

Appeal by Thames Water Utilities Limited
Environmental Permitting (England and Wales) Regulations 2016
Reading Sludge Treatment Centre, Island Road, Reading RG2 0RP

Thames Water Utilities Limited: Statement of Case
11 April 2024

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Introduction

1. This is Thames Water Utilities Limited's ("TWUL") statement of case in respect of its appeal against specific permit conditions following variation EPR/MP3338LU/V004 ("the Permit") for Reading Sludge Treatment Centre ("Reading STC") pursuant to Regulation 31 of the Environmental Permitting (England and Wales) Regulations 2016 ("EPR 2016").
2. The appeal is made in respect of the following permit conditions:
 - i) Improvement condition 9 (IC9)
 - ii) Improvement condition 13 (IC13)
3. Attached to this statement of case is a paginated bundle marked TW1. References in square brackets are references to page numbers in the form of [TW1/tab no/page no].

Grounds of Appeal

Improvement Condition 9

4. In summary, the grounds of appeal are:
 - i) The refusal by the Environment Agency to consider TWUL's proposed site-specific assessment of Best Available Techniques ("BAT") at the Reading STC is unreasonable and contrary to published guidance. IC9 should be amended to permit TWUL to prepare an updated and site-specific assessment of the required secondary containment at the Reading STC to achieve BAT;
 - ii) The time limits imposed by the Environment Agency are unreasonable and fail to take into account, either properly or at all, of:
 - The need for a site-specific risk assessment for Reading STC;
 - Practical steps necessary to design and construct secondary containment;
 - The level of uncertainty surrounding BAT for secondary containment and its requirements;
 - Funding;
 - The wider business implications of a single blanket deadline for all infrastructure improvements to relevant STCs.
 - Wider regulatory obligations imposed on TWUL.

5. The Environment Agency has fallen into error in considering that guidance document CIRIA C736 “requires”, for the purposes of achieving BAT, a minimum industry standard of the greater of either:
 - i) 110 per cent of the capacity of the largest tank within the bund; or
 - ii) 25 per cent 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.
6. The Environment Agency’s interpretation of the requirements of CIRIA C736 is unreasonably restrictive. Correctly understood, CIRIA C736 permits the operator to undertake a site-specific risk assessment to assess the appropriate level of secondary containment on any single site. CIRIA C736 does not impose a blanket application of the greater of either the 110% or the 25% rule.
7. In this case, a site-specific assessment conducted on behalf of TWUL has identified that secondary containment equivalent to 110% of the largest single tank, in line with BREF, would be appropriate for Reading STC, notwithstanding that this will result in secondary containment that is less than 25% of the total capacity of all the tanks within the bund.
8. For the avoidance of doubt, TWUL’s primary contention is that the use of a site-specific risk assessment for the purposes of determining the appropriate level of secondary containment is not an ‘alternative approach’ to BAT, but the proper application of CIRIA C736 for the purposes of achieving BAT.
9. In the alternative, should the Planning Inspector find that the proposed site-specific risk assessment is an ‘alternative approach’ to BAT in this case, IC9 should be amended to allow TWUL to use that risk assessment as a basis for secondary containment at Reading STC.
10. The obligations imposed on water companies, as a result of the Environment Agency’s change in regulatory approach and the application of The Industrial Emissions Directive (Directive 2010/75/EU) (“IED”), remain unclear and unagreed, specifically characterised by the disagreement that exists on secondary containment. Relevant guidance on ‘Appropriate Measures’ was published in September 2022. Practically, it is only at the stage of a specific permit application (with the ensuing site-specific dialogue with Environment Agency) that the precise scope of required improvements to existing infrastructure can be

properly assessed. Consequently, it is a gross over-simplification to state that water companies would have been fully aware of both the requirements and cost of IED and BAT at the point at which the Environment Agency communicated its updated regulatory position to the industry in 2019.

Improvement Condition 13

11. Insufficient time has been provided by the Environment Agency for compliance with IC13, in light of operational challenges encountered in rehabilitation works and queries raised from specialist contractors. A revised deadline of 30 April 2024 would provide an appropriate length of time for compliance.

Reading STC

12. Reading STC is located within the same site as the Reading Sewage Treatment Works (“Reading STW”), south to the town of Reading to the west of the A33. The STC serves a population equivalent of 400,000 taking in sewage sludge from Reading STW and imported from the surrounding area. To the south of the site, separated by a dual carriageway, is the Green Park business park, consisting of commercial office properties. To the south-west is agricultural land; to the north-west is a local council household waste and recycling centre, closed landfill and a local council waste transfer station. To the north are commercial properties consisting of large warehouse type premises. Immediately to the east of the site is derelict land, then the A33.
13. The scope of activities permitted under the Permit relate to the processing of the bio-solids portion (sewage sludge) arising from the overall treatment of incoming domestic & trade sewage. Sewage sludge processing at Reading STC involves a biological treatment process known as advanced anaerobic digestion, used to stabilise the sewage sludge; reducing the harmful microbiological content, the volume of the sludge and associated odours. Following this, the digested sewage sludge is dewatered, the liquid portion returned to the head of the sewage treatment works and the processed sludge recovering to agricultural land.
14. The site has been in operation since January 2005.

15. The STC holds approximately 11,530m³ of liquid within the STC itself. This liquid sludge is stored in 12 tanks with individual volumes varying between 30 to 1775m³. The majority of the tanks are concrete.

The Permit

16. Permit EPR/MP3338LU/V004 was issued on 25 July 2023¹. The introductory note records:

“The Industrial Emissions Directive (IED) came into force on 7 January 2014 with the requirement to implement all relevant Best Available Techniques (BAT) Conclusions as described in the Commission Implementing Decision. The schedule of waste management activities includes the recovery 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, but excludes activities covered by the Urban Waste Water Treatment Directive (UWWTD). However, UK environmental regulators concluded that the biological treatment of waste sewage sludge is not an activity covered by the UWWTD and is therefore within the scope of the IED. The BAT Conclusions for Waste Treatment (the BREF) 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 operations at Reading sewage treatment works are existing but will be brought into environmental regulation for the first time and are required to operate using BAT.”

17. Sections of the permit relevant to this appeal are set out below. Section 2.4 reads:

“2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.”

18. Conditions 3.2.3 and 3.2.4 read:

“3.2.3 Subject to condition 3.2.4, below, all liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container have been agreed in writing with the Environment Agency.

