UUWR_13

PR24 Draft Determination: UUW Representation

Area of representation: Bioresources

August 2024

This document outlines our representation in response to Ofwat's draft determination related to the bioresources price control.

Reference to draft determination documents: "United Utilities Quality and ambition assessment appendix", page 8-9,
"Expenditure allowances, section 3.4.2 Other bioresources enhancement", page 88-89,
"Expenditure allowances, section 4.7.7", pages 189-190,
"PR24-DD-WW-IED-enhancement.xlsx",
"Price control deliverables appendix, Page 185, Section 13.5 Industrial Emissions Directive PCDs",
"PCDWW30, presented in PCD model, PR24CA114 Wastewater Bioresources PCDs, tab "IED UUW"

United Utilities

Water for the North West

Executive Summary

- **Our AMP8 plan represents our largest ever investment in the Bioresources price control:** Our low regrets plan allows us to manage a period of unprecedented change and uncertainty in the bioresources sector, whilst keeping a close watch on the future to enable transformation of our service over the longer-term to deliver better outcomes for customers and the environment.
- **We are broadly supportive of Ofwat's proposed changes to cost sharing mechanisms for Bioresources:** We support Ofwat's proposal to reinstate cost sharing given the on-going uncertainty facing Bioresources. However, we need further assurances on how cost sharing will be executed, given (for example) its position on the RCV "guarantee" for Bioresources. Moreover, the cost sharing mechanism should only be used to manage risks where there is uncertainty over the need - Ofwat should make a reasonable *ex ante* allowance where there is clear evidence of need (but the precise costs are uncertain).
- **There are significant shortcomings in the proposed scope of the notified item to manage landbank risk:** It is clear to us that the WINEP process does not adequately reflect the wider environmental needs that we and the industry must plan for, including the potential long-term consequences of Farming Rules for Water on the agricultural sector, and how that will lead to a deficit in available landbank for the sector. There is an urgent need to continue cross-organisation discussions to resolve the issues, and unless resolved, companies face an unmanageable level of risk in AMP8.
- **We welcome the funding for Industrial Emissions Directive (IED) compliance proposed through Ofwat's draft determination:** It is essential that companies have sufficient funding to meet their statutory obligations. However, Ofwat's benchmarking of IED costs is inappropriate resulting in an inappropriate funding allocation and we propose amendments to the cost models to improve the cost assessment performance and more accurately reflect IED compliance costs. Furthermore, we believe that in the proposed form, Price Control Deliverable (PCD) PCDWW30 is unworkable and would, in reality, prevent any company from recovering enhancement costs for delivery of IED compliance.
- **Ofwat has made an incorrect decision to reject making allowances for several of our enhancement cases:** Delivery of compliance with Environmental Permitting Regulations (EPR) is a WINEP action and a statutory obligation and we should have sufficient resources to deliver the required action. In addition, delivery of preparatory works for alternative outlets is essential to inform an efficient, planned and coordinated transition away from recycling to agriculture and provide a better outcome for customers – allowances should be made to avoid reducing flexibility, and closing off multiple strategic pathways on our LTDS.

In our October business plan, we proposed to invest £979 million in AMP8 to respond to a period of unprecedented change in the bioresources sector. Our AMP8 plan represents the largest ever investment in the Bioresources price control and is the first step in our long-term transformation journey. The plan comprised:

a. Delivery of high certainty and low-regret requirements with a clear scope and cost.

b. Management of an unprecedented level of uncertainty via an uncertainty mechanism (notified item) that would trigger an interim determination (IDoK) if risks materialise mid-AMP.

Through our submission we highlighted that because of recent regulatory changes, the regulation of sludge as a waste under the Waste Framework Directive will materially impact how we plan for future price reviews. The new regulatory framework is leading to:

- Uncertainty over new regulatory requirements;
- New regulatory requirements arising without primary legislative change; and
- An irregular timetable for further updates to regulatory requirements.

Through the draft determination Ofwat has recognised that substantial investment is required to transform the bioresource asset base, and has made enhancement expenditure allowances to deliver IED compliance and our statutory obligations under the WINEP sewage sludge drivers (with the exception of compliance with the EPR). Furthermore, Ofwat has recognised that our base expenditure is upper quartile. Ofwat has provided a strong efficiency challenge to allowed expenditure for both IED and WINEP.

Uncertainty mechanisms

Ofwat has recognised that uncertainty and risk remain in the Bioresources price control, and through the draft determination, has made several proposals that seek to manage the uncertainty:

- 50:50 cost sharing for the bioresources control
- Enhanced cost sharing rates of 25:25 for IED enhancement expenditure
- A landbank notified item (UUW's proposed Bioresources notified item, covering both landbank and waste permitting risks was rejected).

This document contains all our key representations on Ofwat's draft determination of the Bioresources price control. These seek to address material implications of the draft determination that, unless resolved, will significantly undermine our ability to deliver a compliant, reliable and resilient service in AMP8.

We are broadly supportive of Ofwat's proposed changes to cost sharing mechanisms for Bioresources. However, it is important that for the proposed cost sharing to be legitimate, Ofwat should explain how that cost sharing will be executed, given (for example) its position on the RCV "guarantee" for Bioresources. In other areas of cost sharing, the value of any reconciliation adjustment is shared between an RCV adjustment and a revenue adjustment. Assuming Ofwat proposes a similar approach to Bioresources, this raises the question of the status of the RCV guarantee, to ensure that any reconciliation values assigned to the Bioresources RCV are actually recoverable in future. We recognise that other options are available (such as putting 100 per cent of any reconciliation adjustments to revenue in the next AMP), but what is most important is that Ofwat is clear how the cost sharing mechanism will work, and whether that should change the status of the Bioresources RCV.

We welcome that Ofwat has recognised landbank risk in the draft determinations and proposed a notified item. However, we disagree with the scope of the proposed notified item. The scope needs to reflect the wider potential consequences of Farming Rules for Water. It is clear to us that the WINEP process does not adequately reflect the environmental needs that we and the industry must plan for, including the long term impacts of Farming Rules for Water on the agricultural sector (and how that will lead to a deficit in available landbank for the sector), and there has been no provision in draft determinations to reflect the additional cost of biosolids management under market conditions that reflect the full extent of farmers meeting all the requirements of Farming Rules for Water.

The landbank notified item should not be restricted only to legal changes; it is the potential future deficit in available landbank itself that is the trigger to require investment, not the specific route (legislative or otherwise) by which that occurs. There are many legitimate, potential causes of a reduction in the landbank available or an increase in the landbank required, and many of these may not be judged by Ofwat to be a legal change as set out in the draft determination. The notified item needs to include for the impact of any, and all, such events should they occur individually or in aggregation.

A significant change in the landbank available or an increase in the landbank required from the baseline allowed for at final determination should be assessed through landbank modelling and be the trigger. A significant loss of landbank will likely be a national issue, which will require a coordinated approach to developing assumptions for investment requirements (and any assumed residual landbank use) for each company. Ofwat should assess options and share the outputs in final determinations on how this might be delivered in AMP8, and beyond.

We propose that the materiality and triviality conditions should be assessed at the level of the relevant price control rather than Appointee turnover, that being the Bioresources Price Control.

Following draft determination, we have held detailed cross-organisation discussions with Ofwat, the Environment Agency and Defra to seek to find a resolution to these issues. The issues are yet to be resolved and we consider

that there is an urgent need for discussions to continue ahead of final determination in order to find a reasonable outcome. Unless we have the appropriate mechanisms in place to fund our current and future statutory obligations, and gain sufficient certainty to be able to invest with confidence, it will be difficult to implement the best value long-term strategy for our bioresources business. The scale of the investment required, if it materialises as a cost shock, could lead to an inability to respond to changes in regulation in sufficient time.

- Further details about our representation on the proposed landbank item are provided in **Section 1, Managing agricultural landbank uncertainty**. We provide additional representation on wider waste permitting uncertainties in **Section 4, Bioresources Waste Permitting Uncertainties**. We are seeking to broaden the scope of the enhanced cost sharing (25:25) for IED compliance to include equivalent risks at non-IED sites.

Cost assessment and price control deliverables

Ofwat's approach to IED expenditure allowances and supported by enhanced cost sharing (25:25) is broadly welcomed. We disagree with some aspects of the cost assessments and have proposed alternative approaches. Our revised cost models informed our cost revisions and we have proposed further 'stretch' efficiencies. Ofwat's deep dive assessment is a pragmatic way of dealing with sites with the largest scope (and therefore costs) and we provide additional evidence of the requirements for tank covering at two of our largest sites.

While we agree that a PCD for IED is required, the draft determination design is unworkable and overly punitive. The delivery profile must be aligned to the economic regulatory framework (what customers are paying for) rather than the environmental regulatory framework (compliance deadlines). The PCD should be constrained to the elements of works being specifically funded through PR24 IED allowances and it is incorrect to only conditionally allow enhancement upon demonstration of "best endeavours". Otherwise the PCD is unworkable and inconsistent with Ofwat's design principles of a PCD.

- Further details about our representation on Ofwat's proposed cost allowances for IED compliance are provided in **Section 2, IED compliance at anaerobic digestion sites (costs)**.
- Further details about our representation on Ofwat's proposed PCD mechanism for IED compliance are provided in **Section 3, IED compliance at anaerobic digestion sites (PCD)**.

Enhancement cases

We make several representations specific to enhancement cases that are included in the WINEP and outside the WINEP where we disagree with the outcome of Ofwat's assessments.

We accept the proposed efficiency challenge on enhancement costs for WINEP actions to deliver dewatering at MBC and enhanced biosolids quality surveillance. We are disappointed that enhanced sludge screening has not been included as an approved enhancement case. We still consider that deployment of fine screening would have multiple benefits including minimising microplastics and other non-degradable physical contaminants in biosolids recycled to land, and it is a programme area with strong customer support.

Our bioresources enhancement representations are as follows:

- We set out a representation on allowed costs for WINEP storage in **Section 5, Sewage sludge drivers (storage)**. The cost assessment methodology fails to adequately account for the different levels of scope and storage density across company proposals, resulting in an inappropriate allocation of funding to all companies. We have undertaken additional external cost benchmarking on our updated scope, which has reduced our proposed cost to £60 million. This is not our preferred solution as it will be less efficient in whole-life cost terms, should full odour control be required in future.
- We set out a representation on the rejection of WINEP compliance with EPR in **Section 6, Sewage sludge drivers (EPR).** Ofwat has made an incorrect decision as delivery of this WINEP action is a statutory obligation and Ofwat has stated in the PR24 Final Methodology that "companies should deliver the agreed WINEP drivers". Ofwat's decision not to resource a WINEP action is contrary to its published requirements and without sufficient resources we will not be able to deliver the required action, adversely impacting environmental performance.

- We set out a representation on the rejection of Preparatory Works for Alternative Outlets in **Section 7, Preparatory works for alternative outlets**. Delivery of preparatory works for alternative outlets is essential to inform an efficient, planned and coordinated transition away from recycling to agriculture and provide a better outcome for customers and allowances should be made to avoid reducing flexibility, and closing off multiple strategic pathways on our LTDS. The decision fails to consider that the proposed enhancement would in-fact support Ofwat to make good quality decisions over the solutions to meet requirements, if the landbank notified item is triggered in AMP8.

Lastly, in **Section 8, Biomethane**, we present a representation on the proposed Performance Commitment for operational greenhouse gas emissions. The structure of Ofwat's proposed performance commitment creates a disincentive to invest in biomethane production and export: We believe this is at odds with government policy and will act to materially limit the potential impact any wastewater company can have on supporting delivery of UK net zero targets as a result of the regulatory impact of the performance commitment and disincentivisation of investment in biomethane facilities.

Contents

1. Managing agricultural landbank uncertainty

1.1 Key points

- **We face the risk of a significant deficit in available agricultural outlet for recycling biosolids:** This could arise from many causes, and the consequence would be the need for substantial additional investment in Bioresources assets and operations across the sector.
- **We welcome that Ofwat has recognised this risk and proposed a notified item - however, we disagree with the scope of Ofwat proposed notified item:** As drafted, the notified item fails to provide an effective uncertainty mechanism and needs updating to address significant shortcomings in the final determination.
- **The landbank notified item needs to reflect the consequence of Farming Rules for Water:** Defra statutory guidance directs the Environment Agency enforcement approach not to prosecute farmers for spreading other organic manures including biosolids. As a result, this has enabled the market for recycling of biosolids to agriculture to continue. The industry is not currently subject to the full market effect of nutrient restrictions that would be expected if the statutory guidance is no longer in place.
- **Reducing landbank availability related to changes in Defra statutory guidance is not addressed through the PR24 WINEP process:** The exclusion of this risk (and others) and the rejection of proposed actions from the WINEP process does not mean that the investment needs were spurious. Rather, it reflects that these investment actions were not eligible under the WINEP driver and assessment criteria established by regulators.
- **The Landbank notified item should not be restricted to legal changes:** There are many potential causes of landbank loss, and many of these would likely not be judged by Ofwat to be a legal change.
- **We expect that an industry wide co-ordinated approach will be required:** A significant loss of landbank will likely be a national issue, which will require a coordinated approach to developing assumptions for investment requirements (and any assumed residual landbank use) for each company.
- **We are grateful that Ofwat is open to further representation before final determinations:** We are open to further company and industry discussions with Ofwat. This is so we can agree an appropriately worded notified item and define an effective process to provide landbank modelling evidence, that addresses the needs of Ofwat and companies to manage this significant uncertainty through an IDoK process.

1.2 UUW's PR24 proposal

Enhancement investment needs in the WINEP and approaches for uncertain needs (notably for the risk of landbank loss, and for changes in permit requirements) were set out in Ofwat's Final Methodology for PR24 Appendix 4: Bioresources Price Control

In "Our Final Methodology for PR24 Appendix 4: Bioresources Price Control", Ofwat sets out the following statements about risks in section 2.2.1 (page 10)

"Our final methodology policies". "The Water Industry National Environment Programme (WINEP) drivers provide an appropriate framework to deliver environmental improvement and address a range of risks. Our methodology provides a framework for companies to propose other approaches to manage future uncertainty."

In section 2.2.4, page 12, Ofwat sets out the following statements about Farming rules for water:

"Farming rules for water. PR24 WINEP sewage sludge driver aims at delivering improvements in the resilience of the sludge management chain. This process provides a framework for addressing risks related to the use or disposal of sewerage sludge over the 2025 to 2030 period.

Companies should deliver the agreed WINEP drivers. We support engagement by companies with the EA and Defra as appropriate so that their business plans reflect a shared view of what needs to be delivered. However, if

companies still consider that more or less expenditure is required in certain circumstances then there may be a case for flexible funding arrangements."

We have set out an ambitious plan that aligns with Ofwat's Final Methodology

We have been engaged through stage 2 of the WINEP process with the EA, and engaged jointly and more widely with EA, Defra and Ofwat and the industry leading up to business plan submission. Despite this, no shared view of what needs to be delivered was established. The WINEP process has not provided an effective framework for addressing risks related to the use or disposal of sewage sludge over the 2025 to 2030 period. As a result, we consider there is a clear case for flexible funding arrangements to be put in place.

In our October business plan, we set out a plan that delivers Ofwat's final methodology policies. Specifically, the plan includes:

- **High certainty requirements that provide a clear scope and cost with low regrets investments.** Our enhancement cases are set out in UUW661: WINEP sludge drivers (Case 22) and additional enhancement cases to mitigate some risks that are not addressed by the WINEP drivers, Improving resilience in biosolids recycling to agriculture (Case 23) and Bioresources preparatory works for alternative outlets (Case 24),
- **The necessity of an uncertainty mechanism (a notified item) as a means of managing the uncertainty in future investment requirements.** We set out the need for an uncertainty mechanism to address landbank risk in section 9.3.3 of Chapter 92. This includes risks arising from removal of, or changes to, Defra's statutory guidance on Farming Rules for Water (FRfW), that is currently enabling the market for biosolids recycling to agriculture and by doing so is insulating the water industry from the full impact of landbank loss due to FRfW. Further details were set out in our supplementary document UUW583 - Bioresources business plan, section 6, pages 53-55, "A Notified item to manage uncertainty in future bioresources requirements". We believe this is the right approach to best protect the interest of customers – better than seeking to recover significant additional amounts up front from customers and then refund them if those investments are not required.

Our business plan contained many references to the landbank risks including several sections in UUW58 Bioresources business plan. We have extracted below only the key points from each section as a summary:

Section 2.4, Reducing landbank availability in AMP8, pages 12-14:

"There are very significant challenges facing the future of biosolids recycling to agricultural land in England. National modelling shows that the impact of the most likely environmental restrictions (as discussed with the EA) is insufficient agricultural land to recycle biosolids."

"Key drivers of reducing landbank are changes in the implementation of Farming Rules for Water regulations, raw sludge growth, nutrient neutrality, and increasing public and stakeholder concerns over emerging contaminants."

Section 2.5, Measures to address reducing landbank availability are excluded from the PR24 WINEP, pages 14-16:

"Reducing landbank availability is not addressed through the PR24 WINEP process."

"The exclusion of the risk and the rejection of proposed actions from the WINEP process does not mean that the investment needs are spurious. Rather, it reflects that these investment actions were not eligible under the WINEP assessment criteria established by regulators. Investment needs to mitigate the landbank risk must be addressed through another route at PR24."

"The lack of certainty is giving rise to significant concerns for PR24 and a repeat of the AMP7 IED situation, whereby the industry experienced a material unfunded cost shock, although the scale this time is greater. The scale of the investment required could lead to an inability to respond to changes in regulation in time."

Section 2.6, Our strategy to manage uncertainty through our business plan submission, pages 17-18:

[1] United Utilities, UUW66R Bioresources enhancement case, 2023, UUW66R Bioresources Enhancement Case (unitedutilities.com)

[2] United Utilities , Chapter 9 Risk, return and responsible behaviour, 2023, 9.3.3 of Chapter 9, Chapter 9: Risk return and responsible behaviour (unitedutilities.com)

[3] United Utilities, UUW58 Bioresources business plan, 2023, UUW58 Bioresources business plan (unitedutilities.com)

"Our AMP8 plan is aligned with our bioresources long-term delivery strategy and prioritises low regrets actions where we have high certainty over the requirements. We have deferred low certainty activities and balanced that risk with a small investment to improve the resilience of the bioresources service."

"To invest in low certainty activities risks making investment that may not be completely required and this could be detrimental for customers. We instead seek the use of an uncertainty mechanism (notified item) if risks materialise mid-AMP. If our proposal for an uncertainty mechanism is rejected, we will need to include additional costs in our AMP8 plan."

Section 2.7, Our recommendations to support the bioresources sector, pages 18-19:

"The scale of change and uncertainty facing the bioresources sector is greater than ever before. Unless we have the appropriate mechanisms in place to fund our current and future statutory obligations and gain sufficient certainty to be able to invest with confidence, we will struggle to implement a proactive and successful long-term strategy for our bioresources business."

"We recommend that Ofwat supports the bioresources sector through this exceptional period through (1) development of an in-AMP uncertainty mechanism, (2) national coordination of landbank as it becomes increasingly scarce, (3) alignment of the economic and environmental regulatory boundaries, (4) review the greenhouse gas performance commitment impact on the bioresources market."

The points extracted below are those most related to the landbank risk from Section 3, Our long-term strategy and ambition, pages 20-27:

***"A transformational investment programme for the future**: Our long-term plan for bioresources identifies the need for £1.8 billion of enhancement expenditure over the next 25 years. We are anticipating a step–change in the bioresources business model, although there is significant uncertainty over the scale and the timing of the change."*

***"Managing significant uncertainty**: The uncertainty over the future availability of landbank for biosolids recycling means an adaptive plan is critical. The scale of change required, if landbank is no longer available, will take multiple AMPs to put in place the solutions to provide guaranteed alternative outlets. We have prioritised low regrets investment where we have high certainty over the requirements. However, if regulators require an immediate (AMP8) move away from recycling biosolids to land (a deviation from our core pathway) this may require immediate costs of up to circa £300 million in AMP8 to divert biosolids away from agriculture, alongside commencing and committing to a further £700 million in AMP9 to deliver a resilient and long-term alternative outlet for biosolids."*

***"Ensuring a resilient sludge treatment and disposal service**: AMP7 has seen multiple shocks to the biosolids market, and we will deliver agreed WINEP investment of £169.965 million in AMP8 to improve the resilience of our biosolids recycling service. The risk of losing the sludge recycling outlet to land is increasing, requiring acceleration of investment aligned with our core pathway."*

***"Protecting the environment through a phased reduction in reliance on the agricultural landbank**: We will improve landbank resilience through a phased transition out of biosolids recycling to agriculture by 2050 to match the growing environmental ambitions of customers and regulators. We seek £10.394 million enhancement investment to undertake preparatory works for uncertain and long-term options for biosolids disposal aligned with our LTDS."*

Section 6, A Notified item to manage uncertainty in future bioresources requirements, pages 53-55:

"Our AMP8 business plan is focussed on low regret interventions, where we have high certainty in the scope and the investment needed to meet new service standards. This approach includes the necessity of a notified item as a means of managing the residual investment risk over uncertain future investment requirements. We believe this is the right approach to best protect the interest of customers.

We are seeking a notified item to manage uncertainty over both:

(1) the immediate costs and future investment requirements arising from a significant change in the supply/demand for available landbank that is currently relied upon as an agricultural outlet for recycling of sewage sludge; and

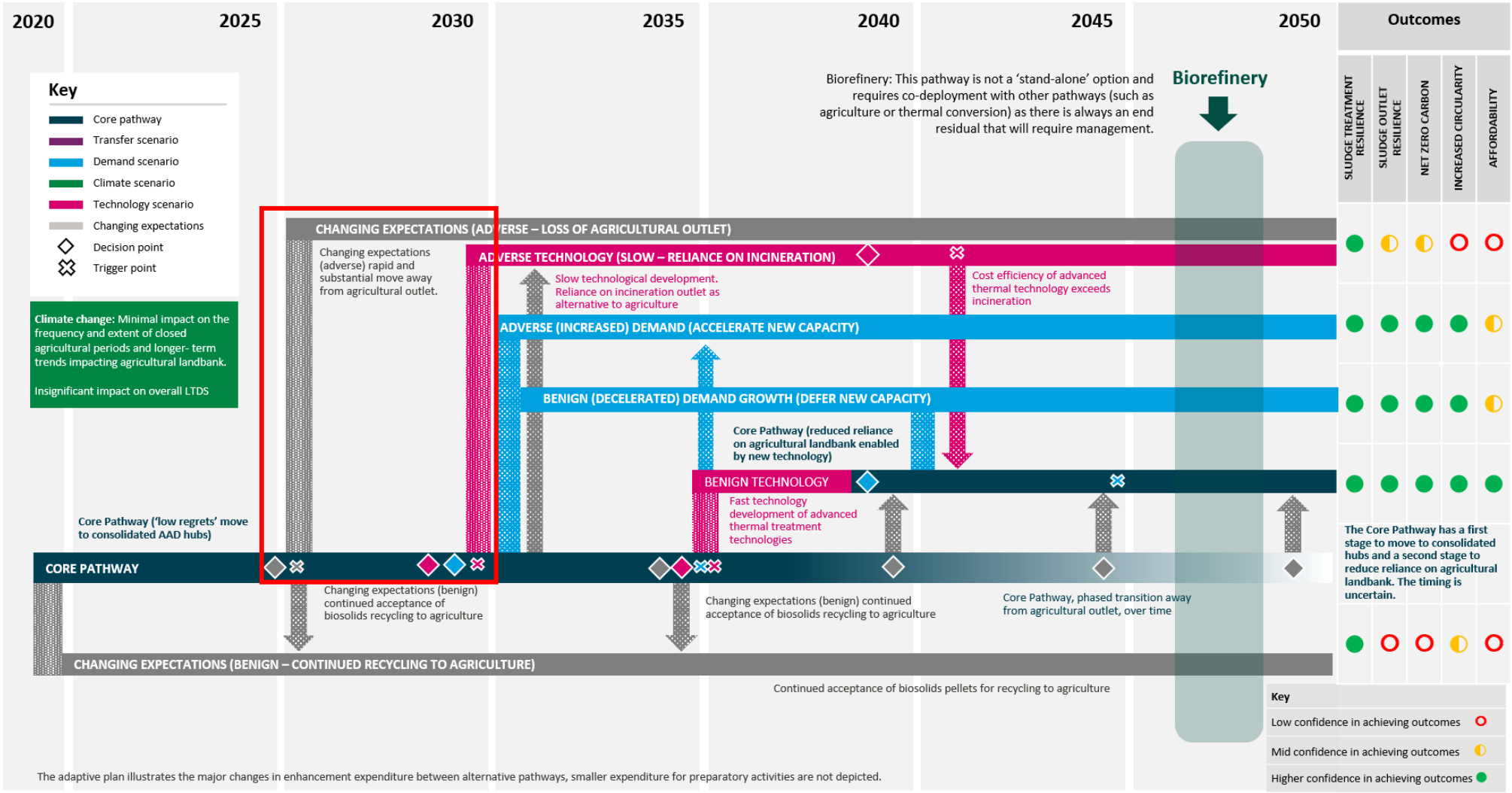
(2) the costs required to meet new improvement conditions arising within permits (or the requirements to meet exemption criteria). This could be either as a variation to an existing permit (or exemption), or from the creation of a new permit."

Our LTDS[4] document UUW12 sets out our long-term delivery strategy for bioresources on pages 75-93.

It provides greater detail on our long-term ambition, core pathway and stress testing scenarios. Figure 1 below is reproduced from UUW12 page 89, shows the bioresources long-term adaptive pathway to 2050. A red highlight box has been added to emphasise the alternative pathway that may be required if there is a confirmed requirement to make a rapid and substantial move away from the agricultural outlet (Changing expectations - adverse). The cost of this pathway is set out in Table LS4g – Adverse expectations.

[4] United Utilities, UUW12 Long term delivery strategy, 2023, page 75-93, https://pr24.unitedutilities.com/pdfs/UUW12_Long_Term_Delivery_Strategy.pdf

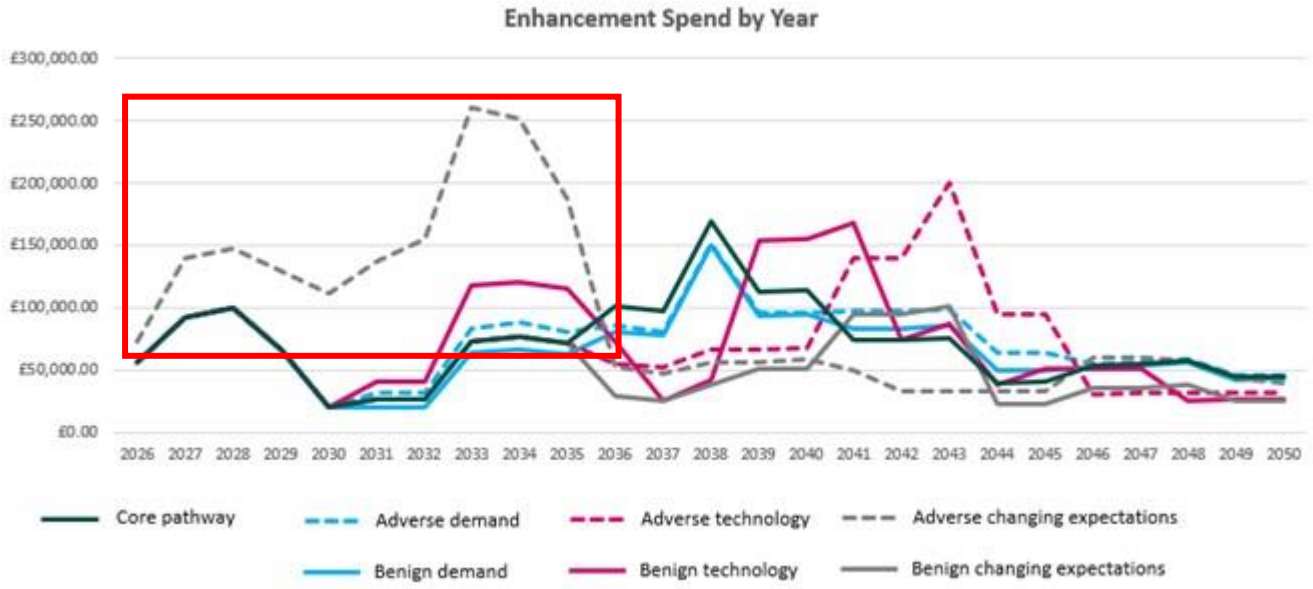
Figure 1: The Bioresources long term adaptive pathway to 2050.



Source: United Utilities Long-Term Delivery Strategy, UUW12, 2023

Figure 2 below is extracted from UUW12, page 90, and shows the enhancement spend by year for each alternative pathway. A red highlight box has been added to emphasise the additional cost of the alternative pathway that may be required if there is a confirmed requirement to make a rapid and substantial move away from the agricultural outlet (Adverse changing expectations).

Figure 2: The enhancement spend by year for each alternative pathway.

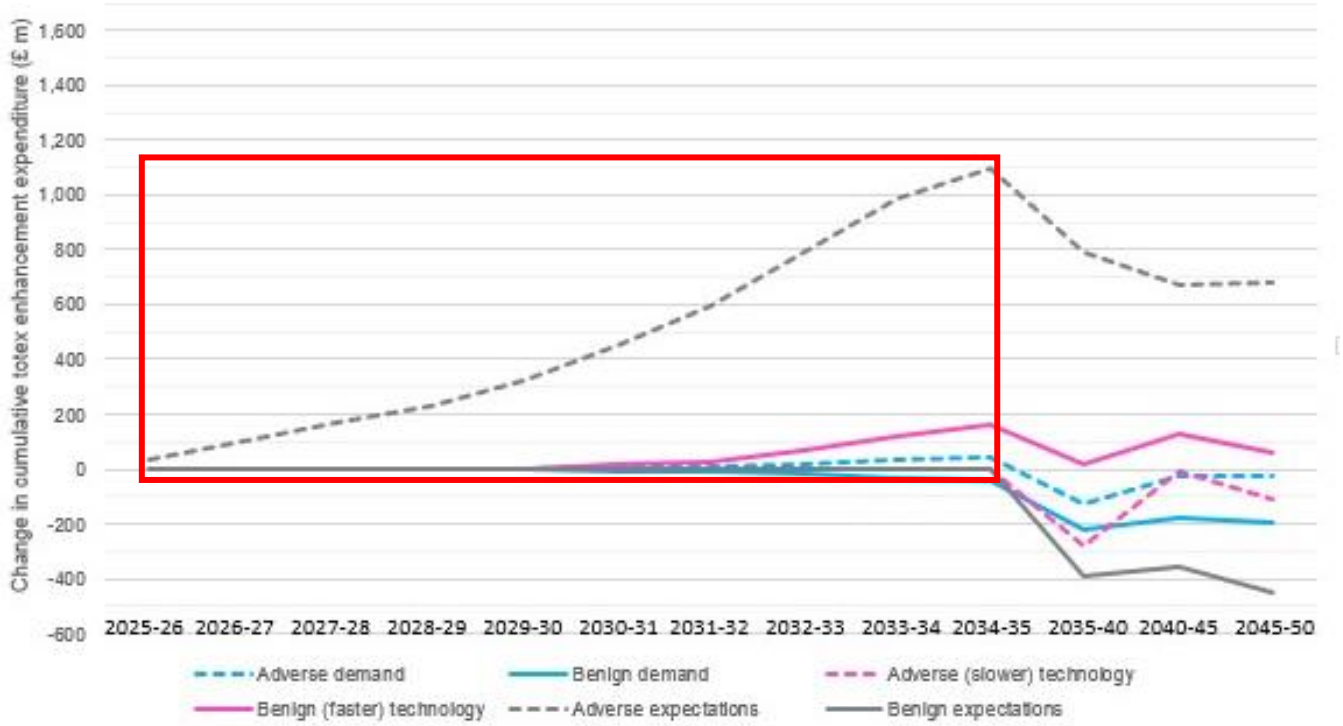


Source: Source: United Utilities Long-Term Delivery Strategy, UUW12, 2023

Figure 3 below is extracted from UUW12, page 90, and shows the additional cumulative variance in expenditure from the core pathway. A red highlight box has been added to emphasise the additional cumulative variance in expenditure from the core pathway that may be required if there is a confirmed requirement to make a rapid and substantial move away from the agricultural outlet (Adverse expectations).

This was our current best estimate at the time of submission and will change as uncertainties are better understood and choices evolve. This shows that the "adverse changing expectations" scenario is significantly more expensive than other pathways and that the greatest variance in investment is in AMP8 and AMP9 as we rapidly transition to alternative outlets.

Figure 3: Cumulative variance in expenditure from core pathway



Source: Source: United Utilities Long-Term Delivery Strategy, UUW12, 2023

The scale of potential uncertain costs is material

We were clear in our October business plan that the landbank risk is uncertain, that it presents a material service and cost threat, and that we have only included low regrets investment in our business plan submission. This is consistent with the requirements that the EA approved in principle through the WINEP process. The exclusion of the risk and the rejection of proposed actions from the WINEP process does not mean that the investment needs are spurious. Rather, it reflects that these investment actions were not eligible under the WINEP driver and assessment criteria established by regulators.

Our core pathway assumes that the use of the agricultural outlet for biosolids is retained during AMP8 (as this is overwhelmingly our preference, as it the best value and most environmentally sustainable approach), as there has not been clear and confirmed requirements to the contrary, or inclusion of solutions to address the scale of such a requirement through the WINEP process.

Scenario testing of our core pathway evaluates the impact that an adverse agricultural outlet scenario would have if it materialised in AMP8. If it does, this may require immediate costs (for UUW alone) of circa £300 million in AMP8 to divert biosolids away from agriculture alongside commencing and committing to a further £700 million of investment in AMP9 to deliver a resilient and long-term alternative outlet for biosolids.

Our position at the time the business plan was submitted, was that it was not acceptable for companies to carry the full risk of a significant deficit in availability of the agricultural outlet (regardless of the cause). This concern is particularly acute for bioresources, given that there was no cost sharing mechanism proposed for the bioresources costs. This left companies exposed to the full cost of the investment required to meet new service standards with no mechanism for recovering the efficient resources to meet these statutory obligations.

In summary, we were very clear in our submission that the requirements for continued access to the agricultural outlet for biosolids recycling was uncertain, not addressed through the WINEP process, and represented a material cost risk that needed to be incorporated as a notified item in the price review process.
We set out our proposal for the notified item in UUW58, Section 6, A notified item to manage uncertainty in future bioresources requirements, pages 53-55. We have extracted the key paragraphs below:

6.1.12 "We believe that the agricultural outlet risk should be recognised as a notified item, as defined under condition B of our instrument of appointment. We consider that it is sufficiently unclear as to whether any future change would qualify as a Relevant Change in Circumstance, given that:

> *the precise route to the loss of landbank is currently unclear, and whether or not the loss would arise directly as a change in legislation to water companies, or indirectly via restrictions placed onto the agricultural sector."*

6.1.13 "What is clear is that it is the loss in available landbank itself that is the trigger to required investment, not the specific route (legislative or otherwise) by which that occurs. Therefore, a notified item is warranted in this case."

6.1.14 "Furthermore, the precise investment needs will depend on the extent of the landbank restrictions and how this is best co-ordinated around the industry to manage it. It is important to recognise that a deficit in available landbank would be an industry–wide issue, not just a regional issue for UUW. Therefore, co-ordination will be required (which we have already raised with Ofwat, to seek its support) to ensure that investment requirements across the sector are efficient. The IDoK process is best placed to give appropriate consideration to the specific investment needs identified."

6.1.15 "We are aware that other companies have also identified the agricultural outlet as a risk and will likely be seeking similar or alternative forms of uncertainty mechanism. What is essential is:

(a) that Ofwat accepts the need for some form of uncertainty mechanism in AMP8 to manage the risk to landbank availability, and

(b) that it is recognised that it is an industry issue, and therefore applies a common and co-ordinated approach."

6.1.17 "The notified item that we are seeking is for:

the immediate costs and future investment requirements arising from a significant change in the supply/demand for available landbank that is currently relied upon as an agricultural outlet for recycling of sewage sludge."

1.3 Draft determination position

Ofwat rejected UUW's proposed Bioresources notified items, covering both landbank and waste permitting risks, as Ofwat stated there were insufficient details explaining how this notified item would be triggered, and how any costs should be calculated.

This was set out in PR24 draft determinations: United Utilities Quality and ambition assessment appendix[5], where on page 8-9 it is stated:

*"**Our assessment:** United Utilities' plan did not meet our minimum expectation but the impact of this on our ability to conduct our price review was not material.*

The company's notified item proposal relating to bioresources has omissions and therefore does not meet our minimum expectations. The company evidenced the materiality and efficiency of risk allocation and customer protection for this proposal but did not include detail explaining how this notified item would be triggered, that is how any costs should be calculated. The business plan did not contain sufficient information for us to assess the relevance of this uncertainty. These omissions have not had a material impact on our ability to carry out a determination as we are able to make our own judgements on bespoke uncertainty mechanism and notified items."

Ofwat proposed uncertainty mechanisms for uncertainty around landbank availability - in PR24 draft determinations: Expenditure allowances[6], section 3.4.2 Other bioresources enhancement, page 88-89 it states:

[5] United Utilities, Quality and ambition assessment appendix, July 2024, page 8-9, PR24 draft determinations: United Utilities - Quality and ambition assessment appendix - Ofwat

[6] Ofwat, PR24 draft determination: Expenditure allowances, July 2024, page 88-89 PR24-draft-determinations-Expenditure-allowances-to-upload.pdf (ofwat.gov.uk)

"We recognise that uncertainty remains around landbank availability, both within the 2025- 2030 period and beyond. We recognise that the loss in available landbank itself might be the trigger for investment subject to Environment Agency's assessment for specific companies' cases.

To support companies in managing this uncertainty we are proposing:

- *50:50 cost sharing for the bioresources control (in addition to 25:25 sharing for IED); and*
- *a notified Item on any increase in costs to bioresources reasonably attributable to any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge over the 2025-26 to 2029-30 period."*

And continues, *"Four alternative sludge treatment projects have been funded through the Innovation Fund. We welcome further Innovation Fund submissions in this area going forward."*

Ofwat set out a proposal for a landbank notified item in PR24 draft determinations: Expenditure allowances[7], section 4.7.7, pages 189-190:

"We are also proposing a notified item in all wastewater companies draft determinations in respect of potential increases to bioresources costs over the 2025-26 to 2029-30 period. This notified item applies to any increase in costs reasonably attributable to any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge. This would allow price controls to be changed in-period through an interim determination if the impact on costs, alone or in combination with other eligible items, met the materiality threshold in licence condition B. We consider that a notified item is appropriate because spreading treated sewage sludge is the main outlet for bioresources operations, the impact of changes could be material and new or changed to legal requirements would not necessarily otherwise qualify for an interim determination because they might not apply directly to companies. In addition, we acknowledge that bioresources activities might be affected by the Environmental Permitting Regulations (EPR) replacing the Sludge (Use in Agriculture) Regulations (SUiAR). These requirements are due to be defined within the Environment Agency's Sludge Strategy and its implementation date is yet to be confirmed.

In the event of an interim determination, no account will be taken of any costs to the extent that they would have been, or would be, avoided by prudent management action. We propose that this notified item does not cover costs in relation to compliance with the existing legal requirements in the Farming Rules for Water (FRfW). It is our understanding that the resilience of the biosolids supply chain to agriculture is included in the PR24 WINEP for the 2025-30 period (intending to address FRfW compliance). We are proposing to introduce cost sharing for bioresources to share the residual cost risk between companies and customers. We are open to further representation from companies on this item before we make our final determinations."

Ofwat sets out additional detail relating to the notified item in "Notification of the PR24 draft determination of price controls for United Utilities" Appendix 1: Notified Items and Land Sales, pages 16-17[8].

"Ofwat proposes to give notice that the following item has not been allowed for when making the final determination of Price Controls:

Costs resulting from changes to the legal requirements in respect of sludge spreading

Any increase in costs in the period from 1 April 2025 that is reasonably attributable to any new or changed legal requirement in relation to the application to agricultural land of fertiliser derived from sludge, whether or not that requirement applies to the Appointee.

Definitions

[7] Ofwat, PR24 draft determination: Expenditure allowances, July 2024, page 189-190, PR24-draft-determinations-Expenditure-allowances-to-upload.pdf (ofwat.gov.uk)

[8] Ofwat, Notification of the PR24 draft determination of price controls for United Utilities Limited, 2024, pages 16-17, Notification-of-the-PR24-draft-determination-of-United-Utilities-Water-Limited.pdf (ofwat.gov.uk)

- *Words and expressions used in this Notified Item have the same meaning as in the Conditions of the Appointments of United Utilities Water Limited as a water and sewerage undertaker for the purposes of Chapter I of Part II of the Water Industry Act 1991, unless the contrary intention appears.*
- *For the purposes of this Notified Item: "legal requirement" means any of the following:*

  (c) any enactment or subordinate legislation;

  (d) any licence, consent or authorisation given or to be given by the Secretary of State, the Welsh Ministers, the Environment Agency, the Natural Resources Body for Wales or other body of competent jurisdiction; and

  (e) any interpretation of law, or finding, contained in any judgement given by a court or tribunal of competent jurisdiction in respect of which the period for making an appeal has expired which requires any legal requirement falling within (a) or (b) above to have effect in a way:

  (i) different to that in which it previously had effect; or

  (ii) different to that in which it was taken to have effect:

  a. for the purpose of making a Relevant Determination; or, as the case may be,

  b. in determining whether a Relevant Determination should be changed;

  c. and "sludge" means sludge produced by sewage disposal works.
- *Additional notes: In the event of an Interim Determination, no account will be taken of any costs to the extent that they would have been, or would be, avoided by prudent management action (and for this purpose what constitutes "prudent management action" shall be assessed by reference to the circumstances which were known or which ought reasonably to have been known to the Appointee at the relevant time)."*

1.4 Issues and implications

This section recognises the positive intent of the proposals made by Ofwat in the draft determination to address the uncertainty over the availability of the agricultural outlet for biosolids recycling. It also raises some key aspects about Ofwat's proposals that we disagree with and makes the case for some adjustments to the scope and wording of the notified item at final determination to improve the effectiveness of the uncertainty mechanism.

The factors affecting the agricultural landbank do not simply result from possible future legal changes - they are highly technical in nature, they are varied, interrelated and complex, meaning geographical modelling is necessary to understand the scale and impact of possible changes nationally and across individual regions. The extent of uncertainty now requires that there is a possibility that at a national level, there is insufficient capacity in the agricultural outlet for some or all biosolids to be recycled. The agricultural outlet is a shared resource used by thousands of farmers/land managers to provide sustainable ecosystem services. It is supported in this by the recovery activities of other organic manure producers e.g. digestate, compost, paper crumble, and the recovery of biosolids to agriculture is recognised as the best practical environmental option in most circumstances. Consistency in understanding the requirements, their impacts, and co-ordination of solutions, will all be important in developing viable and economically efficient plans that work at a national and regional level.

The landbank uncertainty has been recognised and uncertainty mechanisms have been proposed by Ofwat. The uncertainty that we clearly described in our October business plan remains. We face the risk of a significant deficit in available agricultural outlets for recycling biosolids. This could arise from many causes, and the consequence would be the need for substantial additional investment in Bioresources assets and operations for us and across the sector.

We welcome that Ofwat has recognised this risk:

"We recognise that uncertainty remains around landbank availability, both within the 2025-2030 period and beyond."

We welcome that Ofwat has proposed mechanisms to support companies in managing this uncertainty:

- *"50:50 cost sharing for the bioresources control (in addition to 25:25 sharing for IED); and*
- *a Notified Item on any increase in costs to bioresources reasonably attributable to any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge over the 2025-26 to 2029-30 period."*

We welcome Ofwat's proposal to introduce cost sharing for bioresources.
We recognise and welcome that the 50:50 cost sharing mechanism for the bioresources price control will support us in the context of managing the uncertainty around smaller restrictions in the availability of the agricultural outlet for biosolids recycling, leading to small to moderate levels of additional investment in bioresources assets and operations.

However, it is important that in order for the proposed cost sharing to be understood, Ofwat should explain how that cost sharing will be executed, given (for example) its position on the RCV "guarantee" for Bioresources. In other areas of cost sharing, the value of any reconciliation adjustment is shared between an RCV adjustment and a revenue adjustment. Assuming Ofwat proposes a similar approach to Bioresources, this raises the question of how the RCV guarantee applies to Bioresources, to ensure that any reconciliation values assigned to the Bioresources RCV are actually passed onto customers in future. We recognise that other options are available (such as putting 100 per cent of any reconciliation adjustments to revenue in the next AMP), but what is most important is that Ofwat is clear how that cost sharing mechanism will work, and whether this changes the status of the future Bioresources RCV.

Introducing cost sharing alone does not resolve the extent of the uncertainty and risk of material additional cost, to address a significant change in the availability of the agricultural outlet for biosolids.
We would expect the notified item to support us in the context of managing the uncertainty around significant restrictions in the availability of the agricultural outlet for biosolids recycling, leading to significant levels of additional investment in bioresources assets and operations.

We disagree with the scope of Ofwat's proposed notified item and think that the notified item does not provide the appropriate support. As drafted, the notified item does not provide an effective uncertainty mechanism and needs updating in the final determination to address significant shortcomings.

Ofwat criticised our notified item proposal for not *"explaining how this notified item would be triggered, that is how any costs should be calculated"*. We believe that the cost thresholds for IDoKs are clearly set out in condition B of our instrument of appointment, and there was therefore no need to spell this out within our business plan. We were also very clear in our business plan that the trigger for the notified item would be the loss of landbank.

6.1.13 "What is clear is that it is the loss in available landbank itself that is the trigger to required investment, not the specific route (legislative or otherwise) by which that occurs. Therefore, a notified item is warranted in this case. "

We were also clear that the required investment was unclear, and as it is likely to be a national, industry-wide issue, the requirements would likely require a co-ordinated industry assessment that Ofwat would need to lead.

6.1.14 "Furthermore, the precise investment needs will depend on the extent of the landbank restrictions and how this is best co-ordinated around the industry to manage it. It is important to recognise that a deficit in available landbank would be an industry–wide issue, not just a regional issue for UUW. Therefore, co-ordination will be required (which we have already raised with Ofwat, to seek its support) to ensure that investment requirements across the sector are efficient. The IDoK process is best placed to give appropriate consideration to the specific investment needs identified."

We also set out our expectation that the eligibility for IDoK would be consistent with pre-existing rules set out in condition B of our company licence.

6.1.12 "We believe that the agricultural outlet risk should be recognised as a notified item, as defined under condition B of our instrument of appointment. We consider that it is sufficiently unclear as to whether any future change would qualify as a Relevant Change in Circumstance, given that:

the precise route to the loss of landbank is currently unclear, and

whether or not the loss would arise directly as a change in legislation to water companies, or indirectly via restrictions placed onto the agricultural sector."

We did not explicitly state - although it was implicit - that the value of cost that would trigger eligibility for IDoK would be consistent with the pre-existing rules set out in condition B of our company licence as per the standard regulatory mechanism.

In its proposal Ofwat states*: "This would allow price controls to be changed in-period through an interim determination if the impact on costs, alone or in combination with other eligible items, met the materiality threshold in licence condition B."*

This is consistent with the position we set out in our October business plan submission.

The Landbank notified item should not be restricted only to legal changes.
Ofwat states*: "This notified item applies to any increase in costs reasonably attributable to any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge."* ***and*** *continues, "we consider that a notified item is appropriate because spreading treated sewage sludge is the main outlet for bioresources operations, the impact of changes could be material and new or changed to legal requirements would not necessarily otherwise qualify for an interim determination because they might not apply directly to companies."*

We welcome Ofwat's implied recognition that reliance on a Relevant Change of Circumstance RCC (1) in licence condition B alone would not be appropriate, as these changes in legal requirements only apply when the legal changes apply directly to water companies.

The proposed notified item eligibility criteria allow for *"any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge".* However, the eligibility requirement proposed by Ofwat is inappropriately restrictive, precisely because it will only allow for any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge.

Even with the legal definition provided by Ofwat for this notified item, we have concerns over several key events that may or may not be recognised by Ofwat as a legal change. It would be helpful for ambiguity to be resolved in the final determination.

We maintain that it is the potential future deficit in available landbank itself that is the trigger to required investment, not the specific route (legislative or otherwise) by which that occurs.
One event that is expected soon is the Defra post implementation review of Farming Rules for Water. The output of this review is anticipated by the end of 2024. A Defra decision, confirmation, or change, in the management of nutrients or use of organic materials to agriculture could set different expectations for biosolids recycling than has been allowed for in the WINEP or in final determinations. This may or may not be set out through a legal change, but the outcome should be recognised as an event or trigger included for in the landbank notified item.

Similarly, the output of a review of the Defra Statutory Guidance, which provides protection for water companies from the full ramifications of farming rules for water is due to be published *"to take place at any time and in any event will do so by September 2025[9]."* This guidance may be changed, rescinded or just expire (which may or may not be judged to be a legal change). The loss of this guidance would lead to a significant change in the management of nutrients or use of organic materials to agriculture and could set different expectations for biosolids recycling than has been allowed for in the WINEP or in final determinations. Given that this may or may not be judged to result from a legal change, the outcome should be recognised as an event or trigger included for in the landbank notified item. No organisation be they a water company, EA, Defra or Ofwat can know at the moment what the outcome of those decisions will be, so the uncertainty cannot be (or is very unlikely to be) resolved ahead of final determination.

[9] Defra, Statutory Guidance: Applying the farming rules for water, https://www.gov.uk/government/publications/applying-the-farming-rules-for-water/applying-the-farming-rules-for-water#review-period-for-guidance (Online, accessed August, 2024).

Even if the Defra Statutory Guidance on Farming Rules for Water is extended until 2030, there is misalignment between Defra and the EA over the requirements. The EA advisory approach to farmers can be expected to increase restrictions over time. Farmers receiving EA advisory letters that require changes in farm practices to manage nutrients, will need to reduce the input of nutrients and that leads to a reduced demand for biosolids as a feedstock into farms. As more letters are issued nationally by the EA, and there are more EA resources to undertake this activity, the level of market restriction will increase and the need for a movement of a proportion of biosolids out of agriculture will materialise. Landbank modelling shows that this could require circa 70 per cent of biosolids to move out of agriculture. However, this is only one plausible "market failure mode". Given that this may or may not be judged to result from a legal change, the outcome should be recognised as an event or trigger included for in the landbank notified item.

The full impact of these *"requirements in relation to the application to agricultural land of fertiliser derived from sludge"* have not been included in investments agreed in the WINEP (see pages 23-25 of this document for further details).

There are a multitude of other risks which could negatively impact market demand for biosolids products, curtailing or preventing access to the agricultural outlet for biosolids recycling that are outside company's control. If the notified item is not updated, Ofwat may consider these risks to be outside their proposed notified item eligibility criteria. This would be an unreasonable and unacceptable outcome given the current degree of uncertainty and that fact that it is being clearly flagged ahead of PR24 final determinations.

