

**TYSOE PARISH COUNCIL**  
**Response to Planning Application**  
**22/02935/FUL**



View of Vale of The Red Horse from Edge Hill, October 2022

## TABLE OF CONTENTS

<b>Executive summary</b>	<b>03</b>
<b>Planning Context</b>	<b>02</b>
<b>Benefits vs Harm assessment</b>	<b>15</b>
<i>Evidence support</i>	
<b>Visual impact assessment</b>	<b>23</b>
<b>Viewpoint photomontages</b>	<b>37</b>
<b>Traffic impact assessment</b>	<b>48</b>
<b>Transportation assessment</b>	<b>62</b>
<b>Independent highways review</b>	<b>83</b>
<b>Impact on historical setting</b>	<b>100</b>
<b>Impact on ecology</b>	<b>102</b>
<b>Green credentials assessment</b>	<b>110</b>
<b>Safety assessment</b>	<b>115</b>
<b>Odour, noise and light pollution</b>	<b>120</b>
<b>Odour assessment review</b>	<b>126</b>
<i>Appendices</i>	
<b>Appendix 01 – Planning precedents</b>	<b>136</b>
<b>Appendix 02 – Consultation process</b>	<b>139</b>
<b>Appendix 03 – Reference documents</b>	<b>141</b>

## EXECUTIVE SUMMARY

**Tysoe Parish Council object to application 22/02935/FUL in the strongest possible terms.**

The application is to build and operate a large anaerobic digester, in fact an industrial gas producing plant, in the parish of Tysoe. The application conflicts with several planning policies contained in Stratford upon Avon District Council's Core Strategy, the Tysoe Neighbourhood Plan and the National Planning Policy Framework. Many of these policies were designed specifically to protect the District from exactly this kind of development.

The proposed site is in open, undeveloped and tranquil countryside, adjacent to the Cotswold National Landscape (AONB) where it would be an appalling blight on one of the finest views in Warwickshire. The traffic that it would generate, all heavy HGV and large agricultural tractor/trailer diesel-burning vehicles, would cause expensive damage to the fragile roads linking farms and villages to the A422 and would cause significant pollution, great harm and disturbance to the 4,000+ residents living within 4 km of the site.

The application has given rise to alarm and concern in the neighbouring villages evidenced by some 1,400 objections being submitted to SDC's planning portal including objections from 14 neighbouring Parish Councils in Stratford District and in Oxfordshire. Those institutions whose remit it is to protect the environment, ecology and the tranquil landscape in the area (Cotswold AONB, CPRE, Natural England etc.) have joined residents in submitting their strong objections to the application.

There is no evidence submitted that indicates that the applicant has given any serious consideration to any other sites in the vicinity. This reinforces the view that the application is entirely opportunistic.

Any "green" credentials *claimed* by the applicant (although none would be delivered), slim as they are, would be overwhelmed by the manifest harm that this proposal would visit on residents, the landscape, the environment and ecology within a large radius of the proposed site. It cannot proceed.

**This opportunistic and entirely inappropriate application should be rejected by the Planning Authority.**

## PLANNING CONTEXT

### 1. INTRODUCTION

- 1.1 This statement of objection is being submitted on behalf of Tysoe Parish Council in respect of planning application 22/02935/FUL, an application made by Acorn Bioenergy Ltd for the construction of an anaerobic digestion facility, comprising silage clamps, digester tanks, lagoons, administrative buildings, landscape and access on land north of A422 and south-west of Tysoe Road, Butlers Marston.
- 1.2 This statement sets out the relevant planning policies that should be taken into account when determining this application and should be read in conjunction with the following documents:
- Executive summary
  - Benefits vs Harm assessment
  - Visual impact assessment
  - VIA viewpoint photomontages
  - Traffic impact assessment
  - Transportation assessment
  - Independent highways review
  - Impact on historical setting
  - Impact on ecology
  - Green credentials assessment
  - Safety assessment
  - Noise, odour and light pollution
  - Odour assessment review
  - Appendix 01 – Planning precedents
  - Appendix 02 – Consultation process
  - Appendix 03 – Reference reports and documents
- 1.3 These documents set out the Parish Council’s detailed objections, having now fully considered all of the application submission documents, and they expand upon the initial comments made by the Parish Council submitted on 2<sup>nd</sup> November 2022.
- 1.4 If officers are minded to recommend approval of the application, we would ask that the application be determined by the Planning Committee and we would also ask that the members of the Planning Committee undertake an officer-led site visit before the application is presented to a committee meeting.

1.5 The application contains a number of data errors and omissions and these are referred to within our submission in the relevant evidence sections following this statement. In our opinion, these errors and omissions result in a lack of credible evidence to support the proposals and there is currently insufficient reliable information upon which to reach an evidence-based decision.

## **2. PROPOSED DEVELOPMENT**

2.1 This scheme proposes an anaerobic digester capable of processing 92,000 tonnes of feedstock p.a. comprising approximately 60% feedstock (silage, rye, maize, grass, straw) and 40% waste products (poultry litter, farmyard manure, dairy slurry).

2.2 It is anticipated that the digester will produce 20,466,506 Nm<sup>3</sup> biogas pa (equivalent to 10,101,614Nm<sup>3</sup> upgraded biomethane); 13,500 tonnes pa of CO<sub>2</sub> suitable for industrial and commercial uses; and an unspecified quantity of solid and liquid fertiliser/ digestate.

2.3 The five proposed tanks will be 16.6m in height.

2.4 Our calculations suggest that there will be 282 daily peak traffic movements. These journeys will involve HGVs and large agricultural tractor/trailer vehicles. We estimate, in the absence of any definitive information from the applicant, that the transportation of feedstock to the digester and biogas and other products out from the digester will necessitate journeys of over 148,700km per year.

2.5 Even by industry standards, this is a very large facility. By way of comparison:

- Application to build an anaerobic digester in Alderminster (16/01490)FUL) rejected by Stratford upon Avon District Council in 2017 on the grounds of landscape impact.
- Application to build an anaerobic digester in Tollerton, Yorkshire (North Yorkshire CC), appeal (APP/P2745/W/19/3225559) rejected in July 2019, largely on grounds of impact on the landscape and also safety and convenience of highway users.
- Application to build an anaerobic digester in Metherringham Heath, Lincolnshire (North Kesteven DC), appeal (APP/R2520/W/20/3250750) rejected in August 2020 on the grounds of the scale of the plant in the rural context and the adverse effect on the landscape.
- Application to build an anaerobic digester near Melton Mowbray (Leicestershire CC), appeal (APP/M2460/W/19/3241616) rejected in December 2020 on grounds of the landscape impact and also traffic concerns.

The following planning decision should also be considered:

- Application to build a 12,000-bird free-range egg production unit in Tysoe (03/02381/FUL) was rejected at appeal in 2003 on the grounds of its negative impact on the views from the Cotswold AONB and the impact on people’s enjoyment of the AONB in the area of Edge Hill.

### **3. PLANNING CONSTRAINTS**

- 3.1 The site lies in an open countryside location, in an area devoid of any substantial industrial sites. The land take for the fuel depot at Red Horse Vale, to the west of the site along the A422, is less than a fifth of the size of the land proposed to be covered in buildings, structures and concrete in this proposed development. There are no farmyards that cover over 8 hectares. The surrounding landscape comprises large open fields and few buildings of any scale.
- 3.2 Whilst this area of countryside has no special designations, the edge of the Cotswold AONB lies less than 2km from the nearest part of the application site and views of the site can be gained from the AONB.
- 3.3 The site comprises a greenfield site, which holds an intrinsic ecological and biodiversity value as undeveloped land.
- 3.4 A public footpath adjoins part of the eastern boundary of the application site, running broadly north-south between the A422 and Tysoe Road.
- 3.5 The site lies within 2km of the registered Battle of Edgehill Battlefield and within 250m of Hardwick Farmhouse, a grade II listed building.
- 3.6 The site’s north-western border is a water course.

### **4. PLANNING POLICY CONTEXT**

- 4.1 Planning law requires applications for planning permission to be determined in accordance with the development plan unless material considerations indicate otherwise.

#### **Development Plan**

- 4.2 The development plan for the purposes of determining this planning application comprises the Core Strategy, adopted 11 July 2016 and the Tysoe Neighbourhood Development Plan (NDP), which was “made” on 21 February 2022. The following policies are considered to be relevant:

#### *Core Strategy*

- CS1 Sustainable Development
- CS2 Climate Change and Sustainable Construction

- CS3 Sustainable Energy
- CS4 Water Environment and Flood Risk
- CS5 Landscape
- CS6 Natural Environment
- CS7 Green Infrastructure
- CS8 Historic Environment
- CS9 Design and Distinctiveness
- CS11 Cotswold Area of Outstanding Natural Beauty
- CS12 Special Landscape Areas
- CS15 Distribution of Development (Local Service Villages)
- AS5 Kineton
- AS10 Countryside and Villages
- CS26 Transport and Communications

*Neighbourhood Development Plan (NDP)*

- HP1 Spatial Plan and the Location of New Development
- EP1 Protecting and Enhancing Local Employment Opportunities
- NE2 Tranquillity and Dark Skies
- NE3 Flooding and Drainage
- NE7 Trees and Hedgerows
- BE1 Designated and Non-Designated Heritage Assets
- BE2 Responding to Local Character

- 4.3 The Neighbourhood Plan includes a defined Built-up Area Boundary within which development will be supported in principle. This boundary has been adopted by SDC. The proposed development is outside this boundary. The Built-up Area Boundary of the village is referred to in the explanatory text to policy HP1 as “a cornerstone of the Plan”. The fact that this is within a housing policy shows that the local community prepared their NDP never expecting an industrial development of this scale to be proposed within the local area. This is also reflected in policy EP1, which supports extensions to existing employment premises in the village, where such proposals conform with policies in the development plan. These policies should be considered relevant to this application, given the context in which they were prepared during the NDP process.

**Warwickshire Waste Core Strategy Adopted Local Plan 2013-2028**

- 4.4 Stratford-on-Avon District Council, in its EIA screening decision published in October 2022 (ref SCREEN/00089) says this:

*“If it is, however, deemed through the planning application process that the application will result in the production of waste, the LPA has the right to undertake a new Screening Assessment to determine if an Environmental Statement is required, at that time.” (p.7)*

- 4.5 In 2014, an application was made to Warwickshire County Council for an anaerobic digester and associated infrastructure on land at Stoneleigh (ref WDC/14CM022, application withdrawn in March 2015). The planning statement for that application describes a site of 3.4 hectares and a digester fuelled annually by 17,500 tonnes of maize, rye and grass silage; 4,000 tonnes of livestock and poultry manure and slurry; and 13,500 tonnes of waste feedstocks. The digester was anticipated to generate biogas to provide 2,700,00 kw hours of electricity annually and it was hoped to transfer the heat produced by the AD process to local residents. It was expected that, in addition, 400 cubic metres of gas per hour would be injected into the network. The AD process would produce digestate to be used as fertiliser.
- 4.6 This application (intended to process only about one third of the quantity of fuel proposed in the scheme at Tysoe), was considered to be a county matter application, to be determined by Warwickshire County Council as local planning authority and assessed against the County’s Waste Policy.
- 4.7 If this application is deemed to be a waste application, the following development plan policies are also relevant:
- CS2 The Spatial Waste Planning Strategy for Warwickshire
  - CS3 Strategy for locating large scale waste sites
  - CS6 Proposals for other types of recovery
  - DM1 Protection and enhancement of the natural and built environment
  - DM2 Managing Health, Economic and Amenity Impacts of Waste Development
  - DM3 Sustainable Transportation
  - DM4 Design of New Waste Management Facilities
  - DM5 Recreational Assets and Public Rights of Way
  - DM6 Flood Risk and Water Quality

#### **Other Material Considerations**

- 4.8 There are a number of other material considerations as set out below. These are:
- Planning (Listed Buildings and Conservation Areas) Act 1990
  - National Planning Policy Framework 2021



- Planning Practice Guidance
- Development Requirements SPD (DR SPD)
  - part B Character and Distinctiveness
  - part G Agricultural and Rural Buildings
  - part I Non-Residential Buildings
  - part M Landscape Design and Trees
  - part N Biodiversity and Green Infrastructure
  - part O Parking and Travel
  - part R Air Quality
  - part V Climate Change Adaptation and Mitigation
- Relevant appeal decisions (as referred to in 2.5 above)

## 5. PLANNING CONSIDERATIONS

### Principle of Development – the Development Plan

- 5.1 The proposals are sited beyond the built-up area boundary of Tysoe as defined within the Neighbourhood Development Plan and is sited in an open countryside location. There is no support within the NDP for an industrial development of this scale in this location. Core Strategy policy AS.10 Countryside and Villages lists forms of development that will be acceptable in principle in the countryside. A large-scale development for an anaerobic digester is not listed as an acceptable form of development in this policy. It is disingenuous of the applicants to suggest that the proposal could be considered farm diversification, when the scale and nature of the proposals clearly go far beyond a proposal to support the business future of the agricultural unit within which it is sited.
- 5.2 The penultimate paragraph of policy AS.10 states that:
- “All other types of development or activity in the countryside, unless covered by a specific policy in the Core Strategy, will need to be fully justified, offer significant benefits to the local area and not be contrary to the overall development strategy for the District.”*
- 5.3 Policy AS.10 also says that “all proposals will be thoroughly assessed against the principles of sustainable development, including the need to:

- minimise impact on the character of the local landscape, communities and environmental features;
- minimise impact on the occupiers and users of existing properties in the area;
- avoid a level of increase in traffic on rural roads that would be harmful to the local area;
- make provision for sustainable forms of transport wherever appropriate and justified;
- prioritise the re-use of brownfield land and existing buildings; and
- seek to avoid the loss of large areas of higher quality agricultural land.

5.4 There is a specific policy in the Core Strategy that addresses proposals for sustainable energy: Policy CS3. Part A Renewable and Low Carbon Energy Generation says this:

#### **A. Renewable and Low Carbon Energy Generation**

Provision will be made for a range of renewable energy and low carbon generation within the District to maximise environmental, social and economic benefits whilst minimising any adverse local impacts. The overarching aim is that the overall balance of outcomes from such projects should be positive for local communities.

5.5 The policy goes on to say that:

Where large scale low carbon and/or renewable energy projects are proposed that serve national, regional or county interest, but the majority of the effects will be felt locally, the Council will support such schemes where the impacts are, or can be, made acceptable.

The developer must demonstrate, through a balanced assessment of the proposal's positive and negative effects, that detrimental impacts at construction, operation and decommissioning stage are appropriately minimised, mitigated and compensated.

Where the proposal affects a Listed Building, an Area of Restraint, a Special Landscape Area, a Conservation Area, the Cotswolds Area of Outstanding Natural Beauty (AONB), or other nationally designated and non-designated heritage and cultural asset, the

objective of the designation must not be compromised by the development. Within and adjacent to the Cotswolds AONB large scale wind or solar farms are unlikely to be appropriate. When assessing such proposals close to the AONB, careful consideration will also be given to ensure the objectives of the designation are not compromised.

5.6 Part C Biomass Energy says this:

### C. Biomass Energy

Projects and developments which use bio-energy will be supported by the Council where the impacts are, or can be, made acceptable, unless material considerations indicate otherwise.

Applications for bio-energy heat and power proposals will be assessed against the following issues, which are considered to be of particular local significance in the District:

- Impact on designated biodiversity sites, species and ancient woodland.
- Use of brownfield sites or co-location with other wood processing industries.
- Scale and location to avoid adverse off-site impacts, particularly transport.
- Minimisation of pollution, such as noise, emissions and odours.
- Minimisation or mitigation of any adverse impact on amenity and existing residential development.
- Opportunities to support a local biomass supply chain.

- 5.7 There is clearly support in the development plan, through policy CS.3, for the principle of biomass energy developments. However, this in principle support is tempered by the requirement for the developer to demonstrate how the proposals will meet the criteria listed in policies CS.3 and AS.10. The submissions being made by Tysoe Parish Council show how the proposed development fails to meet these criteria.
- 5.8 Policy CS.3 seeks to *“maximise environmental, social and economic benefits whilst minimising any adverse local impacts. The overarching aim is that the overall balance of outcomes from such projects should be positive for local communities”*. It is clear in this wording that any benefits to be gained from biomass energy development should not override all other planning considerations. All relevant material considerations need to be taken into account and the planning balance weighed. This accords with the National Planning Policy Framework (see below).
- 5.9 Where the impacts of the proposed development cannot be made acceptable, when assessed against the criteria in policies CS.3 and AS.10, then the scheme should not be given planning permission. These submissions from Tysoe Parish Council provide the reasons why the proposed scheme cannot be made acceptable in planning terms and why the proposals fail to accord with policies CS.3 and AS.10.
- 5.10 As the scheme conflicts with criteria-based development plan policies which carry full weight, the applicants should have looked at the availability of alternative sites and considered whether any of these would perform better against the relevant policies. An industrial plant of the kind envisaged in the application would be far better suited to a brown-field site or a site on an industrial complex, within or closer to a settlement, but no consideration of alternative sites appears to have been undertaken.

#### **Other Material Considerations**

*National Planning Policy Framework (NPPF)*

- 5.11 The national Framework advises 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)”* (para.8). These objectives are: economic, social and environmental.
- 5.12 Paragraph 9 goes on to say that *“planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.”* Taking into account the advice in paragraphs 8 and 9 of the Framework, the purported environmental benefits of the principle of biomass energy creation must therefore be weighed against other environmental impacts as well as any social and economic impacts. A site-specific and development-specific assessment must be carried out to consider the planning balance in respect of the application submitted.
- 5.13 Paragraph 12 of the Framework advises that *“the presumption in favour of sustainable development does not change the statutory status of the development plan as the starting point for decision-making. Where a planning application conflicts with an up-to-date development plan (including any neighbourhood plans that form part of the development plan), permission should not usually be granted.”* In respect of biomass energy, the Council has up-to-date and relevant development plan policies and these proposals conflict with those policies. Planning permission should therefore not be granted for these proposals.
- 5.14 Paragraph 158 of the Framework states that local planning authorities should not require applicants to demonstrate the overall need for renewable or low carbon energy and should approve an application if its impacts are (or can be made) acceptable. The Core Strategy, adopted in 2016, accords with paragraph 158 and sets out clear criteria for the assessment of impacts.
- 5.15 Paragraph 174 advises that *“planning policies and decisions should contribute to and enhance the natural and local environment by... [amongst other things] ...protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan).”*
- 5.16 In *Nixon v Secretary of State for Housing, Communities and Local Government* ([2020] EWHC 3036 (Admin)), Lieven J held that the question of whether or not an area is a valued landscape is a matter of planning judgement. As well as considering whether land has a statutory designation, a decision-maker should also consider whether it has any particular qualities that take it out of the ordinary. Tysoe Parish Council’s submissions refer to this as a *“cherished landscape”*, as identified in their NDP, and the status as a *“valued landscape”* could be applied. Any development proposals here should therefore protect and enhance the landscape, which clearly these proposals do not.

- 5.17 With regards to technical considerations, the NPPG provides examples of considerations that can affect siting, which include proximity of grid connection infrastructure and site size and, for biomass, appropriate transport links. The Parish Council submissions will show that this development proposal does not have appropriate transport links, particularly, given the scale of the facility and the distance from a connection into national infrastructure.
- 5.18 The NPPG advises that *“policies based on clear criteria can be useful when they are expressed positively (i.e. that proposals will be accepted where the impact is or can be made acceptable).”* The wording of the District Council’s relevant policies accords with this national guidance and these development plan policies should be given full weight.
- 5.19 The NPPG goes on to say that *“the need for renewable or low carbon energy does not automatically override environmental protections”* as well as advising that *“proposals in National Parks and Areas of Outstanding Natural Beauty, and in areas close to them where there could be an adverse impact on the protected area, will need careful consideration.”* This section of the advice concludes that *“protecting local amenity is an important consideration which should be given proper weight in planning decisions.”*
- 5.20 Tysoe Parish Council’s submissions show how the proposals conflict with this advice in the national Planning Practice Guidance.

## **6. CONCLUSIONS**

- 6.1 Whilst the principle of biomass energy projects is supported by development plan policy CS.3 and national planning guidance, the details of such proposals need to be given careful consideration against the criteria set out in policies CS.3 and AS.10 as well as the guidance provided in the Framework and associated guidance.
- 6.2 With regards to transport and highways matters, Tysoe Parish Council has shown that unacceptable harm by way of pollution, damage to road fabric, disruption, potential danger and general disturbance would be caused by the incremental heavy vehicle traffic. The proposals do not, therefore, accord with development plan policy CS26, criterion 3 in policy CS.3 or criteria 3 and 4 in policy AS.10.
- 6.3 With regards to the potential impact on landscape, the Parish Council has shown the scale and location of the plant would render it plainly visible from many local vantage points but, most importantly, those from the Cotswold AONB from where the plant would form an incongruous and alien intrusion into the otherwise rural landscape. The proposals do not, therefore, accord with development plan policies CS5, CS11, BE2, criteria 2 and 3 in policy CS.3 or criterion 1 in policy AS.10.

- 6.4 Turning to matters of odour, noise and light pollution, despite the proposed mitigation measures that the applicant is suggesting, experience from other similar plants suggests that these intrusions cannot be entirely overcome. The site is in close proximity to the settlement of Hardwick Barns and Hardwick House (Grade II listed) and the village of Radway will be immediately down-wind of the site in prevailing conditions. Both will suffer odour pollution and the Hardwick settlement will undoubtedly suffer noise pollution. Despite efforts to mitigate light pollution, the site will be visible from Edge Hill (elevation over 200m) within the AONB, which otherwise enjoys a “dark sky” vista. The proposals do not, therefore, accord with development plan policies CS8, CS9, CS11, criterion 4 in policy CS.3 or criteria 1 and 2 in policy AS.10.
- 6.5 The impact that the proposed development would have on the ecology of the site and surrounding area is discussed in a separate section of this submission. However, it is important to point out that the area is the last remaining stronghold for breeding curlews in Warwickshire. Barn owls and great crested newts are also found in the area and the disturbance caused by the construction and operation of the site, with its attendant traffic, noise and light pollution, would damage the fragile hold that these species have in the area. Accordingly, the proposals conflict with policies AS10, CS3, CS1, CS2 and CS6.
- 6.6 The proposed site is rich in heritage adjacent as it is to the Edgehill Battlefield site and an area with evidence of settlement dating as far back as 10,000 BC. The A422 follows the route of the Roman salt road between Droitwich and the Chilterns. The proposed development of an industrial gas production facility on this site would damage this heritage permanently and irreparably. The proposal conflicts with policies CS5, CS8, CS9, CS11, CS15 and policies in the NPPF (194, 203).
- 6.7 In conclusion, the proposals fail to accord with relevant development plan policies within the Core Strategy and the Neighbourhood Development Plan, as well as relevant guidance within the Framework and national guidance, and planning permission should be refused.**

## BENEFIT VS HARM ASSESSMENT

There is a presumption running through many of the key planning policies relevant to this application that a development may be acceptable if it can be demonstrated that the benefits it provides outweigh the harm that it might do. These include local planning policies (SDC Core Strategy and Tysoe NDP) and those on a national scale (e.g. National Planning Policy Framework).

**We have considered the Application presented by Acorn and examined the potential benefits under three headings – economic, environmental, and quality of life. Our conclusions are that although there may be modest economic benefits from the proposal these are completely outweighed by the irreversible damage that would be caused to the environment and to the quality of the lives of those who live in the broader neighbourhood. Overall, any benefits created by the proposal would be vastly outweighed by the manifest harm it would do. Evidence to support our assertions is contained in the body of our submission.**

### ECONOMIC BENEFITS VS HARM

#### Construction

The application is for a substantial industrial plant covering some 17 acres of productive arable greenfield. Acorn considers the construction will employ some 100 people and take up to 18 months to complete. During this time there will be some opportunity for hiring temporary local labour although much of the construction work is likely to be carried out by contractors with existing workforces. Local businesses in Kineton and Tysoe may enjoy some economic benefit. However, what few benefits that may accrue will need to be balanced against the harm caused by heavy construction vehicles along unclassified roads, disruption to local traffic, noise, dust and mud, destruction of verges, damage to wildlife and creation of a nuisance to residents in the vicinity for the full period of 18 months.

#### Employment

The plant will be manned by four staff (the Design and Access Statement states 4 and 5 staff in various places. These are contradictory statements). These posts are likely to be specialist and therefore appointed from outside of the area. The operation of the plant will therefore not be to the benefit of local employment. Acorn's application includes the opportunity for 'educational visits' but for whom is not defined. Given the toxic nature of the operation (below) it would seem an unnecessary risk for local schools.

## **Energy**

Acorn state that the digester will produce 20,466,506 m<sup>3</sup> of biogas. and that this will be sufficient to heat 7,920 homes. Calculations show that only 80% of the biogas output will be available to inject into the gas main with the balance being used within the process making this a relatively inefficient process. In addition, the applicant fails to point out that this energy is only made available by total reliance on the road transportation of feedstock, biogas, digestate and other products of the process and by taking some 1,700 hectares of land out of food production. These factors render the proposal entirely non-sustainable. Despite the size of the plant, therefore, any contribution to the nation's energy resource, pricing and security would be barely measurable. None of the villages within a 5 km radius of the plant is on the gas main, hence the only local benefit would be via any electricity generated by the biogas produced in the digester. There is no other energy benefit to the local community.

In the Green Credentials Assessment section of this submission, we demonstrate that anaerobic digesters are far less efficient than solar energy generators which, it should be noted, do not rely on road transport in order to produce energy.

## **Farming**

There will be a benefit to any farms that agree to a long-term supply contract for the feedstock for the digester. They will enjoy the benefit of being able to plan for cropping over the medium term and have the possible security of a guaranteed margin on that crop. Farmers will also have an incremental source of soil dressing available from the digester.

However, although valuable to the community, the farm-owning community is relatively small and the incremental benefit that it might gain will be relatively slight. Moreover, dressing is available from a number of sources already and there is no outstanding un-met requirement. An added outcome of the movement of materials would be the harmful effects of increased traffic movement (below).

## **Profits**

The construction and operation of the plant is ultimately controlled through investors in Spain via Acorn's holding company Qualitas Energy. It is not clear from Acorn's application what financial performance is expected from the digester. However, the key components of any performance will be based on the cost of acquiring feedstock and the price at which the gas can be sold. Any profit will be taken by Spanish investors and there will be no financial benefit locally. Should the plant not make adequate profit and become non-viable, Acorn have made no plans for decommissioning. In this case Tysoe and the neighbourhood will inherit a large redundant industrial plant which would render very tangible and long-term harm.



## **ENVIRONMENTAL BENEFITS VS HARM**

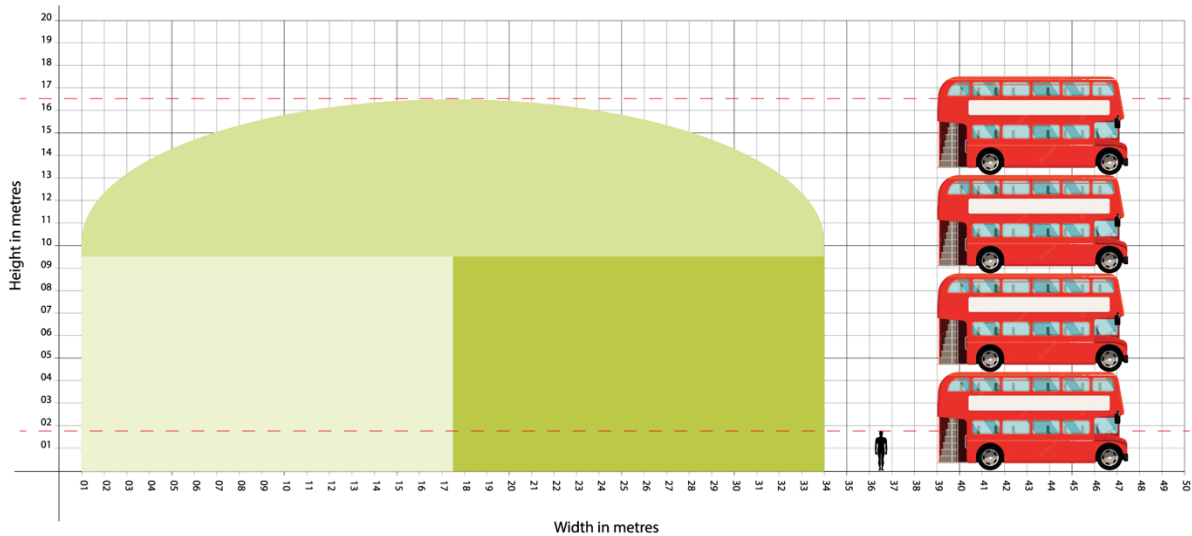
In short, we can find no environmental benefits to the proposal. Acorn argue that any damage to the local environment will be small, or can be mitigated against. On the contrary, the harm presented by the proposal we see as being vast and catastrophic.

### **Setting**

The proposed site of the digester is in open, rural countryside with scattered farms and small villages connected by narrow, unclassified lanes. It is not a brownfield site and Acorn has admitted at a public meeting that they had not considered brownfield sites. Large buildings in the vicinity are generally farm storage barns or shelters; the largest, the buildings at Red Horse Fuels, are low and unobtrusive. The Cotswold Area of Outstanding Natural Beauty lies less than 2 km away on the escarpment to the east and the area is popular with cyclists, walkers and horse riders. Two national footpaths, the MacMillian Way and the Centenary Way run nearby. This is a 'cherished landscape' as defined in the Tysoe Neighbourhood Development Plan, protected by SDC's policy CS.11, with unspoilt views to and from the escarpment of the AONB and across the Vale of the Red Horse towards the Malvern Hills.

### **Visual impact**

The proposal is not for a farm building in this setting, but for an industrial gas-producing complex, constructed on a virgin greenfield site, plainly visible, despite Acorn's protestations to the contrary, from the AONB and surrounding countryside. Its size alone - the area of 12 football pitches, with five digesters the height of 4 double deck buses and a digestate lagoon with the capacity of 8 Olympic swimming pools - will be visible from a wide area and enormously harmful to the existing vistas. Acorn's contention that it can be screened by bunds and new trees is unrealistic. Any industrial facility of this size will harm the character and distinctiveness of the locality and be detrimental to its protection and enhancement.



*Above is a scale diagram indicating the size of the digester tanks being proposed; there would be 5 of these.*

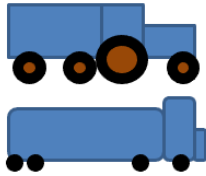
Human activity in the vicinity has a long history as evidenced from prehistoric, Iron Age and Roman sites recorded in WCC’s Historic Environment Record; there is a deserted medieval village at Hardwick itself. The infrastructure of the existing villages and fields has developed gradually from medieval times and the rich wildlife has been allowed to flourish over the centuries; it currently provides a natural sanctuary for threatened species such as curlews and the great crested newt. The proposed plant is wholly incongruous and detrimental to this setting, and a harmful and grotesque imposition on an otherwise organically evolved landscape.

## **Pollution**

The proposal is highly dependent on road transport to bring feedstock from farms to the digester and to transport the end products, including digestate, to their destinations. With the exception of the transportation of biogas, which we understand may be by methane-powered HGVs, this transportation will be by either large agricultural tractor/trailer or HGV – all heavy consumers of diesel fuel. The applicant does not address the pollution that this will cause. However, we have made some conservative assumptions and conclude that the emissions of CO<sub>2</sub>, a greenhouse gas, and NO<sub>x</sub>, a gas harmful to humans and animals, will be very significant and will outweigh any “green” credentials the applicant might claim for the project.