3.2.4 Condition 3.2.3, above, shall apply unless the operator strictly complies in full with IC9 below.”

¹ TW1/1/1-51

19. Table S1.3 sets out the improvement programme requirements. IC9 reads:

Improvement condition for secondary containment design		
IC9	<p><i>The operator shall submit a written ‘secondary containment implementation plan’ and shall obtain the Environment Agency’s written approval to it. The plan shall contain the finalised designs and an implementation schedule for the identified secondary containment systems proposed in the document, Reading STC – Containment Options Report, dated May 2023. The finalised design(s) and specifications shall be produced by appropriate competent individuals (qualified civil or structural engineer), in accordance with the risk assessment methodology detailed within CIRLA C736 (2014) guidance. The plan should include but not be limited to the following components:</i></p> <ul style="list-style-type: none"> • <i>An updated BAT assessment with specific regard to BAT 19 of the Waste Treatment BREF</i> • <i>An assessment of the suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure.</i> • <i>Finalised designs and specifications of the proposed secondary containment proposal completed by appropriate competent individuals.</i> • <i>A program of works with timescales for the commissioning of the secondary containment systems to comply with CIRLA C736 (2014) guidance, or equivalent.</i> • <i>An updated site and infrastructure plan.</i> • <i>A preventative maintenance and inspection regime.</i> <p><i>The plan shall be implemented in accordance with the Environment Agency’s prior written approval.</i></p>	<p><i>6 months of permit issue or such other date as agreed in writing with the Environment Agency.</i></p> <p><i>Implementation of all required and approved containment improvements must be completed by 31/12/2024</i></p>

20. IC13 reads:

Improvement condition for review of effectiveness of abatement plant		
IC13	<p><i>The operator shall carry out a review of the abatement plant at emission point A15 on the site plan in schedule 7, to determine whether the measures have been effective and adequate to prevent and where not possible minimise emissions released to air including but not limited to odour and ammonia.</i></p> <p><i>The operator shall submit a written report to the Environment Agency following this review for assessment and approval.</i></p> <p><i>The report shall include but not be limited to the following aspects:</i></p> <ul style="list-style-type: none"> • <i>Full investigation and characterisation of the waste gas streams</i> 	<p><i>6 months of permit issue or such other date as agreed in writing with the Environment Agency</i></p>

	<ul style="list-style-type: none"> • <i>Evidence that the pollutants of the waste gas stream will be controlled and/or abated either by the abatement plant or by the proposed abatement systems.</i> • <i>Abatement stack monitoring results (including but not limited to odour and ammonia).</i> • <i>Abatement process monitoring results (including but not limited to odour and ammonia).</i> • <i>Details of air quality quantitative impact assessment including modelling and a proposal for site-specific “action levels” (not limited to odour concentration, hydrogen sulphide and ammonia).</i> • <i>Odour monitoring results at the site boundary.</i> • <i>Records of odour complaints and odour related incidents.</i> • <i>Recommendations for improvement including the replacement or upgrading of the abatement plant.</i> • <i>Timescales for implementation of improvements to the abatement plant.</i> <p><i>The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.</i></p>	
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TWUL’s request for an extension of time

21. There have been extensive discussions between TWUL, the water industry generally and the Environment Agency on the requirements of BAT for the purposes of secondary containment. These discussions have failed to reach an agreed position between all parties.

22. At a site meeting on 3 January 2024² with the Environment Agency, TWUL requested an extension to the date for compliance with IC9, 11, 13 and 14. This request was also made formally by way of a letter dated 17 January 2024³.

23. The request was refused by the Environment Agency in respect of IC9 and IC13 by email dated 23 January 2024⁴. A subsequent compliance assessment report (CAR) form, issued on 8 February 2024, set out the Environment Agency’s reasons for its refusal⁵.

² TW1/2/52-64

³ TW1/3/65-72

⁴ TW1/4/73-74

⁵ TW1/5/75-79

IC9

24. This appeal challenges the wording of IC9, as well as the time given for compliance, both for the deadline for a ‘written secondary containment implementation plan’ and the final deadline for implementation of all required and approved containment improvements.

Fundamental errors in the Environment Agency’s reasoning

25. In a CAR form, dated 7 February 2024 and issued on 8 February 2024⁶, the Environment Agency set out its reasons for refusing an extension of time for compliance with IC9 and IC13. The relevant part of the CAR form reads:

“Non-compliance

C2: Management systems and operating procedures – I have scored you a CCS2 (31 points) for non-compliance with permit condition 2.4.1 which states “The operator shall complete improvements specified in schedule 1 table S3.1 by the date specified in that table unless otherwise agreed in writing by the Environment Agency”.

IC9 requires the operator to submit a written “secondary containment implementation plan” and obtain the EA’s written approval to it. The written containment plan was not submitted and an extension of 5 months was requested to allow TWUL to complete a detailed design and obtain quotation and instruction.

A deadline was not agreed, as detailed in the email to TWUL on the 23 January 2024. The reasons for this are below.

In the letter TWUL state that they are considering alternative solutions based on a different risk assessment approach. The details of this were included as Appendix A which concludes that a risk based approach would still need secondary containment but smaller than the current permit requirements. It also concludes that the most credible failure scenario is not catastrophic tank failure, but a slower escape of material over time due to leakage or failure at pipe penetration. The report states that this could allow spills to be managed by temporary bunding⁷ directed towards tertiary containment or controlled return to the WWTWs.

*Secondary containment is covered by BAT 19 which requires the operator to prevent or where that is not practicable, reduce emissions to soil and water. BAT 19d lists a number of techniques which can be used in combination to reduce the likelihood and impact of overflows and failures from tanks and vessels. This includes suitable secondary containment. We use CIRLA C736 as the standard for best available techniques for secondary containment. **CIRIA uses the 110% of the capacity of the largest tank within the bund or 25% of the total capacity of all the tanks within the same bund rule.***

As part of the permitting process TWUL provided a document titled “Reading STC – Containment Options Report”, dated May 2023. Spill modelling in this report shows that the

⁶ TW1/5/75-79

⁷ Temporary bunding forms no part of TWUL’s current proposal, which consists solely of a built environment. This was made clear to the Environment Agency by letter dated 6 March 2024 [TW1/6/80-94].

potential sludge spill from one of the digestors would not be contained on site, highlighting the need for additional containment. The report concludes that the preferred options was wide containment approach with the volume for containment driven by the 25% rule. This would include installation of bund walls and impermeable surfacing at modelled locations.

Secondary containment is a fundamental principle of pollution prevention. TWUL's facilities store and treat significant volumes of waste sludge and liquids that have the potential to cause significant pollution to land, air and water.

*TWUL are now looking at "credible scenario" approach and not the previously submitted 25% secondary containment. **This is a significant change and not what was submitted at the time of the permit application.***

*We provided advice to the industry regarding secondary containment including at a workshop held by Water UK in February 2020, written advice in March 2021 and a presentation in July 2021 delivered to Water UK. **TWUL has had years to plan and prepare for the requirements of this improvement condition. As such an extension is not agreed.***

*As set out in the information supplied to TWUL by Clive Humphries on the 17 January 2024, **we do not accept that the concept of credible scenarios offers an opportunity to reduce secondary containment capacity.** However, we are open to proposals that may deviate without compromising the level of environmental protection.*

With regards to temporary bunding, we do not accept this as a suitable method for containment. It relies on TWUL staff to correctly erect the barriers in time to prevent escape of liquids. We do not consider this an appropriate alternative.

A CCS2 score is given as the reasonably foreseeable impact of not having secondary containment is that tank or pipe failure could lead to a significant environmental impact. The spill modelling shows that the sludge from one of the digestors would escape the site boundary within 15 minutes following failure. The spill modelling shows that it would flow onto the adjacent grassland, the haul road and then Island Road. There is also a small stream running adjacent to the site and the civic amenity facility opposite. The spill modelling shows the digestate flows into this channel which in turn flows directly into the River Kennet around 250m downstream. A digestate spill into the stream would have significant impact on the local water courses. The digestate would also enter drains on site which could impact the sewage works. Without containment the digestate would also spill onto Island Road which could potentially prevent access to nearby businesses.

