

From: [Steve Spencer](#)
To: [Humphreys, Clive](#); [Overton, Michael](#); [Berman, Lucy](#); [Tom Boichot \(Guest\)](#); [Molyneux, Steve](#); [Hatch, Richard](#); [Eugenia Vela \(Guest\)](#); [Shaw, Cameron](#); [Gavin Yuill \(Guest\)](#); [Collins, Georgina](#); [Debenham, Jory](#); [O'Donovan, Christopher](#); [Amzour, Amira](#); [Cope, James](#)
Cc: [Jonathan1 Read](#); [Angela Barugh](#); [Jonathan Hagan](#); [Tim Griffiths \(Guest\)](#)
Subject: RE: IED/Defra Call Slides
Date: 05 February 2024 08:23:53
Attachments: [image001.gif](#)
[image002.gif](#)
[image003.gif](#)
[image004.gif](#)
[image005.gif](#)
[image006.png](#)

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Clive, to follow up and close down the remaining actions regarding IED, I wanted to take the opportunity to provide feedback on your guidance which I've now been able to discuss with our permitting and engineering teams.

- In terms of facilitating a programme to complete the required tank covering we will consider all options (eg liming, exporting sludge) when considering a “best endeavours” plan and will seek to prioritise those assets that are at higher risk of emitting methane in AMP8 and in particular anaerobic digesters.
- One aspect I do need to challenge is the assumption that all tanks can accommodate a roof and if that isn't the case, then this is due to the condition of the tank and not as a result of the IED requirements. We have engaged structural engineers who have challenged this assumption and are very clear in their advice that the retro-fitting of any roof needs to be undertaken on a case by case basis to ensure compliance with numerous legal instruments such as CDM, DSEAR etc, as well as ensuring the long term stability of the tank. Key points they have raised include:
 - Retrofitting of a roof could increase uplift, which some tanks would not withstand
 - Some tank materials are designed assuming any headspace is open to the atmosphere - once enclosed this changes the environment and potentially the specification of the tank.
 - Hydrostatic pressures and the revised weight of the tank need to be re-considered.
 - And finally any modifications could render the assets uninsurable unless the necessary design/legal standards are met.

We have therefore developed a strategy that takes into account this advice and we will not be assuming that all tanks can accommodate a roof. We have considered each tank on an individual basis alongside our structural engineers. Our initial assessments concluded that 47 of 115 tanks would need to be replaced, even if a floating roof is the right technical solution. Hence we are confident that in some cases, the replacement of tanks is needed to accommodate a tank cover. This is a direct result of the IED requirements and will form part of our proposed revised PR24 submission and associated Enhancement Case.

- In terms of secondary containment, we recognise the 25%/110% standard outlined in CIRIA C736 and any evidence regarding a credible scenario will reflect this standard. My apologies, if we gave the impression that we were looking to offer protection at odds to

this standard. For example, we fully recognise that the failure of an individual tank or its inadvertent draining is a credible scenario and hence the 110% element is a minimum credible requirement. However, failure of 25% of all tanks at a single time for every site, we believe is less credible. We recognise a potential cause for large scale failure is explosion, but in some cases we will demonstrate that explosion in one tank may not necessarily impact 25% of all tanks. Many tanks will be storing inflammable material and failure modes of others, where explosion risk does exist, depends on the material of construction, location, design of safety systems and the tank's mode of failure. We will provide evidence as part of the permitting process to demonstrate whether we would propose 25% or 110%, whilst demonstrating compliance with CIRIA C736.

- We are updating our waste acceptance procedures and we await feedback with regards return liquor monitoring, but the ongoing work with the local teams this is allowing us to start refining these costs – whilst we await the final output of the Task & Finish Group.

Finally, you referenced Reading and Didcot so for completeness, I can confirm:

- Reading STC – we challenged the improvement condition date for the secondary containment to provide time to finalise the credible scenario, engage with designers and construct the necessary containment. As you'll be aware that we have now appealed the proposed improvements conditions issued as part of this permit.
- Didcot STC – I can confirm that there is a project to capture the gas at Didcot as part of our PR24 submission and provide a Gas to Grid solution. In the meantime we are in discussions with gas distributors to understand whether there are any interim arrangements available.