# Annual Inputs & Outputs

**90,000 tonnes p.a. of Feedstocks:**  
Ryegrass & Maize silage, cattle & pig slurries, animal manure, chicken litter



69t

69 Tonnes of CO<sub>2</sub> From Tractor & HGV vehicles movements along the A422, cross farm and Tysoe Road importing grown feedstock & animal waste

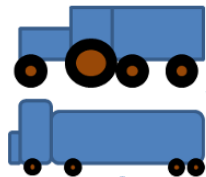
429t

Plant should produce 778t Bio-Methane and 1,425t CO<sub>2</sub>  
20% Bio-Methane will be burnt to run CHP Plant creating a further 429t CO<sub>2</sub> ( $\text{CH}_4 + 2\text{O}_2[\text{Atmos}] \Rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$ )

**1,988t total unnecessary Tonnes of CO<sub>2</sub> created by the total process per Annum**

**1,988 Tonnes CO<sub>2</sub> p.a.**

**Outputs:**  
Liquid & Solid digestate, Methane & Carbon Dioxide



46t

46 Tonnes of CO<sub>2</sub> From vehicles movements along the A422 and Tysoe Road plus exporting 1,425t CO<sub>2</sub> to Food and Drinks Industry

**X5**

19t

19 Tonnes of CO<sub>2</sub> from 20,010km of vehicles movements along the A422 to Banbury & Back,

1,425 Tonnes of CO<sub>2</sub>



Products eaten and drunk releasing 1,425t of product CO<sub>2</sub> back into the atmosphere

*Above is a depiction of the amount of CO<sub>2</sub> emissions that would be emitted from the entire process*

In addition to these CO<sub>2</sub> emissions, we estimate that 4.5 tonnes of NO<sub>x</sub> would be emitted by the vehicles involved in transporting feedstock into and product out from the digester (see 'Traffic impact assessment').

## QUALITY OF LIFE BENEFITS VS HARM

Again, we can find no positive benefits to the proposal. On the contrary, there are serious issues regarding increased traffic, pollution and safety which will impact on the quality of life of those who live in the surrounding area.

### Traffic

The Acorn proposition, to generate biogas in a digester, requires very large quantities of feedstock (92,000 tonnes per annum) to be transported from where it is grown to the digester, it requires the gas to be transported to a gas hub some 16.5 km distant and it requires the transportation of the residue digestate to be ferried to farms. Of the land that the feedstock is grown on, estimated at 1,600 ha (4,000 acres), only a proportion can be derived locally. Given annual crop rotation, this will need to be supplemented from a wider area thus introducing a greater traffic impact. Taking 1,600 ha of land out of crop production is far from conducive to the drive for greater food self-reliance and harmful to the production of food locally.

In order to achieve the goal of 92,000 tonnes of processing, we conservatively calculate that there will be some 7,000 additional vehicle journeys in and out of the site annually by agricultural vehicles and HGVs. Given the location of the plant, these will take place along narrow unclassified roads unsuited to heavy traffic and have a detrimental effect on those who use the local road infrastructure, not to mention safety issues near villages and schools, danger to horse riders and cyclists, and increased pollution throughout the neighbourhood. These villages include Tysoe, Oxhill, Kineton, Radway, Ettington, Pillerton Priors, Pillerton Hersey and Butlers Marston. According to the 2011 census return we estimate that some 4,000 people live within 4 km of the site. Acorn has argued that no traffic will go through the local villages. This is difficult to believe and something that we contend is beyond their control to enforce. These villages are all connected to the A422 (Acorn's arterial route to the gas main at Banbury) by a network of country lanes, many of which are barely wide enough for one vehicle. Traffic will be harmful by way of significantly increased pollution, congestion, damage to the fabric of the road and, possibly, danger to residents. Acorn's intended access to the A422 is hazardous on safety grounds and is a busy and difficult route, exacerbated in adverse winter weather.

The applicant argues that a large proportion of the traffic is non-incremental, that it exists today. We dispute that assertion, however, even if it were true, the proposal would cause a concentration of that traffic on the single focal point of the digester site, thereby causing great disruption and harm to the local population.



*The images above show a typical large agricultural tractor in a village centre (Tysoe) negotiating parked vehicles and moving traffic and on a narrow bridge on the Kineton/Oxhill Road.*

Readers may also view video of a tractor travelling the routes around the proposed digester site here: <https://www.youtube.com/@stophardwickenergy>

## **The digester process**

The very nature of the plant in processing materials, particularly animal waste, creates both smell and noise, although Acorn contend otherwise. Apart from generating methane, the process can also produce ammonia and hydrogen sulphide; the liquid digestate, one of the end products, is toxic and held in large lagoons. Incidents at similar plants in recent years, including pollution and contamination of the environment, caused the Environment Agency to make a formal report on safety issues in 2019. This drew attention to problems of seepage into water courses (the proposed site is adjacent to a natural stream), and to the release of ammonia and hydrogen sulphide into the atmosphere. Given the size of the installation and the toxic and flammable nature of these potential pollutants, there are inevitable questions regarding safety, especially as the process will run 24/7 but only be manned during the working day.

Residents living a few hundred metres from the site would be subject to continuous smell and noise and be first in line for toxic leakage. According to Acorn, the plant will be illuminated during the hours of darkness, despite being in a 'dark skies' area. Light, smell and noise pollution would have a significant, if lesser, effect on the other 4,000 residents, schools, recreational areas and small businesses within a 4 km radius. A facility of this type will present harmful light, noise, and smell pollution, and the potential for serious chemical leakage. Whilst any large and damaging event may be relatively unlikely, any harm done by such an event would be massive and irreparable to the local environment and ecology and to the detriment of the lives of people who live there, and should be located on an existing brownfield site rather than the greenfield site which the application proposes. To site a large industrial plant in such a sensitive area would be perverse and negligent.

## VISUAL IMPACT ASSESSMENT

**This report has been written with respect to the Landscape and Visual Appraisal (LVA) but may need to be modified in the light of any superseding Landscape and Visual Impact Assessment (LVIA).**

### CONCLUSION

There are no exceptional circumstances which justify the building of such an industrial scale anaerobic digestion facility on a greenfield site, in very open countryside in the Clay Vale of the Feldon Character Area.

At 8.45 hectares (over 20 acres) the development would cover almost the same area as 12 football pitches. The five digesters are each 17m (56 feet) tall, a similar height to four double-decker buses stacked on top of each other. The span of this group of digesters alone would be around the same width as the front of Buckingham Palace. So, the development would be out of scale with the existing rural buildings in the area and would become the dominant feature of the landscape. The introduction of industrial elements into an otherwise wholly rural area would be incongruous (see reference image 1 below).

This development would cause permanent damage to cherished views, particularly those from the many high vantage points within the nearby Cotswold Area of Outstanding Natural Beauty (AONB). This has recently been rebranded the 'Cotswold National Landscape' but for ease, we have elected to continue using 'AONB', as many may well yet not be familiar with its new name. The proposed mitigation will be ineffective in preventing these views from being spoilt.

There is no evidence that the applicant has considered how the plant would be decommissioned at the end of its service life. It is likely that the economic lifespan of the plant would not exceed 25 years, at the end of which time the community would be left with a permanent scar on the landscape and a potential source of ongoing pollution. At the very least the applicant should be required to address the decommissioning and demolition of the plant at the end of its life and to identify how this is to be financed. The site would have to be returned to farmland, as it is today. The decommissioning of the plant may have to be brought forward if the proposed technology is overtaken before the plant reaches the end of its natural economic life.

The contribution that this proposal would make to national and regional renewable energy generation targets is small, with any benefit being transported out of Stratford District, while the harm to the visual amenity of Special Landscape Areas and the Cotswold AONB, which is of national importance, cannot be made acceptable.

The LVA states that because of its size and scale, the facility is in the setting of the Cotswold AONB. At the time of writing, the 'major development' status of the application is unknown, but if the development is classed as major, then: NPPF 177 States "*no permission should be given for major development in the setting of an AONB save to the extent the development was needed in the public interest, met a need that could not be met elsewhere or in some other way and met that need in a way that to the extent possible, moderated detrimental effect on the environment, landscape and recreational opportunities.*" Addressing the climate crisis is in the public interest but more suitable, brown-field sites have not been investigated and this plant is not a particularly effective way to address the climate crisis.



## REFERENCE IMAGES OF EXISTING AD PLANTS

Whilst it has not been possible to find an image of an existing AD plant exactly matching this development, the images below give an indication of their nature and appearance.



**Reference image 1**

This image displays some of the typical industrial elements of such large AD plants which would be introduced into the landscape.



**Reference image 2**

This image of a much smaller AD plant in Oxfordshire, illustrates how even though many surfaces are green, their reflective man-made finishes ensure they are still plainly visible.



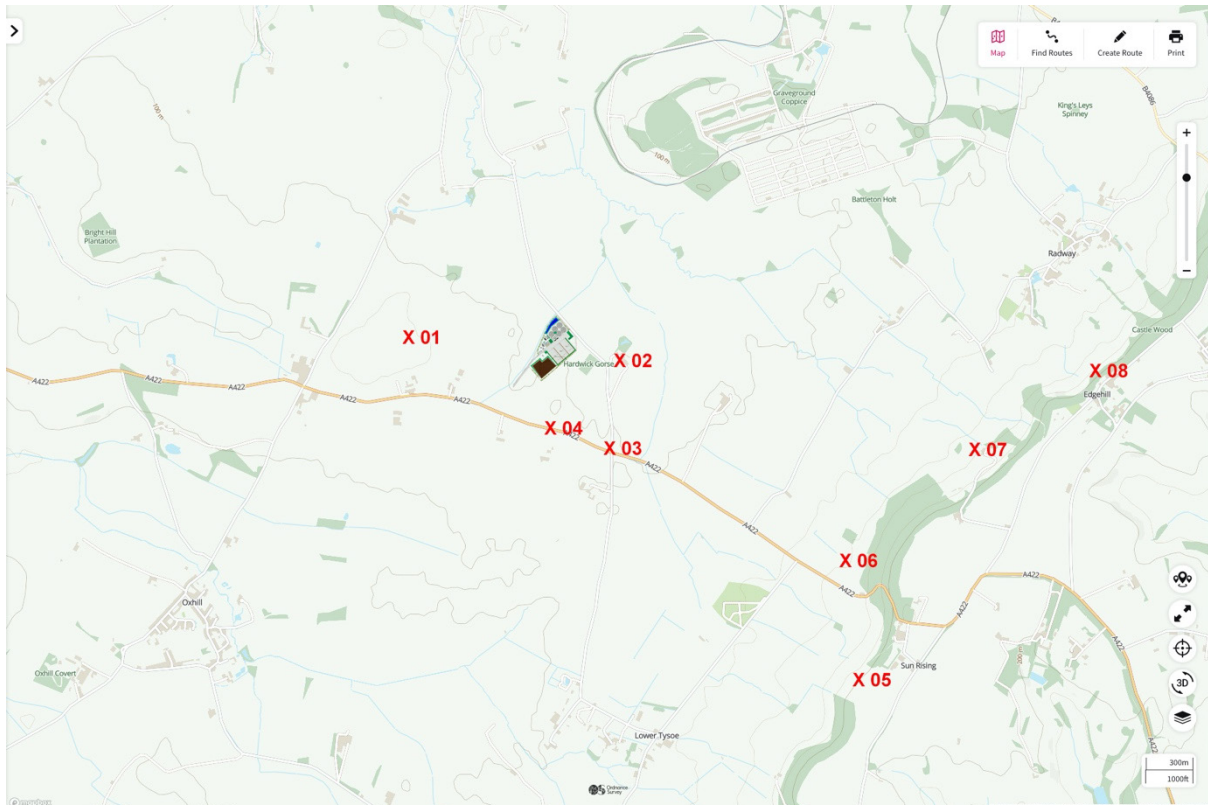
**Reference image 3**

This image shows an AD site in Cambridgeshire during the construction phase.

## VIEWPOINT PHOTOMONTAGES

We have instructed a photographer and visual designer to mock up how the proposed plant will impact the landscape from various viewpoint locations (see full report 'VIA Viewpoint photomontages'). These photomontages are also included in this visual impact assessment.

### Map showing viewpoint locations



### Viewpoint methodology

To produce an accurate representation of the scale of the proposed plant, a drone (with a large red balloon attached) was flown at the height of the digesters and at the corners of the site, whilst the assigned viewpoints were photographed.

All photography has been produced in accordance with the 'Landscape Institute Technical Guidance Note - Visual Representation of Development Proposals.' These guidelines have been used to select types of visualisations which are appropriate to the circumstances in which they will be used.

#### TYPE 3 VISUALISATIONS

**ENLARGEMENT FACTOR:** 100% AT A3

TO BE VIEWED AT COMFORTABLE ARMS LENGTH TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

**CAMERA:** FUJIFILM X-T3

**LENS:** 35MM (50MM CROPPED FRAME EQUIVALENT)

## VIEWS FROM WITHIN THE FELDON CLAY VALE



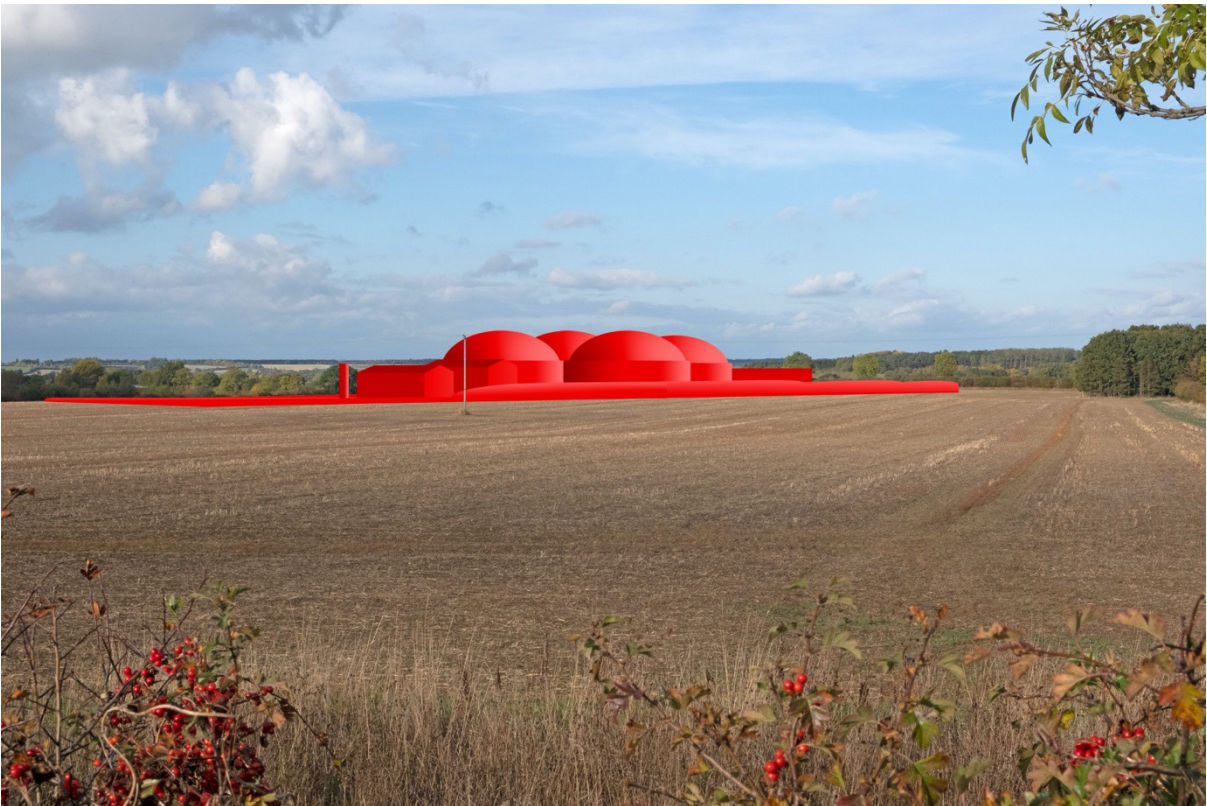
Viewpoint 01 - Herd Hill (Oxhill/Kineton road) looking East towards Edgehill escarpment and the Cotswold AONB



Viewpoint 02 – Hardwick Barns residential properties (Tysoe road) looking West



Viewpoint 03 – Tysoe/Kineton crossroads on A422 looking North towards Kineton



Viewpoint 04 – A422 at entrance to Cotswold Chickens looking North towards Kineton

## VISUAL IMPACT IN THE FELDON CLAY VALE LANDSCAPE

Viewpoints 01, 02, 03 and 04 are taken from within the Feldon Character Area and would be negatively impacted by the proposal. Siting this uncharacteristically large complex of industrial structures in a relatively flat and undeveloped site would represent a discordant feature in the rural landscape. The LVA states the visual effects would extend across the 5km study so the plant would disrupt long distant views across the open countryside from footpaths around the site, including those to the strong backcloth of the Edgehill Escarpment and Cotswold AONB. Cyclists on Route 48 of the National Cycle Network would also be detrimentally affected. It would not maintain or enhance the wholly rural landscape character and high landscape quality of the Vale; it would greatly damage it. This landscape makes an important contribution to the image and enjoyment of the Stratford District and should be protected.

White's Renewable Energy Landscape Sensitivity Study for SDC (2014), which considers the suitability of the Feldon Vale Farmlands for solar and wind farms, states the potential for solar energy development is limited to areas 'away from the many views from surrounding higher ground, especially the adjoining Cotswold AONB and along Edgehill'<sup>1</sup>. It also says areas close to Edgehill battlefield and listed buildings and their setting 'are sensitive and unsuitable'. This development would, of course, be much taller and far more visually intrusive than a solar farm of similar footprint.

The plant will also have a significant detrimental impact on occupiers of existing properties adjacent to the site, which include a Grade II listed building. Views of the site from these houses and their gardens would be very unpleasant. In addition to the loss of visual amenity, there is the potential for light pollution and odour for these near neighbours. Although an assessment of odour is included in the Air Quality Assessment, the Institute of Air Quality Management state that although such tools allow odour impact to be estimated, none of them can forecast dis-amenity<sup>2</sup>. This is a matter of judgement that cannot easily be defined by scientific methods alone and ideally requires a wider stakeholder consensus to be arrived at. This simply will not be known until after the plant is built, by which time it will be too late. There is also the potential for noise pollution from the many processing units which include macerators, compressors, digester motors, chillers and pumps, most of them working continuously through every day and every night of the year.

**Therefore, this proposal contravenes CS.1; CS.5; CS.9 CS.12; CS.22; AS.5; AS.10; NDP and fails to comply with NPPF 174; NPPF 175**

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<sup>1</sup>

<https://www.stratford.gov.uk/doc/205819/name/ED4114%20Renewable%20Energy%20Landscape%20Sensitivity%20Study%20July%202014.pdf>

<sup>2</sup> IAQM, Guidance on the assessment of odour for planning, Version 1.1, July 2018

## VIEWS FROM THE COTSWOLD AONB



Viewpoint 05 - Sun Rising Hill on Macmillan Way and Centenary Way footpaths, in Cotswold AONB, looking North-West



Viewpoint 06 - Sun Rising Hill on Edgehill escarpment, in Cotswold AONB, looking West



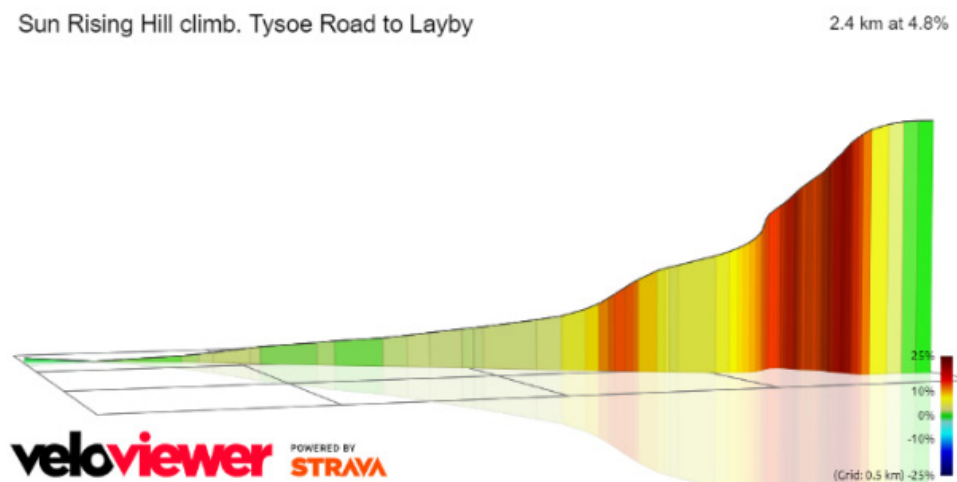
Viewpoint 07 - Public right of way at Westcote on Edgehill escarpment, in Cotswold AONB, looking West



Viewpoint 08 – The Castle at Edgehill on Macmillan Way and Centenary Way footpaths on Edgehill escarpment, in Cotswold AONB, looking West

## VISUAL IMPACT IN THE COTSWOLD AONB (AND COTSWOLD FRINGE CHARACTER AREA)

All along the eastern edge of the site and curving towards the south-east, lies the Edgehill Escarpment which rises sharply from the site. This diagram below shows how the route east along the A422, starts at the Tysoe road on the left and rises 121 metres over the brow of Sunrising Hill within 2.4km.



(Image courtesy of VeloViewer)

As the LVA states, this steep incline and openness of the landscape below mean the plant would be clearly visible from many of the high vantage points within the Cotswold AONB, the border of which is just under 2km away (see views EFGH). These views to and from the escarpment are one of the special qualities of the AONB and are legally protected, as tested in court.<sup>3</sup>

The scale of the plant and its jarring, industrial nature would immediately draw the eye and so have a significant adverse effect on these views, spoiling people's enjoyment of the AONB. This would be particularly detrimental during the construction phase when cranes would dominate these views.

It is a legal duty for all relevant authorities to have regard to the primary purpose of the Cotswold AONB to conserve and enhance the natural beauty of the area. As the development will include ancillary infrastructure such as a biogas upgrading and carbon dioxide recovery unit, heat exchanger, chiller, CHP boilers, carbon dioxide tanks, propane tanks, digestate storage lagoons, an HGV manoeuvring area and filling station, will mainly built on hardstanding and surrounded by palisade fencing, it could not possibly 'conserve and enhance the natural beauty and landscape character' of the Cotswold AONB.

<sup>3</sup> Stroud District Council v Secretary of State for Communities and Local Government (Gladman Development Ltd.), February 2015



Natural beauty incorporates several criteria, including landscape quality, scenic quality, tranquillity, natural heritage and cultural heritage. There has been no night-time assessment of visual impact in the LVA. Any lighting required for nightly gas collections and safety of the workforce (including HGV vehicle lights), would damage this natural beauty and go against the Tranquillity and Dark Skies policies in the Cotswold AONB Management Plan, which has been formally adopted by SDC. Although the lighting plan has been designed for 0% 'sky glow', no consideration has been given to the fact that viewers from the AONB would look down on the site and see the extensive site lit up regardless of this. Any increase in heavy traffic in the villages of Tysoe, Radway and Ratley which either lie within or adjacent to the AONB would also contravene this policy.

The Cotswold AONB is characterised by open agricultural land used for grazing or arable production. Permanent change in land use, not just of the site itself, but through the growing of energy crops which are not normally cultivated in this area and through late cropping resulting in 'scars' on the land would also fail to conserve it.

Recreational users of the Cotswold AONB, both locals and tourists, are invited to enjoy the many views from the Macmillan Way and Centenary Way footpaths which run along the escarpment (viewpoints 05, 06, 07 and 08). As are those following National Trust walks from Upton House<sup>4</sup>, such as the 'What a View Walk' which is listed as one of ten National Trust 'Walks with Wow Factor'<sup>5</sup> (viewpoint 05). Also, those following the Battlefields Trail<sup>6</sup> or simply driving over the brow of Sunrising Hill towards Stratford. Allowing the development of such a large, industrial plant, which will dominate these views would be, in effect, inviting many visitors to World Class Stratford-upon-Avon to focus their attention on a biogas plant.

**Therefore, this proposal contravenes CS.11; CS.12; NDP and fails to comply with NPPF, 176; NPPF, 177; NPPF, 185; NPPF, 194.**

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<sup>4</sup> <https://www.nationaltrust.org.uk/upton-house-and-gardens/lists/walks-from-upton-with-great-views-and-a-taste-of-history>

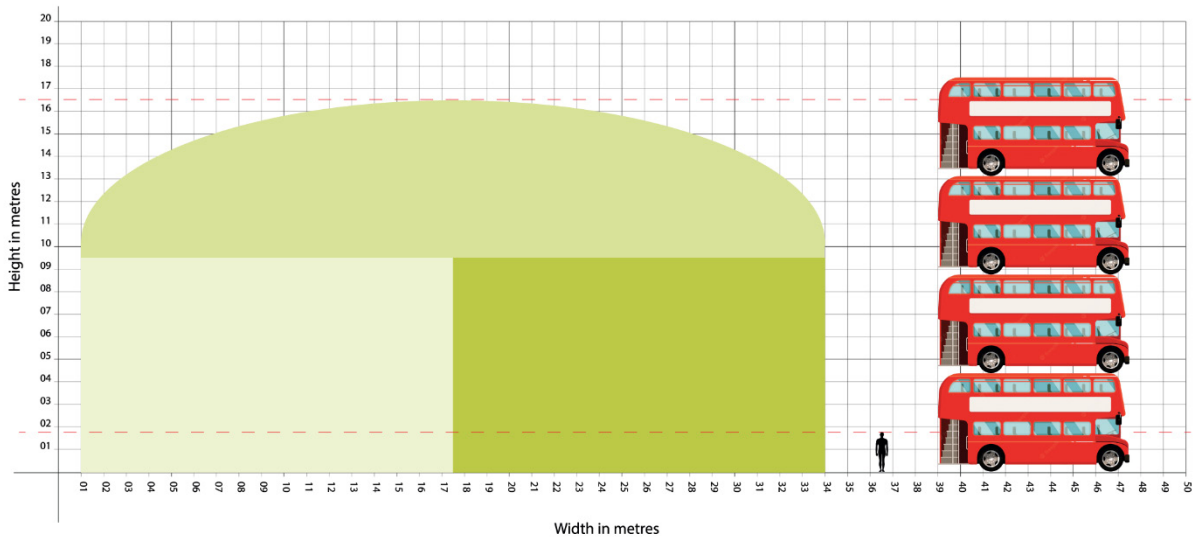
<sup>5</sup> <https://www.nationaltrust.org.uk/features/walks-with-wow-factor>

<sup>6</sup> <https://www.battlefieldstrust.com/media/718.pdf>

## INEFFECTIVENESS OF PROPOSED VISUAL SCREENING

No amount of screening will mitigate this intrusion into the landscape. We do not believe that any screening bund will be effective in preventing views of the site from the high AONB vantage points.

Whilst the use of a sympathetic colour palette could slightly lessen this intrusion, it will simply not be enough to camouflage the plant because of its enormity. In addition, many of the industrial elements will, of practical necessity, have metallic or reflective surfaces (see reference image 2).



*Scale diagram indicating the size of the digester tanks (5 are included in the application)*

Whilst it is recognised some attempt has been made to cluster the five extremely large digester tanks behind Hardwick Gorse when viewed from certain angles within the Cotswold AONB, the LVA states the domes will still be visible from the AONB even after 15 years.

The footprint of the plant extends well beyond Hardwick Gorse, so much of the remaining infrastructure will not be screened by it at all. This includes the many tall structures below:

Component	Height
Pasteurisation tanks x 4	11m
Gas Flare	9m
2 Combined Heat and Power Units	9m (stacks)
Manure Shed	8m
Separator Building	8m

Slurry/Dirty Water Tanks	8m
Biogas Upgrade Unit	7.5m (vent)
2 storey Office Block and 2 storey Welfare Unit Each 2 x stacked containers with external staircasing	Exact height unknown but max 12m

It also includes areas of vehicle movement such as the HGV manoeuvring area, access road and staff car park.

Many of the trees in Hardwick Gorse are already dead or dying. Any native trees and shrubs planted will take too long to establish and reach maturity, given the heavy, clay soil of the site. The LVA states that even after 15 years, the proposed trees and shrubs would only screen the lower elements of the site when viewed from the AONB so even at full height and thickness, they would not be adequate, particularly in the winter months, to screen views from the escarpment.

**Thus, the impact on visual amenity cannot be mitigated enough to be made acceptable and so the development should be avoided.**

**Therefore, this proposal contravenes CS.3.**

## ERRORS, OMISSIONS, CONTRADICTIONS AND INCONSISTENCIES

- The view from Sunrising Hill (view 05) has not been chosen for a viewpoint in the LVIA Appendix 2 – wireline views. It is immediately obvious to anyone standing in the site that this is the highest nearby viewpoint with a clear line of sight to the development. It is incredible that this was not chosen as a viewpoint.
- In the wireline view images there is inconsistency in the heights of the digesters relative to the trees in Hardwick Gorse, and therefore possibly in the scaling of plant. This makes CGI imagery unreliable. For example, from Viewpoint 3 the digesters appear lower than the gorse and from Viewpoint 7 they appear higher.
- We do not believe that the photographs for the wireline views have been taken using a standard 50mm lens as stated in the report, they appear to have been taken with a wide-angle lens.
- The LVA states that no ‘cherished views’ in the Tysoe NDP face the site. This is incorrect as Cherished View 6 does face the site. The impact on this view has not been addressed.
- The LVA states that there are no important views of the site from Radway Conservation Area. This again is incorrect and impacts on these views have not been addressed (see views 07 and 08).
- The Cotswold Fringe Special Landscape Area lies under 2km from the site not outside the 5km study, as stated in the LVA.
- The lighting strategy assesses the site as being in ILP Environmental Zone E2 (low district brightness - sparsely inhabited rural areas, village, or relatively dark outer suburban locations). We believe the site is in ILP Environmental Zone E1(Dark - relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.) as the Guidance Note states where an area to be lit lies close to the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone. Therefore, the lighting strategy does not protect the site enough from light pollution.<sup>7</sup>
- There are no heights given for the Office/Welfare units on the elevation drawings although ‘under 12m’ is given in LVA.
- LNG is listed as an export but no LNG liquefaction unit is identified on the site plan or mentioned in the descriptions of the process.

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<sup>7</sup> <https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021>

# Visual Impact Assessment

Viewpoint photomontages

Proposed anaerobic digestion plant at Hardwick, Tysoe

LPA Ref: 22/02935/FUL

Prepared by Susanna McKail, BA(Hons)

All photography has been produced in accordance with the 'Landscape Institute Technical Guidance Note - Visual Representation of Development Proposals.' These guidelines have been used to select types of visualisations which are appropriate to the circumstances in which they will be used.



