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## Lincolnshire County Council – Anaerobic Digestion Feasibility Briefing Note

V1.0

Environmental and sustainability solutions provided to  
Midlands Net Zero Hub



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## 1.0 PURPOSE AND CONTEXT

An ambition of the Midlands Net Zero Hub (MNZH) is to support local authorities across the Midlands region to better understand Anaerobic Digestion (AD) and its role in generating renewable energy, contributing to energy security, and providing a circular solution for managing food and other organic waste streams. Supported by its accountable body, Nottingham City Council (NCC) and project sponsor, the Department for Energy Security and Net Zero (DESNZ), NCC appointed Walker Resource Management Limited (WRM) to carry out an outline feasibility assessment of AD development potential for five local authorities within the Midlands region. Lincolnshire County Council (LCC) applied for this project, and the main findings and conclusions are summarised below.

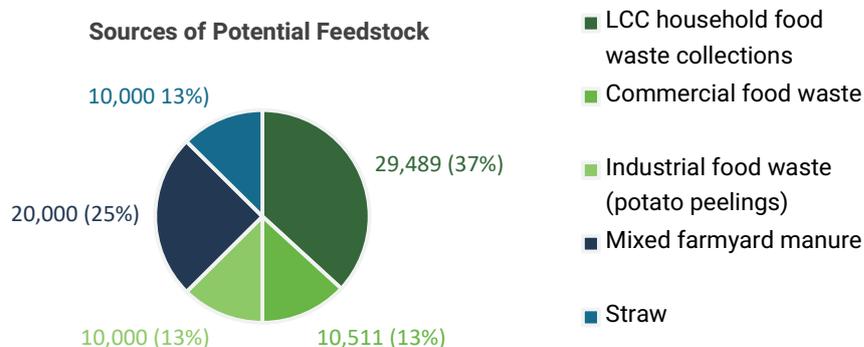
## 2.0 PROJECT OVERVIEW

This project was to deliver an outline techno-economic feasibility study for a 'reference design' AD plant at potential suitable locations across Lincolnshire. The project is an initial, high-level feasibility study to identify opportunities and barriers for AD in Lincolnshire rather than a detailed feasibility study.

A reference design AD plant suitable for LCC's needs was developed and potential suitable locations identified. Relevant planning policy and environmental permit requirements, the availability of suitable local AD feedstocks (food and green wastes, and agricultural wastes) and the location of gas grid and electricity grid connections was assessed. This information was compiled into an outline techno-economic feasibility assessment of the reference AD design for Lincolnshire.

## 3.0 AD CHARACTERISTICS

1. A feedstock estimation exercise identified 80,000 tonnes per annum of organic material potentially available for capture, derived from the following sources:



**Figure 1 - Sources of potential AD feedstock**

2. The plant was assigned an 80,000 tonnes per annum waste processing capacity. This capacity level was determined by the current and prevailing economics of an operation, based on the revenues associated with incentive tariff schemes for renewable energy such as the Green Gas Support Scheme (GGSS).
3. The conventional 'wet' AD treatment process was chosen, comprising of de-packaging, pre-treatment, pasteurisation, and primary and secondary stage digestion. Biomethane was the primary renewable output, as well as heat and electricity to support the plant's parasitic load

demand. Bio-CNG (vehicle fuel), digestate (natural fertiliser) and CO<sub>2</sub> outputs were also modelled.

- Engagement with LCC resulted in the Riverside Industrial Estate site in Boston being selected as the case-study site. The site was chosen due to its proximity to food manufacturers in the estate, access to the A16 and A52 to facilitate movement of wastes, and the siting of the facility to adjacent waste management facilities (Boston HWRC and Biomass Nr 3).

It was noted that the site resides within a level three flood zone and is proximate to commercial and industrial receptors within the estate. Engagement with the planning authority is recommended prior to any anticipated development taking place here.

