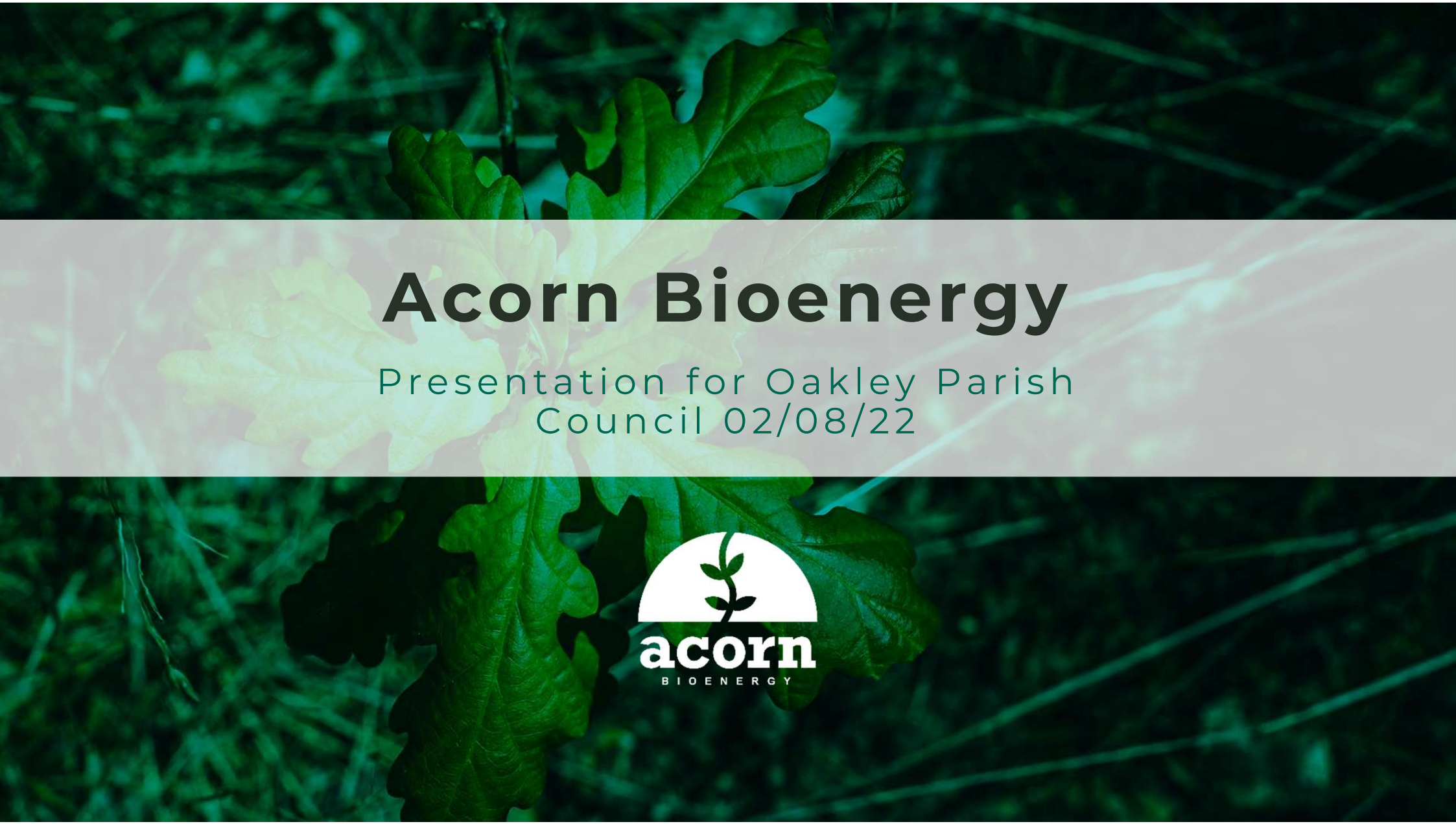


# Acorn Bioenergy

## Presentation for Oakley Parish Council 02/08/22

acorn
BIOENERGY

# Acorn Bioenergy

## What is Acorn Bioenergy?

A new startup with an experienced team

We are committed to decarbonizing 'hard-to-abate' sectors by unlocking the full potential of biomethane production in the UK

We plan to reduce **transport, industry and agriculture CO2 emissions**, commencing in **2023**

## What is Acorn doing?

Acorn generates biogas from anaerobic digestion facilities in the UK and upgrades it to biomethane.