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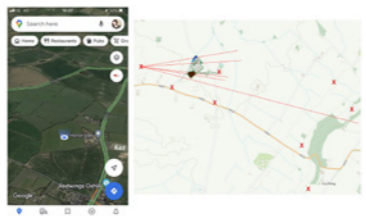
[LinkedIn](#)

BASELINE



**VIEWPOINT 01**

Herd Hill (Oxhill/Kinton road) looking East towards Edgehill escarpment and the Cotswold AONB



TYPE 3 VISUALISATION  
ENLARGEMENT FACTOR: 100% AT A3  
TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

DATE & TIME: 02/10/2022 16:06  
CAMERA: FUJIFILM X-T3  
LENS: 35MM (50MM CROPPED FRAME EQUIVALENT)  
DIRECTION OF VIEW: EAST

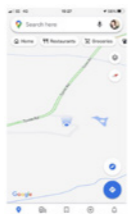
PHOTOMONTAGE





**VIEWPOINT 02**

Hardwick Barns residential properties (Tysoe road) looking West



TYPE 3 VISUALISATION  
ENLARGEMENT FACTOR: 100% AT A3  
TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

DATE & TIME: 14/10/2022 15:21  
CAMERA: FUJIFILM X-T3  
LENS: 35MM (50MM CROPPED FRAME EQUIVALENT)  
DIRECTION OF VIEW: WEST



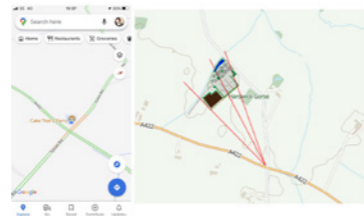
**PHOTOMONTAGE**

BASELINE



**VIEWPOINT 03**

Tysoe/Kineton crossroads on A422  
looking North towards Kineton



TYPE 3 VISUALISATION  
ENLARGEMENT FACTOR: 100% AT A3  
TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

DATE & TIME: 14/10/2022 15:39  
CAMERA: FUJIFILM X-T3  
LENS: 35MM (50MM CROPPED FRAME EQUIVALENT)  
DIRECTION OF VIEW: NORTH

PHOTOMONTAGE



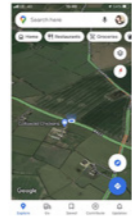




BASELINE

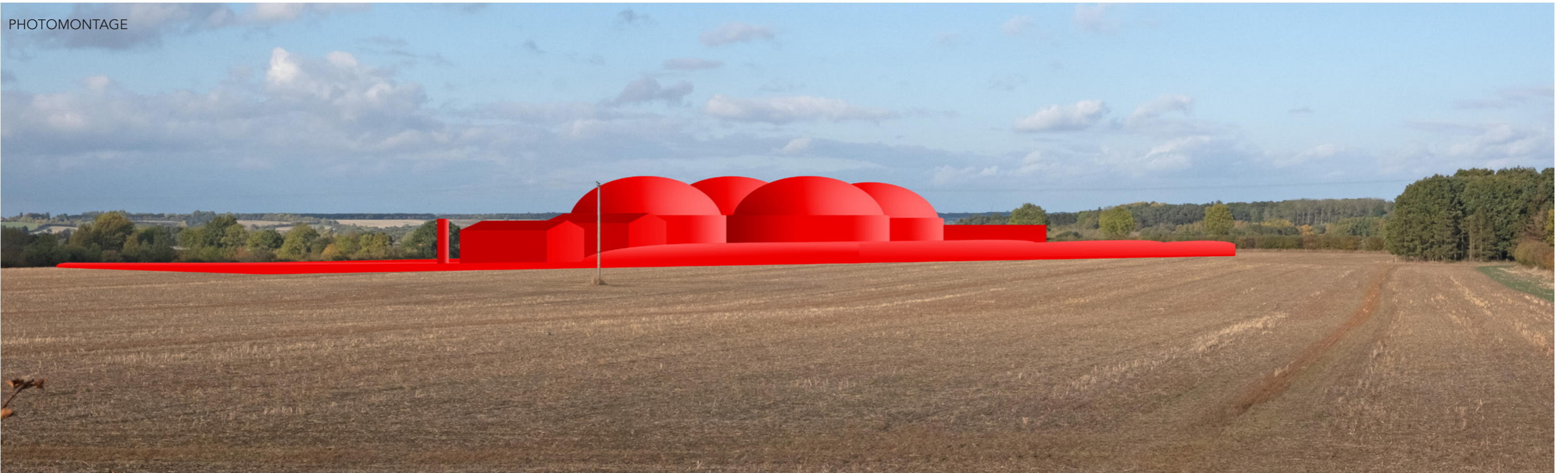
**VIEWPOINT 04**

A422 at entrance to Cotswold Chickens looking North towards Kineton



TYPE 3 VISUALISATION  
ENLARGEMENT FACTOR: 100% AT A3  
TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

DATE & TIME: 14/10/2022 15:30  
CAMERA: FUJIFILM X-T3  
LENS: 35MM (50MM CROPPED FRAME EQUIVALENT)  
DIRECTION OF VIEW: NORTH



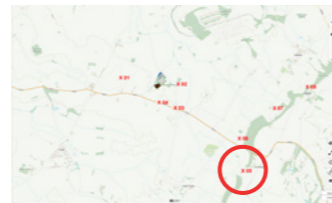
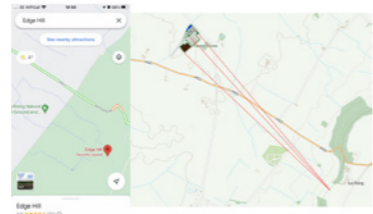
PHOTOMONTAGE

BASELINE



**VIEWPOINT 05**

Sun Rising Hill on Macmillan Way and Centenary Way footpaths, in Cotswold AONB, looking North-West



TYPE 3 VISUALISATION  
ENLARGEMENT FACTOR: 100% AT A3  
TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

DATE & TIME: 16/09/2022 13:43  
CAMERA: FUJIFILM X-T3  
LENS: 35MM (50MM CROPPED FRAME EQUIVALENT)  
DIRECTION OF VIEW: NORTH-WEST

PHOTOMONTAGE

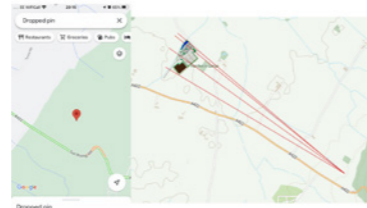


BASELINE



**VIEWPOINT 06**

Sun Rising Hill on Edgehill escarpment, in Cotswold AONB, looking West



TYPE 3 VISUALISATION  
ENLARGEMENT FACTOR: 100% AT A3  
TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

DATE & TIME: 16/09/2022 13:25  
CAMERA: FUJIFILM X-T3  
LENS: 35MM (50MM CROPPED FRAME EQUIVALENT)  
DIRECTION OF VIEW: WEST

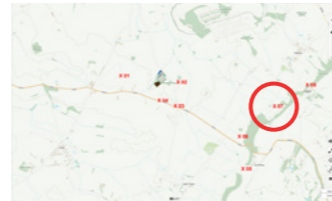
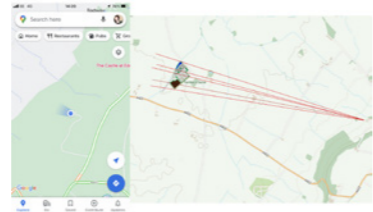
PHOTOMONTAGE





**VIEWPOINT 07**

Public right of way at Westcote on Edgehill escarpment, in Cotswold AONB, looking West



TYPE 3 VISUALISATION  
 ENLARGEMENT FACTOR: 100% AT A3  
 TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
 TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

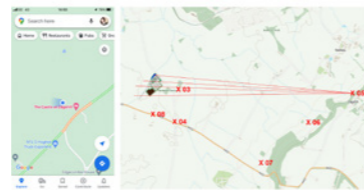
DATE & TIME: 02/10/2022 14:17  
 CAMERA: FUJIFILM X-T3  
 LENS: 35MM (50MM CROPPED FRAME EQUIVALENT)  
 DIRECTION OF VIEW: WEST





**VIEWPOINT 08**

The Castle at Edgehill on Macmillan Way and Centenary Way footpaths on Edgehill escarpment, in Cotswold AONB, looking West



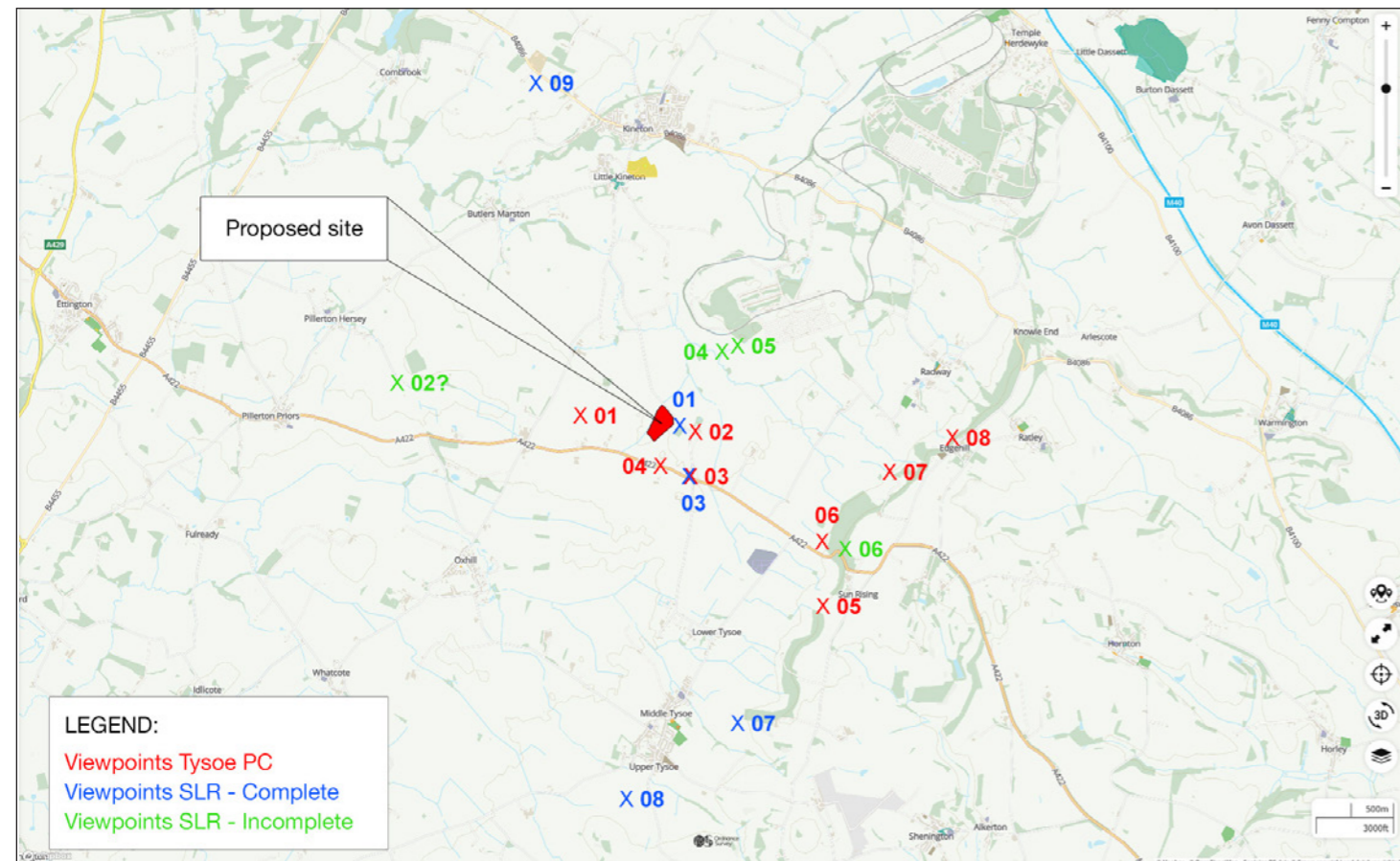
TYPE 3 VISUALISATION  
 ENLARGEMENT FACTOR: 100% AT A3  
 TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
 TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

DATE & TIME: 02/10/2022 13:59  
 CAMERA: FUJIFILM X-T3  
 LENS: 35MM (50MM CROPPED FRAME EQUIVALENT)  
 DIRECTION OF VIEW: WEST



# ERRORS, OMISSIONS, CONTRADICTIONS AND INCONSISTENCIES

Map illustrating location of viewpoints - comparison between Tysoe PC and SLR



This sets out the findings of a review, undertaken by Zanna Consultancy & Design, of the wireline viewpoints created by SLR within the 'Appendix 2 of the LVIA - Landscape photos'.

Referring to 'Appendix 2 of the LVIA - Landscape photos', SLR's wireline viewpoints are misleading, inaccurate and incomplete. See numbering in blue and green on the map illustrating location of viewpoints:

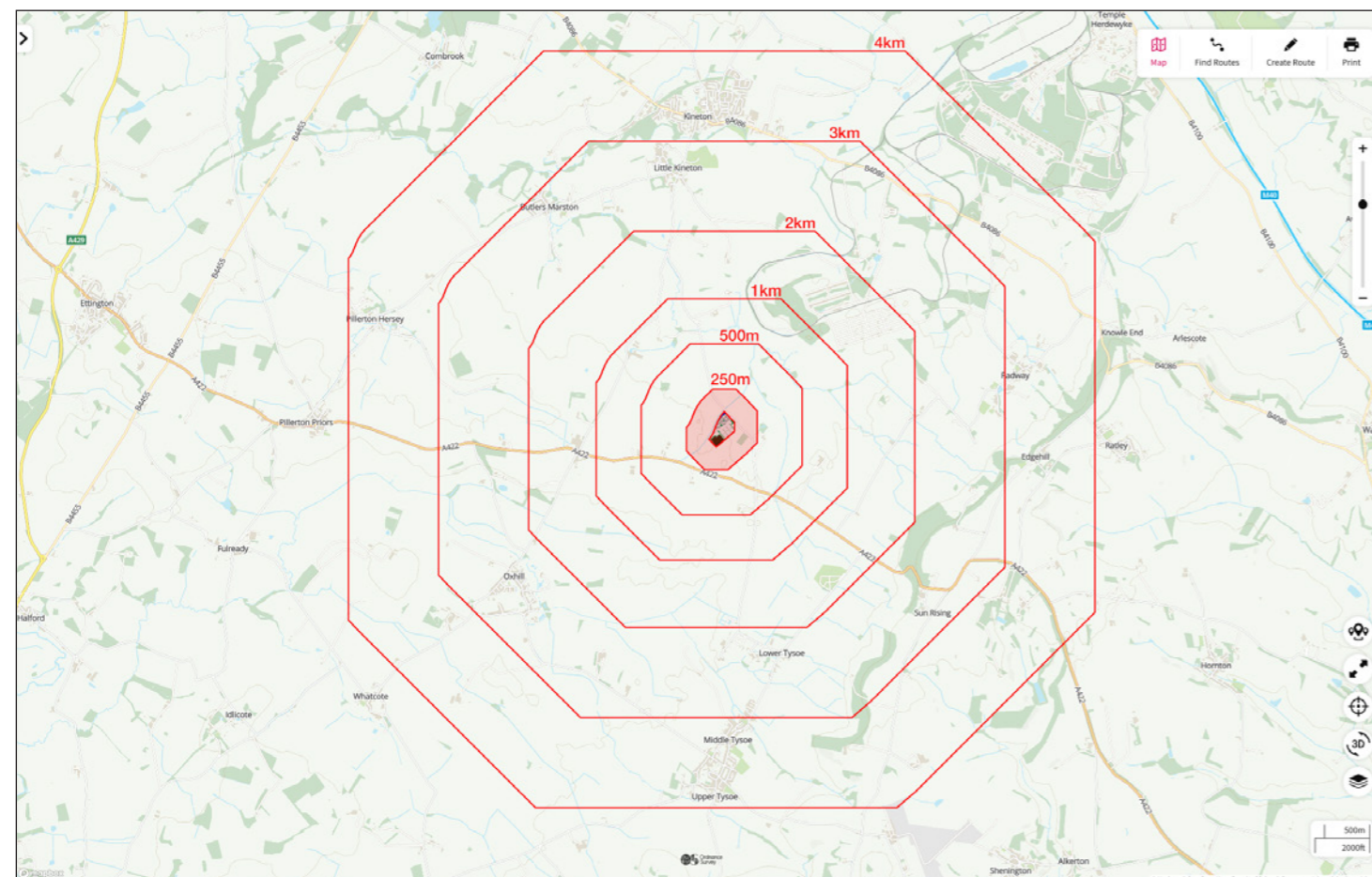
- Viewpoint 1 - Complete but inaccurate. The buildings are incorrect size and height in relation to the digesters
- Viewpoint 2 - Incomplete as no wireline has been created. Unclear where this location is
- Viewpoint 3 - Complete but inaccurate. The scale is incorrect so the digesters and buildings are not high enough
- Viewpoints 4, 5 & 6 - Incomplete as no wireline has been created
- Viewpoint 7 - This is SLR's choice of location from the Cotswold AONB. This is an odd choice, as firstly it is not obvious where this is, and secondly the very obvious viewpoint from the Cotswold AONB is from a well known beauty spot - the area where the Red Horse used to be on top of Sunrising hill, on the Macmillan Way footpath where there is a large clearing in the woods (see Viewpoint 05 in red - Tysoe PC's submission)
- Viewpoints 8 & 9 - Locations that are a great distance from the proposed site, at over 4km away. Not an obvious choice as there are many viewpoints much closer to the proposed site (see Viewpoints 01, 02, 04, 07 and 08 in red - Tysoe PC's submission).

In the LVA, SLR state that their photos are: 'non-verified Type1 photographs informed by guidance produced by the Landscape Institute. The existing views were recorded at the position of each viewpoint using a Nikon D610 full frame camera and a fixed 50mm. The camera was set 1.5m above ground level. The photographs were stitched in PTGUI and cylindrically projected to reflect natural vision and proportion.' I question this statement for the following reasons: SLR state that they use Type 2, not Type 1, on their wireline document; I do not believe that a fixed 50mm lens has been used; and stitched photos cylindrically projected are, in my opinion, unnecessary for a development of this type. The stitching refers to panorama style imagery where you stitch several photos together to get one very wide image, this would only be necessary if you couldn't get the whole site in to one photo, for example if it was a very large scale windfarm with a site several miles wide.

Referring to the 'Landscape Institute Technical Guidance Note - Visual Representation of Development Proposals' document, I have used the methodology from Type 3 visualisation, but SLR state on their wireline document that theirs are Type 2 visualisations. In 4.1.2 it states that 'Whilst Type 3 will be acceptable in many situations, only Type 4 methodology and equipment can provide the levels of verifiable accuracy which are appropriate to high Sensitivity contexts and Purposes.' I do believe that this is a 'high sensitivity context' and as such, their visual representation should be of Type 4. I do not have the technical equipment required for this (LiDAR, measured surveys, tripod and camera with a full frame sensor), hence Tysoe PC's being of Type 3.

Referring to '3.8 Viewing Distance and Enlargement Factor', I question SLR's odd choice of 96% at A1 rather than the recommended 100% at A3. In particular, I believe they have used a similar set up as stated in 3.8.15 - using a 35mm (wide-angle) lens and printing at A1 size. When I look at their photos I believe they are actually shot with a wide-angle lens - the distortion of the foreground is indicative of this. 3.8.16 goes on to state that the 'practitioner should ensure that image quality is appropriate for purpose'. I do not believe that SLR's are appropriate for purpose. Most of the photographs are too far away, incomplete or inaccurate.

Map illustrating proposed site with radiating lines at 250m 500m and every kilometre until 4km



# ERRORS, OMISSIONS, CONTRADICTIONS AND INCONSISTENCIES, CONTINUED



**NOTE:** THE POTENTIAL VISIBILITY OF THE PROPOSED DEVELOPMENT IS ILLUSTRATED AT THE POINT OF CONSTRUCTION BEING COMPLETE. IT DOES NOT ALLOW FOR THE LONG TERM SCREENING EFFECTS OF ANY PLANTING ILLUSTRATED ON THE LANDSCAPE STRATEGY.

**LEGEND**  
 INDICATIVE POSITION, EXTENT OF MASSING OF THE PROPOSED DEVELOPMENT.  
 SOLID LINES AND TRANSLUCENT FILL INDICATE ASPECTS OF THE DEVELOPMENT THAT ARE LIKELY TO BE VISIBLE.  
 DASHED LINES INDICATING ASPECTS THAT ARE LIKELY TO BE SCREENED BY INTERVENING VEGETATION.

**INDICATIVE EXTENT LAND FORMING / ACCESS ASSOCIATED WITH THE PROPOSED DEVELOPMENT.**  
 SOLID LINES AND TRANSLUCENT FILL INDICATE ASPECTS THAT ARE LIKELY TO BE VISIBLE.  
 DASHED LINES INDICATING AREAS THAT ARE LIKELY TO BE SCREENED BY INTERVENING VEGETATION.

**PROJECTION: CYLINDRICAL**  
 ENLARGEMENT FACTOR: 96% AT A1  
 VIEW AT COMFORTABLE ARMS LENGTH  
 TO BE PRINTED AT A1 FOR ASSESSMENT PURPOSES  
 VIEWING BOX INCORPORATES UP TO 90° HORIZONTAL FIELD OF VIEW

**DATE AND TIME OF PHOTOGRAPHY:** 31/03/2022 TAKEN AT 09:41  
**MAKE AND MODEL OF CAMERA:** NIKON D610  
**MAKE AND FOCAL LENGTH OF LENS:** NIKON 50MM  
**DIRECTION OF VIEW:** NORTH

**TYPE 2 VISUALISATION**  
 SLR  
 acorn

**VIEWPOINT 3** **FIGURE 9.3.8**

This is the same viewpoint taken by SLR (above) and myself (below), allegedly using the same camera lens, a standard 50mm lens.

I contest that the photograph taken by SLR is taken using a standard 50mm lens, as the presented Horizontal Field of View (HfOV) is 90 degrees, far wider than the same view photographed below, at a HfOV of 39.6 degrees, with a 50mm lens equivalent on a cropped frame camera (35mm using a Fujifilm X-T3). I would therefore conclude that this photograph has been taken by SLR using a wide angle lens, not a 50mm lens as stated.

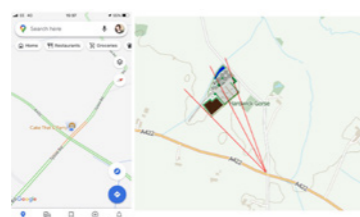
SLR state that this photograph is to be viewed at an enlargement factor of 96% at A1 size, (printed at A1 for assessment purposes), but this is counter to the usual enlargement factor of 100% at A3 size. A1 is 4 times the size of A3. I would suggest that this has been selected to make the wireline photomontages appear smaller than they actually are when viewed on screen (as most people will be doing).



A7 105 x 148mm / 4.1 x 5.8"	A5 165 x 220mm / 6.5 x 8.7"	A3 297 x 420mm / 11.7 x 16.5"	A1 594 x 841mm / 23.4 x 33.1"
A6 105 x 148mm / 4.1 x 5.8"	A4 210 x 297mm / 8.3 x 11.7"	A2 420 x 594mm / 16.5 x 23.4"	
841 x 1189mm / 33.1 x 46.8"			A0

## VIEWPOINT 03

Tysoe/Kineton crossroads on A422 looking North towards Kineton



**TYPE 3 VISUALISATION**  
 ENLARGEMENT FACTOR: 100% AT A3  
 TO BE VIEWED AT COMFORTABLE ARMS LENGTH  
 TO BE PRINTED AT A3 FOR ASSESSMENT PURPOSES

**DATE & TIME:** 14/10/2022 15:39  
**CAMERA:** FUJIFILM X-T3  
**LENS:** 35MM (50MM CROPPED FRAME EQUIVALENT)  
**DIRECTION OF VIEW:** NORTH

I also contest the accuracy of the wireline view by SLR, I do not believe that the heights of the 5 digesters (16.5 metres) and the chicken shed (9 metres) are correct. Compare with the photomontage below, which was created using drones that were flown at correct heights and positions, and photographed to aid the calculations for the photomontages.

# TRAFFIC IMPACT ASSESSMENT

## SUMMARY AND CONCLUSION

In their conclusion, on p39 of the Transport Statement, Acorn state 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.”* We believe that this statement is totally incorrect. The impact and harm done, were this application to be granted permission, would be significant and widespread. **This is supported by the 3 following Transport reports:**

- *Traffic Impact Assessment*
- *Transportation assessment*
- *Independent highways review*

Whilst providing a great deal of data, Acorn fail to provide the key elements of information that enable a realistic assessment of the traffic impacts that the digester would create.

In the absence of those key elements of information we have made what we believe to be reasonable assumptions. Our conclusions are as follows:

<b>Incremental HGV/tractor journeys</b>							
				<b>Daily peak road movements</b>	<b>Annual kilometers*</b>		
<b>Importing crop feedstock</b>				222	42,780		
<b>Importing straw and ag by-product</b>				15	27,032		
<b>Exporting biogas, CO2 and LNG</b>				8	48,522	**	
<b>Exporting digestate</b>				37	30,402		
<b>Total peak daily movements</b>				<b>282</b>	<b>148,736</b>		
<b>Acorn's stated current average</b>				125			
<b>Increase in HGV/tractor movements</b>				<b>225 %</b>			
* includes journeys defined by Acorn as "internal" and by road							
** we understand that biogas transport vehicles will be methane fuelled, this applies to 28,512 of the 48,522km							

It is very likely that Acorn will vehemently disagree with this analysis. Had they included their base assumptions in the application we may have been able to calculate the impact more accurately. It is very unlikely, however, that our conclusions would have been significantly different as we don't believe that any of the assumptions we have made are illogical.



In an email to Cllr John Feilding (SDC Ward Member for Tysoe) on 11<sup>th</sup> November 2022, Mr Gilham, for Acorn, stated that: *“At the moment we have not signed any contracts yet with farmers to supply the site... It is difficult to be specific about where the feedstock will come from. Where the feedstocks are produced will change on a yearly basis, depending on each farmer’s crop rotation. We would not expect the silages to come from more than 10 miles away, though straw and the poultry manure may come from slightly further away than this radius. The feedstock for the plant will come via the A442”* [sic. should be A422]. This demonstrates that our assumption of 6.2 km (see section 1 below) is quite conservative.

**The analysis above shows an incremental peak traffic load of 282 HGV/tractor movements a day compared with the applicant’s assessment of 162 HGV/tractor movements a day – or a 74% increase.**

**We therefore conclude that the impacts from the proposed traffic movements, far from being “negligible”, are in fact profound (even the applicant’s own figures show an increase, at peak times, of 103% over the status quo). It is not credible to suggest that these impacts will not be harmful to the environment, the community and to other road users. These conclusions demonstrate that the proposal is far from being “green”. It is highly dependent on vehicle movements and these movements will be damaging and disrupting.**

The *‘Transportation assessment report’* assesses and challenges Acorns inaccurate data on transportation and safety using agricultural tractor/trailers within their Transport Statement.

In section 5 below we show that the pollution caused by the transportation of product into and out of the digester would be at an alarming level. **We estimate that 133.8 tonnes of CO<sub>2</sub> and 4.5 tonnes of NO<sub>x</sub> would be produced each year. The NO<sub>x</sub> alone is enough to fill an Olympic swimming pool.** This negates any “green” benefit accruing from the development.

A report to consider the impact of traffic caused by the proposed digester has been commissioned on behalf of Tysoe Parish Council from consultants Rappor (see the *‘Independent highways review’*). In their conclusion, Rappor state:

*From a transport and highways perspective, there are several matters and concerns in respect of the access, visibility issues, insufficient information pertaining to both TMPs & CTMPs and inconsistencies with projected vehicle movements, which have resulted in the impact of the proposed development not being adequately assessed.*

*The transport planning elements of the planning application are considered to have a number of fundamental flaws, which are outlined in the TN. The development has significant access concerns in terms of form, design, and gradient. Inaccuracies with the visibility calculations, forward visibility assessment not undertaken, further swept path analysis needed and full TMP & CTMPs are required to appropriately assess the application. Inaccuracies with the proposed vehicle movements and traffic impacts used bring into question the validity of the conclusions made within the SLR TS.*

*Taking all of this into consideration, Rappor concludes that the planning application (LPA Ref: 22/02935/FUL) is not acceptable in transport and highways terms and planning permission should not be granted.*

**We maintain that the traffic considerations alone mean that the application conflicts with the following policies of SDC's Core Strategy: AS.10, CS.22, CS.3, CS.1, CS.5, CS.9, CS.11, CS.2 and CS.26.**

## **BACKGROUND**

There are several concerns over the level of traffic that the digester will create, these are:

- The incremental traffic movements over and above those that exist today
- The harm that will be done to the surrounding environment:
  - Pollution
  - Damage to road infrastructure
  - Congestion
  - Interference with residents' lives
  - Danger to other road users
  - Danger to recreational road users – cyclists, horse-riders, walkers etc.

We believe that Acorn have substantially under-estimated the harm, caused by traffic, that the digester will cause.

Below we demonstrate that the application has minimised the traffic movements.

The key assumptions to be considered are:

### **1. Import of feedstock:**

- Yield of crop per hectare
- Distance travelled to deliver feedstock
- Type of vehicle used for delivery
- Average payload per delivery
- Concentration of deliveries over time

### **2. Export of biogas, CO<sub>2</sub> and LNG:**

- Quantity of gas produced and to be delivered
- Method of delivery
- Distance travelled from digester to delivery point
- Route to be used

### **3. Export of solid and liquid digestate to farms:**

- Quantities of each to be delivered
- Method / vehicles to be used to deliver it
- Distance travelled from digester to farms
- Concentration of deliveries over time

4. How much of the traffic would be incremental?
5. Pollution
6. Traffic management and safety

Acorn have only provided assumptions for a few of these and have avoided some of the most important factors in the traffic equation, i.e. where is the feedstock coming from (the application indicates that it will come from the applicant's farm and surrounding farms) and where is the digestate delivered to.

## 1. Import of feedstock

The application states that the digester will require 92,000 tonnes of feedstock and that approximately 60% of this will be from grown crops, i.e., 55,200 tonnes. The land in the immediate vicinity of the proposed site is heavy clay and not suitable for maize or rye, so the yield will be low, or the operators will choose to go further afield for the crop. Typical yields for maize and rye would be 40 – 60 tonnes/hectare, however this can be as low as 30 tonnes on heavy clay. Also, harvesting maize in late September or early October on heavy clay is extremely difficult. We therefore assume that average crop yields could be, say, 35 tonnes/ha.

Therefore, to grow 55,200 tonnes of feedstock crop, approximately 1,600 ha (or ca.4,000 acres) of land would be needed **(and taken out of valuable food/fodder production)**. Assuming that the feedstock is grown as a “break crop” in a rotation system then, **at a 3-year rotation, 4,800ha (1,600 x 3) (or 11,800 acres) of land would need to be contracted for supply, and at a 5-year rotation, this would increase to 8,000ha (or 19,800 acres)**. The assertion that the grown feedstock would come from the applicant's farm or surrounding farms is not credible. Even if, for example, the yield were to be assumed at 45 tonnes/ha, at a 5-year rotation, an area of 7,400ha (or c. 18,200 acres) would still be required to be contracted.

Therefore, land of between 7,400ha and 8,000ha would be required to be under contract in order to secure the grown feedstock. Even assuming that this land was entirely surrounding the digester, this would mean that a circle of radius 5km of crop production would be required. Given that much of the farmland immediately surrounding the site is not owned by the applicant or is used for sheep grazing, and given that Acorn have not provided any alternative, we would have to assume that a much larger catchment area would have to be secured. **A conservative assumption – i.e., an increase of the catchment area by 50% to 12,000ha of land around the digester – would increase the radius from the digester to 6.2km.** This would mean that the average distance travelled to deliver grown feedstock to the digester would be 6.2km (average distance = 6.2km x 0.5 x 2 for return trips = 6.2km). This assumes that the journey is in a straight line which it certainly will not be.

Acorn state that 90% of the silage trips are by road with 10% “internally”, which we take to mean on-farm. Whether by road or on-farm is irrelevant, the trips still have to be made. *Acorn state on p2 of the Design & Access Statement that 60% of feedstock would be crops and 40% would be “agricultural by-products e.g. manures”.* On p27 of the Transport Statement the table shows that 47,000 tonnes of feedstock would be silage, or grown crops, 20,000 tonnes would be straw and

25,000 tonnes would be slurry/manure. **These two statements seem contradictory.** With an average payload of 16 tonnes per delivery (the legal limit for a tractor/trailer is 13.5 tonnes) this would require **3,450 loads or 6,900 trips** (counting return journeys). **At a conservative estimate of distance per journey of 6.2km, this equates to 42,780km travelled each year – for comparison, the circumference of the globe is 40,000km. These journeys would be carried out by diesel burning vehicles. If we take at face value the applicant’s claim that 90% of the sileage would be transported by road at face value, this will still equate to 6,210 road trips per year.**

Acorn state that during the harvest periods of two 2-week periods in June/July and September/October, the frequency of deliveries will increase. **If we assume that the 90% of the grown-crop feedstock delivered by road is delivered in this 4-week window, that would equate to 222 peak vehicle movements per day assuming 7 days/wk delivery** (Acorn seem to imply on p21 of the Transport Statement that deliveries of feedstock would only take place on 5.5 days per week). Acorn’s traffic survey data shows that the average HGV movements on the A422 is 125 per day, therefore **the conservative estimate above suggests that the delivery of crop feedstock alone, during the harvest seasons, would increase these HGV movements by almost 78% above the existing average. This is at odds with Acorn’s declared assumptions.**

Acorn are equally vague regarding the import of the balance of the feedstock, 36,800 tonnes. Where exactly is it coming from? We are not aware of any large-scale pig or poultry units within 5km of the proposed site that we are aware of as declared sources. However, even if taken at face value, **Acorn’s assumptions for the delivery of the straw, poultry litter, pig slurry etc. at face value, account for a further 4,360 HGV/tractor movements per year or, assuming 5.5 day/deliveries per week, a further 15 HGV movements per day, or a 12% increase on Acorn’s declared average HGV movements per day.** *Acorn’s calculations in table 6-1 on p27 of the Transport Statement seem to be incorrect, e.g., 20,000 tonnes of straw at 20 tonnes per load equates to 1,000 loads not 900 as stated. The 10% “allowance” for internal journeys does not apply to these feedstocks.*

If it is assumed that each of these additional 4,360 HGV/tractor movements travel a similar distance as the crop feedstock, i.e. 6.2km (once again, Acorn again have not provided any detail about where these other feedstocks might be sourced), then these would account for a **further 27,032km of travel per year by diesel burning vehicles.**

## **2. Export of biogas, CO<sub>2</sub> and LNG**

Once again, although Acorn provide a large amount of data, there is a dearth of information that is useful in assessing the impact of the various transportation streams. We therefore have to take at face value the data that they have supplied.

