PROPOSED ANAEROBIC DIGESTION FACILITY AT SPRING GROVE FARM, WITHERSFIELD, NORTHWEST OF HAVERHILL, CB9 7SW

Planning Statement

Prepared for: Acorn Bioenergy Limited

SLR Ref: 404.11923.00002 | Spring Grove Green Power
April 2023

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1.0 Introduction

Acorn Bioenergy Limited (Acorn) is applying to Suffolk County Council for planning permission to construct and operate an anaerobic digestion facility on land to the north of Spring Grove Farm, Withersfield, northwest of Haverhill, CB9 7SW. The site location is shown on **Drawing THU-SCR-02**.

1.1 Acorn Bioenergy Limited

Acorn Bioenergy Limited (Acorn) is committed to decarbonising hard-to-abate sectors by unlocking the potential of biogas (biomethane) production in the UK. It plans to make an immediate impact by reducing the use of fossil fuels and in turn, reducing transport, industry and agriculture carbon emissions by 2023.

Acorn creates and procures biogas from anaerobic digestion (AD) facilities in the UK and upgrades it to biomethane (similar to natural gas) for use as fuel. It operates a 'hub and spoke' model, creating and then transporting biomethane from farm-based AD facilities to a central gas depository, utilising biomethane-powered trucks. The carbon negative biomethane will be directly used as an alternative fuel to power vehicles and injected into the national gas grid to create renewable heat.

The use of biomethane in 'hard-to-abate' sectors is a critical step in the world's journey to carbon net zero. It is a mature and well understood fuel that can be used today while hydrogen and electrification solutions are developed. It has been shown that running an HGV on biomethane delivers a reduction of equivalent carbon emissions of more than 70% compared against diesel-fuelled HGVs.

1.2 SLR Consulting Limited

SLR is a Registered Environmental Assessor Member of the Institute of Environmental Management and Assessment (IEMA) and holder of the EIA Quality Mark (http://www.iema.net/qmark). SLR is also a Registered Organisation validated by the Institute for Archaeologists (IfA), a member of the Association of Geotechnical and Geo-environmental Specialists, and a Landscape Institute (LI) Registered Practice Member and a Member of the Anaerobic Digestion and Bioresources Association (ABDA).

The company has significant experience in the preparation of planning applications and undertaking EIA for a wide variety of projects, including waste, minerals, renewable energy and infrastructure developments.

Further information on SLR can be found on its corporate website at www.slrconsulting.com.

1.3 Summary of Proposed Development

The application proposal is as follows:

> *"The construction and operation an anaerobic digestion facility, associated infrastructure and new access road on land at Spring Grove Farm, Withersfield, Suffolk.''*

The proposed development would comprise approximately 12.5ha (for the main site) and 1.5ha (for the remote lagoons) of developable farmland at approximately 85-100m north of Spring Grove Farm, NGR TL 63984 46977. An area of hardstanding would need to be constructed under the primary components, in addition to the upgrade of existing access via the A1307.

The proposed development would accept in the region of 92,000 tonnes per annum of feedstock per annum from the applicant's landholding and local farms, which would undergo a process of controlled decomposition (anaerobic digestion) within the Anaerobic Digestion (AD) facility. This anaerobic digestion generates biogas

which is upgraded on site into biomethane, before being removed by tanker to a central facility for injection into the national grid. The AD facility would have the capacity to produce approximately **9,773,133Nm^3** of biomethane per annum.

The feedstock would typically comprise the following:

- energy crops such as silage, rye, maize and grass;
- straw; and
- poultry litter and farmyard manure.

The proposed feedstock would be c.60% crops and c.40% agricultural by-products (e.g. manures). The crops (which includes straw and silage) would all have an economic value and therefore could not be considered to be waste. There are no foodstuffs included in the proposed feedstock mix.

In addition to the biomethane, the AD process also produces a nutrient rich solid fertiliser and soil conditioner and a liquid fertiliser (digestate), which would be used on local farms in place of raw manures and artificial fertilisers. The digestate is a product of the AD process and has a value as a fertiliser so also could not be considered to be waste.

The AD process would also result in the production of carbon dioxide (CO_2) as a natural by-product. This by-product is usually vented by AD plant operators, for whom the main goal is the production of biomethane. However, as CO_2 is a precious resource, the proposed AD plant would be fitted with equipment to upgrade the CO_2 to 99.9% purity, suitable for almost all industrial and commercial applications in the UK. Upgraded CO_2 would be liquefied and transported by road to end users within the market area. The proposed AD facility would capture approximately 13,500 tonnes of CO_2 a year.

The AD facility is essential an energy-generating station, designed to derive energy from a feedstock, not a waste processing facility. Given the proposed mix of feedstock products, this application should not be considered a waste application.

1.4 Rationale for the proposed development

The UK is committed to transitioning to a low carbon economy. The Climate Change Act sets out a legal requirement for the UK to achieve 'net zero' carbon emissions by 2050. Government advice is that increasing the amount of energy from renewable and low carbon technologies is important to:

- help to make sure the UK has a secure energy supply;
- reduce greenhouse gas emissions to slow down climate change; and
- stimulate investment in new jobs and businesses.

In March 2019, Suffolk County Council declared a 'Climate Emergency' with councillors pledging to take local action to contribute to national carbon neutral targets through the development of practices and policies, with an aim to being carbon neutral in the County by 2030, and those of their residents and businesses by 2045 - five years ahead of the UK government's 2050 target.

The proposed AD facility would contribute green, carbon negative energy and support the achievement of the UK Government's and Suffolk County Council's targets for achieving net zero by 2050 and 2045, respectively.

Unlike many other renewable energy technologies, the proposed development produces energy in the form of a gas rather than electricity, which allows it to fulfil a somewhat different and complementary function to other technologies:

- **Renewable energy production** – The proposed AD plant would produce biomethane which could be used directly to heat homes and fuel vehicles. The proposed development would provide enough

green gas to meet the heating demand of 7,650 UK households[1]. In comparison with standard UK grid emissions, the biomethane produced by the AD facility would have an equivalent saving of 31,320 tonnes of CO_2 each year, equivalent to taking nearly 21,000 cars off the road.

- **Stable energy production** – Unlike other forms of renewable energy, AD plants produce consistent and predictable quantities of biogas irrespective of weather conditions and daylight.
- **Energy self-sufficiency** – The UK is expected to be partially dependent on gas, for many years. The Russian invasion of Ukraine has bought into sharp focus how reliant Europe and the UK is on imported gas. The UK currently imports 52% of its gas from overseas and the current crisis has highlighted the need for greater self-sufficiency.
- **Fuel poverty** – The rapidly rising cost of fuel in the UK is impacting on the welfare of large numbers of people across the country. Development of additional supplies of gas within the UK will help protect against inflationary energy prices.

As mentioned above, biomethane is only one of the products of the AD process, the other products being organic fertiliser and CO_2. The benefits of these products can be summarised as follows:

- **Organic fertiliser** – Digestate is a nutrient-rich liquid biofertiliser used as a renewable fertiliser. It has high availability of crop nutrients and is an excellent direct alternative to artificial fertilisers, avoiding the use of artificial carbon-intensive compound fertilisers created from natural gas and from mining phosphate and potash fertilisers. In addition to improving crop yields, digestate can improve soil health; healthier soil can store more carbon, as well as support a more diverse ecosystem. As the proposed development is farm-based, with the AD facility being developed in partnership with local farmers, the facility would supply its agricultural partners with the organic fertiliser produced at the AD plant; this is used not only on energy crops used to supply the AD facility but also on crops for the wider food supply chain. The digestate can also be used on pasture land to help to improve grazing for dairy farmers. An added benefit of the digestate is that it is considerably less odorous than the undigested slurries and manures typically spread on land.
- **CO_2** - This is normally considered to be a by-product of biomethane production and is normally vented off by AD plant operators. The applicant considers that CO_2 is a precious resource for many industries. At present, the UK is over reliant on one specific industry and supplier for CO_2 and these businesses are vulnerable to high energy costs.

Strengthened resilience of CO_2 supply in the UK will help bring stability to an industry which is currently severely exposed to international energy pricing (resulting in two recent major supply shortages in 2018 and 2021-2022) which led to food shortages in supermarkets. Local supply from AD plants helps stimulate the local economy, enabling parts of the country far from existing sources of CO_2 production to access supply. CO_2 production at the proposed AD facility would be constant, predictable, and reasonably-priced. The capturing and upgrading of CO_2 at the proposed AD facility is highly energy efficient and would result in an overall carbon intensity that is very low or even carbon negative.

Other benefits of the proposed development include the following:

- **Support to the local economy** - The proposed development would benefit local farmers as it would ensure consistent offtake of agricultural residues, some of which are difficult to manage. Farmers working in partnership with the AD facility would grow crops for the facility which gives them a wider range of viable crop rotations and agronomical planning options. The multi-year crop rotation cycle would ensure diversity on the farm, which benefits soil fertility. These benefits will provide farmers with economic stability at a time when agricultural costs are rising, farming subsidies are being

[1] based upon useage of 14.1MWh/y per household

phased out and farmers are being squeezed by supermarkets on price. With regard to the wider community, the proposed development would draw from the local supply chain for a wide range of goods and services, thereby directly supporting individuals and companies providing jobs and services in the local area.

- **Agricultural health** - At present British agriculture is looking for a means of solving two crippling issues, that of the weed black-grass and finding a 'break crop' (a crop that can be placed in a wheat rotation to reduce pests and diseases) following cabbage flea beetle issues with oilseed rape:
  - **Black grass** (Alopecurus myosuroides) is one of the biggest challenges to profitable arable farming in the main wheat growing areas of the UK due to increased herbicide resistance with many areas suffering a 13% yield loss in cereals. The use of the AD silages within the famers crop rotations can dramatically help to control this weed and hence minimise its impacts on following wheat crops.
  - **Oilseed rape** is the standard break crop grown in British agriculture and has come under pressure over the last few years. Flea beetle has always been a pest in oilseed rape, but some farmers have been forced to drop the crop after the neonicotinoid seed treatment ban commenced in April 2018. This seed treatment helped control the flea beetle but also had a detrimental effect on bees. Use of energy crops destined for the AD plant as break crops can form an alternative economically viable solution to assist oilseed rape production.
- **Agricultural diversity** - Inserting silage crops within the wheat rotation leads to a more diverse number of crops being grown, having benefits outside of greater crop yields. It has several benefits for soil and crop systems: lower incidence of weeds, insect pests, and plant diseases, as well as improvements of soil's physical, chemical, and biological properties. Improvements in the soil's physical properties include better water holding capacity and aggregate stability, whereas the improvements in the biological properties include an increase in organic matter, which replenishes soil nitrogen and carbon. Crops grown in rotation reduce greenhouse gas emissions because of the lower amount of nitrogen fertiliser needing to be added.
- **Biodiversity** - Wider benefits also occur where organic fertiliser (digestate) replaces artificial fertilisers in terms of the wildlife living within the cropping area, with demonstratable benefits to soil invertebrates, insect numbers and diversity, leading in turn to larger and more diverse mammal and bird populations.

1.5 Screening Opinion

SLR submitted a formal request for a Screening Opinion, in the form of an EIA Screening Report, to Suffolk County Council in September 2022 and the screening opinion (ref SCC/0100/22W/Screen) was received on 14 October 2022. This confirmed that the development comprises EIA development and that any application for planning permission must be accompanied by an Environmental Statement (ES).

During SCC's consideration of the Screening decision, SLR work continued on a range of technical assessments and the conclusions of the technical work refined the information which had been included in SLR's Screening Report. The finalised technical reports concluded that the impacts of the proposed development could potentially be significant for Landscape and Visual.

SLR have prepared a full Environmental Statement (ES), prepared in accordance with the EIA regulations. This considers:

- Noise
- Landscape and Visual Impact

- Traffic
- Air Quality
- Ecology
- Land Quality
- Hydrology
- Archaeology and Heritage
- Other Environmental Effects

Appropriate reports and assessments have been undertaken to cover other technical considerations and disciplines, which found that the impacts of the proposed development would not be significant and have therefore been 'scoped out' of the EIA. Notwithstanding the above, the results of the technical reports have been integrated and considered within the ES and factored into the other planning application documents such as this Planning Statement.

1.6 Environment Agency engagement

All AD facilities in England that treat waste feedstocks such as manures are subject to the Environmental Permitting Regulations (England and Wales) 2016, regulated by the Environment Agency. Following the grant of planning permission, an application will be submitted to the Environment Agency who will check to ensure the site design meets the required design standards and that it will be operated to 'Best Available Techniques'.

The permit will ensure the site is operated in a manner which meets the regulatory requirements of:

- Best Available Techniques (BAT) for Waste Treatment guidelines published by the European Commission including Associated Emissions Limits (AEL);
- Biological waste treatment: appropriate measures for permitted facilities (EA 2022);
- The Industrial Emissions Directive (2010).

There will be a written and auditable environmental management system in place that will be followed by all site personnel to prevent risk to the environment from all site operations. In operational terms this will ensure the following:

- The working practices and operational procedures of the plant are appropriate and regulated;
- Emissions to the environment will be controlled and regulated to within specified limits;
- That auditable records are kept of all aspects of permit compliance;
- That daily checks are carried out to ensure efficient operation of the plant and compliance with the permit;
- That the site is managed by a fully trained and Technically Competent Manager (TCM);
- That all staff and contractors working on site are fully trained and competent to carry out tasks on site.

Acorn Bioenergy is working with Earthcare Technical Limited to apply for the environmental permit. Following an initial technical review of the site, pre-application advice was sought from the Environment Agency (Ref: EPR/JP3844QH/A001). The Environment Agency have responded to this and provided advice on specific local wildlife sites that will require consideration in terms of air quality and the potential impact of emissions during the permitting process.

Owing to the presence of local drainage features that link to local water courses, and of a section of Deciduous Woodland to the south of the site which is a BAP (Biodiversity Action Plan) Priority Habitat within 50m of the site boundary, the proposed Spring Grove Farm anaerobic digestion site will require a Bespoke Permit. This requires

that more extensive and detailed information is provided to the Environment Agency for their technical consideration to provide reassurance that these sensitive receptors have been carefully considered in the site design and proposed future operations. This process is separate to the planning approval system, but all these issues are fully considered in line with planning requirements in this application.

Acorn Bioenergy will operate the site in full compliance with their environmental management systems, the environmental permit and following best practice. They will ensure the plant is also compliant with the Anaerobic Digestion Quality Protocol, the Biomethane Quality Protocol and the British Standards Institute Publicly Available Specification for Digestate (BSI PAS110).

1.7 Pre application public engagement

Following the preparation of draft technical reports and a draft site layout, the applicant engaged Public Relations company Instinctif Partners to coordinate all public consultation. This included a public exhibition which took place at Withersfield Village Hall, Turnpike Hill, Withersfield on the 14th September 2022. Prior to the event, 1865 households were contacted by letter and 108 people attended.

Elected members from the district Council were contacted prior to the public exhibition, and meetings were held with local Parish Councils. Members of Suffolk County Council and Withersfield Parish Council were invited to visit an operational AD facility, Euston Biogas in Thetford, in November 2022.

In addition, Instinctif Partners carried out a community survey over two days on 23rd and 24th February in Withersfield and Haverhill, knocking on doors. A total of 196 responses were received across the survey area.

A separate Statement of Community Involvement (SCI) accompanies this application and details the consultation undertaken and issues raised in full, however in summary, there was some support for the proposed development as well as some concerns. These concerns were primarily:

- traffic congestion;
- odour;
- proximity to residents; and
- health and safety and flooding.

The feedback received during the consultation event have been taken into consideration during the preparation of this planning application.

1.8 Planning Submission Package

The planning application submission package comprises the following:

- **Planning Statement** (this document) with the following supporting documents:
    - Air Quality Assessments
    - Arboricultural Implications Assessment (CBA Trees, September 2022)
    - Biodiversity Net Gain Assessment
    - Environmental Statement (incl. Non-Technical Summary)
    - Great Crested Newt Survey
    - Heritage Desk Based Assessment
    - Landscape and Visual Impact Assessment
    - Lichen Survey

  - Lighting Assessment (Strenger, July 2022)
  - Preliminary Land Quality Risk Assessment
  - Riparian Mammal Survey Report
  - Statement of Community Involvement
  - Transport Statement
  - Utilities Statement
- Planning application drawings;
- Application form and certificate(s).

1.9 Report Structure

The remainder of this Planning, Design and Access Statement (PDAS) comprises the following Sections:

Section 2 Site and Surroundings: describes the location, setting and physical characteristics of the site, describes baseline features in and around the site and outlines the site history;

Section 3 Application Rationale: explains the rationale for the proposed development, describes the site selection process, and sets out the design parameters;

Section 4 Proposed Development: provides a process description, describes the AD facility and ancillary infrastructure;

Section 5 Environmental Considerations: describes the specialist environmental studies that have been carried out and summarises their findings. This section is supported by technical reports;

Section 6 Planning Policy: identifies the development plan and considers material considerations;

Section 7 Planning Balance; and

Section 8 Conclusion

2 Site and Surroundings

2.1 Application Site

The application site comprises the main AD plant site, north of the A1307 at Spring Grove Farm, near Haverhill, and an off-site lagoon storage area to the north. The main plant will be connected via underground pipework to an offsite lagoon storage area, which lies approximately 3km north of the main AD plant site.

The main AD plant site comprises two adjoining arable fields at Spring Grove Farm, approximately 9.3ha of which at Bowsey Field (to the west of the main access) and 3.2ha at Spring Grove Field (to the east of the main access). Bowsey Field would be the primary area assigned to the proposed development with a marginal overlap into Spring Grove Field to accommodate some of the lower-level infrastructure. Both fields are Grade 2 agricultural land on Natural England mapping [2].

The fields are bounded by established trees and hedgerow of varying density to the north and west, and a tree belt of substantial depth extends along southern boundary (approximate depths of between 75m-122m). The Stour Brook runs west to east to the south of the Site within the tree belt which eventually feeds into the River Stour and is crossed by an existing bridge which enables access to the fields. The Site lies on gently sloping land, which falls to the south west.

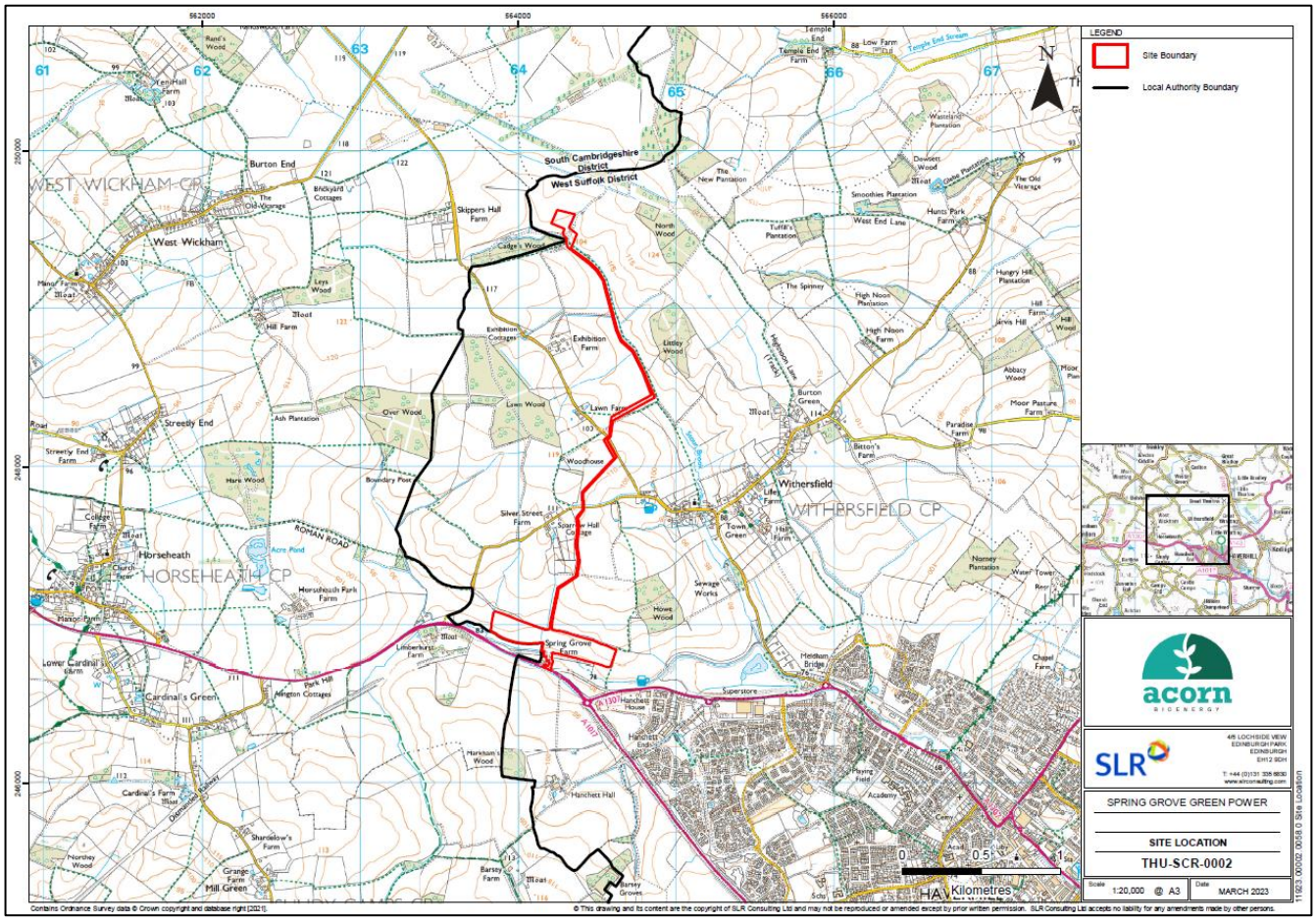
The pipeline will run in a northwards direction, and will carry liquid digestate to two offsite lagoons for easy offtake. The pipe extends to 3,055m and zig-zags across fields, following field boundaries where possible but avoiding hedgerow and tree root protection areas. The pipeline crosses Silver Street and Skippers Lane, running north alongside Stour Brook before crossing existing tracks to meet the offsite lagoons.

