the UK environmental regulators have now concluded that the biological treatment of sewage sludge is not an activity covered by the UWWTD and is therefore within the scope of the IED. This unanimously held view has been communicated to the UK and devolved governments with a view to commencing implementation.

2.0 Implementation

2.1. The IED seeks to achieve a high level of protection for the environment taken as a whole from the harmful effects of industrial activities. It does so by requiring each of the industrial installations to be operated under a permit from the competent authority with conditions based around the use of best available techniques (BAT). In this instance the Environment Agency is the competent authority.

2.2. The IED set a deadline of 7 January 2014 for existing installations to obtain an environmental permit. We have therefore delayed implementation of this aspect of the IED for over five years. We now

[1] Environmental Permitting (England and Wales)(Amendment) Regulations 2013
[2] Directive 91/271/EEC concerning urban waste water treatment

need to address this by ensuring all installations involving the biological treatment of sewage sludge obtain and operate under an environmental permit in as short a timescale as can reasonably be achieved.

2.3. We recognise that many sludge treatment facilities were constructed prior to the current permitting requirements and their design may not be compatible with the best available techniques as described in the EU BAT reference documents. Where this is the case risk assessments can be used to demonstrate that an equivalent level of environmental protection is being or can be achieved. Where additional measures are required we will use improvement conditions within permits to allow time to achieve the BAT standard.

3.0 Next Steps

3.1. The Environment Agency is developing a sludge strategy in order to plan and deliver clear and consistent regulation of sewage sludge treatment and use activities. It will be finalised by the end of 2019. The permitting of sewage sludge biological treatment activities is one element of the strategy. It will be delivered in parallel with the development of the strategy.

3.2. We will use the Water UK waste and recycling network (WaRN) as the main forum to discuss IED and permitting arrangements. We therefore propose that the representatives who attend WaRN act as the main point of contact. We will also ensure that our water company account managers are kept fully informed of progress.

3.3. On a practical level all internal resourcing and training needs are being addressed in preparation to support pre-application discussions and the receipt of permit applications later this year. Through WaRN we be asking each company to provide a definitive list of all sites used to carry out biological treatment of sludge, and to provide a best estimate of the number of permit applications they anticipate making.

Clive Humphreys, Environment and Business, Environment Agency

creating a better place
for people and wildlife

Environment Agency

Each English WaSC + DCWW in England

Our ref: **DRD/JB**
Your ref:
Date: **8 July 2019**

By email only

Dear Jo

INDUSTRIAL EMISSIONS DIRECTIVE

At the last Strategic Steering Group meeting on 2 April 2019 we tabled a paper about implementation of the Industrial Emissions Directive (IED) for biological treatments of sewage sludge. The paper (enclosed) informed the group that the IED applies to the biological treatment of sewage sludge, and that we would be discussing the timetable and process for permit applications with the Water UK waste and recycling network. The meeting acknowledged the paper and its contents received some discussion.

The purpose of this letter is to inform you that we are now implementing this aspect of the IED. This means that permits will be required for the biological treatment of sewage sludge above the IED thresholds. We will arrange for engagement and further communications to take place, principally through the Water UK waste and recycling network, and will be inviting applications for permits in accordance with a timetable to be agreed.

In order to agree the timetable implementation and to initiate the permitting process we are asking each water and sewerage company to provide details of the following to Clive Humphreys via your waste and recycling network representative by 24 July 2019:

- sites carrying out biological treatment of sludge
- sites carrying out biological treatment of other sewage related wastes such as screenings and grits
- sites operating biogas engines
- sites injecting biogas to the gas grid

Should you require any further information please contact Clive Humphreys at clive.humphreys@environment-agency.gov.uk.

Yours sincerely

David Dangerfield
Director of Operations, North

EA/WaSC's IED Workshop (via MS Teams)

29/09/2022 14.30 – 16.30

Meeting Notes

Topic	EA/WaSC	Summary Note	Action
Open Tanks	WaSC	Has there been a change in approach by the EA from an initial risk assessment requirement to now full cover and abatement even if it is low risk?	
	EA	Position has not changed the aim being to prevent diffuse emissions as per BAT 14d. Undertake risk assessments and if there are no diffuse emissions then no requirement to cover. The secondary digesters seem to be most common tanks and the expectation is there would be residual gas from these. Any diffuse emissions need to be characterised and appropriate mitigation undertaken.	
	WaSC	Digested cake in bays which produce no diffuse emissions, would it be a given that there are no emissions or would sampling be required?	
	EA	If the digested cake is moved quickly from pad to field, unless there are bio aerosol or odour issues, then no requirement to cover. However to prevent water ingress a low risk cover could be a tarpaulin. A site by site assessment is required.	
	WaSC	BAT 14d mentions health and safety considerations of covering tanks, at what point does the H&S implications outweigh the environmental benefits? Is there a threshold where emissions are not significant therefore no requirement to cover?	
	EA	There is no threshold to give for emissions. Odour can't be used as a proxy for emissions that require monitoring. The HSE have been contacted, they give guidance on enclosed equipment/buildings. HSE view that it is possible for the safe covering of tanks.	
		Share HSE Guidance links	**EA**
	EA	Cost benefit in BREF/BAT. The industry standard and cost is not a factor as it is considered during BREF drafting. Costshouldn't be a barrier and is not taken into consideration	
	WaSC	Some existing tanks are structurally not able to take a cover, on small tanks with low emissions there's no cost/benefit	
	EA	No scaling is taken into account, the EA will take a view on very low emissions.	
	EA	Guidance needed on the monitoring standards accepted and the period of time to undertake monitoring which will be acceptable	
		EA to take away and confirm	**EA**
	WaSC	The amount of tanks this applies to and the timescales to monitor emissions, design and implement a solution should not be underestimated	