This biomethane is then transported to the injection point by biomethane-powered trucks

The low carbon biomethane will be directly injected into the gas grid to create **renewable heat**, and used as an **alternative fuel** to power heavy goods vehicles (HGVs)

## Why?

In 2021 HGVs produced **18%** of transport emissions, despite comprising **1%** of vehicles on the road

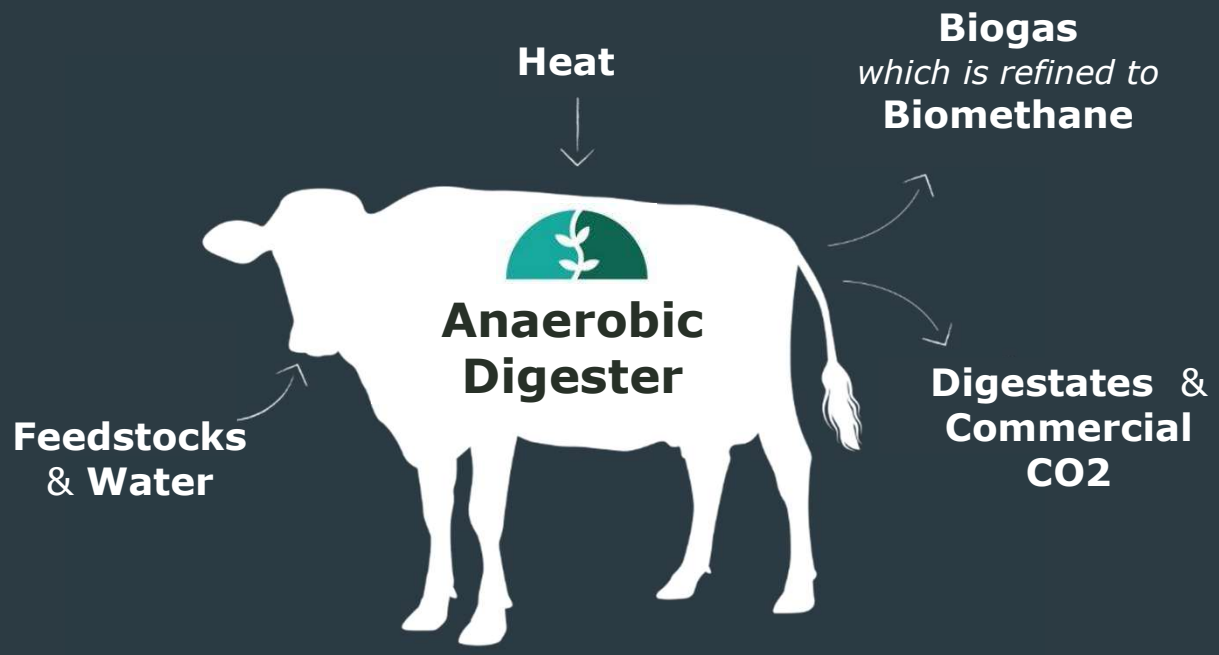
Biomethane is a mature and well understood fuel that can be used today as a carbon-negative source of energy for heating while hydrogen and electrification solutions are in development

Biomethane production will help Buckinghamshire and the UK transition to meet emissions targets

