



Manby Biorefinery, Lincolnshire

CASE STUDY

Manby BGE Ltd. is a large-scale biorefinery planned for construction on a 27-acre site at the former RAF Manby Airfield, a little over one kilometre from Manby village. The biorefinery is centred around an advanced anaerobic digestion system that uses a sealed, oxygen-deprived environment controlled at 40 degrees Celsius to convert organic matter to biogas.

The project is designed to utilise livestock manures and crop residues, such as straw, to produce biomethane, food-grade biogenic CO₂ and a low-carbon organo-mineral granular fertiliser. The resulting renewable energy, produced in the form of biomethane, will be enough to heat a city the size of Lincoln for a year or fuel 1,000 gas-powered trucks every day for a year - an alternative to large volumes of imported fossil fuels.

The food-grade biogenic CO₂ produced will replace about 10% of UK demand. CO₂ is needed across a range of industries, from healthcare and pharmaceuticals to growing tomatoes, to livestock slaughter and packing processes. Large volumes of fossil-derived CO₂ are currently imported into the UK from EU sources to replenish the lost production at a number of fertiliser manufacturing facilities in the UK following the Ukraine crisis and a significant increase in the cost of gas.

The slurry-like material left over, known as digestate, is processed to remove the remaining organic matter and nutrients. This organic matter and nutrient base is sent to a fertiliser blending process to be enhanced with organo-minerals so that the final product meets the agronomic need of farmers.

This low-carbon organo-mineral fertiliser is expected to be a cornerstone of agriculture's fight to decarbonise production. A number of major studies conducted nationally and internationally have demonstrated that between 50% and 80% of farm gate GHG emissions are linked to synthetic, fossil-produced fertilisers.

Planning permission for the project was received in December 2023 and required an initial investment of £500,000. The project then received more than £1m of further investment to complete the detailed design, which is currently nearing completion. Construction of the project, requiring £200 million of investment, is expected to start in Q1 2025 and be completed in Q3 2026.

Locally, more than 100 permanent full-time jobs will be created to run the facility on a 24/7 basis, injecting around £4 million into the economy each year. These jobs are expected to be split 50/50 between white-collar and highly skilled blue-collar jobs. A further £15 million will be injected into the economy through long-term feedstock supply agreements with farmers.