I believe we now are at a point where we are clear what is expected of us and understand the standards to which we much adhere. We are refining our IED investment plans accordingly. Our final actions are to:

- Confirm our “best endeavours” plan for AMP8 with a focus on high priority assets.
- Provide detailed evidence as to the credible failure scenario in line with CIRIA C736 standard. We will provide the evidence as part of the permitting process for each site.
- Finalise our return liquor monitoring requirements based on the feedback from the Task & Finish Group.

Thank you for the ongoing engagement and helping to clarify several points. Although we may not yet have full agreement we understand the EA's position and what we need to provide in terms of evidence to support our proposition at each site as part of the permitting process.

Regards

Steve Spencer

PR24 Wholesale Programme Director

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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.

From: Steve Spencer

Sent: Thursday, January 18, 2024 10:13 AM

To: Humphreys, Clive <clive.humphreys@environment-agency.gov.uk>; Overton, Michael <Michael.Overton@defra.gov.uk>; Berman, Lucy <Lucy.Berman@defra.gov.uk>; Tom Boichot (Guest) <Tom.Boichot@ofwat.gov.uk>; Molyneux, Steve <steven.molyneux@environment-agency.gov.uk>; Hatch, Richard <richard.hatch@environment-agency.gov.uk>; Eugenia Vela (Guest) <Eugenia.Vela@ofwat.gov.uk>; Shaw, Cameron <Cameron.Shaw@defra.gov.uk>; Gavin Yuill <Gavin.Yuill@ofwat.gov.uk>; Collins, Georgina <Georgina.Collins@environment-agency.gov.uk>; Debenham, Jory <Jory.Debenham@defra.gov.uk>; O'Donovan, Christopher <Christopher.O'Donovan@defra.gov.uk>; Amzour, Amira <Amira.Amzour@defra.gov.uk>; Cope, James <james.cope@environment-agency.gov.uk>

Cc: Jonathan1 Read <Jonathan1.Read@thameswater.co.uk>; Angela Barugh <angela.barugh@thameswater.co.uk>; Jonathan Hagan <Jonathan.Hagan@thameswater.co.uk>; Tim Griffiths <tim.griffiths@ofwat.gov.uk>

Subject: RE: IED/Defra Call Slides

Clive, thank you for your comprehensive response.

I have passed to our permitting and engineering teams - we will review and come back with areas of further clarification and where you have requested specific feedback.

This should then allow us to ensure we have a final position regarding IED for the wash up session on 25th January.

In terms of Reading and Didcot, we have also received similar questions from the local EA team and will provide detailed responses. I will provide a summary for this group.

Regards

Steve Spencer

PR24 Wholesale Programme Director

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Clearwater Court, Vastern Road, Reading, RG1 8DB

From: Humphreys, Clive <clive.humphreys@environment-agency.gov.uk>

Sent: 17 January 2024 19:20

To: Steve Spencer <steve.spencer@thameswater.co.uk>; Overton, Michael <Michael.Overton@defra.gov.uk>; Berman, Lucy <Lucy.Berman@defra.gov.uk>; Tom Boichot (Guest) <Tom.Boichot@ofwat.gov.uk>; Molyneux, Steve <steven.molyneux@environment-agency.gov.uk>; Hatch, Richard <richard.hatch@environment-agency.gov.uk>; Eugenia Vela (Guest) <Eugenia.Vela@ofwat.gov.uk>; Shaw, Cameron <Cameron.Shaw@defra.gov.uk>; Gavin Yuill <Gavin.Yuill@ofwat.gov.uk>; Collins, Georgina <Georgina.Collins@environment-agency.gov.uk>; Debenham, Jory <Jory.Debenham@defra.gov.uk>; O'Donovan, Christopher <Christopher.O'Donovan@defra.gov.uk>; Amzour, Amira <Amira.Amzour@defra.gov.uk>; Cope, James <james.cope@environment-agency.gov.uk>