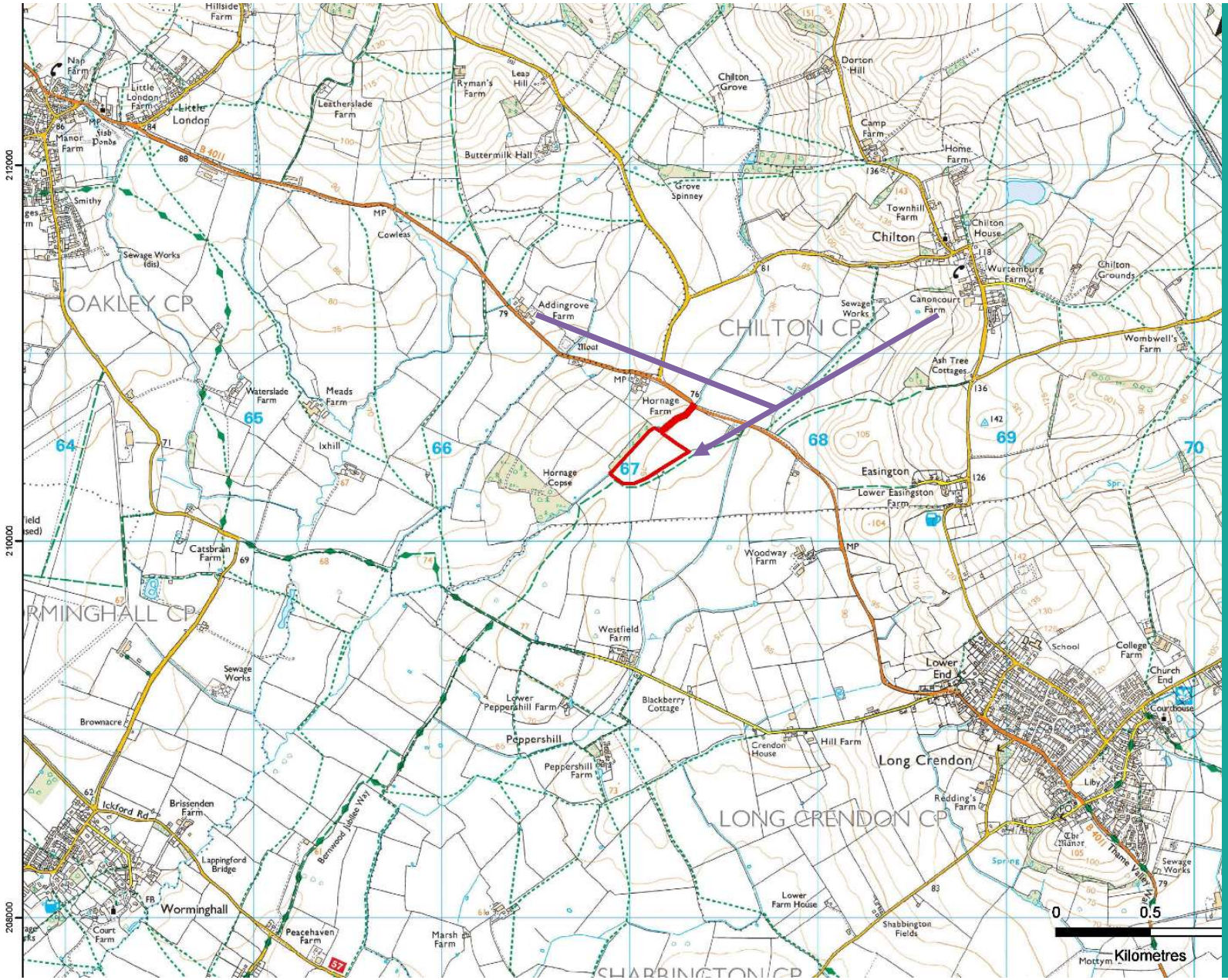
Provide farmers extra sources of income and access to new crop rotations

# What is Anaerobic Digestion?

## The basic principles




- Anaerobic digestion (AD) can be simply thought of as the digestion process that occurs in the rumen of a cow
- At anaerobic digestion facilities feedstocks are converted to **biogas**, which we then refine into **biomethane**
- The main biproducts of this are **$CO_2$** and **Digestates**
- $CO_2$ is captured and refined for commercial uses
- Digestates are valuable as organic **bio-fertilizers**
- Digestates can displace expensive mineral fertilizers (which depend upon limited resources like phosphate and potash) whilst **protecting soil health** and **improving crop yields**.




