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

Environmental Statement

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EIA Quality Mark

This Environmental Impact Assessment Report, and the Environmental Impact Assessment (EIA) carried out to identify the significant environmental effects of the proposed development, was undertaken in line with the EIA Quality Mark Commitments.

The EIA Quality Mark is a voluntary scheme, operated by the Institute of Environmental Management and Assessment (IEMA), through which EIA activity is independently reviewed, on an annual basis, to ensure it delivers excellence in the following areas:

EIA Management

EIA Team Capabilities

EIA Regulatory Compliance

EIA Context & Influence

EIA Content

EIA Presentation

Improving EIA practice

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INTRODUCTION

1.1 This Environmental Statement (ES) sets out the results of an Environmental Impact Assessment (EIA) which has been undertaken to accompany a planning application submitted by Acorn Bioenergy Limited to Suffolk County Council.

1.2 The application seeks planning permission for the construction and operation of an anaerobic digestion facility and ancillary infrastructure (including digestate pipeline and satellite digestate lagoon) at Spring Grove Farm, Withersfield, north west of Haverhill, CB9 7SW. The planning application boundary is shown edged red in Figure 1-1.

Figure 1-1:
Planning Application Boundary

The Applicant – Acorn Bioenergy Limited

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

1.4 Acorn creates and procures biogas from anaerobic digestion (AD) facilities in the UK and upgrades it to biomethane for use as green, replacement fuel as an alternative to natural or fossil fuels. 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.

1.5 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.

SLR Consulting Limited

1.6 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.

1.7 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.

Summary of the Proposed Development

1.8 The applicant's proposed development is as follows:

> *'The construction and operation of an anaerobic digestion facility and ancillary infrastructure including digestate pipeline and satellite digestate lagoon at Spring Grove Farm, Withersfield'*

1.9 The proposed development would import and treat in the region of 92,000 tonnes 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 19,735,050 Nm^3 of biogas per annum.

1.10 The feedstock would typically comprise the following:

- silage (rye, oat, maize and grass);
- straw;
- poultry litter

- farmyard manure.

1.11 In addition to the biogas, 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.

1.12 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 13,515 tonnes of CO_2 a year.

SCOPE OF THE EIA

Screening Opinion

1.13 SLR submitted a formal request for a Screening Opinion, in the form of an EIA Screening Report, to Suffolk County Council (SCC) on 21st September 2022. SCC adopted their formal decisions (ref. SCC/0100/22W/Screen) on the 14th October 2022. SCC's formal screening opinion confirmed that they considered the development was an EIA development that any application for planning permission must be accompanied by an Environmental Statement (ES).

1.14 Suffolk County Council noted that the following were considered the most significant environmental impacts:

- Traffic and its impact of numbers on air quality
- Air quality with regards to odour and human health

1.15 During SCC's consideration of the Screening decision, SLR's 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. Given that the proposal at the time of the EIA screening did not include the digestate pipeline or offsite digestate lagoons it was considered that that a full accompanying Environmental Statement that includes all environmental impacts would be prepared for submission rather than scoping the ES to focus purely on the impacts raised by SCC.

Technical Input to the Planning Application

1.16 Where necessary, further additional reports are provided to support the Environmental Statement and this includes an Arboricultural Survey prepared by CBA Trees, Lighting Scheme prepared by Strenger, and Statement of Community Involvement prepared by Instinctif.

1.17 Notwithstanding the above, the results of the technical reports have been integrated and considered in later chapters of this ES and factored into the other planning application documents such as the Planning Statement.

1.18 All technical inputs to the planning application, aside from the Arboricultural Survey, the Lighting Scheme and Statement of Community Involvement have been prepared by SLR.

1.19 The EIA and preparation of the ES has been coordinated by SLR who are a member of the Institute of Environmental Assessment and Management with an awarded EIA 'Quality Mark'. The EIA Quality Mark is a voluntary scheme, operated by IEMA, through which EIA activity is independently reviewed, on an annual basis, to ensure it delivers excellence in the following areas:

- EIA Management;
- EIA Team Capabilities;
- EIA Regulatory Compliance;
- EIA Context & Influence;
- EIA Content;
- EIA Presentation; and
- Improving EIA practice.