Cc: Jonathan1 Read <Jonathan1.Read@thameswater.co.uk>; Angela Barugh <angela.barugh@thameswater.co.uk>; Jonathan Hagan <Jonathan.Hagan@thameswater.co.uk>; Tim Griffiths <tim.griffiths@ofwat.gov.uk>

Subject: RE: IED/Defra Call Slides

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Hi Steve

Yes earlier this week I received feedback from colleagues and lawyers on credible scenarios as appears in CIRIA 736 – attached for information.

I was also tasked with commenting on the slides you presented at our earlier meeting and I've focused on slide 3 – see attached.

Thanks for the update I've made some notes in red below. You should also be receiving feedback from the Water UK IED Task and Finish Group which met earlier today where we worked through the remaining elements of the 46 technical queries received in September.

I have been speaking to Area colleagues about the ongoing discussion regarding extensions to improvement condition deadlines in the Reading permit. We should be able to agree an extension to the liquor sampling and analysis ICs as we've identified some technical challenges that need to be bottomed out. I'm visiting the ALS lab in Coventry next Tuesday to talk to the company. I'm less convinced by the case for an extension to the secondary containment IC and support the Area's decision to reject the proposal for deploying temporary defences in the event of a loss of containment.

I'm also concerned to learn that over 50% of the biogas produced at Didcot is being flared off rather than being used to generate power. Not only is this a waste of a valuable energy source it is not possible to issue a permit for the site unless an acceptable solution is proposed. Please can you update me on your plans for Didcot.

Regards

Clive Humphreys

Senior Advisor, Environment and Business

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Working days: Monday to Friday



From: Steve Spencer <steve.spencer@thameswater.co.uk>**Sent:** Tuesday, January 16, 2024 2:03 PM**To:** Humphreys, Clive <clive.humphreys@environment-agency.gov.uk>; Overton, Michael <Michael.Overton@defra.gov.uk>; Berman, Lucy <Lucy.Berman@defra.gov.uk>; Tom Boichot (Guest) <Tom.Boichot@ofwat.gov.uk>; Molyneux, Steve <steven.molyneux@environment-agency.gov.uk>; Hatch, Richard <richard.hatch@environment-agency.gov.uk>; Eugenia Vela (Guest) <Eugenia.Vela@ofwat.gov.uk>; Shaw, Cameron <Cameron.Shaw@defra.gov.uk>; Gavin Yuill <Gavin.Yuill@ofwat.gov.uk>; Collins, Georgina <Georgina.Collins@environment-agency.gov.uk>; Debenham, Jory <Jory.Debenham@defra.gov.uk>; O'Donovan, Christopher <Christopher.O'Donovan@defra.gov.uk>; Amzour, Amira <Amira.Amzour@defra.gov.uk>; Cope, James <james.cope@environment-agency.gov.uk>**Cc:** Jonathan1 Read <Jonathan1.Read@thameswater.co.uk>; Angela Barugh <angela.barugh@thameswater.co.uk>; Jonathan Hagan <Jonathan.Hagan@thameswater.co.uk>; Tim Griffiths (Guest) <tim.griffiths@ofwat.gov.uk>**Subject:** RE: IED/Defra Call Slides

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Clive, I was wondering whether you had any feedback on the query I raised regarding secondary containment.

As an update following the workshop we have been able to progress the following key actions, (and by way of an update for all), is allowing us to reshape our IED programme.