The market for biosolids is reliant on the acceptance of product by farmers. Farmers have a choice to accept or reject biosolids and this decision is influenced by many factors. Some key examples where farmer choice to accept biosolids is influenced by factors other than legal changes are:

- a change in a policy statement by food chain actors relating to changes in requirements for the biosolids supply chain to agriculture (e.g. British Retail Consortium, supermarkets).
- a change in a policy statement by farming quality assurance organisations relating to changes in requirements for the biosolids supply chain to agriculture (e.g. Red Tractor Assurance, Quality Meat Scotland)
- a change in a policy statement by farm product exclusion clauses by food user groups (e.g. The whisky distilling industry has a rotation exclusion clause in farmer supply contracts that stipulates that biosolids must not be applied within crop rotations including malting barley; others may do likewise.)

Since the publication of the draft determination, we have met with Ofwat to discuss the draft notified item and a notified item proposed by the industry. We have held several discussions on behalf of the industry with the EA, Defra and Ofwat, and explored examples of plausible events that could lead to a significant change in the availability of the agricultural outlet for biosolids recycling. A table of such events is set out in Appendix A. The table is not an exhaustive list but acts to illustrate the multitude of legal risks, and risks not originating from a legal driver, that must all be included in the scope of the notified item for it to be designed as an effective uncertainty mechanism.

In summary, there are very many routes leading to changes in *requirements in relation to the application to agricultural land of fertiliser derived from sludge*, and Ofwat's requirement for a "legal change" is too restrictive for scoping these risks. The scope of the notified item needs to include provision for changes in market factors / other non-legal changes, that could cause a significant reduction or loss of the agricultural outlet for biosolids recycling.

Ofwat states, "In addition, we acknowledge that bioresources activities might be affected by the Environmental Permitting Regulations (EPR) replacing the Sludge (Use in Agriculture) Regulations (SUiAR). These requirements are due to be defined within the Environment Agency's Sludge Strategy and its implementation date is yet to be confirmed."

We consider that this would be an example of a legal change that applies directly to water companies and would allow price controls to be changed in-period through an interim determination if the impact on costs, alone or in combination with other eligible items, met the materiality threshold in licence condition B. We agree that the full extent of the requirements in relation to the application to agricultural land of fertiliser derived from sludge are

uncertain, so for the avoidance of doubt, it is helpful that Ofwat recognise this event and ensure it is eligible under the notified item.

Ofwat has rejected our low regrets enhancement investment proposals at draft determination which is restricting us from taking prudent management action.
Ofwat states that, *"In the event of an interim determination, no account will be taken of any costs to the extent that they would have been, or would be, avoided by prudent management action."*

We agree with this proposal in principle, although we note that the most prudent management action is to lobby for the continued availability of sufficient landbank, as this is the best value and most environmentally sustainable route for the recovery of biosolids and this is what the industry has been lobbying for extensively.

We have also not sought significant investment in destruction technologies such as incineration or advanced thermal treatment, as it is not yet clear what the optimal alternative technology is. It would therefore be unreasonable for Ofwat to assume that we should have pre-empted this change by commencing such investment. Indeed, any such investment proposed by companies at PR24 was rejected by both the EA (in the WINEP) and Ofwat (in draft determinations).

We also regret that the EA through the WINEP process, and Ofwat through draft determination, have both rejected our enhancement case to improve product quality through the enhanced removal of non-degradable contaminants (such as microplastics). This would have supported market acceptance of higher quality products and reduce the risk of a significant market-based restriction in the availability of the landbank to recycle biosolids. Examples of market-based restrictions are listed below and set out in in more detail in Appendix A.

- Policy statement by food chain actors relating to changes in requirements for the biosolids supply chain to agriculture (e.g. British Retail Consortium, supermarkets)
- Policy statement by Farming quality assurance organisations relating to changes in requirements for the biosolids supply chain to agriculture (e.g. Red Tractor Assurance, Quality Meat Scotland)
- Farm product exclusion clauses by food user groups (e.g. Whiskey distilling industry)
- Landowner and farmers decide not to accept biosolids

We disagree with Ofwat's decision to reject our enhancement funding proposal for preparatory works for alternative outlets. The delivery of this work is essential to inform an efficient, planned and coordinated transition for a proportion of biosolids away from recycling to agriculture, providing a better outcome for customers than an unplanned, reactive, response to a significant and rapid change in environmental obligations. Ofwat's decision fails to consider that the proposed enhancement would in-fact support Ofwat to make good quality decisions over the solutions to meet requirements, if the landbank notified item is triggered in AMP8. We have submitted a separate representation for this enhancement investment in section 7 - Preparatory works for alternative outlets, and urge Ofwat to reconsider its decision in this area.

Moreover, Ofwat states: *"Four alternative sludge treatment projects have been funded through the Innovation Fund. We welcome further Innovation Fund submissions in this area going forward."*

We note that the extent of the challenge facing the bioresources sector is highly significant and while the projects funded through the Innovation Fund are a helpful start, they do not comprehensively address all the challenges and solutions that need to be understood to enable future investment decisions. We welcome collaboration by Defra, EA and Ofwat in developing the proposed PR29 Bioresources Action Plan. This will set out the full scope of work required at a national level to better inform investment decisions at PR29. We seek greater national co-ordination and an agreed funding approach for delivery of the PR29 Bioresources Action Plan. This is likely to include the need for significant additional investment, and be given sufficient priority, through the Innovation Fund as well as accessing other funding opportunities.

Ofwat has incorrectly excluded any scope and investment relating to the impacts of Farming Rules for Water from the scope of the notified item.
In its draft determination Ofwat states: *"We propose that this notified item does not cover costs in relation to compliance with the existing legal requirements in the Farming Rules for Water (FRfW). It is our understanding*

that the resilience of the biosolids supply chain to agriculture is included in the PR24 WINEP for the 2025-30 period (intending to address FRfW compliance)."

This is a complex area and we are concerned that Ofwat has misunderstood the current position regarding FRfW by believing that full compliance with FRfW, and requirements resulting from full implementation of FRfW (i.e. without the provision of the Defra's statutory guidance, which is currently enabling the continued recycling of biosolids and other organic manures to agriculture) is included in the WINEP. It is very clear to us that this is not the case.

The market for recycling biosolids to agriculture has not fully adjusted to the full requirements of Farming Rules for Water.

FRfW is directed at farmers, not water companies. It is the degree of farmer adoption of the requirements that has an impact on the agricultural land they can make available for the recovery of biosolids. Grieve Strategic describes the following:

"There was much discussion surrounding approach and implementation of the Farming Rules for Water in late summer/autumn 2020. This led to a crisis over organic manure use in agriculture, widespread discussion within the agricultural community, an EFRA committee hearing and various research studies to understand the possible implications. This resulted in the Secretary of State for the Environment introducing Statutory Guidance on how the Farming Rules for Water should be enforced."

The driver of this crisis was the EA interpretation that nitrogen in organic manures should not be applied in the autumn ahead of planting popular arable crops (e.g. cereals, such as winter wheat). The crisis included biosolids, and the market for biosolids in the autumn collapsed instantly. This market represents c70% of the national use for biosolids in agriculture. The collapse in the market for biosolids resulted in water companies filling up biosolids site storage and requiring much more storage, and led to an EA regulatory position statement (RPS253) to enable companies to stockpile biosolids in field heaps. The EA considered this impact to be, *"due to farmer delays in agreeing sludge supply contracts for the autumn"*. However, we do not consider that this was a "delay", but it was potentially a permanent market adjustment to reflect the full extent of compliance with the EA interpretation of FRfW for nitrogen management.

As Grieve Strategic observes, *"This resulted in the Secretary of State for the Environment introducing Statutory Guidance on how the Farming Rules for Water should be enforced."*

The Defra statutory guidance states that, *"The Environment Agency should consider the criteria set out below (in the statutory guidance document) when carrying out an inspection (of a farm) under the farming rules for water. Enforcement action should **not** normally be taken where land managers have met the criteria." (emphasis added)*

The introduction of the Defra Statutory Guidance has provided a way forward for organic manures to be spread in the autumn and reduced (practically removed) the risk of farmers being prosecuted. This had the effect on the market, enabling farmers to choose to accept biosolids as an input to their farms for use in the autumn, which enabled the recycling of biosolids (and other organic manures) to resume.

Without this intervention by Defra, the restriction preventing farmers from using biosolids in the autumn before planting cereal crops would be permanent, leading to a permanent reduction in the available agricultural outlet for biosolids. Effectively, the Defra statutory guidance is currently (albeit only temporarily) insulating water companies from the full impact of FRfW on landbank requirements and availability.

The EA advisory approach to farming rules for water, aimed at farmers, seeks to change farmers' nutrient management practices to move in line with the EA interpretation of the requirements by developing plans to move into full compliance. This will have a progressive and cumulative restrictive effect on the available agricultural outlet for biosolids recycling.

The costs associated with recycling biosolids to agriculture reflects the historic and current market. There has been no provision in draft determinations to reflect the additional cost of biosolids management under market conditions that reflect the full extent of farmers meeting farming rules for water.

The requirements of Farming Rules for Water to inform water company investment planning assumptions are uncertain.
Grieve Strategic continues, *"It is vital the use of biosolids (or any nutrient source) provides benefit and does not cause unnecessary/unacceptable harm to the environment. However, given the disagreement over the requirements and in particular the possible effects it could have on the environment and agriculture more broadly, further discussion with all relevant and impacted parties would seem an essential requirement to reach a pragmatic solution."*

The industry has lobbied the EA and Defra extensively over the requirements to reach a pragmatic solution that would enable the continued recovery of biosolids to the agricultural outlet throughout 2025-2030. There have been several technical meetings in September to November 2023 between the industry and the EA, followed by further work on national landbank modelling scenarios. This information was shared with the EA, Defra and Ofwat in Bioresources Collaborative Meetings Four and Five in June and July 2024. These meetings discussed various plausible understandings of the requirements, and the landbank modelling demonstrated the associated impact they would have on the availability of the agricultural outlet to recycle biosolids. The detail of the modelling work was included in the National Landbank Report by Grieve Strategic.[10]

In the conclusion of the National Landbank Report it states, *"Further modelling investigating isolated factors identified the approach to nitrogen and phosphorus management as the critical factor in determining whether there was sufficient land to recycle biosolids (and other manures). The water industry approach to nitrogen and phosphorus management increases landbank required but not to the point where there was more land required than available. By contrast the EA approach to nitrogen and phosphorus management had a substantial affect, resulting in insufficient landbank in all practical senses under all scenarios, and alternative outlets being required for up to 70% of biosolids."*

In the joint meetings the industry has repeatedly requested that a clear and consistent planning assumption be confirmed. However, to date, this has not happened.

When asked whether the requirements under FRfW were certain, the EA has indicated that there is very considerable uncertainty, not just limited to bioresources and that the considerations extent to all material that goes to land. Policy decisions have yet to be made in this regard. Similarly, Defra has indicated that its own views and priorities have yet to be settled on the matter.

It is reasonable to conclude that as the requirements are uncertain and material, costs in relation to full compliance in the market with the existing legal requirements in the Farming Rules for Water (FRfW) must be included in the scope of the notified item.

The requirements of Farming Rules for Water have <u>not</u> been included in PR24 WINEP for the 2025-30 period.
Ofwat states, *"It is our understanding that the resilience of the biosolids supply chain to agriculture is included in the PR24 WINEP for the 2025-30 period (intending to address FRfW compliance)."*

Ofwat's expectation is that the WINEP process would provide an effective framework for addressing risks related to the use or disposal of sewerage sludge over the 2025 to 2030 period. Whilst this may be an appropriate expectation for Ofwat to hold in principle, in practice, it is very clear to us that this is <u>not</u> the case.

The WINEP sludge driver guidance never refers to Farming Rules for Water and there is no explicit text to demonstrate that the requirements of those regulations are included in the scope of the sludge driver. We therefore consider that Ofwat has misunderstood the scope of the WINEP sludge driver.

The purpose and scope of the WINEP sludge drivers is limited to developing contingency measures.
The driver guidance states, *"DEFRA have expressed support for these new sludge drivers to develop contingency measures when business as usual is disrupted to improve the resilience of the supply chain of sewage sludge to agricultural land. Water companies should take opportunity to fund appropriate improvements through their PR24 WINEPs."*

[10] Grieve Strategic: National landbank assessment report, 2024

The driver guidance makes several references to regulatory position statements (RPS). Notably, the assessment approach states, *"Proposals will be assessed against relevant factors such as uptake of RPS 253"*. Regulatory position statement 253 was published in November 2021 and states, *"This regulatory position statement (RPS) is about the storage of dewatered treated sludge. This RPS only applies to sludge producers who store their dewatered treated sludge not at the place it will be used."*

The EA assessment of proposed solutions reinforces the storage-based focus of the WINEP sludge drivers.

An EA information letter to companies on 22 March 2023[11] stated, *"we have given an emphasis on effective storage in the sustainable supply and use of sewage sludge. This is seen as the minimum action necessary to deliver improved resilience in the sludge supply chain to agriculture and other relevant use or disposal outlets."*

We note that this is framed by the EA as a *"minimum action to deliver improved resilience"* and not a more comprehensive scope of resilience.

Subsequent discussion and follow-up meetings with all WASCs led to the EA issuing a further information letter to companies on 19 May 2023 describing its "Storage+ assessment". This assessment slightly broadened the type of actions approved under the sewage sludge drivers as follows:

"It includes both storage and other actions which deliver environmental improvements of sludge quality and handling prior to storage and before supply to agriculture, such as enhanced dewatering and pelletisation."

The scope of the driver remains focussed on solutions to improve storage capability (both the physical storage facilities and characteristics of the material to be stored) to deliver improved resilience for a temporary disruption to logistical operations, and clearly assumes that companies can continue to recycle biosolids to the agricultural outlet.

Storage is not a solution to a long lasting or permanent change in the restrictions in the availability of the agricultural outlet for biosolids recycling (i.e. long-lasting reductions in the land available or increases in the land required).

Solutions that could have provided wider resilience to increasing permanent restrictions in the agricultural outlet for biosolids recycling were rejected from the WINEP

In stage 2 of the WINEP process we collaborated with all other WaSCs and the EA, to provide further granularity over the risks and issues that the WINEP drivers might address. The risks and issues were summarised as improvements contributing to at least one of the following three aspects:

- **Landbank accessibility:** Resilience against in-year access issues such as agricultural epidemics
- **Landbank availability:** Improvements to increase flexibility or timing of when biosolids may be applied and future alternative outlets in the event there is insufficient landbank for recycling to agriculture
- **Landbank quality:** Improvement to biosolids quality to reduce potential risk of harm to soil or water from nutrients, chemicals and microplastics in recycled biosolids.

Industry information collated by AtkinsRealis shows that companies proposed many different solutions. Proposed solutions related to "Landbank accessibility", align with the "storage+" assessment and may have been approved by the EA. Proposed solutions that were not related to Landbank accessibility were rejected by the EA.

This appears to be borne out by an analysis of the investment options considered, accepted and rejected. Figure 4 shows a Venn diagram of the main types of asset investment solutions that companies proposed and the approvals and rejections through the WINEP process.

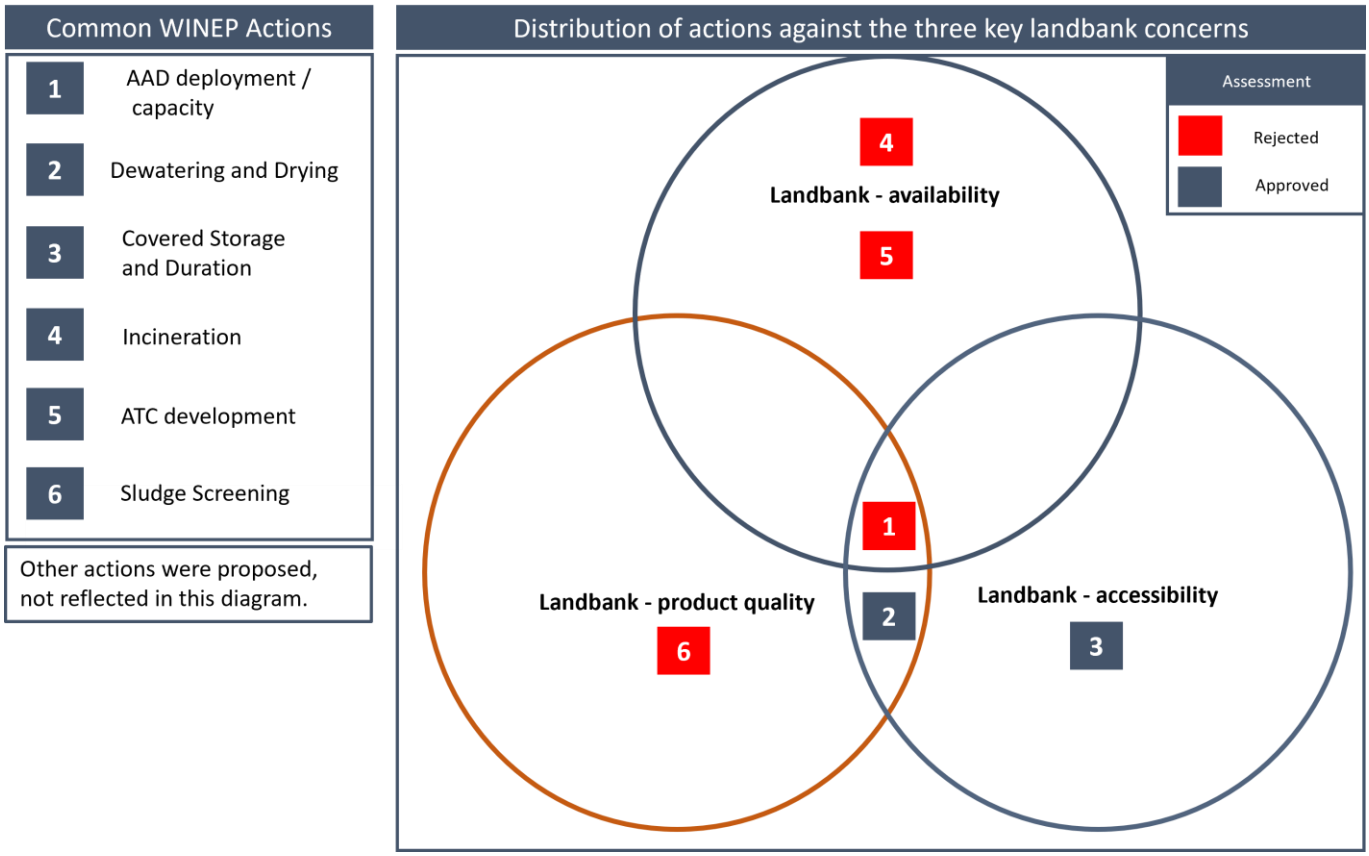
Storage and enhanced dewatering and pelletisation solutions in the Landbank – accessibility circle were approved. Solutions that could have provided wider resilience to increasing permanent restrictions in the agricultural outlet for biosolids recycling through improvements in biosolids product quality, or sludge treatment to reduce biosolids quantity (such as advanced anaerobic digestion) were rejected. Solutions to move a

[11] Environment Agency Information Letter (EA/09/2023), Water Industry National Environment Programme - Sludge update, 22 March 2023

proportion of biosolids to alternative outlets were also rejected (incineration and advanced thermal conversion technologies).

In all around 80% of all WINEP solutions proposed by the industry for the sludge drivers were rejected, effectively ensuring that no actions to address the risk of a more or increasingly constrained agricultural outlet for recycling biosolids had been approved.

Figure 4: Solutions approved and rejected through the WINEP process.



Source: Updated from content shared in Bioresources Collaborative Meeting Three, March 2023

As we understand the EA's position, it is that whilst the resilience of the biosolids supply chain to agriculture was included in PR24 WINEP, the scope of the driver was not inclusive of the broader challenges in bioresources management and its reliance on landbank availability and landbank required.

It is clear to us that the WINEP process does not adequately reflect the environmental needs that we and the industry must plan for, including the impacts of farming rules for water on the agricultural sector, and there has been no provision in draft determinations to reflect the additional cost of biosolids management under market conditions that reflect the full extent of farmers meeting all the requirements of farming rules for water.

We hope that there is not a significant change in the landbank available or landbank required and that we can continue having adequate access for biosolids to be recovered to the agricultural outlet. If this were the case, the notified item would not be triggered as there would be no effect that leads to a non-trivial cost requirement. However, national landbank modelling shared with EA, Defra and Ofwat indicates a strong likelihood of there being a significant landbank deficit, and hence the need for substantial additional investment in Bioresources assets and operations across the sector, hence the need for the notified item to be effective regardless of the *specific route (legislative or otherwise) by which that change occurs.*

Further considerations prior to final determinations

We welcome Ofwat's statement, "We are open to further representation from companies on this item before we make our final determinations."

We have held several helpful discussions with Ofwat, EA and Defra with regards to the draft determination proposal for the notified item to support the development of our representation.

The discussions included the need for the EA to clearly communicate the limited scope of the WINEP drivers and confirm that it does not adequately reflect the full spectrum of environmental needs that we and the industry must plan for, including the impacts of farming rules for water on the agricultural sector, leading to changes in the balance of landbank available and landbank required.

As far as we are able, we have set out the EA position, as it has been communicated to us and the industry, above. It would be helpful for Ofwat to secure directly from the EA the scope of risks and issues that were not addressed through the WINEP sludge drivers.

In discussions, we have also covered the eligibility requirement for the notified item proposed by Ofwat. We shared and discussed examples that evidence why companies consider the draft wording to be inappropriately restrictive because it will only allow for any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge.

This led to the development of a table of example events (legal or otherwise) that could be the cause of a significant change in either the landbank available or the landbank required in the agricultural outlet that may led to a significant investment in bioresources assets and operations (see Appendix A).

We also discussed the role of landbank modelling to provide consistent planning assumptions that could be used in the notified item and interim determination process.

We welcome the engagement from Ofwat, the EA and Defra so far and very much encourage that these discussions continue in the run up to to final determinations.

Landbank Modelling should be accepted as suitable evidence of environmental need

The factors affecting the agricultural landbank are highly technical in nature: they are varied, interrelated and complex, meaning geographical modelling is necessary to understand the scale and impact of possible changes nationally and across individual regions. WaSCs have repeatedly used landbank modelling in previous price reviews to evidence the landbank challenges in their region. The extent of uncertainty now requires that national landbank modelling is undertaken, as there is a possibility that at a national level, there is insufficient capacity in the agricultural outlet for some or all biosolids to be recycled. The National Landbank Report 2024 has been provided to the EA, Defra and Ofwat through the Bioresources Collaborative Meeting attendees and is available on request.

There needs to be a method by which changes in landbank available and landbank required in relation to the application to agricultural land of fertiliser derived from sludge can be assessed. This includes understanding the current requirements and the impact of future requirements. The modelling can also be used in an option selection process and support cost benefit analysis of proposed investment solutions to address landbank risks.

The EA has not commented on the landbank modelling work, reflecting a policy position that means they cannot make a statement over work that has been commissioned by a third party. This means that we have been unable to ascertain the extent to which the EA recognises the validity of the modelling outputs.

This means the industry is in a difficult position in terms of making further progress. Modelling is used across the industry for various uses, and has been recognised in the WINEP driver guidance. We have consulted with regulators in discussions over requirements that needed to be included, and offered the opportunity to comment on the modelling input assumptions. Regulators have attended technical meetings to learn about the model and had the opportunity to ask questions directly to the consultants so as to satisfy themselves over the functionality of the model.

Having had such a high degree of collaborative involvement throughout the project, it is frustrating that we are now unable to secure endorsement of the model despite there being no obvious technical criticism of the actual models, or the assumptions used, and our transparent approach to development.

Nevertheless, it would be unreasonable of Ofwat to disregard the landbank modelling merely on the basis that the EA has not been able to ratify the outputs. We understand that the EA has not disputed the outputs and, as

far as we are aware, no better evidence has been put forward through – for example – alternative modelling. Given the absence of alternatives, and given that no significant concerns have been raised about the model outputs, we believe that this is the best evidence that is available and therefore it should be capable of utilisation by Ofwat.

We understand that Defra has been undertaking further analysis of the model before providing further commentary. A meeting with Defra was arranged for 14 August to discuss the model directly with the modelling consultants ADAS and Grieve Strategic, but the output of this will have come too late for inclusion in this representation. Nevertheless, we note that Defra has been involved in collaborative meetings that discuss the National Landbank Modelling since November 2022 and so will have had significant opportunities already to observe the modelling approach.

Discussions over other data sets that may be used to validate the landbank modelling did not result in the identification of any suitable or available evidence. On this basis we consider that Ofwat should recognise that the modelling undertaken on behalf of the industry is the best available approach and make further decisions on the basis of this evidence. We believe it would be unreasonable to disregard this evidence given that no alternatives have been provided.

We have continued conversations since the publication of the draft determination with the EA, Defra and Ofwat that were specific to the notified item. This generated helpful supporting information regarding a governance and business process for the use of landbank modelling to support the notified item and interim determination process throughout AMP8.

A draft proposal has been developed for a governance group approach that could be developed collaboratively to provide appropriate way of working that all interested parties could; participate in the process, promote changes in requirements to be subject to landbank modelling activity, ensure the modelling is conducted appropriately, confirm the outputs and sign off common planning assumptions. Outputs from this group could provide the basis for investment requirements that can be costed and assessed as to whether they meet the financial thresholds to trigger an interim determination process. Appendix B provides more information.

We also presented a draft methodology proposal for how the outputs of landbank modelling could be used in a simple equation which could apply universally across all modelled scenarios. It divided the landbank required by the landbank available and expressed this as a percentage. This approach can be used to set a baseline value and a threshold value, and act as a trigger for the notified item. Landbank modelling scenarios would be undertaken to understand the impact of each and any changes that materialise or need to be planned for. If the output of the modelling generates a percentage value greater than the threshold, the notified item would be assessed to have been triggered. This enables the loss in available landbank itself to be the trigger to required investment, not the specific route (legislative or otherwise) by which that occurs. This is presented in Appendix C.

Even if the requirements were certain the solution is also currently unclear - in particular, it is unclear how best to allocate investment requirements between companies, to address this national issue.
In our October business plan, we stated in paragraph 6.1.14:

"The precise investment needs will depend on the extent of the landbank restrictions and how this is best co-ordinated around the industry to manage it. It is important to recognise that a deficit in available landbank would be an industry–wide issue, not just a regional issue for UUW. Therefore, co-ordination will be required (which we have already raised with Ofwat, to seek its support) to ensure that investment requirements across the sector are efficient. The IDoK process is best placed to give appropriate consideration to the specific investment needs identified."

The paragraph refers to the fact that we had identified the need for national co-ordination to allocate investment requirements between companies, through the Bioresources Collaborative Meetings.

We note that the minutes of Bioresources Collaborative Meeting One, Feb 2023, reflect the following:

"To date, when dealing with changes that have led to restrictions in landbank, there has always been sufficient landbank and companies have been able to plan by themselves. Now, there is a move to a national landbank

shortage and not something individual companies can plan for on their own. This is an indication of a complete change in business model for bioresources.

There is a risk of planning for an over degree of certainty. Companies will have to overcompensate in what is delivered and a move to incineration is the only option that provides absolute certainty for future compliance. There is a risk that if all companies propose incineration, this is not completely required and could be more detrimental for customers.

Promoting a staged process to manage uncertainty would be more appropriate. Understand necessary least regrets options in first instance, then incremental additional interventions associated with movement to worst case scenario to precisely manage the impact on customers."

And continue:

"Legislation doesn't dictate the right solution to change business model, particularly given the level of seismic change in nature of business. This is observed through WINEP - the add up of company plans does not meet the national need. Therefore, companies are calling for uncertainty management to avoid overcompensating in upfront plans, but also greater level of coordination as this is national level restriction. There are few precedents in water industry to meet a national need, and this inherently requires greater levels of coordination to ensure efficiency and fair management."

Landbank modelling does not make provision for how landbank should be shared as this is a national market. Furthermore, certainty will not come out of clarification on regulations to better define the change; the actual problem is the consequence of the change, leading to there being a national shortage of landbank.

Options for coordination were discussed:

1. **Planning assumptions** - may be simplest and preferable. It would be helpful to have a series of common and coherent planning landbank restriction assumptions. One possibility would be to allocate an area of landbank to each company for their planning assumption, and companies should make alternatives for the remainder.
2. **Interventionist approach** – equivalent to the Regulators' Alliance for Progressing Infrastructure Development (RAPID), to meet the national challenge on Bioresources and may lead to overall more efficient outcomes. However, this is likely to require more time to establish.

Previously it may have been appropriate to consider competition for landbank as being beneficial to market development, but as we now understand the position, competition between companies is not the answer to this problem, rather that coordination is required.

We ask that Ofwat considers all options available to it, and puts forward at the final determination, the appropriate approach or framework through which it will co-ordinate investment that will deliver the sufficient level of investment and efficient level of investment to meet environmental obligations and outcomes at a national and company level.

We have done everything reasonable to collaborate with regulators and policy makers to seek a shared view of what needs to be delivered.

- We worked with the EA extensively and collaboratively through the WINEP process.
- We have repeatedly raised concerns that the full extent of the risk to landbank availability and landbank required were not being appropriately included in the PR24 process.
- We engaged repeatedly and extensively with EA, Defra and Ofwat seeking to obtain clarity and confirmation of requirements so that our business plan reflects a shared view of what needs to be delivered.
- We collaborated with the industry to provide national level information on the landbank challenges and evidenced the shortcomings of individually proposed company solutions (without co-ordination) in failing to address a national problem.

- We have continued to collaborate after company business plan submissions with further national landbank modelling and technical reports that have evidenced that there are no straight forward or low-cost alternative outlets for biosolids.
- We produced an industry proposal for the notified item, agreed by most companies.
- We have continued conversations since the publication of the draft determination with the EA, Defra and Ofwat that were specific to the notified item. This generated helpful supporting information regarding plausible events and a governance, business process and methodology proposal for the use of landbank modelling to support the notified item and interim determination process throughout AMP8.

Despite these efforts we have still not been able to arrive at a confirmed and clear view of requirements, and therefore we are not able to reflect a shared view of what needs to be delivered in our company business plan. Therefore, we believe that Ofwat should recognise that this is a circumstance that requires a flexible funding arrangement, and the notified item needs to be appropriately constructed to enable the loss in available landbank itself to be the trigger to required investment, not the specific route (legislative or otherwise) by which that occurs.

We also propose that the level of the notified item should be at the Bioresources Price Control
Most companies supported an agreed notified item document that was provide to Ofwat shortly before draft determinations were published. This document in provided in full in Appendix D. An extract is presented here.

*"Under licence condition B of companies' instrument of appointment, companies can request an interim determination for a **Relevant Change in Circumstance** or a **Notified Item** under the following conditions:*

*(i) **Materiality:** the Net Present Value (NPV) of the decrease in revenue or, additional costs the company is expected to incur (5 years of capex, and 15 years of opex or revenue), resulting from some change, must be at least 10% of the appointed company's annual turnover in the year prior to the IDoK submission.*

*(ii) **Triviality:** where a number of costs have been combined, these individually must be non-trivial. No definition of trivial is included in the licence but historically Ofwat has defined it as 2% of the appointed company's turnover in the relevant service.*

*In view of the risks, we consider the agricultural outlet risk should be recognised as a **Notified Item**, as defined under condition B of our instrument of appointment, which would ensure that the consequences of any of the changes set out in section 1 would enable companies to request an IDoK reference (subject to materiality and triviality thresholds). As set out above, it is clear that it is the material increase in costs resulting from a loss in available landbank relative to the landbank required that is the trigger, not the specific route (legislative or otherwise) by which that occurs.*

A change to the basis for calculating the materiality threshold

- *The IDoK provisions which remain in companies' licences were written in 1989. At this time each company's regulated business was regarded as a single entity. For example, price controls were expressed as a single company-wide K factor and there was very little differentiation of separate components of the water and wastewater value chains. The concept of wholesale and retail services was unheard of and there was very little consideration of the potential of competition to enable a reduction in the role of the regulator. Given this focus on the overall business, the definition of the IDoK materiality and triviality thresholds in terms of the appointed business turnover was logical and appropriate.*
- *Since then, Ofwat has substantially changed the basis of company regulation. It now treats the business as six separate business units and sets separate price controls for each. The regulatory rules pertaining to each – for example, on the form of the price control, and the sharing of expenditure variances - are not the same. In some cases, most notably bioresources, Ofwat expects the business units to participate in their relevant market, where possible, reducing the need for regulation. Appointees are not even obliged to continue trading in every business unit; most have left the non-household retail market.*

- *All of these changes have reinforced the concept that appointees should manage each business unit according to its own particular regulatory circumstances rather than as mere components of a bigger entity. In view of this the 1989 IDoK provisions have long since ceased to be appropriate. If business units are to be managed in accordance with their particular circumstances, they should be treated as such when it comes to assessing the impact on their costs of major changes. Accordingly, we propose that the materiality and triviality conditions (as set out above) should therefore be assessed at the level of the relevant price control rather than Appointee turnover.*
- *The case for business unit level assessment of thresholds is particularly true of those business units, such as bioresources, where Ofwat expects companies to operate within wider markets. True exposure to contestable markets requires that all participants are able to adjust their prices in response to changes in their costs brought about by changes in their operating environment. A regulatory arrangement that prevents a participant from doing so condemns that participant to the risk of failure. In our view it cannot be reasonable for a water companies' bioresources revenues to be fixed at a level that were efficient in a previous market regime while its competitors adjust their revenues to deal with the costs of the new regime.*
- *Our proposal, therefore, is that the basis for calculating the materiality threshold should be updated to match the regulatory developments since 1989.There is precedent for a change of this nature. At PR19 Ofwat introduced Condition U into the licences of five companies whose price settlements included provision for schemes to be built under Direct Procurement for Customers (DPC), which was another innovation brought into water regulation since 1989. Condition U provided for the scenario where projects needed to come out of DPC and back into in-house provision. The materiality threshold for the IDoKs enabled under this new condition differed from the standard threshold, being set at 2% of appointed business turnover.*
- *In the same way that Ofwat developed the interim determination regime to deal with the innovation of DPC, we consider it must now do the same to match the other innovations it has introduced to water regulation.*
- *The features of the Notified Item we propose are set out in the table below.*
- *We propose that the materiality and triviality conditions are assessed at the level of the relevant price control rather than Appointee turnover. This is considered more appropriate because regulation has evolved to treat each water company as comprising six separate business units which the existing IDoK rules, set out in 1989 do not account for. "*

Table 1: Proposed form of the biosolids to agricultural land notified item

AMP8 Biosolids to Land Notified Item	
Mechanism type	Notified Item as an input into IDoK claim
Application Window	April – September 2025 April – September 2026 April – September 2027 April – September 2028 April – September 2029
Scope	The additional costs for the disposal of sludge arising from a change in the availability of landbank (due to either/both a reduction in available landbank, or an increase in the required landbank).
Materiality threshold	NPV of costs (5 years of capex and 15 years of opex / revenue) are > 10% of prior year Bioresources revenue.
Triviality Threshold	NPV of costs (5 years of capex and 15 years of opex / revenue) are > 2% of prior year Bioresources revenue.
Licence condition	Condition B (amended)

Source: Industry proposal for landbank notified item, 2024

1.5 Approach for final determination

Ofwat should retain the 50:50 cost sharing mechanism proposed in draft determinations. This will help to manage uncertain cost risks that are not sufficiently material to trigger an interim determination. (This is in addition to the enhanced cost sharing for IED and our proposed inclusion of wider waste permitting uncertainties).

Ofwat should update the notified item: to address any increase in costs to bioresources reasonably attributable to any new or changed requirements in relation to the application to agricultural land of fertiliser derived from sludge over the 2025-26 to 2029-30 period.

Ofwat should remove the disallowance of Farming Rules for Water from the notified item text: Defra statutory guidance directs the Environment Agency enforcement approach not to prosecute farmers for spreading other organic manures including biosolids. As a result, this has enabled the market for recycling of biosolids to agriculture to continue. The industry is not currently subject to the full market effect of nutrient restrictions, that will reduce the landbank farmers can make available to recycle biosolids, that would be expected once the statutory guidance is no longer in place.

Ofwat should recognise that reducing landbank availability or increases in landbank required related to changes in Defra statutory guidance is not addressed through the PR24 WINEP process. The exclusion of this risk (and others) and the rejection of proposed actions from the WINEP process does not mean that the investment needs were spurious. Rather, it reflects that these investment actions were not eligible under the WINEP driver and assessment criteria established by regulators.

It is clear to us that the WINEP process does not adequately reflect the environmental needs that we and the industry must plan for, including the impacts of farming rules for water on the agricultural sector, and there has been no provision in draft determinations to reflect the additional cost of biosolids management under market conditions that reflect the full extent of farmers meeting all the requirements of farming rules for water.

The Landbank notified item should not be restricted only to legal changes: there are many legitimate, potential causes of a reduction in the landbank available or an increase in the landbank required, and many of these would likely not be judged by Ofwat to be a legal change as set out in the draft determination. The notified item needs to include for the impact of any, and all, such events should they occur individually or in aggregation.

Landbank modelling should be used as the trigger: a significant change in the landbank available or an increase in the landbank required from the baseline allowed for at final determination should be assessed through landbank modelling and be the trigger. There are very many ways to manifest a change in costs of continuing to use the agricultural landbank for biosolids recycling. To try and list them all as triggers and understand how they interact with each other would be highly complex. There is a risk that Ofwat would not recognise the impact of a legitimate event that was not included in a list of acceptable triggers. To avoid this complexity, and because of its universal applicability to any eventuality, our recommended approach is to using modelling - which we will need to do anyway in order to assess the severity of impact of any specific triggers. Ofwat should adopt, and help further develop, our proposed approach to a governance group and business process that could oversee the landbank modelling activity throughout AMP8 to provide consistent assessment and planning assumptions and agreed outputs to inform Ofwat whether a change in landbank available or landbank required has reached a threshold sufficient to trigger the notified item. Absent that, then the trigger should reflect all (or as many any as possible) of the potential events that could be triggers.

Ofwat should propose an approach to industry wide co-ordination: a significant loss of landbank will likely be a national issue, which will require a coordinated approach to developing assumptions for investment requirements (and any assumed residual landbank use) for each company. Ofwat should assess options and share the outputs in final determinations on how this might be delivered in AMP8, and beyond.

Ofwat should change the basis for calculating the materiality threshold: we propose that the materiality and triviality conditions (as set out above) should be assessed at the level of the relevant price control rather than Appointee turnover, that being the Bioresources Price Control.

Ofwat should ensure greater national co-ordination and agree funding for delivery of the PR29 Bioresources Action Plan: This is likely to include the need for significant additional investment, and be given sufficient priority, through the Innovation Fund as well as other funding opportunities.

2. IED compliance at anaerobic digestion sites (costs)

2.1 Key points

- **We welcome Ofwat's recognition that AMP8 enhancement expenditure is required to deliver Industrial Emissions Directive (IED) compliance:** Substantial investment is required to transform the bioresource asset base and it is essential that companies are efficiently funded to meet this new statutory obligation.
- **Ofwat's benchmarking of IED costs is inappropriate resulting in an inappropriate funding allocation:** Ofwat does not sufficiently consider site-specific variability or the efficiency of secondary containment solutions leading to some companies receiving a higher allocation of cost for the same 'work done', and some companies receiving an inappropriate efficiency challenge. Benchmarking of costs for covering of tanks is not representative of the full enhancement cost and is compounded by inconsistencies in company cost allocation between IED and Carbon Net Zero enhancement programmes.
- **We propose amendments to Ofwat's cost models to better reflect efficient costs to deliver IED compliance:** In document UUWR_21_Enhancement modelling consultation and this representation, we explain our rationale to amend the cost models to improve the cost assessment performance and more accurately reflect IED compliance costs.
- **Ofwat's deep dive assessment is a pragmatic way of dealing with sites with the largest scope (and therefore costs):** We provide additional evidence of the requirements for tank covering at Bolton and Davyhulme to explain the site-specific factors that are driving the high scope and cost of works to deliver IED compliance. We propose that the full cost of £26.157 million for Bolton and £54.837 million for Davyhulme should be allowed in Ofwat's final determination.
- **We propose further efficiencies to reduce our cost of delivering IED compliance:** Our revised cost models informed our cost revisions and we have proposed further 'stretch' efficiencies. Our revised IED enhancement cost submission is £232.877 million. We have undertaken independent, third-party assurance to support the revised cost and scope.
- **Further compliance requirements are being clarified as we progress through the permitting process:** Our business plan submission was based on our latest understanding of requirements at that time. We welcome Ofwat's proposed enhanced cost sharing mechanism (25:25) to recognise the on-going uncertainty associated with IED requirements.

2.2 UUW's PR24 proposal

In our PR24 business plan submission we identified £281.53 million of enhancement expenditure to meet our statutory obligations to comply with the Industrial Emissions Directive (IED) at our anaerobic digestion sites.

Our IED compliance costs and scope were set out in our cost data submission, UUW_079_1 submitted on 20 December 2023, as part of our response to Ofwat query, OFW-OBQ-UUW-079. This superseded information in our IED cost adjustment claim (submission document, UUW44 – Industrial Emissions Directive compliance at anaerobic digestion sites - UUW_CAC_004). It is important to note that whilst the approach to cost recovery and the total cost were updated between the two submissions, the justification for requiring cost recovery to meet IED compliance was materially unchanged.

Our PR24 submission highlighted the need for significant investment to achieve compliance with the IED at our sludge treatment centres, reflecting the scale of change required across our asset base to comply with new standards. We demonstrated that there is no implicit allowance for compliance with more stringent IED permit requirements (as these are an addition to base service provision) and we proposed that efficient enhancement expenditure allowances should be made through PR24.

Our submission identified 14 anaerobic digestion sites needing investment to meet IED compliance standards. At three of the sites (Lancaster, Southport and St Helens) we reduced costs for IED compliance by proposing to

convert sites to sludge thickening centres, as a lower cost option than upgrading the existing anaerobic digestion assets to become IED compliant. The scope of work proposed under our enhancement claim was dominated by two key requirements:

- Provision of secondary containment; and
- Minimisation of fugitive emissions (covering of tanks and abatement of emissions).

It is these two areas that represent the largest industry compliance costs and over three-quarters of company costs.

Through our submission we noted that our understanding of what would be required for IED compliance has grown significantly since the intention to implement the IED was first confirmed in 2019. Furthermore, we highlighted areas of on-going uncertainty in IED compliance scope, and we controlled costs for customers by only including scope where we had certainty over requirements. We highlighted that we may seek to revise our cost estimates for securing IED compliance in future, if further work or Environment Agency confirmed scope requirements make it appropriate to do so.

The scale of investment and capital upgrades required to deliver IED compliance cannot be underestimated. Whilst the EA has set out an expectation for compliance by 31 March 2025, it is clear that investment will extend into AMP8, by necessity rather than choice. The business is working hard to deliver IED compliance as quickly as possible, and our compliance plans demonstrate best endeavours to meet this challenging deadline. We are committed to delivering the vast majority (by number) of IED compliance requirements by 31 March 2025, and only those requirements which are not feasible to deliver by the compliance deadline will extend into AMP8. It must be recognised that the scale of investment required represents a significant transformation of our asset base, and accordingly requires significant time to implement.

Through the PR24 query process we responded to several queries raised with regard to IED expenditure including:

- **OFW-OBQ-UUW-099:** The query asked for more granular information to help refine Ofwat's cost assessment for tank covering for abatement of fugitive emissions.
- **OFW-OBQ-UUW-164:** The query asked us to provide evidence and explanation on why secondary containment (at Davyhulme and Liverpool) and tank covering (Davyhulme) appear to have disproportionately higher costs.
- **OFW-OBQ-UUW-170:** The query asked us to provide evidence and explanation on why tank covering at Bolton appears to have disproportionately higher costs.

2.3 Draft determination position

2.3.1 IED base expenditure

Ofwat has allowed the costs of Environment Agency and Natural Resources Wales permits and administration costs associated with the IED in the draft determination. Ofwat confirmed in response to query, OFW-IBQ-UUW-010, that Ofwat will allow a total of £2.877m across Bioresources and Wastewater Network+ for United Utilities, and a discrepancy in the IED Opex model will be corrected for final determinations.

In allowing the costs Ofwat has stated:

"We have not challenged these costs at draft determinations as they are mostly outside of company control and small relative to other unmodelled base cost areas. But we intend to revisit for final determinations.[12]"

We fully support that these costs are allowed in full. Our most recent APR submissions have revised the scope of the costs included in IED base expenditure data lines, to include only permit subsistence fees and administration costs, and align with the latest regulatory reporting guidance. This has significantly reduced forecast expenditure in AMP8 from historical levels of expenditure, and already presents a significant efficiency challenge to absorb any costs related to the inspection and maintenance of assets in base costs. We agree that as costs are

[12]Ofwat, PR24 draft determinations: Expenditure allowances, July 2024, page 50

predominantly outside of company control, and also relatively minor, it is appropriate that they are allowed as unmodelled costs. The costs in these lines are significantly outweighed by the substantial increase in site opex in AMP8 driven by the IED compliance enhancement in AMP8, which have been subject to a stringent efficiency challenge.

2.3.2 IED enhancement expenditure

Through the PR24 draft determination Ofwat has set out proposed allowances for companies to deliver expenditure related to the IED in the IED enhancement allowance workbook[13].

We welcome the proposal by Ofwat for an exceptional funding mechanism for IED as it is essential we have sufficient funding to meet our statutory obligations. We endorse the approach which recognises both the on-going uncertainty in IED compliance cost and scope, and that given the scale of the required works, we (and the rest of the industry) will not deliver full IED compliance before 31 March 2025.

We make a separate representation in section 3 on Ofwat's proposed PCD metric (PCDWW30) to track delivery of IED enhancement expenditure. This representation relates only to Ofwat's approach to derive efficient costs for IED compliance and should be read alongside UUWR_21_Enhancement modelling consultation.

We observe that Ofwat has undertaken a benchmarking assessment of costs and provide a strong efficiency challenge. We have been allowed £162.43 million of a requested £281.53 million enhancement allowance (58 per cent).

Ofwat noted that there was a significant range in costs submitted by companies. In providing a strong efficiency challenge, Ofwat shared its understanding that companies who they perceived were further progressed with achieving compliance (Northumbrian Water and Yorkshire Water) proposed lower unit costs. Ofwat interpreted this to mean that companies who proposed high costs, have less developed proposals, and the higher costs are unlikely to materialise in practice. However, recognising the higher cost uncertainty compared to other investment areas, Ofwat has proposed to provide enhanced cost sharing rates (25:25). This, Ofwat states, will manage the risk that costs do not reduce for companies with higher costs.

Whilst we agree with the proposed cost sharing, it is important that in order for it to be understood, Ofwat should explain how that cost sharing will be executed, given (for example) its position on the RCV "guarantee" for Bioresources. In other areas of cost sharing, the value of any reconciliation adjustment is shared between an RCV adjustment and a revenue adjustment. Assuming Ofwat proposes a similar approach to Bioresources, this raises the question of how the RCV guarantee is treated for Bioresources, to ensure that any reconciliation values assigned to the Bioresources RCV are actually recoverable in future. We recognise that other options are available (such as putting 100% of any reconciliation adjustments to revenue in the next AMP), but what is most important is that Ofwat is clear how that cost sharing mechanism will work, and whether that should change the status of the Bioresources RCV.

In determining an efficient cost, Ofwat has used a hybrid approach to model an efficient allowance for IED compliance. This was supported by a comprehensive data collection exercise through the Ofwat query process. The assessment excluded IED cost and cost driver data from Dŵr Cymru because of potential differences in the regulatory guidance for IED compliance in Wales.

Modelling of IED costs was split into three parts:

- **Secondary containment**: The cost assessment approach was for scheme level econometric modelling for secondary containment. The cost assessment used only bund wall length as a cost driver to explain differences in secondary containment costs between companies. Ofwat stated that longer wall lengths, that prevents spillage issues from digesters and sludge holding tanks, result in higher secondary containment costs. Ofwat applied an upper quartile catch-up efficiency benchmark to set secondary containment efficient expenditure allowances.
- **Tank covering and abatement of fugitive emissions**: The cost assessment approach was for scheme level econometric modelling for tank covering. The cost assessment used only surface area of tank covers to

[13] Ofwat, PR24 Bioresources Industrial Emissions Directive, June 2024 (PR24-DD-WW-IED-enhancement (3).xlsx)

explain differences in tank covering costs between companies. Ofwat stated that higher area coverage for open sludge tanks results in higher tank covering costs. Ofwat applied a median benchmark to set tank covering efficient expenditure allowances. Median efficiency represents a 0.366 efficiency factor.

- **Other IED costs**: The cost assessment approach was for company level unit cost benchmarking (using sludge produced to explain differences between companies) for all other IED costs. This included costs categorised under monitoring and control, liquor sampling, permit application and 'other' cost drivers. Ofwat applied an upper quartile catch-up efficiency benchmark to set 'other IED costs' efficient expenditure allowances.

Ofwat has undertaken a deep dive into outlier costs, and sites identified as outliers were excluded from the cost model assessment. For UUW, the following outliers were identified:

- **Davyhulme** (secondary containment and tank covering): Ofwat allowed a 50 per cent uplift for secondary containment and tank covering costs.
- **Liverpool** (secondary containment): Ofwat allowed a 50 per cent uplift for secondary containment costs.
- **Bolton** (tank covering): Ofwat has not uplifted costs for tank covering above modelled allowances.

2.4 Issues and implications

We have reviewed and assessed the impacts of Ofwat's modelling approach to determine efficient IED expenditure allowances. While we agree that it is appropriate to undertake a hybrid assessment and model individually the costs of tank covering, secondary containment and 'other' IED compliance activities, the proposed cost models are inappropriate and do not satisfactorily explain the variation in company costs. The approach has resulted in an inappropriate cost allowance and significant underfunding of IED compliance. We have been allowed only £162.43 million of a requested £281.53 million enhancement allowance (58 per cent).

We set out in the remainder of this section our detailed observations on Ofwat's approach to IED cost allowances and the key issues and implications which have arisen from the proposals. We propose amendments as to how the modelling could be refined to improve the cost assessment performance to more accurately reflect the costs. We also provide additional evidence for identified outliers for tank covering at Bolton and Davyhulme to explain the site-specific factors that are driving the high scope and cost of works.

Our proposals for refinements to cost modelling have informed our revised IED compliance cost, set out in our draft determination data tables ADD14. Alongside this, we have proposed further 'stretch' efficiencies, and our revised IED enhancement cost submission is £232.877 million (from £281.53 million submitted in December 2023).

2.4.1 Ofwat's view of future cost reductions is inappropriate

We note that Ofwat identified a significant variation in costs for IED compliance. This agrees with our own view that compliance costs for IED are highly site-specific as costs are influenced by site-specific factors such as proximity to receptors and the type and layout of existing assets on site. We recognise that this provides a significant challenge when seeking to benchmark the cost of IED compliance using relatively simplistic cost models.

This was also reflected in the CMA decision of 2021, which, with reference to IED compliance requirements, stated:

"In general, the CMA observes that IED compliance costs appear highly sensitive to the assessment of detailed requirements at specific sites. This accords with the Environment Agency's view that 'accurate estimates of the cost attributable to IED will only be available once all the site and company specific factors have been assessed and the review or issue of permits has been completed'"[14].