## Site Location

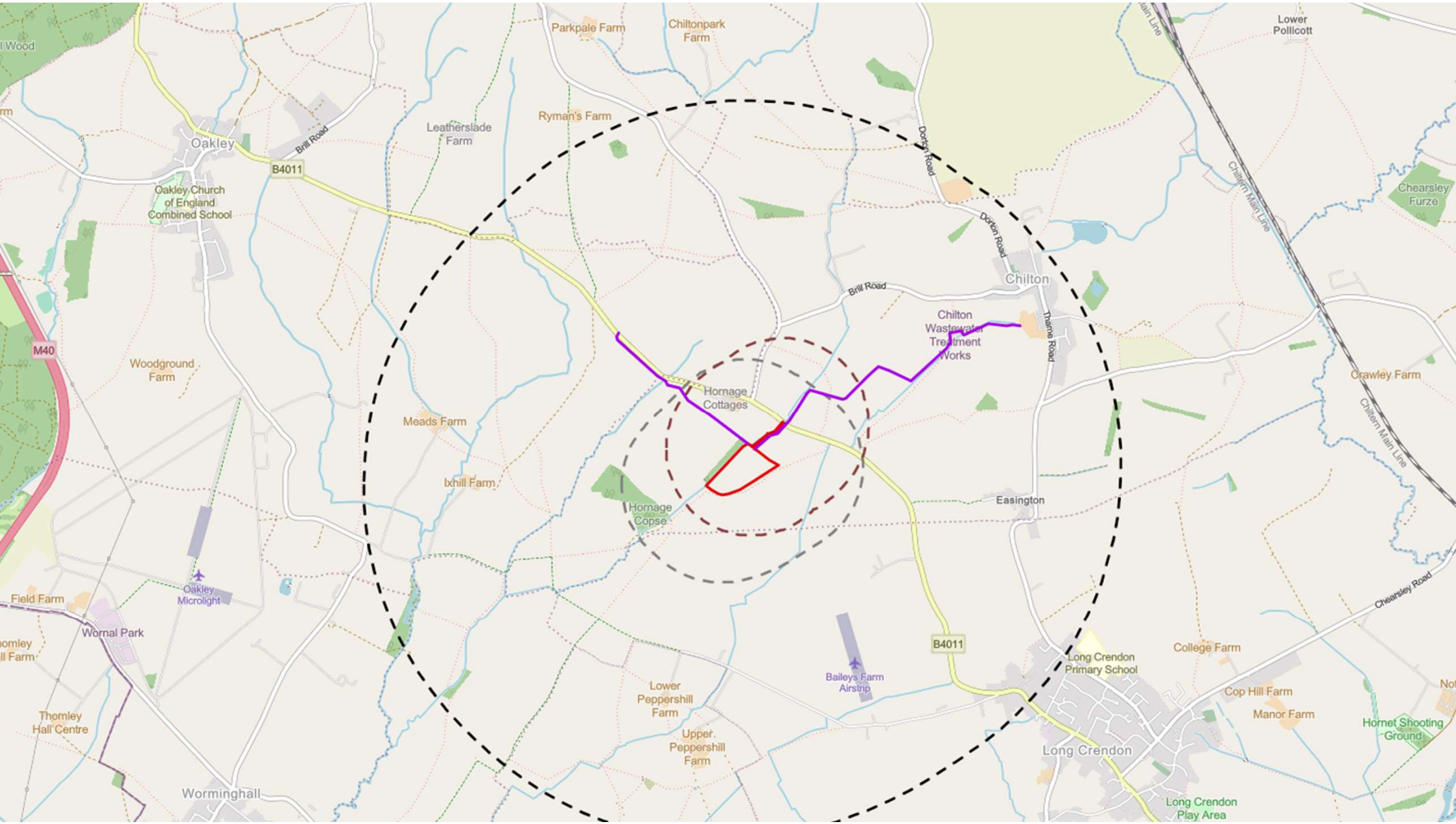
Located off the B4011 at Hornage Farm

Roughly equidistant (1.5miles) between the villages of Oakley and Long Crendon

Predominantly fed with crop silages – rye, maize, grass and straw.