	EA	Had since July 2019 to undertake. EA's approach will be to permit facilities and add improvement conditions until the end of 2024. There will be no deadlines beyond this. If best endeavours are being undertaken to comply then recommendation to area colleagues not to implement enforcement post December 2024. It depends on the narrative to try and achieve this. Water industry Net zero roadmap and OFWAT report on open tanks see this as the most productive solution.	
	WaSC	Suggestion to share best practice and monitoring data etc.	
	EA	Use the broader industry, tank producers and consultants for advice	
	WaSC	Covering of cake pads on a biological site or remote transfer station would the same requirement for covering apply?	
	EA	Same principle applies to prevent weather infiltration, if it's moved quickly and short storage times then no cover required. The expectation is that biosolids wouldn't be stored for more than 6 months.	
Containment	WaSC	Standards required for secondary containment of sludge tanks, would earth bunds be acceptable?	
	EA	Yes in principle. Refer to CIRIA736 for guidance or similar standard.	
	WaSC	Delivery of solutions involve a large expanses of concrete required (carbon footprint, loss of ecology, flood risk) A more holistic solution is required. Integrate EA technical teams.	
	EA	Require specific solutions rather than hypothetical to discuss. Flood risk considerations need to be taken into account when designing and issues will be picked up through the permitting process with EA flood teams.	
		WaSC's to flag up to EA any specific sites which may pose a flood risk	**WaSCs**
		EA to get advice from flood risk & biodiversity/conservation teams	**EA**
	WaSC	Retrofitting & CIRIA736 are there cost/benefit reasons?	
	EA	Risk assess to CIRIA736 standards, equivalence will be accepted. Look at the site inventory and can the largest tank be contained, 50% containment will not be accepted	
	WaSC	Issue around containment solution having to be inside the permit boundary and the implications of future surrender test.	
	EA	Construction of spill solutions will need to be covered by the permit and then needs to be included in the permit boundary for construction/maintenance regulation.	
	WaSC	Understanding the permit boundary which may change during detailed design resulting in variations being submitted for the boundary.	
	EA	Area containing a spillage the site condition report needs to cover the spill area due to potential contamination.	

	EA	The EA legal view is the area needs to be within the boundary	
	EA	The spill area will also capture run off into those areas. Require regular groundwater monitoring as part of permit conditions.	
	WaSC	This is a new issue that needs WRN/TaF discussion and resolution	
	EA	Can be discussed but cannot move away from legal view that containment solutions should be in permit boundaries.	
Emission Returns	WaSC	Practical terms requirements are needed for liquor returns to head of works, would a risk assessment be suitable?	
	EA	Require the characterisation of liquids when being submitted. The EA need to know what is in the effluent due to the wide range of treatment process pre and post AD. (BAT 20, 6, 7 & 3) A broad range of sampling maybe the only way to determine what's present.	
	WaSC	Not always possible to analyse for some of the determinants	
	EA	Former M18 guidance may be useful to look at shows the minimum sampling requirements. Justification may be that it's not possible to sample for certain elements	
	EA	The CIP3 (Chemical Investigation Programme) work has shown that different works have different substances in the effluent and sludge. Different treatment methods have varying effects.	
	WaSC	What is the aim of the H1 assessment and characterisation of return liquors? Will the Agency then set limits? Implications of limit being breached?	
	EA	Establish if there is an impact on the works e.g. ammonia. 12 months or more, monthly sampling then undertake an H1 assessment. See what is of significance, a lot may be screened out. What measures are needed to be taken to deal with the problematic element?	
	WaSC	This sampling and analysis will then be the water companies' responsibility? Concern over PFOA/PFAS and how these are dealt with, maybe no mechanism for removal.	
	EA	If there is no pre-treatment whatsoever then there is a greater risk with levels of metals being a concern. BAT 3 manages what is being passed to the WwTW at the point of release.	
	EA	Although installations are linked to WwTW the EA don't differentiate from other installations in other industries. Bulk tanker deliveries can be controlled although domestic effluent through the sewer is more difficult to control. This is a complexity not seen in other industries. EA need to see where problems are occurring i.e. there is no mechanism for testing parameters	
	WaSC	There is not total control over inputs unlike other industries, there is an implication for the installation to	

		come up with a solution and pass liquors on WwTW – needs further discussion	
	EA	A great deal of uncertainty around this. Is there anything else the EA can do to help/reduce uncertainty?	
		Further discussion needed at the WRN forum	**WaSCs**
	WaSC	Tankered imports of sludge, Ww sludge cannot be rejected as a commercial AD would	
	EA	What checks are carried out between WwTW? Question of suitability of imports to the WwTW. Should some inputs be received by specialist companies and not by WwTW who are able to treat	
	WaSC	Questions not for individual installations, it requires UKWIR/EA research	
	EA	Purpose of the permitting process is to stop unacceptable emissions from the installation	
	WaSC	We are managing emissions currently with no great number of non-conformances, should be picked up under CIP	
	EA	Maybe better options for treating a particular substance due to the WwTW not being able to treat.	
	EA	Appreciate questions which are causing difficulties with the permitting process.	
		Meeting timed out any other questions be sent to Katherine Owens/Clive Humphreys	
Close			

Gregory, Claire

From: /O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP /CN=RECIPIENTS/CN=C7DC9734D4C448738D26A09C9C4A55BA-STEPHEN BOD on behalf of Stephen Boddy <MAILER-DAEMON>
Sent: 19 January 2024 11:23
To: Nicola Telcik
Subject: RE: IED - covering of tanks -some feedback from Clive on our assumptions driving scope and cost

Great – he could comment on explosive question….