In Table 6-1 on p27 of the Transport Statement, Acorn declare that the export of biogas, CO<sub>2</sub> and LNG will create 1,531 trips. This translates into 3,062 trips accounting for return journeys. On p21 of the Traffic Statement Acorn state that biogas will be collected twice a day (the site works 365 days/year) and that CO<sub>2</sub> would be collected once per day. This would create 730 collections of biogas and 365 collections of CO<sub>2</sub> per year, not the 864 and 540 collections respectively stated in table 6-1. *(The data Acorn supply is contradictory).*

We know that the distance from the digester to the centre of Banbury is 13.5km, as declared by Acorn on p7 of the Transport Statement (the distance, by road, to the probable gas main is ca. 16.5km). Acorn do not declare where the CO<sub>2</sub> or LNG will be delivered, so we have to assume that each will be delivered to a destination perhaps 15km from the digester.

**Therefore, these deliveries combined will account for a further 48,522km of HGV travel per year (Biogas 1728 journeys x 16.5km = 28,512; CO<sub>2</sub> & LNG journeys 1334 x 15km = 20,010km) and an increase of nearly 7% or 8.4 HGV journeys per day on the declared current average HGV movements.**

Acorn assumes that the biogas will be transported by road vehicle at loads of 12,500m<sup>3</sup>. This requires a very large vehicle. We believe that the image below is of a 12,000m<sup>3</sup> MEGC (Multi-element Gas Container) vehicle which would transport the gas at 250bar.



The route to Banbury via the A422 is difficult. The large HGVs would have to negotiate Sun Rising Hill, a steep and winding route notoriously difficult in winter. The A422 passes through the village of Wroxton, in which there is a very tight bend which HGVs find difficult to negotiate against oncoming traffic. Then the road passes through Drayton where the High School presents yet another bottleneck on the outskirts of Banbury. The gas carriers would then have to travel through busy residential streets to access the gas injection point. It is difficult to imagine a more unsuitable route for a large gas carrier.

### **3. Export of solid and liquid digestate to farms**

Again, Acorn provide a limited amount of information helpful in assessing the true impact of the traffic that would be created by the delivery of solid and liquid digestate from the digester to farms.

In table 6-1 on p27 of the Transport Statement Acorn state that 65% of the solid and 20% of the liquid digestate is transported “internally” (*although their calculation is incorrect as they state that 90% of the liquid digestate is transported by road*). They assume, again, that “internal” transport is of no consequence but it still burns diesel, and the assumption that it would use no roads is difficult to accept. (*Once again, taking their assumptions at face value, it is difficult to reconcile their figures. For*

*solid digestate they quote a figure of 44,755 which is presumably tonnes. At 16 tonnes per load this would equate to 2,797 deliveries not the 196 stated. Even if Acorn are only counting the 35% they say is delivered by road this would give 979 deliveries. This statement appears to be incorrect by an order of magnitude. Also, their assumption of a 16t payload is incorrect as the legal limit is 13.5t, using this latter figure to calculate the loads and distance travelled would make the answer even worse).*

For lack of a more accurate assessment, we assume that solid digestate accounts for 2,797 deliveries (44,755 / 16 tonnes per load), and that liquid digestate accounts for 2,270 deliveries (68,096 / 30 tonnes per load). Whether these are “internal” or road deliveries is not relevant to the amount of hydrocarbons burnt. Assuming a very conservative average trip distance of 3km (or 6km accounting for return trips), **this would equate to 30,402km of travel by HGV/tractor**. If we accept Acorn’s premise regarding how many of these digestate trips would be road trips, then **digestate deliveries would account for a further 6,042 (2,043 liquid x 2, 978 solid x 2) HGV/tractor road movements per year or, assuming 5.5 day/week working (p21 Transport Statement), a further 21 HGV/tractor movements per day, or an increase of nearly 17% on Acorn’s stated 125 average movements per day.**

Solid digestate cannot be spread on fields all year round, typically it is spread on fields between late winter through to the end of summer, possibly seven months of the year. This would exacerbate these traffic movements even further as the trips would be concentrated into a shorter period. **This would mean that rather than 21 extra HGV/tractor movements per day it could be 36.6 movements per day, or an increase of 29% over the current average, if taken over a 30-week period rather than a 52-week period.**

#### **4. How much of the traffic would be incremental?**

In the table on p29 of the Transport Statement, Acorn show what they purport to be the existing HGV/tractor traffic. They state that *“the proposed development will predominantly result in a redistribution of local agricultural traffic.”* We believe that this is a significant overstatement of the facts. The table shows that there are, according to Acorn, 5,382 annual traffic movements. These apparently exist without the digester being present. We maintain that the following traffic movements will continue to exist even after the digester is installed:

Wheat grain harvest	338
Wheat grain to market	193
Barley grain to harvest	119
Barley grain to market	68
Rape harvest	60
Rape to processor	34
Fertilisers spreading & spraying	<u>569</u>
	1381

Therefore, of the 5,382 annual traffic movements Acorn have apparently identified, 1,381, or 26% are independent of the digester being installed, they will continue to happen, e.g., the small-grains harvest and transport to market will continue as the digester will not utilise the grain and fertilising and spraying will continue as it will be needed to grow the feedstock crops.

Of the other traffic movements Acorn identify, e.g., barley and wheat straw, whilst these may involve “a redistribution of local agricultural traffic”, this traffic will be “redistributed” to only one place – the digester. Instead of being spread across a wide area of farmland as they are now, they will be concentrated on transporting feedstock to the digester. This will cause far heavier HGV/tractor traffic on the A422 as well as on the roads feeding it from the farms supplying the feedstock. **We believe that Acorn’s assertion that the traffic patterns will largely represent a redistribution of existing traffic is not supported by the facts.**

Acorn say that the data in table 6-2 has been compiled “*following a detailed assessment which has included liaising with local landowners and farm operators to forecast typical feedstock supplies.*” It is a pity that they have not provided details of who they liaised with as we have spoken to a number of large farm owners in the Tysoe vicinity who have not been approached by Acorn. We suspect that their information may have come very largely from the owner of the proposed site.

## **5. Pollution**

Given the “green” credentials that the applicant claims for this development, the absence of any meaningful analysis of the pollution caused by the transportation of product into and out of the digester is surprising. Considering that absence, we have been forced to make our own calculations.

We believe that this high dependency on road/on-farm transportation negates any green credentials that the applicant may claim.

Using the assumptions identified below, the project is likely to emit an alarming amount of pollution (CO<sub>2</sub> and NO<sub>x</sub>) when the global view is considered. This is very far from being a “green” proposal.

See calculations below:

<b>Assumptions used:</b>			
1	Ag Tractors will have engines rated at average 250bhp		
2	HGVs will have engines rated at average 350bhp		
3	On road speeds assumed to be 40kph		
4	Off road speeds assumed to be 20kph		
5	NOx emissions assumed to be 0.40g/bhp-hr		
6	CO <sub>2</sub> assumed to be 2.68kg/lit of diesel		
7	Tractor diesel consumption is 14lt/hr		
8	HGV diesel consumption is 35lt/100km		
See reports:			
<a href="https://theicct.org/wp-content/uploads/2021/06/NOx_Emissions_In_Use_HDV_US_20191125.pdf">https://theicct.org/wp-content/uploads/2021/06/NOx_Emissions_In_Use_HDV_US_20191125.pdf</a>			
<a href="https://connectedfleet.michelin.com/blog/calculate-co2-emissions#:~:text=One%20litre%20of%20diesel%20corresponds,to%20your%20kilograms%20of%20CC">https://connectedfleet.michelin.com/blog/calculate-co2-emissions#:~:text=One%20litre%20of%20diesel%20corresponds,to%20your%20kilograms%20of%20CC</a>			
<a href="https://uk-air.defra.gov.uk/library/assets/documents/reports/aeqg/nitrogen_dioxide_in_the_UK-summary.pdf">https://uk-air.defra.gov.uk/library/assets/documents/reports/aeqg/nitrogen_dioxide_in_the_UK-summary.pdf</a>			
<b>Calculations</b>		<b>Kilometers travelled</b>	
		On farm	By road
Grown feedstock import		4278	38502
By-product feedstock		0	27032
Export of biogas etc.		0	20010
Export of digestate		18126	12276
<b>Total</b>		<b>22404</b>	<b>97820</b>
			<b>120224</b>
<b>CO<sub>2</sub> emissions</b>			
Assume the off-road speed is 20kph	Hours	1120	
Litres of diesel used	at 14lt/hr	15680	
CO <sub>2</sub> emissions (Kg)	at 2.68kg/lit	42022	
For HGV at 35lt/100km	Litres		34237
CO <sub>2</sub> emissions	at 2.68kg/lit		91755
<b>Total CO<sub>2</sub> emitted</b>			<b>133777 kg</b>
			or <b>133.8 tonnes of CO<sub>2</sub> per year</b>
			<b>Equivalent to the CO<sub>2</sub> emitted by 50 households per year</b>
<b>NOx emissions</b>			
Off-road Bhp hours	1120hrs x 250bhp	280000	
On-road Bhp hours	97820km / 40kph x 350bhp		855925
<b>Total Bhp hours</b>			<b>1135925</b>
Nox emitted at 0.40g/Bhp-hr			<b>454370 grams</b>
			or <b>4.5 Tonnes of NOx per year</b>
			<b>Equivalent to the average diesel car idling for 12.5 years</b>

## 6. Traffic management and safety

The applicant suggests on p3 of the Transport Statement that an Operational Transport Management Plan should be put in place. They do not give any detail about what should be included in such a plan and do not allude to the issue of traffic through the surrounding villages. In public meetings prior to the application being submitted they gave categorical undertakings that no digester traffic would go through any of the surrounding villages. This statement was considered non-credible at the time as it is not practical to prevent traffic from taking the shortest or most direct route from farm to digester. This route would often lead traffic through the small villages surrounding the plant. Also, it was not clear how the applicant could effectively enforce such a restriction. We remain highly sceptical about such assertions. The following image demonstrates the fragile nature of many of the narrow roads that would have to be used to deliver feedstock from farms to the digester. The cost of repairing the inevitable damage that the heavy traffic would cause is likely to be enormous.





We have not attempted to assess the road traffic dangers associated with this proposal as it is beyond our technical capability. However, it is inconceivable that the volume of traffic that would result from the proposal would not increase the risk of road traffic danger. On p11 of the Transport Statement the applicant includes a table that shows the 85<sup>th</sup> percentile speed on the A422 as approximately 63mph (above the national speed restriction for that road) and the mean speed as approximately 55mph. The A422 in the vicinity of the proposed site is a fast road. The introduction of a high volume of slow and large vehicles on to this road can only increase the risk of a dangerous accident.

It is interesting and pertinent to note that during the compilation of this objection submission, during the month of November 2022, at least 4 HGVs became stranded in separate incidents on Sunrising Hill on the A422. These incidents were caused either by the vehicles jack-knifing or losing traction on wet leaves, and this was before any snow or ice was present.

Readers may view videos of a typical large agricultural tractor travelling on the roads around the proposed digester site here: <https://www.youtube.com/@stophardwickenergy>

The following images show a large agricultural tractor in various settings on the narrow roads linking the villages in the vicinity of the proposed site and also in village centres (Tysoe and Radway):





## ERRORS, OMISSIONS, INCONSISTENCIES AND CONTRADICTIONS

### The following comments relate to the Transport Statement:

1. No indication of the source location of the feedstock is provided. Given that this is a Transport Statement and most of the traffic will relate to the importation of feedstock, this is a serious omission.
2. Page 3, 1.5.2 concerns an Operational Traffic Management Plan. Again, given the fundamental importance of traffic control, the lack of any detail of this Plan is very concerning.
3. Page 7, Fig 3.1, the main road is the A422, not the A 442 as indicated.
4. Page 8, 3.1.2, states that the site comprises 5.8ha. Page 1 of the Design and Access Statement states that the site would be 8.45ha. The two statements are contradictory.
5. Page 8, 3.2, Tysoe Road, it states that Kineton is a small hamlet. Kineton is in fact a large village with a population well in excess of 2,000 people.
6. Page 10, Traffic Survey. This states that the survey was conducted over the period of one week in March 2022. One week in late winter is not sufficient data.
7. Page 12, Fig 3.4 shows the stretch of the A422 subject to accident survey. This equates to approximately 1km of road. This is totally inadequate for such a survey.
8. Page 16, 4.2 Policy Documents. No mention made of the Tysoe Neighbourhood Plan.
9. Page 21, 5.1.1 states that the plant would employ up to 5 FTE staff. 5.1.2 states that the plant would employ 4 FTE staff – a difference of 20% - which is correct?
10. Page 26, 6.2.1 states that feedstock would be imported from “surrounding farms”. This is a vital component in the traffic equation and yet no further details of how far the feedstock will travel and by what routes is provided.
11. Page 26, 6.2.2 describes the product exported. Again, the applicant fails to provide information on where this product will go apart from saying that the gas injection point is in Banbury. How far will the CO<sub>2</sub>, the Biogas and the digestate travel – these are vital assumptions for calculating the traffic impact.
12. Page 27, Table 6.1, Traffic Forecast. There are many apparent serious errors and inconsistencies in this vital table:
  - a. It shows that crop silage is 51% of the total feedstock. However, page 2 of the Design and Access Statement states that 60% of the feedstock will be crops. Adding straw to the crop silage increases the percentage to 73%. It is important when calculating the distances that the feedstock is likely to travel to know how much is crop derived.
  - b. The imports trip calculations all show only the trips for 90% of the feedstocks. This seems to relate to the footnote that states that 90% of the silage is transported by

- road. This does not apply to the other feedstocks and, in any case, all trips should be counted not just those on-road.
- c. The annual trips are only one-way. They should be doubled as the vehicle has to return to base.
  - d. The table shows that silage and other products are transported in 16t payloads. The legal limit for a tractor towed trailer is 13.5t – how is the 16t calculated?
  - e. The biomethane, stated at 10,101,614 (presumably cubic metres, although not stated), is transported in 12,500m<sup>3</sup> wagons but that would equate to 808 “trips” not 864 as stated (not counting returns).
  - f. The CO<sub>2</sub> calculation makes no sense at all. Is the gas measured in tonnes or cubic metres? If the latter then why measure the tanker in tonnes? The calculation appears to be completely wrong.
  - g. The LNG calculation appears to be out by a factor of 1000.
  - h. The solid digestate calculation appears to be completely wrong also.
  - i. The calculation for liquid digestate appears to relate only to the on-road transport and, again, only one-way. It should include off-road for a total picture.
  - j. The footnote states that 90% of the liquid digestate would be transported by road and 20% internally. This equals 110% of the liquid digestate.
13. Page 29, Table 6.2 purports to show existing farm traffic/transport movements gleaned from “liaising with local landowners and farm operators”. To have any validity the applicant needs to identify the sources of this information. Given that it is included and given prominence, then it is deemed important for the applicant’s argument. The sources should be identified.
14. Page 33, Proposed Access Design – no mention is made of the access on to Tysoe/Kineton Road that is proposed. This is not included in Drawing 03 on page 43. This is a particularly sensitive access point but it is not addressed.

# **TRANSPORTATION ASSESSMENT**

**ADAM WYATT**

**Transportation assessment using agricultural tractors/trailers from Acorn's transport statement for proposed AD plant at Hardwick Farm**



# Contents

<b>This report has been produced by Adam Wyatt, EngTechMIAgrE</b>	<b>3</b>
<b>1.0 Executive Summary on Transportation using Agricultural tractors/trailers, to move estimated 90,000 tons of dry products and removing waste solid/liquid digestate to be used in AD Plant</b>	<b>4</b>
<b>2.0 &amp; 3.0 Introduction</b>	<b>5</b>
<b>4.0 Transport Analysis Supporting Information</b>	<b>8</b>
<b>5.0 Example Map of Land use around the proposed AD Plant and road routes</b>	<b>9</b>
<b>6.0 Original Calculations for Acorn Transport Statement</b>	<b>11</b>
<b>7.0 Transportation from field to AD Plant, by Agricultural Tractor/Trailer</b>	<b>14</b>
<b>8.0 Impact of Agricultural traffic on rural roads</b>	<b>16</b>
<b>9.0 Facts on Agricultural Tractors/trailers used for Transport</b>	<b>17</b>
<b>10.0 Images of Agricultural tractor driving possible routes to the proposed AD plant to highlight safety concerns &amp; Links</b>	<b>19</b>
<b>11.0 Conclusion</b>	<b>20</b>



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Technical advisor to the Health and Safety Executive on legal/safety aspects of agricultural vehicles.

## **1.0 Executive Summary on Transportation using Agricultural tractors/trailers, to move estimated 90,000 tons of dry products and removing waste solid/liquid digestate to be used in AD Plant**

- 1.1 The statement from Acorn planning application **22/02935/FUL**, states 'Agricultural traffic will not increase with the implication of the AD plant from the normal local farm activity present' for site covering 8 ha, with 5 digestate towers 16.5 m high and handling upwards of **92,000** tons of dry produce and removing **112,851** tons of solid/liquid digestate.
- 1.2 The Transport statement submitted by Acorn fails to identify from where any of the Farm produce will be imported from, which raised the question of an unknown radius or distance from which they will have to import from. As no data for any confirmed contracts, and only spoken to a few local farmers, this can't be confirmed.
- 1.3 Agricultural vehicles will mainly be used, because of their 4WD off road capacity to work with specialist harvesting machines in the field. This will in result in increased traffic volumes over existing traffic levels, concentrated to one new central location.
- 1.4 This is not the same as current agricultural machinery movements as the applicant states in the transport statement as local farm traffic will be spread between various farms and not concentrated on one new location. The new high concentration of agricultural traffic focusing on the proposed AD plant, will have a devastating effect for road safety, noise, damage to the network of rural road and verges. Acorn's transport statement does not include a full assessment of the highways, or of the impact on the local community around the proposed AD plant, or on the quality of life of residents facing the increased high volumes of agricultural vehicles working around the clock in peak harvest times.
- 1.5 The disposal of original **112,851 tons** of waste solid/liquid digestate, which will have to be transported off site to farmers' fields, and mainly using agricultural tractors/trailer and HGV's. Once again, this will not be normal traffic, but a new high volume of traffic from a newly created central location, utilizing rural roads and passing through villages to deliver this waste to fields serviced by narrow unclassified roads.
- 1.6 Using the data provided by the transport statement in table **6-1 on page 27**, Agricultural tractors/trailers would result in the following increase in traffic of = **8,444** including return journey's or placing an extra 369,944 tons on the rural highway by transporting the estimated **57,000 tons** of produce waste, based on maximum gross weight for agricultural tractor/trailer @ 31 ton, for removing the waste digestate from the AD plant.
- 1.7 Acorn have misunderstood regulation/restrictions relating to agricultural tractors/trailers when calculating movements in the transport statement along with errors in data in calculations in **Table6-1 on page 27**.
- 1.8 The transport statement also fails to recognise safety issues resulting from the impact of increased agricultural tractor/trailer using rural and main roads with high frequency of movement in harvest periods.

## 2.0 Introduction

- 2.1 Acorn not fully understood the current farming activities in the local area around the proposed AD Plan at Hardwick Farm. A large percentage of land positioned around the site is permanent pasture (grass) grazed by sheep, which has minimal agricultural vehicle movement to maintain it.
- 2.2 Acorn also failed to identify current farming models for Agricultural transport activity for arable farms in and around the proposed AD Plant. The type of farms in the area around the proposed AD site are divided into two simple models of functioning farms, (see page 8), which explains one model A, in which all transport is contained on farm, between field and farm buildings & model B, which the farm has satellite field location, this will require agricultural vehicle movement on the highway between sites. This highlights that Acorn have not completed a comprehensive study into farming transportation in the surrounding area when discussing current agricultural vehicle movement, or the vast increase in traffic movements that would ensure it supplying the Proposed AD Plant. This can be supported by the next paragraph.
- 2.3 Acorn does not take this into account in its statement, 'That agricultural vehicle traffic will not increase', but Acorn state the site will require **92,000 tons** of produce to operate the AD plant, so how will this get to the proposed AD Plant site?
- 2.4 Acorn estimate in **table 6-1 on page 27** of the transport statement, that **57,000 tons** of (grass, Rye, Maize, animal manure & pig slurry) will be required by the AD plant all of which will have to be transported by Agricultural tractor/trailer from field to AD plant. Distances to be transported cannot be confirmed by the limited data available, effected by available land, crop rotation and Acorn securing contracts with farmer to supply the AD plant! Acorn state these break crops will benefit farmers by rotation of crops on a 5-year cycle. This now creates the problem of availability of land, thus increasing the distances agricultural tractor/trailers will have to travel, resulting in increased mileage on rural roads and through smaller villages (for example, Radway, Tysoe, Oxhill, Pillerton Priors) in order to access the A422 and to reach the AD Plant (see example map of field/routes on page 9 for illustration).
- 2.5 This massive increase in agricultural traffic will have a significant impact on the rural road network and through villages, increasing risk of road traffic incidents or fatal incidents involving agricultural tractors - with cars, cyclists, horse riders, walkers and children in villages being at a higher risk, (see page 16 Department for transport road traffic accident report).
- 2.6 The massive increase in agricultural transport concentrating movement to a single location will have an adverse effect on noise, safety, damage to road surfaces/verges through villages and on narrow rural roads, as these vehicles will be operating all hours of the day in peak harvest time in June-July for (Grass/Rye) and from September to the end of October. This is based on maximum gross weight of **31 tons** for Agricultural tractor/trailer, (see page 17) travelling on rural roads to supply the AD Plant.
- 2.7 Farmers will utilize their current agricultural transport (tractors and trailers) as a less expensive alternative to hiring expensive HGV trucks to transport products to the AD plant. They will also use specialized agricultural contractors to carry out the harvest and transportation activity using 'Fast Tractors' and large trailers.
- 2.8 HGV's with non-off road capabilities would not be able to follow the harvesting machine in the field, resulting in HGV's getting stuck as fields do not have a hard standing area for this activity like a commercial premises. Allowing **44-ton** articulated HGV to travel down narrow rural roads to the location of a field where crops are to be grown is not safe or practical. Nor should HGVs park on the roadside verge on a narrow rural lane to load produce from the field, (see page 16 accidents on rural roads).

- 2.9 Note: some twin axle trailer and triaxle agricultural trailers have the capacity to carry loads greater than the maximum legal approx. **13,500kg** laden weight, (**13.5 ton**) for the UK highway. This may be higher depending on the Net weight of the trailer, (max gross weight of agricultural trailer is **18290 kg**), (C&U regulations).
- 3.0 I believe that Acorn have substantially under-estimated the Risk/Harm, that will be caused by the increase of traffic to the proposed AD plant, with 31-ton Tractors/trailers, & **44-ton** HGVs on the roads. With many sections of unclassified roads around the proposed site, being no wider than **4.2meters** this will cause issues for other road users.
- 3.1 As in page 27 of the Transport Statement in table 6-1, there are major errors in their calculations and they have used incorrect weights for Agricultural tractors, based on payloads of 16ton. 'The Construction and Use Regulations' 1986 as amended, (C&U)', which states that an agricultural trailer must not exceed maximum gross weight of **18,250 kg**, with most twin axle silage trailers ranging from **4700kg -5900kg** unladen, thus this only leaves Approx. **13,500kg** or less as a payload to comply with these regulations. This error by Acorn in understanding the law concerning the use of agricultural tractors/trailers for haulage has given a misleading figure of vehicle movements, which will need to be recalculated by Acorn to give correct facts for assessment.
- 3.2 Acorn also asserts in their transport statement that all liquid digestate will be transported by HGV (table 6-1, page 27) and used by local farmers for fertilizer for growing crops, which is a true statement, but! So, does this mean we will now have **68,096** tons of waste, as stated by Acorn, which equates to **2296** vehicle movements, according to Acorn's transport statement of liquid waste being moved by HGV. According to their transport statement HGVs will have to travel down narrow unclassified rural roads to deliver the liquid digestate to farmers fields to be spread, with a **7.5-ton** weight limit on many of these roads. Again, as not all the fields will be accessible from the A422, these HGVs will have to use minor roads. Acorn's transport statement fails to provide supporting facts as to which farmers will be receiving this waste product, so no distance can be established, nor can we know which routes will be used- the applicant therefore cannot rule out transporting through surrounding villages to gain access to outlying fields.
- 3.3 A further **44750** tons of solid digestate - **2797** movements by tractors/trailer will need to be removed from the proposed AD site. Acorn fails to make it clear in their transport statement that these figures will be doubled as they have not considered any return vehicle movements, which will equate to 2 movements for example, travelling to the site to pick up waste materials and then taking them to the field for spreading (5,594). Once again, Acorn transport statement cannot prove that tractors will not travel through villages and use unclassified roads around the proposed site to dispose of this waste – there are no clear facts as to which land will be used, the applicant refers vaguely to it being 'local'.
- 3.4 Agricultural tractors have a width of up to 2.55m as stated in 'The Construction and Use Regulations' 1986 as amended, (C&U). If over 2.55m, they must comply with 'Special Types General Order 2003' (STGO), resulting in further restriction for weights and speed. The transport statement has not done a full appraisal of road widths on the roads which will be used - if two tractors meet on the same stretch of rural road, they will need a combined 5.6m width as well as passing space. if this is not given it will result in extensive damage to the road edge and churning up of the grass verge when these HGV's/Tractors pass each other or when meeting oncoming traffic or is trying to keep a safe distance from cyclists minimum **1.6m** or horses, minimum **2m** as stated by law in the highway code.
- 3.5 Due to agricultural trailer design, there is also a danger that the Agricultural Tractors/trailers will exceed the statutory legal limit of 31ton combined weight, as they have the capacity to exceed this and no weighing available in fields (is not practical due to the type of activity and the changing locations products will be traveling, (see agricultural vehicle regulation on **page 17**).

- 3.6 Agricultural Tractors/trailers used for Haulage are limited to a maximum speed of **40 Km/h** as stated by C&U regs, but are capable of speeds up to **65Km/h** for a **T1 type** approved tractor and maximum legal combined weight limit of **31-ton**. These vehicles can be legally driven by a license holder at **17 years old** with a category B (car license) and no extra training required (unlike HGV drivers). In addition, agricultural vehicles are not subject to annual MOT testing or 6 weekly checks like HGV's.
- 3.7 The agricultural industry has identified serious shortfalls in braking requirements for agricultural trailers, resulting in higher risks to other road users if speeds over 40Km/h are exceeded and the gross train weights exceeds the maximum legal limit of **31-ton** combined weight. Also, if the incorrect specification of trailer brakes are fitted and poorly maintained, this will increase risk to other road users. Supporting information can be found in the following document, *'Look Behind You, agricultural transport guide, aea.uk.com* and *'RR697 In-Service assessment of Agricultural trailers and trailed appliances braking systems condition and performance', by the Health and Safety Executive (HSE).*
- 3.8 As maize is harvested in late September/early October, dependent on weather conditions, this could result in water saturated soil conditions following any potential rain. So, during this harvest period, agricultural tractors/trailers exit the field with no tyre washing facility, as this is nether practical or feasible, but Acorn state there is one at the proposed AD plant in the transport Statement. This will result in heavy mud contamination on the highway when tractors exit the field, so the wheel washing facility that Acorn proposes at the plant will not address this issue.
- 3.9 This risk has not been addressed in the transport Statement, to who will be responsible or how it will be enforced, this issue poses a high risk of a road traffic incident, that Acorn Transport Statement fails to address with the high daily volumes of traffic in peak harvest periods coming from unknown locations and using the proposed 2<sup>nd</sup> entrance on the Tysoe road. This access to the proposed AD plant via the 2<sup>nd</sup> entrance is serviced by the Tysoe road. The capacity between the proposed 2<sup>nd</sup> entrance and through the village of Kineton, will have severe limitations for 2 tractors/trailers to pass each other whilst traveling to the proposed AD plant and returning to local fields. It is an offence for several other offences, *under the 'Highways Act 1980' (S161), (S148) and 'The Road Traffic Act 1988' (S2A), for mud left on the highway.*

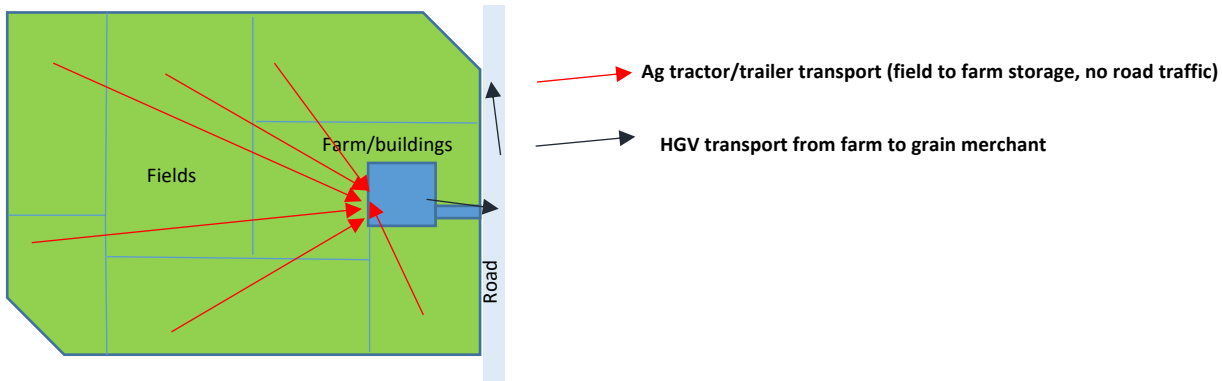
## 4.0 Transport Analysis Supporting Information

4.1 Acorn claim that the development will not increase traffic from current farm vehicle activity. To challenge this statement, we first need to understand how farms operate. Below are two common models in practice, which utilize Agricultural tractors/trailers to transport goods (grain, grass, maize) in harvest periods from field to farm.

### 4.2 Model A:

Traditional Arable Farm setup.

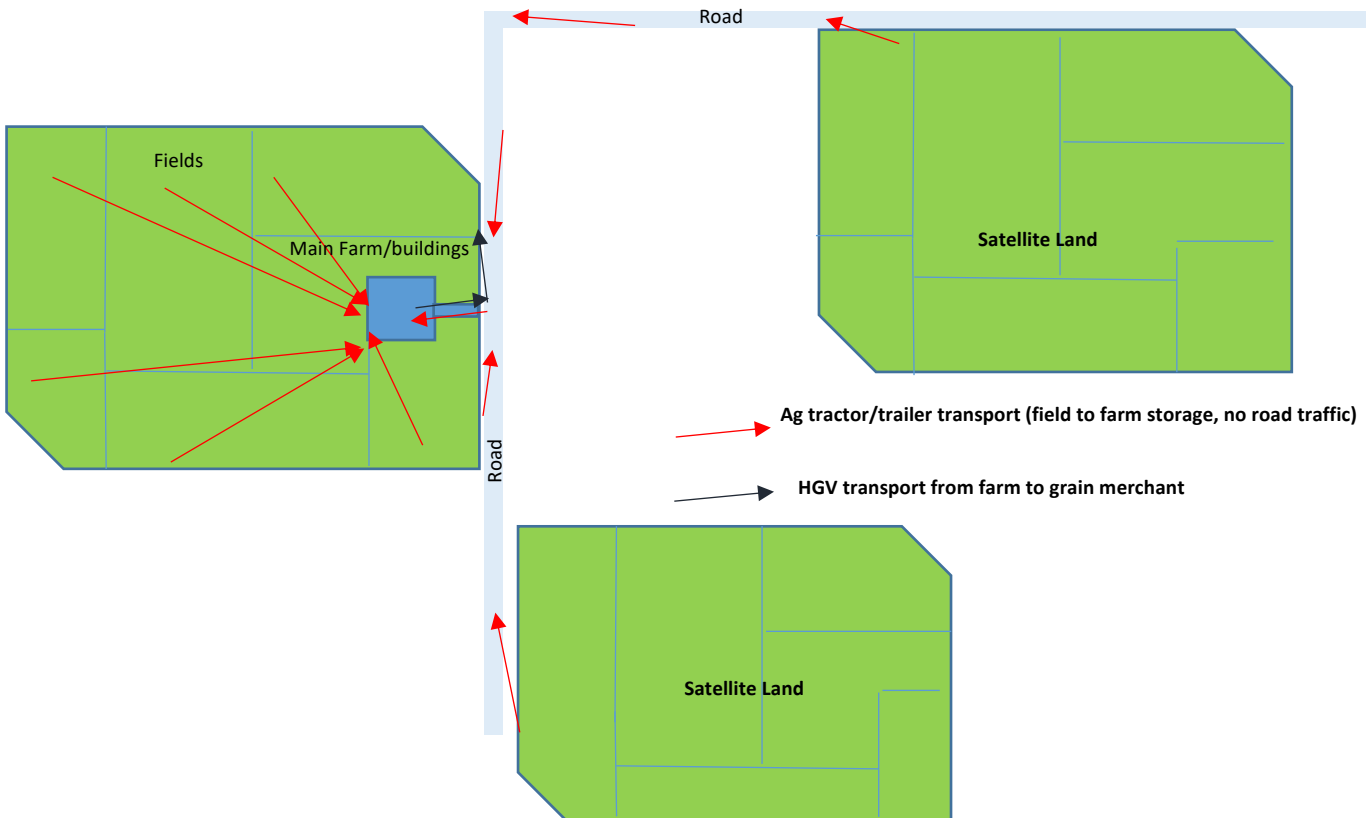
Land located around the farm in one location, with all harvest transport carried out within the boundaries of the farm and HGV's to transport produce to grain merchant.