Ofwat has perceived that there is:

[14] CMA Anglian water services limited, Bristol water plc, Northumbrian water limited and Yorkshire water services limited price determinations final report, 2021 ,https://assets.publishing.service.gov.uk/media/60702370e90e076f5589bb8f/Final_Report_---_web_version_-_CMA.pdf (page 382)

"a general trend for companies further progressed with achieving compliance, such as Northumbrian water and Yorkshire Water, to propose lower unit costs. This indicates that the high costs proposed by companies who have less developed proposals are unlikely to materialise and will be lower in practice"[15].

We fundamentally disagree with this view and do not recognise that Northumbrian Water and Yorkshire Water have more developed proposals or are further progressed with achieving IED compliance. The development of our permit compliance costs is the culmination of extensive work with the Environment Agency over the last three years to define and understand IED compliance standards. We were also one of the first companies to receive a draft permit from the EA. We are committed to full compliance with all of our legal obligations, including the IED. We have had a dedicated IED permitting and delivery team in place for over three years, which we are supplementing with consultancy expertise from a range of advisors to maximise our delivery capability. This team has executive sponsorship reporting into the Company Board of Directors.

Ofwat has incorrectly assumed that because Northumbrian Water and Yorkshire Water received funding and/or 25:25 cost sharing rates through the CMA PR19 redetermination decision, those companies are further progressed in achieving compliance. It cannot be assumed that lower unit costs proposed by these companies are a more accurate representation of the actual cost of compliance: No company, as far as we are aware, has had a permit Improvement Condition approved and signed off by the Environment Agency for either secondary containment or the covering of tanks. We are committed to IED compliance and have progressed with delivery of IED compliance in AMP7, regardless of not receiving enhancement funding. We are confident in our understanding of IED requirements and the high costs to deliver IED compliance are due to the required scope, and not a lack of understanding of IED requirements.

We consider that the variability in cost is due to significant differences in asset base between companies. For example, Northumbrian Water treat 100 per cent of sludge through advanced anaerobic digestion processes. Their costs for covering of tanks would therefore be expected to be significantly less than for companies that treat sludge through conventional digestion processes. Only conventional digestion processes will operate open secondary digesters that are driving the most significant element of costs for tanks covering and emissions abatement. To consider that they have lower costs because they have a better understanding of scope is erroneous and should not be used as justification for an efficiency challenge.

We further highlight that the variability in compliance costs reflects that it is not straightforward to determine the scope of works that is required to demonstrate IED Best Available Technique (BAT) standards. Whilst the standards are set out in the 2018 BAT Reference Document and supported by Environment Agency Appropriate Measures Guidance, there remain challenges over sector specific implementation, retrospectively applying guidance to existing sites and interpretation of risk-based measures.

It is important to acknowledge that the implementation of the IED has been, and continues to be, challenging. The Water Industry and Environment Agency have experienced a steep learning curve in the process of implementing the IED on sludge treatment assets. Our collective understanding of what would be required for IED compliance has grown significantly since the intention to implement the IED was first confirmed. The initial expectation that a risk assessment-based approach would suffice in the majority of cases has proven not to be the case. There are limited opportunities to make efficiencies in the scope and still be confident that these alternative proposals will be acceptable to the Environment Agency.

We are confident that our plans are well developed and reflect an accurate level of scope to be delivered. Our costs are high because the scope of work required to deliver IED compliance is high. There is a risk that companies with a relatively immature understanding of IED compliance requirements, who are not as far progressed in solution design or discussion with the Environment Agency, have a lower understanding of requirements and are distorting the benchmarked cost of IED compliance. In this light, we propose that Ofwat reconsider the level of efficiency challenge applied to IED costs.

[15] Ofwat, PR24 draft determinations: Expenditure allowances, July 2024, page 86

To support our submission, we have sought independent third-party assurance of our IED compliance scope. Jacobs have reviewed our proposed enhancement scope against permit requirements and the ability to meet the requirements of IED and have stated:

"There are no clear omissions from the requirements of the permit within the scope of the submission[16]"

And going on to state:

"There are no aspects of the submission which appear to fall outside of compliance with the requirements of the permit and the implementation of IED".

We have further ensured our scope and costs for IED compliance are efficient by limiting the scope of our IED enhancement claim to only the scope items where we had certainty in requirements. We excluded other scope items which were uncertain, and the total of the uncertainties identified was circa £350 million. Following the draft determination, we understand that Ofwat propose that these areas of uncertainty in IED enhancement expenditure are managed within the scope of the 25:25 IED enhancement expenditure cost sharing mechanism.

We welcome this proposal from Ofwat, and we agree it is an appropriate mechanism to manage on-going uncertainty in IED compliance requirements and costs.

2.4.2 Ofwat's approach to modelling efficient IED compliance costs could be improved

This section sets out our representations on Ofwat's approach to modelling IED costs.

We have identified improvements to Ofwat's secondary containment model

The Ofwat cost model uses bund wall length as the sole explanatory variable to predict secondary containment costs. We agree that wall length is an important cost driver - as observed by Ofwat, wall length individually explains the largest share of costs (compared to other available cost drivers). However, we disagree that wall length is the only relevant factor. We consider that wall height is another important variable and should be incorporated into the cost model. This is important as the bunding solution can comprise long, low-height walls or short, high-height walls to provide containment for an equivalent volume. Therefore, the overall cost driver is the total surface area of the wall (length x height) and not just the wall length.

The optimisation of wall length and height are primarily driven by a combination of two site-specific factors:

- The volume of sludge to be contained in the event of a catastrophic tank failure, which is a function of the number and size of tanks on-site and is determined by applying the guidance set out in CIRIA C736; and
- Site specific challenges to contain that volume on-site which is a function of the layout of the existing assets, the site topography, the proximity of tanks to sensitive receptors and the site boundary, and interactions with other assets within the containment solution. Spill modelling forecasts the surge of material to be contained from a catastrophic failure, and not just a total volume that may fill gradually from the bottom up. The impact of designing solutions that contain this surge of material, as well as the total volume, becomes even more important when considering these site-specific factors.

At scheme level, there is almost no correlation (0.2) between wall length and wall height, and we find that there is no clear relationship at the company level either. Thus, there is little evidence of collinearity between the variables and wall length cannot be considered a proxy for wall height.

We present in Table 2 a summary of secondary containment solutions by company. The average wall height ranges from 0.5m to 1.92m, and this variability will significantly impact the overall cost of the secondary containment solution. For example, the importance of considering the wall height, as well as the wall length, can be seen by comparing solutions to contain a fixed volume of 1000m^3:

Under Ofwat's proposed approach to cost assessment, while each solution provides an equivalent level of secondary containment, and has the same wall area, there would be significant disparity in funding between the two solutions. Unless Ofwat's approach to cost assessment is modified it is penalising companies for building

[16] Jacobs, PR24- IED Assurance Report, SE828-10, 23 July 2024. Jacobs identified some areas of concern that the proposals did not go far enough in certain areas, and highlight risks e.g. the assumption that all current tanks can be covered - Jacobs highlighted that due to the age and design of the tanks they may not be able to bear the weight of additional covers.

short, high-height walls, even where this is the most efficient solution to deliver the required containment. Under our revised model proposals both schemes would be allowed an equitable £5.85 million.

Table 2: Summary of Company secondary containment solutions and derived total surface area of walls

Company	Total wall length (m)	Average wall height (m)	Calculated total surface area of walls (m^2)
Anglian Water	6,829	1.11	7,565
Northumbrian Water	1,680	1.92	3,229
United Utilities	9,992	1.18	11,778
Southern Water	10,730	0.85	9,081
South West Water	2,300	1.50	3,450
Thames Water	20,429	0.70	14,271
Dwr Cymru	3,519	0.78	2,754
Wessex Water	5,020	0.82	4,117
Yorkshire Water	8,426	0.79	6,657
Severn Trent Water	19,092	0.50	9,546
Total	88,017	0.82	72,447

Source: United Utilities, 2024 (Data from Ofwat PR24-DD-WW-IED-enhancement.xlsx)

We propose that wall height is incorporated into the model by multiplying wall length and wall height variables and using this interaction as the sole explanatory variable. This method in effect produces the implied wall 'surface area' estimate. The new variable is statistically significant and increases model performance to explain variation in costs. The new model results in a median efficiency challenge of 0.9 and we consider that applying this factor would provide an appropriate level of efficiency 'stretch' for the industry.

The revised models have informed our revised enhancement cost estimate for secondary containment of £66.907 million.

Benchmarking of costs for tank covering is not representative of the full enhancement cost

Ofwat's approach to cost assessment for tank covering uses the surface area of the tank cover as the sole explanatory variable. This simple model is unable to explain most cost variations across different schemes and has a very low R-squared score of 0.078. However, we have been unable to find a more appropriate model specification based on the provided cost driver data, and to improve model performance it might be necessary for Ofwat to collect additional data.

We have significant concerns that the data used to benchmark costs for tank covering is not representative of the full enhancement cost to deliver IED compliance, due to inconsistent Company cost allocation between IED and Carbon Net Zero enhancement programmes. We highlight that Ofwat's rejection of methane reduction Carbon Net Zero enhancement proposals by Anglian Water, Severn Trent and Yorkshire Water, stated:

"The Industrial Emissions Directive is a driver for capturing GHG pollution from this stage of the wastewater process (AAD, Dewatering etc)[17]"

Given that Ofwat considers that the rejected methane reduction Carbon Net Zero enhancement proposals should be considered as IED enhancement expenditure, we propose that the cost should be added to the IED costs for covering of tanks. We present in Table 3 the impact of including of methane reduction costs in IED Tank Covering costs and it materially increases the cost, by up to 750 per cent. We propose that the methane reduction costs identified as IED costs, should be reallocated to the IED tank covering cost models. Unless these costs are reallocated prior to the cost modelling, the modelled unit rate for IED tank covering will be set with an artificially low level of efficiency.

[17] Ofwat, Wastewater Net Zero model, June 2024 (PR24-DD-WW-Net-zero.xlsm, tab 'Phase 2')

Table 3: Revised IED tank covering costs including rejected Carbon Net Zero enhancement methane reduction proposals

	IED tank covering submission (£/m²)	Revised IED tank covering submission (with inclusion of rejected methane reduction Carbon Net Zero proposals (£/m²)	Change in IED tank covering costs
Anglian Water	£3,457	£25,931	750%
Severn Trent Water	£964	£2,251	234%
Yorkshire Water	£1,881	£3,377	179%

Source: United Utilities, 2024 (Data from Ofwat PR24-DD-WW-IED-enhancement (3).xlsx)

We also have significant concerns that Ofwat has adopted a 'one size fits all' approach to model costs for tank covering. In reality, a range of tank types (e.g. raw sludge tanks, centrate tanks, primary digesters and secondary digesters) will be covered in order to meet IED compliance, reflecting a range of assets and digestion processes. It is expected that each tank type would have a different scope of works, and therefore a different unit rate for covering.

Beyond the size of the tank cover to be provided, the extent of requirements to abate emissions from covered tanks will increase costs. The requirements for emissions abatement are influenced by the volume of the tank (which will influence the extraction rate on any emissions abatement plant) and the tank purpose (i.e. centrate tank, raw sludge or digested sludge which will influence the emissions generating potential of the sludge). The scope of works required for abatement is also influenced by the existing abatement plant available – if a tank is already connected to an abatement system (i.e. a floating roof digester) additional scope for emissions abatement will not be required. However, a new abatement system will be required to abate emissions from a secondary digester to be newly covered. These factors are not reflected in Ofwat's cost assessment.

Given the poor model performance and dataset concerns, we consider it inappropriate to apply an additional catch-up challenge to tank covering model predictions, and we provide a more detailed analysis in our representation, UUWR_21_Enhancement modelling consultation. Therefore, unless a better model specification is found, the catch-up challenge should be assumed to be equal to 1. The revised catch-up challenge has informed our revised enhancement cost estimate for tank covering of £123.908 million.

We agree with Ofwat's position that tank covering costs at Bolton and Davyhulme should be considered as outliers to the model due to the scale and site-specific scope of works. We provide more information on the costs for tank covering at these sites in Section 2.4.3.

We do not support Ofwat's approach to assessing 'other' IED compliance costs

Ofwat's cost assessment approach was for company level unit cost benchmarking (using sludge produced to explain differences between companies) for 'other' IED costs, which included all costs categorised under:

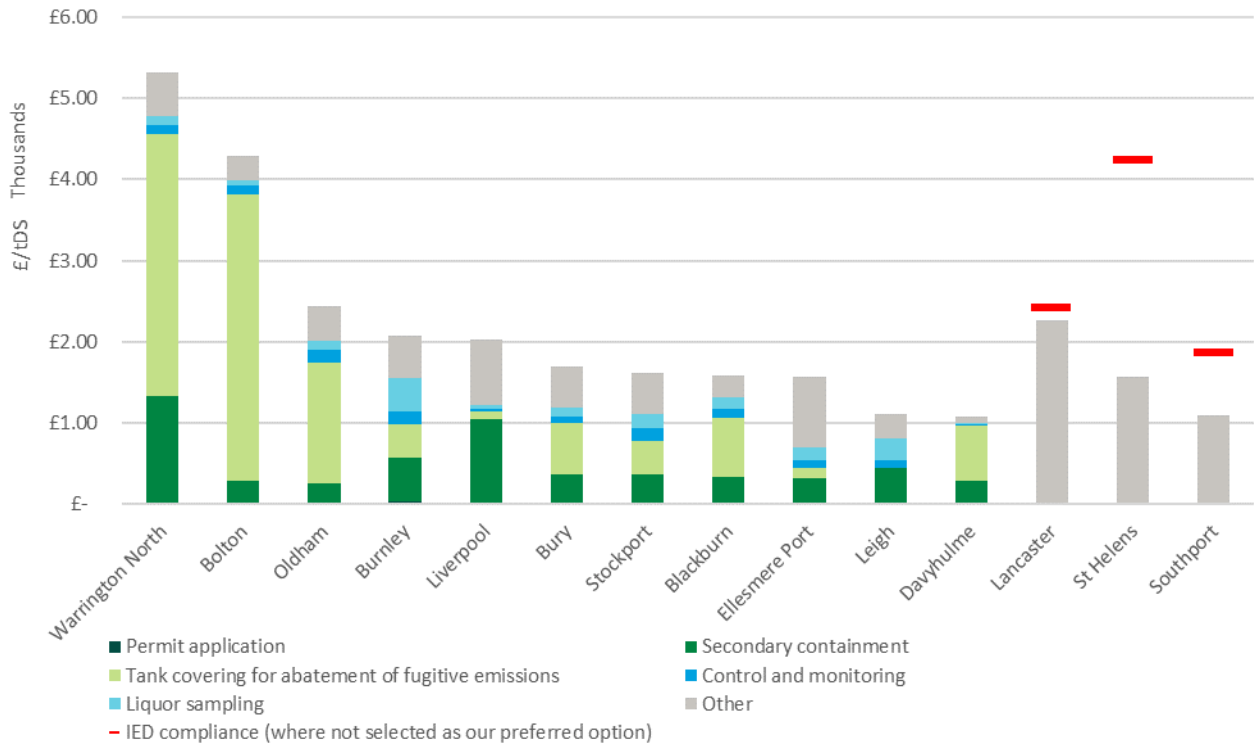
- Control and monitoring;
- Liquor sampling;
- Permit application; and,
- Other

Ofwat applied an upper quartile catch-up efficiency benchmark to set 'other IED costs' efficient expenditure allowances and we have been allowed £35.7 million of a requested £70 million for 'other IED costs'. We observe that across the sector 'other' costs varied significantly and the approach taken by Ofwat to determining cost allowances has meant some companies have been allowed significantly more or less than requested.

The greatest variation in costs is under the 'other' category itself. This is to be expected as the range of works which fall under this category will be, by definition, ad hoc requirements related to specific site circumstances or assets, generating IED compliance requirements that do not fit into any other investment category. We observe that significant expenditure in the 'other' category is isolated to a relatively small number of sites. The cost allowance should reflect the site-specific scope and not be benchmarked on sludge throughput (tDS).

We consider the approach taken is particularly punitive for UU's approach to IED compliance. The most significant costs in the 'other' category relate to dewatering and decommissioning costs, where we have determined the most efficient solution to meet IED compliance is to cease digestion and make alternative investment at another site to treat sludge. The impact of this approach is presented in Figure 5 - it can be seen that at Lancaster, Southport and St Helens sites we have reduced costs for IED compliance by converting sites to sludge export sites, as this is a lower cost option than making the existing anaerobic digestion assets IED compliant. Costs are shown under 'other', and no cost allowance is made in any other category for these sites (i.e. secondary containment or tank covering). The solutions at these sites are already more efficient than delivering IED compliance at the site. This demonstrably shows that Ofwat's approach to assessing 'other' costs is not reflecting efficient IED costs.

Figure 5: Estimated IED compliance costs by site (normalised per TDS processed)



Source: United Utilities, 2023 (reproduced from Figure 4 in UUW_079_1)

We consider that a more appropriate approach would be to apply a high-level efficiency to submitted 'other IED' costs. This efficiency factor could be derived by estimating the cost gap (between predicted and submitted costs) from secondary containment and tank covering models. This approach effectively assumes that company-specific inefficiency is equivalent across secondary containment, tank covering and 'other' IED costs. Ofwat has already implemented a similar methodology to assess Flow to Full Treatment costs as part of the overflows enhancement modelling.

To further support Ofwat in making this change, we have reviewed our scope of works in the 'other' category and have identified efficiencies and reductions in scope. As a result of this exercise, we have reduced our IED 'other' costs to £42.062 million, and costs have been updated in the data table submission ADD14. The efficiencies and solution adjustments made include:

- Outturn asset decommissioning costs as we progress with works at Southport are lower than expected. We have extrapolated the savings across the other sites to reduce forecast asset decommissioning costs.
- We have identified an opportunity to change our delivery approach for digester cleaning. By in-sourcing and expanding our functionality, rather than contracting digester cleaning to an external company, we anticipate this will reduce digester cleaning costs by up to 50 per cent.

- We have yet to formally agree a permit surrender with the Environment Agency. As such there are still some uncertainties in required scope, and given the enhanced (25:25) cost sharing mechanism put in place by Ofwat, we recognise it is reasonable that we review the scope of works included. Where there is uncertainty over whether decommissioning scope is required for permit surrender, we have excluded the costs. However, activities for IED permit surrender and associated asset cleaning and decommissioning are a legitimate part of IED enhancement compliance spend and, if the efficiencies are not realised in programme delivery, we will expect that incurred costs will be covered under the 25:25 cost sharing mechanism.

2.4.3 Additional evidence of cost efficiency at outlier sites

We welcome the pragmatic approach Ofwat has taken to identify outliers and undertake a deep dive cost assessment. We think that this is appropriate given that IED costs are site-specific and influenced by site-specific factors such as proximity to receptors, and the type and layout of existing assets on site.

We welcome recognition by Ofwat that secondary containment at Liverpool and Davyhulme should be considered as outliers due to the significant scope at the site, and we agree it is appropriate to undertake a deep dive cost assessment. We expect that our proposed revisions to the secondary containment cost model will be applied to these sites. Given the poor model performance and the site-specific nature of requirements, we would expect that the full allowance should be provided for the sites, which we have justified through the significant, additional evidence we provided in response to Ofwat query, OFW-OBQ-UUW-164.

In the remainder of the section, we provide additional evidence of cost efficiency at our two outlier sites for tank covering, Bolton and Davyhulme. These sites are outliers due to the large and unique scope of works required at the sites, driven by their unique asset bases. It is correct to consider these sites through a deep dive cost assessment, outside the cost models which do not reflect the scope of works to be delivered. It is essential that companies are efficiently funded to meet their statutory obligations, particularly where these are leading to unique obligations.

Evidence of cost efficiency for tank covering at Bolton

We provided additional information and explanation for the high costs of the solution for tank covering at Bolton in response to Ofwat query, OFW-OBQ-UUW-170. We explained that the high costs reflect the unique asset base at Bolton, which includes two large sludge lagoons which do not currently meet IED BAT standards. We stated that we have not been able to identify a viable solution to retrospectively cover the sludge lagoons with a fixed cover. Therefore, the design solution is to replace lagoons with upstream methane capture, followed by flash aeration, and six new covered tanks with OCU extraction.

Through the draft determination Ofwat did not propose an allowance for Bolton tank covering above the modelled allowance (£10.445 million) highlighting significant concerns over whether the proposed solution for the site is efficient:

"There is no evidence to justify an allowance above the modelled benchmark. The company states that the costs are driven by their proposal to abandon a sludge lagoon and build six new odour-controlled tanks in its place. The company does not provide evidence of a detailed cost breakdown for the scheme to support its statements. The company provides no evidence that this is an efficient solution for this site[18]."

In this representation we provide additional evidence to respond to Ofwat's concerns and we propose that the full cost for replacement of the lagoons of £26.157 million should be allowed in Ofwat's final determination. This is inclusive of a 10 per cent 'stretch' efficiency challenge we have applied to our costs submitted in December 2023. We agree that as a sludge lagoon is a fundamentally different asset type to a tank, requiring a materially different solution to meet BAT, the costs are not well reflected in Ofwat's cost model for tank covering (which uses the m^2 of the solution factor as the only explanatory factor driving cost variations) and therefore the costs for Bolton tank covering should be considered as an outlier, separate to the cost model.

The two large, digested sludge lagoons at Bolton are unique assets, not only within UUW's asset base, but nationally. As we described in our response to Ofwat query, OFW-OBQ-UUW-170, the sludge lagoons at Bolton

[18] Ofwat, Wastewater – Industrial emissions directive; enhancement expenditure model, tab, 'Outliers deep dive', June 2024

are part of our 'central system', whereby six digestion sites are connected to a central dewatering hub at Shell Green. The sites are linked by the 85km Mersey Valley Sludge Pipeline (MVSP) which runs from Oldham to Liverpool. The system is a legacy of the operating model developed at a time when sludges were disposed at sea and barges on the Manchester Ship Canal were utilised as a means of transporting sludges.

The pipeline transports primary digested sludge from upstream digestion centres at Oldham and Bury, to Bolton. Primary digested sludge is stored in the two large sludge lagoons at Bolton, before being transferred via the MVSP to Davyhulme for secondary digestion. At Bolton the lagoons provide approximately 27,000m^3 of storage volume, the required design storage capacity for safe and resilient operation of the MVSP. This storage capacity is needed day-to-day to act as a break tank on the pipeline and to manage outages. The layout of the Bolton lagoons is presented in Figure 6.

Figure 6: IED Compliance requirements associated with Mersey Valley Sludge Pipeline (managing Oldham, Bury and Bolton sludges)

Source: United Utilities, 2023 (Reproduced from UUW_079_1, Figure 13)

We note the approach that Ofwat has taken to calculate an allowance for tank covering at Bolton is particularly punitive, as the cost model allowance is based on the surface area of the proposed tank solution, and not the surface area of the existing lagoons. To illustrate the impact of this:

- The combined surface area of the lagoons is 6,392 m^2. If the lagoons were covered in-situ the cover would be greater than the area to ensure emissions are captured. If a minimum lagoon area had been used for cost modelling the allowance would be £14.161 million.
- In our submission we have presented the area of the solution to replace the lagoons. The proposed tank solution area is 4,077 m^2 and this has been used to determine an efficient cost for compliance (despite storing and abating emissions from the same volume of sludge as if covered in-situ). The modelled cost allowance for the site is £10.445 million.

This further demonstrates why Bolton tank covering should be considered as an outlier to fully reflect the challenges associated with the size of the existing lagoons. The lagoon is seven times larger in surface area than any other tank we are required to cover to comply with IED.

We have reflected on Ofwat's comments and present evidence that replacement of the lagoons is an efficient solution for this site, and a full cost breakdown of the solution, to demonstrate why the full modelled cost allowance should be provided.

We set out our generic approach to options development in Section 24 of our Cost Adjustment Claim submission for IED, in document UUW44. Possible options to meet the required IED standard at Bolton were identified against the 'generic high-level solutions' (GHLS) hierarchy. Options to address PR24 requirements passed through a series of stages before the agreed solution was confirmed, from an initial 'un-constrained' list of options through to confirmation of the defined and estimated scope associated with a preferred solution.

Within the options development process, un-constrained options were identified against a list of GHLS categories. If un-constrained options were deemed viable then additional screening was carried out to identify 'constrained' options, with further screening taking place to refine the feasible solutions and determine those to be progressed to detailed scope development and estimating. In developing feasible options the engineer will always have taken into consideration which solution could represent the best value to the customer.

In Table 4 we summarise the five unconstrained options identified to meet IED requirements for the lagoons at Bolton.

Table 4: Summary of options appraisal to deliver IED compliance at Bolton lagoons

Unconstrained Option	Option description	Delivers BAT compliance?	Area of cover (as per Ofwat cost assessment)	Qualitative Assessment e.g. Carbon, deliverability, O&M	Indicative cost	Progress to detailed scope development and estimating?
Remove need for lagoons – install secondary digesters and dewatering at Bolton	 Cease use of MVSP to export primary digested sludge from Bolton sludge treatment centre. Construct new assets to undertake secondary digestion at Bolton and dewater digested sludge to export for recycling to agriculture. Required tank size for filling and batch sequencing to achieve the 14 days treatment standard would require 4 x 8000m3 tanks (total volume 32,000m3). (MVSP would continue to operate to transport Oldham and Bury sludges).	Yes – secondary digesters would be purpose built to meet BAT requirements for fugitive emissions abatement and secondary containment. (The lagoons would need to be decommissioned at additional cost).	n/a – costs would not be reflected under Ofwat cost modelling	Proven solution with high confidence in delivery. Inefficient expenditure as solution requires new tanks with abatement and new dewatering assets. Tanks are significantly larger than other options, driving a higher cost, along with further significant costs for dewatering assets and liquor management. Note: This option duplicates sludge dewatering and secondary digestion capacity already present elsewhere in the central system.	£££ - Very High	No – option dismissed due to high-cost. The secondary digester tank size is 120% of the capacity of the lagoon, requiring a much more substantial construction (and higher cost) than direct replacement of the lagoon.

Unconstrained Option	Option description	Delivers BAT compliance?	Area of cover (as per Ofwat cost assessment)	Qualitative Assessment e.g. Carbon, deliverability, O&M	Indicative cost	Progress to detailed scope development and estimating?
Remove need for lagoons – move liquid digested sludge via tankers	 Cease use of MVSP to export primary digested sludge from Bolton sludge treatment centre. Tanker primary digested sludge from Bolton to Davyhulme for secondary digestion. (MVSP would continue to operate to transport Oldham and Bury sludges).	Yes – negates the need to mitigate fugitive emissions or provide secondary containment of the lagoons at Bolton. (The lagoons would need to be decommissioned at additional cost).	n/a – costs would not be reflected under Ofwat cost modelling	The solution would require up to 40 additional tankers a day. Bolton site access is restricted by a primary school along the access road limiting the number of vehicle movements. This would result in over 500,000 additional road miles per year and over 4000tCO_2e/yr.	£££ - Very High on-going opex costs	No - option dismissed as infeasible to implement due to the scale of tanker movements required. High on-going opex solution would not provide lowest whole life cost.

Unconstrained Option	Option description	Delivers BAT compliance?	Area of cover (as per Ofwat cost assessment)	Qualitative Assessment e.g. Carbon, deliverability, O&M	Indicative cost	Progress to detailed scope development and estimating?
Cover lagoons in-situ with a floating cover[19]	 Impermeable floating covers are an established method to cover agricultural slurry lagoons. Uses integral floats and gas vents. Covers are not air-tight, but ammonia and odour emissions are minimised by reducing the air speed over the surface.	No – Reduces ammonia and odour emissions but doesn't mitigate fugitive methane emissions. EA clarification "Intensive farming is under a different level of BAT to WASCs" and emissions of methane cannot be abated through minimising the surface to air ratio[20]. Solution does not meet requirements for secondary containment. Additional scope would be required to include making surrounding land impermeable, new containment walls, and extensive drainage (including a pumping station).	6,392m^2	Deliverability challenges as the lagoon needs to be empty initially, and embankments must be suitable for fixing covers. The covers introduce operability risks as access for de-sludging is difficult, raising concerns over continued safe operation of the lagoons.	£ relatively low cost	No – does not meet BAT requirements for minimising fugitive emissions or secondary containment.

[19] Image source https://waterlines.co.uk/services/floating-covers/

[20] Latest advice from Environment Agency colleagues at the industry Task and Finish Group has revealed that Schedule 5 notices which initially included advice to follow guidance, Covering Slurry Lagoons, were issued in error. Stating, "*Intensive farming is under a different level of BAT to WASCs*" and clarifying emissions of methane cannot be abated through minimising the surface to air ratio.

Unconstrained Option	Option description	Delivers BAT compliance?	Area of cover (as per Ofwat cost assessment)	Qualitative Assessment e.g. Carbon, deliverability, O&M	Indicative cost	Progress to detailed scope development and estimating?
Cover lagoons in-situ with a fixed cover[21] with abatement	 Fixed, rigid, covers coated in reinforced PVC polyester fabric are an established method to cover agricultural slurry lagoons. These covers are usually attached to the sides of a tank or lagoon with a central support pole and gas vents.	Solution meets BAT for covering tanks if vents are extracted to abatement, e.g. Regenerative Thermal Oxidiser (RTO) to abate TVOC emissions (including methane). Solution does not meet requirements for secondary containment. Additional scope would be required to include making surrounding land impermeable, new containment walls, and extensive drainage (including a pumping station).	6,392m^2	Significant deliverability risks were highlighted by a supplier visit to site: The large lagoon size will require specialist design and installation of the covering, support infrastructure and gas extraction locations across the covering to link to the abatement plant. Challenging cover installation via crane given lagoon location on a significant slope. Ecology surveys would be required ahead of clearing a large area of vegetation to allow access around the perimeter of the lagoon. Low-cost certainty - challenges with accessibility to install given the size of the lagoons. Covers must be structurally suitable and may involve additional reinforcement.	£££ - Very High (indicative cost for covering and abatement £30m) Exclusive of costs to provide secondary containment.	No – solution meets BAT requirement for fugitive emissions but does not meet secondary containment requirements. Option dismissed as high cost with low certainty, given significant deliverability risks identified by a supplier. Fails to meet BAT for secondary containment.

[21] Image source https://www.farmersjournal.ie/focus/farm-buildings/outdoor-slurry-stores-options-for-covering-to-prevent-ammonia-losses-698227

Unconstrained Option	Option description	Delivers BAT compliance?	Area of cover (as per Ofwat cost assessment)	Qualitative Assessment e.g. Carbon, deliverability, O&M	Indicative cost	Progress to detailed scope development and estimating?
Decommission lagoons and replace with tanks	 Replace lagoons with upstream flash aeration, new covered tanks with abatement. The volume of tanks provide like for like capacity for the volume of the lagoons. The flash aerator is designed to inject air into the partially treated sludge on leaving primary digestion. The air reduces residual anaerobic conditions within the sludge helping to reduce downstream methane emissions. The air from the flash aerator would require treatment prior to discharge to atmosphere to meet emission limits.	Yes – replacement sludge tanks would be purpose built to meet BAT requirements for fugitive emissions abatement and secondary containment.	4,077m^2	Proven solution with high confidence in delivery. Proposed solution is to manage emissions to existing biogas system and odour control units. If this is not feasible or does not meet IED emission limits, there may be an additional requirement to replace proposed OCUs with a Regenerative Thermal Oxidiser (RTO) to abate TVOC emissions (including methane).	££ Moderate Cost £26.157 m	Yes – solution fully meets BAT requirements and is lowest cost solution. High confidence in cost estimate.

Source: United Utilities, 2024

As we present in Table 4, the options appraisal concluded that there was only one feasible option to retrospectively ensure the existing lagoons at Bolton fully comply with BAT requirements. The preferred solution, which progressed to detailed scope development and estimating, was to replace to the lagoons with new tanks with associated emissions abatement. The tanks would be purpose built to comply with BAT for secondary containment and covering tanks. This is the solution put forward as part of our business plan submission.

In Table 5 we provide a breakdown of costs for the preferred solution.

Table 5: Detailed cost breakdown of tank covering at Bolton

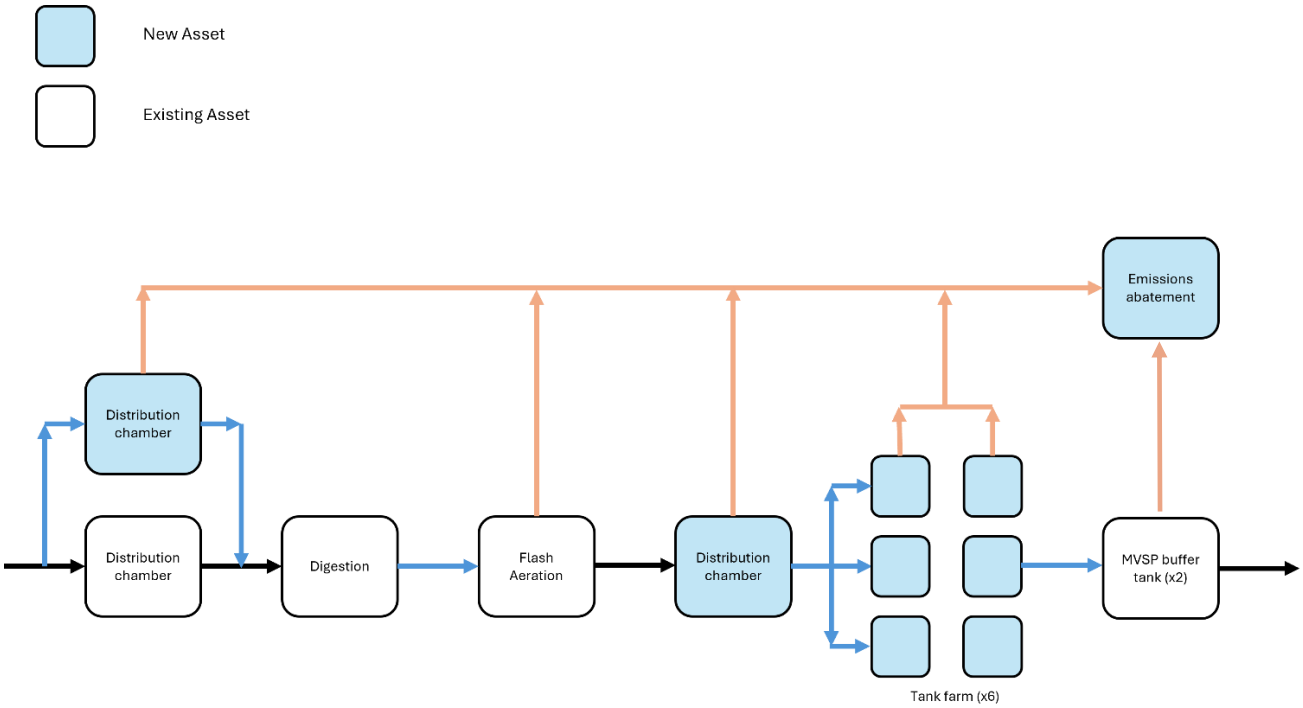
Scope element	Outturn cost (£m)	Civil	Mechanical and Electrical	Description of scope element
Post Digester Distribution	£0.261	Y		Manage transfer from existing primary digesters
Buffer tank	£1.371	Y	Y	Holding tank
Flash Aerator Tank	£1.368	Y	Y	Reduce digestion activity - reduce methane formation
Transfer from Flash Aerator to Tanks (Replacing Lagoon)	£0.691	Y		Allow managed transfer to new tanks (replace lagoon)
Abatement Plant for Flash Aerator + Transfer Tanks	£0.989	Y	Y	Treat off-gases from aerator and transfer tanks
Total (Upstream Plant)	£4.680			
New Covered Tanks Enabled for Connection to Abatement	£13.983	46%	54%	6 tanks each 28m diameter. 70m x 110m impermeable piled foundation, with bund wall. Tanks Glass Coated Steel (GCS), with mixing, covered with extraction connections to abatement plant.
Abatement Plant (Ducting, Abatement Plant & Foundations)	£7.494	Y	Y	Abatement plant: Based on requirement for 70,000 m3/hr extraction rate. Includes ducting, new abatement plant and associated civil works.
Total (Lagoon Replacement)	£21.477			
Total	£26.157			

Source: United Utilities, 2024

From the costs in Table 5, approximately half the costs (53 per cent) are associated with new tanks to replace the lagoons. The remainder of costs are associated with associated abatement plan or upstream infrastructure to install flash aerator and transfer tanks. These costs are considerably higher that would be expected for other types of investment considered under the tank covering cost model, as the lagoon replacement requires a whole new treatment stream to be built at Bolton. In Figure 7 we present a process block diagram summarising the

proposed new process stream. The work is considerably more extensive than might be required for covering a digested sludge tank, which is already part of the digestion process on the site.

Figure 7: Process block diagram for the IED compliant process to replace the lagoons at Bolton



Source: United Utilities, 2024

Our conclusions on the requirements and the necessary scope of works required at Bolton have been subject to independent third-party assurance by Jacobs, which concluded:

"The proposed approach at Bolton to decommission the existing lagoon system and replace it with a suitably sized tank farm, including both appropriate abatement for emissions from the tanks and secondary containment would be the solution most likely to meet the requirements of BAT and the IED permit at the site.[22]"

As we have demonstrated the only viable solution for the large, digested sludge lagoons at Bolton (to replace existing assets entirely) is very different to other investment assessed under the tank covering cost model and it will have a unique unit rate for the purposes of cost assessment. For the purposes of cost assessment Bolton tank covering should be considered as an outlier and we propose that the full cost for replacement of the lagoon £26.157 million should be allowed in Ofwat's final determination.

Evidence for cost efficiency for tank covering at Davyhulme

We provided additional information and explanation for the high costs of the solution for tank covering at Davyhulme in response to Ofwat query, OFW-OBQ-UUW-164. We explained that the cost for tank covering at Davyhulme is high because of the scale of the tanks requiring covering. At Davyhulme we have 19 tanks with a total surface area of 17,314m^2 (equivalent to the area of over 66 tennis courts) requiring covering and emissions abatement: The total cost for this is £54.837 million.

We explained that the large number of tanks at Davyhulme is a consequence of our unique operating model, known as the 'central system'. Over 75 per cent of our sludge is treated through the 'central system', whereby six digestion sites are connected to a central dewatering hub at Shell Green. The sites are linked by the 85km Mersey Valley Sludge Pipeline (MVSP) which runs from Oldham to Liverpool. The system is a legacy of the operating model developed at a time when sludges were disposed at sea and barges on the Manchester Ship Canal were utilised as a means of transporting sludges.

[22] Jacobs, PR24- IED Assurance Report, SE828-10, 23 July 2024.

The pipeline transports primary digested sludge from upstream digestion centres at Oldham, Bury and Bolton to Davyhulme for secondary digestion. The combined sludge from these three centres generates the requirement for a large number of secondary digesters centralised at Davyhulme. Reliance on the pipeline to transport sludge also generates a requirement for buffer tanks for the pipeline, which does not operate continually. In addition, there are a number of contingency tanks, used to provide sludge storage capacity in the event of operational failure of the pipeline.

Through the draft determination Ofwat proposed a 50 per cent cost gap adjustment above the modelled allowance and highlighted significant concerns over whether the proposed solution for the site is efficient. In this representation we provide additional evidence of cost efficiency of tank covering at Davyhulme to deliver IED compliance and we respond directly to the points raised by Ofwat in its deep dive cost assessment. We propose the full costs should be allowed for tank covering.

"it does not justify why so many tanks need covering when the feeder sites represent only about 30% of the site's capacity[23]"

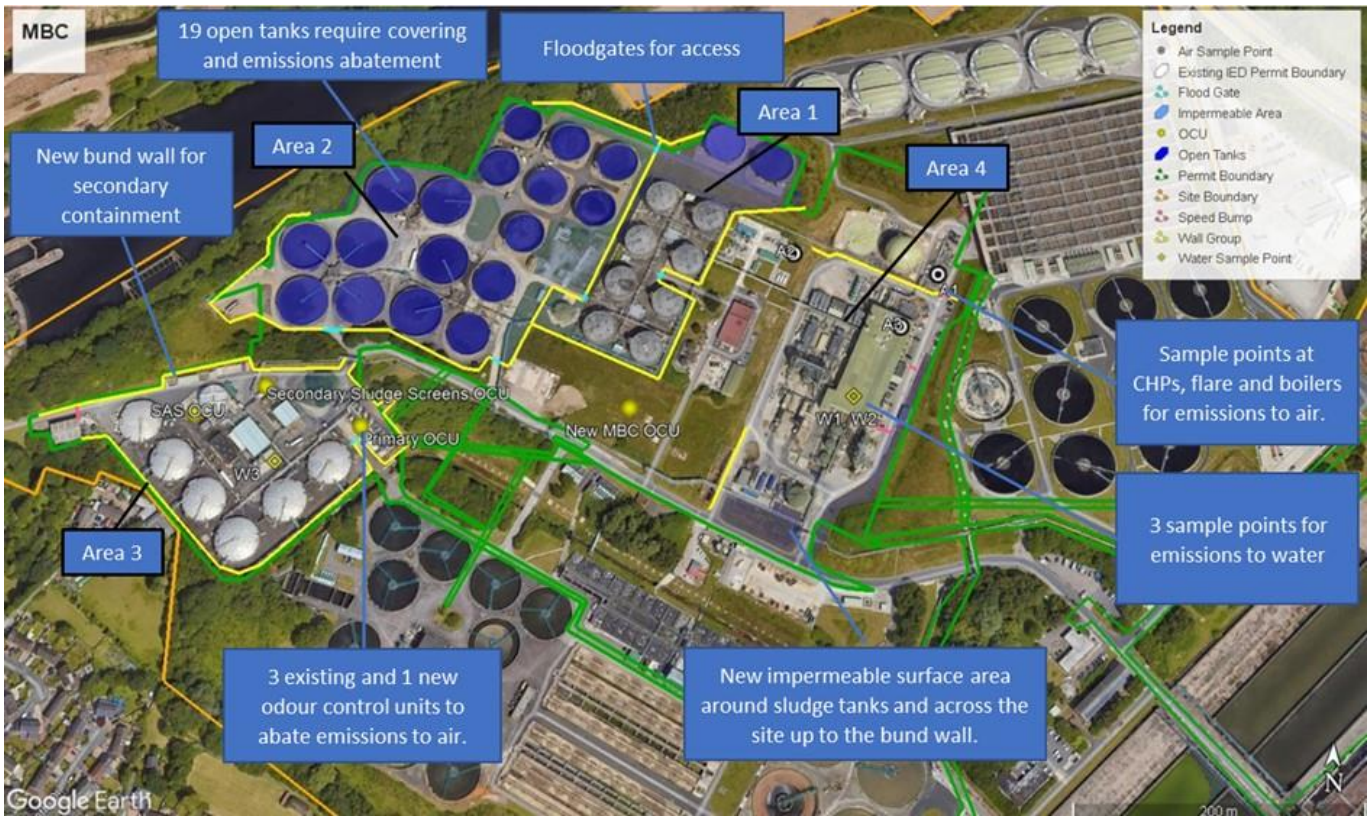
Ofwat has misunderstood the asset arrangement at Davyhulme - Oldham, Bolton, Bury sludges are not 'feeder' sites to the digestion process at Davyhulme. The Davyhulme sludge digestion process, with a capacity of 100,360 tDS/year (FY23 throughput) is a distinct advanced anaerobic digestion process and operates entirely separately to the centralised secondary digestion of Oldham, Bolton and Bury sludges. These sludges do not pass through the digestion process at Davyhulme, and are not classified within the site throughput, the treatment of these sludges is additional to Davyhulme site throughput. The secondary digestion should be considered as a separate process, which happens to be centralised at Davyhulme, rather than having it decentralised at each individual site.

The important distinction for Ofwat to note is that the Davyhulme digestion process is an advanced anaerobic digestion process. This process, by design, does not have open secondary digesters, and therefore despite the significantly larger throughput of the process, the requirements for covering tanks are relatively smaller. Conversely, Oldham, Bolton and Bury sludges are treated via a conventional digestion process. Under conventional digestion, the process has large open, secondary digesters, purpose built as degassing tanks to hold sludge for a minimum of 14 days hydraulic retention time. It is the asset type that is driving IED compliance requirements, rather than the throughput of the digestion process. This is a factor not considered in Ofwat's cost modelling for tank covering.

In Figure 8 we present a schematic of the IED compliance scope required at Davyhulme - the 19 large tanks requiring covering and emissions abatement are highlighted. It is clear that the centralised, secondary digestion at Davyhulme, in addition to on-site advanced anaerobic digestion, is driving a significant uplift in tank covering compliance requirements.

[23] Ofwat, PR24 Draft determination Wastewater – Industrial emissions directive; enhancement expenditure model, tab, 'Outliers deep dive', June 2024

Figure 8: Davyhulme proposed IED compliance scope of work



Source: United Utilities, 2023 (reproduced from UUW_079_1, Figure 16)

"The company does not provide a detailed cost breakdown to support its statements[24]"

The proposed solution to deliver IED compliance for the 19 open tanks at Davyhulme comprises:

- Covering of existing tanks and reconfiguration of tanks to allow capture some of the residual methane in the digested sludge. The reconfiguration moves the post digestion tanks from running in parallel to combining two tanks to run in series.
- Installation of new, flash aeration tanks located between the tank pairings. This injects air into the digested sludge to reduce residual anaerobic conditions within the sludge and stop methane generation.
- Installation of abatement plant to treat the gases emitted from tanks, and the new flash aeration tanks.

We provide in Table 6 a breakdown of the tank covering costs at Davyhulme. The costs captured under the tank covering cost driver include both costs for tank covering and costs for associated emissions abatement.

Table 6: Detailed cost breakdown of tank covering at Davyhulme

	Davyhulme tank covering scope
Tanks to be covered (No.)	19
Tank surface area (m2)	17,314
Cost of covering tanks (£m)	£23.193
Cost of emissions abatement (£m)	£31.644
Total cost	£54.837
Cost of covering tanks (£/m2)	£1,339
Cost of emissions abatement (£/m2)	£1,827

[24] Ofwat , PR24 draft determination Wastewater – Industrial emissions directive; enhancement expenditure model, tab, 'Outliers deep dive', June 2024

	Davyhulme tank covering scope
Total cost (£/m2)	£3,167

Source: United Utilities, 2024

As presented in Table 6, the cost split for the proposed scope of work for Davyhulme is as follows:

1. The minority of costs - circa 40 per cent is civils works for covering of tanks themselves.
2. The majority of cost - circa 60 per cent is to provide emissions abatement plant.

This is highly significant because in demonstrates that there are two factors driving the high cost for tank covering at Davyhulme:

The scale of the tanks

- This is the minority of cost and is partially reflected in Ofwat's cost model assessment by the modelling explanatory factor of surface area (m^2) of the tank cover.
- The scale of the tanks at Davyhulme with a total surface area of 17,314m^2 (equivalent to the area of over 66 tennis courts) is so significant that it presents a step change in cost for delivery, not fully reflected in the cost modelling. We explain more in more detail below that the scale of works is leading to site specific requirements for the scale and complexity of ducting required and a HVLV upgrade to power the abatement plant.

The scope of works required

- The level of methane emissions requiring abatement will increase ancillary works to abate emissions. This is influenced by the volume of the tank (which will influence the extraction rate on any emissions abatement plant) and the tank purpose (i.e. centrate tank, raw sludge or digested sludge which will influence the emissions generating potential of the sludge). The scope of works required for abatement is also influenced by the existing abatement plant available – if a tank is already connected to an abatement system (i.e. a floating roof digester) additional scope for emissions abatement will not be required. However, a new abatement system will be required to abate emissions from a secondary digester to be newly covered. These factors are not reflected in Ofwat's cost model assessment.
- The 19 tanks at Davyhulme are all digested sludge tanks requiring a significant level of emissions abatement that are driving the high, outlier costs for tank covering at Davyhulme. We believe this is an outlier to have such a large number of large secondary digesters at one site, all with a large requirement for abatement and driving 60 per cent of the total cost for tank covering.

We highlight that Ofwat's approach to modelling tank costs uses only one explanatory variable (surface area of cover) and this same unit rate is used, regardless of the tank type. However, in reality a range of tank types will be covered in order to meet IED compliance, reflecting the range of assets and digestion processes across sludge digestion centres nationally. It is expected that each tank type would have a different scope of works, and therefore a different unit rate for covering.

Table 7 we summarise some of the key types of tanks and how these will lead to significant variations in the scope of works required to meet IED compliance, and therefore the unit rate for cost of compliance (beyond the size of the tank cover).

Table 7: Range of tanks potentially included in modelling in Ofwat's cost model assessment and their impact on relative unit rate

Tank Type	Covering requirements	Abatement requirements	Indicative unit cost
Floating roof digester	Roof replacement required	No additional abatement requirements as emissions are abated though the existing biogas system.	Lowest cost outcome as no abatement needed.
Raw sludge storage	Cover required for tank. Due to the lower emissions generating potential of raw sludge it may not be necessary to clean the tank ahead of covering, reducing costs.	Abatement required to meet odour emission limits plus: 20mg/m^3 Total Volatile Organic Compounds (including methane) HCl 5mg/m^3 Ammonia 20mg/m^3 Lower methane generating potential of raw sludge means that the abatement plant is limited to Odour Control Units (OCU). Methane abatement through the biogas system is not required[25].	Medium cost due to moderate abatement requirement.
Existing covered secondary digesters	No requirement for covering	Abatement required to meet odour emission limits plus: 20mg/m^3 Total Volatile Organic Compounds (including methane) HCl 5mg/m^3 Ammonia 20mg/m^3 Extraction rates are 2.5x higher than required for raw sludge tank abatement, increasing unit size. Higher methane concentrations drive more complex solutions to provide abatement via new flash aeration tanks and emissions directed to the biogas system.	Medium due to increased abatement requirement, but no costs for tank covering.
Open secondary digesters	Cover required for tank	Abatement required to meet odour emission limits plus: 20mg/m^3 Total Volatile Organic Compounds (including methane) HCl 5mg/m^3 Ammonia 20mg/m^3 Extraction rates are 2.5x higher than required for raw sludge tank abatement, increasing unit size. Higher methane concentrations drive more complex solutions to provide abatement via new flash aeration tanks and emissions directed to the biogas system[26].	High cost due to high abatement requirement i.e. abatement solutions are much larger (higher extraction rates) and complex (higher methane concentrations)

[25] This was an area of uncertainty identified in our December submission (UUW_079_01). We reduced costs by circa £85 million by excluding requirements to provide additional abatement from existing OCU's (pre-digestion) for methane.

[26] The OCU requirements for post digestion tanks have a total hourly extraction rate of circa 310,000 Nm^3/hour. Conversely, the OCU requirements for raw sludge would be circa 190,000 Nm^3/hour. The scale of OCU required is directly related to the airflow and the extraction rate. The OCU and associated ducting requirement for post digestion tanks is therefore significantly greater than for an equivalent sized raw sludge tank.