The lagoon site extends to approximately 1.5 ha and will be accessed via farm tracks from the east and west, which easily connect to the wider Thurlow estate. It is currently agricultural land, near the former Wratting Common airfield which was located to the north east. A woodland, Cadge's Wood, is located to the south west.

The main site access will be achieved from the existing Spring Grove Farm access off the A1307 Cambridge Road, which connects Haverhill and Linton, with farm tracks used to access the offsite lagoons.

[2] ALC Grades (Provisional) Maps © ADAS & Defra

Figure 2.1: Site Location Plan



2.2 Surrounding Area

Spring Grove Farm is part of the Thurlow Estate, and lies on the rural outskirts of Haverhill, a market town in West Suffolk. The site lies approximately 2km north west of the town centre. The site falls within the administrative boundaries of West Suffolk Council and Suffolk County Council. Cambridge lies approximately 17km to the north west and Bury St Edmunds 26km north east.

The area surrounding the proposed development is primarily rural agricultural land, with isolated commercial and residential properties. To the south east, an employment site (The Epicentre) is located on the junction of the A1307/A1017 with Hanchet End, with Haverhill Research Park, incorporating a pub and nursery further to the east. Beyond lies a suburban residential area, is located at approximately 500m to the southeast of the proposed development. Withersfield, a small hamlet, is located approximately 1km northeast of the main AD plant site, and approximately 600m to the east of the buried pipeline route.

Despite a connected location on the north west fringe of Haverhill market town, the wider area forms an expansive complex of agricultural estate interspersed with woodland copses and scattered hamlets.

The closest residential property is Spring Grove Farm and associated buildings adjacent to the site access. These buildings will used as offices and not residential properties should planning permission be granted, for the AD plant operations, and are subsequently not considered to be residential receptors for the purposes of environmental assessment. Residential receptors to the west are at approximate distances of 320m, 400m and

406m. To the east, residential receptors are present from approximately 600m from site boundary. To the north the nearest residential receptors are located on Silver Street approximately 650m from the site boundary.

The extent of the PRoW network is limited within the 5 km of the Site. A footpath runs along the western edge of Howe Wood and to the east of the Site, terminating at the A1307. The Icknield Way Trail and Harcamlow Way both run to the west of the Site with the Stour Valley Path running roughly north south adjacent to the site.

2.3 Site Planning History

No planning history is indicated for the site, as shown on the West Suffolk Council or Suffolk County Council planning portals which includes records since 2006.

3.0 Application Rationale

3.1 Site Selection

AD facility location is primarily driven by the key objectives of a rural location with good access to the local transport network and established feedstock providers whilst also ensuring that primary infrastructure components, specifically the digester dome tops, are well-screened to retain the characteristic rural amenity of the surrounding landscape. The key constraints which were taken into account during the design process included:

- landscape character and visual amenity;
- location of residential properties – proximity to noise sensitive receptors;
- presence of protected habitats and species;
- potential for traffic, transport and access effects;
- presence of archaeological and cultural heritage features;
- presence of watercourses and associated flood risk (including surface water);
- key recreational routes and other land users; and
- presence of existing utilities including power lines, pipelines and telecommunications links.

In addition, Acorn's site selection required the site to:

- be within close proximity to the primary sources of feedstock including energy crops and manures produced on the surrounding agricultural land;
- be within sufficient proximity to the local road network for feedstock deliveries and biomethane, CO2 and digestate removal;
- have local power grid connection as a back up to the on-site electricity generation; and
- be capable of meeting planning and environmental criteria top avoid adverse amenity impacts, visually screened where feasible from sensitive views, and minimising impacts on flora and fauna.

Additionally, the best and most versatile agricultural land should be avoided, as should land at risk from flooding. The application site meets the criteria set out above and although the site is classified as Grade 2 agricultural land. The site also has a low flood risk, located in Flood Zone 1.

Given the criteria for site selection, two other sites within the Thurlow Estate's landholding was considered suitable at the screening stage prior to the selection of the application site. These sites were located to the north of the application site, one near to the former RAF Wratting Common airfield and one north of Silver Street. However the sites were not taken forward as neither site had HGV suitable access, given their location via narrow farm tracks and lanes. The sites were also some considerable distance from the A-road network, which would have resulted in vehicles going to and from the site would have had to pass through a number of villages to access the A-road network, which was considered inappropriate.

Once the application site had been identified as suitable in principle for the proposed development, the following assessments took place:

- Initial phase 1 desk-based screening of the site and surrounding study area (up to approximately 5km) to identify site constraints and opportunities;

- More detailed phase 2 Environmental Impact Assessment Screening opinion, whereby all potential constraining environmental factors were considered across a range of technical disciplines, including site surveys where appropriate.

The output from the technical appraisals has been fed into the engineering design and layout of the proposed development through an iterative process involving preliminary technical reporting, informed by consultation guidance from the Council, where this was available, workshop sessions, and design evolution. Advanced survey, assessment and specialist reporting has also been progressed where constraints have required further clarification, i.e. a geophysical survey to inform the proposed site layout.

3.2 Design Principles

The layout and design of the proposed development was considered as part of an iterative design process aimed at reducing the potential environmental effects, whilst accommodating operational and commercial requirements.

3.2.1.1 Embedded Mitigation

Considerable efforts were made to produce a Site layout which achieves the most satisfactory relationship with the landscape of the Site whilst respecting other environmental and technical considerations. During the EIA Screening process, the multi-disciplinary team met to discuss the various issues which were identified as part of the initial constraints screening process. The team identified the optimal locations for each type of infrastructure component, i.e. electrical, CHP, digestors, inert rainwater lagoons, digestate lagoons etc.

Mitigation of the potential effects of the proposed development has been predominantly incorporated through the iterative design process. Changes made as a consequence of this iterative design process, i.e. to account for archaeology, tree root protection zones, access and impact on residential properties is considered to be embedded mitigation.

The findings of the technical and environmental studies undertaken for the planning application were used to inform the design of the proposed development, and hence achieved a ‘best fit’ within the environment of the proposed Site.

In summary, the proposed development Site has been identified as occupying a suitable and sustainable location for the development of an AD facility and associated infrastructure, close to the primary sources of feedstock and well located for access to the A43.

4 Proposed Development

4.1 Overview

This planning application seeks planning permission for the construction of an AD facility for the generation and capture of biomethane, including the main AD facility site, pipeline and offsite digestate lagoon. The proposed development includes an upgrade to the existing A1307 access.

The site includes two adjoining arable fields which will contain the main AD facility plant and works. A 3km pipeline will connect the main site to an offsite digestate lagoon location to the north, which would allow offtake of digestate and direct transfer to adjoining fields.

The proposed development would accept in the region of 92,000 tonnes per annum of feedstock from local farms, and through the process of anaerobic digestion, would produce biogas that would then be upgraded to biomethane before being removed from the site by tanker to a central facility where it will be injected into the national grid for general gas consumption.

The AD facility would have the capacity to produce approximately 19,735,050 Nm^3 of biogas per annum; this results in approximately 9,773,133 Nm^3 of upgraded biomethane. This is equivalent to the household heating demand of 7,650 households (based on 14.1 MWh/y per household). Equally the AD plant would save over 31,000 tonnes of CO_2e (compared to using natural gas), equivalent to that created by nearly 21,000 cars.

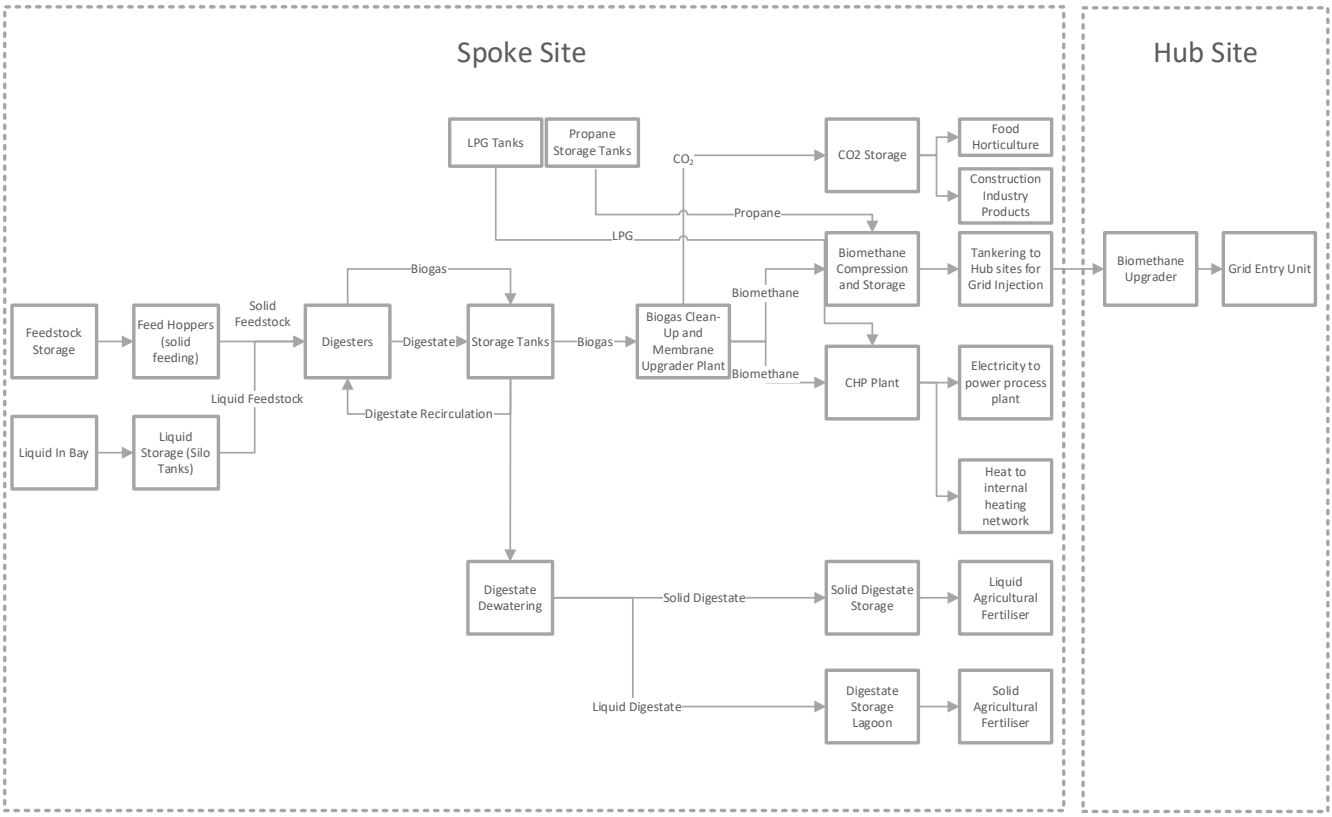
A second output of the anaerobic digestion process is digestate, which would be used on local farms in place of raw manures and artificial fertilisers.

The AD process would also result in the production of a CO_2-rich natural by product. This is normally vented by AD plant operators, where the main goal is the production of biomethane. However, Acorn sees this natural by product as a precious resource, and all their AD plants will be fitted with equipment to upgrade the CO_2 to 99.9% purity, suitable for almost all industrial and commercial applications in the UK. Upgraded CO_2 will be liquefied and transported by road to end users, ideally located locally.

4.2 Process Description

Figure 4- 2 presents the AD process, which is further explained in the text below.

Figure 4-2 AD Process Diagram



The feedstock would be brought to the AD facility from the applicant's land and surrounding farms using tractors and trailers and HGV or tankers, depending on the type of feedstock. All vehicles would access the site via the weighbridge, where the weighbridge operator would record the type of feedstock and tonnages.

An indication of the likely feedstock is set out below. However, it is important to note that the availability of different feedstocks can fluctuate as a result of local and national economic conditions. For example, livestock units are currently very vulnerable to high feed and energy costs and low meat prices. Therefore, the volumes of locally available farmyard manure and litter may be reduced at certain times during the operation of the AD facility. For this reason, it will be important not to restrict any planning permission to specific amounts of specific feedstocks.

- silage (rye, maize and grass silage;
- straw;
- farmyard manure; and
- poultry litter.

4.2.1 Feeding System

Feedstock would be unloaded into the three silage clamps, the manure shed and the straw bunker as appropriate.

Crop silage and grass would be unloaded and stored in the silage clamps, which would be constructed with pre-cast concrete sloping wall panels that are filled with earth for additional strength. The clamps will have a hard wearing and acid resistant rolled asphalt floor and be fitted with a protective sheet to preserve the feedstock and reduce odour. The clamps will have a liquid drainage and collection system for dirty liquid run-off and this would be pumped directly into the buffer tanks for feeding back into the process. Loading shovels would be used to transfer the crop silage from the clamps to the feed hoppers, which would be equipped with walking floors.

Loading shovels would also be used to transfer feedstock from the manure shed and straw bunker into the feed hoppers.

The macerator would mechanically crush, homogenise and defibre the solid feedstock through shear forces rather than shredding. The feed screw pump also functions as a mixing pump, allowing captured rainwater or digestate required for dilution to be mixed with feedstock. Use of a macerator for pre-processing improves the digestibility of the solid feedstocks. The processed straw will then be fed into the digestion tank.

Liquid feedstock would be transferred from a tanker through the liquid in-bay to a series of liquid feedstock storage tanks via the tanker connection point. Liquid feedstock would be transferred from the liquid feedstock storage tanks to the digester via a transfer pump.

4.2.2 Digestion

Within the series of digester tanks, the feedstock would undergo anaerobic digestion, a sequence of processes by which microorganisms break down the feedstock material in the absence of oxygen. Material in the feed hoppers and liquid feedstock storage tanks would be transferred to the digester tanks where it would remain for a minimum of 50 days to maximise the biogas potential from the feedstock.

Each digester would be equipped with submersible mixers to create uniform mixing. There would be a series of pipework entering and leaving the digesters including substrate, digestate, biogas, air, liquid digestate recirculation, and condensate. An optimum temperature of between 38-42^{o}C would be maintained within the digesters through use of the internal heating system which would be supplied with heat from the on-site CHP via the heating manifold. Digestate would be heated to a temperature of 70 ^{o}C for 1 hour in the pasteurisation plant to enable compliance with the BSI PAS 110 standards for digestate products.

The digesters would be fitted with a double layer, self-supporting membrane dome to store the biogas. The membrane dome would be supported at all times by use air blowers to inflate the void between the two membranes.

From the membrane domes, the biogas would be pumped into the gas cleaning unit, so that it is suitable for injection into the gas grid.

4.2.3 Storage and Digestate Separation

The digestate held within the storage tanks would be transferred to the digestate separation process for dewatering. The digestate would be temporarily stored in a header tank for flow regulation before being transferred to the screw presses via a series of screw pumps. The dewatered digestate would be stored in a series of lagoons with 3 lagoons on the east of the main site, each with a capacity of 10,000m^3 (total capacity 30,000m^3). Digestate would also be piped to two further offsite lagoons to the north to enable direct transfer of digestate to local fields, which have a capacity of 11,500m^3 (total capacity 23,000m^3). The lagoons will comprise a reinforced HDPE liner with a floating HDPE cover, with a leakage detection and geotextile protective lining, which will sit within a bunded earthen lagoon wall, with a free board of 750mm. The lagoons are designed to cumulatively hold over six months' of storage. This will ensure the agronomic benefits of the odourless digestate are maximised for local arable crop rotations and will be in full accordance with Environment Agency regulations and best practice guidelines.

The liquid digestate would be stored on site until it can be used as an agricultural fertiliser on surrounding land. This reduces the need to import artificial fertilisers. The solid part of the digestate would be dried and exported by tractor and trailer for use on surrounding farmland. In addition, the potential to provide pipelines directly to enable spreading on neighbouring farmland is being investigated. This would enable the digestate to be piped directly to the land upon which it can be spread, avoiding the use of road transport. From there it could be spread with an umbilical system at the appropriate times of year.

4.2.4 Biogas Clean-up and Membrane Upgrading

Biogas held within the storage tanks would be processed through the biogas clean-up plant. The biogas clean-up and membrane upgrading plant would remove impurities within the biogas stream to produce biomethane and carbon dioxide. Contaminants include hydrogen sulphide, carbon dioxide and water vapour.

There would be sulphur nets in each digester which would convert hydrogen sulphide to elemental sulphur. Pre-treatment to remove contaminants would be required prior to biogas entry into the CHP and gas upgrader to remove contaminants.

The next step in the upgrading process would be to convert water vapour present in the biogas stream into a liquid through a condenser. In the condenser, cold utility fluid would be used to decrease the temperature of the biogas, promoting condensation of water vapour. Water vapour removed from the biogas would flow to the digestate storage lagoons.

Lastly, a membrane upgrader would be used to separate the methane present in the biogas from the carbon dioxide by only allowing methane molecules to pass through a permeable membrane, based on the operating conditions and membrane specification. Carbon dioxide would be recovered and stored onsite for offtake by end users in the food horticulture and construction products industries. Water vapour removed from the biogas would flow to the digestate storage lagoons.

4.2.5 Electricity Generation

The CHP plant would comprise two CHP units. One CHP would be fuelled by biogas produced from the upgrader and produce 0.9 MWe and the other would be fuelled by natural gas, producing 2.0 MWe. Heat produced from the CHP plant would be diverted to the digesters through the Site's heating manifold to improve process efficiency.

4.2.6 Biomethane Storage, Transport and Upgrading

Biogas held within the storage tanks would be processed through the biogas clean-up plant. The biogas clean-up and membrane upgrading plant would remove impurities within the biogas stream to produce biomethane and carbon dioxide. Contaminants include hydrogen sulphide, carbon dioxide and water vapour.

Sulphur nets will be placed in each digester which would convert hydrogen sulphide to elemental sulphur. Pre-treatment to remove contaminants would be required prior to biogas entry into the CHP and gas upgrader to remove contaminants.

The next step in the upgrading process would be to convert water vapour present in the biogas stream into a liquid through a condenser. In the condenser, cold utility fluid would be used to decrease the temperature of the biogas, promoting condensation of water vapour. Water vapour removed from the biogas would flow to the digestate storage lagoons.

Lastly, a membrane upgrader would be used to separate the methane present in the biogas from the carbon dioxide by only allowing methane molecules to pass through a permeable membrane, based on the operating conditions and membrane specification. Carbon dioxide would be recovered and stored onsite for offtake by end users in the food horticulture and construction products industries. Water vapour removed from the biogas would flow to the digestate storage lagoons.