He is probably definitely aware and has view on at least one of the two examples I mention…

Cassington …

Steve

Stephen Boddy
Waste Technical Specialist

07747 646 964
stephen.boddy@thameswater.co.uk

Contact the Team at: airandwaste.permitting@thameswater.co.uk

Clearwater Court, Vastern Road, Reading, RG1 8DB

From: Nicola Telcik <Nicola.Telcik@thameswater.co.uk>
Sent: 19 January 2024 11:13
To: Stephen Boddy <Stephen.Boddy@thameswater.co.uk>
Subject: Fw: IED - covering of tanks -some feedback from Clive on our assumptions driving scope and cost

FYI I asked Paul questions on the covering of tanks…

From: Nicola Telcik
Sent: 18 January 2024 18:09
To: Paul Fountain <paul.fountain@thameswater.co.uk>
Subject: IED - covering of tanks -some feedback from Clive on our assumptions driving scope and cost

Hi Paul,

we received some feedback this morning from Clive Humphreys on our assumptions driving our IED scope. I would be keen to have your thoughts to Clive's responses. Steve Spencer is going to collate responses back to Clive on Friday and further at a call on the 25th Jan.

Covering of tanks (the assumptions I listed in black and Clive's responses in red)

- All open topped tanks are to be covered and emissions sent to CHP engines or Odour Control Units. We understand not just methane, but all potential emissions including methane, ammonia and odours. Correct if the contents of the tank are likely to be a source of polluting emissions to air.

- Need a threshold for residual biogas potential to determine whether to send to CHP or OCU - use PAS110. This was not the original purpose for referencing the PAS110 RBP limit, and the possibility of using PAS110 has now been discounted. The choice of CHP or OCU will depend upon the efficacy of the OCU in preventing emissions to atmosphere.
- Existing tanks were not designed to take covers – may need to replace tank and in different location than current (affects any secondary containment design). We are advised that flexible single and double membrane roofs can be fitted to most types of tank and these are likely to be less expensive than retrofitting rigid roofs. How thoroughly have these tanks been assessed? If tanks are unable to bear the additional weight of flexible roofs it raises questions about tank integrity and whether they are safe and fit for purpose. If tanks are approaching end of life the full cost of asset replacement should not be attributed to IED.

- full solution scope has included new/modified CHP/OCU, pipework etc. It has come to our attention that on at least one site (Didcot) the majority of biogas produced is flared and thus wasted. Without an acceptable solution in line with BAT this alone will prevent us from being able to issue a permit. Also it would appear unreasonable to attribute to IED the cost of installing a CHP to prevent gas being disposed of. On a positive note I expect the ROI would likely be very short after which there would be a net annual reduction in costs due to the new revenue stream.

Thanks,

Nicola Telcik - BEng (Hons) MEngSc FIEAust CPEng NER

Industrial Emissions Directive Programme Manager

Engineering & Asset

Mobile - 07500 911821

Email – Nicola.Telcik@thameswater.co.uk

What is IED? **CHECKOUT THE IED INTRODUCTION VIDEO!**

Mr Mark McAree
Jacobs UK
7th Floor, 2 Colmore Square
38 Colmore Circus
Queensway
Birmingham
B4 6BN

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

MOTT MACDONALD

RBP Analysis
Technical Note

Project:	Residual Biogas Potential of Digested Sewage Sludge		
Our reference:	100107520 WTR-UK	**Your reference:**	N/A
Prepared by:	Steve Bungay	**Date:**	20th December 2023
Approved by:	Not approved	**Checked by:**	Not checked
Subject:	Residual Biogas Potential (RBP) as a stability index for sewage sludge treated using anaerobic digestion		

1 Introduction

1.1.1.1 This technical note reports on the residual biogas potential (RBP) of a variety of sewage sludges treated using anaerobic digestion over an approximate 10-month period from April 2023. 56 RBP tests were performed on samples collected from 16 sites from four water and sewage companies (WaSCs).

1.1.1.2 The 16 sites included seven conventional mesophilic anaerobic digestion (CAD) sites, seven acid phase digestion (APD) sites, and two thermal hydrolysis (THP) sites. Depending on the WaSC, samples were collected following primary digestion (digester), post-digestion storage (PDST), and/or from the dewatered cake (cake).

1.1.1.3 The RBP test is designed to determine the residual biodegradability of digestate samples by measuring of the quantity of biogas produced by the digestate sample during a specified period. The test involves measuring the biogas production for 28 days at a constant temperature of 35^{o}C as detailed in the WRAP report OFW004-005: '*Residual biogas potential tests for digestates*'.

1.1.1.4 OFW004-005 recommended an upper limit RBP value 0.25 l/g VS for commercial digesters based on a limited number of samples including cattle slurry, pig slurry and anaerobically digested municipal wastewater biosolids.

1.1.1.5 As well as an RBP value, OFW004-005 recommended that the kinetics of gas production are reported as part of the test results to ensure that factors such as inoculum inhibition and negative net gas production can be assessed as part of the quality control.

2 Results

2.1.1.1 In reviewing the data, the results were grouped into the three treatment technologies (CAD, APD, and THP), and three inter-process treatment stages (digestion, PDST, and cake). The results were consolidated by first averaging the individual site results, and then averaging the treatment technology and treatment stage results. The consolidated results are shown in table A2: Consolidated RBP Results, in appendix A2 below; and bar charts for: 1) all results, 2) site averages, 3) treatment technology averages, and 4) treatment inter-stage averages, are shown in appendix A3: A3.1.1, A3.1.2, A3.13, and A3.1.4 respectively, below.