Source: United Utilities, 2024

Ofwat's 'one size fits all' approach is not appropriate for determining costs for covering of tanks. We estimate for the simplest solution, where only covering is required, the costs would be only a third of the tank covering cost at Davyhulme. As all of the tanks requiring covering at Davyhulme are post digestion tanks, rather than raw sludge tanks, this has significant impact on OCU scale and cost:

- The solution design for Davyhulme is for two separate OCU streams. By comparison, a single OCU stream would be required to abate emissions from equivalent sized raw sludge holding tanks. Each stream comprises of a two-stage, BAT compliant system for 24 no. 3.5m diameter bio-trickling filters, followed by 8 no. 3.7m diameter twin-bed carbon vessels. The number of OCUs required (48 bio-trickling filters) is reflective of the scale of the abatement system required at the site and is well in excess of the maximum vessel diameter available from suppliers.
- The sheer scale and number of OCUs required introduces further additional costs as the resulting slab for each stream is 1,765m^2 in area and is requires piled foundations to support the significant weight of the installation.
- The power requirements to operate each OCU stream are significant and in the order of 525kW per stream. The power demand requires provision of associated supply and ancillaries, including a HVLV upgrade to meet the significant additional demand.
- The areas the tanks occupy is approximately 3.6 hectares. In order for the OCU system to operate effectively and safely, the system must achieve sufficient ventilation rates to ensure negative pressure differential across the tank covers and manage methane concentrations in the tank headspace. A combination of the required ventilation rates, plus the large area of the tank farm, requires 840m of above ground ductwork, up to 2.4m in diameter to be installed. Due to the existing site layout the ductwork requires six road bridges, driving further additional cost.

We propose that because of the significant abatement requirement at Davyhulme, due to the size and the complexity of the tanks, this is not reflected in Ofwat's simplistic tank covering model. The full allowance of £54.837 million should be provided for Davyhulme in Ofwat's final determination.

2.5 Approach for final determination

We recognise that it is appropriate for Ofwat to ensure that enhancement cost allowances for IED compliance are efficient. We have reviewed and assessed the impacts of Ofwat's modelling approach and we broadly agreed with a hybrid assessment approach to model costs for tank covering, secondary containment and 'other' separately. However, the proposed cost models are inappropriate and do not satisfactorily explain the variation in company costs. The approach has resulted in an inappropriate cost allowance and significant underfunding of IED compliance. The efficiency challenge placed on IED costs, compared to other enhancement areas, doesn’t reflect the site-specific costs for compliance or our detailed cost build up. IED compliance is a prescriptive obligation that we must deliver and there are limited efficiencies that can be gained through delivery.

Unless amendments are made, the proposed costs models do not satisfactorily explain the variation in company costs. In Section 2.4.2 we set out our rationale to amend the cost models to improve the cost assessment performance and more accurately reflect IED compliance costs. We have submitted a revised IED compliance cost of £232.877 million in our data table submission to align with our representation. This is a 17 per cent reduction from our business plan submission of £281.53 million, which we consider an appropriate efficient allowance to deliver IED compliance at our sludge digestion centres. Our revised models have informed our revised costs, alongside a further 10 per cent 'stretch' efficiency. We propose that Ofwat fully accepts our recommendations and provide an allowance of £232.877 million for IED compliance through the final determination. We have undertaken independent, third-party assurance to support the cost and scope of IED compliance.

In summary, our cost modelling proposals are:

- **Secondary containment:** We propose that an alternative metric of wall area (wall length multiplied by wall height) is used as an explanatory variable for cost differences, rather than wall length alone. This is more

representative of the work required and provides a better model outcome, with less unexplained cost variance.

- **Tank covering:** We consider that the cost model for tank covering is likely to have missing costs included in Carbon Net Zero methane reduction enhancement submissions leading to an artificially low level of efficiency. Furthermore, the model is over simplistic and does not provide a good explanation of variation in cost due to the differing scope requirements and tank types captured under this driver. The proposed median efficiency factor of 0.366 is an unacceptable level of efficiency challenge, given that the model represents a significant variation in scope. We propose that Ofwat instead uses an efficiency factor of 1.
- **Other costs:** We propose that Ofwat applies a high-level efficiency challenge to 'other' costs, rather than using £/tDS model which does not reflect the scope of works to be required. Costs under the 'other' category are ad hoc requirements related to specific site circumstances or assets, and significant expenditure is isolated to a relatively small number of sites. The cost allowance should reflect the site-specific scope and not be benchmarked on tDS. In addition, we have reviewed our scope and have identified efficiencies and reductions in scope to support meeting the efficiency challenge Ofwat has applied to IED costs.

We welcome the pragmatic approach Ofwat has taken to identify outliers and undertake a deep dive cost assessment. In Section 2.4.3 we provide additional evidence for outliers to support Ofwat to provide a full allowance for the following sites:

- **Tank covering at Bolton**: We propose that the full cost allowance of £26.157 million is made through Ofwat's final determination. We provide evidence of the options assessment completed which identified the only viable solution to fully meet BAT is to replace the two large, digested sludge lagoons, with new BAT compliant tanks. This scope of works is significantly different to other schemes and is correct to be considered as an outlier.
- **Tank covering at Davyhulme**: We propose that the full cost allowance of £54.837 million is made through Ofwat's final determination. We provide a detailed cost breakdown of the scheme to illustrate the scale and scope of the works required and that the costs are high because the scope of the required works are high. The scope and scale of these works is not reflected Ofwat's cost model and is correct to be considered as an outlier.

We welcome Ofwat's proposed enhanced cost sharing mechanism (25:25) to recognise the on-going uncertainty associated with IED requirements. We welcome this proposal from Ofwat and we agree it is an appropriate mechanism to manage on-going uncertainty in IED compliance requirements and costs.

3. IED compliance at anaerobic digestion sites (PCD)

3.1 Key points

- **We welcome the funding for Industrial Emissions Directive (IED) compliance proposed through Ofwat's draft determination:** It is essential that companies have sufficient funding to meet their statutory obligations. We recognise that it is appropriate for Ofwat to implement a Price Control Deliverable (PCD) to protect customers against non-delivery. However, we believe that in the proposed form, PCDWW30 is unworkable and overly punitive. Through this representation we propose amendments to ensure that the PCD provides an appropriate level of customer protection.
- **We are concerned that the proposed PCD doesn't align with Ofwat's stated principles for setting PCDs:** The PCD metric should protect customers from companies failing to deliver the funded improvements by returning the funding to customers. The PCD scope should, therefore, be constrained to the elements of works being specifically funded through PR24 IED allowances and not, as proposed, the broader metric of "Sites achieving IED compliance." There is a risk that if the PCD metric is too broad, we will deliver everything we have been funded to deliver but won't achieve PCD compliance because a new requirement has emerged, or a distinct operational failure (funded through base allowances) has occurred.
- **The proposed PCD metric is not sufficiently flexible to reflect the multiple ways to deliver IED compliance, including the accelerated rationalisation of our asset base:** Our proposed compliance plan includes shutting a number of sludge digestion sites, but the PCD does not contemplate that such actions might be the best option for customers. Delivery of this best value solution is not enabled under the proposed PCD, and delivery of the scope proposed in our December 2023 submission would incur a £16.282m penalty. The PCD, whilst protecting customers, should also incentivise efficient and effective investment, including site rationalisation. Whilst we believe that our current scope of works provides best value, we shouldn't be held to this scope of works if regulatory direction moves and this no longer provides best value. As permit conditions have only recently been confirmed by the Environment Agency, we are currently assessing different site by site options to achieve IED compliance in both a timely and efficient manner.
- **We strongly support that delivery of IED investment is not time-bound through the proposed PCD:** We agree that it is not currently possible to set out IED delivery dates given the on-going uncertainty in IED requirements and scope. However, it is not appropriate to set the PCD output date as 2024/25, before we have received any funding from customers. In addition, it will not be possible to agree alternative delivery dates with the Environment Agency as they have explicitly stated that they are not able to agree delivery dates beyond 31st March 2025[27]. We propose that the PCD output date should be set at 31st March 2030 to align with customer funding, rather than the IED regulatory date.
- **It is incorrect to only conditionally allow enhancement upon demonstration of "best endeavours":** Best endeavours is a legal term, relevant to regulatory enforcement, but it is not a defined benchmark or compliance standard and is entirely separate to ensuring delivery of the funded improvements. As currently defined the PCD would prevent any company from recovering enhancement costs for delivery of IED compliance, and Ofwat should ensure that companies are efficiently funded for the works required to be delivered.

3.2 UUW's PR24 proposal

In our PR24 business plan submission we identified £282 million of enhancement expenditure to meet our regulatory obligations to comply with the Industrial Emissions Directive (IED) at our anaerobic digestion sites.

[27] Environment Agency, implementation of the Industrial Emissions Directive letter, 18th March 2024

Our IED compliance costs and scope were set out in our cost data submission, UUW_079_1 submitted on 20 December 2023, as part of our response to query, UUW079. This superseded information in our IED cost adjustment claim (submission document, UUW44 – Industrial Emissions Directive compliance at anaerobic digestion sites - UUW_CAC_004). It is important to note that whilst the approach to cost recovery and the total cost were updated between the two submissions, the justification for requiring cost recovery to meet IED compliance was materially unchanged.

Our PR24 submission highlighted the need for significant investment to achieve compliance with the IED at our sludge treatment centres, reflecting the scale of change required across our asset base to comply with new standards. We demonstrated that there is no implicit allowance for compliance with more stringent IED permit requirements (as these are an addition to base service provision) and we proposed that efficient enhancement expenditure allowances should be made through PR24.

Our submission identified 14 anaerobic digestion sites needing investment to meet IED compliance standards. At three of the sites (Lancaster, Southport and St Helens) we reduced costs for IED compliance by proposing to convert sites to sludge thickening centres, as a lower cost option than upgrading the existing anaerobic digestion assets to become IED compliant. The scope of work proposed under our enhancement claim was dominated by two key requirements:

- Provision of secondary containment; and
- Minimisation of fugitive emissions (covering of tanks and abatement of emissions).

It is these two areas that represent the largest industry compliance costs and over three-quarters of company costs.

Through our submission we noted that our understanding of what would be required for IED compliance has grown significantly since the intention to implement the IED was first confirmed in 2019. Furthermore, we highlighted areas of on-going uncertainty in IED compliance scope, and we controlled costs for customers by only including scope where we had certainty over requirements. We highlighted that we may seek to revise our cost estimates for securing IED compliance in future, if further work or Environment Agency confirmed scope requirements make it appropriate to do so.

The scale of investment and capital upgrades required to deliver IED compliance cannot be underestimated. Whilst the EA has set out an expectation for compliance by 31 March 2025, it is clear that investment will extend into AMP8, by necessity rather than choice. The business is working hard to deliver IED compliance as quickly as possible, and our compliance plans demonstrate best endeavours to meet this challenging deadline. We are committed to delivering the vast majority (by number, not by cost) of IED compliance requirements by 31st March 2025, and only those more significant and costly requirements which are not feasible to deliver by the compliance deadline will extend into AMP8. It must be recognised that the scale of investment required represents a significant transformation of our asset base, and accordingly requires significant time to implement.

We did not propose a PCD for IED investment in our business plan submission, although we recognised it was reasonable to consider a PCD to ensure customer protection for the delivery of the additional scope that is allowed for in final determinations. At the time, we were not certain that a PCD would be required for IED compliance as Ofwat was considering how it would make some allowance for IED, which may have been to make cost allowances or to implement an uncertainty mechanism.

We shared in Section 2.3 of our data tables commentary submission in January 2024 our exploratory work on a design for a PCD for IED compliance. We highlighted that if Ofwat decided to implement a PCD for IED compliance it would be essential that a common approach is implemented across all companies, and there is sufficient flexibility in delivery to enable companies to make efficient IED investment.

We proposed that the most appropriate metric to track delivery of IED compliance would be through delivery of the two IED permit Improvement Conditions which are driving the vast majority of capital investment, and have the potential to form a common metric across all companies:

(i) **Improvement condition for secondary containment design** (IC1). This would include all enhancement costs under "secondary containment" within our 20 December 2023 cost driver data table submission (UUW_079_2).

(ii) **Improvement conditions for enclosure of tanks storing (or treatment) stable and unstable digestate** (IC2). This would include all enhancement costs under "Tank covering for abatement of fugitive emissions" within our 20 December 2023 cost driver data table submission (UUW_079_2).

3.3 Draft determination position

Through the PR24 draft determination Ofwat has set out proposed allowances for companies to deliver expenditure related to the IED. We welcome the proposal by Ofwat for an exceptional funding mechanism for IED as it is essential we have sufficient funding to meet our statutory obligations. We thoroughly endorse the approach which recognises both the on-going uncertainty in IED compliance cost and scope, and that given the scale of the required works, we (and the rest of the industry) will not deliver full IED compliance before 31 March 2025. We agree that the proposed allowance should be supported by an enhanced 25:25 cost sharing mechanism for IED expenditure.

We make a separate representation on the cost models used to derive efficient costs for IED compliance in section 2. This representation relates only to Ofwat's proposal to apply PCDs on IED compliance through a site level PCD (PCDWW30).

Details of the PCD are set out in the following documents:

- Price control deliverables appendix, Page 185, Section 13.5 Industrial Emissions Directive PCDs; and
- PCDWW30, presented in PCD model, PR24CA114 Wastewater Bioresources PCDs, tab "IED UUW".

The proposed PCD is common and applies to all nine companies receiving an allowance under PR24 for IED. The PCD measurement metric is an output of "*number of sites achieving IED compliance*". The payment rate is based on delivery of IED compliance for specific sites listed as requiring IED improvement works - for UUW this comprises a programme of 14 sites to achieve IED compliance.

To demonstrate delivery of the output, Ofwat expects companies to secure confirmation from the Environment Agency that the relevant IED sites have been completed in accordance with the respective site specific IED permit and improvement conditions obligations. The Environment Agency sign-off of IED compliance is broader than the specific scope of works being funded through PR24 IED allowances (i.e. it includes activities funded through base expenditure or currently uncertain scope).

Non-delivery PCD payments are equal to the payment rate of non-delivery sites, a total of £156.730 million across our 14 sites.

The proposed PCD is not timebound and has no financial incentives for under or out performance. The compliance date for all sites is 2024/25 – this is before we have received any funding from customers. Ofwat has requested that companies provide a forecast of the delivery profile for site IED compliance, with timescales agreed with the Environment Agency. Independent third-party assurance of the delivery programme should also be provided by July 2028.

The PR24 IED allowances are conditional to several specific conditions set out by Ofwat:

- The company evidencing to Ofwat's satisfaction that all funding is for IED enhancement improvements. The company must demonstrate its best endeavours for delivery and meet the compliance date according to the company latest consultation and agreement with the Environment Agency.
- The company delivering a best value solution while meeting all the IED requirements. The company must provide detailed evidence to show how it has assured itself that the proposed solution is best value, including but not limited to, evidence that the company assessed the compliance status of the asset in advance and evaluated options on the basis of that assessment.

- Provision of independent third-party assessment and assurance of the delivery of IED compliance for the applicable sites, confirming the date that the works and or sections of the works became IED compliant.
- For the scheme to be confirmed as complete it must be fully commissioned, operational and in permanent use. It must be the permanent solution and not a temporary solution.

3.4 Issues and implications

We recognise that it is appropriate for Ofwat to implement a PCD to protect customers against companies failing to deliver the funded IED improvements and we agree that any PCD should be consistent across the industry. However, we believe that in the proposed form, PCDWW30 is unworkable and risks being overly punitive for companies seeking to deliver a best value solution in the best interests of customers.

We set out in the remainder of this section our detailed observations on Ofwat's proposed PCD and the key issues and implications which have arisen from the proposals.

a) The proposed PCD output metric is too broad and does not align with Ofwat's stated principles for setting PCDs

Ofwat's proposed PCD output metric is "*number of sites achieving IED compliance*".

To demonstrate delivery of the output, Ofwat "*expect the company to secure confirmation from the Environment Agency/Natural Resources Wales that the relevant IED sites have been completed in accordance with the respective site specific IED permit and improvement conditions obligations*"[28] .

Ofwat has placed a condition on IED allowances and states that "*the company must demonstrate its best endeavours for delivery and meet the compliance date according to the company latest consultation and agreement with the Environment Agency or Natural Resources Wales*" [29].

This position, if not revised, creates several issues which we believe make the PCD unworkable and overly punitive, as we explain in the remainder of this section.

- **The PCD is not consistent with Ofwat's principles.**

Ofwat expects that a PCD should *"protect customers from companies failing to deliver the funded improvements by returning the funding to customers"* [30]. We agree that the PCD should be constrained to the works being funded. However, the metric of "*number of sites achieving IED compliance*", is too broad in scope and extends beyond the enhancement element of IED allowances to include delivery of full site IED compliance (i.e. it includes activities funded through base expenditure or currently uncertain scope).

There is a risk that if the PCD metric is too broad, we will deliver all the enhancement scope we have been funded to deliver, but don't meet the PCD requirement for achieving IED compliance. This may be because a new requirement has emerged, or a distinct operational failure (funded through base expenditure) has occurred. The Environment Agency letter of 18 March 2024, advising companies of the improvement conditions that the Environment Agency will use where appropriate to deliver the standards required, included a number of improvement conditions not being funded through the enhancement element of IED allowances, for example:

- Improvement conditions for primary containment tanks
- Improvement conditions for operational storage buffer capacity
- Improvement conditions for biogas upgrading plant

In order to align with Ofwat's PCD principles, the PCD scope should be constrained so that it is commensurate with the scope of works funded by the IED enhancement allowances. It should not mandate sign-off of full IED

[28] Ofwat, PR24 draft determinations: Price control deliverables appendix, July 2024, page 186

[29] Ofwat, PR24 draft determinations: Price control deliverables appendix, July 2024, page 187

[30] Ofwat, PR24 draft determinations: Price control deliverables appendix, July 2024, page 164

compliance which could be jeopardised by new scope or operational activities that are not part of the enhancement investment.

We propose that delivery of IED compliance is tracked through delivery of the two IED permit improvement conditions which are driving the vast majority of capital investment:

(i) Improvement condition for secondary containment design; and

(ii) Improvement condition for enclosure of tanks storing (or treatment) stable and unstable digestate.

Delivery of these two improvement conditions, which will require Environment Agency sign-off, relates to over three-quarters of company costs and have the potential to form a common metric across companies. Moreover, these cost drivers are clearly identified and can be aligned and verified with the cost submission in December 2023.

The "other" category should not be included in the PCD scope. It is made up of multiple types of interventions across multiple assets and operational activities and it incurs low levels of capital expenditure. It would be overly burdensome to justify delivery through the PCD across multiple permit clauses and improvement conditions.

- **The assessment of the PCD at site level is overly punitive.**

The proposed PCD metric is a single, site-level assessment of achieving IED compliance. This single metric, with a low level of granularity, risks being overly punitive.

For example, the proposed allowance for Davyhulme sludge treatment centre is £52.398 million under Ofwat's PR24 draft determination. This comprises (amongst other elements) a programme of containment of four individual areas of bunding and impermeable surfacing, and a programme of covering and abating emissions from 19 separate tanks. Non-delivery of site IED compliance under the proposed metric would incur a penalty equal to the payment rate for the site £52.398 million.

It is feasible under the proposed PCD metric, that all secondary containment and works on 18 of 19 tanks could have been delivered at Davyhulme (aligning with the majority of IED allowances being spent as planned), but the whole site would be considered as 'non-delivery' under the PCD. This position would be unreasonably punitive, as customers would have received the benefit of the vast majority of the completed investment and yet the company would be required to return the full IED allowance for the site.

We propose that the design of the PCD should be modified to move away from a single, site-level assessment to separate assessments of the two IED permit improvement conditions which are driving the vast majority of capital investment i.e. secondary containment and covering of tanks. We recognise it would be challenging to provide a PCD output at a very granular level (i.e. number of tanks delivered) but our proposed approach provides an intermediate approach whereby a proportion of the delivery £19.499 million for secondary containment) would be recognised in the scenario and the full scope of works would not be subject to non-delivery penalty.

We believe that allowance for partial delivery is particularly important when considering IED delivery, as these are new standards and there remains considerable uncertainty over the technical feasibility to retrospectively applying standards to existing sites, and being able to agree measures that will meet Environment Agency requirements. It is important to note that no company has yet had an IED improvement condition signed-off by the Environment Agency or even a solution design agreed.

We further add that the approach Ofwat has taken to determine the PCD penalty rate on a site by site basis has resulted in sites having a PCD penalty rate higher or lower that the IED enhancement allowance. The approach used by Ofwat to determine the site level PCD rate is to divide the company allowed totex by the total company requested total. This has resulted in sites being allocated a higher or lower percentage of their requested value, depending on the model outcomes. For example, our Warrington site has been allowed IED enhancement costs of £7.120 million, however, the proposed PCD non-delivery penalty is £15.031 million. We expect that this will be rectified for final determination as it is inappropriate for the penalty for non-delivery to be greater that the allowance for the site.

- **The PCD metric duplicates regulatory compliance monitoring by the Environment Agency.**

Ofwat's proposed PCD output metric is "*number of sites achieving IED compliance*". Set at this broad definition, extending beyond the scope of works being funded through IED enhancement allowances and including activities funded through base expenditure or currently uncertain scope, the proposed metric will duplicate the regulatory oversight already provided by the Environment Agency. The Environment Agency has stated that there is significant risk of enforcement action for delivery beyond 31 March 2025[31].

The PCD should allow Ofwat increased oversight of delivery of the PR24 IED funded improvements, however, it should not duplicate the regulation of compliance under the purview of other bodies. For instance, should a company fail to meet Environment Agency expectations for best endeavours we expect that the Environment Agency would start enforcement proceedings against that company. Companies should not, however, incur further financial penalty from Ofwat for not achieving IED compliance, where the scope of works funded through PR24 IED allowances has been delivered.

The PCD metric should be changed to align with Ofwat's principles of delivery and be constrained to be commensurate with the scope of works funded by the IED enhancement allowances, and not be a duplicate compliance metric overlapping the regulatory oversight provided by the Environment Agency.

- **It is incorrect to only conditionally allow enhancement upon demonstration of "best endeavours".**

In its PCD description Ofwat has applied a condition that "*The company must **demonstrate its best endeavours** for delivery and meet the compliance date according to the company latest consultation and agreement with the Environment Agency or Natural Resources Wales"* [32].

Ofwat is incorrect to only conditionally allow enhancement investment based on meeting "best endeavours". The Environment Agency has defined the following with regards to best endeavours in their letter to Company CEOs in March 2024[33]:

"In keeping with standard practice we have advised that you should look to document and provide evidence that you have taken all available measures to achieve compliance by the earliest possible date. We have described this as demonstrating 'best endeavours'."

Whilst it is right for the Environment Agency to take into account demonstration of "best endeavours" to inform their regulatory approach to non-compliance with IED, it is incorrect for Ofwat to apply "best endeavours" as a benchmark for allowing PR24 IED compliance allowances. Best endeavours is a legal term, relevant to regulatory enforcement, but it is not a defined benchmark or compliance standard. Fundamentally, it is entirely separate to ensuring delivery of the scope of works being funded through the enhancement element of IED allowances, which is the purpose of a PCD metric.

Moreover, what the Environment Agency accept to be best endeavours (if best endeavours are accepted at all) is currently unknown and may be inconsistent between companies. Clearly, a delivery PCD should not be predicated on meeting an unknown requirement, but should be based on delivery of funded investment.

In response to query, OFW-IBQ-UUW-015, Ofwat has stated:

"*We expect IED compliance to be as per Environment Agency guidelines and timescales. Any deviation on site-specific final date for compliance, is subject to the company demonstrating its best endeavours to achieving compliance to the Environment Agency (this includes discussing and obtaining agreement from the Environment Agency on any revised compliance dates)".*

We are concerned that Ofwat has misunderstood the use of 'best endeavours' with respect to IED delivery and in doing so has set an unachievable condition within the PCD definition. The above indicates that Ofwat understand demonstration of best endeavours is a route to agreeing revised IED compliance delivery dates with the Environment Agency. This is not the case.

[31] Environment Agency, implementation of the Industrial Emissions Directive letter, 18th March 2024

[32] Ofwat, PR24 draft determinations: Price control deliverables appendix, July 2024, page 187 (emphasis added)

[33] Environment Agency, Implementation of the Industrial Emissions Directive letter, 18th March 2024

The Environment Agency requires compliance with best available techniques by 31 March 2025. The Environment Agency instead states:

"as the regulator we cannot fetter our discretion, putting forward mitigation does not ensure that you will avoid enforcement, but it can be taken into account when deciding the appropriate level of regulatory response. Demonstrating best endeavours requires you to strive to be compliant before the March 2025 deadline and to take all available measures to do so".

The Environment Agency has been clear that it will not agree alternative delivery dates. Best endeavours instead will inform the Environment Agency approach to enforcement during the period between the regulatory date and the delivery date.

We propose that any reference to meeting best endeavours should be removed from the PCD definition. As currently defined the PCD would prevent any company from recovering enhancement costs for delivery of IED compliance as no company will deliver full IED compliance by the 31 March 2025 regulatory date, and the EA will (most likely) not agree revised IED compliance dates. Notwithstanding the regulatory enforcement position, Ofwat should ensure that companies are efficiently funded for the works required to be delivered.

b) The proposed PCD metric is not sufficiently flexible and is therefore overly punitive for delivering best value

We observe that in the PCD definition, Ofwat states, *"We will hold companies to deliver the relevant IED enhancement upgrades as identified by each individual company under this investment in their December IED cost data submissions"*[34].

And *"We expect the company to deliver the required IED compliance in accordance with the site specific IED permit conditions as agreed by the company with the Environment Agency or Natural Resources Wales"*.[35]

The PCD as defined (to hold companies to account for delivering IED compliance at each site) does not reflect that there are two ways to meet IED compliance at a site level:

(1) Invest in the existing asset base to ensure the site complies, as required, with the IED permit requirements in line with the Best Available Techniques (BAT) and BREF 2018; or

(2) Invest at a site to cease digestion, decommission assets, surrender IED/digestion permits, provide sludge thickening and sludge export facilities. In addition, there may be investment required at an offsite location to ensure sufficient sludge treatment capacity is provided elsewhere in our regional system to compensate for the loss of digestion capacity. Once digestion has ceased, and any IED permit surrendered, this is considered as having meet IED compliance, as the site will no longer fall within scope of the regulations.

The high cost to deliver the level of transformation required to demonstrate compliance with IED BAT standards (e.g. to phase out conventional anaerobic digestion which relies on open secondary digesters) is necessarily leading to the accelerated rationalisation of digestion sites as the costs of compliance would render the site uneconomic and the continuance of activities at the site would not be in the best interests of customers. The potential for site rationalisation has been discussed with the Environment Agency through industry IED Task and Finish Group meetings. At a meeting on 24 April 2024, Environment Agency colleagues acknowledged that a significant number of sites would be decommissioned as an alternative method to meet IED compliance. Environment Agency colleagues noted that IED permits would continue to be issued as required for regulation, but broadly welcomed rationalisation happening within the industry as a move to improved standards and BAT.

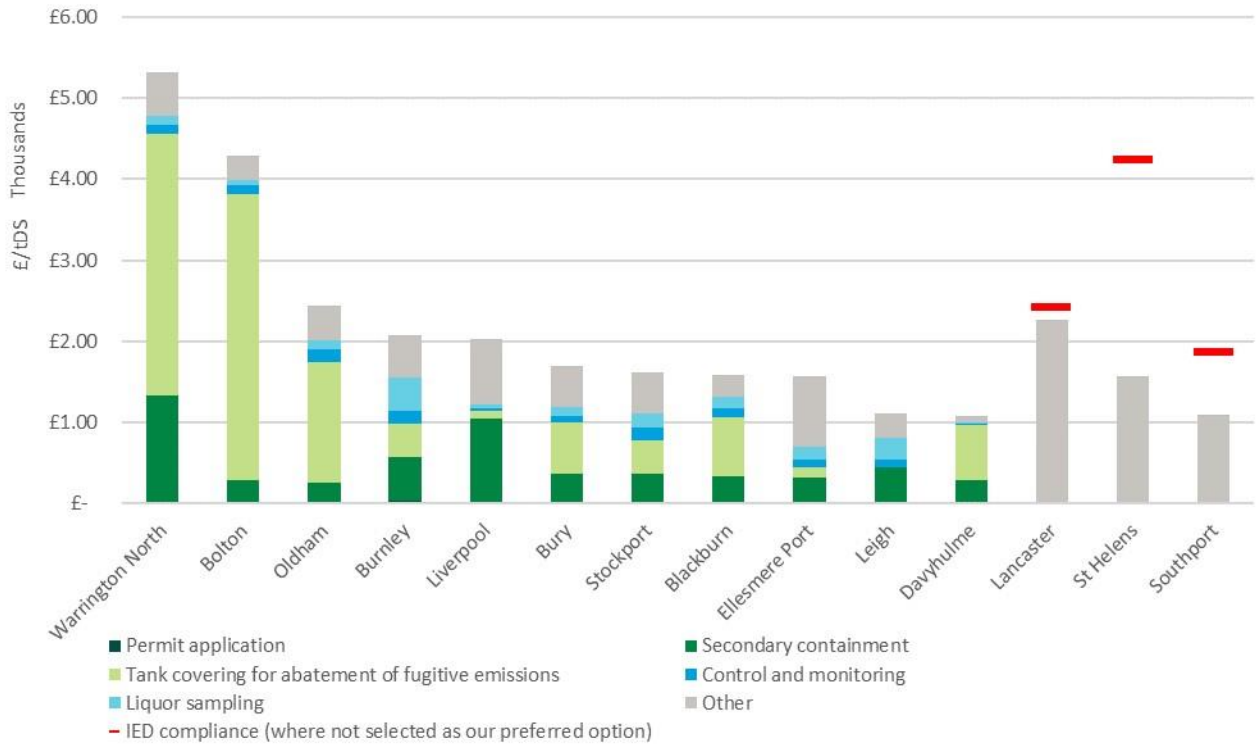
Our proposed IED compliance plan, as set out in our December 2023 submission UUW_079_01 already includes shutting a number of sludge digestion sites to meet IED compliance requirements. As demonstrated in Figure 9, we propose to deliver IED compliance at 11 of the 14 sites that require IED permits. However, at three of the sites (Lancaster, St Helens and Southport) we propose to cease digestion at these sites, surrender IED permits and convert the facilities to sludge export sites. At these sites, where the cost of IED compliance is high compared to

[34] Ofwat, PR24 draft determinations: Price control deliverables appendix, July 2024, page 185

[35] Ofwat, PR24 draft determinations: Price control deliverables appendix, July 2024, page 185

the digestion throughput of the site, this assessment has determined that closure provides the best value option for customers in the long term.

Figure 9: Estimated IED compliance costs by site (normalised per TDS processed)



Source: United Utilities 2023 (Reproduced from Figure 4, UUW_079_01).

Delivery of our least cost and best value compliance plan, incorporating site rationalisation, is not enabled under the PCD. Restricted to an inflexible definition of delivery of IED compliance – to meet site specific IED permit conditions - would mean that delivery of the scope proposed in our December 2023 submission (shown in Figure 9) would incur a £16.282 million non-delivery penalty.

We do not believe that putting the company in this position is in the best interests of customers. It reduces incentives on the company to make decisions which drive the most efficient cost solutions. It is also unreasonable for the company to be subjected to penalties for delivering the scope of works set out in our submission. We consider that the PCD should be revised to recognise that, for some sites, the most cost-effective means of achieving IED compliance is the rationalisation of the site.

We raised this point through Query, OFW-IBQ-UUW-031 and Ofwat responded to state:

"This item will be company specific and may affect specific sites. If the company would like to propose any alternative approach in its representation on our draft determinations, we will review the company's specific proposal based on the evidence provided".

In light of this response, we propose that the PCD definition is updated to state, ***"Number of secondary containment and tank covering schemes achieving IED compliance (or digestion activity decommissioned)"***. It is important to note that site decommissioning and IED permit surrender will also require Environment Agency approval. In some circumstances decommissioning would be a more expensive option in AMP8, but one that might provide better value in the long term. It is important companies should be free to explore such options under the PCD, for the benefit of both companies and customers.

Furthermore, the PCD, whilst protecting customers, should also incentivise efficient and effective investment and not just rigidly hold companies to account for what was funded, regardless of changing circumstances and requirements. We submitted what we thought was our best value IED compliance plan in December 2023. However, as we progress with detailed designs, new requirements emerge, or Environment Agency review

designs, our compliance plans may change. As scope grows there may be a greater number of sites that the best value option may change to ceasing digestion and surrendering the IED permit. Therefore, whilst we believe that our current scope of works provides best value, we shouldn't be held to this scope of works if regulatory direction moves and this no longer provides best value. By constraining the PCD to delivering the limited scope of works from December 2023, the PCD may inadvertently further prohibit delivery of the best value solution.

We are exploring opportunities for the accelerated further rationalisation of assets with the EA and how this could be done in conjunction with meeting IED requirements. Through this approach we could potentially close a greater number of existing sludge digestion sites (due to the technical challenges and disproportionate costs for smaller sites to meet IED compliance requirements) and instead, build new, IED compliant advanced digestion facilities. If the plan comes to fruition there may be a greater number of sites where the solution is to invest to close sites, and build new digestion capacity at an alternative location, rather than retrospectively install secondary containment or cover and abate emissions from open tanks at aging digestion centres.

Aligned with our proposal, the PCD design for IED delivery will need to be sufficiently permissive and flexible to allow both options to be implemented, where such actions might be the best option for customers.

c) The proposed approach to setting and monitoring compliance dates is unworkable

We strongly support that delivery of IED investment is not time-bound through the proposed PCD. We agree it is not currently possible to set out IED delivery dates given the on-going uncertainty in IED requirements and scope.

We can see that Ofwat's PCD proposes a 2024/25 delivery date for "number of sites achieving IED compliance". This 2024/25 date is in line with statutory requirements but is in advance of any AMP8 cost allowances. This PCD should be reset so that the expected delivery schedule matches the timing of cost allowances and hence customer funding.

We sought clarification of this point, through Ofwat Query, OFW-IBQ-UUW-015. Ofwat responded to state:

"We expect IED compliance to be as per Environment Agency guidelines and timescales"

And continuing to add:

"If you have agreed to an alternative delivery program with the EA, please state this in response to the draft determination."

We would take this opportunity to advise Ofwat that all permits are being issued with a compliance date for improvement conditions of 31 March 2025. The Environment Agency has been explicit that compliance dates will not be extended, stating in their latest correspondence:

"We understand that some companies believe that they are unable to implement all the changes and complete the works required to comply with BAT by 31 March 2025. Should you find yourself in this position there is significant risk of enforcement action" [36]

The Environment Agency is not in a position to agree alternative compliance dates. As such, we will be unable to provide a delivery programme, with Environment Agency endorsement, that meets Ofwat's expectations.

We propose that the PCD output date should be set at 31st March 2030 to align with customer funding, rather than the regulatory date. As currently defined, the PCD would prevent any company from recovering enhancement costs for delivery of IED compliance as no company will deliver full IED compliance by the 31 March 2025 regulatory date, and the EA will not agree revised IED compliance dates. Regardless of the regulatory enforcement position, Ofwat should ensure that companies are efficiently funded for the works required to be delivered.

We highlight that a proposed PCD compliance date, beyond the regulatory date for IED compliance does not prejudice our commitment to deliver best endeavours to meet the IED compliance date by 31 March 2025. We are committed to meeting all of our statutory obligations, including the IED, and we are working hard to deliver compliance as soon as possible. We have on-going discussions with the Environment Agency to discuss our

[36] Environment Agency, implementation of the Industrial Emissions Directive letter, 18th March 2024

delivery plans and on-going progress to achieve compliance. Delivery of the specific enhancement investment within the bounds of the PCD and wider IED compliance are not the same, and where appropriate we will seek to put in place temporarily mitigation, whilst the permanent solution is delivered.

To provide assurances to Ofwat and ensure that customers are protected we propose that our ultimate delivery programme is assured by a third party, who will be able to make judgements on appropriate timescales to deliver the scope of works. Third parties will be better placed to make assessment of wider factors impacting deliverability such as supply chain delivery constraints, running concurrent programmes across a number of sites, concurrent works at the same sites and the number of assets which can be taken out of service at any one time. All these factors will materially impact the speed of the delivery programme and the Environment Agency is not best placed to make these assessments.

3.5 Approach to final determination

We recognise that it is appropriate for Ofwat to implement a PCD to protect customers against non-delivery. However, we believe that in the proposed form, PCDWW30 is unworkable and punitive for companies attempting to deliver best value. In Section 3.4 we have set out specific details of the issues and implications that have arisen from Ofwat's proposed IED PCD mechanism. In summary, these are:

- The PCD scope should be constrained to the elements of works being specifically funded through PR24 IED allowances and not, as proposed, the broader metric of "Sites achieving IED compliance." There is a risk that if the PCD metric is too broad, we will deliver everything we have been funded to deliver but won't achieve PCD compliance because a new requirement has emerged, or a distinct operational failure (funded through base allowances) has occurred. We propose that delivery of IED compliance is tracked through delivery of the two IED permit improvement conditions which are driving the vast majority of capital investment:
  - Improvement condition for secondary containment design; and
  - Improvement condition for enclosure of tanks storing (or treatment) stable and unstable digestate.
- The PCD, whilst protecting customers, should also incentivise efficient and effective investment, including site rationalisation. We propose that the PCD definition is updated to state, *"Number of secondary containment and tank covering schemes achieving IED compliance (or digestion activity decommissioned)"*. Unless revised, we do not believe that the PCD is in the best interests of customers as it reduces incentives on the company to make decisions which drive the best value in the long term. It is also unreasonable for the company to be subjected to penalties for delivering the scope of works set out in our submission.
- It is not appropriate to set the PCD output date as 2024/25, before we have received any funding from customers. It will not be possible to agree alternative delivery dates with the Environment Agency as they have explicitly stated that they are not able to agree delivery dates beyond 31st March 2025. We propose that the PCD output date should be set at 31st March 2030 to align with customer funding, rather than the IED regulatory date.
- It is incorrect to only conditionally allow enhancement upon demonstration of “best endeavours” and reference to best endeavours should be removed from the PCD definition. A company's ability to meet statutory compliance dates (whether through demonstrating best endeavours, delivery of temporary works or full compliance) is under the purview of the Environment Agency and outside of the scope of the PCD metric which relates to delivery of specific capital works only. As currently defined the PCD would prevent any company from recovering enhancement costs for delivery of IED compliance, and Ofwat should ensure that companies are efficiently funded for the works required to be delivered.

We propose amendments to the PCD to ensure that the PCD provides an appropriate level of customer protection. In Table 8 we summarise the proposed PCD modifications, which we believe align to Ofwat's principles, yet create sufficient flexibility to allow companies to deliver best value solutions.

Table 8: UUW proposed amendments to the IED PCD metric

Scheme delivery expectations	
Deliverable	Number of secondary containment and tank covering schemes achieving IED compliance (or digestion activity decommissioned) *We propose this increases in granularity from a site level PCD, which is not commensurate with the works being funded, to delivery of the two specific enhancement elements which are driving the majority of enhancement costs. This must also be sufficiently flexible to allow for site rationalisation.*
Measurement and reporting	The company will report progress against delivery of the two IED permit Improvement Conditions which are driving the vast majority of capital investment: (i) Improvement Condition for secondary containment design: The payment rate is equivalent to IED enhancement cost allowances under "secondary containment" on a site-by-site basis. (ii) Improvement Condition for enclosure of tanks storing (or treatment) stable and unstable digestate: The payment rate is equivalent to IED enhancement cost allowances under "tank covering for abatement of fugitive emissions" on a site-by-site basis. • Assessment will be made at the level of delivery of individual Improvement Conditions, not site level IED compliance. • Partial delivery at a site will be allowed if either element of secondary containment or tank covering has been delivered. • The "other" investment category, as well as currently uncertain scope, or activities funded through base allowances are not included in the PCD scope. • The assessment of delivery allows for ceasing activity and decommissioning as an alternate delivery method, where investment is made to remove the need for an IED permit at a site. • The company should state its proposed profile for the delivery of site-by-site improvement condition delivery to enable progress reporting through AMP8. • The PCD timescale for delivery is 31 March 2030. This is the date at which 'non-delivery' will be assessed. *Delivery dates will align with the timing of cost allowances - they will not align with statutory compliance dates. A company's ability to meet statutory compliance dates (whether through demonstrating best endeavours, delivery of temporary works or full compliance) is under the purview of the Environment Agency and outside of the scope of the PCD metric which relates to delivery of specific capital works only.*
Assurance	The company will secure independent, third-party assessment and assurance of the date the works or sections of the works became IED compliant.
Conditions on allowance	The Environment Agency/Natural Resources Wales will confirm works have been delivered in accordance with obligations through either signed-off Improvement Conditions or approved site decommissioning as part of the permit surrender process.
Payments	Payment rate for non-delivery: *Non-delivery PCD payment = Payment rate of non-delivered scheme** **scheme is defined as either secondary containment or tank covering for fugitive emissions by site* The timescale for delivery in the PCD is set at 31 March 2030. The proposed PCD is not timebound and has no financial incentives for under or out performance.

4. Bioresources waste permitting uncertainties

4.1 Key points

- **The waste regulatory framework operates very differently to the water regulatory framework:** The evolving regulatory landscape has resulted in the reframing of the regulation of bioresources under the Waste Framework Directive. The resulting investment requirement to ensure compliance with new and evolving waste regulation obligations is excluded from the WINEP and consequently is not included in the WINEP planned look ahead of future requirements.
- **Waste permitting standards and reforms continue to evolve and will not be clarified prior to the PR24 final determination:** We welcome Ofwat's recognition that AMP8 enhancement expenditure is required to deliver Industrial Emissions Directive (IED) compliance. However, this is only one aspect of requirements under the waste regulatory framework. Waste permitting encompasses more obligations than compliance with IED and we anticipate that further requirements at non-IED sites will emerge in AMP8.
- **A more flexible regulatory regime during AMP8:** It is in customers' best interests not to invest ahead of certainty. An uncertainty mechanism must form part of an efficient package of risk and return in the case that costs are uncertain at the time of the final determination, and therefore have not been allowed for in the final determination. Given that there is a high probability of changes in requirements, but the scope and scale of those changes is unknown, it warrants a balanced approach to cost-risk sharing with customers in AMP8.
- **We are seeking to broaden the scope of the enhanced cost sharing (25:25) for IED compliance to include equivalent risks at non-IED sites:** We have worked collaboratively across the industry to develop a proposal that is supported by the vast majority of companies. We believe that enhanced cost sharing is the best approach to allow companies to invest in new and emerging waste permitting needs. The scope would include new improvement conditions arising within waste permits, statutory guidance or the requirements to meet exemption criteria. This could be either as a variation to an existing permit (or exemption), or from the creation of a new permit.

4.2 UUW's PR24 proposal

We described in our PR24 business plan submission UUW58 - Bioresources business plan (section 2.3, pages 11-12) the evolving regulatory landscape which has resulted in the reframing of the regulation of bioresources under the EU Waste Framework Directive. Sludge treatment and biosolids recycling to agriculture activities have historically benefited from exemptions from the Waste Framework Directive. However, the Environment Agency removal of these exemptions is a fundamental shift away from the existing regulatory framework which has provided stability and little by the way of new requirements in 20 years.

Regulation of bioresources as a waste under the Waste Framework Directive introduces three key aspects that materially impact how we plan for price reviews:

- **Uncertainty over new regulatory requirements** - there is no clear timetable for future changes to waste regulation and Water Industry requirements are not included within the WINEP planning framework.
- **New regulatory requirements arising without primary legislative change** - under the Waste Framework Directive there is a requirement to comply with BAT standards set out in guidance. 'Guidance' documents are legally enforceable through the waste permitting process. For example, the Appropriate Measures guidance for Biological Waste that was published in Sept 2022.
- **Irregular timetable for further updates to regulatory requirements** – the Waste Framework Directive is specifically designed to allow for continuous updates to standards. There is no "hands-off period", unlike for wastewater discharge permits that prevent further guidance or permit changes for four years.

Recent experience of the Environment Agency implementation of the IED for the industry's sludge digestion sites, and the view that the very material investment required was not a Relevant Change in Circumstance (RCC), demonstrates the complexity of the challenge facing regulators to align environmental and economic regulatory framework mechanisms to enable the industry to secure the efficient resources to meet statutory obligations.

The investment requirement to ensure compliance with new and evolving waste regulation obligations (and its timing) is a risk that has been identified by all companies in the sector. The uncertainty that companies are facing is ongoing and will not be resolved before companies' final determinations. However, the expectation is that there will be a significant investment requirement during AMP8. In the PR24 final methodology, Ofwat recognised that an uncertainty mechanism could form part of an efficient package of risk and return, in the case that costs are uncertain at the time of the final determination, and therefore have not been allowed for in the final determination.

In our October 2023 business plan submission, we proposed a notified item to manage both landbank and waste permitting risks in Chapter 9 of our business plan (section 9.3.3):

- The immediate costs and future investment requirements arising from a significant change in the supply/demand for available landbank that is currently relied upon as an agricultural outlet for recycling of sewage sludge; and
- The costs required to meet new improvement conditions arising within permits (or the requirements to meet exemption criteria). This could be either as a variation to an existing permit (or exemption), or from the creation of a new permit.

We stated that this was the right approach to best protect the interest of customers – better than seeking to recover significant additional amounts up front from customers and then refund them if those investments are not required. Without a flexible funding arrangement, we highlighted that there is a systemic risk to the capability of the industry to deliver. If we are not funded to efficiently comply with our regulatory requirements, we may be unable to provide a resilient sludge management service.

4.3 Draft determination position

Ofwat has recognised that uncertainty and risk remain in the Bioresources price control, and through the draft determination, have made several proposals that seek to manage the uncertainty:

- **50:50 cost sharing for the bioresources control**: Ofwat states "*this is a proportionate policy change that addresses the potential uncertainty driven by the large PR24 bioresources enhancement programme*"[37].
- **Enhanced cost sharing rates of 25:25 for IED enhancement expenditure**: Ofwat has set the alternate rate, recognising there is potentially higher uncertainty and states "*due to uncertainty and the potential scale of costs related to IED requirements and consistency with the CMA PR19 redetermination decision which set 25:25 cost sharing rates for Northumbrian Water and Yorkshire Water*"[38]
- **A landbank notified item:** "*This notified item applies to any increase in costs reasonably attributable to any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge*"[39].

UUW's proposed Bioresources notified item, covering both landbank and waste permitting risks was rejected, as Ofwat stated there were insufficient details explaining how this notified item would be triggered, and how any costs should be calculated. Ofwat instead made their own judgement on a bespoke uncertainty mechanism and proposed the notified item described above.

Ofwat did not respond directly on the wider waste permitting uncertainty risks identified as part of our notified item proposal.

[37] Ofwat, PR24 draft determinations: Expenditure allowance, July 2024, page 163

[38] Ofwat, PR24 draft determinations: Expenditure allowance, July 2024, page 162

[39] Ofwat, PR24 draft determinations: Expenditure allowance, July 2024, page 189

4.4 Issues and implications

We strongly welcome the recognition by Ofwat of the increased uncertainty and risk in the Bioresources price control and we think that Ofwat is right to consider how best to manage the uncertainty through the Price Review process. We fully support the proposals for cost sharing in the Bioresources price control (and enhanced cost sharing rates for IED enhancement expenditure) as a form of managing uncertainty.

We welcome the proposal for a landbank notified item but have concerns over the scope of the proposal and we make a separate representation in **section 1, Managing agricultural landbank uncertainty**. We do, however, agree that waste permitting uncertainty is out of scope of the proposed landbank notified item, and in the remainder of this representation we set out our proposals for how waste permitting uncertainty should be managed through PR24.

In our December IED submission we identified several areas of on-going uncertainty in IED requirements (and therefore compliance cost). We limited the scope of our IED enhancement claim to only the scope items where we had certainty in requirements and excluded other scope items which were too uncertain at the time. The total of the uncertainties identified was circa £350 million, and are summarised below:

- Requirements to cover and abate emissions from cake pads.
- Requirements for liquor treatment prior to return to the head of the wastewater treatment works.
- Requirements to provide additional emissions abatement from existing odour control units to meet methane emission limit values.
- Requirements to abate emissions from existing tanks which are not technically suitable to retrofit with covers.

It is important to note that this is not an exhaustive list and other significant areas of uncertainty in IED requirements remain. We also highlight that additional IED compliance requirements are introduced in the event that the sludge treated at a site is ultimately disposed rather than recovered (regardless of the process operating on-site). There is considerable uncertainty over the need for disposal technology such as incineration (linked to limitations of the agricultural outlet) or how other technologies such as Advanced Thermal Treatment (e.g. gasification or pyrolysis) will be considered within the regulatory framework. This could require new IED permits for sludge thickening and dewatering sludge treatment centres, and/or variations for existing IED digestion sites to enable sludge supply to disposal outlets. It is important to note that these changes are specifically as a result of the changing rules around permitting applied to our activities and not as a result of losses in landbank.

Following the draft determination, we understand that Ofwat proposes that these areas of uncertainty in IED enhancement expenditure are managed within the scope of the 25:25 IED enhancement expenditure cost sharing mechanism, with Ofwat stating, "*this applies for enhancement IED expenditure only. Additional base expenditure for companies to improve asset health to help achieve full IED compliance will continue to attract the base cost sharing rates*[40]".

We welcome this proposal from Ofwat and we agree it is an appropriate mechanism to manage on-going uncertainty in IED compliance requirements and costs. However, when considering Bioresources waste permitting requirements more broadly than the implications of the IED, there are further potential changes that may drive material new investment requirements in the bioresources sector, but these are not addressed by Ofwat's draft determination proposals for managing uncertainty.

Waste permitting requirements, outside the IED, continue to evolve and the industry risks iterative and ad hoc new requirements over the course of AMP8 in the absence of a clear regulatory timeline. As these requirements are not yet confirmed, companies have not included costs to address any potential requirements in their business plans.

Potential changes outside IED include, but are not limited to, the following:

[40] Ofwat, PR24 draft determinations: Expenditure allowance, July 2024, Footnote 185 on page 162

- **Waste exemption reforms**[41]: The Environment Agency proposals are not yet finalised and will be subject to consultation (postponed from May 2024). The latest government advice states that changes to the exemptions are likely to start in 2025 but timescales have not been finalised. Direct implications of the proposals are twofold:
  - **Charging for exemptions:** Significant elements of our bioresources business operate under registered waste exemptions (this negates the need to obtain a permit for those activities). The introduction of charging will introduce new costs into the Bioresources price control.
  - **Prohibition of registering exemptions on a permitted site:** Registered exemptions on a permitted site will be prohibited at the end of a 6-month transitional period. Sites which carry out a permitted activity (e.g. import waste to the inlet of a wastewater treatment works) will no longer be able to register an exemption for a different activity on the same site. By default, the currently 'exempt' activity e.g. physical-chemical sludge treatment must now be incorporated within the site permit, if within the same operational boundary. This will require waste permit variations, but significantly for sludge treatment activities, the requirement for a permit makes compliance mandatory with Appropriate Measures guidance. Under a waste exemption, operators 'may refer to' Appropriate Measures standards but meeting these standards is not a legal requirement. In obtaining a waste permit the obligation to meet Appropriate Measures guidance becomes mandated through the permitting process. We estimate that up to six of our bioresources sites may be impacted at an average cost of circa £6 million per site[42].
- **Environmental permit competence requirements**[43]: Changes to technically competent manager attendance requirements (resources qualified under a technical competency scheme e.g. WAMITAB[44]). A consultation on the proposed reforms closed in December 2023 and the output of the consultation is not yet available. The consultation proposed an increase to attendance hours currently undertaken by technically competent staff which may drive an increase in the required headcount to operate our sites.
- **Appropriate Measures guidance:** Updates to Appropriate Measures guidance are iterative and we have no timetable for updates to guidance. For example, Appropriate Measures for the Biological Treatment of Waste was published in September 2022. However, there have been iterative updates and in February 2024 new specifications were introduced for leak detection and repair (LDAR) monitoring. We expect further changes in guidance in AMP8 but the scope, scale and timing of those changes are unknown. The changes will impact sites permitted under the IED and non-IED permitted sites.
- **Renewal of Regulatory Position Statements, such as RPS231**[45]**:** The industry relies on this RPS to allow the storage or treatment of sewage sludge under an S3 or T21 waste exemption. RPS are time limited, and the latest government advice is "*This RPS will be reviewed by 31 January 2024. You will need to check back then to see if it still applies.*" Should there be changes to the scope of Regulatory Position Statements this may drive further significant (but unknown) cost into the Bioresources price control in AMP8.

