



WHO IS IRONSTONE ENERGY LTD?



Ironstone Energy is a wholly owned subsidiary of Future Biogas Ltd, one of the largest and **most experienced operators of biogas plants** in the UK.



Since 2010 Future Biogas have **developed and built 12 biogas sites** as in-house projects and in addition we manage and operate plants developed by third parties.



Future Biogas works with **over 400 farmers to produce sustainable energy crops** from within farming rotations that provide stable income to farms and generate good biogas yields.

www.ironstoneenergy.co.uk



WHAT IS BIOGAS AND ANAEROBIC DIGESTION?



Artist impression of proposed plant in the landscape.



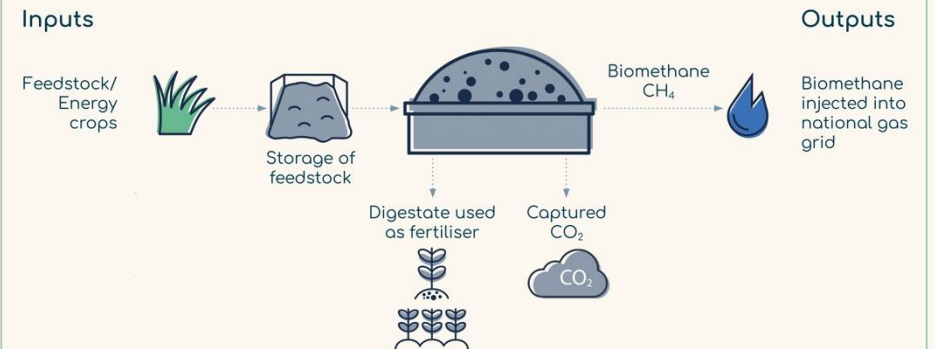
Anaerobic Digestion, or AD, is a method of creating renewable green energy in the form of biogas. The gas can be created from crops specifically grown for this purpose.

Ironstone Energy would only use energy crops to create biogas, not food waste or manures. The biogas would then be upgraded into biomethane and injected into the UK's national gas network.

Biomethane production helps the UK reduce its dependence on imported gas, while also cutting greenhouse gas emissions.

Anaerobic digestion takes place when biodegradable material is broken down by microorganisms in the absence of oxygen. During this process, these organic materials are converted to biogas.

The anaerobic digestion process



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WHY BUILD A NEW ANAEROBIC DIGESTION PLANT HERE?



Location of the proposed plant site, showing access road next to Sewstern Industrial Estate.

The proposed site for the new anaerobic digestion plant has been chosen following detailed investigation in conjunction with Buckminster Estate, who will be supplying around half of the crops inputs.

Ironstone Energy has selected this site as it best combines access, gas network connection, feedstock supply, low visual impact and a variety of other factors. The plant would support the rural economy by creating jobs, using local services, creating demand for local crops and providing community funding.

A variety of sites were reviewed before selecting the proposed location off Gunby/Sewstern Road, which represents the best balance of all these factors.

The anaerobic digestion plant would be fed by local crops, supporting local farmers. All of these crops would be grown using sustainable farming techniques improving soil health. Feedstock crops would be integrated into existing agricultural food production rotations.

Buckminster Estate would be supplying around half of the feedstock per annum, with the remainder coming from local growers within a few miles from the site.