2.1.1.2 Consolidating the results allows the different technologies and different treatment stages to be compared, but the variability in the raw data is smoothed. The specific biogas production after 28 days ranged from 0.040 to 0.324 l/g VS, with the average RBPs for CAD, APD, and THP being 0.126, 0.152, and 0.113 l/g VS respectively, with an overall average RBP of 0.132 l/g VS. However, the data set was too small to be statistically valid, with limited data from THP sites, and no THP results for cake.

3 RBP as a metric for Biological Stability

3.1.1.1 The RBP test is a suitable procedure for benchmarking the residual biodegradability of digestate. However, it is not representative of the actual biogas produced at site following digestion, post-digestion storage, or digestate dewatering. The test is undertaken at constant temperature (35^{o}C), an inoculum is used, and although not specified in OFW004-005 the samples are typically mixed, and the test duration is fixed at 28-days. Given these controlled conditions and elevated temperature, the test procedure will overestimate the actual biogas production that occurs on site.

4 RBP vs Emission Factor

4.1.1.1 An RBP test result cannot be used to simply determine an emission factor (EF) for digested sludge. The RBP test reports biogas production as volume per weight at time X at constant temperature (l/g VS at 28-days and 35^{o}C), whereas an EF is typically reported as % of total biogas produced, or weight of methane per weight of raw dry solids (kg $CH_4/t_{(raw)}DS$).

4.1.1.2 The production of biogas during an RBP test follows a first-order kinetic reaction, i.e., biogas production is not linear and diminishes over time as an asymptote. Therefore, it cannot be readily converted to an EF. To convert a RBP result to a rate based on weight per weight ((kg $CH_4/t_{(raw)}DS$), the DS, the cumulative biogas curve, and CH_4 content of the biogas are required. To convert a RBP result to a rate based percent of total biogas production, the RBP test duration needs to be extended until biogas production ceases, or kinetic modelling is required to calculate

the ultimate biogas production ($y_{BIOGAS,max}$). With either method, the output is the residual biogas production rate specific to the hydraulic retention time (HRT) of the treatment process, and the result cannot be extrapolated to represent an EF from dewatered caked digestate.

5 Comments / Conclusions

5.1.1.1 The RBP test is a useful tool to report the residual biodegradability of digestates.

5.1.1.2 Applying averages and grouping data on a highly variable limited data set is problematic. To enable validation of the testing, more data is required, and a standard sampling and testing protocol needs to be established:

- More data is needed (recommended 12-month period, with a minimum of four samples per sample point, i.e., quarterly),
- Sample points need standardising. It is recommended that freshly dewatered cake being discharged from the dewatering process is sampled. Alternatively, where liquid digestate is sampled, the final liquid product should be sampled i.e., following secondary digestion or PDST. Stockpiled cake should not be used.
- The test protocol needs agreeing and standardising, i.e., inoculum, temperature, mixing, and duration.

5.1.1.3 The results analysed for this technical note are not sufficient to reliably establish an RBP upper limit as a measure of stability for sewage sludge. However, from the limited dataset, an inference, is that subject to additional data, the original limit of 0.25 l/g VS for commercial digesters is broadly appropriate for anaerobically digested wastewater biosolids.

5.1.1.4 The objective of the testing needs confirming; the existing RBP test is suitable to benchmark the residual biodegradability of digestates, however, it is not suitable to quantify actual biogas production at site.

5.1.1.5 The RBP test is a metric for biological stability, it is not applicable as an emission factor or a surrogate for gas emissions monitoring.

A.1 Definitions

5.1.1.6 Acid Phase Digestion (APD)

- Biological hydrolysis as a pre-treatment process to primary digestion and post-digestion storage. Includes all generic biological hydrolysis processes: APD, Enzymic Hydrolysis (EH), Enhanced Enzymic Hydrolysis (EEH), Heat Pasteurisation Hydrolysis (HpH/Helea®).

5.1.1.7 Conventional mesophilic anaerobic digestion (CAD)

- Combined heated primary digestion (35 to 39^{o}C) followed by cold secondary digestion.

5.1.1.8 Primary Digestion

- Heated anaerobic digestion (35 to 39^{o}C) with a minimum HRT of 12-days.

5.1.1.9 Post Digestion Storage Tank (PDST)

- Cold storage with a minimum HRT of 8-hours.

5.1.1.10 Secondary Digestion

- Cold anaerobic digestion with a minimum HRT of 7-days.

5.1.1.11 Thermal Hydrolysis (THP)

- Thermal hydrolysis as a pre-treatment process to primary digestion and post-digestion storage. Includes all generic biological hydrolysis processes (Biothelys, Cambi, Lysotherm).

A.2 Residual Biogas Potential for Different Treatment Processes and Stages

Table A.1: Consolidated RBP Results [1]

Residual Biogas Potential (l/g VS)				
Process	**Digester**	**PDST**	**Cake**	**Average**
CAD	0.129	0.131	0.116	0.126
APD	0.165	0.144	0.146	0.152
THP	0.095	0.131	-	0.113
Average	0.130	0.135	0.131	**0.132**

[1] 16 Sites

56 Sample points

(11 Post digester, 26 Post PDST, 19 Dewatered cake)

(22 CAD, 31 APD, 3 THP)

Response to Maple Lodge Schedule 5 24th October 2023

Date:	26 September 2023
Project name:	Thames Water STC IED
Project no:	B22849AZ
Attention:	Sarah Raymond
Company:	Thames Water
Prepared by:	James JK Killick
Document no:	C.231024-1

1180 Eskdale Road
Winnersh, Wokingham
Reading RG41 5TU
United Kingdom
T +44 (0)118 946 7000
F +44 (0)118 946 7001
[Website]

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.