The plant would also use chicken litter, and slurry from the two dairies at Chilton Estates (transported to the site via underground pipeline)

The site was chosen for its minimal visual impact and access to farms that will provide high quality feedstocks

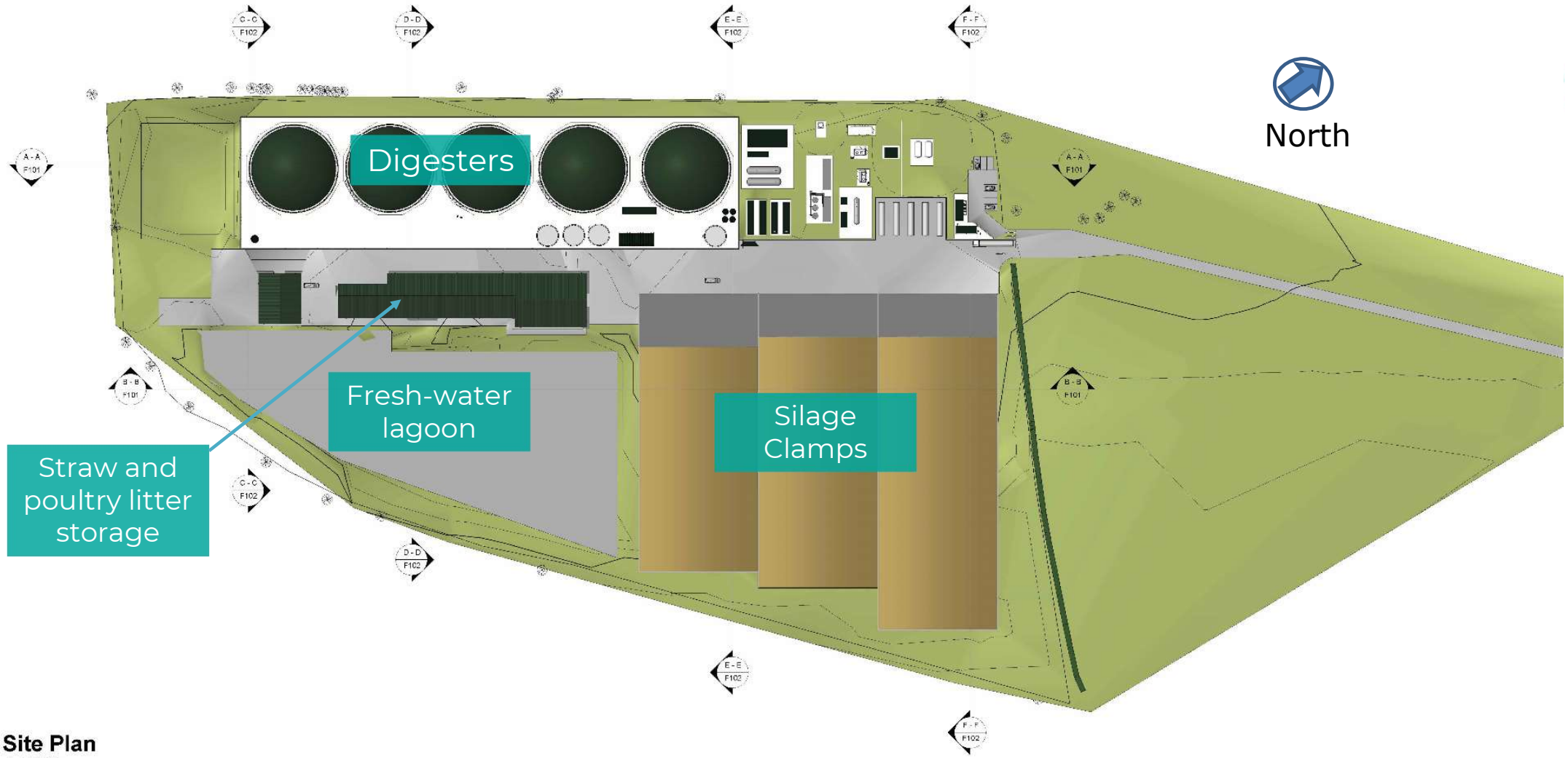

Parkpale Farm
Chiltonpark Farm
Lower Pollicott
Leatherslade Farm
Ryman's Farm
Oakley
Brill Road
B4011
Oakley Church of England Combined School
Dorton Road
Chiltern Main Line
Chearsley Furze
Chilton
Brill Road
Chilton Wastewater Treatment Works