A spill of digestate from one of the digestors is likely to have a significant impact on the local land, water course and businesses. It could also impact the sewage works itself resulting in the potential for further pollution from the sewage discharge.

ACTION – Submit the requirements under IC9 for our approval. We can consider alternatives to BAT so long as they maintain the same or higher environmental protection. We cannot consider any alternatives which offer a lower level of environmental protection.

(emphasis added)

26. Fundamental errors made by the Environment Agency can be summarised as follows:

- i) The Environment Agency has adopted too restrictive an interpretation of CIRIA C736. CIRIA C736 does not mandate the use of 110% of the capacity of the largest tank within the bund or 25% of the total capacity of all the tanks within the same bund.
- ii) The Environment Agency has failed to recognise that the permit application was made in the form that it was as a result of the Environment Agency's erroneous approach to the interpretation of CIRIA C736. The Environment Agency made it clear to TWUL that, in practice, it would not accept a secondary containment assessment that adopted any other approach than a rigid application of the 110%/25% rule. TWUL's permit application was varied to reflect the Environment Agency's interpretation, on the understanding that TWUL could continue to discuss and advance its (correct) interpretation of CIRIA C736. Furthermore, and irrespective of this fact, the fact that the Environment Agency has chosen to regulate the site through the use of improvement conditions cannot fetter TWUL's discretion on the appropriate means to comply with BAT.
- iii) The Environment Agency has disingenuously misrepresented how long TWUL has had to implement site improvements. The reference to relevant "advice" may be considered misleading: the CAR form fails to reflect the lack of specific detail provided in this "advice" or the limits of its relevance. Observations on the timeline are set out below.
- iv) The Environment Agency's error on CIRIA C736 is made plain when it states that it does not accept that "the concept of credible scenarios offers an opportunity to reduce secondary containment capacity". This part of the CAR form implies that CIRIA C736 imposes an arbitrary minimum level of secondary containment capacity, which it does not. TWUL are not seeking to reduce secondary containment capacity below an arbitrary value, but to agree secondary containment capacity based on a site-specific risk assessment, as in fact advocated by CIRIA C736.

- v) The Environment Agency’s statement that they can consider alternatives to BAT incorrectly implies that TWUL are attempting to advance a form of secondary containment that is not consistent with BAT. TWUL has adopted the correct approach to BAT and is only seeking to ensure that requirements imposed on them by the Environment Agency do not go further than is permissible, given the potential for negative consequences, both in terms of cost (at Reading STC and at other sites) and practical impacts on operations on site.

The correct interpretation of CIRIA C736

Best Available Techniques

27. Article 11 of the IED reads⁸:

“Member States shall take the necessary measures to provide that installations are operated in accordance with the following principles:

- (a) All the appropriate preventative measures are taken against pollution;*
- (b) The best available techniques are applied;*
- (c) No significant pollution is caused;*
- (d) The generation of waste is prevented in accordance with Directive 2008/98/EC;*
- (e) 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;*
- (f) Energy is used efficiently;*
- (g) The necessary measures are taken to prevent accidents and limit their consequences;*
- (h) The necessary measures are taken upon definitive cessation of activities to avoid any risk of pollution and return the site of operation to the satisfactory state defined in accordance with Article 22.”*

28. BAT is defined in Article 3(10) of the IED⁹:

“‘best available techniques’ means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole:

- (a) ‘techniques’ includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;*

⁸ TW1/8/113-114

⁹ TW1/8/330-331

(b) ‘available techniques’ means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;

(c) ‘best’ means most effective in achieving a high general level of protection of the environment as a whole.”

29. As set out above:

- i) ‘Available techniques’ refers to those that are economically and technically viable, taking into consideration both ‘costs’ and ‘advantages’;
- ii) ‘Best’ does not require absolute environmental protection, but a “high general level of protection”.

30. Paragraph 5 of Schedule 7 to EPA 2016 requires a regulator to exercise its relevant functions so as to ensure compliance with a number of specified provisions of the IED, including Article 11.

31. Section 15(1) of the Water Resources Act 1991 reads¹⁰:

“15. – General duties with respect to the water industry

(1) It shall be the duty of the Agency and the NRW, in exercising any of their powers under any enactment, to have particular regard to the duties imposed, by virtue of the provisions of Parts II to IV of the Water Industry Act 1991, on any water undertaker or sewerage undertaker which appears to the Agency or the NRW, as the case may be, to be or to be likely to be affected by the exercise of the power in question.”

32. The Environment Agency is explicitly obliged to have particular regard to the duties imposed on water companies by the Water Industry Act 1991, when exercising its relevant functions. This will include particular regard to the duties imposed on TWUL as a sewerage undertaker and the consequential impacts on those duties as a result of requirements imposed by the Environment Agency.

33. Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 established BAT conclusions for waste treatment, under Directive 2010/75/EU, to be applied to the installations falling within the scope of IED. Article 14(3) of the IED requires that¹¹:

¹⁰ TW1/10/256

¹¹ TW1/8/117

“BAT conclusions shall be the reference for setting the permit conditions.”

34. BAT conclusion 19d reads¹²:

“BAT 19. In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below.

Technique		Description	Applicability
d.	Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels	<p>Depending on the risks posed by the liquids contained in tanks and vessels in terms of soil and/or water contamination, this includes techniques such as:</p> <ul style="list-style-type: none"> - Overflow detectors - Overflow pipes that are directed to a contained drainage system (i.e. the relevant secondary containment or another vessel); - Tanks for liquids that are located in a suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment; - Isolation of tanks, vessels and secondary containment (e.g. closing of valves). 	Generally applicable

35. By virtue of the inclusion of the words “Depending on the risks posed”, BAT 19d is explicitly linked to the requirement for a risk assessment. Similarly, the inclusion of the word “suitable” naturally links back to the envisaged risk assessment. Although the description provides generic guidance, it is of note that BAT conclusion 19d envisages that the normal position is to size secondary containment to accommodate the loss of the largest tank within the secondary containment.

CIRIA C736

36. Guidance on ‘Containment systems for the prevention of pollution: secondary, tertiary and other measures for industrial and commercial premises’ (“CIRIA C736”) was published in September 2014.

¹² TW1/11/616

37. CIRIA C736 states that the guidance has been developed to assist owners and operators of industrial and commercial facilities storing substances (inventories) that may be hazardous to the environment. It provides guidance on identifying the hazards, assessing the risks and mitigating the potential consequences of a failure of the primary storage facility and/or the combustion of its contents¹³.
38. Although “sewage and sewage effluents” are excluded from the ‘Stored inventory’ covered by CIRIA C736¹⁴, it is accepted that, in the absence of other relevant guidance, CIRIA C736 sets out an appropriate methodology for assessing BAT for secondary containment at any specific STC.
39. However, the Environment Agency has fallen into error in considering that CIRIA C736 “requires” a minimum industry standard of the greater of either:
- i) 110 per cent of the capacity of the largest tank within the bund; or
 - ii) 25 per cent 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.
40. The Environment Agency themselves recognise that the guidance is not “prescriptive”¹⁵. CIRIA C736 advocates a risk-based approach¹⁶. Section 1.3.2 states¹⁷:

“A key feature of this guide is a risk assessment framework and a three-tier classification system, referred to as classes, upon which different standards of containment construction or levels of performance are required in accordance with the three levels of risk. This three-tier approach has been applied on many COMAH, EPR and equivalent regulated sites and other unregulated sites. It is acknowledged that other approaches are available and can be used, however the operator should be able to demonstrate an equivalent approach to that set out here.”