Any excess gas which cannot be used in the CHP plant, storage and transport, or through the grid entry unit would be fed back through the domes and captured. An emergency gas flare would be installed, 10m from all structures and planting. The purpose of the emergency flare is to prevent build up of pressure in the gas store in the event of a breakdown or power cut. This is required because the AD process is based around bacteria which will continue to create biogas even in the unlikely event of a breakdown or power cut. The gas flare will be completely shrouded and will meet Environment Agency Best Available Technology Guidance. The gas will burn

at 1,000 degrees centigrade to prevent air pollution and the flame will be completely hidden from view. It will only be used when the CHP and the gas clean-up equipment is undergoing scheduled maintenance or in case of break down or emergency.

4.2.7 Water Management

As the AD process can be water intensive, the proposed AD facility would capture as much rainwater as possible for use in the process. Based on annual average estimates, rainwater capture is expected to be sufficient for approximately 70% of the process water demand. Two primary drainage systems will be adopted, for the clean (surface water runoff) and contaminated (foul) water systems.

Accordingly, the Site has been designed to have a clean lagoon (attenuation pond) to store rainwater and clean surface water runoff. Water would be pumped from the attenuation pond (rainwater lagoon) back into the AD process or if necessary, could be discharged at a controlled rate into the nearest watercourse. A swale has been incorporated into the site design for the effective discharge of surface waters to ground, conveyed from the associated hardstanding.

4.2.8 Operational Hours

The AD process involves a biological process that is continuous. The processing plant would therefore be operational 24/7. The facility would be staffed by up to five full time equivalent (FTE) members of staff on-site during the hours of 07:00 – 18:00 Monday – Sunday, except during peak harvest periods when working hours would be extended as necessary. A supervisory control and data acquisition (SCADA) system would monitor the facility overnight when it is not manned.

Deliveries of crops to site would be determined by the harvest. Harvests are ordinarily completed on a campaign basis, therefore during the peak harvest periods, delivery hours would be in line with standard agricultural harvest-time activity.

Vehicle movements relating to delivery of agricultural by-products and export of digestate would generally be limited to the following hours:

- Monday – Friday 07:00 – 18:00; and
- Saturday 07:00 – 13:00.

Biomethane collection and export would take place approximately twice each day 24-hour period. CO_2 would be subject to one offtake by road tanker a day, including Sundays.

4.2.9 Site Construction

The construction process would be managed to ensure minimum disruption during the construction period. The process would be managed in accordance with construction good practice including the recommended management and mitigation measures out in the relevant technical reports accompanying this planning application. All appropriate health and safety management systems would be put in place.

A Construction Traffic Management Plan (CTMP) would set out measures for managing the following:

- setting out of site entrance and interface with traffic on the A1307;
- construction of internal access roads from the south and the north;
- traffic management including routeing and timing of deliveries;
- protection of trees and hedges;
- provision of parking and turning areas within the site;
- signs and instructions; and
- visibility.

It is expected that construction of the proposed development would take approximate 70 weeks and require up to 100 onsite construction workers during the peak construction phase. Approximately 350 HGV deliveries would be required during the construction of the proposed development. This would equate to an average of approximately 1 delivery per day, with a projected maximum at peak times of no more than five HGVs accessing the site per day (10 two-way movements per day).

It is proposed that construction activities, including deliveries, would be limited to 7am to 7pm Monday to Friday, with reduced hours on Saturday for the duration of the construction period. There would be no construction activities undertaken on Sundays or bank holidays without prior approval, unless in the case of emergency.

The AD facility would generate approximately 100 FTE jobs spread over the construction period and five FTE jobs during operation. The temporary increase in employment and the associated secondary economic effects such as supply chain multiplier effects, and spend on local services, would have positive effects at a local level during the construction phase.

4.3 Description of Components

The primary components of the proposed development are shown on the accompanying drawings and would include the items of plant set out in Table 4-1:

Table 4.1
Description and Dimensions of AD Facility Components

Element	Description of Equipment/Plant	Dimensions
Liquid Digestate Tanks, Pre-Tanks, Dirty Water Tanks	Storage of liquid feedstocks, dirty water run off to be reused in the process. To be in green or an alternative colour agreeable to the LPA.	Total 3no 8 x 8m^3 and 3 no 6 x 8m^3
Manure Reception Shed	Storage of poultry litter and farmyard manures. To be partly clad in green under a fibre cement roof or clad using an alternative colour agreeable to the LPA.	26.0m x 19.5m x 6m to eaves, 8m to ridge
Straw Building	To be partly clad in green under a fibre cement roof or clad using an alternative colour agreeable to the LPA. Straw storage building including bunker and processing.	54.5m x 16.05 x 6m to eaves, 8m to ridge 18.7m x 16.05m
Silage Clamps (x3)	The three silage clamps will be constructed with pre-cast 3.16m high concrete U-shaped wall panels that are filled with earth for additional strength. The clamps will have a hard wearing and acid resistant rolled asphalt floor. The clamps will have a liquid drainage	Clamp 1,2,3 – 78.75m x 52.5m wide wide x 3.52m high

Element	Description of Equipment/Plant	Dimensions
	and collection system for dirty liquid run-off. This will be pumped directly into the dirty water tanks for feeding back into the process	
Feeder Hoppers (x2)	Feedstock is fed into the feed hoppers as per the sites feeding plan. Once the feed is loaded it exits and proceeds for further feed pre-treatment before pumped to the digesters. To be green or an alternative colour agreeable to the LPA.	3 no, Approx area 220m3 each
Digester Tanks / Fermenters (x5)	Tanks take feedstock, pumped from upstream processing equipment, with sufficient dry matter content. Digester tank configuration allows for a retention time, with the substrate within the digesters mixed by agitators and recirculated. Generated biogas will flow to the digester headspace before treatment to downstream equipment. To be clad in green or an alternative colour agreeable to the LPA.	Storage operational capacity of each 41,000m³; straight wall height of 9m with 7.6m gas dome; 34m diameter; max height approximately 16.6m high
Pasteurisation Tanks	The pasteurisation tanks would treat the fermented feedstock prior to it being pumped into the digestate lagoons.	4 x 25m3 tanks approx. 3m dia x11 m high (top of agitator)
Separator Building	The separator within the building would extract solids from the digestate before it is pumped to the digestate lagoon.	18m x 15m x 6m to eaves, 8m to ridge
On site Digestate Lagoons (x3)	The lagoons will be used to store the liquid digestate until it can be spread on to land. The lagoons will be covered in line with Environment Agency (EA) requirements.	Storage capacity 3 x 10,000m³
Off site Digestate Lagoons (x2)	The lagoons will be used to store the liquid digestate until it can be spread on to land. The lagoons will	Storage capacity 2 x 10,00m³

Element	Description of Equipment/Plant	Dimensions
	be covered in line with Environment Agency (EA) requirements.	
Gas Flare	For infrequent use during maintenance to burn off any excess gas.	Stack height 9m. Flue diameter 2.4m. Footprint 5 x 4m
Biogas Upgrade Unit	To clean and pressurise the gas prior to transfer to the gas grid. CO_2 vent is connected from gas upgrade unit to the CO2 capture Unit	Over footprint 26 x 9m x 3m. (2 no. containers and associated equipment). Vent height 7.5m
CO2 Capture Unit	Captured CO_2 to be sold	Process plant - Approx 10m x 16m x 4.75m
CO_2 Tanks	Storage vessels for captured CO_2	2 no, 13.2m long by 3m diameter by 3.4m high including plinth.
Combined Heat and Power (CHP) Units (x2)	To provide the AD facility with power and heat. The units would be powered by gas from the biogas plant. To be green or an alternative colour agreeable to the LPA. Associated equipment includes heat exchangers and pumping systems	CHP1 –13m x 3m x 3m, stack 9m CHP2 – 13m x 3m x 3m, stack 9m plus, associated equipment
Compressors (x2)	Compression of gas before injecting into road tankers.	Each – 2 no, 13m x 3m x 3m, stack 5m plus associated equipment
Compressed gas storage (x2)	Storage vessels for compressed gas	2 x banks of gas storage, each 6.5m x 3m x 3m
Propane Tanks	The propane tanks will add propane to the biomethane gas as required.	2 x 12.5 tonnes plus associated equipment
Biomethane/CO2 off-take vehicle bay (x5)	Loading bay area for tanker parking	
Containment Bund	Civil engineering works on site related to the primary containment construction, to current CIRIA guidance and recommendations	Circa 9,424m^2
Lagoon offtake bay	HGV bay for extracting digestate	1 no offtake station for HGV

Element	Description of Equipment/Plant	Dimensions
Parking Area	6 bay car parking area for visitor car parking in office area.	
New Site Access Roads	Via the A1307 (utilising existing farm access)	
Pump room container	Contains pumps to facilitate substrate/digestate between the final storage tank and digesters. along with heat distribution systems to main equipment.	1no. inside containment bund and 2no outside containment bund 13m x 3m x 3m
Rainwater Harvesting Lagoon (underground storage crates)	To collect surface run off from the site.	2,000m^3 rainwater lagoon
SCADA Alarm Monitoring Systems	Supervisory Control and Data Acquisition (SCADA) system will provide an interface for the operator to control the plant, and capture/record all data produced by the process.	n/a
Site Boundary Fence	2.4m high v mesh fencing installed around the main core site. Deer/wildlife fencing installed around lagoons. Double leaf vehicle access gates and a pedestrian access gate will allow entry into the Site.	To follow core site boundary and offsite lagoon boundary
Weighbridge and Site Office Welfare Office Unit (x2)	To record incoming and outgoing deliveries	4 x 40ft containers, double stacked at two storeys high.
ASS (evaporator)	Including process plant container on single pad	Circa 15.3m x 12m. 12m High

4.4 Site Layout

The AD facility layout will be as shown on the accompanying drawings. The layout has been designed to provide a safe and efficient working area, whilst also incorporating the required stand off distances from trees, hedgerows and watercourses in the vicinity.

The proposed site layout is shown on the accompanying site layout plan. Access to the main AD plant site will be provided via the existing agricultural and heavy goods access from the A1307. This, along with the existing bridge crossing the railway cutting and brook will be upgraded to accommodate heavy goods vehicles. The access will run northwards from the A1307, with car parking and welfare located at the AD facility site entrance.

The proposed main AD site will consist of approximately 4.0ha of impermeable hardstanding, housing the facility components. Three silage clamps are located to the northwest, and five domed digester tanks, with a max height of approx. 17m are located in a cluster array at the centre west wing of the site, along with the feed hopper tanks. Trailer bays, gas storage tanks and compressors are located at the centre of the site. This facilitates easy delivery of digestate material and collection of biomethane and the associated byproducts.

A manure reception building, straw bunker and straw building will be located to the southwest of the site.

To the east of the site, a 2,000m³ rainwater lagoon is located which will capture water for reuse within the site. Three covered 10,000m³ digestate lagoons are located to east of the site for storage digestate prior to it being tankered off site.

The pipeline will run in a northwards direction, and will carry liquid digestate to two offsite lagoons for easy offtake to nearby fields within the Thurlow Estate, thereby reducing vehicle movements to the north. The pipe extends to 3,055m and zig-zags across fields, following field boundaries where possible but avoiding hedgerow and tree root protection areas. The pipeline crosses Silver Street and Skippers Lane, running north alongside Stour Brook before crossing existing tracks to meet the offsite lagoons. Horizontal directional drilling will be deployed where required used to drill under roads, services and watercourses where relevant, and sufficient clearances have been factored in to ensure safe working and no detrimental impact.

The lagoon site extends to approximately 1.5 ha and will be accessed via farm tracks from the east and west, which easily connect to the wider Thurlow estate. The site will be fenced and secured via security gates. No lighting is proposed as the site will only be accessed during daylight hours. The site will include a surfaced area with sufficient turning space for vehicles. The lagoons are surrounded by an earth bund, and covered. Further information is provided below on the lagoon operation.

4.4.1 Hardstanding

Due to the nature of the proposed development, the majority of the site will form new impermeable area, predominantly formed of the hardstanding footprints of the digester tanks, digestate lagoons, silage clamps and circulation areas.

The site drainage scheme would be designed so that clean water drains to attenuation ponds/swales. Dirty water would be collected and diverted as indicated in the accompanying drainage strategy.

4.4.2 Planting /Landscaping

Topsoil and subsoils stripped from the site would be formed into screening bunds at the eastern end of the site. As well as reducing views into the site from Haverhill and reducing operational noise levels further, the bunds can be seeded with an appropriate wildflower mix and planted with native trees, to deliver biodiversity net gain.

Native hedge and tree planting is also proposed along the western and eastern boundaries where there are clearer views into the site, this will be capable of providing year around screening. This will improve connectivity of the already substantial mature tree belt and existing hedgerow which is sparse along the west and east. Increased vegetative screening of the development along these boundaries will also provide foraging and nesting biodiversity opportunities as part of the proposed development.

Where landscape and visual effects are unavoidable, these will be mitigated against as far as possible through the planting of further trees, hedgerows (where appropriate) or other forms of vegetative screening as well as altering management regimes to attain greater heights in vegetation.

4.4.3 Fencing

The AD facility would be enclosed by means of Protek anti-climb fencing around the core site (or similar). Deer/wildlife fencing would be installed around the perimeters of the lagoons. Double-leaf vehicle access gates and a pedestrian access gate will allow entry into the Site. CCTV may be required and its location would be carefully considered within the design parameters.

4.5 Operational Life

For the purposes of the technical assessments, it has been assumed that the AD plants would have a lifetime of c.25 years.

4.6 Access

4.6.1 Vehicle Movements and Vehicular Access

The proposed site access would be via the existing Spring Grove Farm entrance, and will comprise an upgrade of the existing access arrangements off the A1307 Cambridge Road. The access from the A1307 into the farm grounds would be upgraded to ensure it meets requirements for HGV vehicles, with improvements including hard surfacing, construction of a bell mouth and the required visibility splay. The proposed site access junction has been designed in accordance with CD123 DMRB, as a simple priority junction. The junction location benefits from adequate visibility with 2.4 x 215 metre visibility splays as illustrated on the proposed access design. A 7m wide, hard surfaced access road would be created from the site access junction to the main site.

In the interests of highway safety and operation, the proposed site access has been designed to allow an HGV to gain access whilst an HGV awaits egress. Egressing vehicles will be restricted from turning right out of the site and would be expected to turn left (east) and then double-back around the roundabout if required to head west.

The access road design features a hard surfaced access road, 7.0 metres wide and approximately 230 metres in length, which would allow HGVs/tractor-trailers to pass in opposing directions without issue. The access road will provide direct access to a car park area and AD Facility operation areas for deposit/loading. All vehicles will be able to turn within the site to egress in a forward gear.

The design has been assessed in terms of HGV swept-paths, the access drawing includes swept-paths for a maximum sized articulated lorry which demonstrates that this worst-case vehicle can access and egress without any issue. Critically, it demonstrates that an HGV can gain access to the site whilst another HGV waits to egress.

To ensure site security, the entrance would be secured out of hours by a locked gate, set back within the site.

The proposed site access has been subject to a Stage 1 Road Safety Audit which has highlighted no safety concerns.

During operation, the proposed development will result in a varied HGV traffic generation profile across the year. A traffic forecast has been undertaken which indicates that the site could be served by approximately 9,134 HGV/tractor trips per year.

For the majority of the year (10 months) the proposed development would generate 25 – 28 HGV/tractor trips per day, which equates to 50 – 56 HGV/tractor movements. Due to the nature of the feedstock, deliveries would follow seasonal patterns. Proposed site traffic generation levels would then peak associated with seasonal harvest periods. This would likely be restricted to two weeks in June and July (rye/oat Silage) and two weeks in September and October (maize silage). Predicted traffic levels would peak for two weeks in June and two weeks in July with up to 63 HGV/Tractor trips per day, which equates to 126 HGV/Tractor movements. It should be noted that existing farming operations involving movement of feedstock materials already contribute to existing traffic on the local road network.

It is anticipated that 2 tankers would visit the site per day to collect the biomethane. There will also be a number of CO_2 HGV movements, but these would be less than 1 per day over the year.

Further detail about access requirements for Site design in the context of traffic and transport impacts are set out in Section 5.

4.6.2 Parking

Parking spaces and manoeuvring space would be carefully considered to ensure that no vehicles would need to queue to get into the Site. Six car parking spaces are proposed as part of the proposed design.

4.7 Scale

The total application site is approx. 16.2ha and details of the size of plant and buildings proposed are set out in Table 4-1. The scale of the development is dictated by the process undertaken at the proposed facility, and every attempt has been made to ensure the layout effectively apportions the scale of development across the site and that sufficient screening is proposed to minimise any visual impact.

4.8 Materials and Appearance

The design of the proposed AD facility has been carefully considered so as to ensure that the appearance of the proposed AD facility blends into its rural setting as much as possible. Design measures include the careful consideration of colour palette to integrate structures within the surrounds (see Table 4.1 for detail), and careful siting of development infrastructure, i.e. focusing taller structures to the centre of the Site and the careful use of external lighting.

4.9 Lighting and Security

Some external artificial lighting would be required at the facility to ensure safe working during periods of reduced daylight. Some limited external lighting would be required at the facility to ensure safe working during the winter months when light is reduced in the early mornings and afternoon/early evenings. All external lights would be directed downwards into operational areas and be hooded to reduce potential light disturbance outside of the site. Lighting would only be used within permitted hours of operation or if necessary, during maintenance or emergency work.

A Lighting Assessment undertaken by Strenger accompanies this planning application and quantifies the impact of artificial light associated with the proposed development on its surroundings, which include residential and ecological receptors.

The assessment should be read alongside the following drawings:

- SK-01 Residential Receptor Location Plan
- SK-02 Assessed Scheme of Lighting
- SK-03 Light Spill

A full copy of the Lighting Assessment accompanies this application. It concludes that:

> *"it has been demonstrated that the proposed development will be compliant with the residential receptor criteria as set out in the Institution of Lighting Professionals (ILP) Guidance Note 01/21: The Reduction of Obtrusive Light. Specifically, the assessed lighting associated with the Proposed Development is compliant with the obtrusive light criteria as set out for ILP Environmental Zone E2"*.

Compliance has been achieved with the adoption of an environmentally sympathetic scheme of lighting having the following mitigation measures as a matter of course:

- the use of luminaires with zero direct contribution to upward light;
- adopting zero-degree luminaire uplift angles;
- careful aiming and positioning of luminaires;
- careful selection of luminaires;
- the use of optimal light distributions for their specific location and orientation;
- optimisation of mounting heights;
- the use of dimming (via factory pre-set);
- the use of presence detection controls and zoned switching;
- a 365-day timer clock and photocell controls;
- using the lowest colour temperature light sources practicable (3000K generally & 4000K for explosive atmosphere luminaires but only where 3000K is not available);
- the use of light spill shields;
- the adoption of the lowest intensity LED modules practicable; and
- minimising the task illuminance level.

The following mitigation measures have been adopted in the design and planned operation of the Proposed Development:

- embedded by design, the siting of areas requiring a high level of illumination away from potentially light-sensitive ecological receptors;
- embedded by design, the erection of 3.0m high close-boarded timber fences to three sections of the Proposed Development site southern boundary; and

  by risk-assessed design & operation (by others), not lighting the site access road.

4.10 SCADA Alarm Monitoring System

The AD facility will include a control system linked to a Supervisory Control and Data Acquisition (SCADA) system which provides an interface for the operator to control the plant and captures and records all the data produced by the process. The control system would control all aspects of the process and send out performance and error alarms to the operator.

5 Environmental Considerations

The potential environmental impacts of the proposed AD facility have been assessed through a range of technical assessments, which are provided in full as accompanying technical reports.

A summary of the scope and findings of the technical assessments are set out below.

5.1 Air Quality

An Air Quality Assessment (AQA) was undertaken in support of this planning application along with an Ammonia Emissions Assessment for the Proposed Development.

The scope of the AQA comprised the following components:

- review of relevant local and national policy;
- baseline assessment – existing air quality in the local area;
- construction phase assessment – potential effects arising from construction activities, primarily dust and traffic emissions;
- operational phase assessment – potential effects arising as a result of odour, dust, bioaerosols, ammonia, and combustions emissions (from power generation and traffic);
- recommendation of mitigation measures, as appropriate.

The Environmental Health (EHO) department at West Suffolk Council (WSC) was consulted on the methodology and scope of the assessments, however, no comments were raised.