#### 4.0 TECHNO-ECONOMIC MODELLING

- Several scenarios were created to be inputted into the techno-economic model, integrating the reference AD design above to produce financial and technical outputs of the process. Benchmarking with AD developers showed an AD plant would cost £34,301,305 (note: this figure includes an added 10% contingency allowance) to develop in Lincolnshire and has been factored within the net-margin values. Four of the five modelled scenarios resulted in positive cashflows over the assumed 15-year project timescale, as shown in Table 1.

**Table 1 - Financial summary of modelled scenarios**

Scenario and Description of Scenario	Average Net Margin Per Annum £	Project total - 15-year lifecycle £
1a – 50% of produced biomethane injected into the gas grid to claim GGSS tariff payments and 50% for on site Bio-CNG fuelling.	796,143	11,942,144
1b – Scenario 1a however injected biomethane to grid is claimed under RTFO at an external Bio-CNG station rather than claiming GGSS.	36,737	551,052
2 – 75% of produced biomethane is injected into gas grid to claim GGSS tariff payments and 25% for on-site Bio-CNG fuelling.	793,361	11,900,415
3a – 100% of biomethane is injected into gas grid to claim GGSS tariff payments.	802,346	12,035,183
3b – Scenario 3a however excludes GGSS tariff payments.	-3,612,507	-54,187,605

- Over 15 years, all scenarios produce 946,287 Megawatt hours (MWh) of biogas, 903,245 tonnes of PAS110 digestate and 87,800 tonnes of CO<sub>2</sub>. Annually, scenario's 1a and 2 produce ~1,897,881 and ~948,941 litres of diesel equivalent of Bio-CNG fuel.

The findings highlight the financial incentive that the GGSS provides. Moreover, a hybrid of GGSS and RTFC can also provide commercial viability, and the AD operator can switch between biomethane uses to maximise this. However, attaining GGSS accreditation by the commission deadline is crucial for ensuring viability for the AD project.

3. Qualitative risks identified at this stage of the project generally pertained to items such as site, ownership/rent considerations, and planning and permitting constraints. Such risks would be investigated and appropriately mitigated during the detailed planning and design phase for a facility.

Although the Department for Energy and Security (DESNZ) has extended the commissioning deadline for the GGSS from 31<sup>st</sup> March 2028 to 31<sup>st</sup> March 2030, participants will only receive the 15-year tariff payment where the facility is commissioned by 31<sup>st</sup> March 2028 (facilities registered for the scheme by March 2028 have until March 2030 to achieve full commissioning, however will only claim tariff payments until March 2043). Given the GGSS' influence on commercial viability, local authorities intending to support AD developments must commence activity promptly to meet the facility commissioning deadline of the GGSS.

## 5.0 NEXT STEPS

1. The work has found that the development of an AD facility in Lincolnshire is technically feasible, financially viable and deliverable under four of the five project scenarios.
2. Should LCC wish to explore AD development opportunities further, several recommendations are provided below to progress the opportunity.
  - Confirm sources of feedstock – this may include exploring partnership opportunities with proximate local authorities also required to collect food waste from 31<sup>st</sup> March 2026.
  - Selection of an appropriate development site – that accords with planning and environmental permit requirements.
  - Preliminary market engagement with prospective contractors to understand capacity and capability to service Council requirements. This can be undertaken formally, in accordance with the Procurement Act (2023).
3. The project has concluded by setting out a programme for the delivery of pre-planning, planning, construction and operational stages of the project, providing structure for the next steps in advancing this initiative and averting risk to the GGSS deadline (please see Supporting Document A).

## 6.0 CONCLUDING REMARKS

The proposed regulations to extend the GGSS application deadline provide a strong market signal and help to build confidence among AD developers and local authorities alike. Considering the delivery pathway of infrastructure projects, and timescales associated with the governance and approval process, local authorities intending to support AD developments must commence activity in earnest to meet the facility commissioning deadline of the GGSS. Achieving this would ensure that a future development would stand the best chance of achieving commercial viability for the full available tariff duration.