- Tank Covering – we are developing an integrated, delivery plan aligning with the need to maintain throughput across our 25 Sludge Treatment Centres and our digester refurbishment programme. This will allow us to share a “deliverable/best endeavours” investment programme. Our aim is to share this with you, so that we can agree appropriate timescales for improvement conditions. **For clarity... the ICs will all have a 31 March 2025 deadline, and best endeavours will be considered after that date should the conditions not be complied with. Best endeavours will be your principal mitigation if deadlines are not met. It will be for Area operational teams to decide whether and what enforcement action is appropriate.**

- Cake Barns – we have recognised that this investment will no longer be needed in AMP8 and will be revisited in AMP9 as appropriate. **Thank you**
- Waste acceptance and return liquor monitoring – your guidance and subsequent input from the local EA team, is allowing us to significantly reduce our sampling programme, and we are finalising our approach which we will share with the local EA team as part of the ongoing permit application process. **Please note that we are working on a national solution which recognises the technical limitations of analysing particularly dirty samples such as AD return liquors. I'm meeting Area colleagues tomorrow to update them on progress.**

The final element is the secondary containment. Currently we are drafting an option to follow CIRA C736 which recommends a risk based approach, but would welcome confirmation this indeed is acceptable to the EA. Also, I can confirm we have received confirmation from the local EA team that containment does not necessarily need to be via concrete structures, and alternative can be considered. **Please see comment above about temporary defences.**

Our aim is to confirm as much of the above at the “wrap up” session planned for 25th January.

If you have points of clarification or queries please don't hesitate to drop me a line.

Regards

Steve Spencer

PR24 Wholesale Programme Director

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From: Humphreys, Clive <clive.humphreys@environment-agency.gov.uk>

Sent: 14 December 2023 19:16

To: Steve Spencer <steve.spencer@thameswater.co.uk>; Overton, Michael <Michael.Overton@defra.gov.uk>; Berman, Lucy <Lucy.Berman@defra.gov.uk>; Tom Boichot (Guest) <Tom.Boichot@ofwat.gov.uk>; Molyneux, Steve <steven.molyneux@environment-agency.gov.uk>; Hatch, Richard <richard.hatch@environment-agency.gov.uk>; Eugenia Vela (Guest) <Eugenia.Vela@ofwat.gov.uk>; Shaw, Cameron <Cameron.Shaw@defra.gov.uk>; Gavin Yuill <Gavin.Yuill@ofwat.gov.uk>; Collins, Georgina <Georgina.Collins@environment-agency.gov.uk>; Debenham, Jory <Jory.Debenham@defra.gov.uk>; O'Donovan, Christopher <Christopher.O'Donovan@defra.gov.uk>; Amzour, Amira <Amira.Amzour@defra.gov.uk>; Cope, James <james.cope@environment-agency.gov.uk>

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Subject: RE: IED/Defra Call Slides

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Thanks Steve I'll look into the references you've provided and get back to you as soon as I'm able.

Regards

Clive

Clive Humphreys

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From: Steve Spencer <steve.spencer@thameswater.co.uk>

Sent: Thursday, December 14, 2023 5:31 PM

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Cc: Jonathan1 Read <Jonathan1.Read@thameswater.co.uk>; Angela Barugh <angela.barugh@thameswater.co.uk>; Jonathan Hagan <Jonathan.Hagan@thameswater.co.uk>; Tim Griffiths (Guest) <tim.griffiths@ofwat.gov.uk>

Subject: RE: IED/Defra Call Slides

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Clive, many thanks for the clarification and feedback, which is extremely useful and will allow us to review our costs accordingly. I will discuss with our permitting and technical teams and if we

have any follow up queries I will drop you a note.

We also promised to provide some information on the back of the workshop regarding secondary containment and clarity regarding the CIRIA C736 guidance – Containment systems for the prevention of pollution.

The document is over 17MB, so difficult to email. I have therefore extracted below the elements where we understood that undertaking a risk assessment and determining a credible failure scenario was an option when sizing the requirements for secondary containment. Primarily linked to the recommendations in “Section 4 – containment system capacity”.

Page 38 Under Section 4.2.1 – The “110 per cent” and “25 per cent rules”, the guidance suggests that *“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”*.

We interpreted this to suggest that the previous 110/25 percent rule was not recommended, but was recognised as an historically accepted practice.