The Proposed Development comprises two sites referred to as 'Site 1 – Spring Grove Farm' and 'Site 2 – along Stour Brook'. Site 1 is located at approximate National Grid Reference (NGR): x564200 y246900, and Site 2 at approximately NGR: x564250 y249550. Both Sites are located within the administrative area of West Suffolk Council and are not located within, or in proximity to, an AQMA.

Neither the Site nor the surrounding area are covered by an Air Quality Management Area (AQMA). A pipeline would connect Site 1 and Site 2, facilitating the transfer of liquid digestate between the Sites. It should be noted that the pipeline has been assessed in isolation within a separate AQA[3].

There are a number of ecological sites in proximity to the Proposed Development, namely the Howe Wood, Markhams Wood, Hare Wood, Littley Wood and Over and Lawn Wood Ancient Woodlands. The Over and Lawn Wood is also designated as a Site of Special Scientific Interest (SSSI). Cadge's Wood, North Wood, New Plantation and Leys Wood are noted to be in closer proximity of Site 2 (near Stour Brook).

The area surrounding the Proposed Development is primarily rural agricultural land, with isolated commercial and residential properties. Hanchet End, a more densely populated residential area, is located at a distance of approximately 500m to the southeast of the Proposed Development.

A selection of 19 human receptors considered to be the closest receptor locations in each direction (of Site 1 and Site 2) comprise predominantly of residential receptors at Silver Street (620m); Horseheath Road (830m); Homestall Crescent (830m); Queen Street (940m); Three Counties Way (320m); Darwin Walk (410m-460m); Hanchett End (550m); dwellings off of the A1307 (320m-400m); and Skipper's Lane (630m-830m). Commercial receptors were identified are Haverhill shopping centre (210m) and Hanchett Hall Cattery/Kennels (690m).

[3] SLR report: "404.V11923.00004_Pipeline_AQA"

The windrose for the Andrewsfield meteorological recording station (24 km south) shows that the main wind direction in this area is from the south west.

The suite of Air Quality Assessments were undertaken in August 2022 for the main AD Facility and in February 2023 for the pipeline and digestate lagoon and comprised:

- Construction Dust Risk Assessment;
- Fugitive Dust Emissions;
- Road Traffic Emissions - Screening Assessment;
- Fugitive Odour Emissions;
- CHP Emissions - Screening Assessment;
- Bioaerosols Assessment; and
- Ammonia Emissions Assessment.

CHP emissions screening was undertaken using the Simple Calculation of Atmospheric Impact Limits (SCAIL) for Combustion[4] model developed by the Environment Agency. The model requires various combustion input parameters; the results of which were screened against the Environmental Standards for Human Health (for nitrogen dioxide (NO_2), sulphur dioxide (SO_2), particulate matter ($PM_{2.5}$ and PM_{10}) and ammonia (NH_3)).

A similar screening exercise was undertaken to ascertain potential pollutant concentrations and potential impacts upon the nearby potential ecological receptors within the relevant screening distance.

Table 5.1- Ecological Receptor Locations

Site	Designation	Within Screening Criteria Distance of	Approximate Distance / Direction from the Site	Most Sensitive Habitat
Howe Wood	AW	Site 1	240m / NE	Broadleaved, Mixed and Yew Woodland
Markhams Wood	AW	Site 1	560m / S	Broadleaved, Mixed and Yew Woodland
Hare Wood	AW	Site 1	1,550m / NE	Broadleaved, Mixed and Yew Woodland
Over and Lawn Woods	SSSI and AW	Site 1 and Site 2	1,030 / N (Site 1) 760m / SE (Site 2)	Broadleaved, Mixed and Yew Woodland
Littley Wood	AW	Site 1 and Site 2	1,780m / NE (Site 1) 760m / SE	Broadleaved, Mixed and Yew Woodland
Cadge's Wood	AW	Site 2	20m / S and SW	Broadleaved, Mixed and Yew Woodland

[4] Centre for Ecology and Hydrology, Simple Calculation of Atmospheric Impact Limits (SCAIL) – Combustion (last updated March 2020).

Site	Designation	Within Screening Criteria Distance of	Approximate Distance / Direction from the Site	Most Sensitive Habitat
North Wood	AW	Site 2	380m / E	Broadleaved, Mixed and Yew Woodland
New Plantation	AW	Site 2	670m / ENE	Broadleaved, Mixed and Yew Woodland
Leys Wood	AW	Site 2	1,250, WSW	Broadleaved, Mixed and Yew Woodland

The CHP plant is located on Site 1, therefore emissions assessment was undertaken in consideration of Site 1 only. The pollution concentrations calculated from the SCAIL model indicated that further detailed assessment would be required to investigate potential impacts upon human and ecological receptors as a result of NO_2 and SO_2 emissions from the CHP plant.

Further detailed dispersion modelling for CHP plant emissions concluded:

- Long-term NO_2 - predicted long-term impacts of NO_2 were calculated to be negligible and 'not significant' at all receptors identified;
- Short-term NO_2 - predicted short-term impacts of NO_2 were calculated to be 'small' at R10 and negligible at all others, and overall 'not significant';
- Short-term SO_2 - predicted short-term impacts of SO_2 were calculated to be 'negligible' and 'not significant'.

Results from the SCAIL screening model also indicated that further detailed assessment was required to investigate potential impacts upon ecological receptors as a result of NH_3 emissions from the Proposed Development. Potential sources of ammonia emissions from the proposed site operations were derived from:

- poultry litter and farmyard manure feedstock;
- feed hoppers;
- liquid digestate; and
- solid digestate

5.1.1.1 Ammonia Emissions Assessment

Calculation of ammonia emissions from the Manure Shed considered the application of an abatement system, to which air from within the Manure Shed would be extracted to and abated prior to release to atmosphere.

Calculation of ammonia emissions from the feed hoppers considered that the hoppers would be filled with feedstocks at all times, and that approximately 30% of the feedstocks in the hoppers would be poultry and farmyard manure.

All impacts (short and long term) were described as 'negligible', therefore the effect on air quality at human receptors as a result of NH3 emissions is considered 'not significant'.

The findings are as follows:

- the short-term NO_X PC is below 10% of the short-term C_{Le} at the Over and Lawn Woods SSSI;
- the NO_X, SO_2 and NH_3 PC is below 1% of the long-term C_{Le} at the Over and Lawn Woods SSSI; and

- the NO_X, SO_2 and NH_3 PC is below 100% of the C_{Le} at the surrounding Ancient Woodlands.

Therefore, the Proposed Development is considered to cause 'no likely damage' to the SSSI and 'no significant pollution' at the surrounding Ancient Woodlands in terms of air quality.

5.1.1.2 Summary of AQA

The Air Quality Assessment assessed the potential impacts on air quality and local amenity associated with the Proposed Development at Spring Grove Farm and along Stour Brook, referred to as 'Spring Grove Green Power'. The potential impact associated with odour, dust, road traffic, bioaerosols, ammonia and CHP combustion emissions on both human and ecological receptors has been assessed.

The construction phase assessment has concluded that the construction of the Proposed Development would result in a 'not significant' risk of impacts.

The operational phase assessment has concluded that the Proposed Development would result in a 'not significant' effect at human receptor locations with regard to odour, dust, ammonia, CHP and traffic emissions bioaerosols emissions screen out of the need for further assessment according to EA guidelines. With regard to ecological receptors the process emissions are considered to cause 'no likely damage' to the Over and Lawn Woods SSSI and 'no significant pollution' at the surrounding Ancient Woodlands.

5.2 Arboriculture

A walk-through feasibility study was undertaken by CBA Trees in April, and further informed by a detailed Arboricultural Implications Assessment (AIA) in September 2022 - by a suitably qualified Arboricultural Consultant. The purpose of the AIA study was to consider the implications the proposed development with an associated new access and haulage road would have upon the existing tree stock, and to also provide solutions where possible, to ensure the safe and healthy retention of trees. Full copies of the Feasibility Study and AIA accompany this application.

To the knowledge of CBA Trees, there are no Tree Preservation Orders (TPO) on the site and the site does not lie within a Conservation Area.

A walk-through assessment of the main AD site identified the presence of strong field boundary trees (although some of these are considered to be of poor quality structurally) along with a strong formal field boundary hedge and a group of trees at the north and western boundaries of the site. In general, the mature trees are typical of field boundary trees in appearance and size. Generally, the more dominant or individual trees on the northern boundary that provide a significant feature in the landscape have heights in the region of 10-15m. A summary of significant trees and recommended root protection areas are as follows:

- an established field boundary hedge along the north of the site will require a root protection distance of approximately 2m;
- several individual trees of Ash, Horse Chestnut and Pedunculate Oak located on the northern hedge, of these, three were considered poor condition –ideally this project would seek to manage these trees and retain them for ecological habitats with their rooting areas retained (requiring root protection distances ranging from 3-8.3m);
- a high-quality oak in the north western corner of the site will require a linear root protection distance of 12m.

In summary, the Arboricultural Survey concluded that the Site is considered to be developable without detriment to the majority of important and/or significant trees, subject to the extent, design and layout of the infrastructure of the AD facility.

The proposed development would retain woodland, mature trees and hedgerows, and an appropriate buffer would be applied during the design process to protect the root protection zones of all other identified trees and hedgerows. Opportunities to provide ecological enhancements have been investigated and designed in where possible.

5.3 Archaeology and Cultural Heritage

An Archaeology and Heritage Desk Based Assessment (DBA) was undertaken as part of this planning application, to understand the potential impact of the proposals on known and potential archaeological remains within the Site and heritage assets within and around the Site (including the pipeline and offsite digestate lagoon components).

A baseline data collection exercise was undertaken to understand the presence/absence of archaeology and heritage receptors within a 1km search area. The baseline was subsequently informed by field observations of potentially sensitive heritage assets within the search area as part of the Site Inspection in April 2022. A second visit was conducted in January 2023 to assess the landscape context of the lagoon and pipeline components of the site.

Evaluation fieldwork in the form of geophysical survey was also undertaken to inform the Assessment. No archaeological fieldwork has been previously undertaken within the boundary of the Site.

The Site is located on the border of West Suffolk and South Cambridgeshire District Councils, and though the Site is contained within West Suffolk, the Study Area used for assessment crosses into both District Councils.

5.3.1 Previous Surveys

No previous archaeological work has taken place within the Site or the immediate surrounding area. To the southeast of the Study Area within Haverhill there has been limited archaeological activity in the form of two separate trial trenching evaluations, which revealed evidence of ancient woodland (**HVH 057**) and archaeological features comprising two possible post holes and a curving ditch which contained Iron Age Pottery (**HVH 025**). The distance of these excavations limit their relevance for informing the archaeological potential of the Site itself, but do contribute to the understanding of the wider historic landscape. A series of fieldwalking and earthworks surveys took place to the south of the Site at Shuggy Camps between 1998-2000 (**ECB2534**), with the northern extent of the survey just within the Study Area. Numerous finds and features were recorded from prehistory to post-medieval, but aside from a possible Roman road (**08229**), no assets found during the fieldwork are recorded within our study area.

Amateur metal detecting in fields 800m to the east of the Site, with finds reported to the Portable Antiquities Scheme (PAS), has revealed a quantity of objects from the Iron Age to the post-medieval periods, but the extent that has been covered by metal detecting is not clear, and therefore it is quite limited in its ability to inform as to archaeological potential within the Site.

5.3.2 Geophysical Survey

A Geophysical Survey was undertaken in March 2022. Only the eastern half of the Site was feasible to be surveyed, with an area of 4.6ha to the west inaccessible due to overgrown vegetation. The survey revealed a limited number of linear and discrete anomalies for which an archaeological origin cannot be ruled out albeit they are notable in their sparsity. Whilst the survey did not detect any evidence of the conjectured route of the *Worsted Street* Roman Road **(07970/WTH 007**) (though the northern edge of the survey area was obscured by a high level of magnetic disturbance), the longest linear anomaly recorded (adjacent to the southern boundary of the Site) is aligned roughly parallel to the conjectured route of the road and may therefore be associated, potentially as a field boundary respecting the alignment of the road present further to the north. A natural spread was located across the field which may concur with the differential soil types in the north and south of the Site.

5.3.3 Designated Assets

The Site is classified in the HLC as part of a post-1950's agricultural landscape, but with the exception of the removal of the railway, there has been little change to the land within the Site since the end of the 19th century, and any changes to the landscape have been the result of border loss.

There are no scheduled monuments, World Heritage Sites or Registered Parks and Gardens located within the application boundary or within the 1km Study Area.

A review of Historic England datasets returned 13 Grade II Listed Buildings and Withersfield Conservation Area within 1km. These are set out below:

Number	Name	Designation
NHLE reference 1236073	Little Thatch	Grade II Listed Building
NHLE reference 1236072	The Grange	Grade II Listed Building
NHLE reference 1236071	13,14 and 14A, Church Street	Grade II Listed Building
NHLE reference 1236070	Elm Lea	Grade II Listed Building
NHLE reference 1375499	Hanchet End Farmhouse	Grade II Listed Building
NHLE reference 1375498	Hanchet End Cottage	Grade II Listed Building
NHLE reference 1331011	Limberhurst Thatch	Grade II Listed Building
NHLE reference 1264841	Turnpike House	Grade II Listed Building
NHLE reference 1264778	Four Cottages Immediately West of Little Thatch	Grade II Listed Building
NHLE reference 1264776	Long Cottage	Grade II Listed Building
NHLE reference 1264777	Church Farmhouse	Grade II Listed Building
NHLE reference 1236109	Silver Street Farmhouse	Grade II Listed Building
NHLE reference 1236074	White Horse Inn	Grade II Listed Building
n/a	Withersfield Conservation Area	Conservation Area

The assets listed below were assessed in the field in April 2022, to ascertain the necessity of providing a full statement of significance to assess the potential impact of the proposals in accordance with the Historic England Good Practice in Planning Advice Note 3 'The Setting of Heritage Assets' (2017) and Advice Note 12 'Statements of Heritage Significance' (2019).

In the field, it was established that the following assets would not require further assessment within this report.

- White Horse Inn (**NHLE reference 1236074**) – c.1km north of the Site
    - The asset was observed as a precaution due to the lack of intervening development and in recognition that it sits alongside the roadside with an important view on the approach from the north. During field observations, it was noted that the Site would not be visible from the asset, and vice-versa, because of a ridgeline rising between the two, and the asset being located at the

base of the Stour Valley. It was noted that there is also no inter-visibility between the two assets from approaches or third-party viewpoints. Additionally, the asset does not affect the ability to appreciate the asset in relation to the contemporaneous Little Thatch cottages (**NHLE 1264778** & **NHLE 1236073**) or understand its setting as a coaching inn on Horthheath Road on the edge of the settlement at Witherfield

- Limberhurst Thatch (**NHLE reference 1331011**) – c.400m west of the Site
  - The asset is located within a closely defined plot within which it is experienced in an intimate and enclosed setting through the presence of mature vegetation including evergreen trees. The proposed development would have no effect on appreciating the asset's architectural and historic interest from within this historic space.
  - Neither would the proposals affect the ability to understand the asset against an immediate rural setting (beyond its private grounds).

It was however concluded that Silver Street Farmhouse (**NHLE reference 1236109**) would be taken forward for further assessment due to the potential for views of the tips of the digestors from the property (10m high, set against a woodland backdrop).

5.3.4 Development Effects

Silver Street Farmhouse (NHLE reference 1236109)

On approaching the asset from the south along Silver Street, more prominent views of the development may be possible at the base of the road, though the development would be shielded by planting and it is likely that only the digestors would be visible. From the base of Silver Street where the development would be most prominent, it is not possible to see the asset due to the topography and vegetation, and the affect would be limited to change to the wider rural backdrop, away from the immediate contextual rural backdrop associated with the asset.

The development would not obscure views to or from the asset and the remaining areas of pre-18th century enclosure farmland, which is primarily located around, and to the north, of the asset, and the only change would be limited alterations to the wider rural landscape within which the asset is set, and possible minor changes to the peripheral views to the south. It is noted, however that change does not equate to harm.

In the above context, this level of change would result in **no harm** to the significance of the asset

5.3.5 Summary

The Archaeology DBA, undertaken with due regard to the guidance published by Historic England and in full accordance with the National Planning Policy Framework, has identified those heritage assets located within the Site and its vicinity and has described their significance. Potential development effects were also considered.

5.3.5.1 Archaeology

Archaeological potential for the site is generally limited, with the exception of the possible presence of *Worsted Street* (**07970** and **WTH 007**) which may be located along the northern boundary of the Site or its vicinity. With respect to this it is noted that the geophysical survey did not reveal any anomalies indicative of the presence of particularly significant remains albeit a single anomaly parallel to the conjectured route of the road may be associated with it (either as a contemporary field boundary or a truncated road feature). Other anomalies may represent truncated features, albeit the baseline evidence for pre and post Roman activity is sparce, with other remains most likely limited to post medieval field boundaries (which the aforementioned geophysical anomaly may also relate to). Overall, in conclusion, it is not assessed that the archaeological potential within the Site would preclude development, any reasonably predicted remains not being worthy of preservation in situ.

The proposals are considered to be compliant with the legislative and planning policy provisions relevant to archaeology.

5.3.5.2 Heritage

All assets potentially sensitive to setting change were considered with full regard to guidance and planning policy. One asset, Silver Street Farmhouse (**NHLE 1236109**), was subject to the preparation of a significance statement. It was concluded that, though the development would result in a slight change to peripheral views from the asset there would be no impact on the important setting elements associated with the asset such that the ability to understand and appreciate the asset would be wholly unaffected. There would be no harm to the asset.

The proposals are considered to be compliant with the legislative and planning policy provisions relevant to heritage.

Survey drawings and details of reporting are contained in full within the associated Archaeology and Heritage Desk-Based Assessment.

5.4 Ecology

Preliminary Ecological Appraisal (PEA) of the site was initially undertaken to support the planning application for the Proposed Development, including pipeline and offsite digestate lagoons. Since the initial habitat survey was undertaken in February 2022 at the main AD Site, a range of detailed protected species survey have been undertaken throughout 2022. One additional site visit was also undertaken in November 2022 to survey the pipeline and digestate lagoon site.

An Ecological Impact Assessment (EcIA) was subsequently undertaken in alignment with the Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland ("CIEEM guidelines"), which are widely regarded as good practice for professional ecologists.

A Biodiversity Net Gain Assessment was also undertaken to demonstrate that the development proposals will result in in a biodiversity net gain of 12.13.

5.4.1.1 Baseline Data Results

Table 5.2 below gives the locations and descriptions of all statutory and non-statutory designations within 2km of the Proposed Development.

Table 5.2-Statutory and Non- Statutory Designated Sites within 2km of Proposed Development

Site Name	Distance (m) from Site	Summarised Site Description
Over & Lawn Woods SSSI	400m west	This woodland is of ancient origin. It lies on chalky boulder clay. The ground flora contains a rich variety of ancient woodland plants, including a number of locally rare species and the nationally restricted oxlip Primula elatior.
Haverhill Railway Walks LNR	600m west	With much of its length now covered with scrub and larger trees, the railway provides a valuable wildlife corridor. It offers food and shelter to a wide range of birds, animals, insects and plants. All five kilometres (3 miles) of the

		disused line is now part of the Haverhill Local Nature Reserve.
Markhams Wood CSW AW	500m south	This small ancient woodland situated on the Cambridgeshire/Suffolk border, is part of the Hanchet Hall Estate. The tree layer consists of oak and ash standards with a shrub layer of hazel coppice. A notable feature of this woodland is the ground flora. Bluebells, oxlips (a nationally scarce plant) and early purple orchids provide a splendid show in Spring. Daffodils have been introduced in the wood by a previous owner
Howe Wood	400m east	Howe Wood is one of a number of ancient woodlands situated in the intensively farmed landscape north of Haverhill. The northern part of the wood is dominated by hornbeam coppice with a significant amount of ash and field maple coppice also present. A number of old oaks standards are scattered throughout. T
Littley Wood CWS AW	200m east	Littley Wood is an ancient wood, situated close to the Over and Lawn Woods, which have been scheduled as a Site of Special Scientific Interest. A large portion of the wood is composed of an old ash, field maple and hazel stand type with scattered oak standards throughout.
Haverhill Flood Park CWS	300M east	The site which lies on the western outskirts of Haverhill was constructed in 1971 to create a flood storage reservoir to prevent flooding in the nearby town of Haverhill. The grassy embankments of the reservoir support a species-diverse flora which is improving in diversity year by year. Over 70 species recorded in May 2017.
Chimswell Ditch CWS	700m south	Chimswell Ditch is a small watercourse, situated close to the outskirts of Haverhill on the western side. The steep sided watercourse is overgrown with dense scrub consisting of elm,

		hazel, sycamore, horse chestnut, field maple, oak, hawthorn, ash and blackthorn. This provides important nesting habitat for birds in an intensively farmed landscape.
North Wood CWS AW	550m east	No data available
The New Plantation CWS AW	700m north east	No data available

5.4.1.2 Habitats

The MAGIC website confirmed the presence of the 6 ancient woodlands within 2km of the Site as listed above. There are also a number of priority habitats within 2km including the watercourse to the south and areas of broadleaved woodland with the nearest being adjacent to the southern boundary of the Site.

