
Appendix: WaterUK – Bioresources – landbank uncertainty

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YorkshireWater

A PR24 Notified Item for bioresources uncertainty in AMP8¹

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

¹ The legislative framework governing bioresources management in Wales differs from that in England. Where relevant, references in this paper to the Environment Agency should include Natural Resources Wales and references to WINEP should include the NEP.

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:

1. **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).
2. **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.
3. **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.

4. **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.

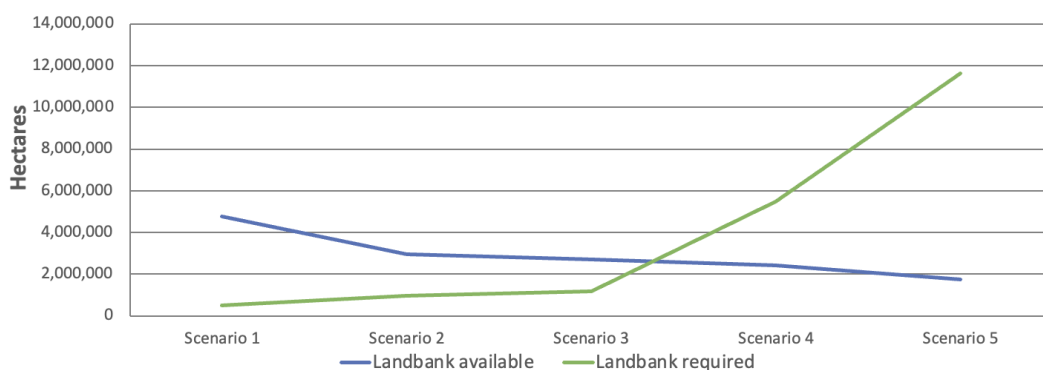
Landbank availability and landbank requirement

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 1.1 – 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 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 was presented to Defra, the EA and Ofwat at Collaborative meetings 4 & 5 in June and July 2024. The work clearly illustrates the scale of the resulting landbank risk associated with the individual issues, with the EA's interpretation of FRfW being the most significant, reinforcing the essential need for an uncertainty mechanism.

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:

1. **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.
2. **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	<p>April – September 2025</p> <p>April – September 2026</p> <p>April – September 2027</p> <p>April – September 2028</p> <p>April – September 2029</p>
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 \(businessmodelling.com\)](#)