Under Ofwat's draft determination proposals, each and all these costs, if not incurred directly as a result of IED permit requirements, would be managed by 50:50 cost sharing in the Bioresources price control. We do not believe that this is a satisfactory management of the risk, as it does not recognise the different regulatory framework that Bioresources now operates, and the increased likelihood of changing requirements in AMP8.

We instead propose that the uncertainty in wider waste permitting risks is managed by broadening the scope of the enhanced cost sharing (25:25) for IED compliance to include equivalent risks at non-IED sites. We believe that enhanced cost sharing is the best approach to allow companies to invest in new and emerging waste permitting

[41] Gov.uk, Guidance: Register, renew or change waste exemptions (Online: https://www.gov.uk/guidance/register-your-waste-exemptions-environmental-permits#waste-exemptions-are-changing, accessed August 2024)

[42] Illustrative cost build-up and justification for requirements is presented in our withdrawn cost adjustment claim, New waste permit obligations at physico-chemical sludge treatment sites that previously had PPC permits (UUW_CAC_005)

[43] Gov.uk, Changes to technically competent manager (TCM) attendance at permitted sites (Online, https://www.gov.uk/government/consultations/changes-to-technically-competent-manager-tcm-attendance-at-permitted-sites, accessed August 2024)

[44] The CIWM (WAMITAB) operator competence scheme is designed to allow permitted waste facilities in England and Wales to demonstrate they employ technically competent people with the knowledge and skills to ensure waste sites comply with Environmental Permitting Regulations (2007).

[45] Waste codes for sewage sludge materials: RPS 231 - GOV.UK (www.gov.uk)

needs. The scope of the expanded costs sharing would include new improvement conditions arising within waste permits, statutory guidance or the requirements to meet exemption criteria. This could be either as a variation to an existing permit (or exemption), or from the creation of a new permit.

We believe this proposal is the right option to balance managing the risks for companies and protecting customers from inefficient expenditure. It avoids companies seeking to recover significant additional amounts up front from customers and then refunding them if those investments are not required and has multiple additional benefits:

- The proposed approach is consistent with how equivalent IED waste permitting risks are proposed to be managed. Ofwat's approach to managing permit compliance expenditure should be consistent across the Bioresources price control and not be differentiated by the type of permit held – the need for expenditure and cost recovery is the same whether a site holds a registered exemption, a bespoke waste permit or an IED permit.
- The enhanced cost sharing would reflect that bioresources now operates under the Waste Framework Directive. The resulting investment requirements to ensure compliance with new and evolving waste regulation obligations are excluded from the WINEP and consequently are without the WINEP planned look ahead of future requirements. There is, however, a high confidence that there will be change and the approach to cost recovery must be updated to reflect the changing regulatory framework and the application of that framework on our activities. Given the high confidence that risks will materialise, and the additional costs that will be incurred, this warrants a more balanced cost-risk share with customers.
- We have discounted reliance on the IDoK mechanism to manage broader waste permitting uncertainty, given that the implementation of the IED was not considered a Relevant Change in Circumstance (RCC). It is preferable for waste permitting risks to be managed through enhanced cost sharing as the scale of the potential changes are lower in magnitude than landbank risks, which we propose are managed through a notified item.
- This would be a common industry approach. The changes will likely impact all companies and therefore funding mechanisms must be considered and applied consistently at an industry level. We have worked collaboratively across the industry to develop a proposal that is supported by the vast majority of companies.

Without an appropriate flexible funding arrangement to manage broader waste permitting risks there is a systemic risk to the capability of the industry to deliver environmental obligations. If we are not funded to efficiently comply with our regulatory requirements, we may be unable to provide a resilient sludge management service.

4.5 Approach to final determination

We propose that Ofwat should broaden the scope of the cost sharing (25:25) for IED compliance to manage equivalent waste permitting risks at sites not permitted under the IED. The scope would include new improvement conditions arising within waste permits, statutory guidance or the requirements to meet exemption criteria. This could be either as a variation to an existing permit (or exemption), or from the creation of a new permit.

5. Sewage sludge drivers (storage)

5.1 Key Points

- **The methodology used by Ofwat to calculate final product storage allowances is not appropriate:** The methodology fails to adequately account for the different levels of scope and storage density across company proposals, resulting in inappropriate allocation of funding to all companies. We provide additional benchmarking evidence to demonstrate that Ofwat's arbitrary 20 per cent adjustment to account for scope differences is insufficient and allowed costs should in reality be over three times greater for "complex" rather than "basic" solution scopes.
- **Ofwat's approach to allocation of funding results in inefficient cost for customers:** Ofwat's proposed allowances range from a variance of +235 per cent to -77 per cent from Company proposed costs. Four out of eight companies received an allowance in excess of their proposed costs and we do not consider this to be an efficient outcome for customers.
- **Ofwat has miscategorised our solution when proposing cost allowances:** We believe Ofwat miscategorised our proposed solution when providing cost allowances, resulting in an insufficient cost allowance. Our proposed scope should have been categorised as "complex" and therefore Ofwat's methodology should have provided a 20 per cent uplift to our cost allowances.
- **We have revised our costs since October business plan submission by adopting lower specification storage:** Following regulatory clarification we have reduced the scope of our solution (and therefore our costs) to £60 million. This is not our preferred solution as it will be less efficient in whole-life cost terms should full odour control be required in future. We provide evidence of external assurance of the revised and benchmarked costs.
- **We propose that Ofwat conducts a deep-dive assessment of our revised costs:** Due to the challenges in cost assessment resulting from the wide variety of scopes, we propose that Ofwat instead completes a 'deep dive' on our revised submission. This deep dive would be consistent with Ofwat's approach to dewatering enhancement claims where there is a similar variability in solution scope.

5.2 UUW's PR24 proposal

We set out our enhancement case for actions agreed under the AMP8 Water Industry National Environment Programme (WINEP) sewage sludge drivers in document UUW66, enhancement case 22.

This comprised an integrated package of four actions included in the WINEP under the sewage sludge drivers:

- **SUiAR_IMP**: Actions to improve resilience in the sludge supply chain to agriculture and other relevant use or disposal outlets; and
- **SUiAR_ND**: Actions to meet requirements to prevent deterioration in soil quality or water quality.

The objective of the sewage sludge drivers is to deliver improvements in the resilience of the sludge management chain.

We anticipate an increasingly constrained and regulated environment in which to operate our biosolids to agriculture recycling service in AMP8 and beyond. The agreed WINEP actions are an integrated package of interventions, across our bioresources system, and will support a combined outcome to improve the resilience of our sludge management supply chain to agriculture and mitigate in-year disruption.

All actions included within scope of the enhancement case, were reviewed and endorsed by the Environment Agency and comprise statutory WINEP obligations for AMP8. The regulatory compliance date for all actions is 31 March 2030. The agreed WINEP actions (and their associated cost) are set out in Table 9. The latest draft WINEP was published on 5 July 2024 and confirmed no changes to our understanding of requirements from our business plan submission.

Table 9: Summary of agreed WINEP actions

WINEP Action ID	WINEP Driver Primary (Secondary)	Action Name	Action Description	Regulatory date	Totex (£m)
08UU100130 (component a to j)	SUiAR_ND	Enhanced biosolids quality surveillance	Enhanced biosolids quality surveillance at 10 sites to manage sewage sludge sustainably	2030	0.171
08UU100132	SUiAR_ND (SUiAR_IMP)	Enhanced dewatering of cake after AD	Proposing enhanced dewatering of cake after AD to manage sewage sludge sustainably	2030	46.644
08UU100134	SUiAR_IMP	Final product storage	Regional final product storage to manage sewage sludge sustainably	2030	107.199
08UU100135	SUiAR_IMP	Sludge to land compliance under Environmental Permitting Regulations	Sludge to land compliance under Environmental Permitting Regulations to manage sewage sludge sustainably	2030	15.950
Total					**169.965**

Source: United Utilities, 2023 (reproduced from UUW66)

Biosolids recycling to agriculture is entirely dependent on access to third party landbank and acceptance of our products by farmers and land managers. The reliance on agricultural land as an outlet makes this area of the business vulnerable to changing market demands.

We presented evidence in our business plan submission of the increasing number of factors that are outside of company control that threaten the resilience of the supply chain of sewage sludge, and why investment is needed in AMP8. The robust evidence we have gathered ensures that the agreed interventions are necessary, we only do what we need to do, and the value to both business and customers is clear.

We set out the enhancement case for Final Product Storage in UUW66, case 22 (section 4.5 - 08UU100134 - Final product storage, pages 17-18).

The WINEP action specifies a requirement for 60 days covered biosolids storage, equivalent to almost 45,000 metres squared of storage area. Storage is recognised by the Environment Agency as the minimum action necessary to deliver improved resilience in the sludge supply chain to agriculture.[46]

In addition, we have received and responded to three queries from Ofwat relating to our final product storage proposals:

- **OFW-OBQ-UUW-049:** Ofwat asked for further details relating to the cake pad enhancement in CWW3.139, including a breakdown of the scope of works and cost, in order to better understand the nature of the cost against the cake pad area (m^2) in BIO5.5. Ofwat also asked us to set out why we consider our cost estimate to be efficient, including results of any benchmarking and any reasons for the scale of costs.
- **OFW-OBQ-UUW-102:** Ofwat asked for further detail on the tonnes dry solids (tDS) of cake to be stored on the cake pads requiring enhancement investment, and the number of days storage to be provided.
- **OFW-OBQ-UUW-137:** Ofwat asked for the technical rationale behind the decision to utilise covered storage over uncovered storage and for confirmation that the Environment Agency is in agreement that covered storage is a positive position over uncovered storage options.

[46] Environment Agency Information Letter (EA/09/2023), Water Industry National Environment Programme - Sludge update, 22 March 2023

In our response to query OFW-OBQ-UUW-049, we answered Ofwat's questions and set out the following factors which explain the variance in cake pad enhancement expenditure, due to differences in the scope of work and/or how the required area has been calculated:

- **Extent and type of pre-existing storage assets**: Costs will vary substantially depending on whether the scope of works is a new-build facility or a retrofit of existing storage to meet the latest regulatory standards. Historically, we have taken biosolids straight to land for stockpiling prior to spreading, which has been acceptable practice. This has minimised the historic need for onsite storage. To deliver this WINEP action we require new assets, which will drive greater unit costs than for pre-existing facilities being extended and/or retrofitted.
- **Type of storage proposed**: Companies have proposed a range of storage types which will materially impact the unit cost of sludge storage. Proposals range from open cake pads to fully enclosed storage with mechanical ventilation and odour control. The scope required will have a material effect on the cost of the solution.
- **Assumptions on storage 'density' (i.e. volume of sludge stored per m^2)**: This will be a factor of product quality, sludge type (e.g. limed or digested), dry solids content of stored material, assumed stack height, and 'inactive' storage area required for safe vehicle access/egress. A higher storage density leads to a lower area (m^2) to deliver an equivalent volume of biosolids storage.
- **Consistency in estimating assumptions**: We note it is difficult to compare the scope of storage enhancement proposals. It is unknown if costs include ancillaries such as land, road access and HGV turning and parking to enable sludge vehicle movements.
- **Location of storage**: some cost requirements will be site specific and will lead to variability in costs, such as site access requirements, security or ground conditions.

In the conclusion of our response to query OFW-OBQ-UUW-049, we stated that it is essential that any economic assessment of the cost efficiency of the scope is undertaken on a like-for-like basis. If the submissions by companies were to be used to compare costs, and create potential benchmarks for storage solutions, we would propose that the cost per tonnes dry solids (tDS) should be used. This provides a better normalised comparison as it takes into the volume of cake stored per unit of area.

Ofwat issued query OFW-OBQ-UUW-102, asking for additional information on tonnes of dry solids of cake to be stored on the cake pads requiring enhancement investment. We responded to the query confirming both the tDS and number of days storage.

We responded to query OFW-OBQ-UUW-137 to confirm that covered storage is a WINEP requirement. We noted that the driver for covering biosolids relates to the final use of the biosolids product and ensuring resilience in the supply chain to agriculture through provision of contingency storage capacity, and is unrelated to storage requirements of IED permitting, which currently allow for uncovered storage.

5.3 Draft determination position

We welcome decisions made by Ofwat to allocate resource to the following actions included in the WINEP sewage sludge drivers:

- 08UU100130 (component a to j) - Enhanced biosolids quality surveillance
- 08UU100132 - Enhanced dewatering of cake after AD

We disagree with Ofwat's draft determination decisions over the following actions included in the WINEP sewage sludge drivers:

- 08UU100135 - Sludge to land compliance under Environmental Permitting Regulations (our representation is provided in **Section 6, Sewage sludge drivers (EPR)**).
- 08UU100134 Final product storage - This is the sole subject of this representation.

Ofwat used a simplistic, median unit cost approach to determine efficient costs for biosolids storage, with a percentage uplift applied to Company allowances to adjust for differences in scope. The unit cost (£/m^2) is based upon the area of cake pad required (m^2).

Ofwat noted significant variation in scope and cost for biosolids cake storage between Company submissions and that this limited the cost assessment approach used:

"We considered approaching the cost assessment by separating the submissions into categories according to scope complexity, however there was a broad range of interventions submitted, ranging from uncovered cake pads to odour-controlled buildings and a number of interventions combining both solutions. This made separation of the proposals challenging and therefore, we discounted this approach. We considered approaching the cost assessment using linear or log regression models, however due to the significant variation in unit costs (£/m^2) and poor correlation, the models were deemed unsuitable, and the approach was discounted". [47]

The methodology Ofwat has used to calculate allowances uses the median unit cost of £572/m^2. An uplift of 20 per cent was applied to the median to account for the additional scope for complex scope proposals. Conversely, a reduction of 20 per cent was applied to the median to account for the reduced scope associated with uncovered stores. This results in:

- Allowances for uncovered stores calculated on a unit rate of £458/m^2.
- Allowances for covered stores without odour control calculated on a unit rate of £572/m^2, resulting in an allowance that is 25 per cent higher than that for uncovered stores.
- Allowances for covered and odour-controlled stores calculated on a unit rate of £686/m^2, resulting in an allowance that is 50 per cent more than uncovered stores.

When applied to the area of covered storage without odour control that is in our proposal, this results in an allowance of £25.416 million to deliver this statutory obligation in the WINEP. This presents an efficiency challenge of 77 per cent on our proposed costs.

5.4 Issues and implications

In this section we respond to Ofwat's proposed approach to determining cost allowances for final product storage and why we consider that it results in an inappropriate funding allowance. This section presents the following:

- We believe Ofwat has miscategorised our proposed solution as a conventional, rather than complex, solution when providing cost allowances, resulting in an inappropriate and insufficient cost allowance.
- Ofwat's cost assessment approach is flawed as it seeks to determine an efficient cost through comparison of too great a variability in scope, and this has resulted in inappropriate company cost allowances. We provide additional benchmarking evidence to demonstrate that Ofwat's arbitrary 20 per cent adjustment to account for scope differences is insufficient.
- Ofwat has failed to consider storage density when providing cost allowances. Storage density is an important determining factor in the efficiency of a storage solution and we propose that Ofwat should use the cost of biosolids storage per tonnes dry solids (tDS), for the purposes of cost assessment.
- Given the shortcomings in Ofwat's approach and data collection, which fails to appropriately account for the complexity and variability in solutions, we recommend that Ofwat conducts a "deep-dive" review of our solution as this is consistent with other assessments with significant solution variability.
- We have reduced the scope of our solution, reducing AMP8 costs to align with the latest regulatory guidance for IED. Our revised costs have been assured and benchmarked by a third party to demonstrate that they are efficient.

[47] Ofwat, Sludge storage cake, June 2024 (PR24-DD-WW-Sludge-storage-cake (3).xlsx, tab 'Cover')

5.4.1 Ofwat has miscategorised our solution when proposing cost allowances

We have assessed and grouped Company proposals into categories, “basic”, "conventional" and “complex” to account for broad variances in proposed scope (we note there remain significant variations within category). The rationale for the categories is as follows:

- **Basic scope**: Uncovered storage on open cake pads.
- **Conventional scope*:*** Covered 'Dutch barn' type storage with open sides. It should be noted that proposals include a combination of conventional and basic storage, and also some solutions are to retrofit covers to existing (basic scope) storage. These variations will have a significant impact on unit rate.
- **Complex scope**: Covered storage within a fully enclosed building (roof and closed sides). It should be noted that proposals include a combination of odour control, mechanical ventilation or the potential to retrofit odour control in future.

Our storage proposal is for a higher specification construction than a traditional Dutch barn, as it includes fully metal clad process building construction rather than simple open-sided or timber structure (although we have not included costs for air extraction and odour control). Our higher specification construction will enable an efficient transition to mechanical ventilation, odour control and methane abatement technology to meet IED Best Available Technique, if required, in the future.

In Table 10 we present categorisation of Company biosolids storage proposals, alongside the proposed Ofwat allowance for each category. We note that our scope categorisation broadly aligns with Ofwat's categorisation of scope with two exceptions:

- **Dwr Cymru** – Ofwat has categorised the solution as conventional covered storage despite noting the storage is not covered (only a potential to retrofit covers at a later date if required). We do not consider that this is an appropriate categorisation as we anticipate the majority of cost will be associated with the structure, rather than the concrete floor slab. We have therefore re-categorised the solution into the "basic" category.
- **United Utilities** – We consider that Ofwat has misunderstood our proposed scope. By covered storage, we proposed fully enclosed storage within a process type building, rather than an open sided Dutch barn. We have therefore re-categorised the solution into the "complex" category.

We note there are other discrepancies between information on scope between Ofwat's cost assessment model and company business plans. We have used the information in Ofwat's cost assessment model as this is the latest information, however, it demonstrates that challenges of adequately categorising scope to assess efficient costs.

Table 10: Company storage solutions categorised by scope

Company	Covered / Uncovered / Combination	New / Re-use / Combination	Proposed Cost (£m)	Ofwat DD Allowance (£m)	Variance between proposed and allowed cost (£m and %)
Basic Scope – Uncovered stores					
Severn Trent Water	Uncovered	New	7.5	25.1	£17.6m (235%)
Dwr Cymru	Uncovered	New	16.8	14.4	-£2.4m (-14%)
Total					**£15.4m**
Conventional Scope - Covered 'Dutch barn' type storage with open sides, or combination of covered and uncovered					
Anglian Water	Combination	Combination	42.4	58.3	£15.9m (38%)
Yorkshire Water	Combination	New	37.8	62.6	£24.8m (66%)
Southern Water	Covered (mixture of temporary and permanent)	New	31.6	38.2	£6.6m (21%)
Total					**£47.3m**
Complex Scope – Permanent covered stores built to process building specification, no reuse of existing assets					
United Utilities	Covered (process building)	New	109.5	25.4	-£84.1m (-77%)
Wessex Water	Covered & Odour Controlled	New	44.7	21.5	-£23.2m (-52%)
Northumbrian Water	Covered & Odour Controlled	New	64.6	18.3	-£46.3m (-72%)
Total					**-£153.6m**

Source: Ofwat, 2024 (PR24-DD-WW-Sludge-storage-cake).

The methodology used by Ofwat creates the following inappropriate outcomes:

Basic, low-cost schemes are allocated more funding than required (up to a 235 per cent uplift). Conversely, complex schemes are underfunded (up to a 77 per cent reduction).

In Table 10 the five companies with the "basic" scope or "conventional" scope are cumulatively allocated £62.4 million more than requested in their proposals. Allocating a greater cost allowance than requested is inconsistent with the approach taken by Ofwat in other cost assessment areas such as dewatering enhancement proposals. It is also overfunding, and we do not consider this to be an efficient outcome for customers.

With regard to our submission, our proposed scope should have been categorised as "complex" and therefore Ofwat's methodology should have provided a 20 per cent uplift to our cost allowances, increasing allowances from £25.4 million to £30.5 million.

5.4.2 Ofwat's approach to cost assessment is inappropriate and provides inappropriate allowances

Ofwat's approach to cost assessment is flawed as it seeks to determine an efficient cost through comparison of too great a variability in scope. Ofwat's approach to compensate for variations in scope, by using an arbitrary +/- 20 per cent adjustment, is not sound. The 20 per cent adjustment does not appear to be derived from the actual costs to deliver the different types of scope. As such, the methodology fails to adequately account for the actual cost related to different levels of scope, resulting in inappropriate allocation of funding to all companies.

Following the draft determination, and recognising the challenges in trying to determine an efficient cost for biosolids storage, we commissioned Jacobs and ChandlerKBS to conduct an external benchmarking exercise of Company biosolids storage solutions. This benchmarking used industry data on the direct costs of delivering

biosolids storage solutions to calculate the relative cost of "basic", "conventional" and "complex" scopes. The results of this benchmarking are shown in Table 11.

Table 11: Summary of cost benchmark data

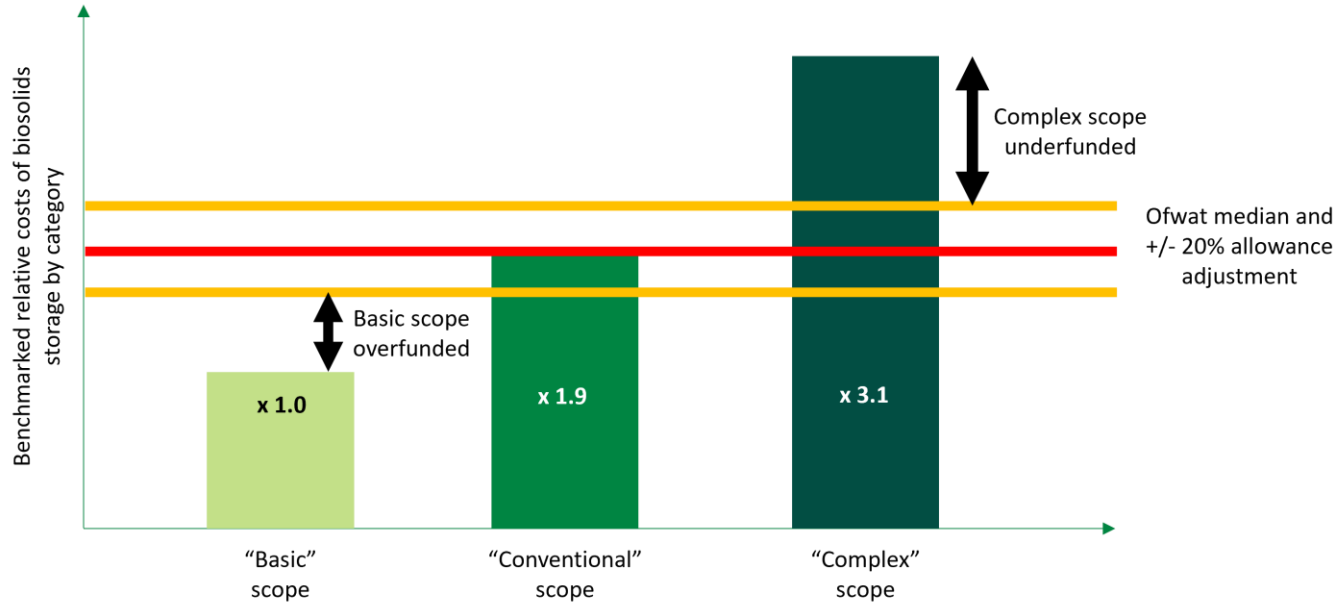
Solution Scope	Direct cost (£/m²)	Additional cost versus "basic" storage	Comment
Basic Scope – Uncovered stores	294	N/A	Base cost for modelling
Conventional Scope - Covered 'Dutch barn' type storage with open sides, or combination of covered and uncovered	545	+185%	Unit costs are 1.85 times the cost of uncovered storage
Complex Scope – Permanent covered stores built to process building specification, no reuse of existing assets	901	+306%	Unit costs are 3.1 the cost of uncovered storage

Source: Jacobs, Biosolids Storage & Cost Review, SE828-04, 2024

The use of only direct costs to generate the relative cost position is valid. However, it does not reflect the total cost to deliver each solution (as contractor add-ons, project risks, cost to serve and company overheads are not included).

This evidence demonstrates that the approach used by Ofwat to take differences in scope into account is insufficient. As presented in Figure 10, the +/-20 per cent adjustment from the median to account for variances in scope does not reflect the actual cost to deliver these different storage solutions. This is leading to significant overfunding of "basic" and combinations of uncovering and covers scope solutions and underfunding of full covered and "complex" scope solutions.

Figure 10: Benchmarked relative costs of biosolids storage by scope category



Source: United Utilities, 2024 (data from Jacobs, Biosolids Storage & Cost Review, SE828-04, 2024)

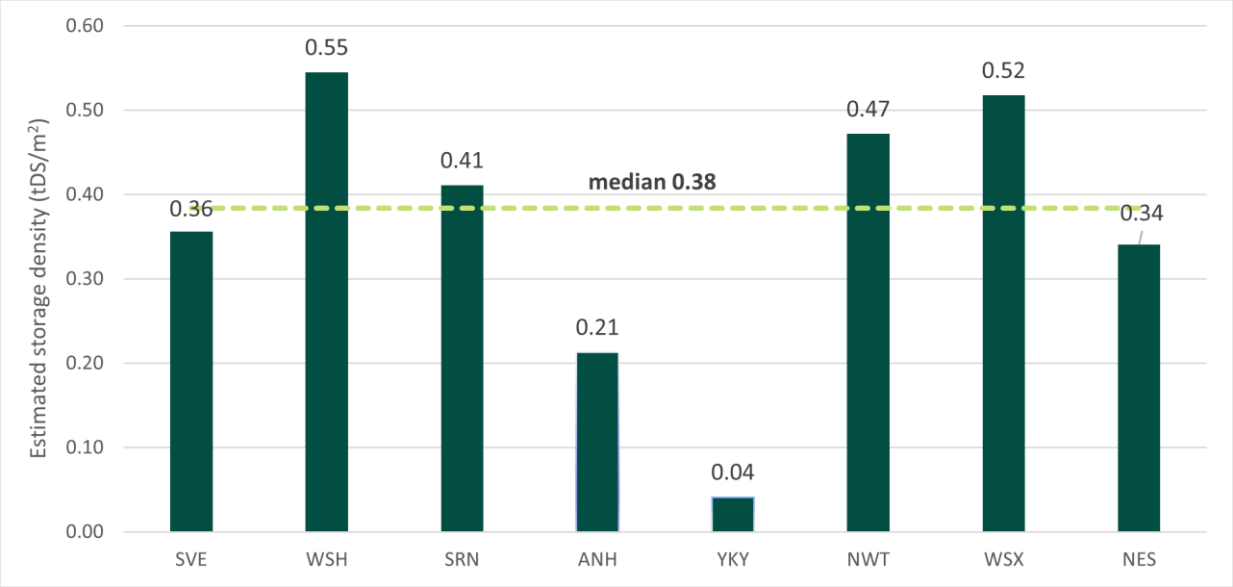
The actual benchmarked cost to deliver conventional scope is 1.9 times greater than to deliver basic scope. However, in making an allowance Ofwat has only deducted 20 per cent from the median. Conversely, for complex scope the actual benchmarked cost to deliver the scope is 3.1 times greater than to deliver basic scope, and again Ofwat's adjustment from the median is insufficient to account for the differences. As such, the methodology fails

to adequately account for the actual cost related to different levels of scope, resulting in inappropriate allocation of funding to all companies.

5.4.3 Ofwat's methodology does not consider the relative storage density between proposed solutions

The methodology does not consider the relative storage density between proposed solutions (i.e. the amount of sludge stored per unit of storage area). Through their benchmarking assessment Jacobs have also made an assessment of the relative storage density of each of the proposed solutions. The outcome of the analysis is presented in Figure 11 and it demonstrates that there is a significant range in the relative density of proposed solutions, from 0.04 to 0.55.

Figure 11: Estimated relative storage density of proposed biosolids storage solutions



Source: United Utilities, 2024 (data from Jacobs, Biosolids Storage & Cost Review, SE828-04, 2024)

Storage density is an important determining factor in the efficiency of a storage solution. For instance, a solution that can accommodate a one metre high stockpile will have half the storage density and will require twice as much area, as a solution for an equivalent volume stored in two metre high stockpiles. The current approach to determining cost allowances would result in one solution receiving double the funding of the other, even though both solutions provide the same absolute storage capacity. We observe that we have a higher than median storage density, meaning our solution is more efficient in the volume of sludge stored per m^2. We consider that the range in Company relative storage density may partially explain the cost variance between solutions.

Ofwat's approach, unless amended, rewards companies for solutions with low storage density and large area of biosolids storage, despite this having the potential to be an overall more inefficient solution. We propose that instead of considering only the area of storage, Ofwat should use the cost of biosolids storage per tonnes dry solids (tDS), for the purposes of cost assessment. We consider that this provides a better normalised comparison as it takes into the volume of cake stored per unit of area. Furthermore, this aligns more appropriately with the Bioresource price control more generally, where allowed costs are based on £/tDS of sludge produced.

5.4.4 Our proposed revisions to Ofwat's chosen cost assessment methodology

Ofwat has failed to undertake appropriate cost benchmarking and has used a model which is overly simplistic. The variability in scope and lack of a storage density metric has not been addressed in Ofwat's draft determination methodology. The use of the £/m^2 unit rate based on the median cost from all proposals with an adjustment applied for scope complexity does not appropriately reflect the actual cost to deliver these different storage solutions. This has resulted in an inappropriate cost allowance and will provide us with insufficient resources to meet our statutory obligations.

Despite Ofwat's acknowledgement that companies have submitted a range of scope for biosolids storage, and gathering additional information through multiple queries on storage proposals, Ofwat has failed to ensure that they have the appropriate information to develop effective cost models. We propose that the following factors should form part of an appropriate assessment to determine efficient costs for biosolids storage:

- **The area of reused versus new concrete pads:** Re-use of concrete pads will reduce the scope (and therefore the cost) of covered store solutions. The amount of re-use of existing concrete pads is not factored into Ofwat's methodology.
- **The areas of covered versus uncovered stores:** The cost of covered storage is significantly higher, an additional 85.4 per cent over and above uncovered storage. When there is a mixed solution the proportion of covered and uncovered stores in proposals is not factored into Ofwat's methodology.
- **The type of covered stores:** Proposals range from temporary structures with fabric roofs to permanent structures with metal roofs, and each type of storage will have a significantly different unit cost, and associated asset life.
- **The storage density (i.e. tDS/m^2) of the proposed storage areas:** Ofwat should use the cost of biosolids storage per tonnes dry solids (tDS), for the purposes of cost assessment as we consider that this provides a better normalised comparison

Given the shortcomings in Ofwat's approach and data collection, which fails to appropriately account for the complexity and variability in solutions, we do not consider that cost allowances should be derived using simplistic median value. We instead recommend that Ofwat conducts a "deep-dive" review of our solution as this is consistent with other assessments with significant solution variability i.e. sludge dewatering.

5.4.5 We have reduced the scope of our solution, reducing AMP8 costs

The scope in our business plan submission was for biosolids storage in a metal clad process building. This is more complex scope than a Dutch barn, and was developed to enable an efficient transition to meet requirements for force ventilated, odour controlled and methane abated storage, if required in future. This was considered the right solution to ensure long term whole-life cost efficiency. This was a particularly important consideration at the time, as the Environment Agency had yet to confirm the requirements for sludge storage at IED permitted facilities.

Subsequent to business plan submission, the Environment Agency has clarified that force-ventilated, fully enclosed sludge storage is not currently required to meet Best Available Technique at IED permitted facilities. Therefore, we propose to reduce the specification to a covered with partial sided construction that still meets the WINEP requirement.

Our revised scope includes:

- Concrete pad sufficient in strength to allow articulated lorries to access and operate.
- Perimeter and internal concrete bay walls to allow storage to a depth of 2.5 metres.
- Contained drainage to capture run-off from stored material.
- Lighting
- Permanent roof and drainage
- Security (fencing, access gates etc)
- Road access suitable for articulated lorries.

This revised scope solution will not impact the efficiency (storage density) of the solution.

We commissioned Jacobs/ChandlerKBS to undertake benchmarking of an efficient biosolids storage cost. Informed by this external benchmarking, we have revised our costs in our draft determination submission to £60 million. This is updated in Table CWW3.137. Our use of the direct cost benchmarks from Jacobs/ChandlerKBS, alongside the cost curves that have previously been assured by Mott MacDonald, provides assurance that our revised costs are efficient.

A copy of the benchmarking report, including a detailed cost build-up, is provided in Appendix G.

5.5 Approach for final determination

We recognise that it is appropriate for Ofwat to ensure that enhancement cost allowances for biosolids storage are efficient. We have reviewed and assessed the impacts of Ofwat's cost assessment approach and have significant concerns over the overly simplistic approach, which fails to adequately make allowances for the wide variety in scope. This has resulted in inappropriate and insufficient cost allowances to meet our statutory obligations. In Section 5.4 we have set out specific details of the issues and implications that have arisen from Ofwat's proposed approach and make recommendations for revisions to improve cost assessment performance for final determination. In summary, these are:

1) Following a review of scope we have reduced the cost of our proposed solution from £107 million to £60 million. This has been externally assured and benchmarked.
2) Due to the challenges in cost assessment, given the wide variety of scopes, we propose that Ofwat instead completes a 'deep dive' on our revised submission. This is an approach used in other cost assessments where there is considerable variation in scope e.g. sludge dewatering. We propose that the full costs for £60 million should be allowed for biosolids storage.

If Ofwat does not adopt our proposed approach, we consider that Ofwat should request additional detail from all companies to fully understand the scope of biosolids storage proposals. Unless further data is gathered it is impossible to set an appropriate £/m^2 benchmark, and ensure that companies have sufficient funding to meet their statutory obligations.

We propose that Ofwat request data on the storage density of each proposal (in tDS/m^2) and should allocate costs on a £/tDS basis to establish appropriate and efficient allowances.

Furthermore, Ofwat should differentiate for the purposes of costs assessment, between the following types of biosolids storage, as each will have a significantly different (and not necessarily comparable) unit cost for delivery:

- Uncovered stores.
- Covered stores on existing pads.
- Covered stores on new pads (temporary building – fabric cover).
- Covered stores on new pads (permanent structure – Dutch barn with open sides).
- Covered stores on new pads (permanent structure – odour controlled).

Whichever approach Ofwat chooses to take to cost assessment for biosolids storage, we propose that our full, revised costs of £60 million are allowed.

We further observe that Ofwat invited companies to update proposed numbers and costs as part of their draft determination response. We confirm that we have revised the cost, however, the total cake pad area of our solution remains unchanged from our business plan submission.

6. Sewage sludge drivers (EPR)

6.1 Key Points

- **The Environment Agency has confirmed the need to deliver this action in AMP8:** The most recent publication of the WINEP on 5 July 2024 confirms this action – to enable recycling of sludge to agriculture in compliance with Environmental Permitting Regulations – is an obligation for us to deliver in AMP8. The WINEP update comes after – and is cognisant of – the updated implementation position of the Environment Agency sludge strategy.
- **Ofwat has made an incorrect decision to reject making resource available to comply with this action:** Delivery of this WINEP action is a statutory obligation and Ofwat has stated in the PR24 Final Methodology that "companies should deliver the agreed WINEP drivers". Ofwat's decision not to resource a WINEP action is contrary to its published requirements and without sufficient resources we will not be able to deliver the required action, adversely impacting environmental performance.
- **The cost to deliver this action is efficient:** We set out additional information here to demonstrate that the cost proposed only includes for the marginal increased administration of the business process that will enable the production of Environment Agency required documentation and the payment of Environment Agency fees. Both are essential to comply with the requirements to enable biosolids to be recycled to agriculture. Third party assurance confirmed our scope and costs are proportionate.
- **Customers are protected through the enhancement cost sharing mechanism:** The scope and cost of this action is certain and the implementation date within AMP8 is the only aspect that is uncertain. The cost sharing mechanism proposed by Ofwat will correctly return money to customers if implementation of the regulations occurs part way through AMP8.

6.2 UUW's PR24 Proposal

We set out our Enhancement case for actions agreed under the WINEP sewage sludge drivers in document UUW66, enhancement case 22. (Page 10, Section 3.6.1, Table 1)

This comprised an integrated package of four actions included in the AMP8 Water Industry National Environment Programme (WINEP) under the sewage sludge drivers:

- **SUiAR_IMP**: Actions to improve resilience in the sludge supply chain to agriculture and other relevant use or disposal outlets; and
- **SUiAR_ND**: Actions to meet requirements to prevent deterioration in soil quality or water quality.

The objective of the sewage sludge drivers is to deliver improvements in the resilience of the sludge management chain.

We anticipate an increasingly constrained and regulated environment in which to operate our biosolids to agriculture recycling service in AMP8. The agreed WINEP actions are an integrated package of interventions, across our bioresources system, and will support a combined outcome to improve the resilience of our sludge management supply chain to agriculture to mitigate in-year disruptions.

All actions included within scope of the enhancement case, were reviewed and endorsed by the EA and comprise statutory WINEP obligations for AMP8. The regulatory compliance date for all actions is 31 March 2030.

The costs and WINEP actions are set out below (reproduced from Table 12 of UUW66, case 22):

Table 12: Summary of Sewage Sludge WINEP actions and enhancement expenditure

WINEP Action ID	WINEP Driver Primary (Secondary)	Action Name	Action Description	Regulatory date	Totex (£m)
08UU100130 (component a to j)	SUiAR_ND	Enhanced biosolids quality surveillance	Enhanced biosolids quality surveillance at 10 sites to manage sewage sludge sustainably	2030	0.171
08UU100132	SUiAR_ND (SUiAR_IMP)	Enhanced dewatering of cake after AD	Proposing enhanced dewatering of cake after AD to manage sewage sludge sustainably	2030	46.644
08UU100134	SUiAR_IMP	Final product storage	Regional final product storage to manage sewage sludge sustainably	2030	107.199
08UU100135	SUiAR_IMP	Sludge to land compliance under Environmental Permitting Regulations	Sludge to land compliance under Environmental Permitting Regulations to manage sewage sludge sustainably	2030	15.950
Total					**169.965**

Source: United Utilities, 2023 from UUW66

Biosolids recycling to agriculture is entirely dependent on access to third party landbank and acceptance of our products by farmers and land managers. The reliance on agricultural land as an outlet makes this area of the business vulnerable to changing market demands.

We presented evidence in our business plan submission of the increasing number of factors such as: exceptional weather events preventing access to agricultural land; disease causing farmers to change their cropping plans; or regulatory or market requirements affecting land managers and the supply and demand of sludge to land that are out of company control that threaten the resilience of the supply chain of sewage sludge, and why investment is needed in AMP8. The robust evidence we have gathered ensures that the agreed interventions are necessary, we only do what we need to do, and the value to both business and customers is clear.

Agreed actions in the WINEP were limited to in-year resilience activities. Activities to address a change in the balance between available landbank and required landbank that may drive a move out of landbank (including compliance with Farming Rules for Water) were excluded from scope and were instead to be managed through our proposed landbank notified item, if a requirement to do so crystallises in AMP8. Details of the proposed uncertainty mechanism (a notified item) can be found in UUW58 section 6, and section 9.3.3 of Chapter 9.

The latest WINEP was published on 5 July 2024 and confirmed all these Environment Agency agreed actions remain as requirements for delivery in AMP8.

6.3 Draft Determination Position

We welcome decisions made by Ofwat to allocate resource the following actions included in the WINEP sewage sludge drivers:

- 08UU100130 (component a to j) - Enhanced biosolids quality surveillance
- 08UU100132 - Enhanced dewatering of cake after AD

We disagree with Ofwat's draft determination decisions on the following actions included in the WINEP sewage sludge drivers:

- 08UU100134 - Final product storage. This is the subject of representation Sewage sludge drivers (storage) in section 5 and not discussed further in this document.
- 08UU100135 - Sludge to land compliance under Environmental Permitting Regulations. This is the sole subject of this representation document.

In the draft determination, Ofwat has rejected making an allowance for WINEP action 08UU100135, sludge to land under EPR.

Ofwat confirmed the WINEP drivers for bioresources in PR24 draft determinations Expenditure allowances section 3.3.7, page 83, as follows:

"For PR24 there are three drivers included within the WINEP/NEP which are in place to enable improvements in bioresources. These are:

- *actions under Sludge (Use in Agriculture) Regulations 1989 (SUiAR) and the Environmental Permitting (England and Wales) Regulations 2016 to improve resilience in the sludge supply chain to agriculture and other relevant use or disposal outlets (Statutory- WINEP/NEP);*
- *actions to meet requirements to prevent deterioration in soil quality or water quality (Statutory - WINEP/NEP); and*
- *investigations into the production, treatment and use of sludge to determine and support good practice and any risks (Statutory - NEP only).*

Ofwat has correctly identified the scope and specifically references the inclusion of *Environmental Permitting (England and Wales) Regulations 2016.*

On page 84 Ofwat states the following in relation to its assessment:

"We have made allowances for all actions, with the exception of requested costs for permit fees, administration costs and management system to meet the requirements under Environmental Permitting Regulations. We have excluded these actions on the basis that only two companies submitted costs, and EPR has not yet replaced the SUiAR. The requirements for compliance under EPR are due to be defined within the Environment Agency's Sludge Strategy. But its implementation date is yet to be confirmed. Not all companies submitted costs to address EPR requirements, but should EPR come into force for bioresources activities, this will likely impact all companies, and therefore funding must be considered at industry level. We recognise that there may be residual risk and will be reviewing our position for final determination. We are providing cost sharing for the bioresources control, in part to manage this risk".

Ofwat also commented on the proposed enhancement[48].

In the assessment Ofwat stated:

"In regards to the EPR compliance investment, the company has not provided sufficient and convincing evidence that this element of the proposed enhancement investment is required. The company has shown no evidence that the investment under EPR will drive a step change in the current level of service to a new 'base' level and/or the provision to new customers of the current service level. The investment being proposed is also not a confirmed, new statutory obligation, as the government has not stated or legislated when the EA's sludge strategy will transition to the new EPR regime. Should this change happen during 2025-2030, there are mechanisms available to deal with these costs. We therefore make an adjustment equivalent to the cost of the EPR compliance investment".

The action remains a regulatory obligation as per the latest issued version of the WINEP dated 5th July 2024.

[48] Ofwat, PR24 draft determination Wastewater sludge treatment , tab " deep dive NWT",https://www.ofwat.gov.uk/wp-content/uploads/2024/07/PR24-DD-WW-sludge-treatment-Other.xlsx

6.4 Issues and implications

This section responds to the key decision points raised by Ofwat and presents the explanations as to why we conclude that Ofwat has reached an inappropriate decision not to make a funding allowance for this action. We also respond to the deep dive analysis and provide further evidence to substantiate the case for an efficient funding allocation.

6.4.1 Response to key decisions

Ofwat has made an incorrect decision to reject making a funding allowance for an agreed AMP8 WINEP action:

The Environment Agency expressly wrote an Information Letter EA/12/2023 to all companies on 19 May 2023 stating as follows with regards the assessment process for the WINEP actions under the sewage sludge drivers:

"The assessment also supports in principle the options associated with future EPR requirements for the agricultural use of sludge."

This is a clear statement of intent for EPR to be implemented in AMP8. The WINEP process has been correctly followed leading to the agreement for this action to be included in the WINEP list of deliverables for AMP8.

The most recent publication of the draft WINEP on 5 July 2024 confirms this action, to enable recycling of sludge to agriculture in compliance with Environmental Permitting Regulations, is an obligation for us to deliver in AMP8. The draft WINEP publication comes after, and is made in the full knowledge of, the updated published implementation position of the Environment Agency sludge strategy. Therefore, it can only be concluded that the EA has confirmed the obligation in the WINEP, and it is a statutory obligation on the company to deliver the WINEP action.

Ofwat set out in the PR24 Final Methodology Appendix 4: Bioresources the following statement about delivering agreed WINEP actions. *"Companies should deliver the agreed WINEP drivers. We support engagement by companies with the EA and Defra as appropriate so that their business plans reflect a shared view of what needs to be delivered."*

We have engaged appropriately, and the proposed action reflects a shared view of what needs to be delivered.

As an agreed WINEP action, and therefore a statutory obligation, we believe it is an incorrect decision by Ofwat not to allow funding to deliver this action. Ofwat's decision not to resource a WINEP action is contrary to its published requirements and without making sufficient resources available we will not be able to deliver the required action, impeding our ability to deliver our environmental obligations.

The EA recognises that this is a new requirement and that it will drive additional costs for the business to meet the requirements. On the basis that the action is included in the WINEP, it can only be concluded that Ofwat should make a funding allocation.

Ofwat has made an inappropriate decision to reject making a funding allocation on the basis that not all companies have the same agreed action in the WINEP:

Ofwat stated, *"We have excluded these actions on the basis that only two companies submitted costs".*

This justification for rejection is erroneous. It is not our role to justify what other companies have or have not agreed with regulators and included in the WINEP or company business plans. As we have set out above, future requirements for recycling biosolids under EPR is a clear obligation for all companies and agreed with the EA as within scope of the WINEP sewage sludge driver. The fact that other companies have not included *"costs for permit fees, administration costs and management system to meet the requirements under Environmental Permitting Regulations"* within their plans makes it no less of a requirement on our activities.

The justification that only WINEP actions for which all companies submitted costs are eligible for a funding allocation is erroneous and has not been applied by Ofwat consistently across the whole WINEP programme.

Ofwat has made an inappropriate decision to reject making a funding allocation on the basis that compliance requirements are yet to be defined:

Ofwat states, *"The requirements for compliance under EPR are due to be defined within the Environment Agency's Sludge Strategy."* The cost allocation that we have proposed is only to follow an existing Environment Agency process for the recycling of materials to land under environmental permitting regulations. As this is a process that already exists for recycling wastes to agriculture not covered by Sludge use in Agriculture Regulations (i.e. processes we already manage as a company such as recycling water sludges to agriculture) we are highly confident in the activities and associated costs that will be required to manage biosolids applications to land under EPR.

We set out additional information about the activity and cost for this action, in section 6.4.2.

Ofwat has made an inappropriate decision to reject making a funding allocation on the basis that the date for implementation is yet to be confirmed:

Ofwat states, *"its implementation date is yet to be confirmed."* As we set out above, the EA has set this requirement as a WINEP action for delivery in AMP8. The precise implementation date is not published but that is not a legitimate justification to overrule the agreed action in the WINEP. The cost sharing mechanism proposed by Ofwat will correctly return money to customers if implementation of the regulations occurs part way through AMP8.

Ofwat has made an inappropriate decision to reject making a funding allocation on the basis that funding must be considered at an industry level:

Ofwat states, *"Not all companies submitted costs to address EPR requirements, but should EPR come into force for bioresources activities, this will likely impact all companies, and therefore funding must be considered at industry level."*

It is not our responsibility to consider funding requirements at an industry level. We are clear that our statutory obligation is set out in the agreed WINEP action and therefore Ofwat should make a funding allocation.

Ofwat has made an inappropriate decision to reject making a funding allocation on the basis residual risk should be managed through cost sharing for the bioresources price control:

Ofwat states, *"We recognise that there may be residual risk and will be reviewing our position for final determination. We are providing cost sharing for the bioresources control, in part to manage this risk."*

We are clear that the funding allocation should be made for this WINEP action. It is not appropriate for Ofwat to reject making a funding allocation for a WINEP action and for the company to be exposed to the cost risk to meet that obligation. The cost sharing mechanism for enhancements proposed by Ofwat will correctly return money to customers if implementation of the requirements occurs part way through AMP8. However, the presence of a cost sharing mechanism is not sufficient to obviate the need for an appropriate cost allowance to be made in the first place.

Our overall conclusion is that Ofwat has incorrectly decided not to make a funding allocation for this action.

6.4.2 Deep Dive Analysis

Many of the points addressed above are also stated in Ofwat's deep dive analysis[49].

The following section addresses only the additional points raised and provides additional information relating to Ofwat's comments in the deep dive document.

We set out the estimating assumptions for this action in UUW66 case 22 section 4.6 Table 4. The following table is an extract:

[49] Ofwat, PR24 Draft determination WW sludge treatment, 2024https://www.ofwat.gov.uk/wp-content/uploads/2024/07/PR24-DD-WW-sludge-treatment-Other.xlsx

Table 13: Estimating assumptions for development of this enhancement case

WINEP Action	Estimating assumptions	Included in enhancement case
08UU100135 Sludge to land compliance under Environmental Permitting Regulations	Costs have been included to allow for EA permitting fees, and associated administration fees. Additional costs to increase our landbank finding service will be absorbed through base expenditure. We will absorb costs to deliver IT software upgrades to support delivery of this new EPR process.	Costs included for permit and administration costs only

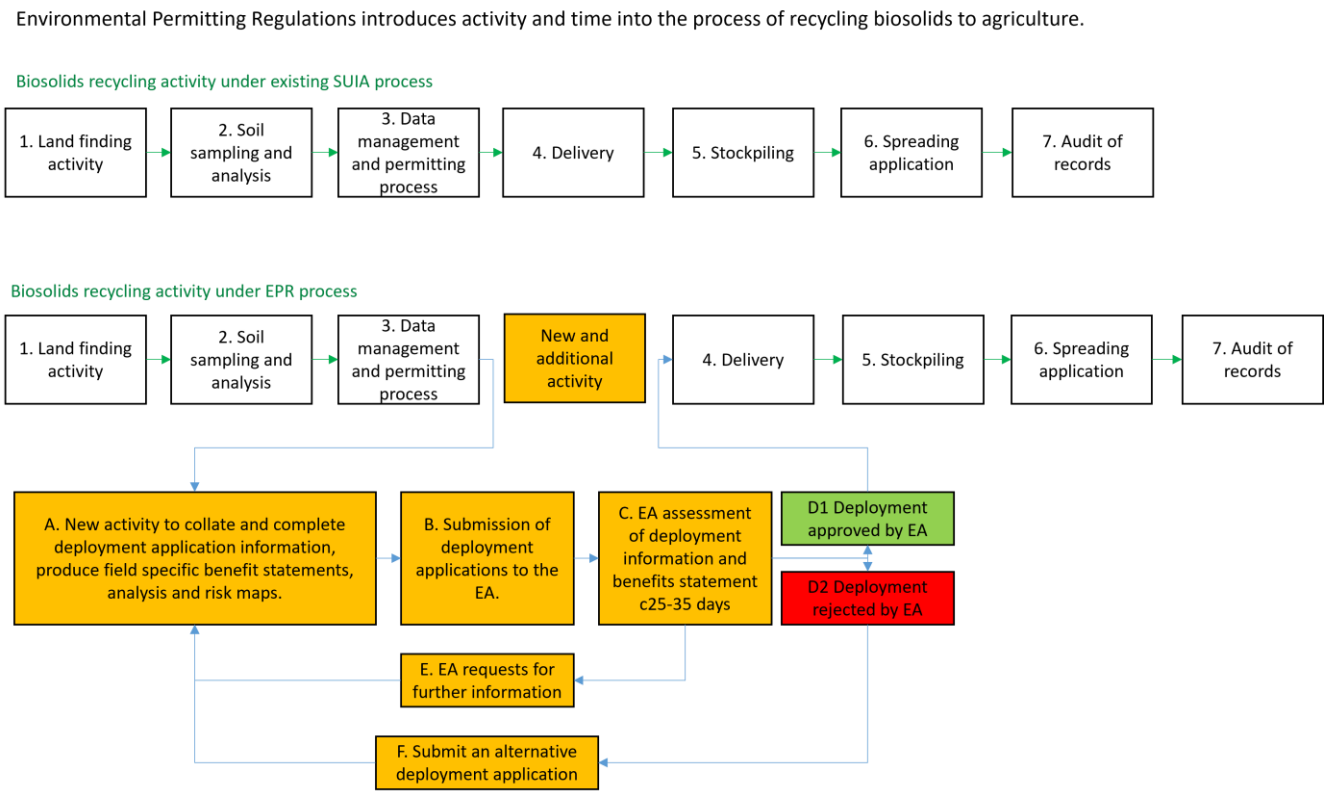
Source: United Utilities, 2023

Ofwat states, "the company has not provided sufficient and convincing evidence that this element of the proposed enhancement investment is required. The company has shown no evidence that the that investment under EPR will drive a step change in the current level of service to a new 'base' level and/or the provision to new customers of the current service level."