### 4.3 Model B

Extensive Arable farm setup.

The farm will have land located around the farm/buildings as the main hub, with satellite blocks of land, which are either owned, in partnership contract agreement or rented off other landowners. This involves Agricultural tractors/trailers to transporting the goods from the satellite land back to the main farm & grain store.

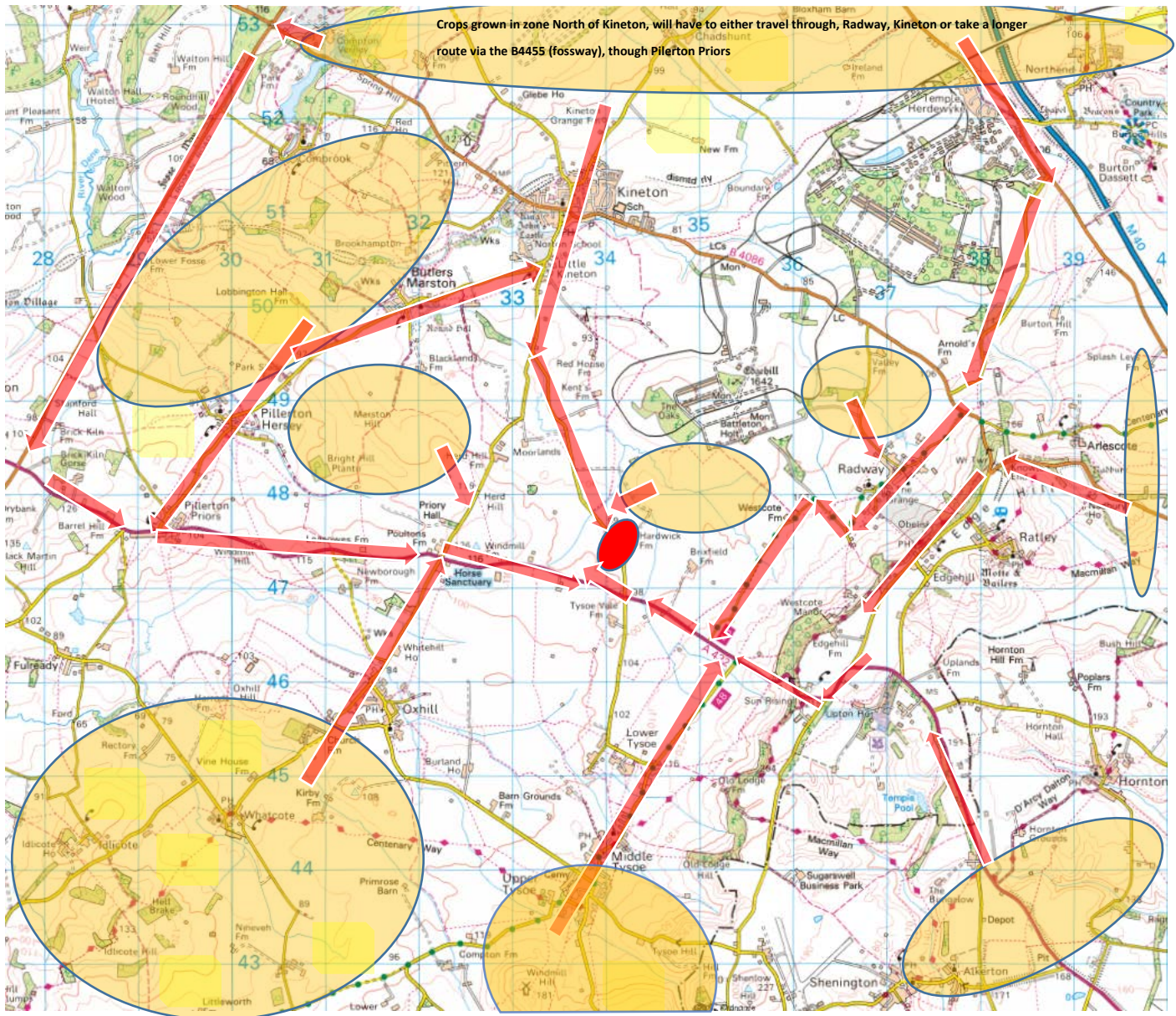


## 5.0 Example Map of Land use around the proposed AD Plant and road routes

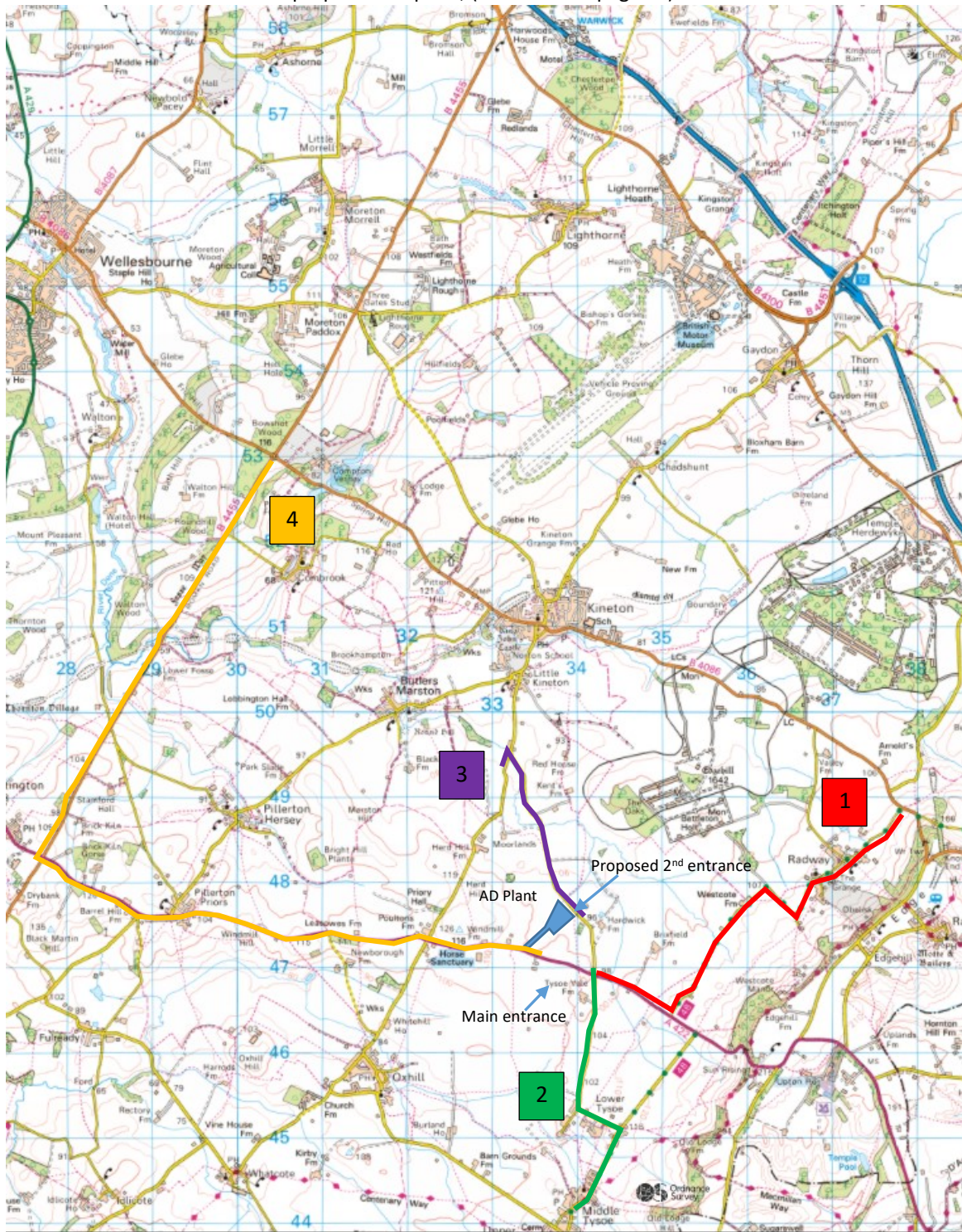
5.1 The map below is for illustration purposes only, in order to highlight land used to grow produce to be transported to the proposed AD Plant.

The yellow highlighted areas are illustrations of locations of satellite farmland used to grow product around the proposed AD Plant. This only shows a small proportion of possible land required, but by looking at the geographical location in relation to surrounding villages and the road network, it would be impossible to avoid Agricultural tractor/trailers having to travel through these villages to reach the AD plant

With the requirement of **5000ha+** (dependent on climate & growing season/yield) to supply the required produce of quoted tons on a **5-year** crop rotation on the contracted farms, this will increase the radius crops will have to be grown and therefore transported to the AD plant. This means transporting goods through further villages and along unclassified roads, resulting in increased carbon footprint, damage to roads, noise, vibration, and increased risk of accidents on rural roads, (see page 16, DFT/NFU rural accident).



5.2 Map to show 4 example routes taken by the tractor shown in the video footage, in order to highlight transport issues on feeder roads around the proposed AD plant, (video link on page 19).



Routes: See links to video on page 19 for tractor travelling these roads:

- 1 B4086 Kington road via Radway to A422 to Kington/Tysoe crossroads, approx. 300m before the proposed main entrance on the A422  
Stratford/Banbury road to Upper Tysoe
- 3 Oxhill road towards Kington, turn back onto the Tysoe road towards the 2<sup>nd</sup> proposed entrance
- 2 A422 Stratford/Banbury road to Upper Tysoe
- 4 A422 Stratford road starting at approximately the proposed main entrance travelling west to join the B4455 (Fosse way) towards Leicester up to the B4100 Banbury/Warwick road.



**6.0 Original Calculations for Acorn Transport Statement Original Table 6-1 Page 27 Transport Statement HGV/Tractor Traffic Forecast**

	TPA	Vehicle Type	Payload (t/m3)	Annual HGV/Tractor trips	Delivery Range
<b>Imports</b>					
Rye Silage	25,000	Tractor	16t	1,407	Mid-June to mid-July
Maize Silage	6,000	Tractor	16t	338	Mid-Sep to mid-Oct
Grass Silage	16,000	Tractor	16t	900	May-Sep
Straw	20,000	HGV	20t	900	All year
Poultry Litter	15,000	HGV	27t	500	All year
Farmyard Manure	5,000	Tractor	16t	282	All year
Pig Slurry	5,000	Tractor	16t	282	All year
<b>Exports</b>					
Biomethane	10,101,614	HGV	12,500m3	864	All year
Co2	14,131,000	HGV	25t	540	All year
LNG	1,900,000	HGV	15t	127	All year
Digestate (solid)	44,755	Tractor	16t	196	All year
Digestate (Liquid)	68,096	HGV	30t	2,043	All year
<b>Total</b>				8,379	

**FIG. 1**

**6.1 Original Table 6-1 With Corrected Calculation HGV/Tractor Traffic Forecast**

	TPA	Vehicle Type	Payload (t/m3)	Annual HGV/Tractor trips	Delivery Range
<b>Imports</b>					
Rye Silage	25,000	Tractor	16t	1,407 <b>(1562)</b>	Mid-June to mid-July
Maize Silage	6,000	Tractor	16t	338 <b>(375)</b>	Mid-Sep to mid-Oct
Grass Silage	16,000	Tractor	16t	900 <b>(1000)</b>	May-Sep
Straw	20,000	HGV	20t	900 <b>(1000)</b>	All year
Poultry Litter	15,000	HGV	27t	500 <b>(555)</b>	All year
Farmyard Manure	5,000	Tractor	16t	282 <b>(312)</b>	All year
Pig Slurry	5,000	Tractor	16t	282 <b>(312)</b>	All year
<b>Exports</b>					
Biomethane	10,101,614	HGV	12,500m3	864 <b>(808)</b>	All year
Co2	14,131,000	HGV	25t	540 <b>(565,240)???</b>	All year
LNG	1,900,000	HGV	15t	127 <b>(126,666)????</b>	All year
Digestate (solid)	44,755	Tractor	16t	196 <b>(2,797)</b>	All year
Digestate (Liquid)	68,096	HGV	30t	2,043 <b>(2,269)</b>	All year
<b>Total</b>				8,379 <b>(702,895)</b>	

**FIG.2**  
Imports, Original (Incorrect calculations) = **4609 trips**  
Imports, (suggested adjusted calculations) = **5115 trips**  
Adjusted calculations gives an increase of **10.98%** (increase of **506 trips** from Acorns errors in calculations)  
Exports, Original (Incorrect Calculations) = **3,770 trips**  
Exports (correct Calculations) = **697,780 trips** (5,874 not accounting for LNG or Co2, as data looks incorrect)  
Adjusted calculation gives increase of 18,408.75% (Increase of 694,010 trips), based on their data provided, **but you can see this is a input errors in data in the LGN and Co2 data sections in table 6-1 on page 27 of the Transport Statement produced by Acorn. This incorrect data fails to give the correct vehicle movement calculation for assessment analysis of vehicle movements. Acorn will need to correct this error to be able to complete assessment.**

**6.2 Table 6-1 With Corrected Agricultural Trailer weights for Payload, 13.5t  
HGV/Tractor Traffic Forecast**

	TPA	Vehicle Type	Payload (t/m3)	Annual HGV/Tractor trips	Delivery Range
<b>Imports</b>					
Rye Silage	25,000	Tractor	16t (13.5t)	1,407 (1562) (1852)	Mid-June to mid-July
Maize Silage	6,000	Tractor	16t (13.5t)	338 (375) (444)	Mid-Sep to mid-Oct
Grass Silage	16,000	Tractor	16t (13.5t)	900 (1000) (1185)	May-Sep
Straw	20,000	HGV	20t	900 (1000).	All year
Poultry Litter	15,000	HGV	27t	500 (555)	All year
Farmyard Manure	5,000	Tractor	16t (13.5t)	282 (312) (370)	All year
Pig Slurry	5,000	Tractor	16t (13.5t)	282 (312) (370)	All year
<b>Exports</b>					
Biomethane	10,101,614	HGV	12,500m3	864 (808)	All year
Co2	14,131,000	HGV	25t	540 (565,240)	All year
LNG	1,900,000	HGV	15t	127 (126,666)	All year
Digestate (solid)	44,755	Tractor	16t (13.5t)	196 (2,797) (3315)	All year
Digestate (Liquid)	68,096	HGV	30t	2,043 (2,269) *	All Year
Alternative option of removing Digestate Liquid					
	(68,096)	Tractor 100%	13.5t	(5044)**	All year
	(34,048) 50%	OR	30t	(1135)	
	(34,048) 50%	HGV 50%	13.5t	(2522)	
		Tractor 50%		Combined 50/50 (3657)***	
<b>Total</b>				8,379 (702,895)* (704,074)** (706,849)*** (705,462)****	

FIG.3

**6.4 Key:**

- (Original calculations figures for trips Table 6-1 on page 27, Transport statement) FIG.1
- (Original figures corrected Acorn sums for trips)\*
- \*(Corrected sums FIG.2 and adjusted original incorrect figure of 16t payload to new corrected payload of 13.5t based on net weight of trailer being 4.75t, as average weight of agricultural silage type trailer used to transport silage type products. Maximum legal weight for Agricultural trailer is 18.25t Gross as set out under C & U regulations.

**Alternative options of removing Digestate Liquid**

- \*\*\* Digestate liquid transported 100% tractor for illustration purpose
- \*\*\*\* Digestate liquid transported 50% HGV & 50% Tractor for illustration purpose

## 6.5 Summary of calculations from Acorn's transport table6-1 on page 27

<b>Imports</b>						
	Acorn's submitted sums	Trips	Acorn's corrected sums	Trips	Corrected Tractor weights (13.5)	Trips
Total Trips		4609		4804		5776
<b>Exports</b>						
Total Trips		3770		69,4983		698298
<b>Imports/Exports Total Trips</b>		<b>8379</b>	Total*	<b>699,787*</b>	Total**	<b>704,074**</b>
<b>Alternative options of removing Digestate Liquid</b>						
<b>Imports/Exports Total Adjusted Options Trips</b>						
Total***						
Total****	<b>705,462</b>					

FIG.4

## 6.6 Findings

On table 6-1 on page 27, Transport Statement, Acorn have failed to conduct correct calculations in their own document and underestimate their stated trips, giving false and misleading figures.

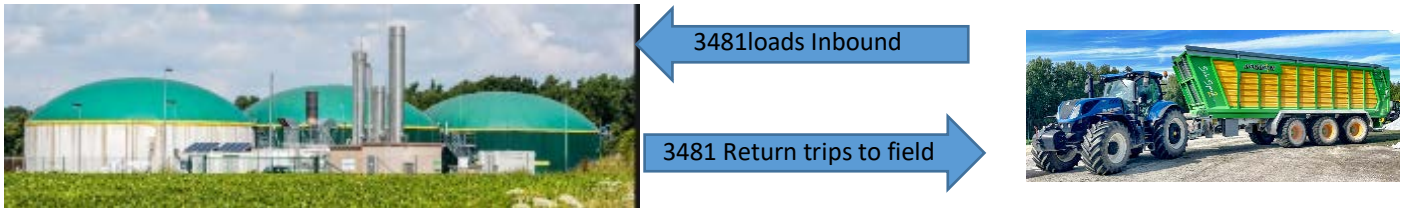
- 6.7 Also, in table 6-1 on page 27, transport statement 'LNG' is in the export section, but on page 26 under 6.2.3, Imports, the following is quote, "The site will also import Liquid Natural Gas (LNG) to power the on-site natural gas CHP as grid connection at this location has not been possible". Error on calculations and misleading figures.
- 6.8 When looking at figures for TPA (tones per annum), for Biomethane, Co2 and LNG, under export in table 6-1, page 27 of the transport statement, Acorn have submitted errors, and false information on transport trips. This follows from the corrected calculation based on the figures submitted by Acorn within this table for planning.
- 6.9 For example, looking at the figures for Co2, which Acorn have quoted table 6-1, page 27:
- Co2- TPA 14,131,000, Vehicle type HGV& Payload t/m3 25t and 540 trips, Errors in their calculations.
  - Take, TPA 14,131,00 and divide by 25t (Payload) in table 6-1 on page 27 gives 565,240 trips and not 540 as quoted, Acorn has made an Errors in entering their heir figures, correctly, this makes it impossible to give a correct value of transport trips for this entry.

## 7.0 Transportation from field to AD Plant, by Agricultural Tractor/Trailer

7.1 The max permitted payload load is **13500** Kg (13.5 ton +/- dependant on tractor weight and trailer tare weight), (legal max gross train weight (agricultural tractor, trailer +load = **31,000** Kg (**31** ton), (*Construction and use Regulations 1986 (C&U)*)

### 7.2 Input to AD plant

Based on Acorn's estimates of 92,000 tons of dry material, 47,000 tonnes (maize, Grass, Rye, whole crop), using Agricultural tractors/trailers = **6962** including return journeys, or an extra 215,822 tons travelling on rural roads to supply the AD Plant.

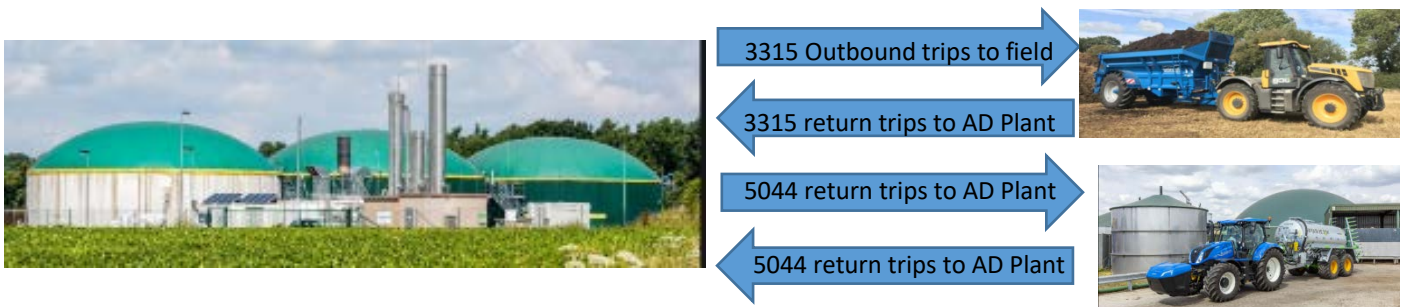


7.3 This does not cover Straw being transported by Tractor/trailer, direct from local farm fields at harvest period, Acorn state all will be on HGV.

Output from AD Plant of waste digestate to fields

**44,755 tons solid waste digestate**

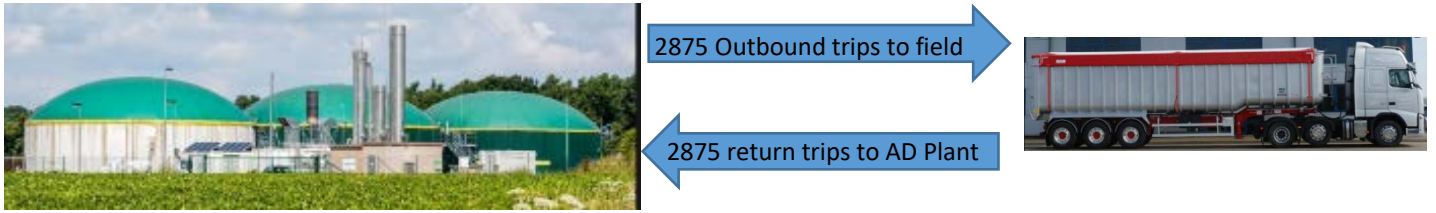
**68,096 Liquid waste digestate (if out by tractor to local farms)**



7.4 Removing the product post digestion process to spread on farmers' fields as fertilizer, example reduced to tons dry matter would equate **3315** trailer loads of waste digestate produce to be transported from the AD plant to field for application, or **6630** including returning journey using agricultural tractor/trailers to farm field, ready for spreading on the field.

### 7.5 Using HGV to remove Waste Liquid digestate.

This would be an extra **4533 HGV** round trips to the AD plant just to remove waste digestate (based on payload approx. **30-ton**, HGV Gross **44-ton** single bulker tipper), using narrow rural roads to deliver the digestate to the farmer's field or an extra **199,452 tons** travelling on rural roads to reach the field to deliver the waste digestate from the AD Plant as part of their journey.



### 7.6 Example Agricultural vehicles used in transport of dye/Liquid products

7.8 Example of an agricultural tanker for transporting liquid animal waste and for application of the liquid waste via a dribble bar at the rear of the tanker for surface application, or disc injection to inject the liquid directly into the soil. Fully laden, gross train mass can exceed over **45-ton**.

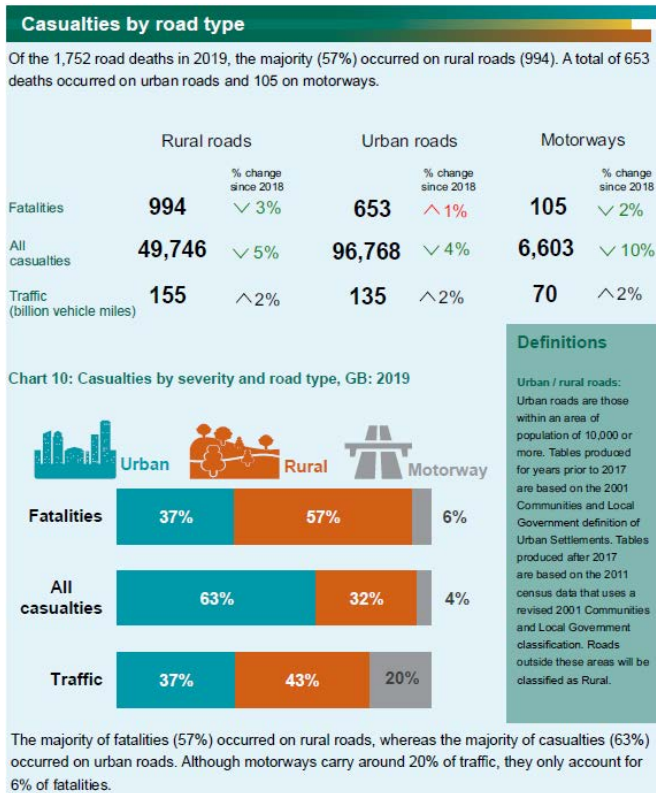


7.9 Example of an agricultural trailer for transporting dry matter, Maize or Grass or dry products. Note: some twin axle trailer and triaxle trailers have the capacity to carry loads greater than the maximum legal **13,500kg** (approx. **13.5 ton**) for the UK highway, this may be higher depending on the Net weight of the trailer. This can put the gross operating weight over the permitted **31,000 kg (31 ton)**, with loads easily exceeding >40,000 kg (**40 ton, the same category as an HGV**).

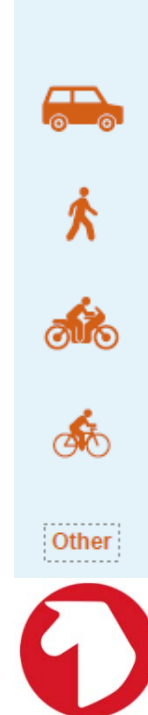


## 8.0 Impact of Agricultural traffic on rural roads

8.1 Department for Transport, Reported Road Casualties Great Britain: 2019, Annual report, published September 2021.



### Who uses rural roads?



8.2 Government statistics show rural roads have the highest fatalities, second highest of all casualties and highest for casualties for traffic.

Based on data from Acorn of estimated **92,000 tons** required to run the AD Plant, and the removal of digestate, this would increase the risk of accidents on the local rural road network with a possible additional **5,750 HGV** movements and 11,924 Farm vehicle movements focusing on one location. This does not include the HGVs to transport the gas to Banbury or other transportation inputs to the AD Plant

8.3 Farm Watcher.co.uk

Data from NFU Mutual prompts rural road safety warning

“New data shows that almost half of accidents involving agricultural vehicles happen during May to September.

8.4 Claims data from rural insurer NFU Mutual shows that last year collisions between agricultural vehicles and third parties were **42 per cent** more likely in this period of the year than in any other months.

On average, there were **456** of these accidents per month during the silage cutting, hay making, and harvesting season, compared to just **263** per month between October and April.

8.5 Higher volumes of agricultural traffic during this period, particularly tractors pulling heavy silage and grain trailers or wide agricultural machinery, brings a greater need for all road users to respect their fellow road users and the hazards common on country roads, says the insurer.

The increase in agricultural vehicles on the road coincides with the sunnier weather and school holidays to greatly increase the hazards on rural roads during this time.

“Gregor Belcher, a farming specialist at NFU Mutual, said: “Silaging getting underway marks the start of the harvest season, during which time we expect to see more tractors, trailers and large agricultural machinery on the roads”.

## 9.0 Facts on Agricultural Tractors/trailers used for Transport

### 9.1 Agricultural Transport Regulations

#### 5.1 – How Heavy can it be?



C&U Regs also specify maximum operating weights for both trailers and tractor-trailer combinations. In 2015 the tractor-trailer maximum gross weight limit was raised to 31 tonnes, from approx. 24 tonnes. This allowed existing agricultural trailers to be towed by larger, heavier tractors without reducing their potential payload.

However, the trailer maximum gross weight limit **was not increased**. So the 18.29 tonnes value set in 1986 still restricts the payload of modern agricultural trailers used on UK roads to approx. 13.5 tonnes, depending on trailer unladen weight. Given that the most common grain trailer size sold in the UK is currently 16 tonnes, it appears that this legal restriction is often being ignored.

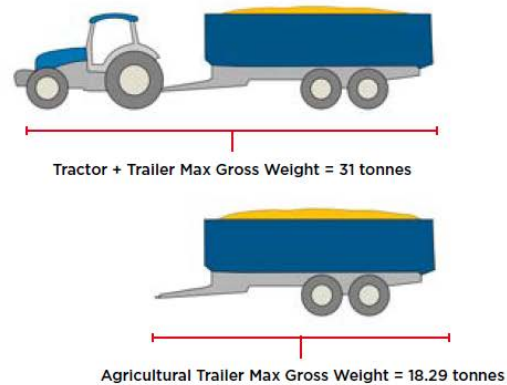


Fig.5 Revised UK agricultural tractor and trailer weight limits

**Depending on the tractor and trailer unladen weight, will leave 13.5 ton +/- for payload of produce.**

Source: [www.aea.uk.com](http://www.aea.uk.com)

#### 9.2 Driving licence requirements for agricultural vehicles

- A 17-years-old, who has passed their car driving test can legally drive an agricultural tractor/trailer on a category B licence.
- This tractor/trailer gross mass of 31,000 kg (31 ton) on the road.
- Agricultural tractor/trailers do not require an MOT like HGV's



A 'Standard Agricultural Tractor'- maximum speed is 40 Km/h (25 mph) on the UK highway, but is capable by design of speeds up to 65 km/h (40 mph)



A 'Fast Tractor' (JCB Fastract), maximum speed is 65 Km/h (40 mph) on the UK highway, but is capable by design of speed of 70 km/h (43 mph)



### 9.3 Typical Agricultural trailer used for transporting a silage type product



**TIPPING TRAILERS**  
**GX 18 23 S**

SPECIFICATION	
Model	GX18 23 S
Carrying Capacity	20,000kg
Unladen Weight	5,900kg
Cubic Capacity	grain 23m <sup>3</sup> silage 39m <sup>3</sup>
Height to top rail	2850mm
Tipped Height	7150mm
Body	6700 x 2450 x 1500mm
Chassis	250x150 reinforced box section
Axles	125mm Ø 10 stud, 420x180 brakes
Suspension	Mechanical suspension with 4 leaf springs
Tyres	Customer choice – recommend 560/60Rx22.5
Tipping Mechanism	Twin 3 stage 4.25" Ø chrome plated tipping rams

**OPTIONAL EXTRAS**

### 9.4 Examples of How Silage crop is harvested and transported using agricultural tractor/trailer and forage Harvester.

**Grass Silage**



**Rye Whole-crop Silage**



**Maize Silage**



**10.0 Images of Agricultural tractor driving possible routes to the proposed AD plant to highlight safety concerns & Links.**

**10.1** Photos and videos taken on Saturday 12<sup>th</sup> November 2022, 10:00 -11:30, not rush-hour, not harvest period. Page 9 shows examples of routes for transporting produce to the proposed AD plant and photos below are from these routes to highlight how narrow these rural roads are with a modern Agricultural tractor using them, especially compared to other road users. Video and links of these routes driven illustrate how narrow the lanes are for a modern production agricultural tractor.