EIA Methodology

1.20 An Environmental Impact Assessment (EIA) has been undertaken to consider all environmental impacts of the proposed development, and the results are presented in this Environmental Statement (ES). The ES has been prepared in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) and takes account of best practice guidelines from the Institute of Environmental Management and Assessment (IEMA).

1.21 The EIA procedure requires an assessment of the likely significant environmental effects of a particular development, with the aim of ensuring that predicted effects are identified. Once identified, the scope for minimising those effects can be considered and properly understood by the decision maker.

1.22 This Chapter of the ES provides an overview of the EIA methodology and outlines the proposed approach to EIA in relation to the proposed development.

Assessment Procedures

1.23 As required by the EIA Regulations, the assessment of impacts has been carried out according to its type (positive or negative and direct or indirect) and duration (temporary

or permanent). As the proposed development could be up to twenty-five years in duration, its duration is considered to be 'long term'. Residual and cumulative impacts are also considered.

Significant Criteria

1.24 The criteria used for assessing the degree of significance are based on the relevant technical guidance from the appropriate professional institute and/or industry good practice. These are detailed within the appropriate chapters of this ES. Where well-documented significance criteria are not available, Generic Significance Criteria as per below have been adopted and applied. These take into account the requirements of the EIA Regulations and have been developed from SLR's expertise and experience in carrying out EIAs.

Table 1-1:
Generic Significance Criteria

Significance	Criteria
Severe – for adverse effects only	Severe or major* effects represent key factors in the decision-making process. They will principally occur where very important resources are subject to extreme effects. Such effects are generally, but not exclusively, associated with any recognised or designated sites/features of international or national importance.
***Major – for beneficial effects only**	Mitigation measures are unlikely to remove or modify the adverse effects. Major* beneficial effects may occur if there is a substantial increase in the value of the environmental resource qualitatively or quantitatively on an international or national level.
Major	Major effects are important considerations on a regional or county level, principally affecting very important resources or creating extreme effects on important resources. Mitigation measures and detailed design work are unlikely to remove all the adverse effects by virtue of the magnitude of the predicted effects. Major beneficial effects may occur if there is a substantial increase in the value of the environmental resource qualitatively or quantitatively on a regional or county level.
Moderate	Moderate effects are important considerations at a district level but are unlikely to be key decision-making issues. They will principally occur where important resources are moderately or slightly affected, or where lesser resources are affected in the extreme.

Significance	Criteria
	Mitigation measures and detailed design work may ameliorate some of the consequences on the affected communities or interests; however, some residual effects will still arise. Moderate beneficial effects may occur if there is a considerable increase in the value of the resource on a district level.
Minor	Minor effects are experienced at the local level and do not represent important issues in the decision making process. Assignment of this level of significance will principally occur if less important environmental resources experience more limited effects. Appropriate mitigation measures may reduce, remove or even reverse such effects. Minor beneficial effects may occur if there is only a limited increase in the value of the resource at a local level.
Negligible	Effects are assigned to this level if they are nil, imperceptible, negligible, within normal bounds of variation, or within margins of forecasting error when compared to the existing situation.

Cumulative Impacts

1.25 Cumulative impacts can be described as those impacts caused by the sum of the projects impacts on the environment component, and/or the projects impacts when added to those of other past, present or future projects. Cumulative impacts are generally recognised as falling into one of two categories:

- Combined effects of individual impacts of a development upon a particular receptor, for example, noise, dust and traffic impacts from a development on a group of nearby properties; or
- Impacts from more than one development which might be insignificant in isolation but combined can produce a cumulative impact.

1.26 Such cumulative impacts have been addressed in each of the technical chapters of this ES.

Depth of Assessment

1.27 A fundamental aspect of any EIA is to determine the baseline environmental conditions at the application site. These baseline conditions form the basis against which predicted changes resulting from the development can be assessed, to determine whether the impacts on the prevailing environment and amenity will be negative, positive or neutral.

1.28 Baseline information has been gathered from a range of sources including published data, desk studies, consultation and site visits and survey work.