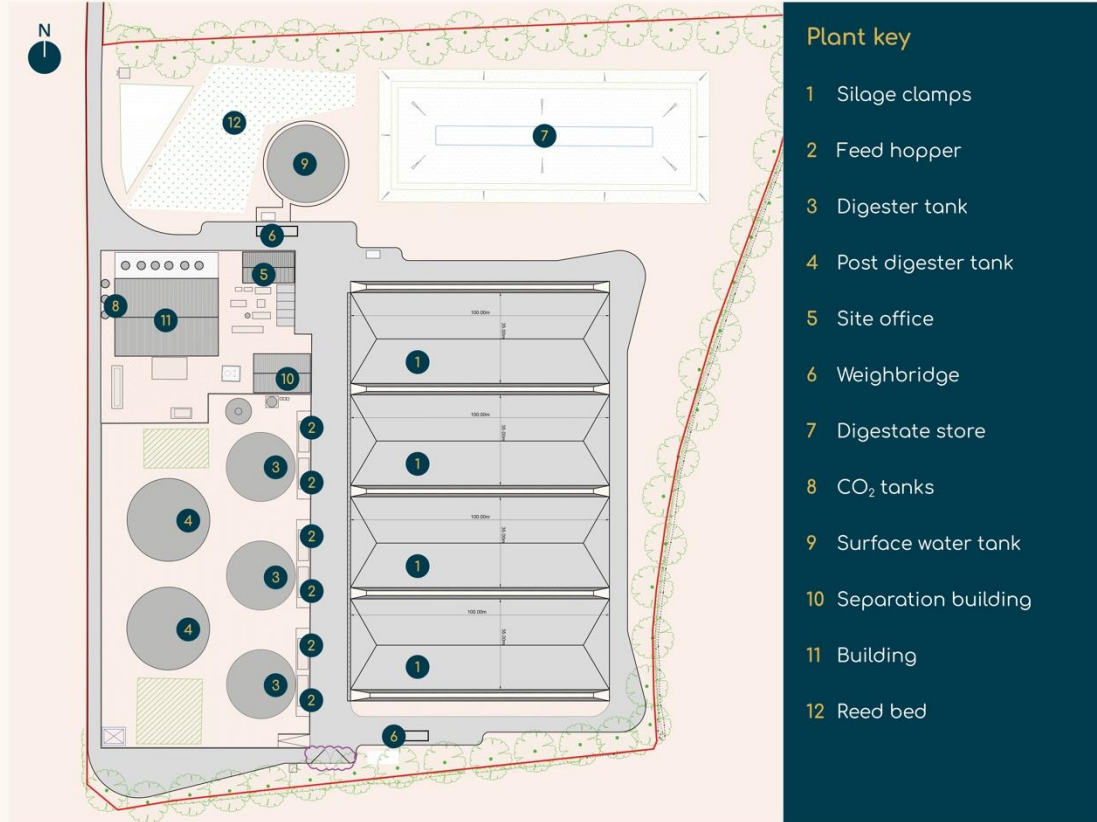
Our proposal includes plans to create a new access track in order to minimise any impact of farming traffic on the immediate local road network.

This site off Gunby/Sewstern Road, also benefits from being close to the existing gas network, which means the gas produced at the plant can easily be injected into the national gas grid.

The new plant would produce enough gas to heat a town roughly the size of Grantham.

This replaces the natural gas currently used, which is mostly imported from outside the UK.

WHAT IS PROPOSED?



Proposed site layout.



Images from other Future Biogas facilities.



The overall site would be around 6 hectares and would be naturally screened around its perimeter by trees, part of which is already formed by established woodland to the west.

The plant would have five tanks comprised of three flat-roof primary digesters and two post digesters. The site would also contain silage clamps to hold around half of the annual crop feedstock required, a fully covered and sealed digestate store and will be designed to capture and retain any run-off and surface water.

Future Biogas would be using the same technology it has applied at 10 previous sites across the east of England.

Plans for this plant includes the ability to capture the naturally occurring by-product, CO₂. The plant would prepare the CO₂ to be transported away from site and permanently stored in either geological formations or embedded in long-lasting products like concrete. This process is called Bioenergy with Carbon Capture and Storage (BECCS).

WHAT IS BIOENERGY CARBON CAPTURE AND STORAGE?

Bioenergy with Carbon Capture and Storage (BECCS) is the process of capturing and permanently storing CO₂ from biomass energy.

The capture and storage of biogenic CO₂ on a large scale is relatively new, but companies have been injecting CO₂ into water, oil and gas filled formations for almost five decades.

The CO₂ by-product created at the proposed Ironstone Energy plant would be fed into the Northern Lights project. This is the world's first open-source CO₂ transport and storage facility.