Page 43, Section 4.3 Method for Assessing Containment Capacity then refers to a recommended approach which references *“...the containment should be capable of retaining:*

- *The total volume of inventory that could be released during a credible incident*
- *The maximum rainfall that would be likely to accumulate within the containment before, during and and/or after an incident.....”*

“In determining containment requirements, the volume of substance should be based on the loss from a credible scenario.....”

Hopefully, this provides context as to the further point of clarification I raised at the end of the meeting. In some cases the consideration of a “credible scenario” could reduce the scale of secondary containment and align more to a risk based approach. Given the CIRIA736 guidance document – we therefore wanted to explore whether the approach outlined in Section 4.3 was one that the EA would consider or whether we have previously misunderstood your references to the 110/25 percent rule.

Many thanks for your offer to look into this matter and provide clarification.

Regards

Steve Spencer

PR24 Wholesale Programme Director

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From: Humphreys, Clive <clive.humphreys@environment-agency.gov.uk>

Sent: 14 December 2023 16:29

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Cc: Steve Spencer <steve.spencer@thameswater.co.uk>; Jonathan1 Read <Jonathan1.Read@thameswater.co.uk>; Angela Barugh <angela.barugh@thameswater.co.uk>; Jonathan Hagan <Jonathan.Hagan@thameswater.co.uk>; Tim Griffiths <tim.griffiths@ofwat.gov.uk>

Subject: RE: IED/Defra Call Slides

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Dear Steve

I'm writing in relation to the action taken by the EA at our meeting yesterday.

EA: *By COP 14 Dec To confirm waste acceptance position to Thames in writing. Copy in Defra and Ofwat.*

Waste Acceptance

Assumptions	Evidence
<ul style="list-style-type: none">- Instructed to develop a proposal for a waste acceptance procedure that meets the requirements of Appropriate Measures- Characterisation of wastes imported- requirement to testing at MCERTS or UKAS accredited labs- Visually inspect every load (to visually inspect, some sort of sample needs to be taken to visualise it)- Every import to be sampled and analysed to confirm pre-acceptance checks- Procedure to be the same for inter-site as for third party imports	<p>11) Final Opportunity Letter for Camberley from T Wager received 12th Oct 2022 to visually inspect every load, MCERT or UKAS accredited labs, inter[1]site to be subject to the same level of compliance as third-party wastes</p> <p>12) Final Opportunity Letter for Camberley from T Wager received 31/05/2023 – meet the requirements of 'Appropriate Measures'. Key areas include but not limited to non-conformance/rejection, sampling, and visual assessment</p>

Our response

Despite being given multiple opportunities you failed to provide information to demonstrate compliance with BAT 2. The sludge can be expected to be of reasonably consistent quality, and where this is the case we would normally expect the producer to characterise the waste and rely on this evidence for multiple loads. You claimed to have a cradle to grave knowledge of the inter-works sludges but could only provide analysis results dating back to 2000 and 2009. The Pre-acceptance and Acceptance Procedures available to us at the time (version 2) and your responses to questions were incomplete or otherwise inadequate. Despite requests we received no amended procedures in respect of operations at Camberley. Tommy's letters presented you with the default requirements which were considered necessary if you failed to present us with proposals for less onerous alternatives and supported this with evidence.

Comments in the 2 referenced letters have now been superseded by the requirements in the permit which was issued in early November. This references in *Table S1.2 'Operating Techniques'* an updated Pre-acceptance and Acceptance Procedure (version 3) originally received for your Reading sludge treatment facility. For clarity, this new procedure does not propose the sampling and analysis of each load. Instead and as recommended it commits you to conducting a sludge characterisation exercise, the results of which will form the basis for acceptance of inter-works sludges at Camberley. This exercise will need to be repeated periodically or when there is a significant change in operations likely to alter the nature of the sludge.

The cost of this periodic characterisation of sludge will be substantially less than the cost of sampling and analysing every load. You should therefore recalculate your costs against the permit requirements and apply this across each of your sludge sites.

