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**Our ref:** EIR-520
**Date:** 15/09/2025
**Email:** EIRRequests@uuplc.co.uk

Dear [redacted]

Thank you for your request for environmental information. We appreciate your interest, and we want to let you know that your request has been carefully considered in accordance with the Environmental Information Regulations (EIR).

I would like to initially take the opportunity to apologise for not providing this information in our previous response. As a result of a miscommunication within United Utilities, it had been wrongly assumed that all of the information that you had requested was part of the ongoing industry wide research and therefore could not be provided.

As your request contained a number of specific questions, this response restates each part of the request (in bold) and then follows this with our response:

**Your request:**

- **How many anaerobic digestion plants does United Utilities operate?**

Within United Utilities, we currently have 9 operational anaerobic digestion facilities.

- **Do any of these plants include a pre-treatment process, such as Thermal Hydrolysis, if so how many?**

I can confirm that 4 of these facilities include pre-treatment processes. The type of pretreatment is detailed below:

- Thermal Hydrolysis (TH) - 2 sites
- Enhanced Enzymic Hydrolysis (EEH) - 1 site
- Thermophilic Aerobic Digestion (TAD) - 1 site

- **Also, if any pre-treatment is used, is there any information concerning the improvement in throughput following the upgrade?**

Using pre-treatment technologies allows for a higher organic loading rate to anaerobic digesters, hence increasing the sludge throughput of existing anaerobic digesters.

A summary of typical organic loading rates can be seen in table below (data taken from a UU Standard Operating Procedure (SOP)).

| Parameter | Mesophilic Anaerobic Digester | EEH Pre-Treatment | TH Pre-Treatment |
|---|---|---|---|
| *Organic Loading Rates for MAD* | ~2.6kgVS/$m^3$/d | 3-4kgVS/$m^3$/d | ~5.5kgVS/$m^3$/d |

As can be seen from the above table, the increased organic loading rates due to pretreatment allows the treatment capacity of existing anaerobic digestion plants to be efficiently increased without building new large vessels for digestion.

Use of pre-treatment technologies also increase the pathogen kill across the treatment process, which means that the digested sludge (biosolids) can be recycled to a wider variety of agricultural land. The pretreatment technologies also increase the yield of methane rich biogas, which enables an increased energy generation.

- **Is there much variation in the throughput of the different plants - is it possible to have a maximum and minimum?**

The operating capacity of different digestion plants can be found in the Bioresources Market Information that we publish annually. Generally, plants operate near capacity unless there are operational issues or outages affecting the throughput.

- **How many full-time staff are employed at each plant (an average will do)?**

For smaller sites, we have 2 full time operational staff and 1.5 full time maintenance staff, with the number of frontline operations and maintenance staff for a large shift site being much greater.
It is important to note that in addition to the direct operational staff on each site, the bioresources business that operate these sites is much larger, and includes a number of support functions, as well as the sludge transport, treatment and disposal functions. The total headcount under the Bioresources Head of Operations is 233 people.

- **Do you recover energy from the AD biogas produced and does this meet the energy requirements for each plant. If there is excess created is this sold to energy companies?**

Yes, all of our operational anaerobic digestion facilities generate methane rich biogas which is typically 60-65% by volume of methane. This biogas is used to generate heat and electricity in CHP engines.

Not all of our anaerobic digestion plants generate all the power that is required by the site, although all the CHP engines will offset the amount of energy that needs to be imported.

Where there is excess energy on a site this is usually exported to the grid, although we use a water absorption process on one plant to purify the biogas and generate biomethane which is then exported to the natural gas grid network.

- **Are there any particular pollutants that cause concern. e.g. heavy metals, micro plastics and pharmaceuticals.**

The primary pollutants that we are interested in are heavy metals, which are listed within the Sludge Use in Agriculture Regulations (SUiAR). Some of these heavy metals such as Cadmium can also cause

inhibition in the anaerobic digestion process. We test all our digested sludge monthly for these pollutants.

We assure ourselves that we meet and go above regulatory requirements by participating in the Biosolids Assurance Scheme (BAS) where our operations for treating and recycling sludge to agriculture are independently audited and assured.

We are now also actively supporting industry wide research into additional contaminants such as microplastics, pharmaceuticals and organic pollutants within sludge. This research is currently being undertaken through UKWIR and the Chemicals Investigation Programme (CIP) and seeks to understand what effect existing sludge treatment processes have on these substances, and to identify what future treatment technologies can be used to effectively treat or manage these substances.

In line with Regulation 12(4)(d) of the EIR, as this research is still in the course of completion, we are currently unable to share any data from it. However, this information will be made publicly available once the project has concluded. You can, however, find the project resumes on UKWIR websites.

We hope that this response answers your request and helps with the research you are undertaking. It may also be helpful to review the information contained within our Annual Performance Report, which provides additional detail on Bioresources activities and expenditure.

However, if you're not satisfied with how we've handled it, you can request an internal review. To do this, please write to us at Environmental Information Office, Haweswater House, Lingley Mere, Warrington, WA5 3LP or email us at EIRRequests@uuplc.co.uk, addressing your request to [redacted], and explaining why you're unhappy with our response. We'll be very happy to review your request and ensure we've done everything we can to assist you.

Any request for an internal review should be made within 40 working days of receipt of this response, and we will reply within 40 working days from receipt of the request for internal review.

Many thanks

[redacted]

We'd love to hear your feedback on how we handled your request! If you have a moment, please complete our short survey here – your input helps us improve our service.