41. CIRIA C736 does not express the 110% and the 25% rule as a minimum requirement. Reference to these ‘rules’ is first found in section 4.2 and subsequently 4.2.1¹⁸:

¹³ Summary, p.ii, TW1/13/649

¹⁴ See Section 1.2, TW1/13/673

¹⁵ Permit decision document, TW1/15/870-900

¹⁶ CIRIA C736 p.1, TW1/13/649

¹⁷ TW1/13/674

¹⁸ TW1/13/708-709

“4.2 Current Industry Practice

Table 4.1 lists the current approaches, regulations and guidelines for estimating secondary containment volumes and are reviewed in the sections that follow. They are also summarised in Table 4.2.

...

4.2.1 The ‘110 per cent’ and ‘25 per cent’ rules

The basis for much industry practice in the past has been the 110 per cent and 25 per cent rule. Although not following the risk-based approach recommended in this guide, this practice has been in use for many years.”

42. At the outset, several key points are evident:
 - i) This part of CIRIA C736 sets out ‘current industry practice’, not ‘required industry practice’;
 - ii) The 110 per cent and 25 per cent rules are means of “estimating” secondary containment volumes;
 - iii) The use of the 110 per cent and 25 per cent rules does not follow the “risk-based approach” recommended in CIRIA C736.

43. Correctly understood, CIRIA C736 does not mandate the use of the 110 per cent and 25 per cent rules. The guidance in CIRIA C736 proceeds to identify a range of relevant factors, before explicitly stating¹⁹:

“The method set out in this guidance (Section 4.3) provides a quantitative assessment of these assumptions, rather than relying on an arbitrary allowance of 110 per cent of the primary capacity or 25 per cent of the primary capacity for multiple tanks within a common secondary containment. See Sections 4.3 and 4.4 which cover credible scenarios.”

44. CIRIA C736 expressly describes the approach taken through the use of the 110 per cent or 25 per cent rules as “arbitrary”.

45. Section 4.3 is entitled ‘Method for Assessing Containment Capacity’²⁰. The word “assessing” in the guidance contrasts with the previously used “estimating”. This section of CIRIA C736 sets out a method for assessing the required site-wide capacity for

¹⁹ TW1/13/710

²⁰ TW1/13/713

containment. It refers to and draws on experience in using a range of current approaches discussed in Section 4.2, but does not slavishly apply any of those particular approaches.

46. The guidance states:

“The method is based on the principle that the containment should be capable of retaining:

- *The total volume of inventory that could be released during a credible incident (see Section 4.3.2)*
- *The maximum rainfall that would be likely to accumulate within the containment before, during and/or after an incident (see section 4.3.3)*
- *Firefighting agents (water and/or foam), including cooling water (see Sections 4.3.4).*

A summary of recommendations from these approaches is provided in Section 4.5 and Table 4.6²¹.”

47. The assessment of a “credible incident” is therefore central to the application of CIRIA C736. At no stage does the guidance apply an arbitrary calculation, save for estimating (rather than assessing) containment capacity.

48. The relevant part of Table 4.8 reads²²:

<i>Factor to be considered</i>	<i>Local containment capacity recommendations</i>
<i>Primary storage capacity (ie possible storage inventory)</i>	<i>Capacity at least 100% of primary capacity for single tank installations.</i>
<u><i>Note this may be limited by the credibility of the scenario and need not necessarily result in a complete loss of inventory</i></u>	<u><i>Capacity based on risk assessment based on credible scenario for multi-tank installation taking into account tertiary containment provision.</i></u>

(emphasis added)

49. Later in CIRIA C736 the guidance states²³:

“At low risk sites or sites where it can be demonstrated that the probability of a simultaneous occurrence of events is sufficiently low, it may be possible to apply less stringent capacity requirements. Such relaxations should be subject to the designer’s and site operator’s discretion and the agreement of the various regulatory bodies in the light of the particular circumstances.”

²¹ Although CIRIA C736 states ‘Table 4.6’ on p.43, it is anticipated that the guidance intended to refer to Table 4.8, entitled ‘Summary of retention capacity recommendations’.

²² TW1/13/726

²³ TW1/13/726

Environment Agency justifications

50. The Environment Agency’s document entitled ‘Secondary containment and credible scenarios’²⁴, provided to TWUL by email on 17 January 2024²⁵, advances two justifications for the Environment Agency’s interpretation. First, it is suggested that Section 4.2.1 of CIRIA C736 recognises that the 110/25% rule is an established industry standard that does not follow the risk-based approach recommended in other sections of the guide. TWUL accepts that the 110/25% rule does not follow the risk-based approach – this is made plain in the wording of section 4.2.1 itself. However, the suggestion by the Environment Agency that this fact reflects a minimum requirement ignores the plain wording of the guidance itself and the fact that section 4.2.1 merely identifies “the basis for much industry practice”, not a methodology for quantitatively assessing the appropriate level of secondary containment.
51. Secondly, reliance is placed by the Environment Agency on Figure 4.3 on page 56 of CIRIA C736²⁶ to support its interpretation. Figure 4.3 sets out in diagrammatic form a “Process for estimating containment capacity”. Figure 4.3 does not purport to set out how an “assessment” of containment capacity should be conducted; its relevance is limited to an estimation of appropriate secondary containment. This is made clear in the title.

TWUL’s current assessment of BAT requirements for Reading STC

52. Since the approval of the permit application in July 2023, TWUL has been assessing the containment options for the site. TWUL considers that the oversized secondary containment design submitted with the application requires more capacity than is practically needed to achieve BAT.
53. Furthermore, the design could have adverse operational impacts on the site. The present design has potential impacts to access to the site in the event of a tank failure, with the potential for consequent impacts on operation and maintenance of the STC.
54. Consequently, TWUL seeks to amend the wording of IC9 to permit TWUL to submit to the Environment Agency an updated assessment of site-specific secondary containment, prepared in accordance with the correct interpretation of CIRIA C736.

²⁴ TW1/24/901-903

²⁵ TW1/25/904-913

²⁶ TW1/13/727

55. As set out above, on 3 January 2024, TWUL met with the Environment Agency to discuss secondary containment for Reading STC. Although the meeting had been requested back on 7 December 2023, this was the first date available for the Environment Agency. Slides prepared for the meeting²⁷ identified that CIRIA C736 permits a risk-based approach to be taken, the assessment of which had identified opportunities that could determine how to comply with IC9. In particular, the risk-based assessment considered credible failure scenarios and suggested a smaller volume of containment as well as further consideration of local containment and/or with operational intervention.
56. The updated risk assessment did not change the site hazard rating, recording that risk remained at ‘Medium’.
57. TWUL sought the Environment Agency’s initial thoughts on this alternative solution. Whilst the discussion on 3 January 2024 was specifically concerned with Reading STC, the principles applied to how BAT risk assessments should be addressed for all 25 STC sites for which permits are to be applied for and the respective secondary containment solutions.
58. In support of its position, TWUL provided the Environment Agency with an updated assessment of secondary containment at Reading STC, prepared by AtkinsRéalis²⁸.
59. Section 4 reads²⁹:

“4. Discussion point

The EA have stated that they expect relevant guidance (e.g., CIRIA C736) be adhered to for new and existing facilities and have advised that adherence to the more conservative 110%/25% rule is expected rather than a risk-based approach.