The predominant habitats identified within the Site boundary (including the pipeline and digestate lagoon areas) comprised:

- cropland;
- modified grassland (strips of modified grassland border the fields);
- hedgerow;
- rivers and streams; and
- woodland.

Assessment concluded that predicted habitats losses were not, in themselves, considered significant and a **No change level of impact** with regard to habitat receptors within the proposed Site was concluded.

The Proposed Development includes the creation of new habitat and the enhancement of existing habitats, as set out in the Biodiversity Gain report. The delivery of these measures and the outcome of biodiversity gain in the long-term would lead to a **minor beneficial effect**. Details of these measures will be included in a Biodiversity Management Plan.

Ancient Woodland

Indirect impacts from dust, aerial deposition of pollutants, changes to hydrology, construction-related noise and cumulative impacts have been identified as having potential for adverse impacts upon Cadge's Wood AW located adjacent to the Site. A **Minor adverse level of impact** would be predicted prior to mitigation.

There is potential for indirect effects from the anaerobic digestion process itself as detailed within the associated Air Quality Assessment (and technical appendices). This report confirms that there is an absence of likely significant effects from the Proposed Development as the PC is below 100% of the annual CLe at the AW.

However, the modelled Process Contribution as a percentage of Nitrogen Critical Load exceeds 1% of the relevant critical load for Nitrogen (including NOx and NH3) at 6 ancient woodland sites: Howe Wood (4.6%), Markhams Wood (1.2%), LIttley Wood (1.9%), Cadge's Wood (39%), North Wood (2.5%) and New Plantation (1.3%).

Exceedance of 1% of the Critical Level or Load is a precautionary threshold adopted by the Woodland Trust as a guide for the need for additional surveys and assessment of the potential for air quality impacts to ancient woodlands.

In order to better characterize the likelihood of impacts upon ancient woodland features, a lichen survey was undertaken – given that lichen are a useful indicator of change in air quality – in this instance nitrogen and

ammonia levels and exposure. The surveys concluded that ancient woodland lichen assemblages have already been subjected to impacts relating to poor air quality (both historical and current background levels), such that the additional process contribution resulting from the proposed AD plant would not make a significant difference to the lichen assemblages present at the assessed ancient woodlands.

A **Minor adverse level of impact** was predicted upon ancient woodlands, in the absence of additional mitigation or compensation to address the principal concern of future regeneration potential.

Mitigation for Ancient Woodland will therefore comprise the maintenance and regeneration of AW sites through long-term management. These measures will be detailed in an Ancient Woodland Site Management Plan, which will outline methods to support an improvement in overall conservation status and condition at these sites. This mitigation strategy complies with current advice on development surrounding ancient woodlands and is considered to constitute a suitable compensation strategy aligning with the requirements of Paragraph 180 of NPPF.

With mitigation in place, a **Short-term No Change and Long-term Minor beneficial level of impact** is predicted on Ancient Woodland.

5.4.2 Species

5.4.2.1 Plants

Suffolk Biodiversity Information Services (SBIS) returned several records of notable flowering plant species within the 2km search radius including pyramidal orchid (*Anacamptis pyramidalis*), common spotted orchid (*Dactylorhiza fuschii*), southern marsh orchid (*Dactylorhiza praetermissa*) and bee orchid (*Ophrys apifera*) however none of these are associated with arable habitats. No notable, rare or legally protected species were recorded during the survey.

5.4.2.2 Invertebrates

SBIS returned records of two invertebrate species including small heath *Coenonympha pamphilus* and cinnabar *Tyria jacobaeae* which are both Section 41/UKBAP species. No notable invertebrates were observed during the survey.

Due to the presence of intensively managed agricultural land within and surrounding the site, it is considered unlikely that the site or immediately surrounding areas support and protected or notable, e.g. Section 41/UKBAP, invertebrate species.

5.4.2.3 Amphibians

The data search returned no records of amphibians within the 2km search radius. MAGIC and online mapping identified no aquatic habitats on site however the UKHab survey confirmed the presence of suitable GCN terrestrial habitat in the form of hedgerow.

Four ponds were identified within 500 m of the AD plant Site. Of these, ponds 3 and 4 were not surveyed as they were deemed too isolated by the large A1307 road which separates them from the Site; and pond 2 was dry at the time of survey. A GCN survey was therefore only undertaken at pond 1, including a habitat suitability index assessment and eDNA sampling eDNA analysis confirmed the absence of GCN in pond 1 and as such there is considered no potential for GCN to be present in the terrestrial habitat on Site, or any local populations present that may be affected by the proposed development.

The hedgerows on the site could potentially provide terrestrial foraging areas for other common amphibians such as common toad (an S41/UKBAP species); however, the majority of the Site is arable land and therefore largely unsuitable for these species. While it is possible that small numbers of more common amphibians may use the site occasionally, it is considered unlikely that permanent populations are present or that the habitats present are critical for the survival or reproductive success of any local populations of amphibians.

5.4.2.4 Reptiles

The data search returned no records of reptiles within 2km of the Site. The hedgerows on the Site could support reptiles; however, the majority of the Site is arable land. Therefore, while the possibility that small numbers of common reptiles occasionally use the site, it is considered unlikely that permanent populations are present or that the habitats present are critical for the survival or reproductive success of any local populations of reptiles.

5.4.2.5 Birds

The data search returned records of notable bird species within 2km of the Site including lapwing (*Vanellus vanellus*), yellow hammer (*Emberiza citronella*), Eurasian skylark (*Alauda arvensis*) and kestrel (*Falco tinnunculus*).

The arable fields on site have potential to provide areas of value for wintering and breeding birds, in particular those birds closely associated with farmland habitats. Lapwing, a red listed species of conservation concern, has been recorded wintering in the wider area although no breeding is recorded. The absence of breeding lapwing broadly fits with the ongoing decline in this species. Skylark, a red listed species, has been recorded wintering and breeding in the wider area and were recorded on the site during the habitat survey in September 2022. These two species, known to be present in the area, as well as the yellowhammer, are considered to be of County importance.

In addition, the presence of kestrel, an amber-listed raptor species, is considered to be of Local importance. It has not been confirmed if any of these species breed within the Site, but breeding cannot be ruled out in suitable habitats.

Prior to mitigation, a **Major adverse level of impact** is predicted upon foraging and breeding habitat for skylark.

Prior to mitigation, a **Minor adverse level of impact** is predicted upon lapwing and other wintering bird assemblages present within the site.

Construction vegetation clearance, including removal of crops that can harbour ground nesting birds, should be timed to be undertaken outside of the breeding bird season, which runs from March to August inclusive. If this is not possible, a nesting bird check should be undertaken by a competent ecologist immediately prior to vegetation removal and land clearance.

To mitigate for the loss of arable habitat within the Proposed Development, management recommendations in relation to farmland ground nesting bird species of conservation concern would be implemented within the surrounding arable land - within the landowner's ownership. This includes the creation of uncropped fallow plots and crop management (spring crops) to allow for nest establishment. These areas should be at least 10m from any boundary, and at least 1ha.

With mitigation in place, the Proposed Development will have a reduction in the level of adverse effects and an increase in the beneficial effects on nesting birds, therefore reducing impacts to **No change level of impact.**

5.4.2.6 Mammals

Bats

SBIS and Cambridgeshire and Peterborough Environmental Records Centre (CPERC) returned records of common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*).

The Site supports suitable habitat for commuting and foraging bats in the form of native hedgerows and broadleaved woodland, which bound the proposed AD plant site. The watercourse which runs 30m east of the proposed pipeline also has potential as a commuting and foraging route. However, the majority of the surface area of the Site comprises arable land which has negligible potential for supporting commuting or foraging bats, and none of these features are considered likely to be important or critical for supporting rare or uncommon bat

species. Based upon the suitability of features, and species recorded locally, the site is considered to be of Local importance to foraging and commuting bats.

Several mature trees with ivy cover and/or cracks and crevices suitable for bats occur within the Site boundary – concluding a Local Importance for roosting bats.

Overall, with the inclusion of sensitive lighting design, there is considered to be a **No change level of impact** on foraging and commuting bats.

Long term enhancement of the Site for bats includes the planting of species rich grassland and the creation of new hedgerow habitat surrounding the southern portion of the Site. With mitigation and enhancement in place the Proposed Development is assessed to result in a **No change level of impact.**

5.4.2.7 Badger

SBIS returned two records of badger *Meles meles* within 2km of the site. Two badger setts comprising one hole each were found within the woodland to the north of the main AD Site. Of these, one was considered active and the other, inactive. The site itself is therefore considered to be of Local Importance for badgers.

The Proposed development is therefore predicted to result in a **No change level of impact** upon badgers (due to the distance of known setts). Mitigation for badgers will be detailed in the CEMP and will include standard good-practice methods of working and inclusion of a buffer zone around retained setts.

5.4.2.8 Riparian Mammals: otter and water vole

SBIS returned no records of otters *Lutra lutra* within 2 km of the site. A watercourse runs along the southern boundary of the site therefore a riparian mammal survey was undertaken to confirm the presence/likely absence of these species - during which no evidence of the species were found. It is therefore concluded that the site is unlikely to support riparian mammals.

5.4.2.9 Hazel Dormouse

SBIS returned no records or hazel dormouse *Muscardinus avellanarius* within 2 km of the Site. The Site itself does not include any habitats suitable to support dormice.

5.4.2.10 Other Mammals

A record of polecat (Mustela putorius) was returned in Withersfield just north of the Site in 2017 by Vincent Wildlife Trust (VWT). Polecats have a relatively strong presence in Suffolk and the habitats adjacent to the Site in particular the watercourse has potential to support this species. The Site itself however has **low potential** to support polecat due to the majority of the habitats on site being intensively farmed land.

5.4.3 Mitigation

Embedded mitigation, implemented through avoidance of habitat removal and development design, includes the retention of hedgerow through directional drilling. Creation of species rich grassland is also proposed as part of the Proposed Development and offsite farmland nesting bird habitat creation. A sensitive lighting scheme has been designed to retain dark habitat for bats. Good-practice methods of working will be detailed and adhered to in the CEMP to minimise the risk of impact to species and habitats during construction.

Prior to the commencement of construction, the CEMP, Biodiversity Management Plan and Ancient Woodland Site Management Plan will be produced to ensure the mitigation is appropriately adopted, with clear and deliverable measures.

No residual significant effects are predicted to result from either the construction phase or the operational phase of the proposed development.

5.4.3.1 Biodiversity Enhancement

A Biodiversity Net Gain Assessment is required under Local Planning Policy which will further enhance the Site's ecological value. The BNG Assessment as summarised above indicates that an increase in biodiversity performance of the Site of approximately 12.13%. This is subject to appropriate planting plans and management plans being developed to optimise the delivery of biodiversity performance on the Site and to realise its intended out-turn condition.

5.5 Ground Conditions/ Land Quality

A Preliminary Land Quality Risk Assessment (PLQRA) was undertaken by SLR to demonstrate the site's suitability for the proposed development, taking account of potential contamination related risks. A full copy of the PLQRA will be submitted in support of the planning application and a summary of the scope and findings of the assessment are set out below.

The site was inspected by a representative of SLR's Land Quality and Remediation team on 28th March 2022.

Stour Brook was noted to flow immediately adjacent to the south boundary of the site. An embankment covered with overgrown bushes and mature trees formed by a disused railway line, roughly follows the same route along the southern boundary of the eastern part of the site. The A1307 Cambridge Road runs adjacent to the south boundary, at a proximity of around 90m, connecting Haverhill to Linton in the west (approximately 7km).

The Spring Grove Farm site includes two adjoining arable fields. Bowsey Field in the west was covered with dead crop stubble and Spring Grove Field in the east was open and ploughed. A high pressure gas pipeline was noted to run along the northern boundary of Bowsey Field. A ditch runs in a southerly direction between the two fields.

5.5.1 Scope of PLQRA

The PLQRA scope of work comprised the following tasks:

- Two site walkovers to:
  - Assess visual evidence of contamination and identify potential sources of contamination.
  - Review the potential for pollution to have occurred at the site.
  - Identify the surrounding land use.
- Review of land use history using available historical maps. Extracts of the maps are used to illustrate the historical land use of the site and surrounding area.
- Assessment of site sensitivity and environmental setting including a review of geological and hydrogeological records (e.g. geological maps, groundwater sensitivity and vulnerability maps etc). The quality of nearby surface waters and underlying groundwater is assessed, as well as any data available on pollution incidents, abstractions and discharges.
- Collection of information from public registers and regulators that is available via the GroundSure database, which can be obtained more quickly than through direct contact with the regulators and other public bodies.
- Data assimilation and risk assessment involving an assessment of potential sources (e.g. chemical storage, spillages etc), pathways (e.g. surface water drainage) and receptors (e.g. controlled surface watercourse) at or adjacent to the site. A conceptual site model (CSM) and the level of risk associated with identified potential pollutant linkages (PPLs) is determined qualitatively from the model.

There were no previous contamination or ground investigation reports provided for review.

5.5.2 Ground Investigations

The main site has a continuous history of being open fields with a central drain running through and farm buildings in the south. A railway line ran along the southern boundary until it was dismantled around 1971. An embankment associated with the former railway line remains present and overgrown adjacent to the south-eastern boundary. The pipeline route has typically comprised undeveloped land since the earliest mapping records. During the walkover of the pipeline route in November 2022, an underground oil pipeline and overhead power lines were observed crossing the pipeline route at the approximate mid-point near Skippers Lane.

The northern part of the site around the proposed digestate lagoon formed the southern extent of RAF Wratting Common airfield from around 1943. Several small buildings and Nissan huts were constructed on-site and in the immediate vicinity which were primarily used for bomb storage. SLR understands the airfield was disused shortly after the end of the war and by 1984 most of the structures were no longer present and the area had reverted to agricultural use.

Activities associated with the former World War 2 RAF Wratting Common in the very northern extent of the pipeline route and lagoon could be a potential source of contamination. Nissan huts were located on-site and immediately adjacent to the area around the proposed digestate lagoon which are known to have comprised the airfield bomb stores and fusing point buildings. Most of the former storage huts are no longer present. There is the potential for former RAF activities and later demolition works to have impacted shallow soils on-site in the area of the northern lagoon and pipeline.

Given the history of the remainder of the site as agricultural fields with residential farm buildings and storage, no other significant potential sources of contamination were identified on site.

5.5.3 Conclusions and Recommendations

Groundwater was noted to be of moderately high sensitivity at the site given the presence of a principal chalk aquifer and a groundwater protection zone beneath the site, albeit afforded some protection by the presence of approximately 30m thick superficial deposits of variable permeability and the distance to the nearest abstractions.

Surface water sensitivity is considered to be moderately high given the on-site and adjacent ditches and Stour Brook adjacent to the south of the site, and the northern extent of the pipeline route.

Qualitative risk assessment indicates that the site represents a potential moderate/low risk of contamination impacts to human health (and controlled waters associated with the former RAF use).

Qualitative risk assessment indicates the remainder of the site represents a low risk to human health (and controlled waters associated with the proposed development) as no potentially significant sources have been identified.

Given the lack of potential contamination sources it is likely that on site soils can be excavated and reused as part of the proposed development, excluding the northern extent of site in the former RAF area.

5.5.4 Land Quality

A shallow ground investigation is recommended in the former RAF area in the north of site to assess potential contamination impacts to shallow soils resulting from historic land use. An assessment of potential unexploded ordnance may be required. The purpose of the investigation would primarily be to assess if there is a potential risk to workers during the pipeline and digestate lagoon construction, but also to assess potential ongoing risks to future site workers.

No further investigation or remediation is considered necessary for the proposed development. A watching brief should be maintained for potentially unexpected contamination during development. If any geotechnical

investigations are proposed for foundation design then consideration should be given to chemical analysis of made ground if it is encountered on site.

5.5.5 Soil Materials Management

It is the responsibility of a holder of material to form their own view on whether that material is waste or not. Given the proposed reuse of natural occurring material within the same site boundary and lack of potential contamination sources it is possible that excavated soils reused as part of the proposed development would not be considered waste. However, we would recommend that any soil reuse is covered by a Materials Management Plan in accordance with the CLAIRE Definition of Waste Code of Practice (DoWCoP).

5.6 Landscape and Visual Impact Assessment

Optimised Environments (OPEN, acquired by SLR in 2021) were commissioned to undertake a Landscape and Visual Impact Assessment (LVIA) in support of the planning application for the proposed development.

The LVIA was prepared in support of the application and this follows Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3), The Landscape Institute with the Institute of Environmental Management and Assessment (2012). It evaluates the significance of effects on landscape character, landscape designations, landscape elements and the visual amenity of the AD facility and Pipeline/ offsite digestate lagoons Sites and their surroundings.

The LVIA was undertaken by experienced Chartered Landscape Architects at SLR Consulting Ltd (SLR) (formerly OPEN) on behalf of Acorn Bioenergy Limited (ACORN).

The full LVIA and its appendices accompany this planning application, and the main scope, findings and conclusions of the LVIA are set out below.

In landscape and visual terms, it is considered that the Proposed Development comprises two distinct components, including an anaerobic digester plant (the 'AD facility Site) and, secondly, a buried pipeline connecting to two offsite digestate lagoons (the 'pipeline and lagoons Site'). The landscape and visual effects of these two main components were anticipated to be distinct in terms of their potential impact i.e. each will affect different geographical areas, the LVIA consequently separates the assessments for these two main components.

5.6.1 The Study Area

An initial 5km Study Area was defined to inform a review of aerial photographs and desktop ZTV analysis and this was further refined following site visits for the AD facility and pipeline sites. The site visits indicated that the potential visibility of the proposed AD facility Site would be heavily curtailed by landform, hedgerow/ tree and woodland planting. To account for this, the assessment of the AD facility Site was based on a 2km detailed Study Area around the AD facility Site, with eight representative viewpoints identified within this range to inform the visual impact assessment.

The evaluation of the AD facility Site concluded that it was unlikely that the Proposed Development would have any material effects beyond approximately 1km radius, since the visual influence of the Proposed Development would reduce rapidly with distance influenced by the landform and intervening woodland and trees, such that Haverhill is substantially screened from visibility of the AD facility Site.

5.6.2 Viewpoints

The results of the initial Study Area analysis were used to identify potential viewpoints from a range of distances and directions to offer a representative sample of the likely visibility of the Proposed Development. The actual extent of visibility was verified during site visits in May and September 2022, with the pipeline and offsite digestate lagoons being assessed in November 2022.

5.6.3 Landscape and Visual Assessment summary

This Assessment has found that the effect of the Proposed Development on the surrounding landscape and visual receptors would be localised and concentrated substantially within a radius of 0.5km of the site, although the presence of the digestor tanks above the existing tree canopy would be noticeable across limited other parts of the 2km Study Area, including from some 3 storey residential development within Haverhill, where unobstructed views (mainly from elevated ground) are possible. The choice of site for the Proposed Development avoids landscape designations and consequently there are no effects on any areas that are designated for their scenic qualities. The Assessment considers the landscape character sensitivity to be a medium level, or lower, as a result.

The Proposed Development requires a countryside location as it serves an agricultural purpose, and the site offers a good degree of natural screening as a result of the ability to utilise landform screening to integrate the new facilities in a satisfactory way. The existence of mature tree and hedgerow planting around three boundaries of the site is particularly beneficial in containing visibility of the facilities, which will tend to be prominent only in views from the east where the boundary is currently open. To address this visibility, a major new woodland block is proposed that will in time reinforce the eastern boundary and make a discernible contribution to biodiversity. The woodland will be planted on top of an area of bunded soil, providing a degree of enclosure and visual mitigation from completion of construction works. The assessment found that the effect of the pipeline and digestate lagoon on the surrounding landscape and visual receptors would be concentrated within the immediate vicinity of the pipeline route with intervisibility within this area being reduced due to undulating landform, hedgerows and mature woodland.