In this section we seek to provide Ofwat with additional information and evidence to further demonstrate that the proposed enhancement investment is required. We consider that the evidence is sufficient, but if Ofwat considers that additional evidence is required, then we are of course willing to provide whatever further evidence might be required to meet Ofwat's evidential threshold.

The recycling of biosolids under the control of environmental permitting regulations delivers a higher level of environmental protection through the production of detailed information packs and benefit statements that promote the beneficial use of biosolids while minimising any potential environmental harm. The process changes between recycling biosolids under the sludge use in agriculture process and environmental permitting process is set out in Figure 12 below.

Figure 12: Flow diagram to show the additional activity in the business process to meet EPR requirements



Source: United Utilities, 2024

The EPR process is based around pre-approval of the biosolids recycling activity by the EA. This process introduces additional preparatory work to submit deployment applications and a time requirement for deployment

applications to be assessed by the Environment Agency. By contrast the SUIA process enables biosolids to be recycled, with compliance only assessed after completion of the business process, through an audit.

Table 14 below shows calculations that we have used to estimate the number of deployments required per year. This uses regional averaged data for our biosolids product and uses a target of 240kg of nitrogen per hectare to calculate the area in hectares that will be required for recycling to agricultural outlets. This shows we require 18,810 hectares per year to recycle the biosolids product to agriculture compliantly.

Table 14: Calculations to estimate the number of deployments required per year

TDS to agriculture	Dry matter (%)	Fresh weight (tonnes)	N content (%DS)	Application rate (TDS/ha)	Land required (ha)
113,335	28	390,776	4.0	6.2	18,810

Source: United Utilities, 2024

This value is divided by the number of hectares that we expect we can address through each deployment. Grassland fields is a dominant land type in the North West and farms and field sizes are typically smaller than average, particularly compared to larger arable fields. The new process will also create a time lag and rework for a proportion of the deployments. This is because some farmers will change their plans between the time applications are submitted and the time the decision over the deployment is confirmed by the EA. This will require an alternative deployment application to be developed. Similarly, poor weather could alter the farmers' choice of crop and a new deployment application would be needed. As a result, the overall process efficiency is lower, and we have used an average value of 15 hectares per deployment as opposed to the theoretical maximum size of a deployment of 50 hectares. Therefore, we can conduct the following calculation:

Land required in hectares, divided by the average number of hectares per deployment, equals the number of deployments required.

18,810 / 15 = 1254 deployments required

As this calculation is a forecast, we have used expert opinion to apply a cautionary assumption to the value this calculation generates and have proposed 1200 deployments per year on which to base our cost build up.

The process is more time consuming for operators and will require some additional roles to produce the information and evidence packs and manage the liaison with the EA to ensure the smooth processing of deployment applications. The 15-page long form that requires completing for each deployment is provided in Appendix E. We have identified the need for three additional qualified roles to complete this activity as well as one quality assurance role to confirm details are complete and accurate prior to sending to the EA. This will ensure that fewer deployment applications are subject to EA requests for additional information and by submitting high quality documentation it should minimise the time for the EA to reach a decision and maximise the success of making a delivery of biosolids to a farm as planned.

Role holders also require the appropriate training and qualifications. This includes The Fertiliser Advisers Certification & Training Scheme (FACTS) qualified roles and WAMITAB qualified roles (WAMITAB qualifies and certificates those working in waste management and recycling). There will also need to be greater engagement with farm customers which will require one additional role to liaise with farmers and take soil samples.

The EA requires the process to be charge funded and has a published approach to applicable fees.[50] This reflects the additional resources required at the EA to assess each of the deployment applications submitted. This is not required under the existing process and is a new requirement outside of company control.

The pre-approval approach of the process introduces a time factor that was not previously a feature of the process. Only after the approval has been granted can biosolids be delivered to a farmer's field. The typical period for Standard Rules 2010 No.4 deployment decision is c25 working days. The EA assessment process includes a statutory consultation period of 25 days with Natural England/English Heritage for all affected sites (i.e. within

[50] Environment Agency, The Environment Agency (Environmental Permitting and Abstraction Licensing) (England) Charging Scheme 2022 Table 2.15.4, page 100

1km of SSSI/sensitive sites/Source Protection Zone 2). In these instances, a decision over the deployment is likely to take longer, c35 days.

This requires additional handling and operational storage of biosolids at operational sites prior to delivery and these additional costs are included. We have assumed the equivalent of two months of the annual biosolids exports will have to be doubled handled at either on-site or off-site storage locations. When biosolids cake is stored on open cake pads, the material is exposed to rain and the quality tends to deteriorate. If the effect of the rain reduces the dry solids to 20% or less, it cannot be recycled under the industry agreed 20 measures initiative and it would need diverting to land restoration. We have assumed that 3,500 tonnes (5% of the stored volume) will be recycled to a land restoration outlet with a gate fee. This is factored into the unit rate.

Most waste materials recycled to agriculture under EPR are incentivised and biosolids products would need to compete in this market to secure the agricultural outlet. Financial incentivisation encourages farmers to honour the orders they place for which deployment documentation is prepared and submitted to the EA. This helps to minimise abortive activity that can be created by farmers changing their plans and compensates farmers for inherent delays in the process, prior to receiving the biosolids product delivery. As this may require the farmer to alter their workplans or cause delays in planting leading to concerns over lower yields. There is also a second administrative step to notify the EA of an intention to spread the biosolids. The farmer who will undertake the spreading activity needs to inform the EA prior to spreading. This additional administration step requires additional time and effort, and farmers will expect a payment for doing this work.

We set out a detailed explanation of the costs included in the enhancement case in Table 15 and Table 16 below.

Table 15: Summary of enhancement expenditure activities and cost

Description	Unit cost	Units	Total cost	Cost type
EA fees for the assessment of deployment information and benefits statement.	£1,718.00	1,200	£2,061,600.00	OPEX/Annual
Increased biosolids cake handling prior to EA approval of deployments and the delivery stage (tonnes).	£3.00	62,500	£187,500.00	OPEX/Annual
Payments to farmers to honour the supply of biosolids as a waste material through the deployment process (tonnes).	£2.25	375,000	£843,750.00	OPEX/Annual
Additional human resources to undertake new activity to collate and complete deployment application information, produce field specific benefit statements, analysis and risk maps (number of roles).	£55,388.00	3	£166,164.00	OPEX/Annual
Additional human resource to undertake quality assurance for the deployment application process (number of roles).	£55,388.00	1	£55,388.00	OPEX/Annual
Additional human resource to liaise with farmers over their requirements and collect soil samples (number of roles).	£43,225.51	1	£43,225.51	OPEX/Annual

Source: United Utilities, 2024

Table 16: Summary of enhancement expenditure by year of AMP8

	Cost £					
Description	**Year 1***	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**AMP8 total**
EA fees for the assessment of deployment information and benefits statement.	£1,546,200.00	£2,061,600.00	£2,061,600.00	£2,061,600.00	£2,061,600.00	£9,792,600.00
Increased biosolids cake handling prior to EA approval of deployments and the delivery stage (tonnes).	£140,625.00	£187,500.00	£187,500.00	£187,500.00	£187,500.00	£890,625.00
Payments to farmers to honour the supply of biosolids as a waste material through the deployment process (tonnes).	£632,812.50	£843,750.00	£843,750.00	£843,750.00	£843,750.00	£4,007,812.50
Additional human resources to undertake new activity to collate and complete deployment application information, produce field specific benefit statements, analysis and risk maps (number of roles).	£124,623.00	£166,164.00	£166,164.00	£166,164.00	£166,164.00	£789,279.00
Additional human resource to undertake quality assurance for the deployment application process (number of roles).	£41,541.00	£55,388.00	£55,388.00	£55,388.00	£55,388.00	£263.093.00
Additional human resource to liaise with farmers over their requirements and collect soil samples (number of roles).	£32,419.13	£43,225.51	£43,225.51	£43,225.51	£43,225.51	£205,321.17
Total						**£15,948,730.67**

*We assumed lower costs in year 1 to facilitate a short startup phase

Numbers in the table above are post efficiency in line wit our October business plan submission

Source: United Utilities, 2024

Table 17 below sets out the options that we have considered to comply with this WINEP action. This concludes why the option selected is the most appropriate.

Table 17: Options considered to comply with WINEP action 08UU100135 - Sludge to land compliance under Environmental Permitting Regulations

Option	Rationale	Select / reject	Reason
Retain SUIA process only	Maintain the SUIA process for recycling biosolids to agriculture.	Reject	This option was discounted as non-delivery of a statutory obligation in the AMP8 WINEP would not be acceptable.
Update processes to meet EPR requirements	Implement business process improvements to enable biosolids recycling to agriculture under EPR.	Select	This option delivers the statutory obligation in the AMP8 WINEP.
Include the full scope and cost to comply with EPR	Include all possible scope to meet future EPR requirements such as additional sampling and monitoring of contaminants.	Reject	Full scope of requirements such as to monitor for contaminants has not been confirmed. Additional scope and cost is not low regret investment. These requirements are uncertain and are best addressed through a landbank (notified item) uncertainty mechanism.

Source: United Utilities, 2024

Delivery of the biosolids recycling under the SUIA business process are included in base. There is no implicit allowance for this investment in cost models, as this reflects delivery only of the over and above costs to deliver the business process for recycling biosolids to agriculture under EPR in AMP8.

More detailed and accurate documentation submitted to the EA prior to spreading will provide a better service to the EA enabling them to undertake their activities effectively and improve environmental protection, while making best value of the nutrients in biosolids. This information will be shared with farmers and support their nutrient management planning to consider the benefits of the nutrients applied through the use of biosolids.

This aligns with the EAs aim is to reduce the risks and improve performance for the beneficial use of sludge and enable proper determination of permissions and a robust risk-based compliance scheme to be appropriately funded.

For the avoidance of doubt, wider implications of implementing the EA sludge strategy such as technical requirements related to the balance between landbank availability and landbank required, market changes for the demand for biosolids products, as well requirements to sample and analyse for contaminants of concern are not in scope of this action and are requirements related to uncertainty that will be addressed though a landbank notified item, which is the subject of ongoing Ofwat and industry discussions. We set out our representation for a landbank notified item in document in section 1.

We have completed third party assurance of our scope and cost to validate that the costs set out in detail in this representation are efficient and robust. The assurance was conducted by Grieve Strategic, which specialises in advising companies across the water and waste sectors on materials recycling to agriculture.

The assessment included technical assurance on the number of deployments, increased resource requirements, material handling and farm incentivisation. The full report is in Appendix F. The assessment concludes;

"In summary, we believe UU's costs to meet the requirements of the WINEP action are fair and proportionate. Recycling biosolids in accordance with the requirements of the EPR will impose additional fees, require more people to produce the required documentation and the delays/uncertainty imposed by the process will result in material having to be stored elsewhere and incentivisation provided to at least some farmers, all items UU have included with costs comparable to publicly available information.[51]"

[51] Assurance of United Utilities Environmental Permitting Regulation costings – Grieve Strategic, 2024

In line with other WINEP actions Ofwat should allocate funding to enable us to deliver this activity. The enhancement cost sharing mechanism 40:40 is an appropriate cost sharing mechanism. For Ofwat not to make a funding allocation and expect us to deliver an environmental obligation through a base 50:50 cost sharing mechanism is unacceptable and a flawed approach to implementing the economic regulatory tools at Ofwat's disposal.

6.5 Approach for final determination

We consider that our original proposed approach remains the correct way to proceed and is appropriately accounted for in the economic regulatory framework proposed by Ofwat for AMP8.

Ofwat should recognise the statutory obligation placed on the company by the inclusion of this action in the WINEP, dated 5 July 2024. The obligation remains a statutory requirement that the company must deliver in AMP8. The direction from the Environment Agency is clear that this is an AMP8 deliverable even if the exact implementation date is not currently published.

Ofwat should allocate resources to deliver WINEP requirements. Ofwat would be failing to fund UUW to meet its environmental obligations if it did not make an allowance to meet this statutory WINEP requirement.

Ofwat should assess the efficient cost to meet the requirement. The efficient cost of £16.489 million only includes for the increased administration and management costs of the business process and the payment of Environment Agency fees. These are essential to comply with the requirements to enable biosolids to be recycled to agriculture in line with the WINEP action.

Ofwat should recognise that customers are protected through the enhancement cost sharing mechanism. The cost sharing mechanism proposed by Ofwat will correctly return money to customers if implementation of the regulations occurs part way through AMP8.

Alternatively, Ofwat could approach the EA to confirm the removal of this action from the WINEP. This would be a confirmation that the EA is not implementing the EA sludge strategy in AMP8.

7. Preparatory works for alternative outlets

7.1 Key points

- **We disagree with Ofwat's decision to reject funding for preparatory works for alternative outlets:** Delivery is essential to inform an efficient, planned and coordinated transition for a proportion of biosolids away from recycling to agriculture, providing a better outcome for customers. Through on-going collaborative work, the Industry, Ofwat, Defra and the Environment Agency have all recognised the uncertainty over the sustainability of biosolids recycling and the need for a planned transition, and funding should be allowed through PR24.
- **The decision to not allow funding does not align with Ofwat's PR24 methodology:** The methodology set out key principles for funding preparatory work for uncertain and long-term options, which were not reflected in Ofwat's evaluation of this enhancement need. The evaluation only highlighted concerns that the investment may become unnecessary should the risk not materialise. The assessment does not consider that, given a long investment lead-time of circa ten years, without preparatory works in AMP8 it will reduce flexibility, and close off multiple strategic pathways and alignment with our Long-Term Delivery Strategy (LTDS).
- **We provide additional evidence in support of our representation:** We provide significant additional evidence of the substantial landbank risks in our region, as well as a national study demonstrating that there is a shortfall in capacity to dispose of sludge to other outlets, if the landbank is lost. This is further evidence of why undertaking low regrets preparatory works now, ahead of landbank loss, is critical.
- **Ofwat is wrong to reject the enhancement case because the action is not approved under the WINEP:** The action was not a proposed WINEP action as it relates to wider resilience in our operations in delivering our functions and not within scope of the WINEP sewage sludge driver.
- **Ofwat has recognised the significant uncertainty associated with landbank and has proposed a notified item:** The decision fails to consider that the proposed enhancement would in-fact support Ofwat to make good quality decisions over the solutions to meet requirements, if the landbank notified item is triggered in AMP8.
- **Ofwat should change the draft determination decision:** The full allowance of £10.569 million should be made for *UUW66 – case 24, Bioresources preparatory works for alternative outlets*, through the final determination. We agree that this level of expenditure is not material and a PCD is not required.

7.2 UUW's PR24 proposal

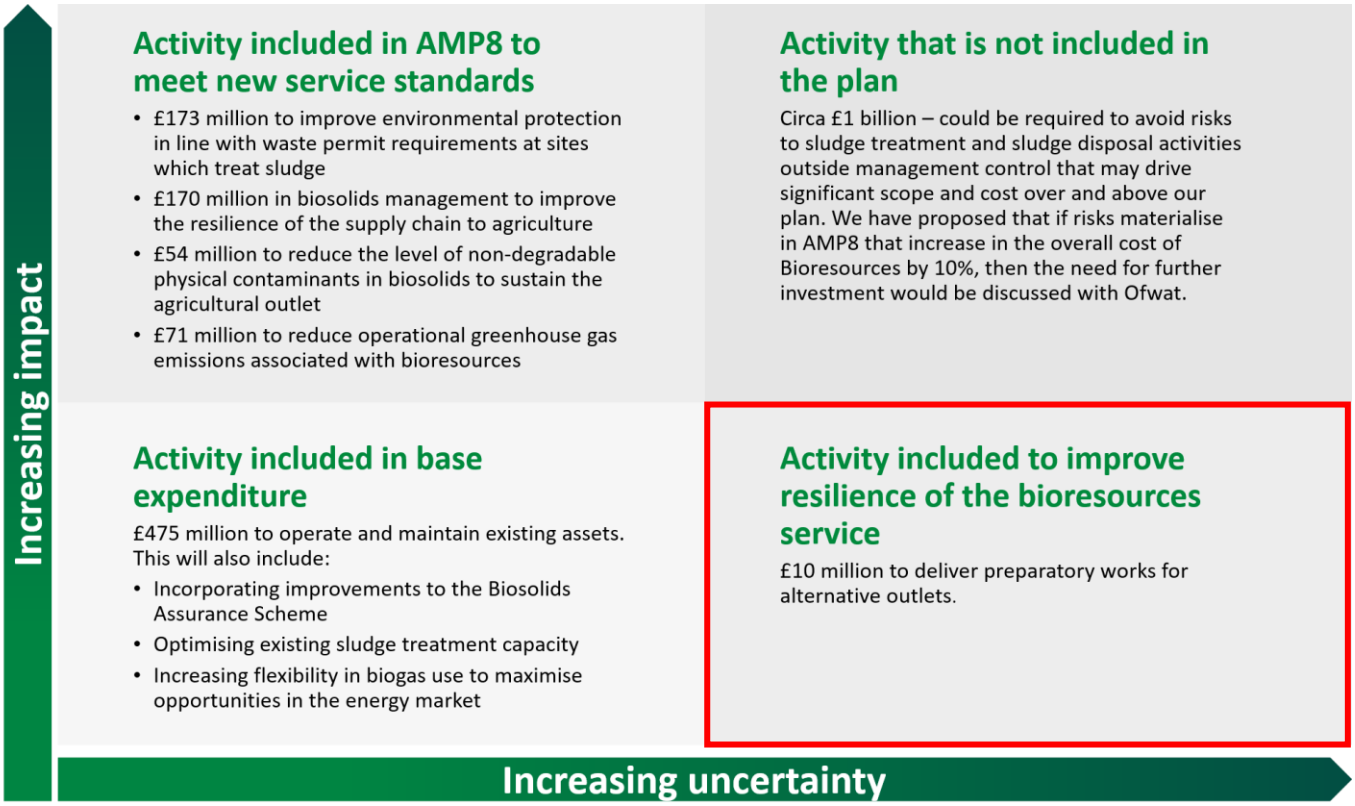
Enhancement case, UUW66 – case 24, set out a £10.569 million proposal to deliver preparatory works for uncertain and long-term options for alternative biosolids disposal outlets, aligned with our Long-Term Delivery Strategy (LTDS).

The enhancement case submission was part of an integrated package of measures to respond to the unprecedented change and uncertainty in the bioresources sector. Our LTDS (presented in section 6 of business plan document, UUW12) explained that we anticipate that biosolids recycling to agriculture will reduce over time to match the changing environmental ambitions of customers and regulators, although there remains uncertainty over the timing and scale of the change. Alternative treatment and disposal technology will be required to adapt to reducing landbank availability and enable a move away from biosolids recycling to agriculture. Our core pathway assumes that landbank loss will be gradual and phased, enabling a transition to advanced thermal treatment technologies which will have a long lead-time to deploy.

Our AMP8 business plan for Bioresources, provided in document UUW58, explained our approach to respond to change in the bioresources sector:

- We prioritised delivery of low-regrets investment where we had high certainty over the requirements. This included approved WINEP actions to increase sludge storage capacity to increase resilience against in-year disruption to biosolids recycling from causes such as wet weather or agricultural epidemics.
- We proposed a notified item to manage the risk that landbank loss is not gradual or phased, but risks materialise in AMP8 requiring an immediate move away from recycling biosolids to land. We identified that this may require immediate costs of up to circa £300 million in AMP8 to divert biosolids away from agriculture, alongside commencing and committing to a further £700 million in AMP9 to deliver a resilient and long-term alternative outlet for biosolids.
- We identified the need for low regrets preparatory investment for the short-term, to initiate actions with long investment lead-times, and keep open multiple strategic pathways and align with our LTDS for a phased transition away from biosolids recycling to agriculture. These advanced works are required because of a current lack of access to alternative outlets or treatment technologies for sludge when agricultural land is not available. This action was set out in our October 2023 Business plan enhancement case document UUW66 – case 24 and is the subject of this representation.

Figure 13: Our approach to manage change in the bioresources sector through our business plan submission (highlighted activity is the subject of this representation)



Source: United Utilities, 2023 (reproduced from Figure 26, UUW12).

In the enhancement case we shared evidence of national landbank modelling which has demonstrated that there is a significant risk of landbank shortfall for up to two thirds of biosolids nationally, although there remains uncertainty over the scale and timing of this change. There are multiple risks (both statutory and non-statutory) that may result in a landbank deficit which include implementation of Farming Rules for Water, EA sludge strategy and changes in public/farm acceptance of biosolids.

We set out the scope of the proposed enhancement case to start preparatory works in AMP8 which will deliver:

- Feasibility assessments, planning, detailed design, and permitting of sludge drying and thermal treatment technologies, as a higher value alternative to incineration, for up to 100 per cent of our sludge.

- The potential to accelerate the implementation of alternative pathways on our LTDS by up to three years and inform PR29 planning over landbank resilience needs.
- Alignment to the long-term strategy for bioresources in England, keeping alternative pathways open on our adaptive plan for maximum flexibility. This aligns with principles set out in Ofwat's PR24 methodology for funding preparatory work for uncertain and long-term options.

We considered that the proposed investment £10.569 million represents a low-regret one per cent of the total likely investment need in AMP9 and beyond, but delivering this investment upfront maximises our ability to influence the overall success in ensuring the long-term sustainability of sludge use and disposal. We noted that actions associated with construction and delivery of new assets to move to alternative outlets were outside the scope of the enhancement case. The need for additional investment to progress with these activities would be determined at PR29 and form part of our PR29 business plan, as appropriate.

We highlighted that unless we start to plan and accelerate deployment of alternative, uncertain and long-term options, we face a risk of being unable to provide a resilient sludge management service, and ultimately having no disposal outlet for sludge. These activities, relating to future enhancement activities, and increasing our level of business resilience in response to external challenges outside our control, are not included in base expenditure.

7.3 Draft determination position

Through the draft determination, Ofwat recognised our LTDS, stating that it met expectations. Ofwat commented that our LTDS "*presented a series of alternative pathways (aligned to the common reference scenarios) of higher regret activities. It included a clear monitoring plan, incorporating all required fields*"[52]. One of these alternative pathways was that associated with a rapid transition away from biosolids recycling to agriculture. Ofwat did not comment on the need for low regrets preparatory investment for the short-term, to initiate actions with long investment lead-time to keep open multiple strategic pathways.

Also in the draft determination response, Ofwat has recognised the uncertainty around landbank availability, both within the 2025-2030 period and beyond. Ofwat proposed a landbank notified item, stating "*We consider that a notified item is appropriate because spreading treated sewage sludge is the main outlet for bioresources operations, and the impact of changes could be material*"[53]. We provide a separate representation on the proposed landbank notified item in **Section 1, Managing agricultural landbank uncertainty**.

Ofwat rejected the need for enhancement investment for UUW66, Case – 24 Bioresources preparatory works for alternative outlets, and made a 100 per cent adjustment to costs. Ofwat provided the following explanation for why they considered the enhancement case failed the evaluation[54]:

" These actions are not approved under the Water Industry National Environment Programme (WINEP).

The company does not provide clear evidence of customer support.

The company does not provide sufficient and convincing evidence to demonstrate the timing of materialisation of specific risks for its region."

Ofwat also raised some concerns over whether the investment is the best option for customers:

"The company provides limited evidence that alternative technology options have been considered and does not provide details of a cost benefit analysis to demonstrate that the chosen option is the right solution.

The company does not provide sufficient and convincing evidence that it has considered an appropriate number of alternative technology options and whether the additional investment for planning and feasibility may become unnecessary at this stage should the risk not materialise."

and whether investment is efficient:

[52] Ofwat, PR24 draft determinations: United Utilities – Quality and ambition assessment appendix, July 2024, page 4

[53] Ofwat, PR24 draft determinations: Expenditure allowances, July 2024, page 89

[54] Ofwat, Wastewater Freeform, July 2024, (File: PR24CA79 – WW – Freeform.xlsx, Tab 'NWT_L1B'

"The company does not provide sufficient and convincing evidence that the proposed costs are efficient.

The company does not provide evidence of cost benchmarking to demonstrate that they are efficient."

The investment passed the customer protection gateway as Ofwat recognised that the expenditure is not material and a PCD is not required.

7.4 Issues and implications

We disagree with Ofwat's decision to reject funding for Bioresources preparatory works for alternative outlets. We believe this is an incorrect decision and inconsistent with both:

- Ofwat's PR24 methodology which recognises that some works may be required, even where there is uncertainty over the timeline for risks emerging. This is particularly important where actions have long lead times to ensure that multiple strategic pathways on our LTDS are kept open.
- Ofwat's recognition of landbank uncertainty elsewhere within the draft determination (i.e. the proposed landbank notified item). The proposed prudent, low-cost actions, support the best outcomes for customers and would support Ofwat to make good quality decisions over the solutions to meet requirements at PR29 or an interim determination, if the landbank notified item is triggered in AMP8.

We further believe that some of the statements made by Ofwat in their assessment of the case are spurious, for example, rejecting the need for the enhancement case as it is not part of the WINEP. The action was not a proposed WINEP action as it relates to long-term resilience in our operations, which is a duty of Ofwat, and not within scope of the WINEP sewage sludge drivers.

Furthermore, when assessing the best option for customers and cost efficiency, we believe that Ofwat has misunderstood the intent of the works. For example, Ofwat raises concerns that an appropriate number of technology options have been considered, however, a technology review is, in fact, an objective of the investment, and therefore to purport that it not being completed ahead of the business plan submission as a reason for concern, cannot be a correct decision.

In this section we provide additional narrative on the implications of Ofwat's decision, and supplement our response with additional and latest evidence, where appropriate, to respond to each of Ofwat's comments.

7.4.1 Rejecting this enhancement case does not align with Ofwat's PR24 methodology

Ofwat set out their key principles for long-term delivery strategies as part of the PR24 methodology. This recognised that business planning decisions need to be made in a long-term context to help ensure that what is delivered in the short-term is likely to maximise long-term value for customers, communities and the environment.

Through our business plan submission, we have aligned with the principles set out by Ofwat. The guidance notes that the core pathway "***must include*** *any activities that meet the following criteria… investment required to keep future options open (such as enabling work or learning and monitoring), where possible, or is required to minimise the cost of future options*[55]".

We have identified enhancement case, *UUW66 – case 24 Bioresources preparatory works for alternative outlets*, as part of our core pathway in our Bioresources LTDS. Given the long investment lead-time of circa ten years to move to alternative outlets, the investment to undertake preparatory works for alternative outlets is essential to retain flexibility and keep open future options and multiple strategic pathways on our LTDS. If we only look to invest once landbank risks are confirmed, this will increase our costs and limit options for alternative disposal outlets in the interim, even if sufficient alternative outlets are available.

The PR24 methodology stated that it would *"consider any proposals from companies against key principles for funding preparatory work for uncertain and long-term options"*[56]*. However, this is seemingly contrary to the comment* made in Ofwat's evaluation of the enhancement need that "*investment may become unnecessary*

[55] Ofwat, PR24 and beyond: Final guidance on long-term delivery strategies, April 2022, page 7 (emphasis added).

[56] Ofwat, Creating tomorrow, together: Our final methodology for PR24 Appendix 4 – Bioresources control, December 2022, page 12.

should the risk not materialise"[57]. This assessment does not take into consideration that the works are low-cost preparatory works, and higher costs may ultimately be incurred if a lack of investment closes off pathways on our LTDS.

Ofwat should therefore reverse its decision and allow funding for this enhancement case to ensure that our plan delivers on the principles set out in the LTDS and final methodology.

7.4.2 It is not in the best interests of customers to reject prudent, low regret actions that support an efficient approach to manage landbank risks.

Ofwat stated in the draft determination, "*We recognise that uncertainty remains around landbank availability, both within the 2025-2030 period and beyond*"[58] and have proposed a landbank notified item.

Since business plan submission there has been a series of on-going, collaborative meetings between Water Companies, Ofwat, Defra and the Environment Agency. Through these meetings, the uncertainty over the sustainability of biosolids recycling has been discussed, and it has been recognised that there is a need for a planned transition to move away from an over reliance on landbank. Collaborative meeting four, held on 7 June 2024, discussed that there are two potential approaches to meeting the requirement to move away from landbank:

(1) **"Inefficient" approach**: If there is an immediate collapse in the market requiring us to utilise alternative outlets such as landfill, this would impact opex costs and increase customer bills significantly and provide a less sustainable solution.

(2) **"Efficient" approach**: a planned transition focussing on the right capital interventions to meet the long-term direction for bioresources management and provide a more sustainable solution.

Delivery of low regrets preparatory works now, ahead of landbank loss, is critical to support an efficient approach. The works proposed through the enhancement case will deliver feasibility assessments, planning, detailed design, and permitting of sludge drying and thermal treatment technologies, as a higher value alternative to incineration, for up to 100 per cent of our sludge. Ultimately these prudent, low-cost actions in AMP8 have the potential to accelerate the implementation of alternative pathways on our LTDS by up to three years and inform PR29 planning over landbank resilience needs.

In the absence of certainty over environmental requirements and common strategic planning assumptions for AMP8 and beyond, it is imperative that we undertake prudent actions that support resilience in our operations, and efficient future investment. In rejecting this enhancement case it would risk forcing an inefficient approach to the loss of landbank. In our business plan submission, we estimated that an inefficient, rapid transition away from landbank may require immediate costs in AMP8 of up to circa £300 million to divert biosolids away from agriculture, alongside commencing and committing to a further £700 million to deliver a resilient and long-term alternative outlet for biosolids.

Ofwat should therefore change its decision and allow funding for this enhancement case. The actions, whilst supporting an efficient approach to transition away from landbank, would also provide information to assist Ofwat to make good quality decisions over the requirements at an interim determination, if the landbank notified item is triggered in AMP8.

Moreover, there is shared regulatory support for the PR29 Bioresources Action Plan which will identify varied actions and projects and draw them into a programme for delivery in AMP8. This work will help generate information that can be shared with the industry as part of that action plan to benefit customers across the country.

7.4.3 We provide additional evidence to demonstrate the need for enhancement investment

Ofwat provided the following explanation for why they considered the enhancement case failed the 'need for enhancement' test:

[57] Ofwat, Wastewater Freeform, July 2024, File: PR24CA79 – WW – Freeform.xlsx, Tab 'NWT_L1B'.

[58] Ofwat, PR24 draft determinations: Expenditure allowances, July 2024, page 88.

"These actions are not approved under the Water Industry National Environment Programme (WINEP).

The company does not provide clear evidence of customer support.

The company does not provide sufficient and convincing evidence to demonstrate the timing of materialisation of specific risks for its region."

It is wrong to reject the action because it is not in the WINEP

Through the draft determination Ofwat states:

"We have not made allowances for resilience actions that were not approved through WINEP. Extensive discussions were held between companies and the Environment Agency in developing the WINEP programme. The Environment Agency consider that the approved actions are sufficient to achieve resilience in the sludge supply chain. There is insufficient evidence to justify supporting actions that go beyond those agreed by the Environment Agency."[59]

Ofwat is wrong to reject the enhancement case because these actions are not approved under the WINEP for two reasons:

(1) Ofwat's understanding of the scope of the WINEP sewage sludge driver does not reflect the narrow driver scope and interpretation the Environment Agency used to approve WINEP actions.

Ofwat has misunderstood the scope of the WINEP sewage sludge drivers. The reason for rejection assumes that the scope of the WINEP sewage sludge driver extends to include all actions to achieve resilience in the sewage sludge supply chain. However, subsequent clarifications by the Environment Agency have made it apparent that when the sewage sludge drivers were applied to approve or reject actions, they were much narrower in scope. The Environment Agency stated:

*"The sludge (use in agriculture) driver seeks environmental enhancements in sewage sludge (biosolids) to deliver **contingency measures** (such as storage) when business as usual is disrupted"*[60].

And:

*"The resilience of the biosolids supply chain to agriculture was included in PR24 WINEP. However, the scope of the driver was **not inclusive of the broader challenges in bioresources management and its reliance on landbank availability and landbank required**."*[61]

The scope of the approved actions under the WINEP sewage sludge driver was restricted to:

*"Storage + is a hybrid assessment in the sewage sludge (biosolids) supply chain. It includes both **storage and other actions which deliver environmental improvements of sludge quality and handling prior to storage** and before supply to agriculture, such as enhanced dewatering and pelletisation"*[62].

It can clearly be seen that, based on the latest clarifications provided by the Environment Agency, the WINEP sewage sludge drivers do not target total 'resilience' in the sludge supply chain. Rather they are actions that provide contingency against temporary 'in-year' disruptions. Ofwat should update its assessment of the enhancement case cognisant of the fact that the WINEP driver did not address resilience in landbank availability or landbank required.

(2) The actions were not proposed WINEP actions as they relate to securing resilience in our operations in delivering our functions and not within the scope of the sewage sludge driver

Given that broader landbank resilience has been confirmed as outside of the scope of the WINEP sewage sludge drivers, we highlight that securing resilient services is a priority for companies and Ofwat alike. The industry relies

[59] Ofwat, PR24 draft determinations: Expenditure allowances, July 2024, page 88.

[60] Environment Agency, Water Industry National Environment Programme - Sludge (Use in Agriculture) update, Information letter EA/12/2023 to Regulatory Contacts in Water and Sewerage Companies, 19 May 2023 (emphasis added)

[61] Environment Agency, Sewage Sludge Driver Lead, Bioresources Collaborative Meeting 4 minutes, 7 June 2024, (emphasis added)

[62] Environment Agency, Water Industry National Environment Programme - Sludge (Use in Agriculture) update, Information letter EA/12/2023 to Regulatory Contacts in Water and Sewerage Companies, 19 May 2023 (emphasis added)

on biosolids recycling to agriculture as the main outlet for sewage sludge, without which the industry would be left with insufficient outlets for biosolids disposal. Ensuring a resilient outlet for biosolids disposal is a core function and part of a company's ability to meet their licence duties to provide a resilient service.

We believe that this allowance should be considered as part of furthering the resilience objective to secure long term resilience of the company's systems and processes and supporting us in enabling us to meet, in the long term, an essential part of the wastewater service. This is an important element of Ofwat's final methodology.[63]

We believe that Ofwat should reconsider its decision and make an allowance for this enhancement case in the final determination. Now, having clarified the narrow scope of the WINEP, Ofwat should make the assessment in line with its final methodology in respect of furthering the resilience objective.

We clarify evidence of customer support

We recognise that it is important to have customer support for how we manage Bioresources services and in Enhancement Case, UUW66 (section 5.5) we shared the conclusions from customer engagement we led to inform development of our Bioresources LTDS. Further information about how customer research shaped our LTDS, and therefore the preparatory works aligned to the LTDS, was also presented in Section 3.4 of UUW21, Our Customer Research Methodology.

The research concluded that customers' long-term priorities are for a Bioresources service that provides reliable sludge treatment in a way that limits its impact on human health, greenhouse gas emissions, and on water quality. Customers preferred advanced anaerobic digestion and believed we should be investing in established technologies and exploring new technologies simultaneously to keep one eye on the future.

In line with the objectives of this enhancement case, there was a clear consensus around not waiting for problems to occur and instead, to plan and invest now in additional capacity and functionality so that if and when problems occur, we are in the best position we can be to deal with those problems. Customers also recognised the need for research and development and the requirement to balance short- and long- term investment.

Comments raised during the workshops included:

- *"We need to be forward thinking. There's no point panicking once the horse has bolted."* A customer from our Preston workshop.
- *"Fail to prepare, prepare to fail."* A customer from our Warrington workshop.

The full evidence of the customer research we undertook at the time can be made available, if required, to support our case.

We did not undertake further, specific customer research into the bill impact of the enhancement case for two reasons:

(1) Through the customer research already completed, we had strong customer support for undertaking planning and investment now, so that the business is prepared to deal with future challenges. We considered that as the proposed investment relates to future enhancement activity, to ensure provision of a resilient service, it was not considered a discretionary enhancement case, but essential to maintain alignment with our LTDS.

(2) The bill impact of the enhancement case is relatively minor and as a prudent and low-cost action we did not consider it material enough to require additional specific customer engagement. This aligns with Ofwat and CCW's principles of high-quality research, avoiding duplication and ensuring each engagement has meaningful impact. However, if we were to make more significant investment to proceed with implementation, we recognise this would require further evidence of customer support, at that time.

[63] Ofwat, Creating tomorrow, together: Our final methodology for PR24, December 2022, page 14.

We provide further evidence for materialisation of specific risks for our region

We provided in section 4.2 of our enhancement case the outputs of national landbank modelling which highlighted that under the most likely scenario, there is only sufficient land available to accommodate the continued recycling of approximately one third of all national biosolids. Alternative treatment and/or disposal outlets may be required for the remaining two thirds of biosolids.

We provided in section 6 of UUW12 further context that landbank resilience risks are particularly pressing in the North West. Landbank is already constrained with only 50 per cent of agricultural landbank being available for recycling. Of that agricultural land available, only 16 per cent is arable, which is the most flexible in the type of biosolids which can be recycled. To find adequate landbank we have a greater distance to travel to recycle than any other company, resulting in higher sludge recycling costs. The national landbank modelling demonstrates that under current regulatory conditions the average haulage distance we are required to travel to recycle biosolids to land is 71km, compared to an industry average haulage distance of 46km.

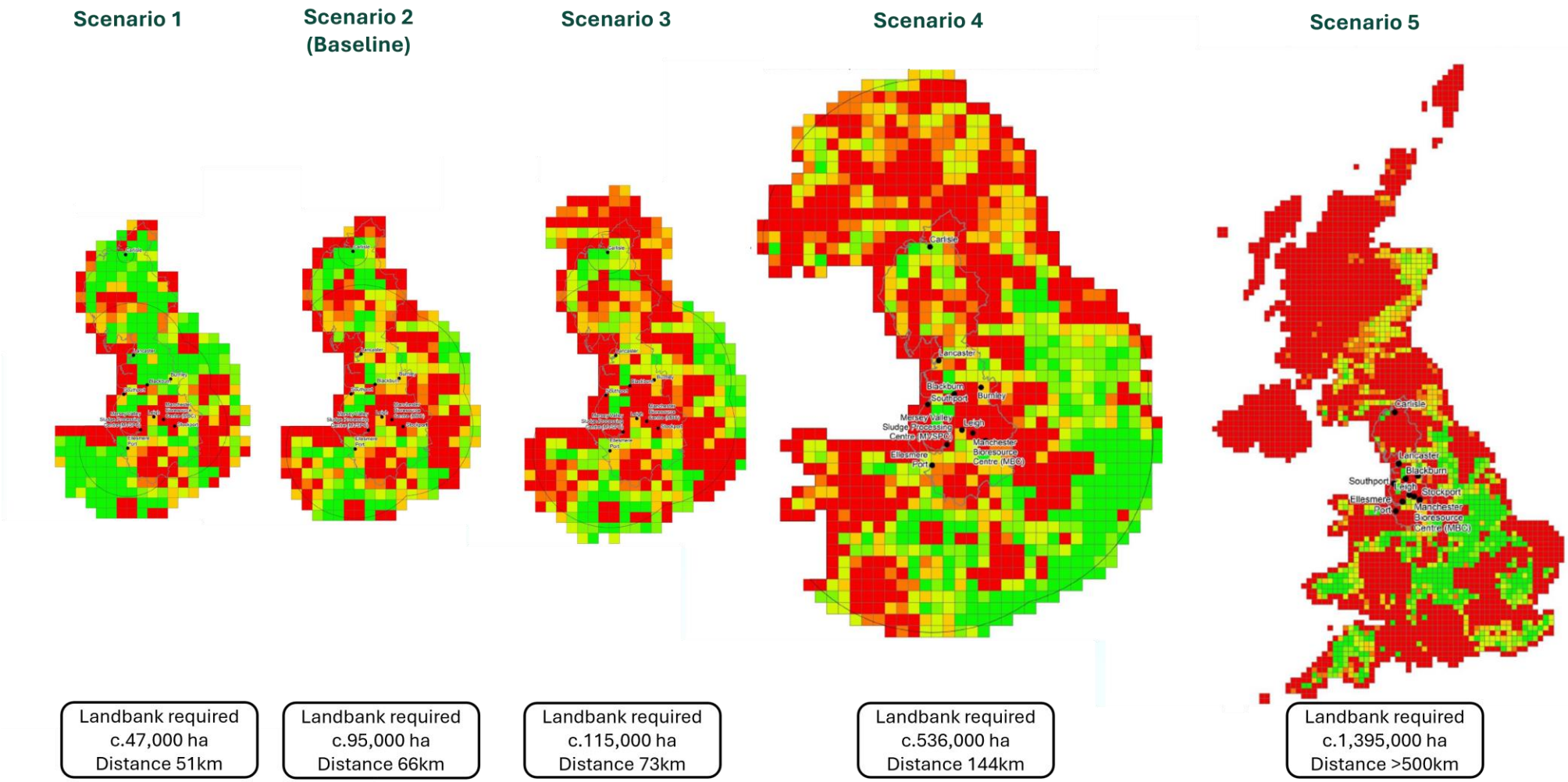
We now provide additional evidence of the landbank risks for our region from United Utilities' commissioned Grieve Strategic (2022) landbank analysis, which was not shared in our original enhancement case. The regional landbank modelling uses the same methodology as the National Landbank Modelling and utilises a wide range of factors that either compete with biosolids, or prevent it being recycled to calculate the available agricultural land. The assessment demonstrated that while these factors apply nationally, they do not affect each area evenly:

"The northwest of England, and UU's region in particular, is one region where there are competing factors which impact on the ability to recycle biosolids. Firstly, is the quantity of agricultural land; there are major conurbations (e.g. Greater Manchester, Liverpool) and very large areas of non-agricultural land (e.g. moorland, lakes and mountains in the Lake District, Peak District and Pennines). The climate in the northwest has much higher levels of average rainfall than the midlands or particularly the east and southeast. The rainfall itself can have an effect as it means there are less days where it is possible to physically store or recycle biosolids, but the key effect is the land use. Due to the greater rainfall there is more grass in the west than the east as in many areas grass is the only crop that can be commercially grown for consumption by livestock. Animals by their nature are inefficient meaning higher quantities of nutrients are fed to them than they need, which means excess nutrients are contained in their manure. The regulations governing stocking densities (i.e. how many animals are allowed on a farm) and the recycling of organic manures to agricultural land means biosolids is effectively in direct competition with all other sources. In the case of livestock manures, farmers will always accommodate their own livestock manure first and given there is estimated to be 90 million tonnes of livestock manure in the UK, with most of this in the west, means there is significant competition in the northwest (e.g. from the dairy farms of Cheshire)."[64]

We present in Figure 14 landbank modelling map outputs from the North West regional assessment of five modelled scenarios. As the modelling scenarios apply progressively greater restrictions the total area of land required increases, and the distance to travel also increases. For scenarios one to three there is sufficient land available to continue to recycle our biosolids to agricultural land - this requires us to access most of the available agricultural land in the North West, alongside significant areas of North Wales, Shropshire, Derbyshire and Yorkshire. For scenario 4, the area needed is five times greater than the baseline and the landbank required is equivalent to all available agricultural land in the north of England, alongside large areas of Wales and Scotland. In scenario 5 the landbank required (to only meet our needs for biosolids recycling) is equivalent to the available agricultural landbank across the whole of Great Britain.

[64] Grieve Strategic in association with RSK ADAS, United Utilities Landbank Assessment, 2022

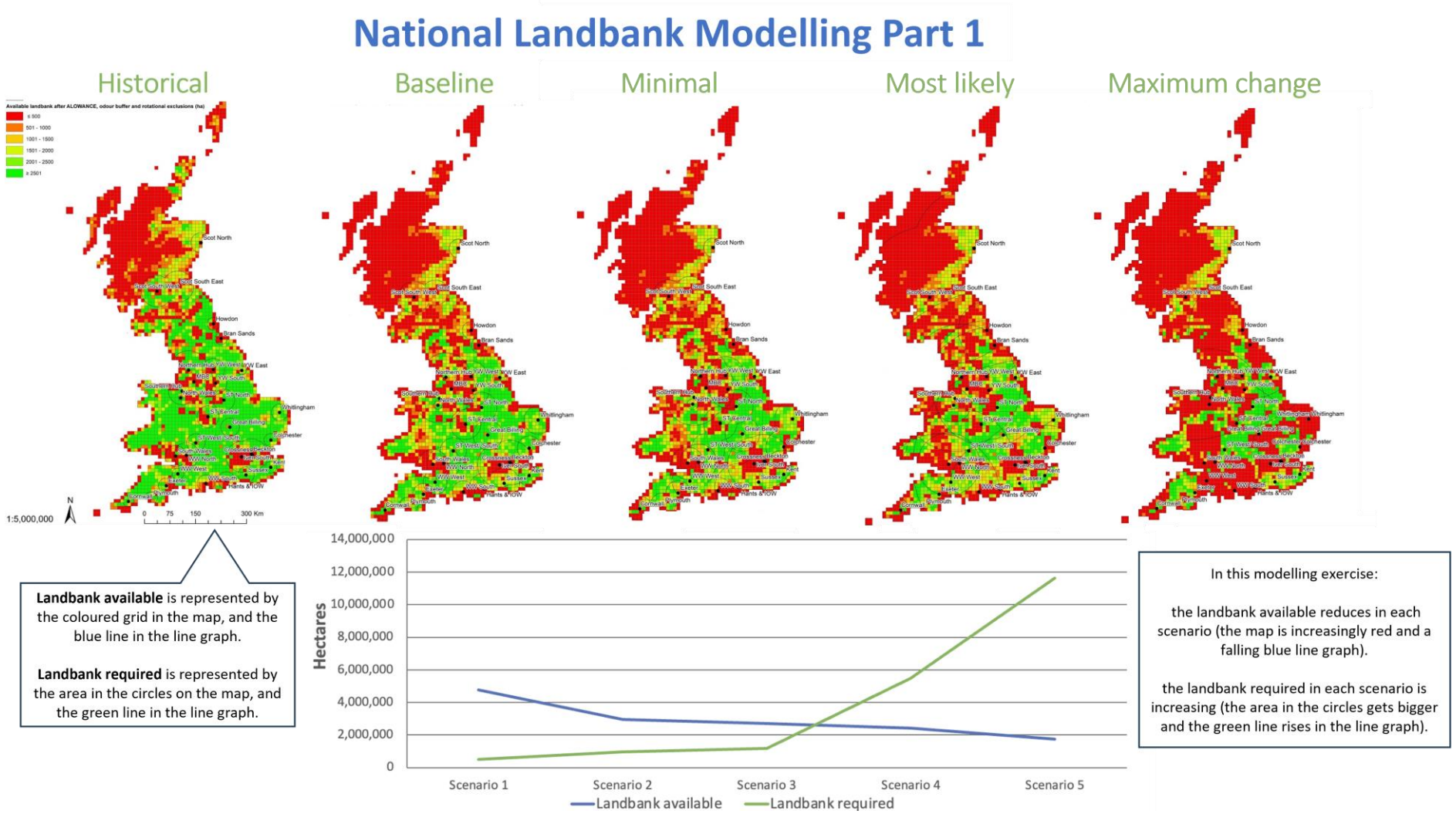
Figure 14: Landbank modelling outputs for United Utilities



Source: Grieve Strategic in association with RSK ADAS, United Utilities Landbank Assessment, 2022

As agricultural landbank is a shared and finite resource, the full extent of the landbank challenge and competition between water companies is best demonstrated through national landbank modelling, as we present in Figure 15.

Figure 15: National landbank modelling outputs



Source: Grieve Strategic in association with RSK ADAS, presented at Bioresources Collaborative Meeting Four, June 2024.

Since business plan submission, the industry has commissioned additional national landbank modelling to isolate key factors so that the impact of individual changes can be quantified. The modelling concluded:

"The approach to N and P management [was] *the critical factor in determining whether there was sufficient land to recycle biosolids (and other manures). The water industry approach to N and P management increases landbank required but not to the point where there was more land required than available. By contrast the EA approach to N and P management had a substantial affect, resulting in insufficient landbank in all practical senses under all scenarios, and alternative outlets being required for up to 70% of biosolids."* [65]

The uncertainty over nutrient requirements is primarily linked to future Defra decisions over the implementation of Farming Rules for Water. One event that is expected by the end of 2024 is the Defra post implementation review of Farming Rules for Water. Similarly, the output of a review of the Defra Statutory Guidance, which provides protection for water companies from the full ramifications of Farming Rules for Water is *"to take place at any time and in any event will do so by September 2025"*[66]. A Defra decision, confirmation, or change, in the management of nutrients or use of organic materials to agriculture could set different expectations for biosolids recycling than has been allowed for in the WINEP or in final determinations.

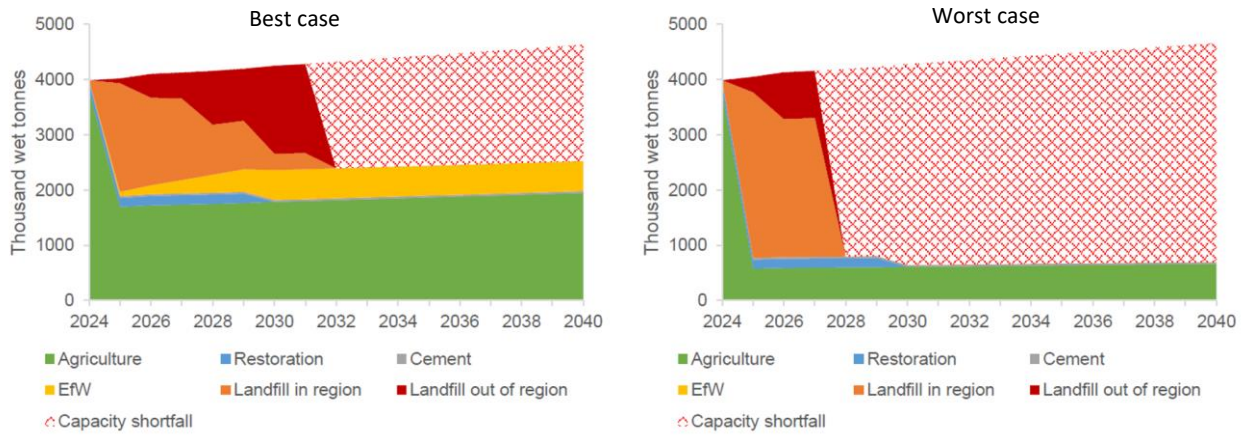
This information provides clear evidence that the agricultural outlet for biosolids recycling in the North West is already facing moderate challenges. Any change in requirements is expected to make recycling biosolids to agriculture even more challenging. While the scale and timing of changes are uncertain, the probability of change is high because key decisions are expected during AMP8. Through modelling we have demonstrated the likely impact of those changes, further supporting the need for prudent action now (ahead of confirmation of any potential changes in requirements) to undertake preparatory works for alternate outlets.