BREF states that secondary containment should be able to accommodate the total volume from the largest tank within the containment area, and a risk-based approach should be followed to assess the impacts of containment failure.

Whilst CIRIA C736 discusses the 110%/25% rule it doesn’t recommend this as a blanket approach and suggests a site-specific risk assessment is more appropriate to ensure that secondary containment is efficient and adequate.

²⁷ TW1/2/52-64

²⁸ TW1/28/934

²⁹ TW1/28/926

The CIRLA C736 approach (e.g., 110%/25% rule) may result in costs greater than those if only BREF requirements (largest tank volume) were met. However, it should be noted that CIRLA C736 was developed prior to BREF being released and was based on UK containment experiences and as such does go further than the later recommendations of BREF. The EA have used CIRLA C736 in their interpretation of BREF requirements at a national level for all new permit applications, as they have done historically.

Whilst CIRLA C736 has wide applicability, Section 1.2 of the guidance describes issues that are not covered in this guide. This specifically states that “sewage and sewage effluents, farm waste and related materials” are excluded as “Stored inventory”.

The guidance also notes in Section 1.1.3 that the “costs of upgrading existing facilities might outweigh the environmental benefits, and therefore not be viable, or that other equally effective risk reduction measures to those suggested in this guidance may be implemented”.

As such there is precedence within BREF and CIRLA C736 that suggests site specific risk assessment should be carried out to ascertain the most cost beneficial secondary containment solution, while providing an acceptable level of environmental protection. Neither document state that the solution must provide total environmental protection, rather as low as reasonably practical.”

60. This report correctly identified that CIRIA C736 does not recommend the 110%/25% rule as a blanket approach, instead advocating a “risk-based approach”.
61. The site-specific risk assessment identified that the ‘rule of thumb’ consideration of 25% of total tank volume was not a credible solution and worst case would be 100% loss of the largest tank. A secondary containment system of 110% of the largest single tank, in line with BREF, was the most appropriate for the site.
62. The relevant part of the conclusion of the AtkinsRéalis report³⁰ reads:

“The review demonstrates that a risk-based approach at Reading would still need secondary containment but smaller than current permit requirements and further consideration of local containment and/or with operational intervention.

The current permit application process has been issued based on a single feasible solution, which is based on the worst case failure scenario. A cost benefit analysis of alternative options, which might provide the same degree of environmental protection but at a lower cost has not been accepted at this time as they were not submitted with the initial permit application. This is contrary to the WINEP methodology, and the risk-based approach recommended in CIRLA C736.

Analysis of the site using the ‘110%/25%’ Rule has demonstrated that an engineering solution can be provided but it is not cost effective and potentially provides more storage than the site

³⁰ TW1/28/929

requires. As such, using the CIRLA recommended approach shows that the site is medium risk and could provide the required environmental protection by only containing the largest tank volume.”

The ‘alternative approach’

63. In the event that a finding is made that the proper application of BAT requires a minimum of either 110% of the largest single tank or 25% of the total capacity of all tanks within a bunded area, whichever is the greater, it is still incumbent on the Environment Agency to properly consider TWUL’s site-specific risk assessment in order to determine the appropriate level of site containment for the Reading STC.
64. The Environment Agency’s blanket refusal to consider any site containment system less than 25% is unreasonable. ‘Equivalent’ environmental protection is required to be assessed against risks posed, not by reference to a numerical value for containment capacity. IC9 should be amended to permit such a risk-based approach to be taken.
65. A rigid and restrictive refusal by the Environment Agency to consider options not put forward as part of the permit application is unreasonable. Practical impacts continue to be identified following the submission of the permit application. Potential improvements continue to be identified following the submission of the permit application. IC9 is currently worded in such a way as to preclude consideration of appropriate alternative proposals.

Deadlines for IC9

66. IC9 currently sets a deadline of 6 months from the date of permit issue for submission of a written ‘secondary containment implementation plan’. That deadline expired on 24 January 2024.
67. IC9 also requires implementation of all required and approved containment improvements by 31 December 2024.
68. Both deadlines of 24 January 2024 and 31 December 2024 are unreasonable. TWUL seeks a revised deadline of 6 September 2024 for the provision of a written ‘secondary containment implementation plan’ and 31 March 2026 by which to complete all required and approved containment improvements. This latter deadline will allow for the following:

- 3 months for contractor procurement in advance of AMP8;
 - 3 months for the contractor to complete details (including DSEAR³¹ assessment, HAZOP³² assessment, final spill modelling and Biodiversity Net Gain mitigation, together with design details of ramps, culvert, walls, pump station and impermeable surfaces;
 - 9 months for on site construction. Site activities will include mobilisation, groundworks, road ramps, culvert, wall construction, remedial work to impermeable surfaces, drainage return pumping station, drainage system modifications, testing and commissioning, demobilisation and handover.
69. Containment solutions need to be assessed by the Environment Agency and TWUL must undertake detailed design work to be submitted to the Environment Agency. Agreement on the appropriate risk assessment approach for secondary containment will determine the containment requirement. A detailed design for secondary containment is required to be approved by the Environment Agency before implementation can be commenced.
70. The Environment Agency has already extended all deadlines for IED improvements for sites until 31 March 2025³³, recognising the need for additional time for planning and implementing necessary improvements.
71. Any deadline imposed on TWUL must be considered in context. In order to effect site infrastructure improvements, individual STCs will have to curtail operations on site to allow for construction works to take place. Reading STC is one of 25 STCs within the overall TWUL system. Sludge from all 354 STWs is processed at these sites. To undertake work at Reading STC will require some AAD³⁴ capacity to be taken off-line, resulting in sludge being diverted to other STCs. Undertaking work at multiple sites simultaneously will reduce the amount of capacity available to process sludge, to the point that there will be insufficient installed capacity. Thereafter untreated sludge will need to be sent to alternative outlets such as landfill or land restoration. TWUL require sufficient time to allow process outage to be managed.

³¹ Dangerous Substances and Explosives Atmospheres Regulations 2002

³² Hazard and Operability Study

³³ TW1/33/935-937

³⁴ Advanced Anaerobic Digestion

72. Improvements at all STCs are closely linked to the activities on the adjacent STW. The delivery of improvement condition works needs to consider the impact on the operation and potential upgrade works at the STWs.
73. Funding for all IED improvement conditions across all 25 STCs has been sought within the AMP8 business plan proposals submitted to Ofwat (£529.5m of which £492.7m of capex investment). This funding, if approved, will not be available until, at least, April 2025. Award of construction contracts will not be possible prior to this date, however development of design and procurement activities will commence ahead of this date.
74. The Construction Design and Management Regulations 2015 requires designers and contractors are provided with sufficient time and resources to develop their proposals.

The application for an environmental permit at Reading STC

The form of the permit application

75. A BAT assessment for Reading STC completed on 6 January 2022 recorded in respect of BAT conclusion 19d³⁵:

“Item d) is not complied with for the primary digester tanks or digested sludge cake silos. While these tanks are equipped with level alarms and the digesters are monitored for foaming, tanks are not routinely equipped with secondary containment. Isolation valves and pump inhibitors are installed at appropriate points to allow for tanks and vessels to be isolated. The sludge building provides a level of containment to the holding tanks located within this building. The whole site is bunded with pumps that return site drainage to the sewage treatment works within the same location, so this could capture spillages.”