Thame Road
M40
Woodground Farm
Hornage Cottages
Crawley Farm
Meads Farm
Ixhill Farm
Hornage Copse
Easington
Oakley Microlight
Field Farm
Wornal Park
Chearsley Road
B4011
College Farm
Long Crendon Primary School
Baileys Farm Airstrip
Lower Peppershill Farm
Cop Hill Farm
Manor Farm
Hornet Shooting Ground
Thomley Hall Centre
Upper Peppershill Farm
Long Crendon
Worminghall
Long Crendon Play Area

# The Proposed Facility

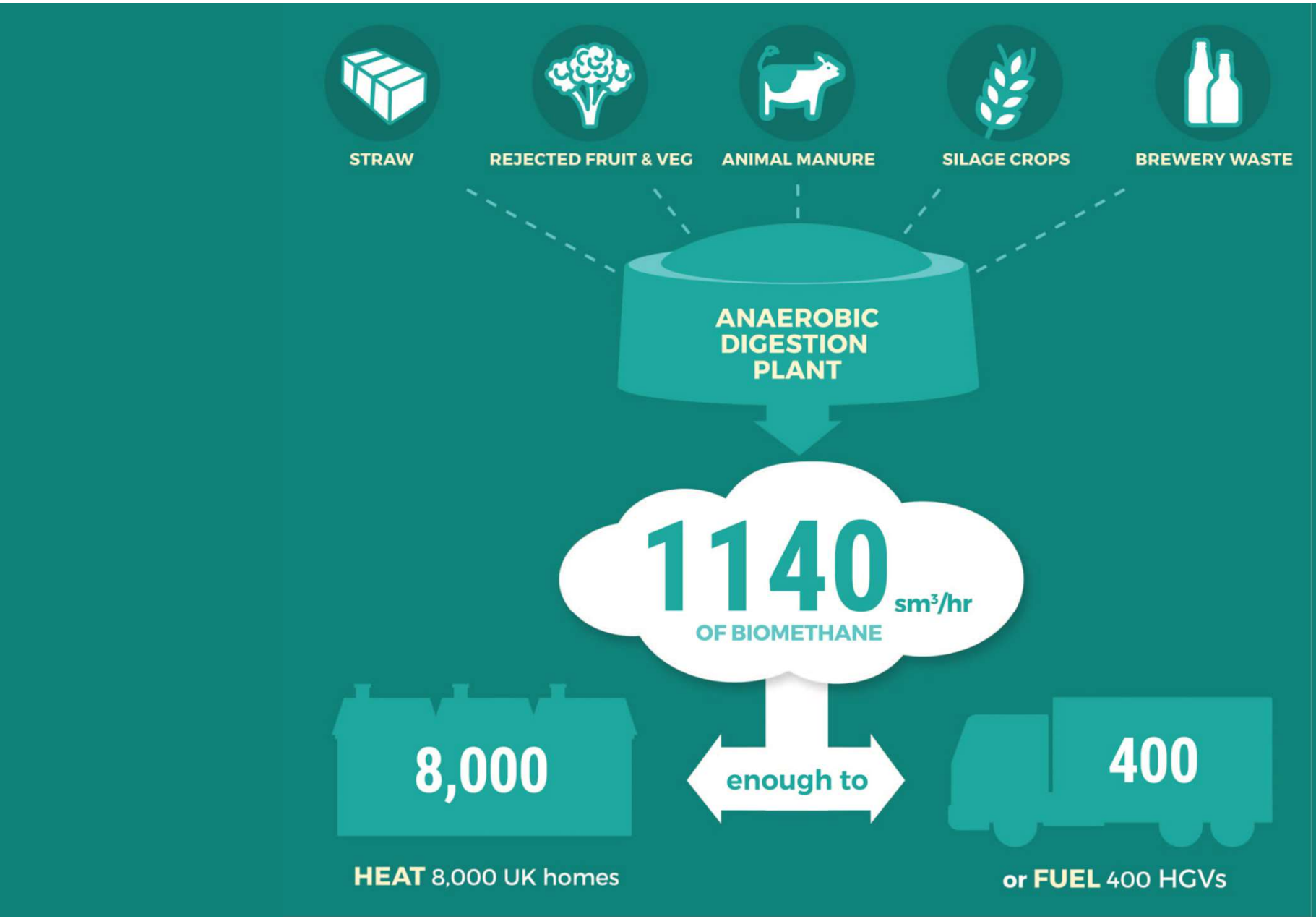
**A similar sized plant for visual context.**