Radway Rd to A422



Bend by Hardwick Barns, Tysoe



Bridge Oxhill Rd Junction Tysoe/Kineton Rd



Radway to A422



Middle Tysoe

**1** B4086 Kineton road via Radway to A422 to Kineton/Tysoe crossroads, approx. 300m before the proposed main entrance on the A422



<https://youtu.be/nsCZGV5eEV4>

**2** A422 Stratford/Banbury Road to Upper Tysoe



<https://youtu.be/tuo7JB1JOVU>

**3** A422 Stratford/Banbury Road to Upper Tysoe



<https://youtu.be/ynl7Pua2dtE>

## 11.0 Conclusion

- 11.1 The transport statement submitted by Acorn fails to give accurate data, with error with an increase of 10.98%, when correcting calculations on imports, to make a conclusive evaluation on the total traffic movements. The applicant fails to mitigate that how the 92,000 tons, of which 57,000 tons being delivered by tractor and removing 44,755 tons of solid waste and 68,096 tons of liquid waste to and from one new location will be any change from normal agricultural traffic, stated by Acorn in their Transport Statement.
- 11.2 These high volumes of agricultural traffic, especially in concentrated harvest periods of 250 or (500) movements per day, including return trips or 1 every 4 mins entering the proposed AD plant in a 24hr period, this will exponentially raise the risk of a fatality or serious road traffic incident on narrow rural roads. A high volume of slow-moving agricultural vehicle will also be on the A422, where, according to the applicant's planning application, the average speed is 62 mph – when vehicles doing this speed meet a tractor/trailer travelling at 32 mph (legal max speed), it will result in queueing traffic behind these tractors, or in drivers taking unnecessary risks to overtake. As a consultant for agricultural vehicle fatality investigation on highways with the CPS and police forces, the evidence provided by Acorn in their Transport Statement is flawed, full of errors and has not addressed any road traffic safety issues whilst using agricultural tractors/trailers. Acorn fails to provide a conclusive traffic management statement on how they will control the flow of traffic at busy periods and identify the routes used for agricultural tractor/trailers to connect to the A422 and how they will avoid traffic movement having to go through surrounding villages to be able to join the A422 as they have not identified where the products are being sourced.
- 11.3 This planning application should be declined due to the flaws in the Transport Statement to support the proposed AD Plant location, with clear safety issues identified for the increase in volumes of agricultural vehicle movements using the highway network around the proposed AD site.

Traffic consultant

Adam Wyatt EngTechMIAgrE

rappor



# Proposed Anaerobic Digestion Facility

Technical Note

November 2022





## TECHNICAL NOTE

**Project Name:** Proposed Anaerobic Digestion Facility  
**Job No:** 22-0788  
**TN Status / No:** Issue 01  
**Date:** November 2022  
**Prepared By:** Jonathan Senkbeil  
**Checked By:** Mike Glaze  
**Subject:** Independent Highways Review

### 1. Introduction

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- 1.1 Rappor have been instructed to prepare a Technical Note (TN) to review the highways information submitted in relation to the proposals for the construction of an anaerobic digestion facility on land at Hardwick Farm, Warwickshire - LPA Ref: 22/02935/FUL.
- 1.2 The description of the development proposal is as follows:  
  
*'The construction and operation of an anaerobic digestion facility, ancillary infrastructure and the construction of a new access road and access from Banbury Road (A422).'*
- 1.3 The purpose of this TN is to undertake a transport and highways review of the information submitted by SLR Consulting (SLR) in support of LPA Ref: 22/02935/FUL.
- 1.4 The TN concludes that there are access concerns, visibility issues, insufficient information pertaining to both Traffic Management & Construction Traffic Management Plans and inconsistencies with projected vehicle movements, which have resulted in the impact of the proposed development not being adequately assessed.



## 2. Qualifications

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- 2.1 This TN has been prepared by Michael Glaze LLB (Hons) EngTech MIHE, and I am a Director at Rappor.
- 2.2 I hold a 2<sup>nd</sup> Class Honours Bachelor of Law (LLB) degree. I have been a member of the Institute of Highways Engineers since 2008.
- 2.3 I have worked in the field of transport planning since 2007 and have a wide range of experience relating to public and private sector development planning.
- 2.4 I previously managed the Highway Development Management Team at Gloucestershire County Council and worked in the department for eight years, providing transport advice to the Local Planning Authority's (LPA) on a wide range of development proposals. I have also provided expert witness evidence on behalf of GCC and Rappor at Planning Inquiries and Hearings.
- 2.5 Specialisms included within my role at Rappor consist of land acquisition and site feasibility appraisals, the production of transport impact assessments to consider and mitigate the impact of major and minor development proposals, and sustainable transport planning. I have also assisted with a variety of planning appeals.

Mike Glaze LLB (Hons) Eng Tech MIHE

*Director* on behalf of Rappor

## 3. Planning Background

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- 3.1 A planning application was submitted and validated in October 2022 and a Transport Statement (TS), produced by SLR, was submitted to assess the highways and transport implications. As part of the statutory consultation the Local Highway Authority (LHA), Warwickshire County Council (WCC) will provide comments and assess the proposals from a highway and transportation perspective as part of a consultation response.
- 3.2 At the time of writing a consultation response has not been provided by the LHA and subsequently uploaded to the planning portal.



- 3.3 It should be noted that Tysoe Parish Council (TPC) object to the proposals with highways issues cited as one of the reasons for their objection stating “...*the significant level of incremental heavy farm and commercial traffic that the plant would generate would cause great harm to the network of unclassified roads connecting villages in the area. The traffic will cause congestion, noise, pollution, damage to the road infrastructure and danger to other road users*”.
- 3.4 The TPC objection is attached at **Appendix A**.

## **4. SLR Consulting - Transport Statement**

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- 4.1 The planning application (LPA Ref: 22/02935/FUL) was submitted in October 2022, and a TS, produced by SLR in September 2022, was submitted to assess the existing highway conditions and determine the transport implications of the development proposals.
- 4.2 The application site currently comprises arable agricultural land and is served via an informal access of Tysoe Road and a field access in the south-western corner of the field to the south off Banbury Road (A422).
- 4.3 Banbury Road (A422) is a two-way single carriageway that runs for approximately 20km between Drayton, to the east, and a roundabout junction with the A429, to the west. No pedestrian infrastructure is present, it is unilluminated and is subject to National Speed Limit restrictions (60mph).
- 4.4 The proposal seeks to develop land to provide an anaerobic digestion facility, which would process a maximum of 92,000tpa of agricultural feedstock. Site access would be located to the south of the site via Banbury Road (A422), and a secondary access retained off Tysoe Road to the north.
- 4.5 The TS concluded that in terms of highway safety and operational capacity, that subject to the implementation of a Traffic Management Plan, there would be no detrimental impact to the local highway network and any impacts resulting from the construction phase will be minimal and managed effectively.

## **5. Transport Review**

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### **Form of Access**

- 5.1 Primary access to the site will consist of a new priority junction to the east of the existing field access served off Banbury Road (A422). The development would also utilise a secondary access, direct off Tysoe Road.



- 5.2 Figure 2.3.1 of CD 123 (Geometric design of at-grade priority and signal-controlled junctions), which is part of the Design Manual for Roads and Bridges (DMRB), suggests that, for new junctions, priority T-junctions shall only be used when the design flow (i.e. the 2-way Annual Average Daily Traffic (AADT) in the Major Road is less than 13,000 vehicles and the Minor Road is not expected to exceed 300 vehicles.
- 5.3 Forecast trip generation, as detailed at Section 9.1.2 of the submitted TS, states that the primary access off Banbury Road (A422) is within these thresholds with an AADT of 3,376 vehicles on the major road - Banbury Road (A422) and between 62 and 162 (operational traffic + 10 LV movements on the minor road). Therefore, SLR deduced that a proposed priority junction would be an appropriate form of access to serve the proposals.
- 5.4 As the site is surrounded by agricultural land, which is currently, and historically, been worked, there is an expectation that movement of crops in large vehicles - tractor/trailer combinations, tankers, or other HGVs – is 'normal' and to be expected by other road users on the local highway network.
- 5.5 Nevertheless, the traffic movements generated by the proposed development, which will be covered in more detail later in this section, will be problematic due to their frequency across the year (10 months) and concentration on the local highway network as the anaerobic digestion facility is envisaged to service local farms. Proposed traffic movements will occur constantly throughout the day between 07:00 - 18:00 on weekdays with the traffic impact peaking with seasonal harvest periods, primarily restricted to June, July, September, and October, which would also cover periods of dusk and darkness in the autumn / winter months across unilluminated rural carriageways.
- 5.6 The existing assortment of traffic on Banbury Road (A422), revealed by the ATC survey undertaken as part of the submitted TS, included domestic cars, agricultural vehicles, LGVs and HGVs already on the network. Consequently, the proposals will further increase the number of slow-moving agricultural vehicles and HGVs on the highway network, which could result in highway safety concerns and inconvenience to other highway users and result in an adverse impact to highway safety.
- 5.7 It is stated at Section 6.2.4 of the submitted TS that *"traffic distribution at the site access junction will vary...but traffic relating to product output is more likely to travel to and from the east"*. Therefore, it can be assumed that the propensity will be for vehicles travelling westbound and turning right into the site from Banbury Road (A422).



- 5.8 The ATC data, detailed in Section 3.4.1 of the submitted TS, recorded 280 two-way vehicle flows on Banbury Road (A422) in the AM network peak (08:00 - 09:00) and 319 two-way vehicle flows in the network PM peak (17:00 - 18:00). This equates to approximately one vehicle trip every 20 seconds in the AM peak and every 18 seconds in the PM peak currently occurring.
- 5.9 Factoring in both the propensity for vehicles traveling to / from the east and waiting to turn right into the sight and the quantum and mixture of vehicle traffic already on the network, will only further restrict the gaps in traffic for vehicles wanting to turn right into the site.
- 5.10 This issue is further exacerbated given the anticipated type / size of slow-moving vehicles accessing / egressing the site, and also factoring in conditions of poor light, dusk and darkness in the autumn months, during both the construction and operational phase of the development.
- 5.11 Given the potential safety concerns associated with an increase in queuing right-turning vehicles consideration should have been given in the submitted TS to a more appropriate access arrangement such as a ghost-island right turn. This would create an additional lane to allow slow moving agricultural traffic waiting to turn right from the major road into the minor road to do so without impeding through traffic movement and improve highway safety. The assessment criteria in the DMRB should be considered as a 'guide' on the local road network and therefore site specific and development specific circumstances taken into account as part of the access appraisal. The type of traffic, speed of traffic and routing of traffic would all result in highway safety concerns regarding the provision of a priority junction. A higher grade of junction should be provided to improve highway safety for all users.

### **Access Design**

- 5.12 The proposed access is 'awkward' in its design as it has to turn with a radii of 50m to meet Banbury Road (A422) at a right angle and be perpendicular to the adopted highway. The access should be consistent and be perpendicular further back from the carriageway. This would improve highway safety for all road users.

### **Access Gradient**

- 5.13 The SLR TS acknowledges at paragraph 7.3 that *'the access will be required to ramp up to Banbury Road (A422)'*. This significantly underplays the existing level difference between the carriageway and the adjacent land, a point emphasised in the supporting Road Safety Audit (RSA), attached to the TS, that states that the existing levels between adjacent land and Banbury Road (A422) may lead to an excessive gradient potentially leading to side swipe type collisions.





- 5.14 The RSA further notes that on-site observations indicate the existing level of Banbury Road (A422) is higher than the adjacent fields proposed for development. The change in levels may lead to an excessive gradient where the proposed minor access arm meets the major road and this arrangement may lead to difficulty for HGVs egressing the site, which may in turn result in highway safety issues.
- 5.15 Given the recommendation of the RSA it is unclear why the supporting TS has not provided any details on the proposed access gradient even though the level difference is acknowledged, and this could impact visibility and cause highway safety issues.
- 5.16 The TS advises that the gradient will be considered at the detailed design stage, however this is not appropriate for a new junction onto a principal route. At this stage, there is no certainty that a compliant access gradient can be provided. The granting of planning permission without a suitable gradient being achievable would render the permission unimplementable.

### Road Safety Audit

- 5.17 The Road Safety Audit (RSA) does not contain the audit brief; therefore, it is not possible to determine the scope of the RSA. The RSA does not appear to have considered the use of the access from Tysoe Road, if this is the case the RSA should be updated. The documents provided to the audit team do not include information pertaining to vehicle movements, vehicle type and distribution, therefore the audit team were not able to consider the development with all of the necessary information available. Finally, the RSA states that the audit team were not advised of any departures from standard with the proposals. As set out in this report, the junction visibility represents a departure from standard given that recorded design speeds are above the 60mph speed limit. This should be reconsidered by the audit team.

### Visibility

- 5.18 The ATC data, detailed in Section 3.4.1 of the submitted TS, recorded average speeds for Banbury Road (A422), which are summarised for ease of reference in **Table 5.1**.

Direction	Average Speeds (mph)	85 <sup>th</sup> ile Speeds (mph)
Northbound	55.1mph	62.9mph
Southbound	55.4mph	63.3mph

**Table 5.1** Summary of Vehicle Speeds on Banbury Road (A422)

- 5.19 As **Table 5.1** indicates, for northbound traffic the average speed was 55.1mph and the 85<sup>th</sup> percentile speed was recorded at 62.9mph. For southbound traffic the average speed was 55.4mph and the 85<sup>th</sup> percentile speed was recorded at 63.3mph.



- 5.20 For design purposes, 85<sup>th</sup> percentile vehicle speeds shall be used for new major/minor junctions or accesses on existing roads as per CA 185 - DMRB. The design speeds are utilised to determine the design criteria for new junctions.
- 5.21 Section 7.2 of the submitted TS acknowledges CA 185 – DMRB guidance stating the access design “... should take into account junction visibility in consideration of recorded vehicle speeds”.
- 5.22 WCC’s Design Guide (2022) Part 1 – Pre-application Development Management states that “...*Design Speed is either the 85<sup>th</sup> percentile speed for existing roads or as defined in DMRB CD 109 for new roads (not to be less than posted speed limit)*” and Part 3 - states that “...*where 85th percentile speeds are greater than 37mph/60kph, then the visibility splay should be based on the surrounding environment*”.
- 5.23 Banbury Road (A422) is a two-way single carriageway, which has no pedestrian infrastructure within proximity to the site, is unilluminated and subject to National Speed Limit restrictions (60mph).
- 5.24 The SLR Consulting TS states that “...*Mean speeds along Banbury Road (A422) in the vicinity of the site access junction are comfortably within the posted speed limit, and as such there is no cause for concern; **the 85<sup>th</sup> percentile infractions of +2.9mph and +3.3mph are not considered as a serious cause for concern***”.
- 5.25 Any new or intensified vehicle access should be reviewed and justified as being able to provide visibility splays so that they are both efficient and appropriate to the traffic conditions that will be generated in accordance with the relevant national guidance (i.e. Manual for Streets & Manual for Streets, the DMRB or local WCC design guidance as appropriate).

#### *Banbury Road (A422)*

- 5.26 As the proposed development will result in a new access being formed from Banbury Road (A422), it is necessary to demonstrate that junction visibility is suitable at the access point as part of the planning application.
- 5.27 The design of the proposed access junction onto Banbury Road (A422) has considered junction visibility based on the National Speed Limit (60mph). In accordance with DMRB CD 109 Table 2.10, a design speed of 100kph (60mph) requires visibility splays with a ‘y’ distance of 215m. Visibility should be achievable in both directions within the red line boundary, the extent of the adopted highway and not reliant on third-party land.



- 5.28 Junction visibility splays are illustrated on the proposed access design, attached at Drawing 03 of the SLR TS, which demonstrates that the visibility splay extends across highway land providing 215m splays in either direction.
- 5.29 It is best practice to utilise recorded 85<sup>th</sup> percentile speeds on existing roads as they are the best method of generating an accurate design on what visibility distance is most appropriate for a section of carriageway. As such it is unclear why the roads speed limit has been utilised in the planning application and not recorded 85<sup>th</sup> percentile speeds considering these were recorded and stated within the submitted TS.
- 5.30 Developers are actively encouraged by LHAs to undertake ATC surveys in order to provide this information in all cases regardless of the size of developments and determine the requisite visibility in accordance with 85<sup>th</sup> percentile speeds as per national (DMRB) and local guidance (WCC Design Guide).
- 5.31 The recorded design speeds, as shown in SLR TS, were captured as + 2.9mph northbound and + 3.3mph southbound over the 60mph speed limit. As these speeds fall between the tabulated values in CD 109, i.e., 100kph (60mph) & 120kph (70mph) the higher value should be used, as per CA 185 guidance.
- 5.32 As the recorded speeds fall between tabulated values, as per DMRB CD 109 Table 2.10, for a design speed of 120kph (70mph) visibility splays with a 'y' distance of 295m are required. As such the visibility assessment undertaken as part of the submitted TS should be reconsidered accordingly and visibility splays of 295m plotted and assessed.
- 5.33 Until this analysis has been undertaken it cannot be determined if visibility from the access is therefore acceptable and thus the access arrangements considered suitable.

#### *Tysoe Road*

- 5.34 As the proposals represent an intensification in use of the existing access from Tysoe Road, which will be formalised and used as a secondary access, it is necessary to demonstrate that junction visibility is suitable.
- 5.35 It is noted that a visibility assessment has not been undertaken within the submitted TS for Tysoe Road and therefore it is unclear if the required emerging visibility splays are achievable in both directions. Until this analysis has been undertaken it cannot be determined if visibility from the access is therefore acceptable and thus the access arrangements considered suitable.



- 5.36 Furthermore, no details have been provided pertaining to any enforcement measures to restrict the use of Tysoe Road. The submitted TS states that this access will be used as a secondary access (serving as emergency access), which may also be used by local silage trips to the north and local digestate trips, for ease. Given the anticipated usage it is unclear how any further additional movements will be restricted at this access in any case without any preventative or enforcement measures proposed.
- 5.37 It is also noted that a walk-over condition survey has not been undertaken along Tysoe Road to assess the baseline highway condition and determine its suitability for an intensification in use. It is understood that the carriageway has a fragile road structure, varying width along its length, restricted forward visibility and a narrow bridge crossing.
- 5.38 The local road network serving Tysoe Road is not suitable to accommodate additional traffic movements, particularly by large vehicles. The potential use of the Tysoe Road access should be clarified, together with enforcement measures and vehicle movements to prevent regular use of the access.

### **Forward Visibility**

- 5.39 Whilst emerging horizontal visibility has been reviewed and assessed in the submitted TS there has been no consideration given to forward visibility, which is the visibility that a driver has of the carriageway ahead of them and the minimum distance at which an obstacle must be visible to a driver so adequate time and distance is available for safe braking to avoid any potential hazard. Unobstructed forward visibility is paramount to enable vehicles to slow their speed comfortably to avoid any potential hazard.
- 5.40 Further assessment is required to demonstrate that drivers along Banbury Road (A422) have suitable forward visibility to a vehicle exiting the proposed junction and are able to slow appropriately. It is the driver travelling at speed on the major arm (Banbury Road – A422) that is required to slow appropriately, rather than drivers exiting the proposed junction (the minor arm). Forward visibility in this context is critical to avoiding conflict and collisions at road junctions and is significantly more important than the provision of junction visibility.
- 5.41 Furthermore, it is noted that forward visibility splays are not shown to and from a vehicle turning right into the proposed access junction, which is vital to the assessment given the anticipated direction vehicles will be travelling to the site. The provision of forward visibility splays ensures that a vehicle travelling westbound approaching a vehicle turning right into the proposed junction can brake appropriately on approach to the right turning vehicle. The forward visibility splays should also demonstrate that a vehicle turning right into the application site can see a vehicle approaching from the west; travelling eastbound.



- 5.42 Given the concerns regarding the access gradient, the forward visibility assessment should be undertaken in both the vertical and horizontal planes. The level differences between the major road and the access may result in issues regarding the availability of forward visibility to and from the junction. On this basis, the proposed access gradient must be determined, with the forward visibility splay assessment undertaken based on the site access gradient within the vertical plane.
- 5.43 As such, a forward visibility assessment needs to be undertaken to demonstrate that the site access is safe and suitable in accordance with paragraph 110 of the National Planning Policy Framework (NPPF).
- 5.44 Until this analysis has been undertaken it cannot be determined if visibility from the access is therefore acceptable and thus the access arrangements considered suitable.

#### **Swept Path Analysis**

- 5.45 As stated at Section 7.3 of the submitted SLR TS swept path analysis has been undertaken to demonstrate that the proposed access arrangements are suitable to accommodate HGV movements, which is the largest vehicle anticipated to access / egress the site.
- 5.46 However, it is noted that the swept paths only demonstrate HGV left-in / out movements with no further swept path analysis undertaken for right turn-in / out movements. It is unclear why this assessment has not been undertaken as based on the anticipated arrival movements vehicles will be predominately arriving from the west and turning right into the site.
- 5.47 The submitted swept path analysis therefore needs to be reconsidered to demonstrate that the largest anticipated vehicles to access / egress the site can do so without encroaching upon the line of vehicles travelling in the opposite direction along Banbury Road (A422).

#### **Traffic Management Plan / Construction Traffic Management Plan**

- 5.48 As stated at Section 8.1 of the submitted SLR TS the operation of the site must adhere to a Traffic Management Plan (TMP), which is recommended to be secured by a Planning Condition.
- 5.49 In addition, at Section 8.2 it is also stated that the construction phase must adhere to a Construction Traffic Management Plan (CTMP), which is recommended to be secured as a Planning Condition.



- 5.50 Section 1.5.2 of the submitted TS states that both a TMP and CTMP should be put in place but does not provide any further detail of what measures will be included in both documents.
- 5.51 In the absence of these documents' consideration of the impacts of the proposal cannot be adequately assessed as there is no information detailing vehicle journey times / distances and the type / size of vehicles that will be used for transporting:
- a) 80,500 tonnes of feedstock from farms to the digester;
  - b) 9,000,000m<sup>3</sup> of biogas from the anaerobic digester to Banbury; and
  - c) Solid and liquid digestate from digester to farms.
- 5.52 It is also unclear what routes vehicles transporting the waste will use in addition to the routes for the delivery of construction materials and equipment.
- 5.53 Further detail is needed in terms of the condition of the existing highway surface and what impact any future intensification in use, of a predominantly rural highway network, will cause.
- 5.54 Information is also lacking in terms of any off-site mitigation measures that may be required to manage the impact of the various stages of the proposals including the provision of any diversion routes and temporary road closures where appropriate.
- 5.55 To appropriately assess the planning application, in terms of its highways and transport implications, during the construction & operational phases, both the TMP and CTMP should be provided during the determination period of the planning application and not conditioned. The crux of traffic and construction management are fundamental to assessing the highways impacts of the application regarding determining routing, vehicle type, access enforcement and enforcement of routes together with minimising the impact of the construction phase and what preventive measures will be put in place.
- 5.56 Without these documents to review it cannot be concluded that there would not be an unacceptable impact to highway safety in accordance with paragraph 111 of the NPPF.

## **6. Projected Vehicle Movements**

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- 6.1 In terms of projected vehicle movements, several concerns relating to inaccurate figures submitted in the TS are raised, which are as follows: -
- a) To deliver 55,200 tonnes of grown feedstock SLR state within their submitted Planning Design & Access Statement (PD&AS) that 60% of feedstock would be crops and 40% would be "agricultural by-products e.g., manures". Table 6.1 of the TS indicates that 47,000 tonnes of feedstock would be silage, or grown crops, 20,000 tonnes would be straw, & 25,000 tonnes would be slurry/manure, which equates to 73% crops and 27% split. Clarity is needed to explain the contradictions between the submitted PD&AS and TS;



- b) The submitted SLR TS states that 90% of the silage trips will be made by road with 10% “internally”. With an average payload of 16 tonnes per delivery (the legal limit for a tractor/trailer is 13.5 tonnes) would require 3,450 loads or 6,900 trips (counting return journeys). If SLR’s assumption that 90% of the silage would be transported by road at face value, this equates to 6,210 vehicle trips per year;
- c) The submitted TS states at Section 6.2.3 that during the harvest periods for two 2-week periods in June/July and September/October the frequency of deliveries will increase. Assuming 90% of the grown-crop feedstock delivered by road is delivered in this 4-week window, this equates to 222 peak vehicle movements per day assuming 7 days/week delivery;
- d) Regarding anticipated operational hours in Section 5.1.1 of the TS states that deliveries of feedstock would only be limited to 5.5 days per week. The ATC data at Table 3.1 of the TS shows that the average daily (00:00 – 24:00) HGV vehicle movements are 125 two-way vehicle movements. Based on SLR’s estimates of crop feedstock, during the harvest seasons, HGV vehicle movements would increase by 78% above the existing traffic level on Banbury Road (A422);
- e) Table 6.1 of SLR’s TS is inaccurate as 20,000 tonnes of straw at 20 tonnes per load equates to 1,000 loads not 900 as stated. The 10% “allowance” for internal journeys does not apply to these feedstocks. Table 6.1 states that the export of biogas, CO<sup>2</sup> and LNG will create 1,531 vehicle trips, which equates to 3,062 two-way vehicle movements. Section 5.1 of the submitted TS states that biogas will be collected twice a day (the site works 365 days/year) and that CO<sup>2</sup> would be collected once per day. This would create 730 collections of biogas and 365 collections of CO<sup>2</sup> per year, not the 864 and 540 collections respectively stated in Table 6-1;
- f) Table 6.1 states that 65% of the solid and 20% of the liquid digestate is transported “internally” For solid digestate a figure of 44,755 is quoted, which is presumably in tonnes as no unit of measurement is provided. At 16 tonnes per load this would equate to 2,797 annual HGV/tractor trips and not the 196 stated within the submitted TS. Utilising SLR’s assumptions that 35% are transported by road this would still equate to 979 annual HGV/tractor trips; and
- g) The submitted TS states at Section 6.3 that there will be “*a redistribution of local agricultural traffic*” and this traffic will be “*redistributed*” to the proposed anaerobic digestion facility instead of being spread across a wide area of farmland as they are now, they will be concentrated on transporting feedstock to the digester. This will cause a far heavier concentration of HGV/tractor traffic on Banbury Road (A422) and on the roads feeding that from the farms supplying the feedstock.

## 7. Summary

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- 7.1 Rappor has undertaken a transport and highway review of the information submitted in relation to the proposals for the construction of an anaerobic digestion facility on land at Hardwick Farm, Warwickshire - LPA Ref: 22/02935/FUL.
- 7.2 From a transport and highways perspective, there are several matters and concerns in respect of the access, visibility issues, insufficient information pertaining to both TMPs & CTMPs and inconsistencies with projected vehicle movements, which have resulted in the impact of the proposed development not being adequately assessed.



- 7.3 The transport planning elements of the planning application are considered to have a number of fundamental flaws, which are outlined in the TN. The development has significant access concerns in terms of form, design, and gradient. Inaccuracies with the visibility calculations, forward visibility assessment not undertaken, further swept path analysis needed and full TMP & CTMPs are required to appropriately assess the application. Inaccuracies with the proposed vehicle movements and traffic impacts used bring into question the validity of the conclusions made within the SLR TS.
- 7.4 Taking all of this into consideration, Rappor concludes that the planning application (LPA Ref: 22/02935/FUL) is not acceptable in transport and highways terms and planning permission should not be granted.

### **Appendices**

Appendix A Tysoe Parish Council Objection Response





## Appendix A – Tysoe Parish Council Objection Response

Following is the initial response from Tysoe Parish Council to planning application 22/02935/FUL to build a large anaerobic digester in the parish of Tysoe.

We object to the application on the following grounds:

The application conflicts with SDC Core Strategy policies AS.10 and CS.15 as the construction of a large industrial plant on a green field site will blight the landscape and the rural environment in this sensitive area. Also, the significant level of incremental heavy farm and commercial traffic that the plant would generate would cause great harm to the network of unclassified roads connecting villages in the area. This traffic will cause congestion, noise, pollution, damage to the road infrastructure and danger to other road users.

Just as importantly, the application conflicts with policy CS.11 as it will negatively impact on the views from and the setting of the Cotswold AONB (now the Cotswolds National Landscape).

The application also conflicts with the Tysoe Neighbourhood Development Plan as it proposes the building of a large industrial plant in the north of the parish outside the designated Built-up Area Boundary. The site is wholly inappropriate for an industrial installation and will breach the policies of the made Neighbourhood Plan.

We suggest that it would be worth the District Council commissioning a landscape consultant (perhaps Simon White) to carry out an assessment of the application given the significance of the adjacent AONB etc. Perhaps the applicant would be willing to pay for this.

The Parish Council strongly objects to this application for the large-scale development of a green-field site, in open countryside in full view of the Cotswold AONB.

We will be considering the application further over the coming weeks and will be supplementing our objection with further evidence of how this application conflicts with the Core Strategy.

On behalf of Tysoe Parish Council

Charmaine Swift, Clerk

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## IMPACT ON HISTORIC SETTING

The proposed site sits at the centre of an open rural landscape surrounded by a loosely concentric ring of parish villages. These villages (Butlers Marston, Kineton, Oxhill, Pillerton Hersey, Radway and the Tysoes) lie within a radius of less than 4 km from the site and represent its nearest population centres. On the basis of historical settlement patterning and according to the 2011 census returns, the greater majority of the 4446 individuals recorded living in those six parishes will be based in or around these villages. These populations will be directly or indirectly vulnerable to disturbance brought about by increased local traffic movement, noise, odour, light or airborne pollution caused by the development which sits at the epicentre of their respective communities (**contra CS.1; AS.5; AS.10**).

Apart from homes, these villages also contain community centres, village halls, places of worship, burial grounds, schools, playgrounds and recreation areas. Village origins revert to medieval or earlier times when communities were mostly agrarian and when village and countryside were part of a common social and economic infrastructure. The built heritage is captured in the six Conservation Areas and 190 listed buildings within the 4 km radius, some near the proposed site itself. The agricultural heritage can still be seen in the vestiges of medieval ridge and furrow from an open field system which underlies the late 18<sup>th</sup> century enclosures and subsequent land divisions. This same landscape contains the deserted medieval villages of Brookhampton (3.5 km north-west), Westcote (3.5 km north-east) and Hardwick itself with a recorded population of around 70 individuals in the late thirteenth century before it declined completely after the Black Death. Its exact position probably lies close to its successor, Hardwick Farm, a listed building some 300m from the site.

Human activity in the area has a long history as evidenced from prehistoric objects recorded in WCC's Historic Environment Record and from field walking. These include scatters of Mesolithic material (c.10,000 to 4,000 BC), a prized polished axe of the Neolithic (c. 4000 to 2200 BC) from by Hardwick Cottages, and nearby Iron Age and Roman structures identified from geophysical survey. The line of the A422 is based on the old Roman salt road (The Saltway) from Droitwich to the Chilterns, and the current Kineton Road (still a track on the 1st edition OS map) was the line of the former 'Portway' (road to market). Sanderson Miller's designed 18<sup>th</sup> century landscape at Radway lies across open countryside 3 km to the east.

The application for the Digester takes a very cursory view of this environment and chooses to limit its impact within an arbitrary radius of 1 km. In planning terms this would be normal for a small development, but a construction of this magnitude needs to be seen in a wider landscape context. The application bases its concept of 'history' almost entirely on designated sites and buildings (of which there are few within 1 km) thus avoiding other designated and non-designated assets beyond (noted above) which represent a more realistic picture of the proposed plant's historic environment

**(contra NPPF, 203).** Moreover, the geophysical survey undertaken of the site covers barely half of the proposed plants' footprint and is inadequate for even normal planning purposes.

It is not so much the fact that this development would destroy any specific aspect of the area's history or any particular known designated building or monument, it is simply that an industrial plant covering 7 ha with a height of 17m is wholly incongruous to this historic setting and a massive and grotesque imposition on an otherwise organically evolved landscape **(contra NPPF, 194)**. Any industrial facility of this size will damage the character and distinctiveness of the locality **(contra CS.9)** and be detrimental to its protection and enhancement **(contra CS.8)**.

The countryside within which this development would sit contains narrow lanes popular with cyclists as well as a network of well-used local footpaths and bridle ways. These include the nearby Centenary Way, and the MacMillan and ancient Jurassic Ways which follow the escarpment to the east on the edge of the AONB from where the development would be both visible and obtrusive **(contra CS.5; CS.11)**. The area is recognised in the Tysoe Neighbourhood Development Plan as one of cherished natural beauty, and the proposed site lies well beyond any agreed boundary where development might be permitted **(contra CS.15; NDP)**. The creation of the Sun Rising Natural Burial Ground and Nature Reserve - 'a place of deep natural peace' – (less than 2 km from the site) is a reflection of this tranquillity.