76. It is not in issue that improvements are required at Reading STC to existing secondary containment in order for the operator to be able to demonstrate that it is operating to BAT.
77. The form of the application for Reading STC was heavily influenced by Environment Agency observations made in respect of other permit applications, in particular the permit application for Camberley STC. As previously identified, Reading STC is one of twenty-five sludge treatment centres that require containment proposals. Through responses from the Environment Agency to multiple iterations of the Camberley containment risk assessment,

³⁵ TW1/35/961

TWUL were guided by the Environment Agency to move away from the recommended CIRIA C736 site-specific risk assessment to the Environment Agency's interpretation of the CIRIA C736 guidance of the 110% and 25% rule.

78. On 24 June 2022, TWUL received a 'Notice of request for more information' from Tommy Wager of the Environment Agency³⁶, pursuant to paragraph 4 of Part 1 of Schedule 5 of EPR 2016, in respect of the Camberley IED Permit application. Section 3 was entitled 'Secondary Containment'. 'Question' 17 of the document reads:

"17. Submit a revised spill model in the Camberley IED assessment report to assess the impact from a catastrophic tank failure. Your revised model must assess the impact of spill volumes using 110% of the largest tank or 25% of all tanks within a bunded area (whichever is greater) as opposed to a 'credible' spill volume."

79. The position adopted by the Environment Agency was categoric and gave no implication of any room for further discussion as part of the permitting process.
80. The original secondary containment assessment for Reading was dated 18 May 2022 and followed the CIRIA C736 site-specific risk approach³⁷. As a result of the information provided by the Environment Agency in respect of Camberley, this assessment was not provided to the Environment Agency. Instead, a document entitled 'Reading STC – Containment Options Report' dated 30 June 2022³⁸ was submitted to the Environment Agency as part of the permit application. Based on the use of an ADBA risk assessment, Reading STC was identified as presenting a 'Medium (Class 2)' risk. The Containment Options Report applied a 25% rule³⁹ in the assessment made at the site.
81. The Containment Options Report was updated in May 2023⁴⁰, following comments received from the Environment Agency. As before, the report applied a 25% rule. Both reports were submitted despite that fact that TWUL did not agree with this non-site-specific approach or the subsequent oversized containment volume that arises.

³⁶ TW1/36/971-981

³⁷ TW1/37/982

³⁸ TW1/38/1002-1035

³⁹ Section 3.3.2, TW1/38/1015-1016

⁴⁰ TW1/40/1036-1068

The use of Improvement Conditions

82. Where the Environment Agency was not able to fully assess TWUL's proposals to meet BAT conclusion requirements, but had received commitments to implement BAT, the Environment Agency has chosen to set time sensitive improvement conditions alongside backstop bespoke permit conditions.
83. No issue is taken with this approach in principle. TWUL is a responsible operator and is committed to ensuring that BAT or equivalent is applied throughout operations. Given the change in approach that had been taken by the Environment Agency to regulation and the fact that this was an existing site requiring improvements, the use of improvement conditions reflected these factual circumstances.
84. The Environment Agency have described its approach as "in essence a permitted local enforcement position". Irrespective of the term applied to describe the approach adopted, the use of improvement conditions is a practical means of allowing an operator sufficient time to make improvements to existing facilities. The factual circumstances surrounding the upgrading of infrastructure at STCs such as Reading are entirely different to the approach that might be taken to a new facility.
85. The Environment Agency recognise this fact⁴¹:

"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."

And later⁴²:

"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."

86. The fact that the Environment Agency has chosen to use improvement conditions as a means of securing improvements at existing sites does not, as a matter of principle, fetter the legitimate discretion of the operator to determine how BAT is to be achieved, nor does it limit the options available to the operator to proposals advanced during the permitting

⁴¹ TW1/15/873

⁴² TW1/15/878

application process. Complaints made by the Environment Agency about the fact that it has chosen to regulate through the use of improvement conditions are consequently irrelevant. In any event, IC9 expressly requires an “updated BAT assessment”. An updated assessment would be entirely redundant, if it did not provide an opportunity for TWUL to reconsider proposed secondary containment against BAT.

The length of time that TWUL has had to implement site improvements

87. The precise application of IED requirements has been the subject of significant uncertainty, with relevant regulatory guidance only published in September 2022.

The IED timeline

88. Following a review of the Integrated Pollution Prevention and Control (“IPPC”) Directive by the European Commission, a suite of Directives were combined under the umbrella of a new Directive on Industrial Emissions (“IED”), Directive 2010/75/EU, which came into force on 6 January 2011.
89. The requirements of the IED were transposed into domestic legislation by way of amendments to the Environmental Permitting (England and Wales) Regulations 2010 (“EPR 2010”), coming into force on 27 February 2013.
90. Prior to this point, sewage treatment sites operated by sewerage undertakers treating indigenous sewage sludges separated from the main urban wastewater treatment stream at the site along with the importation of similar wastes were regulated under the Urban Waste Water Treatment Directive (“UWWTD”) and EPR 2010/2016 as exempt waste management activities, although some works (for example biogas utilisation) were covered by the Environmental Permitting regime.
91. Initially, the Regulator took the view that anaerobic digestion plants would be excluded from the requirements of the IED. In March 2012, Defra published a ‘Consultation on the transposition of the IED in England and Wales’. Section A6 read⁴³:

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

⁴³ TW1/43/1099-1100

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 Directive. 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’ and ‘residual sludge, whether treated or untreated, from urban waste water treatment plants’ 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.”

92. A review by the Environment Agency was subsequently undertaken to determine the applicability of the IED to sewage treatment works undertaking the biological treatment of sewage sludge. The Environment Agency set out an interim position that deferred the need for water companies to apply for permits.
93. On 2 April 2019, the Environment Agency informed a Strategic Steering Group meeting⁴⁴ that it had determined that the IED applied to the biological treatment of sewage sludge and that it would be discussing the timetable and process for permit applications through the Water UK waste and recycling network. A sludge strategy was to be finalised by the end of 2019.
94. In July 2019 the Environment Agency wrote to water companies to confirm that the Environment Agency had decided to implement IED for biological treatments of sewage sludge. In order to agree the timetable implementation and to initiate the permitting process, the details of sites carrying out biological treatment of sludge was requested from TWUL. This letter did not purport to provide any form of guidance on the permitting process⁴⁵.
95. The Environment Agency’s CAR form issued on 8 January 2024 states⁴⁶:

“We provided advice to the industry regarding secondary containment including at a workshop held by Water UK in February 2020, written advice in March 2021 and a presentation in July 2021 delivered to Water UK.”