Section 1 – Best Available Techniques BAT - Outstanding responses to Notice dated 31/07/2023 (reference Appendix 1 for Question 2)

Response to Question 2 - Abatement of assets pre-anaerobic digestion

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.

Response to Question 3 - Appropriate abatement and commitment to BAT (reference Appendix 1 for Question 3)

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.

Answer 4 Leak Detection and repair plan (LDAR) (reference Appendix 1 for Question 4)

Please find attached the correct version of "TW_STC_EPR_08a_MPL_APPH", version 2 August 2023, which states the 6 month frequency for flame ionisation detection.

END OF NOTE

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) *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, NH3 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 the 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

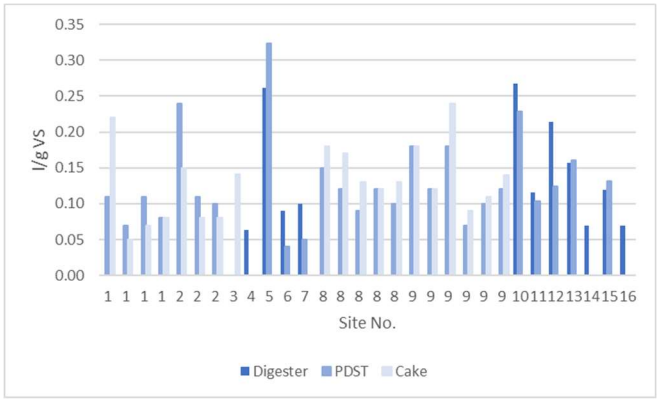
outstanding and requires a response.

A.3 Residual Biogas Potential Graphs

A.3.1.1 All Results

- 16 sites
- Multiple results
- Multiple processes

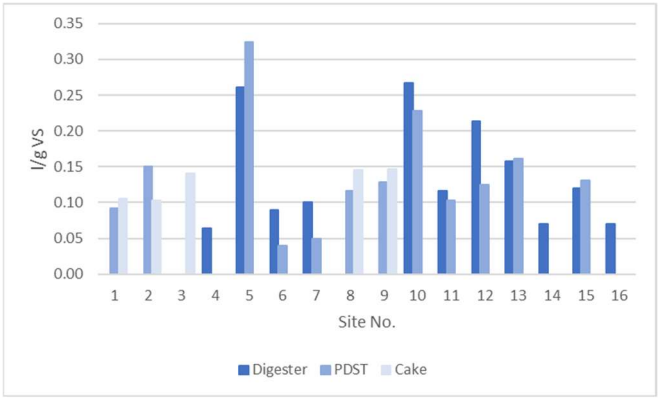
RBP_{MIN}	0.040 l/g VS
RBP_{AVE}	0.133 l/g VS
RBP_{MAX}	0.324 l/g VS



A.3.1.2 Site Averages

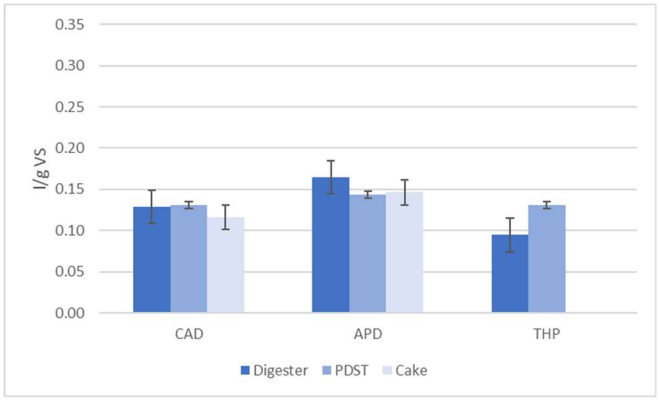
- 16 sites
- Average results
- Multiple processes

RBP_{MIN}	0.040 l/g VS
RBP_{AVE}	0.135 l/g VS
RBP_{MAX}	0.324 l/g VS



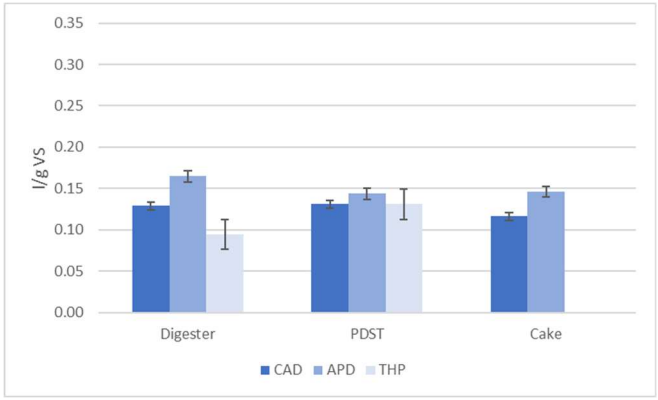
A.3.1.3 Treatment Technology Averages

- Conventional Aerobic Digestion
  RBP 0.116 to 0.131 l/g VS
- Acid Phase Digestion
  RBP 0.144 to 0.165 l/g VS
- Thermal Hydrolysis
  RBP 0.095 to 0.131 l/g VS



A.3.1.4 Treatment Inter-stage Averages

- Primary Digester
  RBP 0.095 to 0.165 l/g VS
- Post Digestion Storage Tank
  RBP 0.131 to 0.144 l/g VS
- Dewatered Cake
  RBP 0.116 to 0.146 l/g VS



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

Jacobs U.K. Limited
1180 Eskdale Road
Winnersh, Wokingham
Reading RG41 5TU
United Kingdom
T +44 (0)118 946 7000
F +44 (0)118 946 7001
www.jacobs.com

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 digestors 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.