In addition, we share the outputs of a national study by AtkinsRealis commissioned on behalf of the industry and which concluded:

"In the event that an abrupt regulatory or market change rapidly constrains access to the agricultural landbank, it is not currently clear what alternative outlets would be immediately available to accept biosolids or what their respective capacities may be"[67].

In Figure 16 we present a graphic from the report to demonstrate the potential scale of alternative outlets that may (or may not) be available in the event of landbank loss. The best- and worst-case scenarios account for uncertainties in how much landbank may be lost and the capacity of alternative outlets to accept biosolids. It is clear in both cases that there are insufficient outlets to accept all biosolids.

Figure 16: Project best- and worst-case scenarios for alternative outlets for biosolids under the modelled most likely landbank scenario



Source: AtkinsRealis, Figure 6-1, National Plan B – A review of the resilience of Biosolids outlets in England, Wales and Scotland, June 24

[65] Grieve Strategic in association with RSK ADAS, National Landbank Assessment, August 2024

[66] Defra, Statutory Guidance: Applying the farming rules for water, https://www.gov.uk/government/publications/applying-the-farming-rules-for-water/applying-the-farming-rules-for-water#review-period-for-guidance (Online, accessed August, 2024).

[67] AtkinsRealis, National Plan B – A review of the resilience of Biosolids outlets in England, Wales and Scotland, June2024

The report provides further details for the north region and calculates that depending on how uncertainties resolve, up to one third of biosolids could be accommodated in alternative outlets such as restoration or landfill. However, the research concludes up to 33 per cent of biosolids would have no alternative outlet if a significant proportion of the landbank is lost. This report provides clear evidence of why undertaking low regrets preparatory works now, ahead of landbank loss, is critical. Any uncertainty in requirements and the timing of those requirements is offset by the long lead-time to develop and implement alternative outlets.

7.4.4 Delivering preparatory works is the best option for customers and efficient investment

When assessing the best option for customers and cost efficiency, we believe that Ofwat has misunderstood the intent of the works. Ofwat raises concerns that an appropriate number of technology options have not been considered or an appropriate cost benefit analysis completed to support the chosen option.

We agree that these are critical considerations, and these are in fact part of the objectives of the proposed enhancement case. The scope is preparatory works that will include feasibility assessments of sludge drying and thermal treatment technologies. We will engage markets through delivery of the project to undertake a full technology review of available market solutions to support improvements in sludge treatment, use, and if needed, disposal. As the scope is exploratory and preparatory only, we are not yet constrained to one technology or solution, and this must be reflected in Ofwat's decision making. It cannot be correct for Ofwat to conclude that a full options appraisal not being completed ahead of the works is a reason for concern.

The concerns raised also do not reflect that we have deferred significant investment (an additional circa £1 billion) to implement actions to move away from biosolids recycling to agriculture in AMP8. There is a risk that this investment may not be completely required and investing significantly now could be detrimental for customers. The works proposed are a minimal one per cent of the total likely investment need in AMP9 and beyond, should we be required to move away from biosolids recycling to land. This proportion of investment spend upfront, where we have maximum ability to influence the overall success and outcome of the project, is in line with other projects of this scale and benchmarked norms for project delivery.

In our enhancement case submission we provided a detailed breakdown of scope to deliver the project. When a full scope of works is agreed and defined for implementation (outside the scope of this enhancement case) it will, at this stage, be appropriate to benchmark the chosen solution.

Any information produced as part of this enhancement case will inform good quality decisions over the requirements at an interim determination, if the landbank notified item is triggered in AMP8. Moreover, the learning generated will be shared with the wider industry as part of the PR29 Bioresources Action Plan.

7.5 Approach for final determination

Ofwat should change the draft determination decision and make an allowance for UUW66 – case 24, Bioresources preparatory works for alternative outlets. The full allowance of £10.569 million should be made through Ofwat's final determination. We agree with Ofwat that this level of *expenditure is not material and a PCD is not required*.

The significant landbank risks have been recognised by Ofwat in proposing a landbank notified item. Given the recognition of the material risks facing the business, it is complementary to allow this minimal, low regret funding that will enable an efficient and planned transition to alternative technologies. This will allow the company to act in the best interests of customers to focus on developing the right capital interventions to meet the long-term direction for bioresources management and provide a more sustainable solution in the long term.

These activities, relating to future enhancement activities, and increasing our level of business resilience in response to external challenges outside our control, are not covered by base expenditure. The decision to allow enhancement investment in relation to this proposal is part of securing the long-term resilience of companies' systems and to secure that we take steps to ensure we can, in the long term, meet the need for wastewater services. Supporting the proposal would be in line with pursuit of the resilience objective and the fact that this enhancement action is not proposed under the WINEP is irrelevant in this circumstance.

We believe that support for this enhancement case would be consistent with Ofwat's final PR24 methodology and supportive of us having the appropriate resources to plan for long-term options identified within our LTDS. The landbank risks are significant and too great to do nothing in AMP8. The decision over whether to allow enhancement funding must reflect that without action, we risk closing off alternative options, as they have a significant lead time (circa ten years), to implement ahead of when they may be needed.

The prudent and proportionate level of investment proposed will have benefits beyond the North West, as the learning will be shared with the industry via the PR29 Bioresources Action Plan. Furthermore, if the notified item is triggered in AMP8, this minimal investment would support Ofwat to make good quality decisions over the solutions to meet the clarified requirements.

8. Biomethane

8.1 Key points

- **The Performance Commitment for operational greenhouse gas emissions interacts negatively with biomethane production and export:** Meanwhile, biomethane production offsetting fossil gas or diesel reduces more carbon emissions than using biogas to produce electricity, which is a lower carbon source of energy, and becoming lower every year.
- **Government policy supports biomethane production:** It also provides incentives as it is recognised that biomethane is a valuable fuel to use in reducing harder to abate fossil fuels in heating and transport.
- **The structure of Ofwat's proposed performance commitment creates a disincentive to invest in biomethane production and export:** We believe this is at odds with government policy and will act to materially limit the potential impact any wastewater company can have on supporting delivery of UK net zero targets as a result of the regulatory impact of the performance commitment and disincentivisation of investment in biomethane facilities.

8.2 UUW's PR24 proposal

In our PR24 submission (Bioresources Business Plan, UUW 58, section 4.8.8 through 4.8.13) we highlighted how the common performance commitment (PC) "operational greenhouse gas emissions performance commitment (Wastewater)" interacts negatively with the transition of biogas use in CHP to biomethane production and export. We highlighted how this is not supportive of government policy on the use of biomass for net zero. Since our submission, the government has consulted[68] on proposals to incentivise the transition from CHP to biomethane production, recognising the point we highlighted, that biogas use for biomethane production is a more valuable tool when it is used for gas grid decarbonisation than for electricity production.

8.3 Draft determination position

We note that all proposed new biomethane facilities have been rejected in the draft determination Net Zero document as these investments should be made from base expenditure.

In "PR24 operational greenhouse gas emissions performance commitment (Wastewater)", Ofwat did not adjust the operational greenhouse gas emissions performance commitment (Wastewater) to reflect the concerns we raised regarding its potential impact on the prospects for companies to pursue biomethane production and export opportunities.

In its assessment of how the PR24 draft determinations supported UK Government Policies, Ofwat did not reflect on how this specific performance commitment might have negative unintended consequences for wastewater companies' ability to support the economy wide transition required to meet UK government net zero targets.

8.4 Issues and implications

We agree with the position taken by Ofwat that these facilities should be funded out of base expenditure. In fact, we would expand on this to highlight the fact that new biomethane facilities are commercially viable for third party operators. However, this does rely on the unrestricted use of government support schemes available to third party operators, for example the RTFO (Road Transport Fuel Obligation) or GGSS (Green Gas Support Scheme).

The operational greenhouse gas emissions performance commitment (Wastewater) allows for biomethane facilities to retain the carbon credentials (Renewable Gas Guarantee of Origin or RGGOs) associated with the

[68] UK Government, Future policy framework for biomethane production call for evidence, Future policy framework for biomethane production: call for evidence - GOV.UK (www.gov.uk)

production of biomethane and use within the PC framework. However, the value of retaining the carbon credentials is materially less than the value supported externally in the GGSS (£35/MWh in the PC[69] compared to £60/MWh in the GGSS[70]). The RTFO is a traded mechanism so doesn't have fixed prices. However, biomethane produced within this scheme is typically sold in the range of £50 to £80/MWh[71]. The carbon credentials cannot be double counted so can only be 'sold' into one scheme and revenues cannot be stacked between them.

As currently constituted, the operational greenhouse gas emissions performance commitment (Wastewater) means that water customers will be funding biomethane facilities which are already commercially viable with support from existing incentive schemes and which already mean that biomethane operators have a route to market. Existing incentive schemes are paid for through additional charges on gas bills (GGSS) and taxes on vehicle fuels (RTFO). If we were to retain RGGOs (i.e. use the Ofwat PC 'route to market') this creates a new and – in our view – unnecessary cost for the water customer.

Additionally, the PC framework is only set for 5 years compared to 15-year contracts in GGSS. Biomethane facilities will typically take between five and ten years to reach payback.

The PC is therefore not a realistic alternative to existing market mechanisms as it is both lower value and lower certainty than existing policy interventions.

Further, due to existing biogas being typically used onsite in CHP engines and thus forming a carbon benefit which is counted within the emissions baseline, exporting biomethane results in an increase in a company's reported emissions, although it serves to deliver much lower whole economy emissions. **Investing in biomethane facilities therefore results in a penalty under the operational greenhouse gas emissions performance commitment (Wastewater).**

We agree with the governments analysis that domestic biomass (e.g. sewage sludge) should be prioritised to be used in the most beneficial way to meet UK net zero goals. For currently available technology, we believe this to be biomethane production (ideally with carbon capture and storage), as suggested in the government's biomass strategy (p157)[72].

If the PC remains in place to cover biomethane facilities, we will not invest in the lowest carbon available technology and instead be incentivised to maintain the status quo. This means investing in CHP engines instead, which will have an asset life of 15 years and as such **prevent the optimum carbon outcome from being achieved until 2040** at the earliest.

As such, the potential impact any wastewater company can have on UK net zero targets is significantly reduced as a result of the regulatory impact of the performance commitment and disincentivisation of investment in biomethane facilities to the detriment of government policy and targets.

8.4.1 Case study

To demonstrate the points above, we have provided an indicative case study that shows the impact of different choices in the use of biogas.

[69] £188/tCO_2e * 0.18290 (natural gas emissions factor)

[70] GGSS tariffs

[71] Certificate Price Report produced by Barrow Green Gas, July 2024

[72] Biomass Strategy 2023 - GOV.UK (www.gov.uk)

Table 18: Biogas use case study

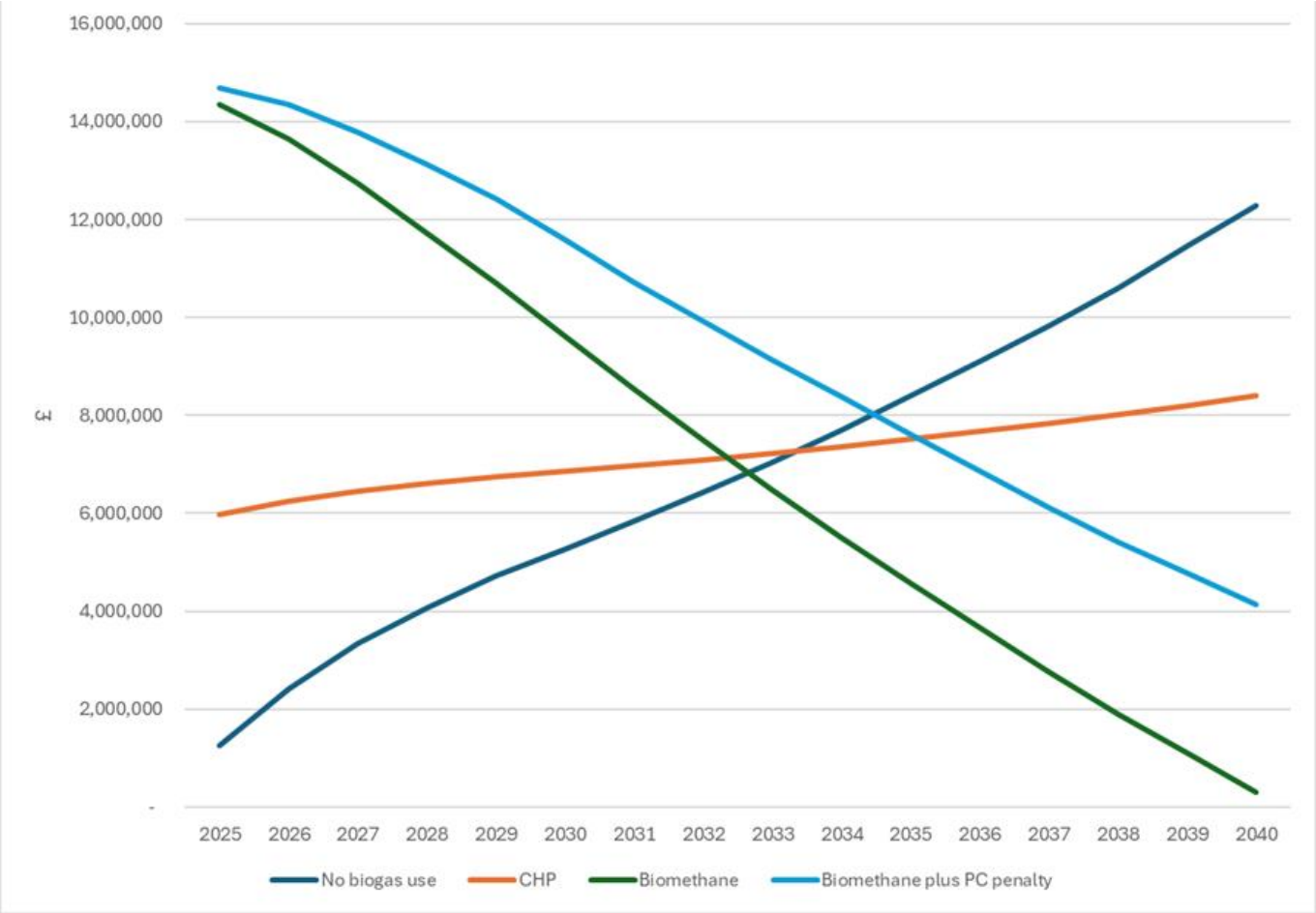
	No biogas use	Use of biogas in CHP engines	Biomethane to grid (excluding performance commitment impact)	Biomethane to grid (including performance commitment impact)
Capex (£m) (funded from base spending)	Nil	£5.7m	£15m	£15m
15 years CO_2 emissions from site (tCO_2e)	25,459	1,936	-40,505	-40,505
15-year totex	£12.3m	£8.4m	£0.3m	£4.1m

Source: United Utilities, 2024

Based on the Table 18 above, we highlight that:

- Biomethane facilities have a higher capex requirement than CHP facilities (circa 3 times higher) – but this should be funded from base expenditure.
- Biomethane export creates 3 times more carbon reduction than using biogas in CHP engines. This is in part due to the decarbonisation of the electricity grid over the forecast period compared to the displacement by biomethane of fossil gas from the gas grid. Carbon benefits are further increased if the biomethane is used in HGVs to displace diesel use, as diesel has a higher emissions factor than gas.
  - The above highlights why a 'whole economy' view is important when it comes to considering the greatest carbon outcome and that focussing only on carbon emissions produced by an operational wastewater site prevents wider benefits from being accessed.
- Costs ('totex') in this model include upfront capex and future energy costs and revenues (the 'no biogas use' scenario is only future energy costs). CHP capex is significantly lower than biomethane investment, however, revenues from biomethane export are forecast to offset upfront capex costs and energy costs and as such are a more efficient use of funding over the long term. This comes at risk to the investor however as future energy costs are unknown.
- The performance commitment creates a penalty which other biomethane operators are not exposed to and which creates a barrier to investment.

Figure 17: Biogas use case study showing the cumulative cashflow forecast for different scenarios



Source: United Utilities, 2024.

- The "No biogas use" scenario (dark blue) shows a sites energy costs across the period assuming no usage of the biogas.
- The orange "CHP" line shows how, over time, self-generation can help to control a site's energy costs. Residual energy requirements for the site account for the increase over the period.
- Investment in biomethane (the green line "Biomethane") comes with higher upfront costs and therefore higher investor risk. However, revenues from biomethane plants can offset increased residual energy costs and be more efficient over a 15-year period.
- The impact of the downside penalty from the PC is shown in the light blue line ("Biomethane plus PC penalty.") This reflects the penalty associated with increased electricity import at the site. We have shown this relative to the biomethane investment line. We have assumed that the PC continues in its current form over the 15-year period, although there is some uncertainty relating to that assumption. For example, we could assume that the carbon price would rise in each five-year period reflecting the increased value of carbon as we progress towards 2050. We have also assumed that there is no rebaselining of carbon emissions for AMP9. In both cases, the outcome would be a lower return for the biomethane investment as a result of an increased PC penalty.
  - This case study is equivalent in size to around 5% of UU's available biogas. It shows that at current rates, the PC would generate a £4m penalty across the 15-year period. Over AMP8, this is a 40% reduction in revenues generated from biomethane export as a result of the penalty applied by the PC. This would make the business case for biomethane much more difficult given the uncertainties in both energy costs and the PC regulatory mechanism over the period. The impact of this would be to take forward the more certain/favourable business case associated with CHP investment as this would not negatively interact with the PC.

- The outcome of this decision would be 42,000tCO_2e emissions which could have been avoided through the displacement of fossil methane gas over the 15-year timeframe.

Scaled up to sector level, this would be 7m tCO_2e over the period, representing 4% of UK carbon budget 6[73]. Contrary to government policy, sewage sludge biomass would not be used in the most beneficial way to reduce carbon emissions if Ofwat continues with the operational greenhouse gas emissions performance commitment (Wastewater) in its current form.

8.5 Approach for final determination

Due to the complexity of existing energy markets and the interaction biomethane production has with government support schemes, which are designed to best incentivise whole economy progress towards net zero, **we propose that biomethane facilities are removed from the operational greenhouse gas emissions performance commitment (Wastewater) through re-baselining carbon emissions associated with biogas use**. This ensures that there are no unintended consequences from the PC on the development of new biomethane facilities which create barriers to market entry for wastewater companies and enables investment from base expenditure.

We stated in our original submission that we would support a review of the operational greenhouse gas emissions performance commitment (Wastewater) in order to minimise distortions towards existing energy markets and incentives. This remains the case.

[73] Carbon Budget Delivery Plan (publishing.service.gov.uk)

Appendix A Notified item event table

Background
Ofwat has stated the following in draft determinations:

"We are also proposing a notified item in all wastewater companies draft determinations in respect of potential increases to bioresources costs over the 2025-26 to 2029-30 period. This notified item applies to any increase in costs reasonably attributable to any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge. This would allow price controls to be changed in-period through an interim determination if the impact on costs, alone or in combination with other eligible items, met the materiality threshold in licence condition B. We consider that a notified item is appropriate because spreading treated sewage sludge is the main outlet for bioresources operations, the impact of changes could be material and new or changed to legal requirements would not necessarily otherwise qualify for an interim determination because they might not apply directly to companies. In addition, we acknowledge that bioresources activities might be affected by the Environmental Permitting Regulations (EPR) replacing the Sludge (Use in Agriculture) Regulations (SUiAR). These requirements are due to be defined within the Environment Agency's Sludge Strategy and its implementation date is yet to be confirmed."

Companies welcome that Ofwat has recognised this risk and proposed a notified item.

The notified item should be drafted in such a way to manage the uncertainty around significant restrictions in the availability of the agricultural outlet for biosolids recycling, leading to significant levels of additional investment in bioresources assets and operations. There are concerns that the scope of Ofwat's proposed notified item fails to provide an effective uncertainty mechanism and needs updating in the final determination.

The eligibility requirement proposed by Ofwat maybe considered to be inappropriately restrictive. This is because it will only allow for any new or changed legal requirements in relation to the application to agricultural land of fertiliser derived from sludge. Even with the legal definition provided by Ofwat for this notified item, there are concerns over key events that may or may not be recognised by Ofwat as a legal change and therefore fall outside the scope of the notified item. It would be helpful for the scope to be reviewed and any ambiguity resolved in the final determination.

The following table provides a list of plausible events identified by WaSCs that may have an impact on the ability of the water industry to recycle biosolids to an agricultural outlet. The purpose of the table is to help support discussions related to the scope and wording of Ofwat's proposed notified item. This list is illustrative only, it is not intended to be exhaustive and nor can it be, as the risks may materialise through multiple other routes.

	Event Name	Description	Impact	Probability
	Leading indicators	**We consider that leading indicators should be used to identify an event or trigger has occurred, and to enable as much time as possible to prepare for a reduction in the available agricultural outlet for biosolids.**	-	-
1	Defra FRfW post implementation review	The output of this review is anticipated by the end of 2024. A Defra decision, confirmation, or change, in the management of nutrients or use of organic materials to agriculture could set different expectations for biosolids recycling than has been allowed for in the WINEP or in final determinations. This may or may not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	High	High
2	Defra FRFW Statutory Guidance change (or expiration)	The output of a review of the Defra Statutory Guidance, which provides protection for water companies from the full ramifications of FRfW, is anticipated by September 2025. This guidance may be changed, rescinded or simply expire (which may or may not be judged to be a legal change). The loss of this guidance would lead to a significant change in the management of nutrients or use of organic materials to agriculture could set different expectations for biosolids recycling than has been allowed for in the WINEP or in final determinations. Given that this may or may not be judged to result from a legal change, the outcome should be recognised as a trigger for the landbank notified item.	High	High
3	EA Regulatory Position Statement	The EA may issue a Regulatory Position Statement with respect to the use of biosolids in agriculture. This regulatory tool is used to modify enforcement approach and is time limited. It may or may not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	High	Medium
4	EA changes in land spreading guidance impacting/relating to the biosolids supply chain to agriculture (England)	The EA may issue changes in land spreading guidance impacting biosolids recycled under EPR (now or in the future) to agriculture (England). This may or may not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	Low	Low
5	National position statement relating to the biosolids supply chain to agriculture (Wales / Scotland)	The relevant regulatory authority may issue a Regulatory Position Statement with respect to the use of biosolids in agriculture. This regulatory tool is used to modify enforcement approach and is time limited. It may or may not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item. (Note: Impact scored as “medium” on the basis that land availability in just one of Wales or Scotland is less significant the loss of availability in England)	Medium	Medium

6	Policy statement by food chain actors relating to changes in requirements for the biosolids supply chain to agriculture (e.g. British Retail Consortium, supermarkets)	Food chain stakeholders have a significant influence over the market for biosolids product as in input into agriculture. This was evidenced in 2000-01 with a concern over pathogens in biosolids. This threatened the loss of the agricultural outlet and led to the introduction of the Safe Sludge Matrix and its “layers of protection” to restore stakeholder confidence. This risk would not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	High	Medium
7	Policy statement by Farming quality assurance organisations relating to changes in requirements for the biosolids supply chain to agriculture (e.g. Red Tractor Assurance, Quality Meat Scotland)	Farming quality assurance organisations are stakeholders that have a significant influence over the market for biosolids product as in input into agriculture. For example, Red Tractor membership includes c90% of agricultural land. Their policy currently mandates the use of Biosolids Assurance Scheme certified biosolids as the requirement for biosolids to be accepted as a farm input. The requirement could change and support for biosolids withdrawn, driven by scientific and/ or perceived risks leading to a significant fall in demand for biosolids product. This risk would not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	High	Medium
8	Outcome of a legal action e.g. a judicial review, (e.g. Fighting Dirty /River Action, other etc)	The outcome of a court case may or may not be considered a legal change. To avoid any doubt over whether changes in requirements brought about though judgements made in courts are considered a legal change for the purpose of the notified item, it would be appropriate to set out clearly in the notified item that any such outcome should be recognised as a trigger for the landbank notified item.	Don’t know	High
9	Welsh government review launched into the land spreading of organic materials including AAD digestate	The output of a review into the land spreading of organic materials including AAD digestate has been announced. A Welsh Government decision, confirmation, or change, in the management of nutrients or use of organic materials to agriculture could set different expectations for biosolids recycling than has been allowed for in final determinations. This may or may not be set out through a legal change but the outcome should be recognised as a trigger for the landbank notified item.	High	High
10	Politian/political figure statement that creates doubt over the safe and sustainable use of biosolids to agriculture	There is a risk that a statement from a political or influencing role could have an unintentional negative consequence on the market demand for biosolids. In 1988 Edwina Curry (Health minister) provoked outrage by saying most of Britain's egg production is infected with the salmonella bacteria. These claims led to a 60 percent decline in egg sales over the next few weeks. A statement that creates doubt over the safe and sustainable use of biosolids to agriculture could generate a significant and long-lasting fall in demand for biosolids to agriculture. This risk would not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	High	Low

11	Change in guidance (e.g. AHDB's Nutrient Management Guide – RB209)	Changes to good practice guidance or nutrient management guidance (e.g. RB209) could change the requirements and further restrict the available agricultural outlet. This risk would not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	High	High
12	Farm product exclusion clauses by food user groups	The whisky distilling industry has a rotation exclusion clause in farmer supply contracts that stipulates that biosolids must not be applied within crop rotations including malting barley. This restriction is in the baseline as it already exists. Further restrictions from other end users could reduce the available remaining landbank. This risk would not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	Don't know	Don't know
13	Landowner and farmers decide not to accept biosolids	There are instances in other countries where community groups are putting pressure on individual farmers and landowners not to accept biosolids deliveries over fears of health risks and environmental harm. These are currently low in number and impact, but the prevalence of these events could escalate. Should the number of landowners or farmers rejecting biosolids increase significantly, this would lead to a significant fall in demand for biosolids. The cumulative decisions of landowners or farmers should be recognised as a non-legal trigger for the landbank notified item.	Don't know	Don't know
14	Legislation changes to adopt 'full' EPR requirements for Biosolids disposal as delivered by the EA sludge strategy	This seems likely to be implemented as a legal change and may be eligible for classification as a relevant change of circumstance (RCC). For the avoidance of doubt, it would be helpful to retain the reference to the EA sludge strategy as a trigger for the notified item.	High	Medium
15	Outcome based regulation	An outcomes-based approach to regulation is one which stipulates a final outcome but does not prescribe how the outcome is reached. This approach can enable changes and introduce new requirements to deliver the outcome which does not require new legislation. This risk may or may not be set out through a legal change, but the outcome should be recognised as a trigger for the landbank notified item.	High	High
16	Devolved Government objections	The movement of waste between devolved nations may be an issue that leads to pressure on companies not to send waste between nations. Given that this may or may not be judged to result from a legal change, the outcome should be recognised as a trigger for the landbank notified item.	Med	Med
17	Farm incentive and payment schemes	Farmers may be incentivised to change practices or land use based on economic incentives or payments. Such schemes may already exist, but incentive rates may be modified, to influence further the participation rate of farmers. Given that this may or may not be judged to result from a legal change, the outcome should be recognised as a trigger for the landbank notified item.	Med	Med

	Lagging indicators	**We consider that lagging indicators could be used as a backstop indicator to evidence that an event or trigger has occurred, leading to an observable reduction in the available agricultural outlet for biosolids.**	-	-
18	Existing reported data on “disposal outlets”	Ofwat collects bioresources data from WASCs each year. There are specific reporting requirements for sludge outlets set out in Bio4 lines 18- 22. This information would show a change in the proportion of outlets used for biosolids, with a reduction in the agricultural outlet and an increase in other outlets such as restoration, landfill, Energy from Waste and incineration. The reporting will be for the previous year so this could act as a lagging indicator that a change in the agricultural outlet for biosolids has occurred. This could be used to set a threshold above base use of alternative outlets which if surpassed would be the trigger for the notified item. This risk would not be set out through a legal change, but the outcome could be recognised as a trigger for the landbank notified item.	Don't know	High
19	Actual haulage distance vs modelled haulage distance	Ofwat collects bioresources data from WASCs each year. There are specific reporting requirements for the transport of biosolids to outlets set out in Bio1 lines 26 -29. It may be possible to monitor the difference between the baseline haulage distances generated as an output of the landbank modelling and compare that to the actual haulage distances of WASCs. The reporting will be for the previous year so this could act as a lagging indicator that a change in the agricultural outlet for biosolids has occurred. This could be used to set a threshold above a base level which if surpassed would be the trigger for the notified item. This risk would not be set out through a legal change, but the outcome could be recognised as a trigger for the landbank notified item.	Don't know	High
20	Collate feedback from farm customers to identify any changes in sentiment towards the acceptance of biosolids as an input to farms.	WASCs could collect customer feedback from the farming customers they work with and allocate an area of agricultural land where the farmer or landowner has decided that they do not want any biosolids. Evidence would need to include the farmers reason and the area of land that has been excluded from receiving biosolids products. A methodology for data collection needs to be established to ensure consistency and a baseline is required to understand current sentiment, above which the change can be measured against. This risk would not be set out through a legal change, but the outcome could be recognised as a trigger for the landbank notified item.	Medium	High
	Landbank Modelling Trigger	**We consider that it is the change or loss of the available agricultural outlet for biosolids that is the trigger for investment and therefore should be the trigger for the Notified Item, irrespective of which of the legal or non-legal event or events lead to the change or loss of the available agricultural outlet for biosolids.**	-	-

21	Modelled Landbank Risk Ratio threshold	There could be many individual or multiple compounding events that lead to a loss in the agricultural outlet for biosolids that are not related to a legal change. The changes in requirements could be beyond the extent to which costs have been allowed for at the final determination. There is a risk that in seeking to identify each and every event, one or more could be overlooked and that omission lead incorrectly to a failure to recognise a change in the available agricultural outlet for biosolids. The universal approach that would take account of any changes in legal and non-legal requirements for biosolids use in agriculture would be to use a landbank model. The approach could use an agreed governance and methodology to establish and agree the baseline requirements that reflect the cost allowed for at final determination. It could also set out an agreed threshold, which if passed regardless of the specific event or events would act as the trigger for the landbank notified item. It is the loss of the agricultural outlet for biosolids that is the trigger for increased scope and investment costs. The modelling activity would incorporate and evidence all the changes that have occurred and the inputs into the model. The governance and modelling process would involve EA/Defra and Ofwat as well as companies / water industry. A governance and process proposal and method to calculate the baseline and threshold for the trigger is set out in a separate document.	Universal assessment	Universal applicability

Appendix B Using landbank modelling to support the PR24 landbank Notified Item

Background

There is significant uncertainty over the availability of the agricultural outlet for biosolids recycling in AMP8. There are many possible drivers of change including legal and non-legal factors such as, changes in demand for biosolids product by stakeholders across agricultural and food supply chain markets. Ofwat proposed a landbank notified item as part of their Draft Determinations to manage the uncertain scope and cost of changes above the level of scope and funding allocated in final determinations.

The factors affecting the agricultural landbank are highly technical in nature, they are varied, interrelated and complex, meaning geographical modelling is necessary to understand the scale and impact of possible changes nationally and across individual regions. WaSCs have repeatedly used landbank modelling in previous price reviews to evidence the landbank challenges in their region. The extent of uncertainty now requires that national landbank modelling is undertaken, as there is a possibility that at a national level, there is insufficient capacity in the agricultural outlet for some or all biosolids to be recycled. The agricultural outlet is a shared resource used by thousands of farmers/land managers to provide sustainable ecosystem services. It is supported in this by the recovery activities of other organic manure producers e.g. digestate, compost, paper crumble, and the recovery of biosolids to agriculture is recognised as the best practical environmental option in most circumstances. Consistency in understanding the requirements, their impacts, and co-ordination of solutions, will all be important in developing viable and economically efficient plans that work at a national and region level.

Scope

There needs to be an agreed way of working to enable Ofwat (and all those involved in the process) to have confidence in the use of landbank modelling and trust in the model outputs, so that this evidence can be used to support the notified item process.

Landbank modelling can be used to support the notified item process in the following ways:

- To evaluate the impact of legal and / or non-legal triggers. More specifically, what is the effect of specific changes on the landbank available or landbank required to recycle biosolids.
- To be a non-legal trigger for the notified item. More specifically, a methodology using landbank modelling of specific changes and the effect they have on the landbank available or landbank required to recycle biosolids, could be used as a trigger in the notified item process.
- To understand the benefit of individual or co-ordinated investment solutions on the landbank available or landbank required to recycle biosolids.

As the uncertainties have not yet materialised it will be important to understand the impact of not just one eventuality but have a capability that can be effective to understand many different possibilities. Landbank modelling provides that capability through being able to run many different scenarios and/or fewer more holistic scenarios. This might be ‘routine monitoring’ on (for example) an annual basis, or in response to a specific change. In both situations, the role of landbank modelling would be to analyse the change and provide information as to the impact it will have on the on the landbank available or landbank required to recycle biosolids.

There are two key requirements to ensure that landbank modelling is conducted appropriately to support the notified item process.

(1) There needs to be effective governance over the use of landbank modelling to support the notified item process.

(2) There needs to be a clear process that can be followed to enable evidence to be generated through modelling that has the support and confidence of all involved and is approved for use.

The governance approach and process could be established and agreed in advance, and included in final determinations.

Governance

The proposal is that a governance group is established to oversee landbank modelling used in support of the Notified Item. The role of the governance group would be to:

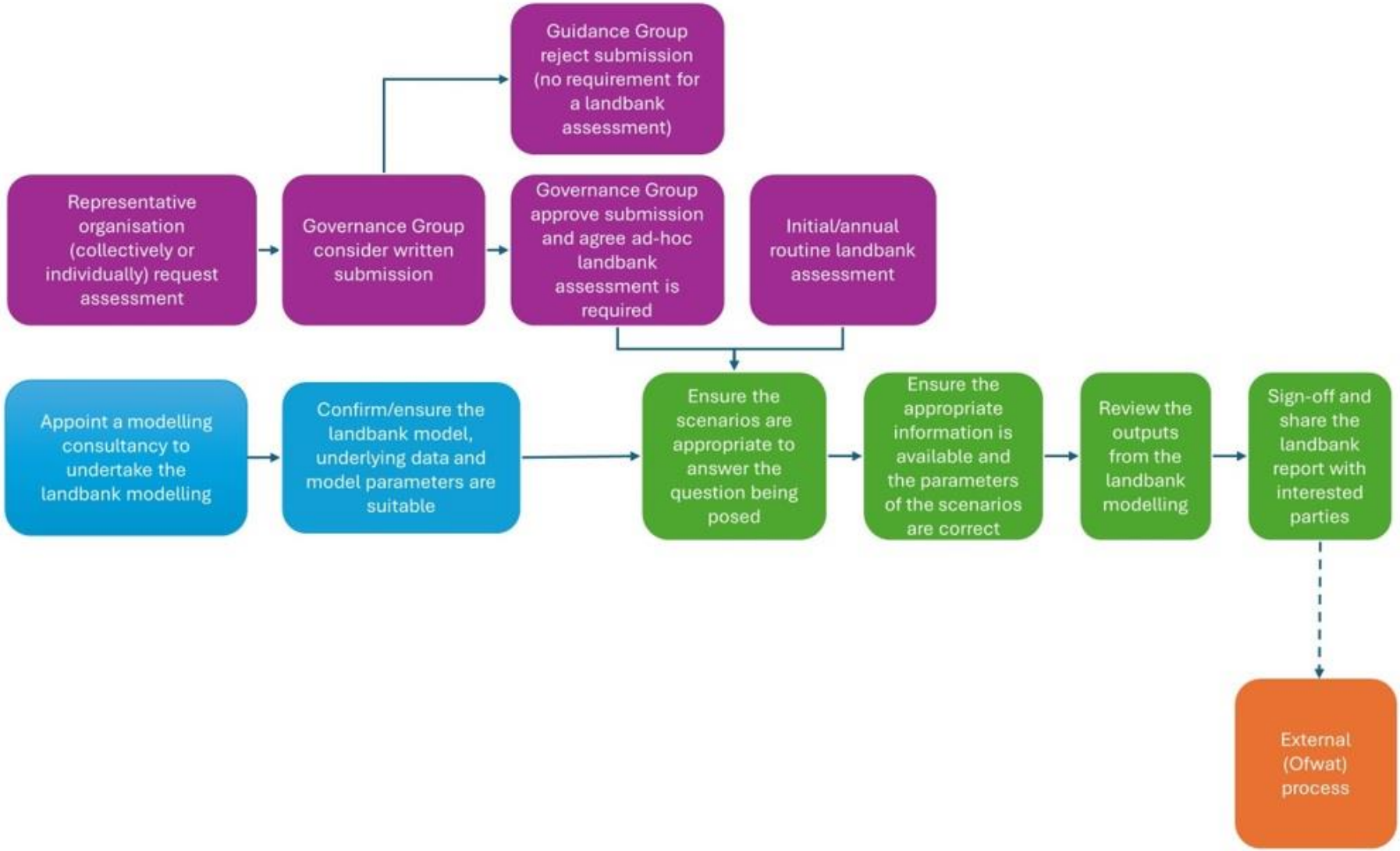
- be accountable for engaging the services of a capable landbank modelling organisation(s) to conduct the work throughout 2025-2030 (AMP8);
- manage modelling costs within an agreed budget throughout 2025-2030
- confirm/ensure that the landbank model uses appropriate data sources and model functions to provide clear and accurate outputs;
- initiate modelling of scenarios, as required;
- ensure that the appropriate technical information is provided to the consultant to enable scenario model inputs to be defined and agreed;
- review the output of landbank modelling, such as reports; and
- signoff report for issue to interested parties.

A formal term of reference for the group would be created as the governance groups' first action. However, it is proposed the group would function as follows:

- The group will be composed of representatives from the EA, NRW, Defra, Welsh Government, Ofwat and the WaSCs.
- The group will meet at least annually to review and discuss if/what landbank assessments are required. This would be scheduled to enable outputs to feed into interim determination timescales.
- It is anticipated that as a minimum an annual update will be required, but this is subject to the views of the group and a nil return may be agreed.
- In addition to an annual meeting, the group will meet on an ad-hoc basis to discuss requests for landbank modelling scenarios to be run.
- Any representative organisation, collectively or individually, can make a request in writing for a modelling scenario to be run. This would include stating what event is likely to occur, or has occurred, that could make a noticeable change in the landbank available or landbank required to recycle biosolids.
- Modelling scenarios could be run to understand the impact of an event or events in combination that could lead to a restriction in the landbank available, and/or an increase in the landbank required for recycling biosolids.
- Modelling scenarios could be run to understand the impact of investments or solutions that change the landbank available or landbank required to recycle biosolids.

- Decisions would be made on a simple majority basis, with the EA, NRW, Defra, Welsh Government and Ofwat getting two votes each and the WaSCs getting a single vote. Organisations have the right to abstain. In the event of a tie, Defra will have the casting vote.
- Output reports approved by the governance group will be communicated to an agreed stakeholder list.
- The governance group will make clear the landbank model(s) that are to be used as the basis of planning assumptions.
- The landbank assessments will be funded by the water industry, but the selected contractor will 'report' to the guidance group in terms of the details of the modelling and all assumptions.
- Water UK will act as secretariate, arranging meetings and creating and circulating minutes.

Process


Guidance Group reject submission (no requirement for a landbank assessment)
Representative organisation (collectively or individually) request assessment
Governance Group consider written submission
Governance Group approve submission and agree ad-hoc landbank assessment is required
Initial/annual routine landbank assessment
Appoint a modelling consultancy to undertake the landbank modelling
Confirm/ensure the landbank model, underlying data and model parameters are suitable
Ensure the scenarios are appropriate to answer the question being posed
Ensure the appropriate information is available and the parameters of the scenarios are correct
Review the outputs from the landbank modelling
Sign-off and share the landbank report with interested parties
External (Ofwat) process

Appendix C Use landbank model outputs for NI

Landbank modelling approach for the Landbank notified item. For discussion.

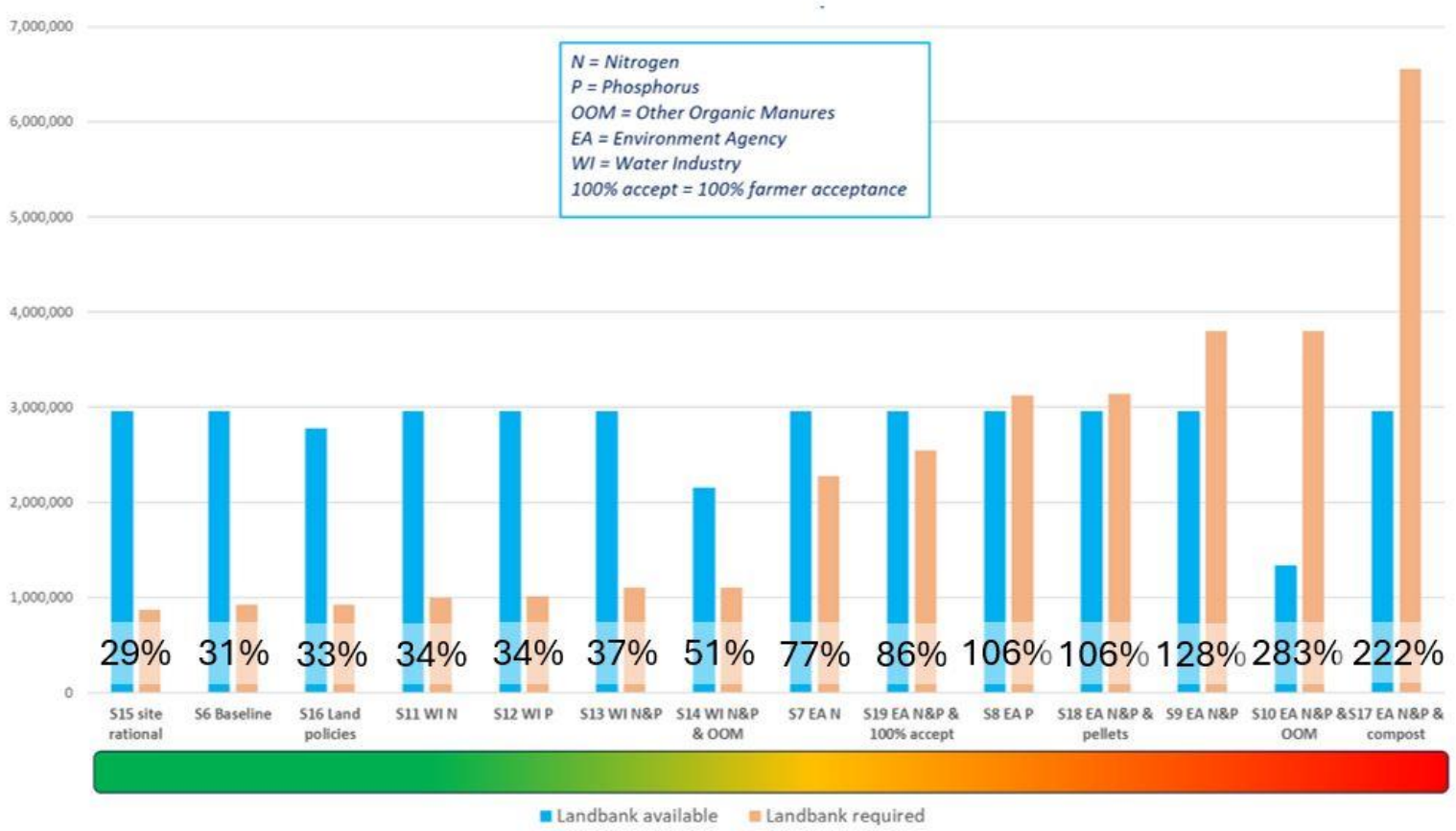
8th August 2024

Using landbank model outputs to calculate and communicate changes in a clear and consistent way

- As part of the landbank modelling there are two key parameters:
  1. Landbank available
  2. Landbank required
- As shared in collaborative meetings 4 and 5, these parameters were represented in a bar chart, side by side for each scenario.
- The capacity of the agricultural outlet for biosolids could be articulated in terms of the "percentage of the agricultural land available that is required"
- This is calculated as follows: (landbank required / landbank available) * 100
- The higher the percentage, the greater the restriction on the agricultural outlet for biosolids.

Worked examples

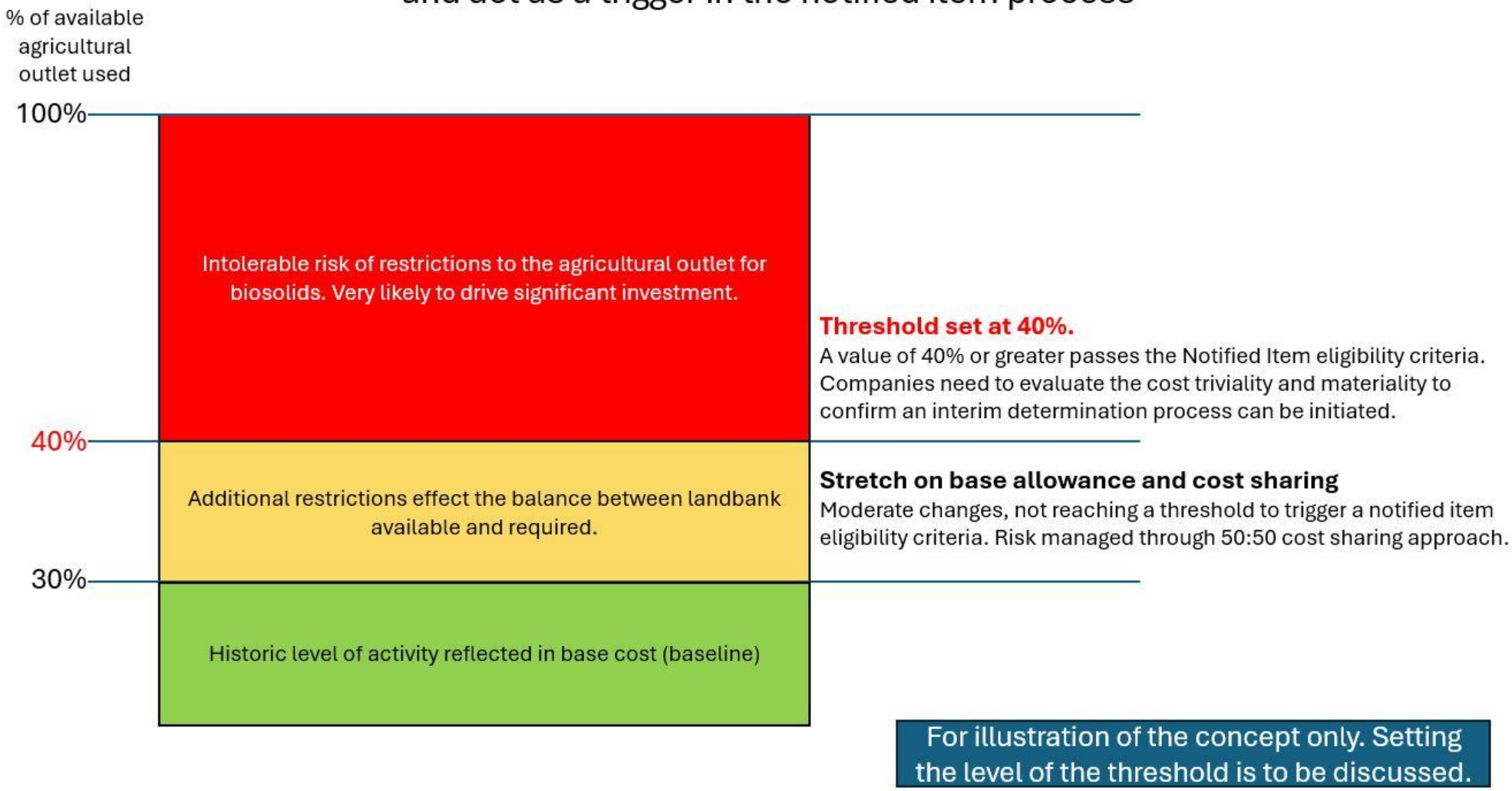
- Below are the most recent scenarios, showing the percentage of the agricultural land available that is required



Using landbank model outputs to calculate and communicate changes in a clear and consistent way

- This calculation can be used on any scenario to provide a representative comparison.
- It would be possible to calculate a baseline.
- It would be possible to set a threshold to act as a trigger for the notified item.
- The threshold would be set at a higher percentage than the baseline.
- If a risk materialises, the landbank modelling governance group and process could initiate a model scenario run.
- If the output from the scenario run generates a percentage greater than the threshold, this can be evidence that the trigger for the notified item has been passed.
- The process would then require companies to demonstrate that the change will meet Ofwat financial "gateways" before a making a decision to seek an interim determination.

Using landbank modelling outputs to set a threshold, and act as a trigger in the notified item process



Appendix D Biosolids Notified Item Proposal Final

A PR24 Notified Item for bioresources uncertainty in AMP8

Summary
The risk to biosolids disposal at AMP8 is a risk that has been identified by all companies in the sector and in their business plans most companies sought some form of regulatory certainty to address the ambiguity they are facing at AMP8. The anticipated changes represent an unmitigable downward risk. We consider it is important that Ofwat recognise this and allows for the uncertainty in its PR24 Final Determinations.

The predicted loss of landbank demonstrated by the National Landbank modelling project undertaken by ADAS and Grieve Strategic indicates a national shortfall for available land bank. Given that companies will use whatever land is available (and not just the land within their service area), the impact on companies will not be individualistic – it will be highly co-dependent. The precise investment needs will depend on the extent of the landbank restrictions and how any response can best be co-ordinated across the industry. Therefore, it is important that the uncertainty is recognised by Ofwat and that a co-ordinated approach is adopted to ensure that investment requirements across the sector are both sufficient and efficient – i.e. there is enough investment to manage the risk but avoiding inefficient duplication of investment needs between companies. The IDoK process is best placed to allow consideration of the specific investment needs identified at the most appropriate time and Ofwat should make changes in landbank a Notified Item. We propose also that the materiality threshold should be amended to reflect the changes in water regulation which have occurred since the IDoK regulations were drafted in 1989.

In the event of a significant change in landbank availability or requirement triggering the need for an IDoK the landbank modelling carried out by ADAS & Grieve Strategic would need to be updated, to identify the proportion of national biosolids production which would need to be recycled via an alternative route.

Proposed Notified Item at Final Determination
The additional costs for the disposal of sludge arising from a change in the availability of land bank (due to either/both a reduction in available land bank, or an increase in the required landbank).