⁴⁴ TW1/44/1116-1117

⁴⁵ TW1/45/1118

⁴⁶ TW1/5/77

96. Specific care needs to be taken concerning generalised statements about “advice”. Although the Environment Agency did give a presentation to the water industry in February 2020⁴⁷ which refers to the 110%/25% rule, that reference is only in the context of outdated guidance and not in respect of CIRIA C736.
97. The pre-application advice later provided in March 2021⁴⁸ makes no reference to secondary containment.
98. A presentation to Water UK was provided in July 2021⁴⁹. This presentation expressly refers to CIRIA C736. It draws specific attention to section 4.3.3, which concerns accounting for rainfall, and provides a case study based on 110% storage. At no stage is it suggested as part of the presentation that CIRIA C736 purports to lay down minimum arbitrary requirements for secondary containment.
99. On 3 May 2022 the Environment Agency published ‘Water and sewerage company IED permits: Update April 2022’⁵⁰, in which the Environment Agency expressly identified that it considered that, in respect of secondary containment, the approach taken by the ADBA risk assessment tool and in CIRIA C736 represented the industry standard for containment, but made no mention of any minimum requirements to achieve BAT. The update stated:
- “The term ‘credible scenarios’ used in containment assessments must be defined in detail and be supported by evidence from structural engineers.”*
100. Between 10 July 2020 and 21 August 2020, the Environment Agency consulted on draft technical guidance on ‘Appropriate measures for biowaste treatment’. The Environment Agency’s response to the consultation was published on 27 July 2021. This response document includes the following passages⁵¹:

“There is overlap between BAT for waste installations and necessary measures for waste operations. The Environment Agency uses the term ‘appropriate measures’ to cover both sets of requirements.”

...

⁴⁷ TW1/47/1119-1144

⁴⁸ TW1/48/1145-1152

⁴⁹ TW1/49/1153-1174

⁵⁰ TW1/50/1175-1178

⁵¹ TW1/51/1179-1236

“Some respondents felt that operators should be given time to implement changes to secondary containment requirements. There was a clear perception that existing sites would be required to retrofit secondary containment to CIRLA 736 standards. We have made it clear that the requirement to ensure secondary containment to CIRLA 736 standards applies to new sites. Existing facilities such as water industry sludge digesters are unlikely to be designed and built to a CIRLA 736 specification. In such cases we expect operators to evaluate primary and secondary containment to ensure it is fit for purpose and use alternative means to achieve an equivalent standard. All sites must be assessed by a chartered engineer.”

101. The consultation response document makes it clear that operators are entitled to “evaluate” secondary containment to ensure it is fit for purpose.
102. On 17 May 2022 a workshop was arranged for water companies, with a presentation provided by SLR Consulting on CIRIA C736⁵². At no point did that presentation suggest that CIRIA C736 prescribed a minimum arbitrary requirement relating to the greater of the 110%/25% rule. Containment for multiple tanks was to be based on a “credible failure scenario”.
103. On 21 September 2022, the Environment Agency published ‘Appropriate Measures for the Biological Treatment of Waste’. This is the first publication relevant to BAT published after the date that the Environment Agency concluded that the IED applied to anaerobic waste plants. There are several aspects of the ‘Appropriate Measures’ guidance that are both more cautious and more prescriptive than before, with tighter or more specific controls.
104. It is self-evident that the Environment Agency was still in the process of evaluating and determining what steps should be taken by operators as late as 2022. It is unrealistic to suggest that the regulatory position was settled when the principal relevant guidance was subject to consultation and finalisation over a two-year period.
105. The ‘Appropriate Measures’ guidance recognises the need for site-specific risk assessment⁵³:

“Existing sites

16. Operators of existing sites must use a chartered engineer to carry out a detailed assessment of primary and secondary containment where it has not previously been validated to industry recognised standards.

17. You must assess containment structures against CIRIA 736. This is a risk-based assessment. Where you have not used CIRIA 736, the assessment must be

⁵² TW1/52/1237-1265

⁵³ TW1/53/1270

an equivalent approved standard. Where improvements are identified, you must propose an improvement programme or process monitoring to make sure there are no uncontrolled process releases.”

(emphasis added)

106. Section 5.5, entitled ‘Preventing accidental emissions’, does not refer to the 110%/25% rule at all, and provides no guidance on minimum mandatory requirements for secondary containment. Section 7.1(9), which refers specifically to mandatory requirements for secondary containment, makes no reference to the 110%/25% rule.

107. On 29 June 2023, TWUL wrote to Georgina Collins, Director of Regulated Industry at the Environment Agency⁵⁴, in the following terms:

“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).

...

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 that 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.

...

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.”

108. In an email dated 11 August 2023, the Environment Agency identified that it considered that BAT required secondary containment that the Environment Agency would expect to

⁵⁴ TW1/54/1273-1275

include impermeable surfacing and application of the 110% or 25% rule. This email followed on from a meeting that TWUL had requested in respect of another linked site, Maple Lodge, in which CIRIA C736 and risk assessments based on credible scenarios were expressly raised. The Environment Agency stated that in its view, “*Any deviation to this would be classed as an ‘alternative approach’ to BAT relevant in cases which qualify for derogation from BAT ...*”. As has already been set out, this view taken by the Environment Agency is wrong.

The 2019 Price Review (“PR19”)

109. Infrastructure improvements in order to achieve BAT compliance will carry with them significant financial outlay on the part of all water companies. The scope of this financial commitment has only become clearer since the publication by the Environment Agency of its guidance in September 2022 on ‘Appropriate Measures’ and as applications for environmental permits have been designed and submitted. As set out above, it was estimated in June 2023 that the cost of implementing IED aligned with the ‘Appropriate Measures’ guidance will be in the region of £480 million for TWUL alone. This figure has now been revised to a range of £500 million to £600 million.
110. PR19 set the funding for the 5 year asset management plan (“AMP”) period of 2020/21 to 2024/25. This is known as AMP7. The Environment Agency’s position that IED must be delivered in AMP7 (2020-2025).
111. PR19 plans were submitted to Ofwat in September 2018. At this point in 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.
112. Companies received formal notice on 18 July 2019, informing them that they would need to submit IED permit applications, some five months after Ofwat’s initial assessment of business plans. TWUL were unable to properly scope and apply for funding to Ofwat to meet the total cost of IED requirements in the PR19 Price Review.
113. Funding for IED improvements at Reading STC has not been allocated in the PR19 Business Plan. An enhancement cost claim by TWUL was rejected by Ofwat. Funding

cannot realistically be allocated by TWUL in the remainder of the AMP7 period without having a material impact on other committed schemes.

114. Due to uncertainty in both scope and cost prior to agreeing permits for the implementation of IED, Ofwat is currently considering whether on an exceptional basis to provide funding and/or an uncertainty mechanism to allow companies to recover some implementation costs as part of PR24. As part of that consideration, Ofwat has asked for details of all sites where IED applies, with a breakdown of cost incurred to date and forecast cost to achieve full compliance.

Conclusion on IED implementation

115. It is a gross over-simplification to expressly state or imply that the precise requirements of upgrading existing facilities to BAT would have been able to properly understood at the moment that the Environment Agency stated, in July 2019, that water companies would be subject to IED requirements for the biological treatment of sewage sludge.
116. Relevant guidance was consulted on in 2020 but not published until September 2022. Even then, precise requirements can only be properly understood at the point of a permit application when specific consideration is given to the precise means by which BAT should be evaluated and achieved.

Failures in the general regulatory approach adopted by the Environment Agency

117. As identified above, the Environment Agency is under a duty to have particular regard to the duties imposed on water companies by virtue of Parts II – IV of the Water Industry Act 1991.
118. Section 94 of the Water Industry Act 1991 reads⁵⁵:

“94 General duty to provide sewerage system

(1) It shall be the duty of every sewerage undertaker –

(a) to provide, improve and extend such a system of public sewers (whether inside its area or elsewhere) and so to cleanse and maintain those sewers and any lateral drains which belong

⁵⁵ TW1/55/1566-1567

to or vest in the undertaker as to ensure that that area is and continues to be effectually drained; and

(b) to make provision for the emptying of those sewers and such further provision (whether inside its area or elsewhere) as is necessary from time to time for effectually dealing, by means of sewage disposal works or otherwise, with the contents of those sewers.”