Mitigation and Compensation

1.29 Finally, if significant environmental impacts are predicted in the EIA process, then the ES provides measures which would be employed to eliminate or ameliorate the impact to acceptable levels. Mitigation measures are formulated based on a hierarchy of avoid, reduce, compensate, remediate and enhance. Mitigation measures can be in the form of changes to operational practice, or changes/additions to the design of a facility.

Assumptions and Limitations

1.30 This ES should be read on the basis of effects being assessed using the worst-case scenario.

Benefits of the Development

1.31 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.

1.32 Suffolk County Council declared a climate emergency on 21st March 2019, and as part of this, the Council committed to become a carbon neutral organisation and committed to work with communities and partners to identify opportunities for making the County carbon neutral.

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

1.34 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 (based on 14.1MHh/y per household). In comparison with standard UK grid emissions, the biomethane produced by the

AD facility would have an equivalent saving of 31,230 tonnes of CO_2 each year, equivalent to taking 20,750 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.

1.35 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.

1.36 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 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.

    - **Cabbage Flea Beetle** has always been a pest to oilseed rape (which is the standard break crop grown in British agriculture), 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.

The Environmental Statement

1.37 The ES has been prepared to fulfil the requirements set out in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 regarding the content of environmental statements (Schedule 4).

1.38 The ES seeks to provide an objective account of the impacts of the overall proposed development. The aims of the ES are to:

a) Describe the baseline conditions at the site against which changes and effects can be assessed.

b) Describe the details of the respective elements of the overall scheme.

c) Consider the potential effects of the development.

d) Describe the measures which are available to mitigate those effects.

e) Assess the likely effectiveness of the mitigation measures.

1.39 The ES has been prepared with a clear structure and reads as a concise single document. It is sub-divided into a number of sections and Chapters, namely:

1.0 Introduction which sets out the background of the preparation of the ES and the procedural requirements.

2.0 The site and its surroundings, which provides a summary baseline description of the site as a context to the description of the development scheme and as an introduction to the more detailed baseline descriptions set out in the technical chapters which support the planning application. This section also provides an overview of the planning history of the site.

3.0 The proposed development, which describes the details of the AD facility.

4.0 Noise

5.0 Landscape and Visual Impact Assessment (LVIA)

6.0 Traffic

7.0 Air Quality

8.0 Ecology

9.0 Land Quality

10.0 Hydrology and Hydrogeology

11.0 Historic Environment

12.0 Other Environmental Effects which provides an overview of other technical reports undertaken which are not subject of EIA and the conclusions of these.

13.0 Conclusions which provides a general overview of the EIA, and the key conclusions which are reached.

Submitted Documents

The Environmental Statement (ES)

1.40 The ES draws together the inputs from the specialist technical consultants who have undertaken the EIA and is intended to be a self-contained document which covers all relevant topics.

Non-Technical Summary

1.41 A Non-Technical Summary of the ES has been prepared as a separate document as a means of enabling the findings and conclusions of the ES to be more readily understood.

Planning Statement

1.42 The planning application is supported by this ES and is formalised by a separate Planning Statement (PS). The PS includes a detailed description of the proposed development but for ease of reference, and to formalise the ES, a summary of the proposed development is provided within Chapter 3 of this ES.

1.43 The PS also includes a review of national planning policy, and policy in the local development plan against which the application will be judged. The brief references to planning policy in the technical chapters of the ES are provided for reference purposes only as a context to the respective studies, with analysis of compliance with policy requirements confined to the PS.

Statement of Competency

1.44 SLR Consulting Ltd is a member of the Institute of Environmental Assessment and Management (IEMA). In accordance with Regulation 18(5) of the EIA Regulations, the ES

must be accompanied by a statement outlining the relevant expertise and qualifications of the experts who have been involved in its preparation.

1.45 The EIA and planning application has been coordinated by **Rhian Thomas** of SLR Consulting Limited. Rhian is a Principal Planner with over 16 years' experience and has a Masters in Town & Country Planning (Hons) and is a member of the Royal Town Planning Institute (RTPI). She has been the project manager for numerous Environmental Impact Assessments for projects in the UK.