## **ERRORS, OMISSIONS AND SHORTCOMINGS**

**The following comments relate to the Historic environment theme:**

1. Acorn's study limits itself to a 1 km radius of the proposed site and therefore barely touches the landscape and population likely to be affected.
2. The study only includes designated sites and monuments and does not take into account non-designation aspects of the historic environment.
3. The geophysical survey only covers a part of the footprint of the proposed site.
4. *Groundsure* erroneously place the proposed site in a Conservation Area (pp 5 and 51).

## Impact on ecology

### BIRDS

The proposed development sits in a farmed landscape which is known to be an **important stronghold for a suite of threatened farmland birds**, most of which have shown long-term declines and are Red or Amber listed in the recently published '*Birds of Conservation Concern 5*'.<sup>1</sup> The specific location is within an important landscape for breeding Curlews, currently a top priority for conservation in the UK.<sup>2</sup>

The Preliminary Ecological Assessment commissioned by Acorn Bioenergy concluded that the site has high potential to support nesting birds. Whilst Skylarks are mentioned, the assessment took no account of the breeding Curlews that use the surrounding area. The report points out that vegetation clearance may impact birds during the nesting season and that any demolition or clearance of vegetation should take place outside the nesting season, and that if this is not possible an ecologist should check before such works occur. Skylark is mentioned here. However, the biodiversity enhancements suggested in the Biodiversity Net Gain assessment, an increase in the area of grassland by 0.93 ha, the scrub by 1.25 ha and hedgerow by 0.88 km, do not take account of the loss of 7.25 ha cropland which may well be used by ground nesting birds. This also does not take account of the increased disturbance through human activity in the area.

### Curlews

**The area is particularly important for breeding Curlews.** This is their most important remaining stronghold in Warwickshire and their conservation is a very high priority. Banbury Ornithological Society has been working with local farmers in recent years to locate and protect Curlew nests and help enable chicks to fledge successfully.

The Ecology section of the EIA Screening Report used Magic Maps to provide information on the bird interest of the area based on data collected for the BTO Bird Atlas 2007-11. This data set, whilst certainly a useful reference as a starting point, is from a very limited period and based on a moderate level of survey effort. For example, the survey failed to record breeding Curlew in the area even though they are known to have been breeding regularly since the 1940s.

It is not known if the application site itself has been used by Curlews, but it is in the vicinity of an extensive area of grassland managed as pasture and hay/silage which still supports at least two pairs

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<sup>1</sup> <https://www.bto.org/our-science/publications/birds-conservation-concern>

<sup>2</sup> <https://britishbirds.co.uk/wp-content/uploads/2019/10/Brit.-Birds-108-660-668.pdf>

of Curlews. Note that there is no reference here to specific sites due to the sensitivity of this information about a rare breeding bird that is vulnerable to human disturbance.

Research shows Curlews often feed several kilometres away from the nest site at suitable feeding sites, which can include arable fields as well as grassland. Therefore, any development or change of land use in this landscape has potential to impact on them either directly through loss of habitat or indirectly, for example by increasing disturbance (people, vehicles, dogs, lighting), increasing numbers of generalist predators (principally Foxes, Badgers and corvids attracted to the food and plantings associated with the development) and risk of collision with vehicles. A more detailed response will be submitted by the Banbury Ornithological Society.

## **Barn owls**

Barn Owls are present in the vicinity of the proposed development. The Barn Owl is a species of open country, favouring lowland habitats such as farmland and young plantation woodland. The Barn Owl is listed on Schedule One of the Wildlife & Countryside Act. The Barn Owl Trust estimate that, in a typical year, about one third of young Barn Owls are killed on roads and the majority of deaths happen on major roads and in the autumn. Thus, increased traffic on the A422 and nearby roads may pose an increased threat to Barn Owls in the area.

## **AMPHIBIANS**

### **Great Crested Newts**

Great Crested Newts have been found in several locations within 2 km of the site (Figure 1) and beyond. Great Crested Newts are strictly protected under European law (annexes II & IV of the EC Habitats Directive & Appendix II of the Bern Convention) from injury / killing / capture and destruction or deterioration of their habitat. They are strictly protected under Schedule 2 of the Conservation of Habitats & Species Regulations (regulation 40) and the Wildlife & Countryside Act (Schedule 5) from trade, injury / killing, capture, disturbance and damage / destruction to their habitat. This is acknowledged in the Preliminary Ecological Assessment. A preliminary scoping survey was undertaken and no further surveys were recommended.

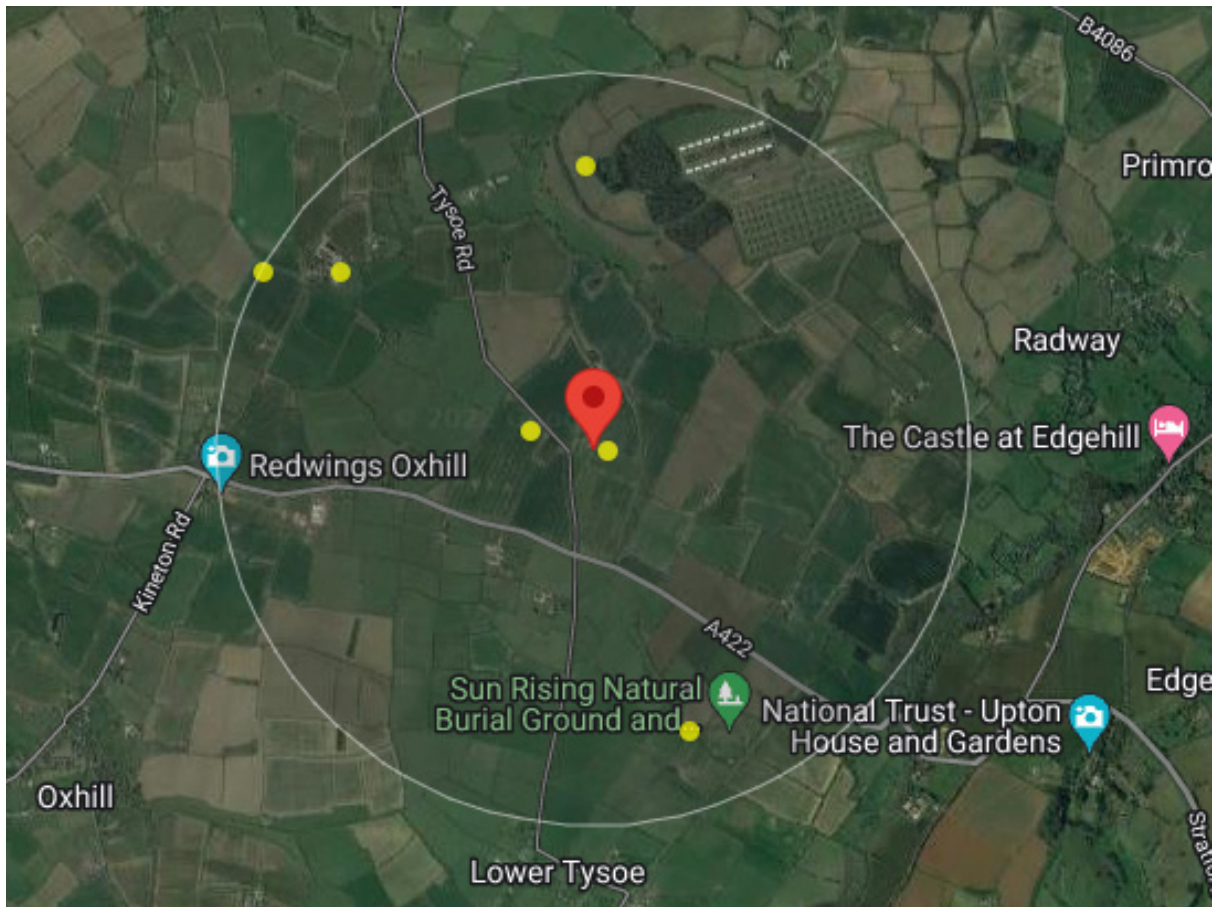


Figure 1. Sightings of Great Crested Newt (yellow spots) from the National Biodiversity Network (NBN) Atlas (2 km radius and using postcode CV35 0DY).

[https://records.nbnatlas.org/explore/your-area#52.9548|1.1581|12|ALL\\_SPECIES](https://records.nbnatlas.org/explore/your-area#52.9548|1.1581|12|ALL_SPECIES)

## MAMMALS

The Preliminary Ecological Assessment commissioned by Acorn Bioenergy concluded that illumination of the site in particular has the potential to disturb bats. The report also concluded that measures to protect hedgehogs and brown hares, and retention of suitable habitat on the site to allow connectivity, should be followed. In the case of the brown hare in particular, the loss of 7.25 ha cropland may constitute a significant loss of habitat and the Biodiversity Net Gain actions will not compensate for that loss.



**The following objection submitted by Banbury Ornithological Society illustrates the importance of this site and the surrounding countryside to the birdlife in the area.**

<https://apps.stratford.gov.uk/EDMSDeepZoom/DeepZoom/PDF/53914372-1c7a-c073-b102-08dac8a8805d.pdf>

Mike Pollard  
Conservation Officer  
**Banbury Ornithological Society**  
Joseph Brooke  
Senior Planner  
Stratford-on-Avon District Council

Via email

17 November 2022

Dear Mr Brooke

**Planning Application 22/02935/FUL**

I am writing on behalf of the Banbury Ornithological Society (BOS), in my role as Conservation Officer.

Founded in 1952, the Banbury Ornithological Society (BOS) studies the bird life in the twelve 10km squares surrounding Banbury which includes parts of Northamptonshire, Oxfordshire, and Warwickshire. Fieldwork is the core of BOS activity but the Society also holds regular monthly meetings, publishes a monthly Newsletter and Annual Reports, manages seven nature reserves and is pro-active in local conservation matters.

**We wish to OBJECT to this planning application.**

We are very concerned about the potential impact of this development on the most important remaining breeding population of Curlews in Warwickshire.

We previously commented on the EIA screening report for this proposal. A full environmental impact assessment would have properly assessed how the development might impact on the important populations of breeding Curlews, Barn Owls, and other farmland birds in the landscape within which the development would sit.

We note that the Preliminary Ecological Appraisal (PEA) states that:

*A number of notable bird records were returned by WBRC. Some of these are priority species associated with farmland including Eurasian skylark (*Alauda arvensis*), lapwing (*Vanellus vanellus*), and kestrel (*Falco tinnunculus*).*

*The site offers nesting opportunities in the hedgerow and arable fields including the support of priority species such as Eurasian Skylark which ground nest in short grass and crops. The site is therefore considered to have **high** potential to support breeding birds, including priority species.*

We agree with the rating of high, and the available data indicates this is the actual case for the local area rather than just potential. We are disappointed that this report does not build on the analysis presented in the EIA Screening Report, which had already identified the area as supporting a Level 4 assemblage of arable breeding birds. Other datasets are available, for example, records from BOS, BTO (Bird Track), West Midlands Bird Club and the local Barn Owl conservation group. Additional surveys of the farmland surrounding the development would have been very helpful due to the quite limited coverage to date. Absence of evidence is not evidence of absence.

The proposed site of the development sits in a farmed landscape which is known to be an important stronghold for a suite of threatened farmland birds, most of which have shown long-term declines and are Red or Amber listed in the recently published Birds of Conservation Concern 5. The specific location is within an important landscape for breeding Curlews, currently a top priority for conservation in the UK.

Conservation initiatives by farmers in south Warwickshire are seeking to reverse these long-term trends and enable recovery of key breeding species including Barn Owl, Curlew, Grey Partridge, Kestrel, Lapwing, Linnet, Reed Bunting, Skylark, Tree Sparrow, Yellow Wagtail and Yellowhammer.

The site itself includes sympathetically managed hedgerows with trees, a grass margin, a triangle of rough grass, and arable farmland. This provides good habitat for many birds of farmed landscapes, for example - Yellowhammers, Linnets, Goldfinches, Barn Owls and Kestrels. The replacement of this habitat by an access road and extensive built infrastructure will have a negative impact on these species through direct loss of habitat and disturbance by vehicles.

### **Bird records for the application site and surrounding area**

The application site is located in 1km square SP3347, Tetrad SP34H and 10km square SP34.

BOS records are collected at the site or 1km square level and BTO national bird atlas surveys are conducted at the tetrad level.

The Ecology section of the EIA Screening Report has used Magic Maps to provide information on the bird interest of the area based on data collected for the BTO Bird Atlas 2007-11. This data set, whilst certainly a useful reference as a starting point, is from a very limited period and based on a moderate level of survey effort. For example, the survey failed to record breeding Curlew in the area even though they are known to have been breeding regularly since the 1940s.

The Report states that ‘MagicMaps indicated a moderate level of breeding farmland birds for the site, level 4 with the wider areas 3 and 4. and low level of grassland bird assemblages at the Site, level 2 in the wider area around the site, reducing completely 1km west of the site. Data shows that the likely birds in the area are possibly Lapwings, Tree Sparrows, Turtle Doves and Yellow Wagtails.’

We agree that the Atlas data presented on the Magic website shows that the area for the proposed development supports a Level 4 assemblage of Arable breeding birds (four species out of the six - Corn Bunting, Grey Partridge, Lapwing, Turtle Dove, Tree Sparrow, and Yellow Wagtail) and Level 2 assemblage of Grassland breeding birds two of the five species – Curlew, Lapwing, Redshank, Snipe, Yellow Wagtail.

In lowland England, Level 4 for Arable Assemblage is a relatively high score which we would not describe as ‘moderate’ as suggested in the Report. Level 4 Assemblage has been used to identify areas as important for farmland birds.

### **Curlews**

We particularly need to flag the importance of the area for breeding Curlews. This is their most important remaining stronghold in Warwickshire and their conservation is a very high priority. BOS has been working with local farmers in recent years to locate and protect Curlew nests and help enable chicks to fledge successfully.

A good overview of Curlew status and conservation needs can be found on the website of the Curlew Recovery Partnership: At 58,500 breeding pairs, the UK currently holds approximately a quarter of the global Eurasian Curlew population, with estimates for England of about 30,000 pairs. However, national monitoring data, coordinated by BTO, show that this population has been in long-term decline since the 1970s and has almost halved in the UK over the last 20 years. In lowland southern England the population has declined to about 500 pairs, with many colonies on the verge of local extinction.

Curlews are known to have bred in this landscape since the 1940s. Note that no reference is made to specific sites due to the sensitivity of this information about a rare breeding bird that is vulnerable to human disturbance.

A detailed study of ‘*Curlews in the Banbury area*’<sup>3</sup> has been recently published which identifies this area as a local stronghold (page 10):

#### *South Warwickshire*

*Curlews were present in this area from 1945 and were known to nest on ridge and furrow pastures at this time. The south Warwickshire sites were not surveyed as part of the BTO or RSPB surveys as they*

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[http://www.banburyornithologicalsociety.org.uk/images/publications/The\\_changing\\_fortunes\\_of\\_Curlews\\_Numenius\\_arguata\\_in\\_the\\_heart\\_of\\_England\\_over\\_the\\_past\\_one\\_hundred\\_years.pdf](http://www.banburyornithologicalsociety.org.uk/images/publications/The_changing_fortunes_of_Curlews_Numenius_arguata_in_the_heart_of_England_over_the_past_one_hundred_years.pdf)

*are not classic river valley wet meadow sites. They are a mosaic of grasslands on clay soils, some managed as hay or silage meadows, some are simply grazed semi-continuously by sheep and cattle.*

*The only co-ordinated survey of this area was the ABBS in 1997, which located four pairs. BOS records indicate that about four pairs and possibly as many as six pairs were present in some years during the 1980s and 1990s. In recent years, the population appears to have declined, and since 2015 just two sites are known to have been occupied, with one to two pairs on one site, and a territorial male at the second site. A couple of areas that were previously occupied have become unsuitable due the agricultural intensification, including silage production and increased grazing by sheep.*

*In Warwickshire, an action plan for waders (Lapwing, Snipe, Redshank and Curlew) has recently been drafted by the Local Biodiversity Action Partnership. The plan recognises the current risk of extinction of Curlew in the county, the population having fallen from circa. 25 pairs in 2004 to six to eight during 2011-16 and five in 2018.*

Curlew distribution maps were prepared recently by our recorder to illustrate the distribution of Curlew in the BOS recording area in the 2010s compared to the 2000s, which identifies the cluster of Curlews in the Lower Tysoe area and their presence within the SP34H tetrad.

It is not known if the application site itself has been used by Curlews, but it is in the vicinity of an extensive area of grasslands managed as pasture and hay/silage which still support at least two pairs of Curlews. We note there is also extensive grassland immediately west of the site which is almost certainly used by Curlews. I have personally observed Curlews flying over the application area and I have observed Curlews feeding in arable fields at other sites in the Banbury area.

In this area the Curlew breeds in grassland habitats, principally in fields managed for a hay or silage crop, but they are most successful where grasslands are managed with limited or no addition of fertilisers. Curlews feed on invertebrates living in the soil and in the grass itself and they feed over a wide area - not just in the vicinity of the nest site. Research shows Curlews often feed several kilometres away from the nest site at suitable feeding sites, which can include arable fields as well as grassland. Therefore, any development or change of land use in this landscape has potential to impact on them either directly through loss of habitat or indirectly, for example by increasing disturbance (people, vehicles, dogs, lighting), increasing numbers of generalist predators (principally Foxes, Badgers and corvids attracted to the food and plantings associated with the development) and risk of collision with vehicles.

Predation of Curlew nests and chicks is a particular issue for many Curlew populations including those in Warwickshire, and we are concerned that this development may lead to increased numbers of predators due to the potential availability of additional food and increased cover.

### **Biodiversity Net Gain Assessment**

Full details of the BNG calculation to achieve a 45% habitat uplift have not been provided as part of the application which makes commenting on them difficult.

The BNG Assessment is partly based on the creation of narrow, linear grassland features which will be subject to a high level of edge effect and spray from vehicle movements, and it is hard to imagine these will ever achieve more than a very moderate condition. We also noted a number of factual errors in the report.

We consider that the BNG proposal needs to be subject to detailed review to determine if the calculations are correct and the predicted outcomes are achievable.

Yours sincerely,

Mike Pollard  
Conservation Officer

Banbury Ornithological Society

## GREEN CREDENTIALS ASSESSMENT

### IS ANAEROBIC DIGESTION GREEN?

#### Tysoe Parish Council concludes:

1. The AD process is not “Net Carbon Zero” when the “system boundary” takes a ‘global’ view and extends the boundary to all inputs and outputs including transportation, vehicle, and site construction emissions with a minute contribution to national gas production
2. Digestate used repeatedly carries damaging risks to land and environment
3. A large area of land would be taken out of human & animal feed production to produce AD feedstocks
4. This is not an optimal location for the AD plant because of remoteness from feedstock and the additional greenhouse emissions created by consequent road haulage
5. The local ecology and environment could suffer a harm not balanced by the benefit to the local community affected<sup>1</sup> of four ‘permanent FTE’ jobs which may not be filled by local residents.

HMG’s Anaerobic Digestion Strategy Plan was issued in 2011 on the basis that the technology would tackle the household waste disposal problem in place of landfill site.<sup>2</sup> Anaerobic Digester (AD) Technology was seen as a ‘green’ way forward based on experience in Europe. The economic viability of such plants has reduced in more recent years as Government subsidies have been removed and a number of plants closed accordingly.<sup>3</sup> The prime purpose of the current Acorn Bioenergy Ltd proposal is not to handle domestic waste but to generate Biogas; a combination of Methane (a target of 9.10<sup>6</sup> m<sup>3</sup>), Carbon Dioxide (CO<sub>2</sub>), and a by-product of Nitrogenous digestate that would be sold to farmers as non-mineral fertiliser<sup>4</sup>.

The feedstocks for the process are a combination of purpose grown crops such as Maize and Ryegrass, along with chicken manure and livestock slurries to promote the anaerobic digestion process in order to maximise the process yield<sup>5</sup>. The crop feedstock will require around 1,600

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<sup>1</sup> Stratford on Avon District Council Core Strategy CS.22– final paragraph, & Policy AS10

<sup>2</sup> HMG’s Anaerobic Digestion Strategy Plan Department of the Environment, Food and Rural Affairs 2011

<sup>3</sup> For example, see Monbiot G, 2014, The Biogas Disaster, *Farmers Guardian* March 14<sup>th</sup>; also, Bowan M and Woroniecka K (2020) *Bad Energy; defining the role of biogas in a new zero future*

<sup>4</sup> Hardwick Green Energy EIA Screening Report – SLR reference 404.11923.00002 V5.0, August 2022

<sup>5</sup> The official Information Portal on Anaerobic Digestion (<https://www.biogas-info.co.uk>)

hectares of land per annum taken out of animal and human food production on a three to five year rotation. The proposed site does not lie near land suitable for the production of the crops cited, nor are there sizable intensive chicken farms in the area. This means that feedstocks will require transporting a considerable distance to the AD Plant site, adding to road congestion and greenhouse gas emissions. Whilst the proposal is to fuel local haulage vehicles with bio-methane, vehicles travelling from further afield will run on diesel and local farm vehicles on 'red diesel'.

The AD process converts the specially grown crops, manure and slurries into methane and carbon dioxide gases in the proportion of approximately 60% methane and 35% carbon dioxide, and liquid digestate. The process requires an input of heat to provide a stable operating temperature of around 35°C to optimise the AD process. The biogas is 'cleaned' to separate off the CO<sub>2</sub> which would be sold on to the food and drinks industry, but subsequently re-released into the atmosphere on consumption. The Methane is then 'doped' with propane gas from on-site storage to increase the calorific value to the equivalent of natural gas to be transported to the Banbury injection point, a round trip of around 40km. Additional gases such as hydrogen sulphide may also be released from the digestate or feedstock storage dependent upon feedstocks employed. These last two gases are potential toxins to humans and wildlife<sup>6 7</sup>.

**CO<sub>2</sub> and methane are only 'locked' out of the atmosphere for a short period of time until used in the food industry or combusted in vehicles and industrial processes. The process of combusting methane produces additional CO<sub>2</sub>, water, and harmful nitrogen oxides. The feedstocks are specifically grown for the purpose and animal waste used would in the normal course of events be used as fertiliser. This process is therefore neither carbon-neutral nor green.**

At a public meeting in Kineton Village Hall on the evening of the 27<sup>th</sup> September 2022, in answer to a question from a member of the public the Business Development Director of Acorn Bioenergy Ltd. stated that, "*the carbon payback of construction of the site will be 3.5 years*". This does not equate with the assessment above.

The combustion of bio-methane produces heat, water, and CO<sub>2</sub> which of course is released into the atmosphere as well. The combustion chemical equation neither destroys or creates carbon dioxide and can be considered carbon neutral, except that the annual feedstock inputs will be at least 80,500t<sup>3</sup> requiring many vehicle movements whilst in harvest season and the outputs will also require transportation. These movements will in themselves emit a large amount of additional greenhouse gases and release further carbon into the environment, as well as oxides of nitrogen and other greenhouse gases.

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<sup>6</sup> Statutory Guidance SR2021 No6, No7, and No8

<sup>7</sup> Farm Energy 3<sup>rd</sup> April 2019, Anaerobic Digesters and Biogas Safety

The digestate is a useful non-mineral based fertilizer. The WRAP<sup>8</sup> publication “*Comparison of Environmental Impacts of Nitrogenous Material*”<sup>9</sup> warns of the prolonged and overuse. The Review reports that;

*“UN Environment (2019) identify nitrogen pollution as one of the five most significant emerging issues on the environment. Growing demand on the livestock agriculture, transport, industry and energy sector has led to a sharp growth of the levels of reactive nitrogen – ammonia, nitrate, nitric oxide (NO), nitrous oxide (N<sub>2</sub>O) – in our ecosystems.”*

In addition, they report;

*“Since 2008 there has been an increase in the quantities of cattle manure, cattle slurry and food waste-digestate that are applied. However, application of other materials has changed little over time, suggesting that these increases in application are not displacing use of other materials. The review identified that although there are policies in place to reduce the environmental impacts of nitrogenous materials in the UK, there are no policies which are likely to alter future levels of application” and: “Levels of micro-plastic contamination were identified through wider academic and non-academic literature.”*

The Review also concluded that:

- *“If emissions associated with nitrogenous materials do not alter, by 2030 they could account for up to 10% of UK territorial emissions”*
- *“Levels of micro-plastic contamination are likely to vary depending on the fertiliser material being studied. Micro-plastic contamination is highest within sludge and lowest among garden waste compost”*
- *“Acidification potential<sup>10</sup> varied widely, with mono-digested slurry and maize having a higher potential than other materials and co-digested materials identified in the review. Both the acidification potential and global warming potential of digestate can be reduced through drying and palletising, composting, ammonia stripping and drying or by biological treatment”*

The planning application drawing shows that the site encroaches upon a water course on the North-western Boundary and is partially within the flood risk section of the field. This would indicate a potential contamination risk to the watercourse and a threat to the environment.

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<sup>8</sup> WRAP is a charity working with governments, businesses and citizens around the globe to create a world in which resources are used sustainably. We generate evidence-based solutions to protect the environment, build stronger economies and support more sustainable societies.

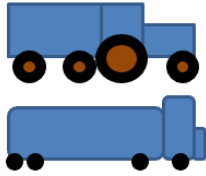
<sup>9</sup> A review of published literature to identify the environmental impacts of mineral fertiliser; slurry; compost; digestates, and; biosolids September 2020

<sup>10</sup> Acidification potential refers to the compounds that are precursors to acid rain. These include sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), nitrogen monoxide (NO), nitrogen dioxide (N<sub>2</sub>O), and other various substances. Acidification potential is usually characterized by SO<sub>2</sub>-equivalence.



# Annual Inputs & Outputs

**90,000 tonnes p.a. of Feedstocks:**  
Ryegrass & Maize silage, cattle & pig slurries, animal manure, chicken litter



69t

69 Tonnes of CO<sub>2</sub> From Tractor & HGV vehicles movements along the A422, cross farm and Tysoe Road importing grown feedstock & animal waste

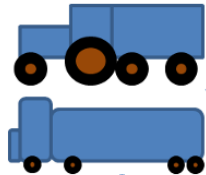
429t

Plant should produce 778t Bio-Methane and 1,425t CO<sub>2</sub>  
20% Bio-Methane will be burnt to run CHP Plant creating a further 429t CO<sub>2</sub> ( $CH_4 + 2O_2 [Atmos] \Rightarrow CO_2 + 2H_2O$ )

**1,988t total unnecessary Tonnes of CO<sub>2</sub> created by the total process per Annum**

**1,988 Tonnes CO<sub>2</sub> p.a.**

**Outputs:**  
Liquid & Solid digestate, Methane & Carbon Dioxide



46t

46 Tonnes of CO<sub>2</sub> From vehicles movements along the A422 and Tysoe Road plus exporting 1,425t CO<sub>2</sub> to Food and Drinks Industry

**X5**

19t

19 Tonnes of CO<sub>2</sub> from 20,010km of vehicles movements along the A422 to Banbury & Back,

1,425t

1,425 Tonnes of CO<sub>2</sub>

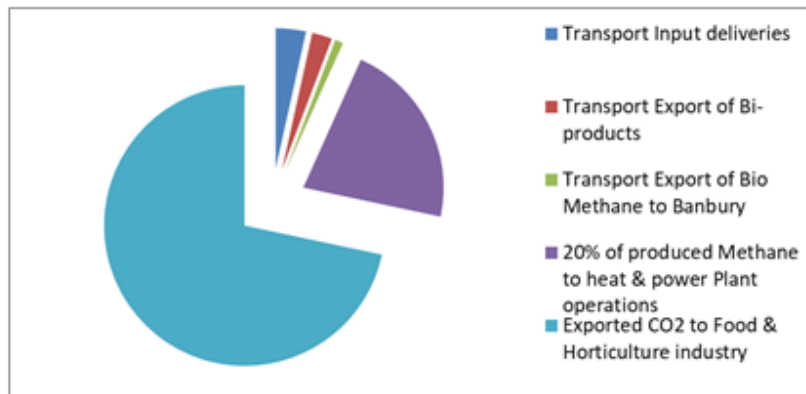


Products eaten and drunk releasing 1,425t of product CO<sub>2</sub> back into the atmosphere

Above is a depiction of the amount of CO<sub>2</sub> emissions that would be emitted from the entire process

Looking at where the CO<sub>2</sub> emissions in more detail, the CO<sub>2</sub> generated by the proposal will mainly go to the Food and Beverage industry and be released into the atmosphere on consumption by humans.

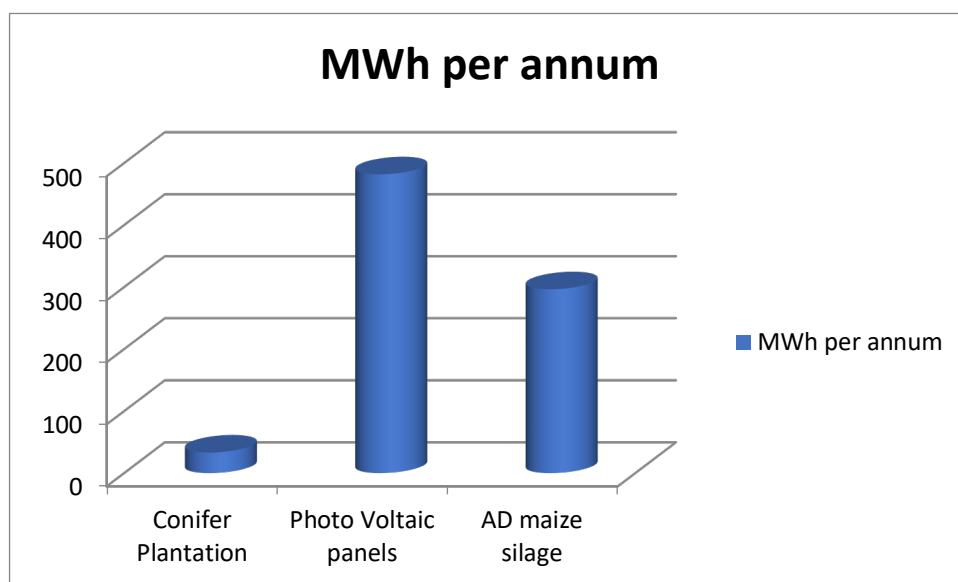
## Operation Generated CO<sub>2</sub>



It cannot be argued that the AD process 'Locks away Carbon', as described by the applicant, it simply delays the release of the greenhouse gas for a short period of time whilst generating additional CO<sub>2</sub> that otherwise would not be generated.

In addition to these CO<sub>2</sub> emissions, we estimate that 4.5 tonnes of NO<sub>x</sub> would be emitted by the vehicles involved in transporting feedstock into and product out from the digester (see Traffic impact assessment).

A comparison of land use efficiency shows that anaerobic digestion of a single hectare of maize silage is more efficient than the power generated by the same area of conifer plantation (wood chips) and only 62% as efficient as a hectare of photovoltaic panels converting sunlight to electricity without generation of CO<sub>2</sub>.



**Our conclusion has therefore to be that this is not the 'green renewable energy' process that is claimed by the applicant.**

## **SAFETY ASSESSMENT**

### **RISK TO HEALTH, SAFETY, AND COMMERCIAL OPERATIONS OF ANAEROBIC DIGESTION PLANTS**

Acorn Bioenergy Ltd. has indicated the inherent safety of the AD plant design proposed assuming correct operation and maintenance. There have however been several incidents<sup>1</sup> including damage to the operating plants, the environment, and explosions resulting in the death of employees and contamination of the environment which would indicate that this is not an accurate statement. This paper shows the facts and identifies the risks as determined by the Department of the Environment and shows that the location between an immediately adjacent watercourse on the north-western boundary of the plant and the Tysoe Road which forms the immediate North-Eastern boundary, is dangerous and does not consider the dangers to the local population, ecology, and environment.

### **EFFECT ON THE LOCAL RURAL ENVIRONMENT AND POPULATION**

By its scale, this proposed operation on a Greenfield site is not an agricultural activity, but an Industrial and Commercial development more suited to a Brownfield site where infrastructure, emergency services, and communications networks are already developed and available, by which we mean road networks of sufficient capacity to handle the increased volume of traffic reported in this document under its own heading, and located nearer to the Banbury injection terminal proposed as the delivery point of the Bio-methane produced.