Northern Lights was created to provide a safe and permanent storage option for CO₂ removed from the atmosphere. Locking CO₂ away like this will help combat climate change.

Once injected into the geological rock formations, the CO₂ will remain there for many thousands, if not millions, of years.

The Ironstone Energy plant will capture and store over 20,000 tonnes of CO₂ per year.

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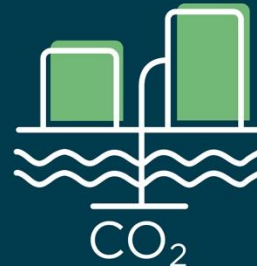
CO₂ captured and liquified on site and transported to port facilities by road tanker

2



Liquid CO₂ transported from temporary CO₂ storage at the port facility, to Norway via ship

3



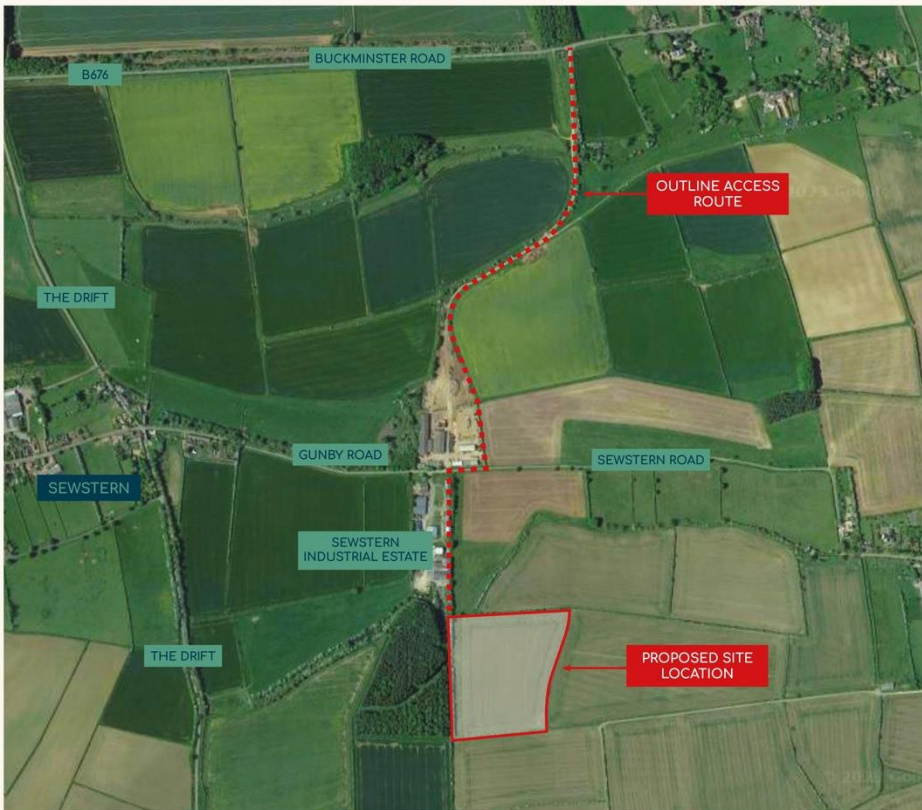
Captured CO₂ injected into permeable rock 2,500-3,000 metres below the North Sea seabed

4



CO₂ safely and permanently sequestered for thousands, if not millions of years

HOW WOULD SITE TRAFFIC BE MANAGED?



Our proposal includes plans to create a new access track in order to minimise any impact of farming traffic on the immediate local road network. Approximately 70% of the feedstock supplied by the estate will use farm tracks.



What are the operating hours of the plant?

The plant would run 24/7, 365 days per year, continuously supplying renewable gas to the local grid network.

The plant would be staffed during working hours and deliveries made during the hours 07:00 to 19:00 (with out of hours remote monitoring).

The exception to this is during the peak harvest periods when working hours would be extended to allow harvested crop to be brought onto site, twice a year.