Section 1: Context
In the PR24 final methodology, Ofwat recognised that an Uncertainty Mechanism (UM) could form part of an efficient package of risk and return in the case that costs are uncertain at the time of the Final Determination and therefore have not been allowed for in the Final Determination. This note describes the uncertainty the industry is facing nationally regarding biosolids disposal to land during AMP8 and the Notified Item we are proposing for PR24.

The uncertainty facing the sector is because of both the timing and nature of the expected change which could require significant levels of investment and a coordinated industry response. This uncertainty is unlikely to be clarified prior to the PR24 Final Determination. It is also unclear which (if any) of the numerous potential triggers (described below) will be activated between now and 2030 and what the compounding effects of potentially multiple changes could be. These factors point to the importance of a more flexible regulatory regime during AMP8.

The uncertainty facing the sector

The bioresources sector is currently faced with significant uncertainty regarding biosolids recycling to agricultural land during AMP8. There are a number of drivers for this uncertainty, and we have listed some of these below. These include potential legislative changes and possible shifting public perceptions which, for example, may impact farmer acceptance of biosolids on their land. Advances in technology may also lead to changes in the law, imposing more stringent controls on companies. It is important to note that the following is not an exhaustive list, and it is likely to evolve as more information is known:

- **Farming Rules for Water (FRfW):** Within the current guidelines, there is uncertainty regarding the long-term impact of FRfW on the spreading of treated sewage sludge on farmland, due to DEFRA's statutory guidance

curtailing EA enforcement. A Post Implementation Review of FRfW is expected in late 2024 and the DEFRA statutory guidance for FRfW, which (effectively) allows autumn spreading to continue, is due to be reviewed by September 2025. The outcome and exact timing of these reviews cannot be known at present and could be subject to delays. However, these reviews could be the trigger for a significant change to the agricultural outlet for biosolids recycling early in AMP8, resulting in lower land bank availability (see discussion below).

- **EA sludge strategy**: The industry has been engaging with the EA on the development of the EA sludge strategy since 2020. This includes the EA's planned transition for biosolids from the Sludge (Use in Agriculture) Regulations (SUiAR) to the Environmental Permitting Regulations (EPR). The change from SUiAR to EPR provides the EA with enhanced controls that would allow it to enforce its interpretation of nitrogen and phosphorus management directly on Water Companies (rather than on farmers). This would lead to a significant reduction in landbank availability and place additional pressure on alternative disposal outlets, which already have limited capacity. The consultant AtkinsRealis is expected to provide water companies with further information in June 2024, substantiating the national limitations of alternative outlets and we will make this information available to Ofwat. The conclusion of the EA sludge strategy is not expected before the Final Determination and the published EA sludge strategy has recently been updated specifically to remove a date of implementation. Therefore, given the potential impact on companies' ability to recycle biosolids to agricultural land, there is a risk that companies will not have funding for additional requirements in the Final Determination to meet all the requirements of the EA sludge strategy.
- **Bioresources Water Industry National Environment Programme (WINEP) for PR24:** The EA's WINEP focus is on short-term resilience in the supply chain and not the impact of a loss of landbank as a disposal route for biosolids in the medium term. The priorities for the EA for the Bioresources WINEP therefore are current issues, such as fuel and HGV driver shortages. Whilst as an industry we welcome the sludge driver and the investment this will provide to improve short-term resilience into our storage strategy, the intended effect of the Bioresources WINEP for PR24 does not address the medium-term risks to Bioresources operations caused by a loss of agricultural land. The EA has currently ruled out endorsing industry proposals relating to landbank availability, except those specifically related to storage. It is important to recognise that this rejection by the EA is not a rejection of the potential investment need, but a rejection of its classification under that WINEP driver.
- **Change in public/farmer acceptance:** There has been a huge increase in interest in biosolids recycling to land. This is particularly notable in the USA and has even resulted in bans on biosolids use in some counties and states. Although the situation is not currently so stark in the UK, there has been a significant increase in media articles and even a Judicial Review launched against the EA/Defra. Such interest has the potential to have an impact on public and farmer acceptance or even make biosolids recycling not viable with little or no warning.

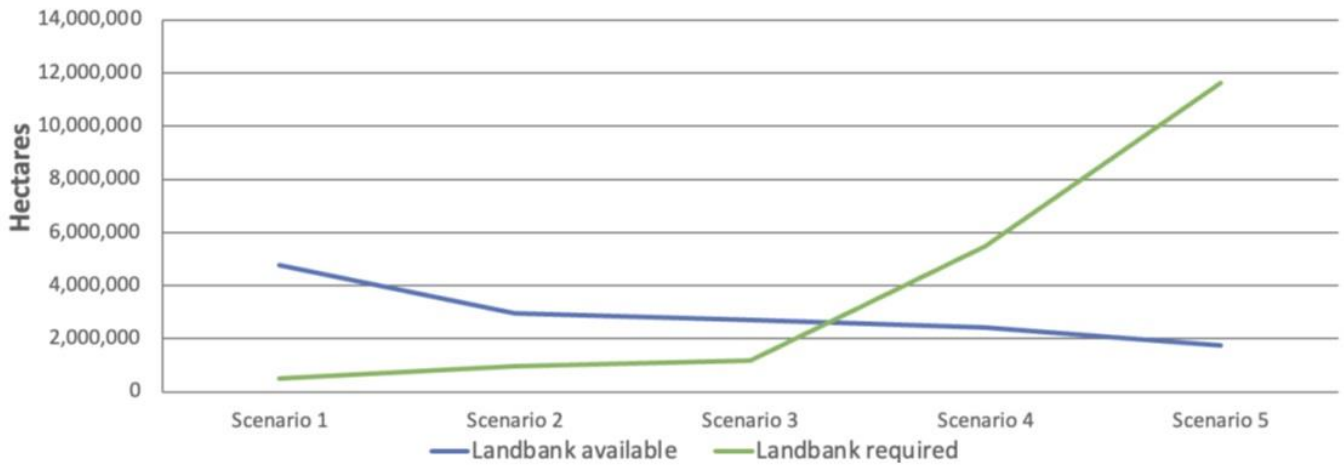
Landbank availability and landbank requirement

Whilst many of the restrictions above may be considered as primarily affecting the behaviour of farmers (the end users), this matters to water companies because the ability for end users to accept biosolids affects the ability of companies to discharge their obligation of safely utilising biosolids. The EA sludge strategy on the other hand has a direct impact on water companies.

Recycling biosolids to farmland is the principal outlet for the recycling of sewage sludge (circa 87% of biosolids are recycled to land), and there is no other available equivalent outlet. Therefore, if nothing else, a material change to the availability of land bank for recycling of biosolids would have a very significant impact on bioresources operations, likely requiring substantial investment in alternative treatment and disposal methods such as drying and incineration. The pre-emptive switch to these alternative methods would not be efficient given the high cost and resultant impact on customer bills.

Grieve Strategic analysed the impact of five different scenarios on the agricultural landbank. According to their report, the most likely scenario – scenario 4 - will result in a reduction of available land of around 20% and an increase in land required by around 500% by the end of AMP9 compared to the baseline scenario. (Scenario 2 is the baseline scenario and reflects the situation as of today, scenario 1 reflects the situation at the beginning of AMP7). In other words, there would be insufficient land to recycle all the industry's biosolids.

Figure 18: Land bank availability scenarios from the Grieve Strategic report



The graph above illustrates that the extent of the problem is greater than this because of the landbank requirement. Scenario 4 most closely models the phosphate restrictions which the EA has stated is their interpretation. These restrictions will increase the return frequencies to land and consequently dramatically increase the landbank required as well as reducing the available land, meaning there is insufficient agricultural land available for companies to recycle biosolids.

Furthermore, scenario 5 considers the impact of additional changes in perception, whereby landbank availability would be further impacted, down by 40% compared to the baseline scenario, and an increase in land required by around 1,000%, with the difference between landbank available and landbank required being even more pronounced than in scenario 4. Although scenario 5 is not currently considered most likely, the uncertainty and speed at which public/farmer perception could change would require an urgent industry-wide response, suggesting a flexible regulatory approach is essential.

The scale of the problem

The lack of clear and consistent planning assumptions on landbank availability and landbank required has resulted in inconsistent and varying company business plan submissions, prioritising no/low regrets investment and relying on an uncertainty mechanism, to a greater or lesser extent. The industry has not consistently planned for Scenario 4 “most likely”, as that would require 66% of biosolids to be directed to an alternative outlet away from agriculture, and proposals to deliver that extent of change have not been included.

An industry shift to alternative routes of disposal for biosolids that may be required to commence in AMP8 to address the insufficiency in landbank is expected to cost several billions of pounds across the sector – both in short term mitigating actions, and long-term investment to move to the new model of sludge disposal that would be required. The cost to each company and the profile of investment required however, depends on:

- The amount of available landbank/landbank required – this depends on the extent to which legislation, regulations, interpretations of regulations or guidance over enforcement of regulation or public perceptions change, influencing the market for biosolids to agriculture.
- How much investment companies need to make to fulfil their obligations; and
- How investment should be distributed between companies - the projected landbank shortage is a national issue, and companies recycle to whatever land is available (not just the available land within the company boundary). Therefore, it seems likely to be more efficient to assess investment needs on a national basis. It may be more efficient for the industry collectively to build a smaller number of new treatment centres to service the needs of the whole sector rather than the current pattern of assets where each company is more or less self-sufficient in its treatment assets. In this scenario, some companies’ additional costs could be capital ones whereas others would incur greater opex.

The current alternative routes to disposal include landfill, land restoration or sending sludge for third-party treatment and disposal. The latter, however, provides limited scope for disposal as all water companies are facing a similar challenge regarding land availability.

Companies are committed to delivering their biosolids strategies and aim to deliver a no regrets plan for AMP8. However, the uncertain nature of upcoming legislative, regulatory and public perception changes and the resultant cost impact makes it essential that a flexible regulatory approach for AMP8 is established.

New information that was not available for inclusions in October 2023 business plans
The industry has worked with the EA and held two technical meetings (Sept-Nov 2023) seeking to clarify and confirm the requirements of Farming Rules for Water for incorporation into the Biosolids Assurance Scheme. While progress was made on the majority of industry proposed improvements to biosolids recycling to agriculture, the key requirements for nutrient management (N and P) were not resolved.

The industry has commissioned additional national landbank modelling by Grieve Strategic to reflect the impact of key requirements for nutrient management (N and P) on landbank availability and landbank required, as discussed at the technical meetings. This activity was shared and discussed with the EA, Defra and Ofwat at a collaborative meeting on 12th April 2024. The output of this work will be available in early June. It is expected that this new information will be used to support discussions over the extent of environmental obligations and the scale of the resulting landbank challenge. Should this lead to an updated understanding of certainty in landbank planning assumptions, companies will reflect this in their draft determination representations. However, this work will not resolve all aspects of landbank uncertainty and the essential need for an uncertainty mechanism will remain.

Section 2: Interim Determinations (IDoKs) and Notified Items
Under licence condition B of companies' instrument of appointment, companies can request an interim determination for a **Relevant Change in Circumstance** or a **Notified Item** under the following conditions:

- **Materiality**: the Net Present Value (NPV) of the decrease in revenue or, additional costs the company is expected to incur (5 years of capex, and 15 years of opex or revenue), resulting from some change, must be at least 10% of the appointed company's annual turnover in the year prior to the IDoK submission.
- **Triviality**: where a number of costs have been combined, these individually must be non-trivial. No definition of trivial is included in the licence but historically Ofwat has defined it as 2% of the appointed company's turnover in the relevant service.

In view of the risks, we consider the agricultural outlet risk should be recognised as a **Notified Item**, as defined under condition B of our instrument of appointment, which would ensure that the consequences of any of the changes set out in section 1 would enable companies to request an IDoK reference (subject to materiality and triviality thresholds). As set out above, it is clear that it is the material increase in costs resulting from a loss in available landbank relative to the landbank required that is the trigger, not the specific route (legislative or otherwise) by which that occurs.

A change to the basis for calculating the materiality threshold
The IDoK provisions which remain in companies' licences were written in 1989. At this time each company's regulated business was regarded as a single entity. For example, price controls were expressed as a single company-wide K factor and there was very little differentiation of separate components of the water and wastewater value chains. The concept of wholesale and retail services was unheard of and there was very little consideration of the potential of competition to enable a reduction in the role of the regulator. Given this focus on the overall business, the definition of the IDoK materiality and triviality thresholds in terms of the appointed business turnover was logical and appropriate.

Since then, Ofwat has substantially changed the basis of company regulation. It now treats the business as six separate business units and sets separate price controls for each. The regulatory rules pertaining to each – for example, on the form of the price control, and the sharing of expenditure variances - are not the same. In some cases, most notably bioresources, Ofwat expects the business units to participate in their relevant market, where

possible, reducing the need for regulation. Appointees are not even obliged to continue trading in every business unit; most have left the non-household retail market.

All of these changes have reinforced the concept that appointees should manage each business unit according to its own particular regulatory circumstances rather than as mere components of a bigger entity. In view of this the 1989 IDoK provisions have long since ceased to be appropriate. If business units are to be managed in accordance with their particular circumstances, they should be treated as such when it comes to assessing the impact on their costs of major changes. Accordingly, we propose that the materiality and triviality conditions (as set out above) should therefore be assessed at the level of the relevant price control rather than Appointee turnover.

The case for business unit level assessment of thresholds is particularly true of those business units, such as bioresources, where Ofwat expects companies to operate within wider markets. True exposure to contestable markets requires that all participants are able to adjust their prices in response to changes in their costs brought about by changes in their operating environment. A regulatory arrangement that prevents a participant from doing so condemns that participant to the risk of failure. In our view it cannot be reasonable for a water companies' bioresources revenues to be fixed at a level that were efficient in a previous market regime while its competitors adjust their revenues to deal with the costs of the new regime.

Our proposal, therefore, is that the basis for calculating the materiality threshold should be updated to match the regulatory developments since 1989.There is precedent for a change of this nature. At PR19 Ofwat introduced Condition U into the licences of five companies whose price settlements included provision for schemes to be built under Direct Procurement for Customers (DPC), which was another innovation brought into water regulation since 1989. Condition U provided for the scenario where projects needed to come out of DPC and back into in-house provision. The materiality threshold for the IDoKs enabled under this new condition differed from the standard threshold, being set at 2% of appointed business turnover.

In the same way that Ofwat developed the interim determination regime to deal with the innovation of DPC, we consider it must now do the same to match the other innovations it has introduced to water regulation.

Section 3: Bioresources compliance costs Notified Item
The features of the Notified Item we propose are set out in the table below.

Companies are proposing that agricultural outlet risk should be recognised as a **Notified Item.**

Companies are also proposing that the materiality and triviality conditions are assessed at the level of the relevant price control rather than Appointee turnover. This is considered more appropriate because regulation has evolved to treat each water company as comprising six separate business units which the existing IDoK rules, set out in 1989 do not account for.

AMP8 Biosolids to Land Notified Item	
Mechanism type	Notified Item as an input into IDoK claim
Application Window	April – September 2025 April – September 2026 April – September 2027 April – September 2028 April – September 2029
Scope	The additional costs for the disposal of sludge arising from a change in the availability of landbank (due to either/both a reduction in available landbank, or an increase in the required landbank).
Materiality threshold	NPV of costs (5 years of capex and 15 years of opex / revenue) are > 10% of prior year Bioresources revenue.
Triviality Threshold	NPV of costs (5 years of capex and 15 years of opex / revenue) are > 2% of prior year Bioresources revenue.
Licence condition	Condition B (amended)

Appendix - Creating a digital twin

As part of the OFWAT Water Breakthrough Challenge, five water companies partnered with Business Modelling Applications (BMA) to find a way to quickly identify opportunities in the bioresources market and to tackle future challenges. The project explored ways to work in partnership and fully understand the market opportunities through integrating asset systems and collaborating with neighbouring water companies on potential joint investments, with the aim of reducing sewage sludge end-to-end treatment cost, increasing the resilience of operations, meeting common environmental goals and simulating the impact of regulatory changes.

Using advanced digital simulations, the project was able to analyse different scenarios. Landbank availability wasn't included in the initial project, and was identified as an opportunity for future development.

The development of a National Digital Business Twin involving all companies and landbank availability (i.e. outputs of future ADAS/Grieve modelling) could provide the industry and Ofwat with an opportunity to explore a whole system methodology and adaptive planning functionality. This could unlock insights and drive significant environmental and social benefits, if and when changes such as landbank availability occur.

Further information is available via the following link Technological Innovation in the Bioresources Sector - Insights by BMA (businessmodelling.com)

Appendix E Landspreading: form LPD1 application for deployment

The Environmental Permitting (England and Wales) Regulations 2016.

Use this form to apply to deploy mobile plant for landspreading.

You must operate under one of these permits. Tell us which type of permit this deployment is for:

- ☐ SR2010 No 4: mobile plant for landspreading (land treatment resulting in benefit)
- ☐ SR2010 No 5: mobile plant for reclamation, restoration or improvement of land
- ☐ SR2010 No 6: mobile plant for landspreading of sewage sludge
- ☐ Bespoke mobile plant permit for landspreading or land reclamation

When you fill in this form you must refer to the Landspreading: form LPD1 guidance to make sure you provide the required information.

Guidance

You can either:

1. Save the form onto a computer, fill it in electronically and email it to us.
2. Print the form, fill it in by hand, scan the completed document and email it to us.
3. Print the form, fill it in by hand and post it to us.

Please write clearly in the answer spaces.

If there is not enough space for all the required information, provide it in a separate document and give it a reference. List these references in section B5.

Contents

Section A About you

A1 Contact details

A1.1 Discussions before your application

If you discussed this application with us before, we will have given you a pre-application reference number. Give this reference number in the box below.

Put the details in a separate document and give it a document reference number. Give this reference number in section B5.

Pre-application reference _____

A1.2 Submitting more than one deployment for the same area of land

You can spread up to 10 waste streams for each deployment. If you are submitting more than one deployment for one area of land tell us in the box below. For example, this deployment is 1 of 3.

Number of deployments _____

A1.3 Contact details for this deployment application

Provide details for the person we can speak to about the information supplied with this form.

This could be the operator, or a consultant (acting on behalf of the operator). We may need to ask about any missing information, details within the supporting documents or if the payment is missing or incorrect. Being available to answer queries will help us process your application quicker.

Title (such as Mr, Mrs, Miss) _____

First name _____

Last name _____

Name of company or organisation _____

Address _____

_____

_____

_____

Postcode _____

Contact numbers, including the area code

Telephone _____

Mobile _____

Email _____

A1.4 Tell us how you would prefer to correspond

Email ☐

Phone ☐

A2 Your permit details

A2.1 Permit under which this deployment is taking place

Give the permit number under which this deployment application is being made.

Permit number _____

A2.2 Name of permit holder (operator)

This can be the operator or the company, individual or organisation applying to deploy.

If this is the same as A1.3 tick this box ☐ Go to section A2.3

If not provide details below.

Title (such as Mr, Mrs, Miss) _____

First name _____

Last name _____

Name of company or organisation _____

Address _____

_____

_____

_____

Postcode _____

Contact numbers, including the area code

Telephone _____

Mobile _____

Email _____

A2.3 Technically competent manager

This is the person who will be responsible for compliance with the permit for this deployment.

If this is the same as A1.3 tick this box ☐ Go to section A2.4

If not provide details below.

Title (such as Mr, Mrs, Miss) _____

First name _____

Last name _____

Name of company or organisation _____

Address _____

_____

_____

_____

Postcode _____

Contact numbers, including the area code

Telephone _____

Mobile _____

Email _____

A2.4 Nominated competent person

Provide details of the nominated competent person who will be the main contact for the deployment and who will report to the technically competent manager.

If there is no nominated competent person go to section A3.

Title (such as Mr, Mrs, Miss) _____

First name _____

Last name _____

Name of company or organisation _____

Address _____

_____

_____

_____

Postcode _____

Contact numbers, including the area code

Telephone _____

Mobile _____

Email _____

A3 About the occupier of the land

A3.1 Are you the occupier of the land?

Yes ☐ Go to section B

No ☐ Give details of the landowner or main occupier, for example, the tenant

Title (such as Mr, Mrs, Miss) _____

First name _____

Last name _____

Name of company or organisation _____

Address _____

_____

_____

_____

Postcode _____

Contact numbers, including the area code

Telephone _____

Mobile _____

Email _____

If there is more than one occupant for different areas of land provide details on a separate sheet.

Document reference _____

Include this reference in section B5.

A3.2 Do you have the consent of the occupants to carry out the activity?

Yes ☐ Go to section B

No ☐ Give details below why you can carry out this operation without the consent of the occupier

Section B Deployment details

B1 Risk banding

Tick the box to show which risk band your activity falls in. This relates to the type of waste and where you will store and spread it.

Table B1.1 Risk banding

Type of permit	Lower risk location Outside a groundwater source protection zone 2 and or 500m of a European site, Ramsar and or a Site of special scientific interest	Higher risk location Within a groundwater source protection zone 2 and or 500m of a European site, Ramsar and or a Site of special scientific interest
SR2010 No 4: list A wastes (lower risk wastes)	Low risk deployment ☐	High risk deployment ☐
SR2010 No 4: list B wastes (higher risk wastes)	Medium risk deployment ☐	High risk deployment ☐
SR2010 No 5 and SR2010 No 6 (any waste listed)	Medium risk deployment ☐	High risk deployment ☐
Bespoke mobile plant permit	High risk deployment ☐	High risk deployment ☐

It depends on what risk band you are in as to what information you will need to provide for this application. See section B1.1 of the Landspreading: form LPD1 guidance for details.

B2 About the waste

List all the individual waste streams being spread under this deployment in Table B2.1.

Table B2.1 Summary of wastes being spread

Reference	LoW code	Description of waste	Stackable or non-stackable	Is the waste high in readily available nitrogen?	Name and address including the postcode of the producer of the waste	Waste producer's permit number if applicable	Total amount to be spread (tonnes)
Example	**03 03 05**	**De-inked paper sludge**	**Stackable**	**No**	**Smith's Newsprint Printer House London SW1 1AA**		**500**
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

B3 About the land to be treated

B3.1 Give the main address for the farm, office or site where the spreading is to take place

Address _____

_____

_____

_____

Postcode _____

B3.2 Tick the type of land to be treated

☐ Agricultural land

☐ Non-agricultural land

B3.3 Areas of land to be treated

Provide details of the areas of land to be treated.

Table B3.3 Details of land to be treated

Number	Field name, number or reference	Size (ha) (Spreading area - not the total field area)	12-figure national grid reference (centre of field) (for example TQ 12345 67890)	Waste type(s) to be spread (LoW)	Is the field within a SgZ for nitrate?
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

If there are more than 10 fields continue on a separate sheet. Give this reference in Section B5.

Document reference _____

B3.4 Previous land treatment

Tell us if the land has been treated with other materials in the last 12 months. These include:

- other types of waste
- anaerobic digestates and liquors
- compost, ash
- sewage sludge, slurry, manure and other types of organic manure derived from a plant, animal or human source

Yes ☐ Fill in table B3.4 below. You must take these wastes into account in your benefit statement.

No ☐ Go to section B4

Table B3.4 Details of previous land treatment

Number	Field name, number or reference	Type(s) of other materials spread in last 12 months	Person or company who spread the waste	Quantity spread per hectare (tonnes)	Deployment or other reference if applicable
Example	**East Field**	**Digested sewage sludge cake**	**Eastern Waters**	**20**	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

B4 Storage of waste

B4.1 Are you storing waste in connection with this deployment?

Yes ☐ Fill in table B4.1

No ☐ Go to section B5

You can only store waste at the place where you will use it. You cannot store the waste in these places until we have agreed your deployment.

In table B4.1 give the location of your storage facility, or facilities if you are planning to use more than one. You can only store up to 3,000 tonnes of waste that you will spread under this deployment in a location at any one time. Of this you must not store more than 1,250 tonnes of non-stackable waste.

Table B4.1 Details of storage

Number	12-figure national grid reference (for example, TQ 12345 67890)	Waste type and method of storage	Quantity stored at any one time (tonnes)	Are you using secondary containment?	Is the storage within 200m of a designated site?
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

B5 Supporting documents

You must provide all the required information when you submit your application.

Without it we:

- will not be able to assess your proposal within 25 working days
- may reject your application

☐ Location map (required for all deployments)

Document reference _____

☐ Benefit statement (required for all deployments)

Document reference _____

☐ Waste analysis (required for all deployments)

Document reference _____

☐ Receiving soil analysis (required for all deployments)

Document reference _____

☐ Site-specific risk assessment (if applicable)

Document reference _____

☐ B5 Additional information

Please list document reference numbers.

Section C Payment

Use this section to tell us how you will pay for your deployment. For details of deployment charges see section C of the Landspreading: form LPD1 guidance.

You need to create your own reference number. It should be in the format of PSCAPPXXXXXYYY. Include the first five letters of the company name and a unique numerical identifier. For example, PSCAPPSMITH123. The reference number that you supply will appear on our bank statements.

If you do not quote your reference number, there may be a delay in processing your payment and application.

Payment

Tick below to show how you have paid.

☐ Cheque

☐ Credit or debit card

☐ Electronic transfer (for example, BACS)

Paying by cheque

Cheque number _____

Amount (£) _____

Payment reference number (PSCAPPXXXXXYYY) _____

Date paid (DD/MM/YYYY) _____

Make cheques payable to 'Environment Agency' and make sure they have 'a/c payee' written across them if it is not already printed on.

Please write the name of your company and payment reference number on the back of your cheque. We will not accept cheques with a future date on them.

Paying by credit or debit card

If you are paying by credit or debit card we can call you. We can accept payments by Visa, MasterCard or Maestro card only. We will use the contact details given in section A1.3.

☐ Please call me to arrange payment by credit or debit card

Paying by electronic transfer BACS reference

If you choose to pay by electronic transfer you will need to use the following information to make your payment.

Company name	Environment Agency
Company address	SSCL (Environment Agency), PO Box 797, Newport Gwent, NP10 8FZ
Bank	RBS/NatWest
Address	London Corporate Service Centre, CPB Services, 2nd Floor, 280 Bishopsgate, London EC2M 4RB
Sort code	60-70-80
Account number	10014411
Account name	EA RECEIPTS

State who is paying (full name and whether this is the agent, applicant or other) _____

Amount paid (£) _____

Date payment sent (DD/MM/YYYY) _____

If you are making your payment from outside the United Kingdom, it must be in sterling.

Our IBAN number is GB23 NWBK 607080 10014411 and our SWIFTBIC number is NWBKGB2L.

Payment reference number (PSCAPPXXXXXYYY) _____

You should also email your payment details and reference number to: ea_fsc_ar@gov.sscl.com

Section D Privacy notice, confidentiality and national security

Privacy notice

See Environmental permits privacy notice for how the Environment Agency uses your personal information in services to support environmental permitting. This also includes information on confidentiality and national security.

We will normally put all the information in your application on a public register of environmental information. However, we may not include certain information in the public register if this is because the information is confidential or in the interests of national security.

Confidentiality

If you can show that any information you send us is commercially or industrially confidential, we will consider removing that information from the public register. You must include a letter with your application giving your reasons. If we agree with your request, we will tell you and we will not include the information in the public register. If we do not agree with your request, we will let you know how to appeal against our decision, or you can withdraw your application.

Only tick the box below if you are certain that you wish information to be confidential. This may delay your application.

☐ Please treat the information in my application as confidential

National security

If you think that the information you will send us may be a threat to national security, you must contact the Secretary of State before you apply. You must still send us that information with your application. We will not include this information on the public register unless the Secretary of State decides it can be included.

For more information on confidentiality and national security see the relevant sections of the Environmental permitting guidance: Core guidance.

Section E Declaration

The application contact must tick the declaration section. The application contact must be the operator or their agent. A person knowingly or recklessly making a statement which is false or misleading when providing information to us commits an offence under regulation 38 of the Environmental Permitting (England and Wales) Regulations 2016.

If you make a false or misleading statement:

- we may prosecute you
- if you are convicted, you are liable to a fine or imprisonment (or both)

☐ I declare that the information provided both on the form and in the supporting documentation which has been supplied with this form is true to the best of my knowledge and belief.

Section F Where to send your form

Send your deployment application form, payment details and supporting documents by email to PSC@environment-agency.gov.uk

Or by post to:

Environment Agency Permitting and Support Centre Environmental Permitting Team

Quadrant 2

99 Parkway Avenue Parkway Business Park Sheffield

S9 4WF

Do you want all information to be sent to you by email?

☐ Please tick this box if you wish to have all communication about this application sent via email (we will use the details provided in part A1.3)

Section G Next steps

We will check this application and contact you if we have any questions.

We will send you an email decision notice when we approve your application.

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff.

If you are not happy with our service, or you would like us to review a decision we have made, please let us know.

Appendix F Assurance of United Utilities Environmental Permitting Regulation costings – Grieve Strategic, 2024

Grieve Strategic Limited
Garden House
Back Street, Ilmington
Shipston-on-Stour
CV36 4LJ UK

info@grievestrategic.co.uk
www.grievestrategic.co.uk

13th August 2024

Richard Brindle
Head of Bioresources Strategy
United Utilities
Haweswater House
Lingley Mere Business Park
Lingley Green Avenue
Great Sankey
Warrington
WA5 3LP

Assurance of United Utilities Environmental Permitting Regulation costings

Dear Richard,

United Utilities (UU) shared estimated costs associated with the approved WINEP action "Sludge to land compliance under Environmental Permitting Regulations (EPR)" for our review. These are costs that UU are predicting would be incurred to deliver the WINEP action, that will ensure they have the resources to comply with the new regulatory requirement. The Environmental Agency (EA) in England and Natural Resources Wales (NRW) have both indicated that a move away from the Sludge Regulations, with the EA going as far as publishing their Sludge Strategy and stating as such.

Technical assurance

We have reviewed the costs and assumptions provided by UU across the different aspects and have summarised our thoughts against the different topics below.

Number of deployments

To recycle 'waste materials' to land typically requires a Standard Rules 2010 Number 4. Mobile Plant for Landspreading. However, having a permit is not enough and operators have to apply to 'deploy' the piece of mobile plant on a case-by-case basis. UU have calculated the number of annual deployments they believe they will required based on the quantity of biosolids recycled to agricultural land, how much land that requires and then made allowances due to the impact of the revised process on their operations.

Using publicly available data (e.g. on the quantity of biosolids UU produce and recycle to land) we get a similar area. Specifically, 360,000 tonnes of biosolids (taken from United Utilities website) with an average nitrogen content of 11 kilogrammes total nitrogen per tonne fresh weight (kg N/tonne) (taken from AHDB's Nutrient Management Guide – RB209), applied at an application rate of c.250 kg N/hectare (the maximum application rate allowed) gives an area of approximately 16,000 hectares.

As UU's documents make clear, a single deployment application can utilise up to 50 hectares (assuming the consistently managed land exception of up to 100 hectares cannot be used, which for planning purposes is a fair assumption), with their calculations based on 15 hectares per deployment. When we have undertaken similar calculations in the past we have used a figure of 25 hectares per deployment. This recognises that it is practically impossible to always use the full area due to the size and nature of farmers/fields, crop rotations and distances between farms (i.e. deployments do not have

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Company Registration Number: 06320779. VAT Registration Number: 909 3082 25

to be limited to a single farm, but they must be within a 10 mile radius of the central location). Moreover, deployments have to be approved 'up front' (i.e. before any activities can take place) unlike the Sludge Regulations, which is audited after the fact meaning more deployments will be needed than a simple mathematical calculation would suggest. Moreover, if any changes occur it is likely a new deployment would be required as, although local officers can approve changes, this could be categorised as a Local Enforcement Position and result in the associated material being classified as unsatisfactory sludge use and disposal under the Environmental Performance Assessment. However, our 'standard' 25 hectare figure is based on an average of agricultural land across Great Britain, which is not a fair reflection of the land use in and around the UU region. The UU landbank is dominated by smaller grassland farms, which have small fields, in contrast with arable areas with large farms and fields. As such we can appreciate and agree that a smaller number should be used, given the nature of the agricultural landbank within/around the UU region.

The fee UU have quoted per deployment is accurate and matches that published by the EA. We believe UU also recycle some biosolids in Wales; NRW publish their own fee structure, which is banded based on risk but is comparable to the fees charged to the EA as their high risk deployment is more expensive and their low risk deployment is less expensive and their medium risk is almost the same cost. Moreover, there are other costs (e.g. a fee to gain a landspreading permit and an annual subsistence fee), which has not been included in UU's calculations.

In summary, using publicly available data, an appropriate and defendable figure for the quantity of land used per deployment and an accurate deployment fee we get a comparable figure to UU and endorse their approach and therefore cost.

Increased resource requirement

Within UU's submission they have included a cost for five extra people; three to process the deployments, one to oversee the process and ensure deployments are completed correctly and one additional person to take the additional samples required. As mentioned previously, the EPR process puts considerably more onus on the applicant than the existing approach under the Sludge Regulations. UU will likely have to collect additional information, take it from their existing systems and put it into a Deployment application form (LPD1) and supporting documents (e.g. Benefit Statement) to make an application. Although this is not the end of the process, applicants have to respond to any questions raised by the regulator (i.e. EA or NRW), which in our experience can take significant amounts of time. Only once all the questions have been satisfactory addressed, is the deployment application approved and material can be stockpiled. There is then a notification process whereby the regulator has to be told of the intention to spread the approved Deployment. Given we understand the farmers are responsible for the spreading activity, this will make this process time consuming and lengthy, in ensuring no biosolids is spread until the regulator has been notified, but also ensuring the administration process is not a 'blocker' preventing spreading occurring at the optimum time.

Within their justification document, UU have included time for the production of the deployment 'pack', but they have not referenced the time requirement responding to questions particularly associated with the notification to spread process. Given this, we agree with the additional resource UU have stated would be required, as if anything it may be an underestimate.

Material handling and farm incentivisation

Within UU's submission they have included a cost for additional material handling. Given the change to requiring upfront permission rather than record keeping, at key spreading times (e.g. spring and autumn) this will result in a need for material to be moved elsewhere while deployment applications are approved. This can be minimised by planning ahead, but it is impossible to completely avoid this double handling and two months production is a fair figure (particularly given the extended spreading window associated with grassland which dominates the UU region). The rate of £3 per tonne appears very good value when compared to figures quoted by the National Association of Agricultural Contractors (NAAC) and based on fees quoted by commercial organisations.

With regards farmer incentivisation, this is standard practice for certain materials and in particular in certain regions of the UK, particularly those with greatest competition for land (e.g. South East and North West). A figure of £2.25 per tonne is broadly consistent with what other operators pay farmers (e.g. for paper crumble), where they will pay a fee equivalent to the application or cultivation cost. However, based on the NAAC's typical fees these costs would exceed the fee UU have proposed (i.e. the UU figure may be an underestimate). The only question is whether UU would always have to apply this incentivisation fee or if there are specific situations where this would not be necessary. It may well be the case that there are situations where this fee would not be needed, but it is likely to be the exception rather than the rule.

We therefore agree with the figures/costs UU have proposed for material handling an incentivisation. If anything the incentivisation may not be necessary in all cases, but the rate quoted is below that that other organisations pay, mean these points likely balance out and suggest the cost quoted is appropriate.

Decision and conclusions

In summary, we believe UU's costs to meet the requirements of the WINEP action are fair and proportionate. Recycling biosolids in accordance with the requirements of the EPR will impose additional fees, require more people to produce the required documentation and the delays/uncertainty imposed by the process will result in material having to be stored elsewhere and incentivisation provided to at least some farmers, all items UU have included with costs comparable to publicly available information.

Yours sincerely

Matt Taylor
FACTS No: FE/3734
Commercial Director

Appendix G SE828-04 PR24 – Biosolids Storage Scope Cost Review (21 Aug 2024) – REV08

Biosolids Storage & Cost Review

Version: 9

United Utilities
SE828-04

23 August 2024

Biosolids Storage & Cost Review

Client name:	United Utilities		
Project name:	SE828 DD Cost Services		
Client reference:	SE828-04		
Project no:	B27070GP	**Project manager:**	Nick O'Hara
Version:	9	**Prepared by:**	Jeff Tse
Date:	23 August 2024	**File name:**	SE828-04 PR24 – Biosolids Scope & Cost Review

Document history and status

Version	Date	Description	Author	Checked	Reviewed	Approved
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2	14/08/2024	Revised for comment	JT	ZA	ZA	NOH
3	19/08/2024	2nd Revised for comment	JT	ZA	ZA	NOH
4	20/08/2024	3rd Revised for comment	JT	ZA		NOH
5	21/08/2024	Final	ZA	NOH		NOH
6	22/08/2024	Final REV01	NOH			NOH
7	22/08/2024	Final REV02	NOH			NOH
8	22/08/2024	Final REV03	NOH			NOH
9	23/08/2024	Final REV04	NOH			NOH

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Contents

Definitions, acronyms and abbreviations

Term	Meaning
Dutch barn	Full roof, partial side covering and high sided bays / walls
PR24	2024 Price Review
tDS	Tonnes dry solids
UU	United Utilities
WaSCs	Water & Sewerage Companies

Introduction

United Utilities (UU) Bioresources Business is facing an increasing risk of land bank availability reducing or being lost and alternative outlets being required for biosolids.

As forming parts of the Price Review (PR) 24 business plan, UU developed a cost submission of £109 million to provide strategic covered storage facilities for sewage sludge cakes at the following four locations for a period of 2 months. Their original proposal priced in UU FY22-23 base cost are based on enclosed building without odour control facilities, providing a total of 20,983 tDS of biosolid storage capacity listed in Table 1.

Table 1: UU Biosolid storage CAPEX, areas and capacities

Storage Location	Type of storage scope in original proposal	Biosolid Storage Area (m^2)	Biosolid Storage Capacity (tDS)	Biosolid storage density (tDS/m^2)	FY22-23 CAPEX (£M)
Shell Green	Enclosed building without odour control (covering Site A and B)	13,280 m^2	6,268 tDS	0.471 tDS/m^2	£37.54M
Halewood	Enclosed building without odour control (covering North, Middle and South pad)	11,375 m^2	5,369 tDS	0.472 tDS/m^2	£26.54M
Crewe	Enclosed building without odour control (covering Area 1, 2 and 3)	8,400 m^2	3,965 tDS	0.472 tDS/m^2	£20.53M
Streford	Enclosed building without odour control (covering East and West pad)	11,400 m^2	5,381 tDS	0.472 tDS/m^2	£24.54M
	Total	**44,455 m^2**	**20,983 tDS**	**0.472 tDS/m^2 (Average)**	**£109 M**

UU commissioned Jacobs to review the cost build-up elements in these 4 storage locations and to develop efficient externally benchmarked cost estimates for their revised storage proposal, which is to deliver Dutch Barns at the same 4 locations rather than their original proposal with fully enclosed process building construction without odour control. This review provides efficient cost benchmarks for similar-sized Dutch Barn facilities using rates from ChandlerKBS.

Benchmarking

UU's original PR24 draft plan capex estimates in Shell Green, Halewood, Crewe and Stretford are shown in Table 2, with costs including UU on-costs. Final locations for the biosolids storage will be confirmed through the AMP 8 delivery programme.

Table 2: Base and refined CAPEX Cost

Storage Location	Capex (FY 22/23)
Shell Green	£37.54M
Halewood	£26.54M

Storage Location	Capex (FY 22/23)
Crewe	£20.53M
Stretford	£24.54M
Total	£109M

UU's original storage proposals at 4 locations included metal clad process buildings, whose construction method could enable transition to forced ventilation, odour control and methane abatement technology if there is a future need to comply with the Environment Agency's requirements of Best Available Techniques.

However, UU has reduced the specification of their proposal to a covered, partial sided Dutch Barn construction to comply with the minimum WINEP requirement. The reduced scopes to Dutch Barns includes:

- Concrete pad sufficient in strength to allow articulated lorries to access and operate.
- Perimeter and internal concrete bay walls to allow storage to a depth of 2.5 metres.
- Contained drainage to capture run-off from stored material.
- Lighting
- Permanent roof and drainage
- Security (fencing, access gates etc)
- Road access suitable for articulated lorries.

The reduced storage scope shall not negatively impact the efficiency of the biosolid storage with the same storage density of 0.47 tDS/m^2.

Based on the reduced storage scope with Dutch Barns, an externally benchmarked cost estimate was made using the CAPEX unit cost from ChandlerKBS. ChandlerKBS provided unit cost estimates for the three types of storage facilities in Table 3.

- They do not include any costs under the asset types of civil refurbishment, road/path/car park, telemetry, software & application, biodiversity net gain.
- They do not include any costs on preliminaries, contractor add-on and client overheads.
- The do not include any costs on any construction add-ons (surface/foul drainage, pipework/channels, connections/tie-ins, service diversion, contractor surveys, landscaping and other enabling works).

Table 3: ChandlerKBS unit rate estimate

Type of storage	Cost Estimate (£/m^2)	% difference vs Cake Pad	% difference vs Dutch Barn
Cake pad	£294/m^2	N/A	-46.1%
Dutch barn	£545/m^2	+85.4%	N/A
Enclosed building with odour control	£901/m^2	+206.5%	+65.3%

Market Comparison

1.1 Reduced Scopes with Dutch Barns

At the request from UU, the biosolid storage proposals for the 4 locations were reduced from originally planned enclosed building without OCU to Dutch barns.

The updated CAPEX cost for Dutch Barns facilities shall include the following cost elements:

a) Base cost calculated from unit rates from ChandlerKBS

b) UU's site specific construction direct costs on associated new roadways, pipeworks, drainage, service divisions, landscaping etc.
c) Other UU's add-on costs from contractor works, tender to out-turn, UU add-ons and capital overhead with percentage as advised from UU. These appear to be appropriate for this type of construction.

Table 4 shows the updated CAPEX cost and average unit rate for 4 sites with new Dutch Barn using the ChandlerKSB rate and the above oncosts. The detailed cost breakdowns of CAPEX (with agreed UU % oncosts) for each site are shown in Appendix.

Table 4: Updated CAPEX cost for Dutch Barns and overall unit rate in CAPEX /m2

Dutch Barn	Capex (including UU oncosts)
Shell Green	£19,465,067
Crewe	£8,857,489
Halewood	£15,754,981
Streford	£15,961,022
Total CAPEX for all Dutch Barns	**£60,038,558**
CAPEX £/m^2	**£1,350/m^2**
CAPEX £/tDS	**£2,859/tDS**

1.2 Cost Benchmark with other WaSCs

The biosolid storage proposals from other WaSCs differ from each other with different scales and uncertainties in their scopes for land availability and purchase, storage duration, storage density, storage building configuration, building material used, ventilation requirements, and other civil and M&E necessary accessories. It is difficult for direct cost benchmarking between WaSCs proposals even for the same type of storage, when there is lack of information on the biosolid storage density from different WaSCs for ease of comparison.

Table 5 shows the normalised costs per m^2 and tDS storage for United Utilities' proposed revised scope and costing compared to the Draft Determination allowances for the other companies.

Table 5: Cost benchmark – UU revised submission with other WaSCs' draft determination allowance

Company	Submitted Costs (£m)	Ofwat Modelled Cost Allowance (£m)	Type of storage (Based on Ofwat's Cost Model Detail)	Storage Area (m^2)	Storage capacity, tDS [a]	Storage density tDS/m^2	Submitted Cost £/tDS	Ofwat Final Allowance based on Storage Capacity £/tDS	Final Modelled Allowance V Submitted Cost (based on tDS capacity of Storage)
Severn Trent	7.5	25.1	Uncovered Storage	54,839	19,534	0.36	£384	£1,285	335%
Welsh Water	16.8	14.4	Uncovered Storage[d]	25,128	13,696	0.55	£1,227	£1,051	86%
Southern Water	31.6	38.2	Mixture of temporary and permanent covered storage	66,735	27,431[b]	0.41	£1,152	£1,393	121%
Anglian Water	42.4	58.3	Mixture of uncovered and covered – no odour control	101,944	21,724	0.21	£1,952	£2,684	138%
Yorkshire Water	37.8	62.6	Mixture of uncovered and covered – no odour control	109,577	4,526[c]	0.04	£8,351	£13,830	166%
United Utilities	60.0	25.4	Covered storage no odour control	44,455	20,983	0.47	£2,859	£1,211	42%
Wessex Water	44.7	21.5	Covered storage no odour control	31,340	16,226	0.52	£2,775	£1,325	48%
Northumbria Water	64.6	18.3	Covered storage no odour control	26,625	9,075	0.34	£7,118	£2,017	28%

Notes:

(a) tDS is estimated from company stated storage duration and 2029-30 forecast sludge output, accounting for % treatment type and assumptions on destruction ratios.

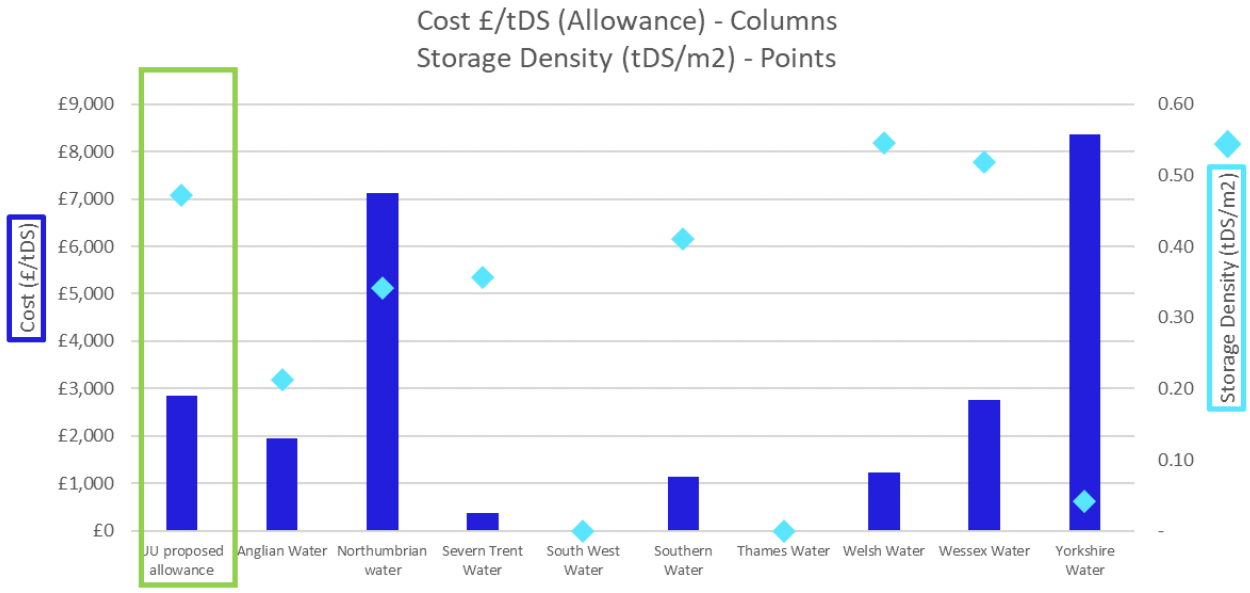
(b) An average based on Southern Water's statement that storage is for 3 months on some sites and 6 months on others.

(c) This is based on Yorkshire Water's statement that storage is for between 18 days and 1 month.

(d) Costs may included low temperature drying based on their Business Plan submission.

Storage density is an important determiner of efficiency. We estimate that United Utilities has relatively high storage density compared to the other plans. Figure 1 shows how United Utilities' revised cost of £60m compares against the submitted costs for the other companies.

Figure 1 Relative estimated storage cost £/tDS and density tDS/m²



Conclusions

For UU's original proposal with enclosed buildings without OCU for 4 locations, the total CAPEX was £109M with unit rate of £2,456/m2 and £5,202/tDS. If reducing scopes to Dutch barns and using externally benchmarked rates from ChandlerKBS with updated UU add-on percentages, the updated CAPEX shall be reduced to £60M with unit rate of £1,350/m2 and £2,859/tDS.

Appendix: Cost Build-up for Dutch Barns with ChandlerKBS rates and agreed UU oncosts

A) Shell Green

Shell Green	Original Scope (Enclosed building without OCU)	Changed Scope (Partially Covered- Dutch Barn)
	UU Base Cost in FY 22-23	Calculation using ChandlerKBS rate
Direct Cost		
New civil structure	£15,168,650	£9,611,533
New mechanical provision	£300,000	
New electrical provision	£105,861	
New ICA provision	£59,728	
Refurbishment work (Inc. Ground/Traffic Road Preparation)	£0	£0
Construction Add-on (Incl. pipework, ducting, drainage, service division, landscaping etc)	£950,873	£950,873
Direct Cost =	£16,585,112	£10,562,406
Other Site Specific Add-on Cost		
TOTAL CAPEX =	£37,544,488	£19,465,067
Storage Floor Area (m2)	13,280	13,280
CAPEX / m2	**£2,827**	**£1,466**

B) Crewe

Crewe	Original Scope (Enclosed building without OCU)	Changed Scope (Partially Covered- Dutch Barn)
	UU Base Cost in FY 22-23	Calculation using ChandlerKBS rate
Direct Cost		
New civil structure	£7,794,300	£3,845,520
New mechanical provision	£200,000	
New electrical provision	£63,930	
New ICA provision	£36,070	
Refurbishment work (Inc. Ground/Traffic Road Preparation)	£583,802	£583,802
Construction Add-on (Incl. pipework, ducting, drainage, service division, landscaping etc)	£377,052	£377,052
Direct Cost =	£9,055,154	£4,806,374
Other Site Specific Add-on Cost		
TOTAL CAPEX =	£20,532,401	£8,857,489
Storage Floor Area (m2)	8,400	8,400
CAPEX / m2	**£2,444**	**£1,054**

C) Halewood

Halewood	Original Scope (Enclosed building without OCU)	Changed Scope (Partially Covered- Dutch Barn)
	UU Base Cost in FY 22-23	Calculation using ChandlerKBS rate
Direct Cost		
New civil structure	£9,831,847	£7,051,789
New mechanical provision	£260,000	
New electrical provision	£79,913	
New ICA provision	£45,088	
Refurbishment work (Inc. Ground/Traffic Road Preparation)	£1,027,898	£1,027,898
Construction Add-on (Incl. pipework, ducting, drainage, service division, landscaping etc)	£469,500	£469,500
Direct Cost =	£11,714,246	£8,549,187
Other Site Specific Add-on Cost		
TOTAL CAPEX =	£26,539,964	£15,754,981
Storage Floor Area (m2)	11,375	11,375
CAPEX / m2	**£2,333**	**£1,385**

D) Stretford

Stretford	Original Scope (Enclosed building without OCU)	Changed Scope (Partially Covered- Dutch Barn)
	UU Base Cost in FY 22-23	Calculation using ChandlerKBS rate
Direct Cost		
New civil structure	£8,804,028	£7,082,820
New mechanical provision	£300,000	
New electrical provision	£95,895	
New ICA provision	£54,105	
Refurbishment work (Inc. Ground/Traffic Road Preparation)	£1,153,636	£1,153,636
Construction Add-on (Incl. pipework, ducting, drainage, service division, landscaping etc)	£424,536	£424,536
Direct Cost =	£10,832,200	£8,660,992
Other Site Specific Add-on Cost		
TOTAL CAPEX =	£24,547,200	£15,961,022
Storage Floor Area (m2)	11,400	11,400
CAPEX / m2	**£2,153**	**£1,400**