Recreational Receptors

There would be a high level of visual impact from the PRoW that runs to the east of the Site boundary. This would experience a high magnitude of change during construction that would be Significant, and which would inevitably be negative in nature. However, as the large area of new woodland establishes this effect would be ameliorated and the long term impression would be positive, as the woodland contributes to the fabric of the local landscape character. There would be limited visibility of the Proposed Development from the local road network with the main visibility arising from the A1307 along the northern edge of Haverhill, and further west where it has a junction with Silver Street. A large stand of mature poplars provides some good screening from this location but during winter views are likely to be more apparent. In the context of the route as a whole, the effects would be of an extremely limited duration.

The Assessment concludes that although the Proposed Development would be visible to a relatively limited extent, through the appropriate use of colour and materials and the introduction of new landscape elements within the scheme, there would be a limited effect on the landscape character and visual amenity within the surrounding area. The landscape and visual effects would also be highly localised, only affecting parts of the local area within 500m-600m radius from the Proposed Development Site.

Residential Receptors

Longer range views - from around 500 metres distance - are achieved from an elevated stretch of Silver Street to the north, where a small number of residential properties are located. In these views, the Proposed Development will be set down below the landform of the foreground hillside, with only the tallest elements of the digestors on the AD facility Site seen above the intervening hedgerow. The digestor tanks will be painted a muted colour in order that they recede and blend into the background colours. The northern boundary of the AD facility Site will be subject to further hedgerow planting to reinforce it and to secure the long-term resilience of the boundary as a screening element for the Site, which will help to reduce the magnitude of change perceived along Silver

Street by Year 10. Other than these properties, the Proposed Development would be well concealed in views from the closest residential receptors around the AD facility Site. There will be some oblique views from upper storeys of a small number of residential blocks in Haverhill, from about 1km distance. The visual effects arising in Haverhill will be of a minor nature.

Beyond around 500m the effects on landscape character would diminish rapidly due to the level of screening in the intervening landscape. The effects would also reduce over time as a consequence of the further mitigation envisaged in the Landscape Strategy.

Pipeline

The construction of the pipeline is likely to be locally intrusive, but this will be a short term activity and once reinstated, and vegetated, the route will be indiscernible in the landscape and views. The offsite digestate lagoons have been carefully sited to achieve a good level of integration into the local landscape and to benefit from localised screening available from Cadge's wood and nearby hedgerows. Further hedgerow planting will help to integrate this low-lying element into the landscape with only localised long term landscape and visual effects.

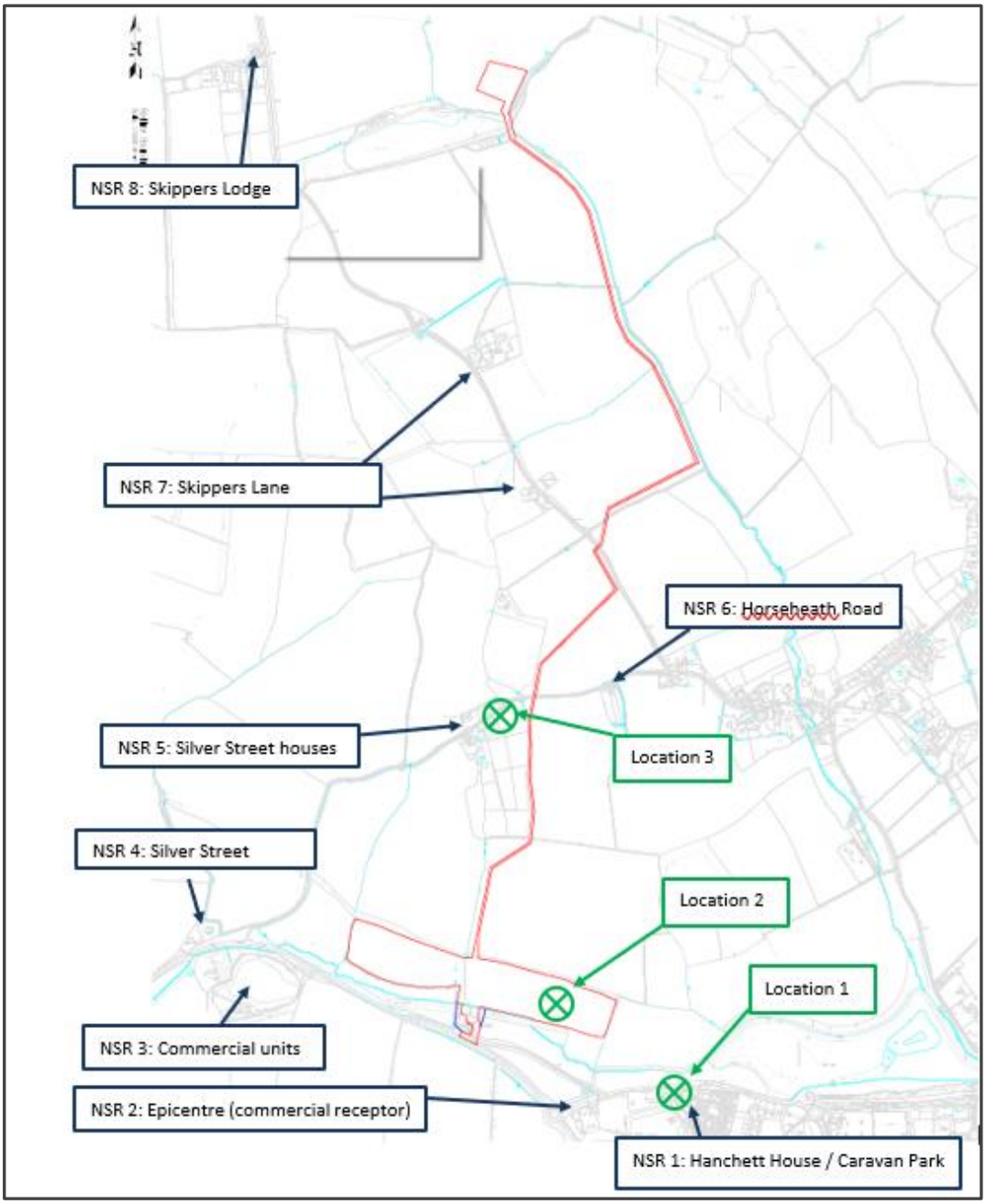
5.7 Noise

This planning application is supported by a Noise Impact Assessment, which is based on the results of a noise survey carried out at locations representative of the nearest noise-sensitive receptors (NSRs) to the Site, over representative daytime and night-time periods. The assessment has been presented in accordance with industry guidance BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*, local and national planning policy guidance.

Prior to undertaking the noise assessment, SLR consulted with West Suffolk Council with regards to the acceptability of the proposed assessment methodology and noise monitoring locations. Details of the advice offered by the LPA is set out within the associated Noise Impact Assessment Report.

To determine baseline sound levels in the vicinity of the proposed development, a noise survey was undertaken between Friday 11th and Monday 14th March 2022. Sound levels were measured at three locations around the Site as shown on Figure 5.1 below.

Figure 5.1
Monitoring Locations and Noise-Sensitive Receptors



5.7.1 Construction Noise

For the purposes of the Noise Assessment, Construction Noise was considered in phases, and assumed that each construction phase would be in isolation. The items of plant which would typically be utilised during each activity, the equipment sound power levels (determined from BS 5228:2009+A1:2014), and the estimated percentage on-time of each item of plant were set out for each of the following phases:

- Phase 1 – Site clearance and enabling works.
- Phase 2 – Substructure works and access road.
- Phase 3 – Superstructure works.

- Phase 4 – Digestate Pipeline works.

The pipeline construction duration is estimated at 12 weeks, typically estimated 30 m of pipeline length per day, comprising trenching, laying pipe and back filling. Trenchless directional drilling is understood to be short in duration, estimated 1-3 days at each location point.

The threshold value for construction noise was not exceeded at any of the NSRs, therefore the magnitude of the effect has been predicted to be negligible for all construction phases. When the magnitude is negligible, the effect is considered not significant, regardless of the sensitivity of the receptor.

5.7.2 Operational Noise

The impact of the proposals upon the noise environment at the nearest noise-sensitive receptor (NSR) to the Site was assessed based on a preliminary plant selection, as the most reliable currently available information and agreed with the client.

In addition to operational plant sources, heavy goods vehicle (HGV) movements within the Site were also included in the model based on an estimated quantity of up to 2 no. HGV movements during the 1-hour daytime assessment period and 1 no. HGV movements (as a worst-case) during the 15-minute night-time assessment period. This has been based on traffic estimates for average HGV movements including 3 no. daily biomethane gas or CO2 tankers (which may occur during the day or night) and other feedstock / digestate deliveries typically occurring during daylight hours. Other agricultural traffic into the plant is understood to typically take place during daytime hours and was not included in the noise model.

5.7.3 Assessment Assumptions

The following assumptions and caveats must be acknowledged when considering the noise model and sound data used for assessment:

- The exacting design of the AD plant may vary depending on the final contractor and the specific anaerobic digestion design method adopted.
- The CHP has been confirmed by the client as operating with a sound level of 65 dB (A-weighted) at 10 m; the stack has been modelled as a point source at 9 m high and 1 m above the chimney height with a sound power level of 93dB(A).
- Motorised mixers in the model have been assumed as point noise sources external to the tank walls at high level. The final design may incorporate mixers located within a concrete roof, with reduced noise emissions.
- The process building construction has been assumed lightweight single ply metal.
- The enclosed pump for the digestate pipeline has been assumed nominally 65 dBA at 1 m.
- The following fixed plant items have been given a sound pressure level of nominally 85 dB (A-weighted) at 1 m as a likely worst-case as confirmed by the client. Actual noise emissions from these items may be lower.
- Extracting station (potential alternative tanker with pump configuration would be low noise).
- Includes for Grid Entry Unit
- Includes for Chiller
- Includes for Pumps for heat systems
- All noise sources have been considered operating continuously and simultaneously for the proposed day and night-time plant operations, therefore tending toward a worst-case.

The numerical assessment concluded that, during the daytime, the plant emissions rating level has been predicted to be significantly below the representative background sound level at all NSRs, ranging 12 to 18 dB below the background sound. Where the rating level does not exceed the background sound level during daytime operation, this is an indication of the sound source having a low impact, depending on the context.

During the night-time, the plant emissions rating level has been predicted relative to the representative background sound level as +7 dB at NSR 1, +3 dB at NSR 4 and -2 dB at NSR 5. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact. Where the rating level has been predicted to lie above the representative background sound level during the night period, contextual considerations have been described in the assessment methodology where the assessment has been modified to support low impact.

5.7.3.1 Results

The assessment has concluded that the noise level of construction has been predicted to lie significantly below the threshold value adopted for the assessment at the noise-sensitive receptor. Vibration activity has been considered limited where vibration impacts at the receptor have been considered negligible. Noise and vibration from construction activity has therefore been predicted to lie within acceptable limits where the impact has been considered negligible with no significant effect.

The operational impacts of plant and processes have been reviewed in terms of an absolute, relative and change in environmental sound levels. The judgement has been made that the magnitude of impact is likely to be negligible during the day but may be moderate in the worst case, during the night-time, at the nearest receptors. The level of noise is deemed to be non-intrusive, such that it could potentially be heard during times of the night but does not cause any change in behaviour or attitude or affect the character of the area to the extent that there is a perceived change in the quality of life. The effect level from noise impact has been judged not significant.
It has been predicted that the increase in noise levels from operational road traffic associated with the proposed development would be negligible, based on the CRTN prediction method and projected traffic flows. Where there is a negligible impact, the effect has been considered not significant.

5.8 Traffic and Transport

A Transport Statement (TS) has been prepared in support of the planning application, to assess potential impacts of the proposed development at Spring Grove, Thurlow Estate, upon the local highway network.

The proposed AD facility would process c. 92,000tpa of agricultural feedstock. Feedstock in the form of silage (rye, maize and grass varieties); straw; farmyard manure; poultry litter and farmyard manure would be transported to Site via HGV/tractor-trailers from surrounding farms.

The site will also import Liquid Natural Gas (LNG) to power the on-site natural gas CHP as a grid connection at this location has not been possible.

The following by-products and outputs would then be transported off of the Site via HGV/tractor trailers:

- biomethane which would be stored on site prior to being transported by tanker to a central gas injection point;
- CO_2 suitable for almost all industrial and commercial applications in the UK would also be produced and exported;
- solid digestate used as an agricultural fertiliser; and
- liquid digestate used as an agricultural fertiliser.

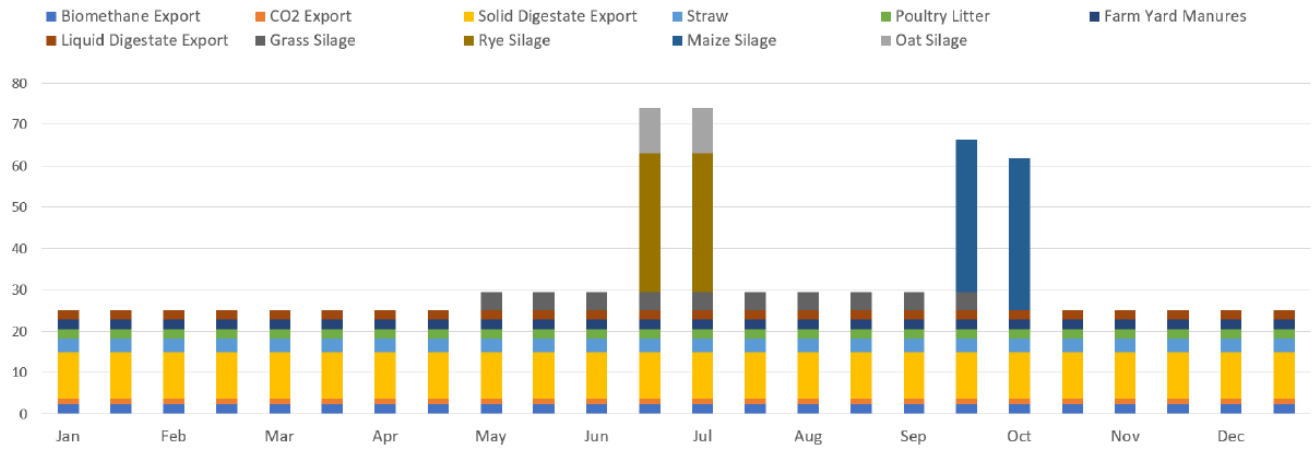
The breakdown and annual traffic forecast is detailed within Section 6 of the TS and summarised within Table 5.3 below.

Table 5.3
HGV/Tractor Traffic Forecast

	TPA	Vehicle Type	Payload (t/m3)	Annual HGV/Tractor Trips on Highway	Delivery Range
IMPORTS					
Rye Silage	15,000	Tractor	16	938	Mid-June to mid-July
Maize Silage	16,500	Tractor	16	1,031	Mid-Sep to mid-Oct
Grass Silage	10,000	All	16	625	May to Sep
Oat Silage	5,000	All	16	313	June to July
Straw	20,500	HGV	24	855	All year
Poultry Litter	15,000	HGV	26	577	All year
Farmyard Manures	10,000	Tractor	16	625	All year
EXPORTS					
Biomethane	9,817,265m³	HGV	12,500m³	786	All year
CO2	13,297,000	HGV	24.89	535	All year
Digestate (Solid)	55,000	All	-	2,946	All year
	33,000	HGV	24	1,375	
	22,000	Tractor	14	1,571	
Digestate (Liquid)	15,000	HGV	27	556	All year
TOTAL	-	-	-	9,786	-

As shown above, due to the nature of some feedstock harvesting, some deliveries would follow seasonal patterns. Other imports would follow a more consistent pattern of delivery throughout the year. The seasonality is illustrated within Figure 5.2 below.

Figure 5.2 Proposed Maximum Daily HGV/Tractor Load Forecast



The above graph illustrates how the proposals are likely to result in a varied HGV/tractor trip generation across the duration of a year.

The traffic forecast indicates that for the majority of the year (10 months), the proposed development would generate 25-29 HGV/Tractor trips per day, which equates to 50-58 HGV/Tractor movements.

Site traffic generation levels would then peak with seasonal harvest periods. This would likely be restricted to two weeks in June and July (Rye/Oat Silage) and two weeks in September and October (Maize Silage). Predicted traffic levels would peak for two weeks in June/July with up to 74 HGV/Tractor trips per day, which equates to 148 HGV/Tractor movements.

5.8.1.1 Traffic Distribution

The application site benefits from good access to the local strategic road network via the A1307 whilst being in close proximity to the Thurlow Estate farming operations from which it will be primarily served.

HGVs relating to the haulage of gas products are likely to distribute to/from the west along the A1307 to the A11.

Proposed HGV traffic associated with the local farms will distribute both east and west along the A1307, although it is noted that the largest area of farmland is located to the north/north-east of the application site.

This area of farmland, particularly during intense harvest periods, would be serviced by the internal farm track network to the north of Spring Grove Farm, in the north extent of the Thurlow Estate. These tracks offer direct access across private land using established routes.

It is also noted that HGVs serving farms to the east and north-east would be able to utilise the new bypass once completed.

5.8.1.2 Daily Profiles

Regular feedstock movements such as the delivery of straw, manures, and other organic wastes will typically take place during standard working hours of 08:00-17:00hrs. Agricultural import traffic will have the same diurnal variation as existing farm activity. All agricultural movements, including digestate, will therefore usually occur within daylight hours. Peak harvests periods will be operated by local farmers and casual staff using a limited number of owned/hired vehicles, not a large fleet. As such, traffic profiles would naturally be spread throughout the day, thus avoiding any congestion issues.

5.8.1.3 Existing Background Agricultural Traffic

Whilst the proposed site traffic will be new to the application site, a large proportion of the generated movements would already be on the local network as the proposed AD Facility will service existing local farms which have an existing traffic generation. This has been quantified as approximately 5,600 annual loads, which makes up a large proportion (61.3 %) of the proposed 9,134 annual loads.

The proposed increase would equate to an average of 10 additional HGV/tractor loads per day in the local area. This figure is provided for comparison purposes only as in practice, the loads would fluctuate at harvest periods.

5.8.1.4 Access Design

Access to the site is currently taken off the A1307 Cambridge Road. There are currently two points of access, one between the buildings and one to the east of the buildings. The proposals seek to upgrade the east access junction and close up the access junction between the buildings, to minimise points of access off the A1307. Access to the buildings can then be gained from the north via the upgraded internal access road.

Vehicular speeds were recorded by an Automatic Traffic Count (ATC) installed on the A1307 Cambridge Road in the vicinity southeast of the access. Eastbound speeds were recorded at 52.9 mph, representing the 85th

percentile speed, and 47.0 mph as the average mean speed; westbound equivalents were recorded at 52.3 mph and 46.2 mph respectively.

Topography in the vicinity of the site access is broadly level with good forward visibility. Visibility splays on egress from the existing site access are achievable up to 215 metres in either direction across the extents of the public highway, satisfying the standard requirements for 60mph vehicle speeds.

The proposed access junction has been designed in accordance with CD123 DMRB, as a simple priority junction with a 15 metre junction radii and tapers at 1:10 over 25 metres. The design has been assessed in terms of HGV swept-paths; the access drawing includes swept-paths for a maximum sized articulated lorry (16.5 metres) which demonstrates that this worst-case vehicle can access and egress without any issue. Critically, it demonstrates that an HGV can gain access to the site whilst another HGV waits to egress.

The junction location benefits from adequate visibility with 2.4 x 215 metre visibility splays as illustrated on the accompanying proposed access design.

The junction will include a restriction on HGVs turning right out of the access. HGVs will be instructed to turn left and then double-back at the roundabout if they are required to head west. This would be managed by means of signage and contract agreements. The site access design could also be developed to include a splitter-island as a physical barrier. The island could be developed during the detail design stages as a Trief kerb. A review of the U-turn capability of a maximum sized articulated lorry at the roundabout has also been undertaken.

5.8.1.5 Internal Access Road

The design requires the demolition of an existing timber outbuilding, a bridge to cross the River Stour and the widening of the gap in the railway embankment. This would require the demolishment of the west abutment wall and cutting away the embankment. The access road design features a hard surfaced access road with a 7.0 metre width (plus widening at the bends) and a length of 230 m, which would allow HGVs/tractor-trailers to pass in opposing directions without issue.