- 6.5 hectares
- Significant screening to limit any visual impact (planting new hedgerows and native trees)
- Site lighting will not be required outside working hours
- Staffed by 4 people during the hours 07:00-19:00 Monday to Sunday, except during peak harvest periods
- Planting of wildflowers, new native trees and hedgerows would result in a significant biodiversity net gain on the site

*The Euston Biogas Plant, located near Thetford, Suffolk*
*Image courtesy of Material Change*




# Hornage Site Layout


STRAW
REJECTED FRUIT & VEG
ANIMAL MANURE
SILAGE CROPS
BREWERY WASTE
ANAEROBIC DIGESTION PLANT
1140 sm³/hr
OF BIOMETHANE
8,000
enough to
400
HEAT 8,000 UK homes
or FUEL 400 HGVs

Each year, the lifecycle of the process and our capture of $CO_2$ will result in

**-5,000**
**TONNES OF $CO_2e$**

Compared with standard UK grid emissions

**23,000**
**TONNES OF $CO_2e$**

## A YEARLY SAVING OF

# 28,000
**TONNES OF $CO_2e$**


the $CO_2$ used by 1,300,000 **TREES**

equivalent to


or taking 9,000 **CARS** off the road!

# Potential Benefits

- Help tackle climate emergency
- Ensure energy security
- Secure crop diversity and income for local farms
- Ensure soil health to preserve agricultural land
- Provide environmentally friendly fuel for HGVs while other solutions are developed
- At least 15% improvement in biodiversity
- 4 Additional jobs, plus HGV drivers
- Employ local firms
- Supply cheaper CO2 to local businesses
- Provide opportunity for educational trips

# Traffic Movements

## Where will the traffic be routed?

-HGVs would generally follow the B4011 north towards Bicester/ Banbury via the M40
-Farm vehicles would come from different directions, often using farm tracks
-On the whole, our vehicle movements will be timed to avoid peak traffic periods (8-9AM, 5-6PM)
-Construction traffic would predominantly come from the north

## How much traffic passes the site currently?

-According to a study carried out by Auto Survey's Limited in February 2022, the B4011 sees 4,874 vehicle movements per weekday
-Of these, 127 were classified as HGVs, equating to approx. 3% of the total traffic volume

## How many vehicle movements will the site require?

-The site would require 3 HGV trips per day (2 for carrying biomethane, 1 for CO2)
-For most of the year, the site would see roughly 18 tractor trips per day (not all of them on the road), which equates to 1.5 deliveries each hour
-Silage deliveries would increase in harvest season
-HGV movements are new traffic movements, while most farm vehicle movements are redirections of existing farm traffic

# The Chilton Consultation

•Invite letters were delivered to 223 households and businesses on the 16 May

•49 people attended the exhibition on the day

•So far, we have received 21 responses in total, from a mix of feedback forms received at the exhibition and after, emails and website comments

•29% of responses raised traffic, 20% asked about environment, 12% said it would be beneficial to community, 10% mentioned the visual impact, 7% mentioned odour and noise

•We have contacted Grendon Underwood ward councillors, key cabinet members and the members of the strategic sites committee, plus Greg Smith MP

# Next Steps

## Planning Application

We've carried out an Environmental Impact Assessment that can be found on the Buckinghamshire County Council website.

**Summer 2022**
**Submission of planning application**

**Winter 2022**
**Determination of planning application**

**Spring 2023**
**Start on site if permitted**


acorn
BIOENERGY
Thank You


Anaerobic
Digesters
Chicken Manure
Storage


Silage Clamps