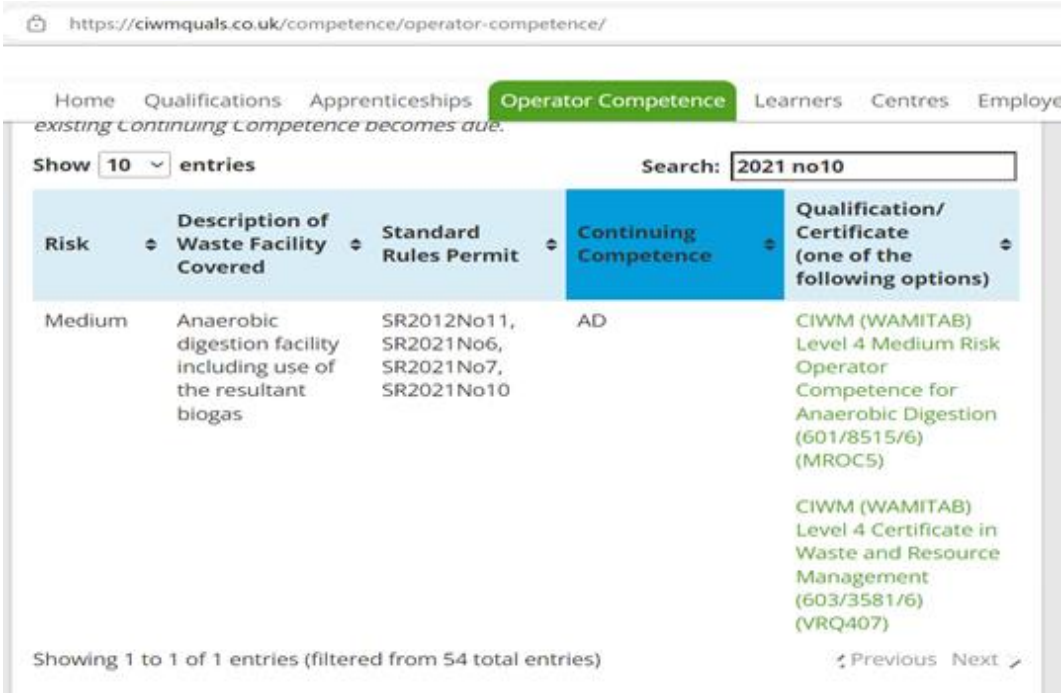
For any tanks identified as not biologically active, we require that you submit proposals for the covering of tanks in line with guidance Covering Slurry Lagoons (publishing.service.gov.uk), Biological waste treatment: appropriate measures for permitted facilities - 1. When appropriate measures apply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



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 digestor domes
'Drawing 0080563.pdf045fc6'6' - diagram showing floating roof operation with lip.
'Drawing 0054189.pdf04570e9' - engineering drawing Maple Lodge Primary Digestor

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 Anerobic 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) Advised 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	
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 (updated)*

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 (updated)* 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: • geology • hydrogeology • surface waters	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. 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. The geology of the site is a bedrock of Lewes Nodular Chalk Formation which are shallow marine in origin. This is overlain by

	sedimentary alluvium clay, silt, sand and gravel from fluvial origins. Parts of the site are within the boundaries of a Source Protection Zone 1. Bedrock deposits are classified as Principal and superficial deposits are classified as Secondary A.
Pollution history including: • 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	The site is located within a generally rural area of Hertfordshire. 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. 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). 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. 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.
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	None collected. 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. The following substances may be ‘relevant hazardous substances’: • Diesel • Oil • Grease

	• Anti-freeze These substances are stored in and around the CHP engines, and are used in their routine operation and maintenance. 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. 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.
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	
Permitted activities	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. Imports of waste to the works inlet for treatment via the UWWTD route.
Non-permitted activities undertaken	• Discharging of waste • Storage of waste • Storage of biogas • Physical blending of wastes • Storage of raw materials
Document references for: • 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	
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	• 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	
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	• 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	• 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 of supporting information	• **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.	
Checklist of supporting information	• **Site closure plan** • **List of potential sources of pollution risk** • **Investigation and remediation reports (where relevant)**

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.	
Checklist of supporting information	• 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)

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.

Response to Maple Lodge Clarification RFI 27th February 2023

Date: 10th March 2023
Project name: Thames Water STC IED
Project no: B22849AZ
Attention: Sarah Raymond, Environment Agency
Prepared by: Mark McAree

Jacobs U.K. Limited
1180 Eskdale Road
Winnersh, Wokingham
Reading RG41 5TU
United Kingdom
T +44 (0)118 946 7000
F +44 (0)118 946 7001
www.jacobs.com

Dear Sarah,

Please see below the answers to your questions raised on the "Application Variation - Maple Lodge STC - Further clarification" document emailed on 27th February 2023.

1) Payment of outstanding fees

We identified in our RFI an outstanding balance of £2,034. We cannot locate this payment.

Answer 1.