119. The Environment Agency has yet to set out or explain how it has taken the following factors into particular consideration. The observations below reflect general failures in the regulatory approach taken by the Environment Agency to IED and its impact on water companies.

Prospective operational impacts

120. Wastewater and sludge are produced continuously in a 24/7 operation. TWUL’s duties as a sewerage undertaker require TWUL to safely treat wastewater and remove and treat its residuals, in order to effectively deal with the contents of those sewers. Residual sludge is treated through anaerobic digestion in order to satisfy biosolids to land requirements, such as those imposed by the Sludge Use in Agriculture Regulations 1989.
121. Obligations imposed on TWUL as a consequence of the IED have significant operational impacts, particularly given that 25 sites across TWUL’s network are required to upgrade existing infrastructure in order to be able to meet IED requirements. If, for example, all such sites were required to upgrade simultaneously, this would significantly impact on TWUL’s operational capacity to meet its duty under section 94.
122. However, there is no indication that the operational impacts as a result of the change in approach to regulation or the single deadline for all TWUL STC sites have in any way been factored into the decision-making of the Environment Agency. Cost implications carry a similar risk, as do impacts on wider site compliance.

Cost-benefit analysis

123. The Environment Agency stated, by email on 11 August 2023⁵⁶:

“We would also highlight at this point that cost would not be a factor for an alternative approach as BAT is considered to be affordable across the industry sector as a whole for both newly built plant and a “typical” existing plant. A cost benefit analysis is only relevant in

⁵⁶ TW1/56/1931-1933

cases which qualify for a derogation from BAT and the derogation process only applies to associated emission levels (AELs) which are not applicable to containment as the relevant BAT technique requires that, “in order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques.” Any deviation from identified BAT would require evidence to demonstrate either that:

- *Any alternative technique would provide at least the same level of environmental protection that is equivalent to the BAT.*
- *There are specific and demonstrable reasons why BAT should not apply in this case.*
- *There are specific and demonstrable reasons why a lower standard of environmental protection should be permitted.”*

124. TWUL’s case that a site-specific risk assessment is a prerequisite to achieving BAT, not a derogation from BAT, has already been set out fully.
125. In addition, the Environment Agency’s approach represents a fundamental misunderstanding of BAT. As set out above, ‘available techniques’ are expressly defined in the IED as those that are developed “*under economically and technically viable conditions, taking into consideration the costs and advantages*”. A cost benefit analysis is consequently fundamental to any assessment of what constitutes BAT.
126. CIRIA C736 itself recognises this fact, see for example sections 1.3.3, 1.5.3 and figure 2.8. For example, section 1.3.3 states⁵⁷:

“1.3.3 Existing sites

The guide provides owners and operators of existing sites with ways of identifying and mitigating any pollution risk inherent in their installations and how the adequacy of any newly acquired site may be assessed. Any gaps between the recommendations presented here (or other specific codes etc agreed between regulators and industry) and the situation at a specific site should be dealt with in a manner that satisfies the relevant legal requirements (including risk and cost-benefit factors in deciding whether to upgrade).

The application of this guidance to existing facilities should be based on risk, and any upgrades completed to reduce risk sufficiently to satisfy the law and to be in accordance with guidance under the relevant legislative regime. Upgrades may be subject to as low as reasonably practicable (ALARP) and/or best available techniques (BAT) ‘tests’ and supporting cost-benefit analyses (CBA) depending on the legislative regime (COMAH, EPR etc). It is, however, recognised that the costs of upgrading existing facilities might outweigh the environmental benefits, and therefore not be viable, or that other equally effective risk reduction measures to those suggested in this guidance may be implemented. Guidance on how to make such decisions

⁵⁷ TW1/5/674

is available for differing legislative regimes and can also be clarified by discussion with the regulators.”

127. For TWUL, costs have to be justified both to Ofwat and to customers. The letter to Georgina Collins dated 29 June 2023 highlighted the significant costs implications imposed on TWUL, following clarification of ‘Appropriate Measures’ published in September 2022. These costs implications do not form part of TWUL’s funding in AMP7. If the capacity of a containment system is too large, resources that might have been invested in other ways may be wasted.

Existing installations

128. References to the requirements that are placed on “new” sites are, in the particular circumstances of IED’s application to STCs, irrelevant. Site-specific concerns are critically relevant to the viability of proposed site improvements. Furthermore, duties imposed on TWUL require an operationally effective sewerage network, which is at risk of negative impacts where numerous existing facilities are required to improve infrastructure requirements simultaneously.

Funding

129. Funding for IED infrastructure improvements in AMP8 is yet to be agreed. The blanket application of a single deadline across all 25 TWUL sites will have a significant impact on TWUL’s available resources, with potential consequential impacts on operations.

IC13

130. The deadline of 24 January 2024 has provided insufficient time for TWUL to submit a written report of the review of the abatement plant:
- i) Parts required for rehabilitation works to fix the Odour Control Units came with long lead times to procure. There was then limited availability of framework suppliers to fit the necessary parts.
 - ii) Outstanding queries arose following advice from specialist contractors on the process monitoring requirements of the Odour Control Units and on the monitoring requirement of the standby carbon Odour Control Unit at Reading STC, which is only in use less than once in every 10 years.

- iii) As a consequence, it is necessary to redo the odour monitoring of the Odour Control Unit, with a resulting delay in the impact assessment and finalisation of the full report required by IC13.

131. A revised deadline of 30 April 2024 is sought, taking into account the following update on timings:

- Week commencing 5 February 2024 - TWUL's Capital Maintenance Programme (CMP) Contractor activity had to change out an Analogue input (AI) card for a new one due to low signals on some of its channels. The AI card provides continuous communication from field devices to the Programmable Logic Controller (PLC).
- Between 12th and 16th February 2024 - ERG (a supplier of air pollution control systems), replaced the gas inlet dampers for both the scrubber and carbon filters. The inlet isolation dampers are used to isolate / divert the gases through the scrubber or carbon filter. The Odour Control Unit (OCU) is designed to run as a wet scrubber with a stand-by carbon filter.
- Between 19th and 24th February 2024 - ERG was to commission the OCU, but this was delayed due to an unresponsive pH controller which needed replacement. Commissioning was completed on 11th March 2024.
- Between 11th and 13th March the OCU was "bedding in" – it takes a couple of days post-commissioning for the OCU to stabilise.
- Week commencing 11th March 2024 – TWUL's CMP ran internal checks to confirm the OCU is running correctly and ERG revisited site and adjust dosing.
- Week commencing 18th March 2024 - Olfasense, a specialist in odour consultancy and laboratory services - attend site to carry out sampling required as per IC13.
- Week commencing 1st April 2024 - Olfasense undertook modelling required as per IC13.
- Week commencing 11th April 2024 - Olfasense to write up report for IC13 and then go through internal TWUL checks and for updating any required improvements for the OCU – the report from Olfasense for IC13 is expected to be received by TWUL by 30 April 2024.