Regards

Clive

Clive Humphreys

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From: Overton, Michael <Michael.Overton@defra.gov.uk>
Sent: Wednesday, December 13, 2023 10:05 AM
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Cc: Steve Spencer <steve.spencer@thameswater.co.uk>; Jonathan1 Read <Jonathan1.Read@thameswater.co.uk>; Angela Barugh <angela.barugh@thameswater.co.uk>; Jonathan Hagan <Jonathan.Hagan@thameswater.co.uk>; Tim Griffiths (Guest) <tim.griffiths@ofwat.gov.uk>
Subject: FW: IED/Defra Call Slides
Importance: High

Please find the slides shared by Thames attached.

From: Steve Spencer <steve.spencer@thameswater.co.uk>
Sent: 13 December 2023 09:56
To: Overton, Michael <Michael.Overton@defra.gov.uk>
Cc: Shaw, Cameron <Cameron.Shaw@defra.gov.uk>
Subject: RE: IED/Defra Call
Importance: High

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Michael, here are some introductory slides – if you can circulate to all attendees that would be great.

Our proposal is to talk through the assumptions on slide 3 – as it is our understanding of these assumptions that is driving the scope and costs.

During the session we have slides that will answer many of the questions you posed in your email – and we have site by site detail if required. (And will share a deep dive on Rye Meads).

PS Attendees at our end on the call – we are all in a single room at our Reading Offices.

- Myself
- Jonathan Hagan – PR24 Strategy & Planning Manager
- Angela Barugh – Head of Asset Strategy
- Andrew Hardman - Bioresources Strategy Manager
- Nicola Telcik – IED Programme Manager

Regards

Steve Spencer

PR24 Wholesale Programme Director

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From: Overton, Michael <Michael.Overton@defra.gov.uk>

Sent: 12 December 2023 15:34

To: Steve Spencer <steve.spencer@thameswater.co.uk>

Cc: Shaw, Cameron <Cameron.Shaw@defra.gov.uk>

Subject: RE: IED/Defra Call

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That's great – I look forward to seeing the materials you are pulling together. I will distribute these to those on the call if you can get them to me ASAP.

Kind Regards,

Michael

From: Steve Spencer <steve.spencer@thameswater.co.uk>

Sent: 12 December 2023 15:18

To: Overton, Michael <Michael.Overton@defra.gov.uk>

Cc: Shaw, Cameron <Cameron.Shaw@defra.gov.uk>; Amzour, Amira <Amira.Amzour@defra.gov.uk>; Berman, Lucy <Lucy.Berman@defra.gov.uk>

Subject: RE: IED/Defra Call

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Michael, thank you for the positive feedback. We also felt it was a successful meeting - between all parties, we identified actions that could make a material difference to the chemicals programme.

We will be taking a similar approach to IED. We will be laying out the assumptions in our plan at a high level, and the rationale for those assumptions. To help ensure we can clear up any misunderstandings we will also identify the correspondence with the EA, that has led us to our conclusions.

We will then discuss options which could significantly reduce the investment requirements – subject to EA review and ensuring we have understood the BAT conclusions correctly.

We also have all the details available site by site, including a deep dive into Rye Meads.

We are aiming to try and get some information pulled together and distributed as soon as possible.

Regards

Steve Spencer

PR24 Wholesale Programme Director

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From: Overton, Michael <Michael.Overton@defra.gov.uk>

Sent: 12 December 2023 14:58

To: Steve Spencer <steve.spencer@thameswater.co.uk>

Cc: Shaw, Cameron <Cameron.Shaw@defra.gov.uk>; Amzour, Amira <Amira.Amzour@defra.gov.uk>; Berman, Lucy <Lucy.Berman@defra.gov.uk>

Subject: IED/Defra Call

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Hi Steve,

You should have received an updated question sheet for tomorrow. The Chemicals call was successful today in large part because Thames identified flexibilities and any barriers ahead of time. Would you and your colleagues be able to replicate this format for IED tomorrow?

Michael

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