Payment for the extra over of £2,034 has been processed against PO number 4700382228, with reference number EPR/FP3435LA/V006. Payment was confirmed with TW payment agent on the 7th March 2023.

2) Bioaerosol Risk assessment (BRA)

You have provided a your monitoring locations for Bioaerosols in your response to the RFI, however you have not updated your BRA as requested in question 1 of the RFI.

Update and provide 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 2

Please see the Appended updated Bioaerosol Risk Assessment 'TW_STC_EPR_03a_HGR_APPF 2.0 (Feb 23)'

3) Floating Roof digesters

In response to question 2e of the RFI, you have advised that the floating roof digesters use a wet seal to minimise the release of biogas from the floating roof structure. Advising that you employ techniques 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, and

- The use of the flare stack to manage storage of excess biogas in emergency circumstances.

It is our current viewpoint that these techniques do not meet the requirements of BAT 14d which require that in order to prevent or, where that is not practicable, to reduce diffuse emissions to air, BAT is to use an appropriate combination of techniques which include the containment, collection and treatment of diffuse emissions, including:

- Storing, treating and handling waste and material that may generate diffuse emissions in enclosed buildings and/or enclosed equipment,

- maintaining the enclosed equipment or buildings under an adequate pressure and,

- where appropriate/relevant collecting and directing the emissions to an appropriate abatement system via an air extraction system and/or air suction systems close to the emission sources.

We would also note that the use of the flare to manage storage of excess biogas would not meet BAT. BAT 15 requires that flaring is only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques below:

- Correct plant design, including the provision of a gas recovery system with sufficient capacity and the use of high-integrity relief valves, and

- Plant management which includes balancing the gas system and using advanced process control.

It is our understanding that your response identifies diffuse emissions from the storage of unstable digestate in tanks that are not fully enclosed, and in any issued permit we would implement an improvement condition to address this. This improvement condition will require a plan containing the final designs, and an implementation schedule for the enclosure of the floating roof digesters. The plan will also need to 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.

a) Provide confirmation that you will meet BAT and fully enclose the floating roof digesters.

b) 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.

c) 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.

Answer to 3a, 3b and 3c.

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.

Further to our email of 28th February, Thames Water would need to see the draft text of the proposed Improvement Condition before we can confirm our understanding of the requirements. Thames Water understands that any alternative BAT must be evidence based.

4) NGR emission locations

You have provided in response to question 3g monitoring point locations. This does not include the NGR for point S6.

Provide the NGR for emission point S6.

Answer 4

Monitoring point	NGR	Monitoring frequency	Methodology (standard)	Assessment procedures
S6 – Biogas Condensate	a) TQ04094 92114 b) 0409092073	n/a	MCERTS or ISO/IEC 17025	

Although a composite sampling location has been identified for Biogas Condensate: Monitoring point S6 (locations a & b), due to low volumes of this wastewater return routine monitoring is not proposed – please see 'Response to RFI_Q5_Maple Liquor 20230208'.

5) Diesel Generators

You currently have permitted under EPR/MB3295YC emission points A11 and A12.

Provide a written confirmation that these will provide power to the installation activity.(i.e. be a directly associated activity of the installation)

Answer 5

The 1 x 2, 5.022MWth standby diesel generators - already permitted as new MCPs in SRP EPR/MB3295YC - provide power to the whole STW; *including sludge treatment* and UWWTD/other activities. Therefore, they could meet the definition of a DAA. There are no other standby diesel generators on site at the current time.

In amalgamating into the IED AD permit, we anticipate no material changes to the current permit conditions relating *to these already permitted new MCPs* but please reply on this point if this assumption is incorrect.

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.

Section 1 – Best Available Techniques BAT - Outstanding responses to Notice dated 31/07/2023 (reference Appendix 1 for Question 2)

Response to Question 2 - Abatement of assets pre-anaerobic digestion

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.

Response to Question 3 - Appropriate abatement and commitment to BAT (reference Appendix 1 for Question 3)

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.

Answer 4 Leak Detection and repair plan (LDAR) (reference Appendix 1 for Question 4)

Please find attached the correct version of "TW_STC_EPR_08a_MPL_APPH", version 2 August 2023, which states the 6 month frequency for flame ionisation detection.

END OF NOTE

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) *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, NH3 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 the 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.

From: SM-Defra-RESP-notifications (DEFRA) <RESP-notifications@defra.gov.uk>
Sent: Wednesday, February 28, 2024 8:47 AM
To: McAree, Mark <Mark.McAree@jacobs.com>
Subject: [EXTERNAL] EPR/FP3435LA/V006 Review of Draft Permit Documents CRM:0355042

GOV.UK

Environment Agency

Dear Mark McAree

Environmental Permitting (England and Wales) Regulations 2016

Application reference: EPR/FP3435LA/V006

Operator: THAMES WATER UTILITIES LIMITED

Facility: Maple Lodge Sludge Treatment Centre, Denham Way, Rickmansworth, WD3 9SQ

I enclose a draft of your permit variation and consolidation. I'm sending it to you so you can check we've stated your details correctly and it covers the activities you applied for. We're not asking for comments on the conditions we've used or how the permit is presented.

If you've concerns about the conditions we've chosen please discuss this with me and I can explain why they've been included. These wording of these conditions is standard. We will only consider changes to the wording in very exceptional circumstances.

The draft notice shows the changes we'll make to your permit. The reasons for these are as a result of your application.

If the permit variation is granted, your subsistence charge will change as a result of your application. Your new annual subsistence charge will be £16,813. We'll make a pro-rata adjustment for this financial year.