The internal access road will provide direct access to a car park area and AD Facility operation areas for deposit/loading. All vehicles will be able to turn within the site to egress in a forward gear. The internal access road will also provide access to the adjacent buildings which front the A1307. The access road design has been reviewed to ensure that the proposed levels work in terms of the bridge requirements, prior to detailed design stages.

In terms of topography, the level of the access road at the access junction is 82.5 metres and the level of the field where the development is located is 81.4 metres.

However, the proposed levels for the access road should be determined based on the bridge structure requirements. This has been calculated from the supplied flood level, plus 600mm freeboard and a 1 metre bridge deck thickness. This would place the road on an embankment of up to 2.3m in height, which would have 1:3 embankment slopes and a 1m verge on each side. With a 100 metre distance between the access junction and the bridge, this would allow for an appropriate gradient.

Additionally, 10 flood culverts and railway embankment culvert improvement works should be provided to ensure the access road does not cause any detrimental effect on flood flows. This will ensure the access does not flood occasionally in a flood event.

5.8.1.6 Traffic and Transport conclusions

A robust design and assessment process has demonstrated that the scheme proposals adhere to the appropriate safety standards with the necessary operational capacity to ensure that there will be no detrimental impacts to the local highway.

Paragraph 111 of the National Planning Policy Framework (NPPF) states:

'*Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe'*.

It is concluded that any impacts resulting from the proposals would be negligible in terms of road safety, highway operation, and/or network capacity; as such the proposal is considered acceptable in highways and transportation terms.

5.9 Water Environment

A full suite of Flood Risk Assessment (FRA) and Surface Water Drainage Strategy (SWDS) documents accompany this application and have been prepared by SLR, under the direction of a Technical Director for Hydrology at SLR who specialises in flood risk and associated planning matters. Reporting has been completed in accordance with guidance presented within the National Planning Policy Framework[5] (NPPF) and its associated Planning Practice Guidance[6] (PPG), taking due account of current best practice documents relating to assessment of flood risk published by the British Standards Institution BS8533[7].

Hydraulic modelling was also undertaken to inform the emerging proposed layout to:

- define baseline flood mechanism against which the impact of the proposed scheme and mitigation
- measure(s) can be assessed
- examine changes in the flood mechanism(s) compared to the baseline as a result of the proposed
- development to identify if/what issues need to be mitigated
- outline suitable options that may mitigate increase in peak water levels or flood extent
- test and refine mitigations options
- identify set of mitigations to implement into the proposed development
- determine whether further model justification is likely to be required by Environment Agency and/or
- the Lead Local Flood Authority (LLFA)
- prepare deliverable as a summary in Flood Risk Assessment (FRA)
- prepare a modelling report to explain modelling process that was undertaken.

5.9.1 Flood Risk Summary

Based on the results of the hydraulic modelling, the main Site was shown to lie on the fringes of Flood Zones 1, 2 and 3a, as defined by Table 1: Flood zones at PPG Annex 3, where:

- *Zone 1 - low probability (Flood Zone 1). Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b);*

- *Zone 2 - medium probability (Flood Zone 2) Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map); and*
- *Zone 3a - high probability (Flood Zone 3a) Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)*

5 National Planning Policy Framework: Communities and Local Government (Updated July 2021)
6 Planning Practice Guidance: Communities and Local Government (Updated June 2021)
7 BS8533:2017, Assessing and managing flood risk in development: Code of Practice (December 2017)

The entirety of the site is located in excess of 50km away from the coast and is elevated to levels above 78.78m AOD. The flood risk from tidal flooding was concluded to be low and not considered further.

5.9.1.1 Main Site

With reference to the Flood Map for Planning (Rivers and Sea)[8], the southern part of the main Site was shown to lie within an area having a greater than 0.1% Annual Exceedance Probability (AEP) of river or fluvial flooding. The flood risk to the proposed development at the main Site was considered further.

In terms of surface water and pluvial flooding, flood risk within the main site varies from low to high i.e. the depth of inundation from this source could exceed 900mm during a flood event with between 1% and 0.1% AEP (low) - however, during a flood event with a greater than 3.33% AEP (high), the depth of inundation would predominantly be between 300 – 900mm.

A flow path also crosses the Spring Grove Field and flooding would occur during an event with between 1% and 0.1% AEP (low). The associated depth of inundation could reach 300mm.

Within the main Site, where the flood extent associated with surface water flooding coincides with that associated with flooding from rivers during a 1% to 0.1% AEP event (Flood Zone 2), flood management measures have been provided as discussed within the associated FRA and SWDS. Within areas only at risk of flooding from surface water, it is proposed that all built infrastructure of the proposed AD facility be either located outside these areas or be protected from flooding. Additionally, it is proposed that the SWDS be developed to prevent pooling by providing sufficient water drainage features.

Groundwater was also recorded within the trial pit excavated for infiltration testing at approximately 1.90m b.g.l. within the layer of gravel and cobbles. This rose to 1.59m b.g.l. indicating groundwater was confined beneath the clay. Infiltration testing was also undertaken within the southern part of the main Site. Given that the geology across the main Site does not vary, it is expected that any gravel and cobbles layer(s) would be overlain by clay across the main Site and groundwater emergence is therefore considered unlikely. The flood risk from this source was therefore low and not considered further.

Sewer flood risk was also considered low for the main site and not considered further.

5.9.1.2 Northern Lagoons

With reference to the Flood Map for Planning (Rivers and Sea), the northern lagoons were shown to lie entirely within an area having less than 0.1% Annual Exceedance Probability (AEP) of flooding from river and fluvial flooding. The flood risk from this source was therefore low and not considered further.

The northern lagoons were shown to be predominantly at medium risk of flooding from surface water, except for the western boundary of the part of the Site which is at low to medium risk of flooding from this source. However, this flood risk extent was limited to the boundary and does not extend across the footprint of the proposed lagoons. The flood risk from surface water flooding was therefore low and not considered further.

BGS Borehole records present borehole logs at four locations within an approximate 1km buffer of the northern lagoon and pipeline. The depths of these range from 30m – 60m and all report groundwater strike, ranging from 15m – 30m b.g.l. The flood risk from this source is therefore low and is not considered further. Sewer flood risk for the northern lagoons was also shown to be low and not considered further.

5.9.2 Pipeline

There is a limited section of the pipeline located within an area having a greater than 0.1% Annual Exceedance Probability (AEP) of flooding from rivers. However, as the pipeline will be constructed below ground, consideration of the flood risk along its alignment would be limited to the construction phase. It is therefore

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concluded that the Construction and Environmental Management Plan (CEMP) would be cognisant of the flood risk with associated impact and management measures conditions.

At the corridor of the two watercourses discharging to the Stour Brook, surface water/pluvial flood extent during a less than 3.33% AEP event (low to medium) was shown to be limited. However, during a flood event with a greater than 3.33% AEP (high), the extent increases and depth of inundation could reach 300mm.

A small section of the pipeline was shown to be located within an area having a low to High risk of flooding from surface water. However, as the pipeline will be constructed below ground, consideration of the flood risk along its alignment will be limited to the construction phase. It is therefore concluded that the Construction and Environmental Management Plan (CEMP) would be cognisant of the flood risk with associated impact and management measures conditions.

BGS borehole logs available at four locations within an approximate 1km buffer of the northern lagoon and pipeline cover depths from 30m – 60m and all report groundwater strike, ranging from 15m – 30m b.g.l. The flood risk from this source was therefore low and not considered further.

In terms of sewer flood risk, the pipeline was shown to be set predominantly within arable land with crossing points at Skippers Lane and Silver Street/Horseheath Road with sewers potentially present within these. The pipeline will however be constructed below ground and consideration of the flood risk along its alignment will therefore be limited to the construction phase. It is therefore concluded that the Construction and Environmental Management Plan (CEMP) will be cognisant of the flood risk with associated impact and management measures conditions.

Flood risk has been assessed in line with BS8533[9] , taking account of national, county and local planning policy and guidance, and all potential sources of flooding to the Site have been considered.

A screening assessment of the flood risk posed by sources including fluvial, tidal, surface water, groundwater, sewer, reservoirs, canals and infrastructure failure has been undertaken. The screening assessment concluded that the main Site is partly at risk of flooding from rivers and surface water. Hydraulic modelling to establish the fluvial flood risk at main Site, and also captures the pluvial flood risk, indicates that the main Site lies on the fringes of Flood Zones 1, 2 and 3a. However, all key elements of the proposed development will be located outside the 1% AEP flood extent.

The flood risk to the proposed development is considered negligible and, therefore, in terms of both the Exception and Sequential Tests, the Site is suitable for development. It should be noted that allowances for changes to peak river flows have been considered. An 8% uplift to the 1% AEP peak river flow was therefore assessed. Results of this assessment indicate that flooding of the proposed development within the main Site would be limited to the central part of the access road.

Flood management measures in the form of culverts will be provided. These measures result in a reduction in flood risk downstream of the main Site. However, there is a limited area within the woodland to the south west of the main Site where flood risk is marginally increased. This increase in flood risk is however considered appropriate in light of the low vulnerability use of the woodland and the decrease in flood risk immediately downstream of the Site.

The hydraulic model results predicts no measurable increase in flood risk to residents and property further downstream in Haverhill.

A summary of the potential sources of flooding and the flood risk arising from them is presented in Table 5.4.

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Table 5.4
Potential Sources of Flooding

Potential Source of flooding	Significant Flood Risk at the Site (Y/N)
Rivers or Fluvial Flooding	Y
Sea or Tidal Flooding	N
Surface Water or Pluvial Flooding	Y
Groundwater	N
Sewers	N
Reservoirs, Canals and other Artificial Sources	N
Infrastructure Failure	N

5.9.2.1 Drainage Philosophy

Two primary drainage systems will be adopted, for the clean (surface water runoff) and contaminated (foul) water systems. In accordance with Suffolk County Council design requirements and the Environment Agency climate change guidance, the proposed clean water system will be designed to manage all flows up to and including the 1% AEP rainfall event +20%. The runoff corresponding to the contaminated water system would be harvested and used to meet around 100% of the water demand of the AD process. Such an arrangement (which depends on management controls) will need to be agreed with the LLFA (planning) and Environment Agency (permitting).

5.9.3 Surface Water Drainage Strategy

In line with national, county and local policies, the development must make allowance for a 20% uplift in peak rainfall to accommodate for climate change, which has been included within the SWDS for the Site. The SWDS has been developed to demonstrate that the requirements of national, county, and local policies can be achieved at the site given the nature and the quantum of development proposed. Greenfield runoff from the Site currently discharges to the Stour Brook, directly or indirectly via a network of drains. The proposed development will seek to restrict discharge into the Stour Brook at the 50% AEP greenfield rate of 2.6ls-1ha-1.

The attenuation storage required to achieve the greenfield rate for surface water runoff resulting from the proposed development will be provided within a lagoon. Runoff to the lagoon will be conveyed by a network of channel drains and underground pipes. The lagoon will provide the required attenuation of runoff prior to discharge into the Stour Brook.

The proposed AD plant has been designed in accordance with CIRIA C736, Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (England) Regulations (SSAFO) and CIRIA 759. Additionally, the plant will be operated under strict operational & maintenance procedures to ensure protection of the local receptors.

In common with most drainage strategies put forward in support of planning applications, the strategy presented here will need to be subject to detailed design and relevant approvals before construction commences.

5.10 Pest Control

The Site Manager (or Deputy) will have responsibility for ensuring that nuisances and hazards arising from the facilities due to pests are minimised. All loading, unloading and storage of feedstock would be undertaken within a controlled environment and the silage clamps and digestate lagoons would be covered. Grates would be fitted to drains where requires, to prevent pests entering the buildings.

The Site Manager (or Deputy) will ensure that regular weekly inspections are made of all the facilities, for visual evidence of infestation. The avoidance of litter build-up and generally “good housekeeping” will keep areas neat and tidy. Active baiting will also be undertaken at strategic locations around the facilities and the baiting sites will be examined during regular inspections. In the event that problems are identified, action will be taken to remedy any problems as appropriate.

6 Planning Policy Review

6.1 Introduction

This section reviews relevant planning policy guidance at national and local levels and considers the degree to which the proposals comply with guidance and policy in respect of energy, waste and climate change.

6.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) (updated July 2021) states, in paragraph 2, that planning law requires applications for planning permission be determined in accordance with the development plan, unless material considerations indicate otherwise. The Development Plan for the Site is considered in section 7.5.

Achieving sustainable development

Paragraph 7 details that *"The purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs."*

Paragraph 8 continues by detailing that *"Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):*

a) ***an economic objective*** *– to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;*

b) ***a social objective*** *– to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and*

c) ***an environmental objective*** *– to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

The presumption in favour of sustainable development is detailed in paragraph 10, which states: *"So that sustainable development is pursued in a positive way, at the heart of the Framework is a* ***presumption in favour of sustainable development*** *(paragraph 11)".*

Paragraph 11 goes on to say that development proposals that accord with an up-to-date development plan should be approved without delay. Further benefits to the sustainability of the agricultural sector in the area such as supporting jobs and decarbonising operations contribute to the Economic and Social Objectives of the framework.

Any adverse impacts of the AD facility on the natural and built environment, and on the local residents and communities in the area, have been assessed as part of this application and found to be acceptable. The landscape and visual impact has been assessed through an LVA that concluded that although the proposed development would be visible to an extent, through the appropriate use of colour and materials and the introduction of new landscape elements within the scheme, there would be limited effect on the landscape character and visual amenity within the surrounding area. As no significant adverse impacts on health and quality of life have been identified through the technical assessments, the proposed AD facility is considered to be in accordance with the NPPF.

Decision making

Paragraph 38 identifies that *"Local planning authorities should approach decisions on proposed development in a positive and creative way. They should use the full range of planning tools available… and work proactively with applicants to secure developments that will improve the economic, social and environmental conditions of the area. Decision-makers at every level should seek to approve applications for sustainable development where possible."*

The proposed development would contribute to the economy through the generation of renewable energy, the provision of digestate as a fertiliser for local farms, and the direct and indirect spend in the local economy; thereby supporting local employment and local businesses to the benefit of local communities.

The proposed development would also contribute to environmental conditions by managing farmyard manures and poultry litter through a process that captures methane, methane being one of the main contributors to global warming. Manures that previously were spread on the land releasing CO_2 into the atmosphere would be processed by the plant. As such, the development proposals fully accord with the requirement for sustainable development which is the overarching principle of NPPF.

Paragraph 40 notes that local authorities should encourage the take up of any pre-application services they offer and that they should encourage applicants to engage with the local community, statutory and non-statutory consultees before submitting their applications.

Paragraph 43 notes that '*The right information is crucial to good decision-making, particularly where formal assessments are required (such as Environmental Impact Assessment, Habitats Regulations Assessment and flood risk assessment). To avoid delay, applicants should discuss what information is needed with the local planning authority and expert bodies as soon as possible.'*

Building a strong, competitive economy

Paragraph 81 notes identifies that *"Significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development. The approach taken should allow each area to build on its strengths, counter any weaknesses and address the challenges of the future…"*

Paragraph 83 continues by stating that *"Planning… decisions should recognise and address the specific locational requirements of different sectors."*

Supporting a prosperous rural economy

Paragraph 84 identifies that *"Planning policies and decisions should enable:*

a) *the sustainable growth and expansion of all types of business in rural areas, both through conversion of existing buildings and well-designed new buildings;*

b) *the development and diversification of agricultural and other land-based rural businesses; ……"*

The proposed development seeks to develop a sustainable rural business in a way that will support local farms through acceptance of crops and agricultural by-products, and the provision of digestate as a substitute fertiliser, contributing to development of a circular economy within Suffolk, with regard to the key objectives of keeping products and materials in use; regenerating natural systems and eliminating waste and pollution[10].

6.2.1.1 Promoting sustainable transport

In considering applications for development, paragraph 110 states that '*it should be ensured that:*

[10] Key objectives definition as set out by the Ellen Macarthur Foundation www.ellenmacarthurfoundation.org

a) *appropriate opportunities to promote sustainable transport can be – or have been – taken up, given the type of development and its location;*

b) *safe and suitable access to the site can be achieved for all users;*

c) *the design of streets, parking areas, other transport elements and the content of associated standards reflects the current national guidance, including the National Design Guide and the National Model Design Code; and*

d) *any impacts from the development on the transport network in terms of capacity and congestion), or on highways safety, can be cost effectively managed to an acceptable degree.'*

Paragraph 111 states that *'development should only be prevented or refused on highway grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'*

6.2.1.2 Achieving well-designed places

Paragraph 130 states that '*Planning policies and decisions should ensure that developments:*

a) *will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;*

b) *are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;*

c) *are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);…*

d) *optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and public space) and support local facilities and transport networks; …'*

Paragraph 131 notes that '*Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highway officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.'*

Planning for climate change

Paragraph 152 notes that *'The planning system should support the transition to a low carbon future in a changing climate..'* and *'support renewable and low carbon energy and associated infrastructure'.*

Paragraph 158 states: "*When determining planning applications for renewable and low carbon development, local planning authorities should:*

a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and

b) approve the application if its impacts are (or can be made) acceptable…"

The contribution of the proposed development to climate change is at the core of the application. The significant increase in production of renewable energy associated with the operation of the AD facility would make a substantial contribution to climate change and cutting greenhouse gas emissions.

On the basis of Paragraph 158, there is clear and unequivocal support in national planning policy that planning permission should be granted.

6.3 Climate Change

6.3.1 Government advice[11] for local authorities

As regards local authorities' statutory duty towards climate change, Government advice on the Ministry of Housing, Communities and Local Government states that '*In addition to supporting the delivery of appropriately sited green energy, effective spatial planning is an important part of a successful response to climate change as it can influence the emission of greenhouse gases*'.

6.3.2 Climate Change Act 2008

The Climate Change Act established a legally binding target to reduce the UK's greenhouse gas emissions by at least 80% in 2050 from 1990 levels. This was amended in 2019 to require reduction of emissions by at least 100% in 2050.

Two of the four opportunities highlighted by Government to mitigate climate change by reducing greenhouse gas emissions are relevant to the proposed development:

'*Providing opportunities for renewable and low carbon energy technologies.*

Providing opportunities for decentralised energy and heating'.

The proposed development would a significant opportunity for contributing to climate change minimisation within West Northamptonshire.

6.3.3 Suffolk County Council Climate Emergency

In March 2019, Suffolk County Council declared a 'Climate Emergency' with councillors pledging to take local action to contribute to national carbon neutral targets through the development of practices and policies, with an aim to being carbon neutral in the County by 2030, and those of their residents and businesses by 2045 - five years ahead of the UK government's 2050 target.

The proposed AD facility would contribute green, carbon negative energy and support the achievement of the UK Government's and Suffolk County Council's targets for achieving net zero by 2050 and 2045, respectively.

6.4 National Planning Policy for Waste

The NPPW sets out the Government's policies for working towards a more sustainable and efficient approach to resource use and provides a framework for businesses and communities to take more responsibility for their waste, including by enabling it to be disposed of without endangering human health or harming the environment.

The NPPW recognises the need to drive waste management up the waste hierarchy, with other recovery such Anaerobic Digestion which produces energy preferred over disposal without energy recovery. In the absence of a local AD facility that is able to accept agricultural by-products, the proposed waste feedstock would likely be spread on fields releasing CO_2, i.e. at the lowest level in the waste hierarchy. The proposed development therefore supports national waste policy in moving the management of such wastes up the waste hierarchy.

6.5 The Development Plan

The Development Plan for the proposed development comprises:

- The Suffolk Minerals and Waste Local Plan (adopted July 2020);

[11] https://www.gov.uk/guidance/climate-change#statutory-duty-on-Climate-Change

- St Edmundsbury Core Strategy (adopted December 2010); and
- Haverhill Vision 2031 (adopted September 2014)
- Joint Development Management Policies for Forest Heath and St Edmundsbury Local Plan (adopted 2015)

6.5.1 Suffolk Minerals and Waste Local Plan 2020

The Suffolk Minerals and Waste Local Plan (SMWLP) was adopted in July 2020 and forms primary policy for waste planning applications.

The following policies are considered relevant to the proposed AD facility:

- Policy GP1: Presumption in Favour of Sustainable Development;
- Policy GP2: Climate Change Mitigation and Adaptation;
- Policy GP3: Spatial Strategy;
- Policy GP4: General Environmental Criteria;
- Policy WP1: Management of Waste (Mt);
- Policy WP3: Existing or Designated Land-uses Potentially Suitable for Waste Development;
- Policy WP7: Anaerobic Digestion;
- Policy WP 17: Design of Waste Management Facilities.