1.46 The Transport Statement has been prepared by **Adam Turner**, Principal Transport Planner at SLR Consulting. Adam has over 20 years' experience providing specialist transport advice to clients within a range of sectors which include the minerals, energy & waste and bult environment, providing input from initial concept design through the planning process to the discharge of conditions. Adam has significant experience with the preparation of Transport Assessments, Transport Statements and Environmental Statement Chapters, informed by traffic forecasting, traffic impact analysis, junction modelling and indicative highway design capabilities. Adam has worked on a number of mining projects in various locations around the UK and Ireland, assessing the implications associated with vehicles generated by mineral extraction and restoration activities.

1.47 The Noise chapter has been undertaken by **James Blakely** (BSc (Hons), MIOA). James is an Associate Acoustics Consultant for SLR Consulting Limited, holding relevant qualification and experience including Bachelor of Science with honours in Acoustics, Corporate Member of the Institute of Acoustics and over 10 years' relevant acoustics practice.

1.48 The Air Quality chapter has been undertaken by **Matthew Mitchell** (MEnv, CEnv, MIAQM and MIEnvSci). Matthew has 15 years' experience as an environmental consultant and project manager specialising in air quality and greenhouse gases. Experience across the management and coordination of Air Quality and Environmental Projects to both national and international performance standards and legislation. Matthew has worked in all realms of Air Quality Assessment, during the design, planning and Environmental and Impact Assessment (EIA) stages of Projects. Matthew has detailed experience in mix use-urban design projects especially within the South-East of England and Greater London, working with a variety of clients and stakeholders across the commercial and residential property sector.

1.49 The Ecology chapter has been undertaken by **Olivia Guindon** (BSc (Hons), MSc and MCIEEM), Senior Ecologist for SLR Consulting Limited. Olivia has over 5 years' experience in the environmental sector as an ecological consultant. Undertaking baseline surveys, collation of data and assessment of potential impacts due to development and post construction monitoring. She has worked on a diverse range of projects including ecological impact assessments both in the UK and abroad including the Ivory Coast, Georgia, Togo, Turkey and Honduras.

1.50 The Hydrology chapter has been undertaken by **Andrew Dannett** (CEng, MICE, MCIWEM C.WEM and BEng), Technical Director of Hydrology & Hydrogeology for SLR Consulting Limited. Andrew is a Chartered Civil Engineer and has specialised as a river catchment

engineer and is responsible for undertaking and managing the development of masterplans and many different types of hydrological and hydraulic projects, together with flood risk assessment work in the UK. Andrew has undertaken and managed mange hydrological environmental impact assessments in support of development. His EIA experiences includes working overseas in demanding environments such as Nepal, Saudi Arabia and Mozambique.

1.51 The Archaeology chapter has been undertaken by **Harry Towers** (BSc (Hons)), Senior Archaeologist for SLR Consulting Limited. Harry has over 4 years' experience in the sector and has worked on a wide range of sites ranging from individual watching briefs to large excavations of national importance. He has supervised multiple projects of various types, including rural and urban area excavations and field evaluations. He has produced both mid and post-excavation site plans with finds and sample distributions in GIS using his own survey data.

1.52 The Land Quality chapter has been undertaken by **Louise Beale** (SQP NQMS, SiLC, CGeol, CSCS, BSc (Hons), MSc), Technical Director of Land Quality & Remediation for SLR Consulting Limited. Louise has over 15 years' experience in the sector and has worked on Phase 1 and Phase 2 land quality assessment and contamination remediation on single and portfolio sites for both public and private sectors.

Copies of the Environmental Statement and Non-Technical Summary

1.53 Hard copies of the Environmental Statement are available as follows:

- Volume 1: Main Text - £100 plus postage
- Volume 2: Technical Appendices - £150 plus postage
- Non-Technical Summary (NTS) - £15 plus postage
- Digital copies of the above documents on a CD - £10 plus postage

1.54 from: Rhian Thomas at SLR Consulting Limited, 86 Princess Street, Manchester, M1 6NG. Tel 0161 872 7564 or rthomas@slrconsulting.com.

1.55 Copies of all submitted documents will also be available to view on the Suffolk County Council website.