We have included improvement conditions in your permit variation. Please note that charges apply where our assessment or approval of information is required. These charges are applicable.

You can find further information on charging in our charging scheme:
https://www.gov.uk/government/publications/environmental-permits-and-abstraction-licences-tables-of-charges
and charging guidance:
https://www.gov.uk/government/publications/environmental-permitting-charges-guidance/environmental-permitting-charges-guidance

If you consider that there are any errors in your details or the activities stated, or if it refers to matters which

you regard as being confidential or affecting national security, please let me know by 13/03/2024. You can email me at sarah.raymond@environment-agency.gov.uk.

Please phone me on 07557 139052 if you have any questions.

Yours sincerely,
Sarah Raymond
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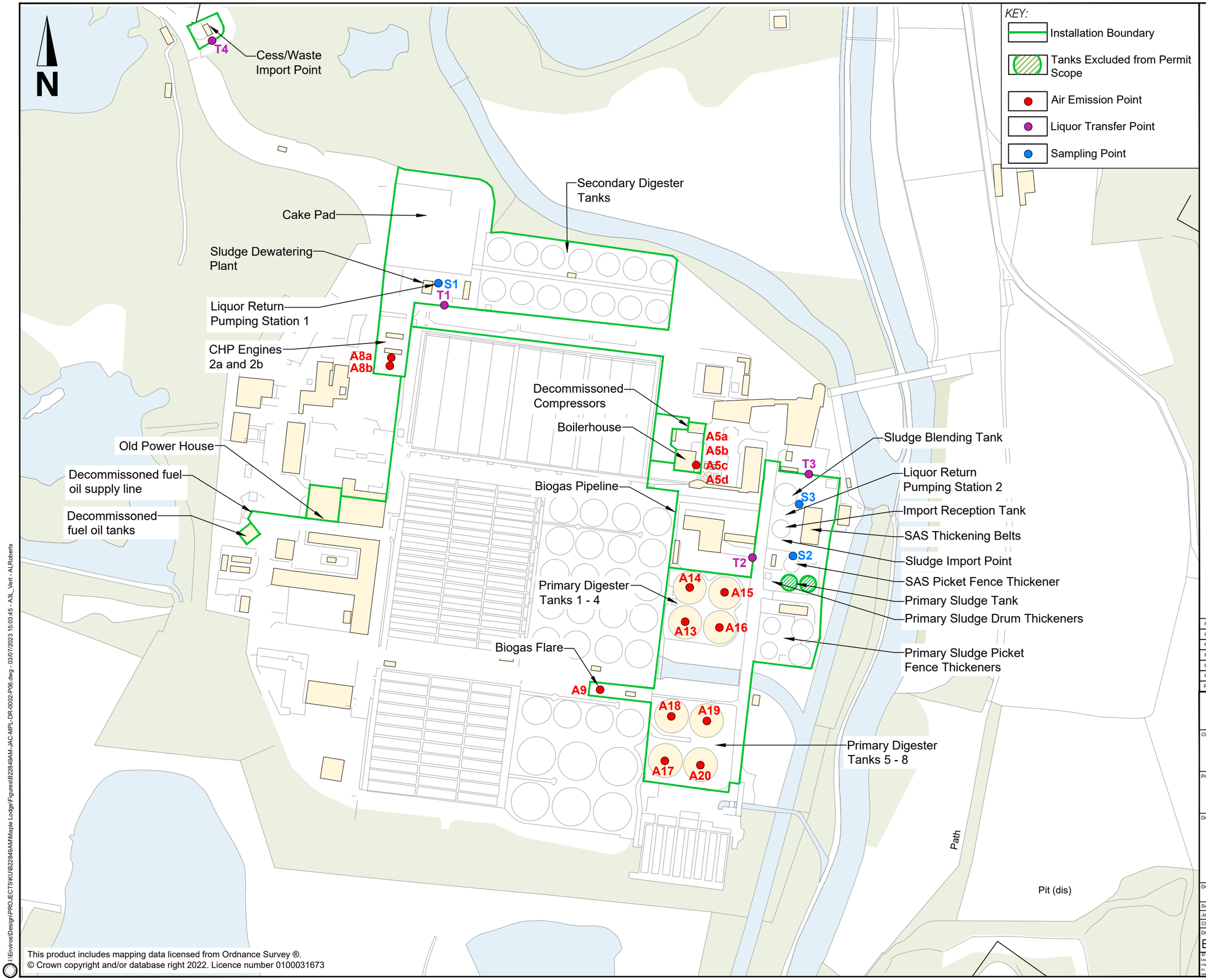

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
P06	JUN. 2023	FOR INFORMATION	AR	MM	JK	MM
P05	JUN. 2023	FOR INFORMATION	AR	MM	JK	MM
P04	JUN. 2023	FOR INFORMATION	AR	MM	JK	MM
P03	FEB. 2023	FOR INFORMATION	AR	MM	JK	MM
P02	JUL. 2022	FOR INFORMATION	AR	MM	JK	MM
P01	APR. 2021	FOR INFORMATION	AR	MM	JK	MM

Jacobs
1108 Eskdale Road, Winnersh, Reading, RG41 5TU
Tel:+44(0)118 946 7000
www.jacobs.com

Client: Thames Water

Project: STC IED PERMIT
MAPLE LODGE STW

Drawing title: FIGURE 2
INSTALLATION BOUNDARY
AND AIR EMISSION POINTS

Drawing status: PERMITTING

Scale	1:2500	DO NOT SCALE
Jacobs No.	B22849AM	Rev P06
Client no.		

Drawing number: B22849AM-JAC-MPL-DR-0002