Policy GP1 'Presumption in favour of sustainable development' states:

> *'The County Council will take a positive approach to minerals and waste development that reflects the presumption in favour of sustainable development.*
>
> *It will work proactively with applicants to find solutions which mean that proposals can be approved wherever possible, and to secure minerals and waste development that improves the economic, social and environmental conditions in the area.*
>
> *Planning applications that accord with the site allocations and policies in this Plan will be approved without delay, unless material considerations indicate otherwise.*
>
> *Where there are no policies relevant to the application or the relevant policies are demonstrably out-of-date at the time of making the decision, the County Council will grant permission unless material considerations indicate otherwise – taking into account whether:*
>
> *a) Any adverse impacts of granting planning permission would significantly and demonstrably outweigh the benefits, when assessed against the policies in the National Planning Policy Framework and National Planning Policy for Waste taken as a whole; or*
>
> *b) Specific policies in the National Planning Policy Framework or National Planning Policy for Waste indicate that development should be restricted.'*

This policy aims to make sure that any new waste development is sustainable in line with economic, social, and environmental conditions within the area.

In addition to the clear green energy benefit that the proposed development affords, it complies with the above policy since it would benefit local farmers by ensuring consistent offtake of agricultural residues, some of which are difficult to manage. Farmers working in partnership with the AD facility would also grow crops for the facility

which gives them a wider range of viable crop rotations and agronomical planning options. The multi-year crop rotation cycle would ensure diversity on the farm, which benefits soil fertility. These benefits will provide farmers with economic stability at a time when agricultural costs are rising, farming subsidies are being phased out and farmers are being squeezed by supermarkets on price.

With regard to the wider community, the proposed development would draw from the local supply chain for a wide range of goods and services, thereby directly supporting individuals and companies providing jobs and services in the local area.

In terms of the environment, considerable efforts were made to produce a site design which achieves the most satisfactory relationship with the landscape of the site whilst respecting other environmental and technical considerations.

Policy GP2 'Climate Change Mitigation and Adaptation' states:

> '*New minerals and waste management facilities should through their construction and operation minimise their potential contribution to climate change through reducing carbon and methane emissions, incorporate energy and water efficient design strategies and be adaptable to future climatic conditions.*
>
> *Proposals for new minerals and waste facilities should where appropriate:*
>
> *a) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption, including maximising cooling and avoiding solar gain in the summer;*
>
> *b) be planned so as to minimise carbon dioxide and methane emissions, and support opportunities for decentralised and renewable or low-carbon energy supply;*
>
> *c) give priority to the use of sustainable drainage systems, paying attention to the potential contribution to be gained to water harvesting from impermeable surfaces and encourage layouts that accommodate waste water recycling;*
>
> *d) take account of potential changes in climate including pluvial and fluvial flooding, rising sea levels and coastal erosion, and;*
>
> *e) incorporate proposals for sustainable travel including travel plans where appropriate.'*

The proposed development is considered to be in accordance with Policy GP2 due to the low carbon biomethane produced by the AD plant being directly used as an alternative fuel to power vehicles and injected into the national gas grid to create renewable heat. Biomethane delivers a reduction of equivalent carbon emissions of more than 70% compared against diesel-fuelled HGVs, making it supportive of opportunities of minimising carbon emissions.

The AD plant has been designed in a way that will help minimise energy consumption and will harvest a large percentage of the water needed for the workings of the plant from rainfall. Two primary drainage systems will be adopted, for the clean (surface water runoff) and contaminated (foul) water systems. CHP systems will derive power from plant activity to provide a sustainable source of energy for the development.

Climate change has been assessed through the hydrology assessment of the proposals, fully in line with current future climate change considerations.

Policy GP3 'Spatial Strategy' states:

> *'Preference will be given to proposals for minerals and waste development in accordance with the Key Diagram where individual sites are well related to the Suffolk Lorry Route Network (or rail network or navigation) major centres of population (namely Ipswich, Lowestoft and Bury St Edmunds) and do not*

have potentially significant adverse impacts upon features of environmental importance (natural or man-made) or endanger human health'.

Within the 'Key Diagram' mentioned above, the application site can be seen to be located within close proximity to the 'Zone Distributor Lorry Route' that runs between Haverhill and Bury St Edmunds. The development would also not have any adverse impacts upon features of environmental importance. Thus, the proposed development adheres to policy GP3, and should be considered a preferred location for this type of development due to its location.

Policy GP4 'General Environmental Criteria' explains that developments should address and demonstrate where applicable, how they would have no significant adverse effects on various environmental, heritage, and landscape issues. The policy goes on to states that:

'Proposals should meet or exceed the appropriate national or local legislation, planning policy or guidance for each criterion, including reference to any hierarchy of importance. Proposals should aim to achieve a biodiversity net gain. Proposals should demonstrate that when considering the potential for significant adverse impacts upon features of acknowledged environmental importance, that the hierarchy of firstly avoidance, then mitigation and finally compensation has been followed'.

This planning application is supported by an Environmental Statement along with a range of technical assessments, including landscape and visual, noise, air quality, heritage, ecology, traffic and flood risk assessments. SLR's technical teams have worked closely with Acorn's design team to ensure that the construction and operation of the AD facility limits the impacts on sensitive receptors as far as possible. Where necessary, mitigation has been embedded into the scheme. No significant adverse impacts have been identified as a result of the proposed development on the local area and its surrounding environmental importance.

Where landscape and visual effects are unavoidable, these will be mitigated as far as possible through the planting of further trees, hedgerows (where appropriate) or other forms of vegetative screening as well as altering management regimes to attain greater heights in vegetation.

A Biodiversity Net Gain (BNG) Assessment has been undertaken in addition to the implementation of wildlife-friendly landscaping proposals, incorporation of invertebrate habitat features and the installation of barn owl box at the Site. An improvement of 12.13% in BNG will be provided as a result of the scheme. Thus, the proposed development complies with Policy GP4 above.

Policy WP3 'Existing or Designated Land-uses Potentially Suitable for Waste Development' states:

'General waste management facilities (other than landfill sites and water recycling centres) may be acceptable within the following areas:

a) land in existing waste management use;

b) land in existing general industrial use (B2 use class) or in existing storage or distribution use (B8 use class) (excluding open air composting);

c) land allocated for B2 and B8 purposes in a local plan or development plan document (excluding open air composting);

d) within or adjacent to agricultural and forestry buildings;

e) agricultural and forestry land (open air composting only) excluding ancient woodland or planted ancient woodland sites;

f) brownfield land (excluding open air composting);

g) former airfields (open air composting only);

h) water recycling centres (including composting and anaerobic digestion) and;

i) current and former mineral workings (open air composting and construction, demolition and excavation waste recycling only).

Proposals must also comply with the environmental criteria set out in Policy GP4.'

This policy links with Policy WP7 (discussed below) which outlines that AD facilities are expected to co-locate with waste water treatment plants, to capture methane from sewage. In this instance, the feedstock linked to the proposed facility will be derived from nearby agricultural land, and to reduce the transport of feedstock to / treated digestate from the facility, the development needs to be co-located with the feedstock source. The provision of digestate as a by-product is a positive benefit to the local agricultural land and economy.

Policy WP3 is aimed at '*general waste management facilities'*, and whilst the proposed development is considered by the County Council to be a waste development it is not a 'general waste management facility' as the primary purpose of the facility is to generate green energy. Furthermore, the facility would accept a proportion of agricultural wastes and other farming products, rather than general waste streams.

The extent to which the proposed development should be judged against Policy WP3 must therefore be considered against the national policy drive for green energy sources and energy resilience, in the same vein as the general policies of the SWMLP coupled with Suffolks' declaration of climate emergency, which clearly support green energy, such as that provided by this carbon-negative proposal.

This is discussed further below in the context of Policy WP7.

Policy WP7 'Anaerobic Digestion' states:

'*Anaerobic digestion facilities may be acceptable on land:*

a) within the uses identified within Policy WP3; or

b) integrated with waste water treatment plants.

Proposals for such facilities at landfill sites may be considered acceptable on a temporary basis whilst landfilling and restoration is taking place on site. Proposals must also comply with the environmental criteria set out in Policy GP4.'

The preceding paragraph (6.15) to this policy states that *'anaerobic digestion facilities promote anaerobic degradation of organic wastes such as animal wastes, energy crops, and vegetable tailings. The process involves introducing the feedstock into a tank of bacteria rich slurry. This process produces methane gas that is normally used to drive a diesel generator and export the electricity to the grid. The main advantage of this over composting is that electrical power is produced. Co-locating with sewage treatment allows methane to be recovered from sewage and at the same time prevents a potent greenhouse gas from escaping into the atmosphere.'*

The above description focuses on facilities that produce electricity. The proposed development would generate biomethane that would be injected directly into the grid, not create electricity to be introduced to the grid as is suggested in the policy. Electrical power would only be created through CHP for use on-site, but not for export.

The proposed facility is being developed in response to the Government's push for development of alternative fuels to decarbonise energy used for heating and the transport sector and to provide increased national resilience, reducing reliance on diesel. This is a relatively recent shift in Government priorities that is not reflected in Policy WP7.

This policy therefore arguably does not apply to the proposed development as the purposes for which AD technology can be used as described in the Policy are drawn too narrowly and do not reflect changes in national and indeed local policy.

Given that climate emergency has been declared in Suffolk, and the national policy drive for improved, green sources of energy for all sectors not just electricity, it is suggested that Policy WP7 is not relevant to the proposed development and that other policies in the MWLP such as Policy GP1 'Presumption in favour of sustainable development' should take precedence.

Policy WP 17 'Design of Waste Management Facilities' states:

> '*Waste management facilities will be considered favourably where they incorporate:*
>
> *a) designs of an appropriate scale, density, massing, height and materials;*
>
> *b) safe and convenient access for all potential users;*
>
> *c) schemes for the retention of existing and provision of new landscape features;*
>
> *d) measures which will protect, preserve and where practicable enhance the natural, and historic environment including the setting, landscape and built environment, and:*
>
> *e) comply with Policy GP2.'*

The findings of the technical and environmental studies undertaken for the planning application were used to inform the design of the proposed development, and hence achieved a 'best fit' within the environment of the proposed site, taking account of all contextual environmental considerations.

Although the form of the proposed AD facility is necessarily driven by its function, its design has been carefully considered so as to ensure that the appearance of the proposed AD facility blends into its agricultural setting as much as possible. Design measures include the use of an appropriate colour palette to integrate structures within the surrounds and careful siting of development infrastructure.

A safe and appropriate access has been designed, which ensures vehicles entering and exiting the site can do so in a safe manner, in forward gear and without causing queuing on the highway.

In landscape terms, the proposed development would be landscaped to blend with its surrounds, retaining existing landscape features including streams, ditches, trees and hedgerows as far as possible. Where removal of landscape features is unavoidable, mitigation is proposed, with a net gain in biodiversity across the site of 12.13%. As detailed in the ES, the proposed woodland management of the designated Ancient Woodland to the north would result in a positive influence on the condition of the woodland, providing increased environmental benefit.

As the design of the AD plant has been carefully designed to be sympathetic to the surrounded environment, this proposed development complies with Policy WP 17 above.

6.5.2 West Suffolk Local Plan

The St Edmundsbury Core Strategy Development Plan Document (SECS) (adopted December 2010) sets out the visions and objectives for the former borough council area and now forms part of the West Suffolk Local Plan. The West Suffolk Local Plan Review is currently at the early stages of plan preparation.

The document sets out the vision for future growth of the area, including Haverhill and rural areas, and provides strategic policies to guide sustainable development, and the scale, type and location of new development. The

document provides strategic spatial objectives that set the spatial context for policies and proposals. The following are relevant to the proposed development:

> *Strategic Objective C ''to sustain and enhance rural communities by providing, where infrastructure and environmental capacity exists, new housing to grow settlements and safeguard existing rural services while, maintaining and, where possible, improving the rural environment.''*
>
> *Strategic Objective J ''to ensure new development addresses and tackles environmental sustainability issues including climate change adaption, carbon emissions reduction, renewable energy provision, recycling, waste reduction and water efficiency.''*

The policies below are considered relevant to the proposed development.

- Policy CS1: St Edmundsbury Spatial Strategy
- Policy CS2: Sustainable Development
- Policy CS3: Design and Local Distinctiveness
- Policy CS9: Employment and the Local Economy
- Policy CS12: Haverhill Strategic Growth
- Policy CS13: Rural Areas
- Policy CS14: Community Infrastructure Capacity and Tariffs

Policy CS1 'St Edmundsbury Spatial Strategy' provides a framework for environmentally sustainable economic growth. The policy states that the protection of the natural and historic environment, the distinctive character of settlements and the ability to deliver infrastructure will take priority when determining the location of future development.

Policy CS2 'Sustainable Development' aims to make sure that new development protects and enhances natural resources and are of a sustainable design. New development should enhance biodiversity, conserve and enhance air and land quality, minimise need for travel, and using natural resources such as harvesting and grey water recycling. The development proposals should take into consideration ecological factors, health and wellbeing, transport, pollution, materials and waste factors.

Various technical documents accompany this planning statement and consider potential effects and mitigation measures for air quality, ecology, and travel aspects of the proposed development. The development will harvest a large percentage of the water needed for the workings of the plant from rainfall. In terms of biodiversity, benefits occur where organic fertiliser (digestate) replaces artificial fertilisers in terms of the wildlife living within the cropping area, with demonstratable benefits to soil invertebrates, insect numbers and diversity, leading in turn to larger and more diverse mammal and bird populations.

Policy CS3 'Design and Local Distinctiveness' states that *"Proposals for new development must create and contribute to a high quality, safe and sustainable environment…"* the policy goes on to explain that proposals should address components on heritage and conservation, landscape and views, community safety, natural and historic environment, open space, and access and transport where appropriate.

This planning application is supported by a range of technical assessments, including landscape and visual, noise, air quality, heritage, ecology, traffic and flood risk assessments. SLR's technical teams have worked closely with Acorn's design team to ensure that the construction and operation of the AD facility limits the impacts on sensitive receptors as much as possible. Where necessary, mitigation has been designed into the scheme, for example, the increased vegetative screening of the development along the western and eastern boundaries will provide foraging and nesting biodiversity opportunities as part of the proposed development.

Policy CS9 'Employment and the Local Economy' states that *"Provision will be made for development that will aim to deliver at least 13,000 additional jobs in the borough by 2026…"* Specific employment allocation sites have been selected in Bury St Edmunds and Hanchett End at Haverhill. *"…Employment growth will also be achieved by the allocation of land for employment uses in mixed use developments in Bury St Edmunds, Haverhill, and the Key and Local Service Centres, and through policies supporting growth in the rural economy, retail, leisure and tourism…"*

The AD facility would generate approximately 100 FTE jobs spread over the construction period and five FTE jobs during operation. The temporary increase in employment and the associated secondary economic effects such as supply chain multiplier effects, and spend on local services, would have positive effects at a local level during the construction phase.

In addition to providing employment, the proposed development will support local agricultural business. Thus, the proposed development adheres to the relevant policies of Policy CS9.

Policy CS13 'Rural Areas' states that *"The scale of development in Key Service Centres, Local Service Centres and Infill Villages, as defined in Policy CS1, will reflect the need to maintain the sustainability of local services for the communities they serve, the diversification of the economy and the provision of housing for local needs.*

Development outside the settlements defined in Policy CS4 will be strictly controlled, with a priority on protecting and enhancing the character, appearance, historic qualities and biodiversity of the countryside while promoting sustainable diversification of the rural economy. Policies in the Development Management DPD and Rural Site Allocations DPD will set out detailed uses which are appropriate in rural areas."

The proposed development will have positive effects on the local economy, such as the initial uplift in jobs through the construction, through to the longer term benefits of how the development would draw from the local supply chain for a wide range of goods and services, thereby directly supporting individuals and companies providing jobs and services in the local area.

It will support the sustainable diversification of the rural economy through promoting sustainable crop and byproduct processing. It will continue to maintain the sustainability of local agricultural business.

Policy CS14 'Community Infrastructure Capacity and Tariffs' states that *"All new proposals for development will be required to demonstrate that the necessary on and off-site infrastructure capacity required to support the development and to mitigate the impact of it on existing infrastructure exists or will exist prior to that development being occupied."*

The proposed development includes provision for on-site infrastructure to support the development.

6.5.3 Haverhill Vision 2031 (Adopted September 2014)

The former St Edmundsbury Borough Council formally adopted Bury St Edmunds, Haverhill and Rural Area Vision 2031 (Vision 2031) site allocation documents on 23 September 2014. Vision 2031 documents form part of the former St Edmundsbury area Local Plan. These documents identify where growth will be allowed and what local everyday services people will need to enjoy a good quality of life. It forms part of the West Suffolk Council's Local Plan, setting out the direction of management and service provision within the town. The policies below are considered relevant to the proposed development.

- Policy HV1: Presumption in Favour of Sustainable Development
- Policy HV13: Community Infrastructure Levy and Allowable Solutions

Policy HV1 Presumption in Favour of Sustainable Development states that:

> *'When considering development proposals the council will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework. It will always work proactively with applicants jointly to find solutions which mean that proposals can be*

approved wherever possible, and to secure development that improves the economic, social and environmental conditions in the area. Planning applications that accord with the policies in this Local Plan (and, where relevant, with polices in Neighbourhood Plans) will be approved without delay, unless material considerations indicate otherwise. Where there are no policies relevant to the application or relevant policies are out of date at the time of making the decision then the council will grant permission unless material considerations indicate otherwise – taking into account whether:

• Any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits, when assessed against the policies in the National Planning Policy Framework taken as a whole; or

• Specific policies in that Framework indicate that development should be restricted.'

Policy HV13: Community Infrastructure Levy and Allowable Solutions states:

'Money raised through the CIL and Allowable Solutions may be required to contribute towards energy efficiency and carbon dioxide reduction projects identified by the council in future. It may also contribute towards the development of the strategic district heating networks. Further details will be set out in the forthcoming CIL Charging Protocol and a future Allowable Solutions SPD."

7 Conclusion

The proposed AD facility would produce biomethane which would be used to heat homes and fuel vehicles. The proposed development would provide enough green gas to meet the heating demand of 7,650 UK households (based on 14.1 MWh/y per household). In comparison with standard UK grid emissions, the biomethane produced by the AD facility would have an equivalent saving of over 31,000 tonnes of CO_2 each year, equivalent to taking almost 21,000 cars off the road. Energy resilience and self-sufficiency in energy, especially gas, is increasingly important in these times of rapidly rising fuel prices and uncertainty over imported energy.

The production of biomethane would be in line with local and national targets for reducing CO_2 emissions and reducing reliance on fossil fuels, whilst also contributing to fuel self sufficiency.

The solid and liquid digestate output from the AD facility would be spread on surrounding farmland in place of artificial fertilisers, thereby reducing the reliance on imported fertiliser. Output of CO_2 gas from the facility would be upgraded on site for use in other processes including food processing and storage.

In summary, the proposed development is considered to provide a sustainable means of generating low carbon, renewable power, CO_2 and fertiliser whilst supporting the resilience of the local rural economy. The development would provide employment during construction and operation, which in turn returns money into the local economy.

Whilst arable land within the site would be lost, significant biodiversity net gain is achieved, which would be provided by strengthening the existing native planting, the creation of wildflower meadows and new tree planting along the route of the access road. The use of digestate would contribute to soil improvement on agricultural land over which the digestate is spread.

A full Environmental Impact Assessment has been undertaken and the application is accompanied by an Environmental Statement. This concludes that the impacts of the construction and operation of the AD facility can be kept within required levels and mitigated as required.

National and local policy confirms that proposals for renewable energy developments should be supported in appropriate locations. The proposed site is well placed in relation to the strategic road network as well as the source of the feedstock and the use for the digestate output of the AD facility on local farms.

The visual impact of the development would be mitigated by the proposed landscaping screening, with native hedge and tree planting further reducing visual impact and providing biodiversity net gain.

In conclusion, the proposed development meets national and local policy that gives a high priority to renewable energy generation as a means of achieving a low carbon economy. In terms of the planning balance, and for the reasons outlined in this Planning Statement, the planning application should be approved.

APPENDIX 01

Drawings

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