IRONSTONE
energy

BENEFITS FOR THE LOCAL COMMUNITY AND ENVIRONMENT



Job creation

Subject to planning permission, once complete, the site will employ up to seven full-time staff and create several part-time opportunities.

Ironstone Energy will aim to employ staff and contractors from the local area wherever possible, including during the construction period. Future Biogas operate active apprenticeship and work experience programmes, providing operational and technical career opportunities.



Working with the local community

In line with all the sites that Future Biogas operate and manage, an annual community fund will be established of £30,000 by Ironstone Energy to support not-for-profit projects, charities, and community initiatives in the local area.



Wildlife and biodiversity

Ironstone Energy aim to bring positive benefits to the natural environment surrounding the plant. The project will support farmers in the transition to sustainable and regenerative farming practices, improving soil health and enhancing biodiversity over time. Landscaping will include a woodland tree belt to screen the perimeter of the plant, which will not only offer a valuable habitat for wildlife but become an established, natural visual barrier.



ENVIRONMENTAL QUESTIONS



Will the plant be noisy?

AD plants are typically very quiet and are not generally associated with noise disturbance or ongoing noise issues.

All possible sources of noises will be assessed, with mechanical items used on site assessed before and after development. An independent acoustic assessment would be submitted to the local authority with any planning application.

As well as following the strict noise standards applied in agricultural areas, Ironstone Energy will take extra measures to soundproof noise sources from within the plant. Equipment likely to generate noise is specially housed and HGV access hours are often limited.

Will the plant smell?

AD plants that are fed entirely by crops do not cause odour nuisance to local residents or businesses.

There is usually a minimal compost/crop silage type odour associated with the silage storage (clamps) on site and only detectable when standing in close proximity to the clamps.



Odour issues are more commonly associated with food waste, utility sludge plants or animal manure feedstocks, which does not apply to this site.

An independent Odour Assessment will be submitted to the local authority with the planning application, which will assess all possible odour emission points. All liquid digestate produced will be stored in a fully covered store.

Waste/by-product use

One valuable by-product of AD is digestate, which is created once the crops have been converted to biomethane.

Digestate contains readily available nitrogen which is key to plant growth. It also contains useful levels of phosphate and potassium and a variety of micronutrients, all of which are essential for plant growth.

When used appropriately as part of a whole farm management approach, as is proposed here, the organic matter contained in digestate improves soil structure, fertility and soil health.

Digestate also improves water holding capacity in soils. This helps enhance drought resistance of light soils and allows farmers to better manage heavy (clay) soils. Digestate returns key nutrients back to the soil, helping farmers save on the use of carbon-intensive artificial fertilisers.



WHAT HAPPENS NEXT?



Timescales

Following a period of consultation with the local community, which includes public events and stakeholder briefings during September and October 2023, feedback from residents and other interested parties will be reviewed and, where possible, adopted.

This information will assist in informing the final proposal for any planning submission, later in the autumn.

Upon submitting an application, South Kesteven Council (the local planning authority) will undertake its own consultation with statutory and non-statutory consultees and local residents before deciding whether a proposal should go ahead.

The planning process takes a minimum of 13 weeks, then subject to planning consent, we would hope to start work in Spring 2024. Construction will likely last around 18 months. Ironstone Energy have an agreement in principle to lease the site for 30 years, after which the plant will be either upgraded, re-purposed or decommissioned.



We welcome your feedback

Please submit your questions or feedback using the form on our website:

www.ironstoneenergy.co.uk

Or you can also write to us at:

Freepost SEC NEWGATE UK LOCAL
Ironstone Energy Ltd

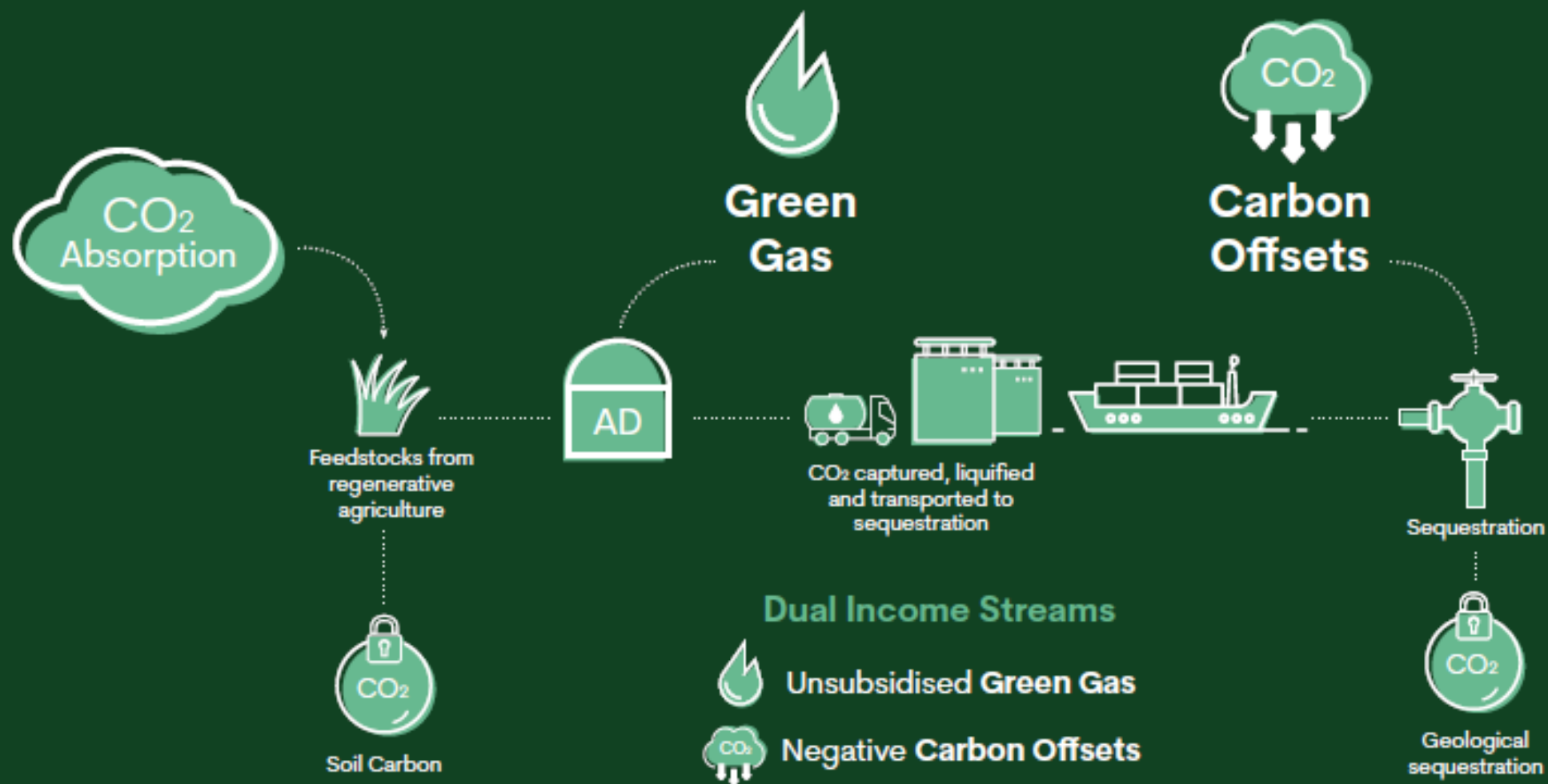
Or contact us:

01476 855095

enquiries@ironstoneenergy.com

www.ironstoneenergy.co.uk

A Carbon-focused Approach



Growing food AND fuel:

- Builds resilience through diverse crop rotations
- Provides opportunities for cover and companion cropping
- Encourages farm diversification
- Helps reduce inputs such as chemicals
- Replaces artificial fertiliser with digestate
- Provides profitable break crop options