The significant additional heavy vehicle traffic movements that will be necessary to both feed into the AD Plant and remove product in itself increases the risk to road users in a very rural environment and already well used category of road<sup>2</sup>. It should be noted also that that the crossroads at Tysoe Road and the A422 is heavily used especially from 07:30 to 09:00 weekdays by drivers dropping off Children at Tysoe Primary School and school buses running from Tysoe to Kinton, Strafford upon Avon, and the Alcester Secondary schools. In the afternoon the reverse traffic is seen between 15:00 and 17:30. In addition normal commuter traffic movements, and existing agriculture associated vehicle movements make the road connections around the proposed site quite

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<sup>1</sup> [https://consult.environment-agency.gov.uk/environmental-permitting/standard-rules-consultation-no-20/user\\_uploads/incidents-report--2010-2018--final.pdf](https://consult.environment-agency.gov.uk/environmental-permitting/standard-rules-consultation-no-20/user_uploads/incidents-report--2010-2018--final.pdf)

<sup>2</sup> Tysoe Traffic Survey December 2021

congested. This is a very rural location and internet delivery of goods is convenient and therefore very common, all adding to traffic congestion and increased risk of accident.

The removal of food production for human and livestock to support AD Plant feedstock requirements is likely to damage local livestock operations and businesses reliant upon local farming operations.

**Overall, the applicant's proposal would have the potential to reduce the health and wellbeing of the local population and existing commercial activities, and harm the local wildlife and environment. This will not be offset by benefits to the local communities, contrary to AS10 & CS.3.**

## POTENTIAL RISKS

NNFCC<sup>3</sup> state; "Anaerobic digestion can be regarded as a chemical process with all the associated risks: flammable atmospheres, fire and explosion, toxic gases, confined spaces, asphyxiation, pressure systems, COSHH, etc. In addition, it also incorporates gas handling and gas storage. Therefore, it is essential that thorough hazard and risk assessments are carried out at each stage of a project from design to installation to commissioning to implementation and operation."

The EIA Screening Report does not refer to any Health and Safety programme that would remove such risks<sup>4</sup>. HMG Statutory Guidance<sup>5</sup> sets out the minimum requirements to ensure safe working and potential damage to the environment and ecosystems.

The Statutory Guidelines Risk Assessment identifies the following areas of risk:

1. Risk to Local Human Population
2. Risk to Local Human Population Livestock and Wildlife
3. Risk to Local Human Population and local environment
4. Risk of Land Bank Contamination
5. Risk to surface waters close to and downstream of the site
6. Risk to water abstracted from the watercourse
7. Risk to groundwater
8. Risk of diffuse emissions from polluting and greenhouse gases such as methane and ammonia
9. Risk to protected sites.

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<sup>3</sup> <https://www.biogas-info.co.uk> NNFCC, Department of Environment Food & Rural Affairs Department for Business Energy & Industrial Strategy - The Official Information Portal on Anaerobic Digestion

<sup>4</sup> EIA Screening report for Acorn Bioenergy SLR Ref: 404.11923.00002 V5 August 2022

<sup>5</sup> SR 2021 No6, No7, and No8 updated July 2022

Added to this are Risks to Employees and Visitors at the site.

Farm-Energy<sup>6</sup> noted in 2019 that;

*“When manure is anaerobically digested, the biogas produced is primarily composed of methane and carbon dioxide, with lesser amounts of hydrogen sulphide, ammonia, and other gases. Each of these gases has safety issues.*

*Overall, biogas risks include explosion, asphyxiation, disease, and hydrogen sulphide poisoning.*

*Extreme caution is necessary when working with biogas.”*

In September 2019, the Environment Agency reported on AD associated Environment Incidents between 2010 and 2018<sup>6</sup>. The report does contain incidents at a number of waste water plants but also a number of industry, and farm based plants. The report includes descriptions of incidents and root cause with photographic illustration, and notes;

*“According to a leading AD plant insurer, “Anaerobic digestion plants may experience significant loss events during operation resulting from damage to operational equipment, structural collapse, fire, flood or theft. These events can often result in lengthy periods of process downtime, with a consequential loss of revenue, clean-up costs, risk of local pollution and a resulting drop in local community confidence and support for the project; which can be difficult to rebuild.”*

*“It is essential that all plant operators, and those involved in its maintenance, fully understand the risks that are present on an AD plant, and why these safety and control features are provided. They need to be aware of the consequences of safety feature failures, incorrect plant operation and not following set procedures. Human error is often the root cause of many major loss or damage events<sup>7</sup>.”*

The potentially high level of risk associated with such an operation suggests that the four FTE employees will require a significant level of specialist training and it is likely that such qualified people will not be recruited from the local working population. When questioned Acorn Energy Ltd stated that there would not be 24/7 site security<sup>8</sup>.

UK DSEAR Regulations require a Risk Assessment to be undertaken for all facilities where a risk of explosion is possible. Biogas Plant Owners and Operators are not operating legally unless they apply the DSEAR Regulations<sup>9</sup>.

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<sup>6</sup> <https://farm-energy.extension.org/anaerobic-digesters-and-biogas-safety>

<sup>7</sup> Anaerobic Digestion: Plant Operation Risk Management. A Guide to Loss Prevention. HSB Engineering Insurance Limited. (Part of Munich Re). HSBEI-1728-0717

<sup>8</sup> Tysoe Parish Council minutes 10<sup>th</sup> October 2022

<sup>9</sup> <https://blog.anaerobic-digestion.com/anaerobic-digester-plant-explosion-blamed-on-gas-storage-epdm-failure>

In December 2020 a tragic accident at Avonmouth in Wessex Water’s anaerobic digester **killed four workers.**<sup>10</sup>



Examples of AD plant accidents and explosions can be found all over the internet. Another example is the 2007 explosion at Daugendorf Germany, see image below.



This is significant because of the concrete construction of the digester tanks similar to that proposed by Acorn Energy Ltd at the Hardwick site.

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<sup>10</sup> <https://thebristolcable.org/2021/02/the-avonmouth-explosion-was-horrific-but-it-wasnt-unprecedented-wessex-water-silo-bristol>

In 2014 at the Harper Adams University AD unit, there were two incidents. In the first accident, it was reported that **up to 8,000,000 litres of waste could have been spilled in a leak of anaerobic digestate at Harper Adams University College**. A bund built to contain any leaks also failed, causing digestate to flow on to an adjacent field. *“The cause of the incident remains unclear. The Environment Agency has suggested it was a broken valve, while other reports have described a mechanical failure within the tank itself.”<sup>11</sup>*

The second accident occurred some 15 months later when a processing tank at the AD plant is believed to have collapsed at Egremont, near Newport, Shropshire.



It is clear from past evidence that Anaerobic Digester plants are both prone to explosion and digester collapse or rupture. The proposed location is between a watercourse and road. The watercourse forms the boundary on the western side, and the Tysoe Road running North-West to South-East the opposite boundary of the plant with two of the three Digesters within a few metres of the road. On the basis that explosion and other catastrophic accidents are not uncommon for this type of AD Plant this represents a major Risk Factor difficult if not impossible to completely mitigate.

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<sup>11</sup> Farmers Weekly

# ODOUR, NOISE AND LIGHT POLLUTION ASSESSMENT

## SUMMARY

The applicant has undertaken assessments of air quality, noise and lighting and has concluded that none of these provide any reason to reject the application. The fact that the applicant has stated, in the Design and Access Statement, that mitigation measures would be taken to minimise the impact of such pollution is to be applauded. However, these measures are insufficient to prevent a significant deterioration in the environment that exists at the site today.

The proposed site is open agricultural countryside with no significant development or pollution emitters within 10km. It is in an area subject to a Dark Skies policy in the Tysoe Neighbourhood Plan. The only noise emitter in the vicinity is traffic on the A422. This is an almost entirely tranquil site. Therefore, any industrial development of the kind proposed will diminish this tranquillity and increase pollution by noise, odour and light. Whilst the applicant states that this pollution provides insufficient grounds on which to reject the application, we believe that the cumulative impact of the proposal on the otherwise tranquil site, when considered in total, provides ample grounds for rejection.

**Had the digester been proposed for a brown-field site or an existing industrial site, the level of odour, noise and light pollution may well have been acceptable. However, in the case of the proposed site, where the pollution baseline is as close to zero as practically possible, almost any incremental pollution is likely to be significant.**

## PLANNING CONTEXT

Core Strategy policy AS.10 states that:

*“All proposals will be thoroughly assessed against the principles of sustainable development, including the need to:*

- *Minimise the impact on the occupiers and users of existing properties in the area.*



Policy CS.3 states that:

*Where large scale low carbon and/or renewable energy projects are proposed that serve national, regional or county interest, but the majority of the effects will be felt locally, the Council will support such schemes where the impacts are, or can be, made acceptable. The developer must demonstrate, through a balanced assessment of the proposal's positive and negative effects, that detrimental impacts at construction, operation and decommissioning stage are appropriately minimised, mitigated and compensated. Where the proposal affects a Listed Building, an Area of Restraint, a Special Landscape Area, a Conservation Area, the Cotswolds Area of Outstanding Natural Beauty (AONB), or other nationally designated and non-designated heritage and cultural asset, the Stratford-on-Avon District Council - July 2016 30 Stratford-on-Avon Core Strategy 2011-31 Section 3 District Resources – 3.2 Sustainable Energy objective of the designation must not be compromised by the development. Within and adjacent to the Cotswolds AONB large scale wind or solar farms are unlikely to be appropriate. When assessing such proposals close to the AONB, careful consideration will also be given to ensure the objectives of the designation are not compromised.*

**These policies leave it to the discretion of the planner as to whether the impact of the proposed development would be sufficiently minimised. It is our view that is not the case. The impacts or noise, odour and light pollution, when set against the current near zero level, would be significant.**

## **ODOUR IMPACT**

In the opening paragraph of the Executive Summary of the applicant's Air Quality Assessment it is stated that the assessment has considered the impacts on air quality at the proposed site at Tubbs Farm, Butlers Marston. The site is not at Butlers Marston, but at Tysoe. We assume that despite making this error the assessment has been conducted at the correct location.

The Summary states that both the construction and the operational phases would present a "not significant" impact on air quality. Given that there is a zero impact on air quality currently at the site this is a bold statement to make, although they do go on to say that there will be a "slight adverse" effect at Hardwick House.

The Assessment, which is a dense document, heavy with technical data but light on any practical assessment of the real-world impact of odour, takes a very legal view of "impact". It assesses the impact against a strict legal framework of legislation rather than assessing the practical impact on those residents living nearest to the proposed site.

There is a wealth of evidence of digesters causing odour problems for near neighbours. No doubt the applicants will say that these digesters were not well run. However, there is a more than passing chance that such problems would be experienced if such a large digester as the one proposed were to be built and fed on 40% animal manure.

The following are examples of digesters causing odour issues for neighbours:

*\*The UK's largest AD plant is at Cannock Chase, Staffordshire and treats 120,000 tonnes of waste from nearby food producers. In January 2020, a petition of over 1000 signatures called for the plant to be closed because of odour issues. Source Express Star).*

*\*Warminster Town Council is to contact the Environment Agency after residents living near Bore Hill Farm complained about the 'unpleasant smells' coming from the Malaby Biogas biodigester plant.*

*Concerned local residents reported that the "unpleasant smell" from the AD biodigester was impacting on their lives during the current hot weather.*

*Several councillors confirmed their own experience that the smell was unpleasant and could be smelled over a long distance. (Wiltshire Times).*

*\*A company in Middlesbrough specialising in anaerobic digestion has been ordered to pay £19,670 for odour pollution. BioConstruct NewEnergy, operating in Imperial Avenue, pleaded guilty at Teesside Magistrates Court to offences which occurred in July 2018. (Energy LiveNews).*

*\*Residents in a Somerset village have said more needs to be done to tackle a "sewage like smell" coming from a waste plant. Cannington Bio Energy's anaerobic digestion plant was built to process farm waste but, since 2011, has dealt with food from outside the county.*

*ReneTaylor, who runs Currypool Mill campsite near the plant, said an increase in traffic from the plant had also made life very difficult for her guests. "They are huge tractors with tankers on the back, and the lane is tiny," she added. "When they are moving the digestate into this area every few minutes they are up and down, all day long, from early morning to late at night just constant.*

*"And the odours can be very, very bad, especially if the wind's in this direction. Even inside the house, you get this sickly odour which is almost like a combination of dog's muck and burnt plastic." (BBC).*

We believe that, despite the mitigation measures that the applicants propose, there is a high risk of odour pollution in practice. Given the complete absence of any existing similar pollution, we ask why near residents should be exposed to such a risk which would be extremely difficult to eradicate once the digester was built.

An independent review of the odour assessment was commissioned, on behalf of Tysoe Parish Council, from Air Quality Consultants, a consultancy well versed in odour issues involving anaerobic digesters. Their full report is included in Appendix 4 to this submission. An extract from the conclusions of that report reads as follows:

Based upon the review of the odour risk assessment, it is concluded that whilst it is generally robust, the choice of assessment method is basic and not sufficient on its own to draw a confident conclusion on the potential for odour impacts at the nearby farm. Whilst AQC does not find any considerable failings in the odour assessment and its conclusions, **it is strongly recommended that**

**the IAQM's guidance for a multi-tool odour assessment approach should be used to add robustness and reduce the uncertainty involved in the single assessment technique used.**

The AQA prepared by SLR has the following deficiencies:

- A failure to use more than one year of meteorological data when assessing the pathway effectiveness
- Incomplete analysis of feedstock volumes and storage areas in determining the appropriate source odour potential
- Incorrect distance used for the pathway effectiveness between the AD plant and Receptor R1.

AQC summarise: *Nevertheless, to ensure that the most odorous sources will be adequately controlled... further odour assessment in the form of dispersion modelling should be required to support the planning application.*

**We stress that, in the case of the proposed site, where odour pollution is currently as close to zero as practically possible, almost any incremental pollution is likely to be significant for nearby residents.**

## **NOISE IMPACT**

The Assessment is a document dense in technical data without a great deal of interpretation for the non-expert reader. However, it is interesting that Table 6.3 shows the noise levels that might be experienced in several locations close to the site. This table, however, does not show the existing noise level, therefore making any comparison with the *status quo* impossible.

Table 6.2 in the Assessment shows the noise levels for various plant components. This includes the noise emitted by the HGV movements, which are stated at 2 movements per hour, daytime, and 1 movement every 15 minutes during the night-time, with the noise predicted to be 95 LwA, the second highest emitter on the list. This is an understatement of the noise pollution emitted by vehicle movements to a considerable degree. Our assessment is that at peak harvest season there could be 282 HGV/tractor-trailer movements a day which, if evenly spread across 24 hours, would equate to 12 per hour. However, this is likely to be compressed into 12 daylight hours which would exacerbate the situation. Therefore, if HGV movements are rated by the applicant in their own table, as the second highest noise emitter, the Assessment is clearly under-estimating the noise pollution by an order of magnitude.

It is also worth noting that most of the machinery identified in Table 6.2 operates 24 hours per day. This will introduce noise into an otherwise virtually silent environment. On page 25 of the Noise Assessment, it states: *"During the night time, the plant emissions rating level has been predicted*

*to be above the representative background sound level, indicating a significant adverse impact, depending on the context.*" This seems to contradict the assertion that no impact will be experienced from noise pollution.

Prevailing wind conditions, which the applicant states as being predominantly from the south-west, would carry any noise towards the nearest receptors, Hardwick House and Hardwick Barns. These receptors, we assert, experience a very low level of ambient noise located as they are some distance from the A422 and from any other noise emitter.

**We therefore submit that, far from causing “no impact on health or the quality of life”, the noise pollution will most certainly change the lives of the nearest residents in a negative way.**

## **LIGHT POLLUTION**

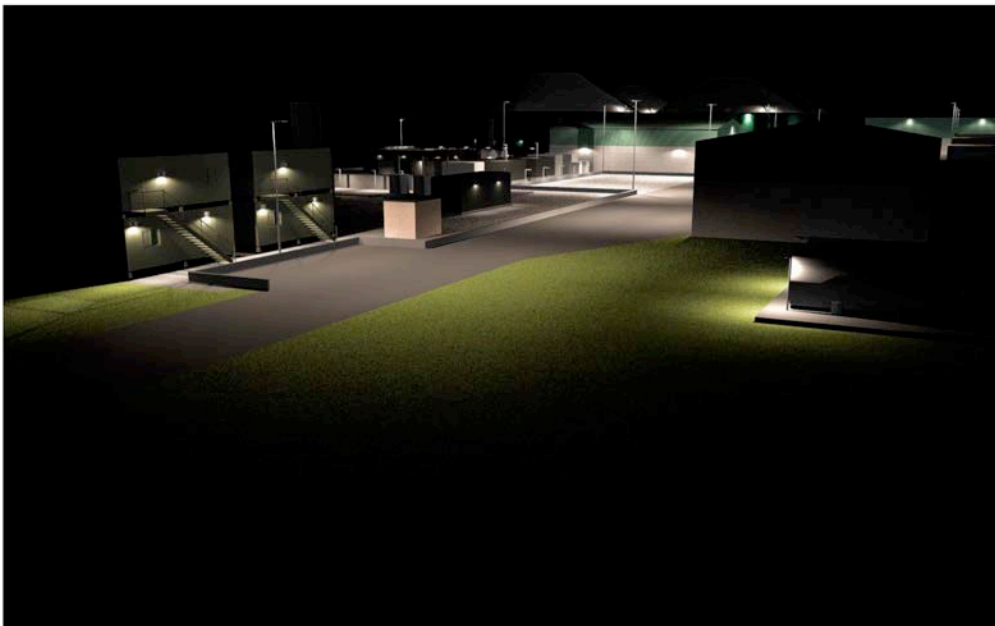
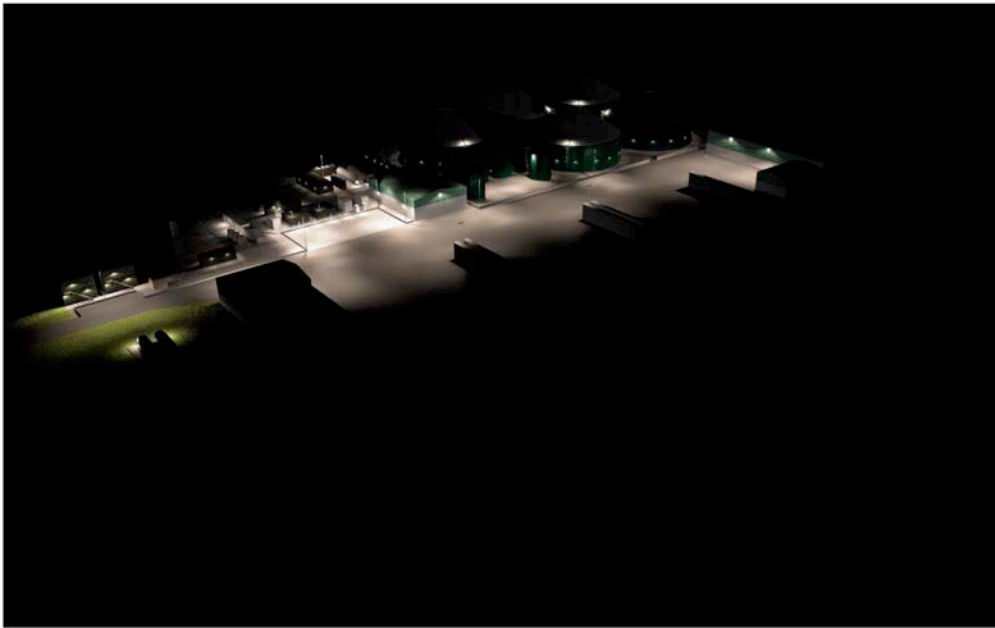
The applicant's lighting assessment concludes that the proposed digester installation *“will be compliant with the residential receptor criteria as set out in the Institute of Lighting Professionals Guidance Note 01/21: The Reduction of Obtrusive Light.”* That is not the same as saying that detrimental impacts are minimised or that the designation of the area (Cotswold AONB) is not compromised.

The applicant has proposed several mitigation measures which, again, we applaud. However, we submit that the vital view of the Vale of the Red Horse from the AONB, some 200m above the site, will most certainly be compromised by the glow from the site. The applicant's own simulated images show what the plant will look like when lit at night. From these images any observer will realise that the glow from the plant will be highly visible from the AONB. The site is in a “dark skies” area where light pollution is at a minimum. A lit facility of the size of the proposed digester and ancillary equipment will intrude into the tranquillity in a most obtrusive manner.

If they were to comply with statutory guidance on safety and protection from arson, which they presumably intend to, then they would need security fencing and night patrols which will mean that they would also need adequate full illumination at night.

No assessment of the night-time view from the AONB has been provided. Drawing SK-01, Residential Receptor Location Plan, does not include any receptors in the AONB, probably one of the most important locations when considering light pollution. In fact, very little consideration seems to have been given to the impact that the lit site will have on night-time views from the AONB.

Below are the applicant's own images of what the site might look like at night. We have to use our own imagination to determine how this would negatively impact the night-time view from the AONB in this “dark-skies” area.



**Our conclusion is that, despite the mitigation measures proposed, it is highly likely that significant light pollution will compromise the dark skies above the Vale and will be plainly visible from the AONB.**



## **Odour Assessment**

### **Review:**

Hardwick Green Power  
Anaerobic Digestion Plant,  
Stratford-on-Avon

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November 2022



Experts in air quality  
management & assessment

## Document Control

<b>Client</b>	Mr and Mrs Liggins	<b>Principal Contact</b>	Richard Brogden (Bruton Knowles)
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<b>Job Number</b>	J10/13936A/10
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<b>Report Prepared By:</b>	Paul Outen
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### Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
J10/13936A/10A/1/F2	30 November 2022	Final	Laurence Caird (Technical Director)

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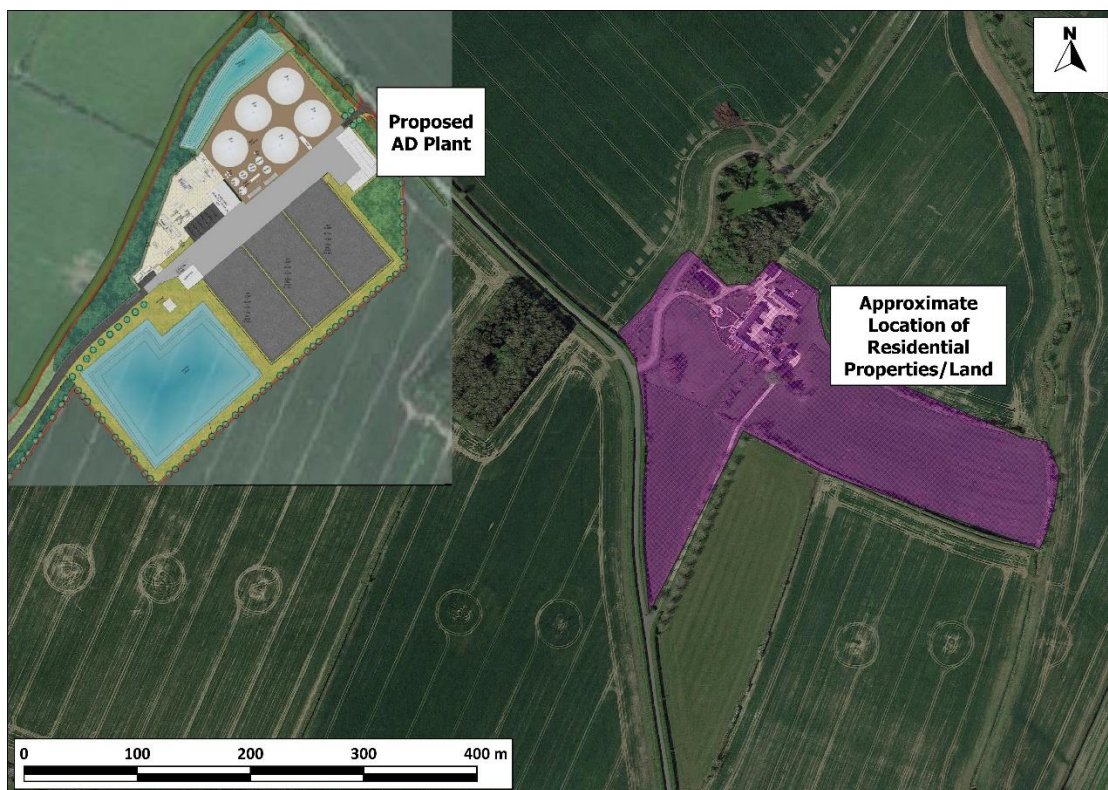


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## 1 Introduction

- 1.1 This note sets out the findings of a review, undertaken by Air Quality Consultants Ltd (AQC), of an odour assessment report produced by SLR (SLR, 2022). The odour assessment was completed to support the planning application (reference: 22/02935/FUL) for a proposed Anaerobic Digestion (AD) plant to be operated by Acorn Bioenergy on land at Tubbs Farm in Warwickshire. The assessment report considered the impacts of odour, dust, road traffic, bioaerosols, ammonia and onsite combustion; however, only the odour assessment will be considered as part of this review.
- 1.2 The residents of Hardwick House (one property and associated land) and Hardwick Barns (comprising five properties and associated land) located approximately 200 m to the east of the proposed AD plant at the nearest boundary have expressed concerns regarding the potential for adverse odour impacts at their property resulting from the operation of the proposed facility. The location of the proposed AD plant in relation to the nearby residential properties is shown in Figure 1. AQC has therefore been commissioned to undertake a detailed review of the methodologies and assumptions employed within the odour assessment (SLR, 2022), and to review them against the approaches set out in relevant published guidance documents in order to determine the robustness of the assessment approach and whether the overall conclusions are valid and can be relied upon.



**Figure 1: Location of Proposed AD Plant and Hardwick House and Hardwick Barns**

Imagery ©2022 Google. Contains section of site plan produced by Acorn Bioenergy (drawing number: TE-1A)



- 1.3 Throughout this review, any issues with the odour assessment that have been identified have been categorised as either a:
- **Major Issue** - in the opinion of the reviewer, any one individual failing would be highly likely to invalidate the reported conclusions;
  - **Moderate Issue** - weaknesses have been identified which, individually, may or may not affect the conclusions; or
  - **Minor Issue** - weaknesses have been identified but the professional experience of the reviewers suggests that each one, in isolation, would be unlikely to affect the conclusions of the assessment. There remains, however, the potential for multiple minor issues to combine to invalidate the reported conclusions. Minor issues have also been identified where the material presented is misleading or otherwise inappropriate to inform consultation.

## 2 Review of Odour Assessment

- 2.1 This section sets out the findings of AQC's review of the odour assessment undertaken by SLR (SLR, 2022). Each subsection below reviews the assumptions and the approaches of the different aspects of the odour study and reviews them against published guidance, policy and the best-practice approaches to odour assessment for proposed installations.

### Choice of Assessment Method

- 2.2 The odour assessment used the desk-based risk assessment approach as set out by the IAQM (IAQM, 2018). Given that the AD plant is proposed, and is in a largely rural setting, AQC is in agreement that this is a suitable approach to the assessment of odours to support a planning application.
- 2.3 However, the IAQM guidance (IAQM, 2018) is clear that odour assessment is a challenging practice and as such it is "*best practice is to use a multi-tool approach where practicable*"; i.e. the guidance recommends that more than one assessment tool is used when undertaking an odour assessment.
- 2.4 As the AD plant is proposed, observational assessment methods would not be applicable to this assessment; however, the assessment should have considered the use of an odour dispersion modelling to assessment to supplement the odour risk assessment methodology used.
- 2.5 As set out later in this document, the odour risk assessment identifies the digestate lagoon as being the most significant odour source. There are a large amount of published emissions data for lagoons handling a wide range of wastes, and thus it is of AQC's professional judgement, which considers the proximity of the lagoon to nearby residential properties, that dispersion modelling of this odour source would add robustness to the assessment and help to corroborate the findings of the single, qualitative approach which has been adopted. This should not be considered a justification to limit

odour modelling to the digestate lagoons though, as odour emissions data for other odour sources such as feedstock storage are available and should be included in the assessment. This is judged to be a **MODERATE** issue.

## Receptors

- 2.6 The assessment predicted the potential odour effects at six discrete receptor locations. AQC has reviewed maps and aerial imagery of the surrounding area and is in agreement that all worst-case (i.e., nearest) sensitive properties have been included in the odour assessment.
- 2.7 All of the receptors have been classed as being of high sensitivity to odours; this is in accordance with the IAQM guidance and thus AQC agrees with this judgement.

## Meteorological Data

- 2.8 The assessment used one year (2019) of meteorological data from the Church Lawford station, which AQC considers the most suitable and representative data available. However, only one year of data has been used when determining the pathway effectiveness for odours between the source and receptors. Due to the temporal variation in winds across multiple years, it is recommended that multiple years of data be used. It is recognised that the IAQM guidance does not stipulate the use of multiple years data for odour risk assessments, but it is clear in recommending the use of five years of data (as a minimum) for odour modelling. The use of a single year of meteorological data for the odour risk assessment is judged to be a **MINOR** issue.

## Source Odour Potential

- 2.9 The odour assessment sets out the various processes which will take place at the AD plant and assigns a source odour potential to each stage of the works. However, it is the overall source odour potential that is used in the assessment of odour effects at each receptor, and thus this review has focussed on the overall judgement, only.
- 2.10 The odour assessment classifies the proposed AD plant as being medium in terms of its source odour potential. The IAQM guidance (IAQM, 2018) states that a facility with a medium classification would typically involve:

*“Magnitude – smaller Permitted processes or small Sewage Treatment Works (STWs); materials usage thousands of tonnes/m<sup>3</sup> per year; area sources of hundreds of m<sup>2</sup>.*

*The compounds involved are moderately odorous.*

*Unpleasantness – processes classed in H4 as “Moderately offensive”; or (where known) odours having neutral (0) to unpleasant (-2) hedonic score.*

*Mitigation/control – some mitigation measures in place, but significant residual odour remains.”*

2.11 The assessment considers the types of feedstocks to be received and odorous nature of the feedstocks but makes no consideration to the tonnages of feedstock handled or area of storage clamps proposed in determining the overall source odour potential. The assessment would benefit from further analysis of feedstock volumes and storage areas in justifying the source odour potential. This is judged to be a **MINOR** issue.

### Pathway Effectiveness

2.12 The IAQM guidance (IAQM, 2018) is clear that the “*Air Quality Practitioner should document in the assessment report the justification for their assignment to the selected categories for...the Pathway Effectiveness*”. However, no detailed justification is provided in the report for each receptor; only a statement on the criteria used to determine the effectiveness.

2.13 When focussing on Receptor R1, which is the property with which this review is concerned, the following data are provided (SLR, 2022):

**Table 6-2**  
**Determination of Pathway Effectiveness**

Receptor		Direction from Proposed Development Boundary	Distance from Proposed Development Boundary (m)	Pathway Effectiveness
R1	Residential (Farm)	E	290	Moderately Effective
R2	Residential (Farm)	S	415	Ineffective
R3	Residential (Farm)	SSE	400	Ineffective
R4	Residential	SSE	700	Ineffective
R5	Residential (Farm)	SSW	540	Ineffective
R6	Residential (Farm)	NNW	1000	Ineffective

2.14 The report states that the frequency of winds between the source and receptor has been assessed; however, the workings and explanation of this are not clear. The guidance states that a key factor in assessing the risk of odour impacts is “*the frequency (%) of winds from the source to receptor*” and thus it is of AQC’s professional opinion that an assessment looking at exact wind frequencies over a five-year period would be more robust. However, it is recognised that the guidance accepts this can also be done “*qualitatively, [by looking at] the direction of receptors from source with respect to prevailing wind*”.

2.15 In addition, the distance of 290 m appears to have been measured to the façade of the property; the recreational outdoor space associated with the property should also be afforded a high sensitivity to odours, and thus the distance from source to receptor is closer to 200 m. This is judged to be a **MINOR** issue.

## Assessment of Overall Significance of Odour Effects

2.16 The assessment determined that the effect at R1 (the location with which this review is concerned) is slight adverse, and thus 'not significant'. The IAQM guidance states that "*where the overall effect is greater than "slight adverse", the effect is likely to be considered significant*". Thus, based solely on the results of the risk assessment undertaken by SLR, AQC is in agreement with this overall assessment of significance.

2.17 However, the guidance states that:

*"The conclusion on the overall significance of likely odour effects will usually involve the practitioner drawing together the findings of several odour assessment tools, each of which have their own inherent strength and weakness and uncertainties. This "weight-of-evidence" approach differs from conventional air quality assessments, where the conclusion is usually based on the results of one (or a couple at most) assessment tool to which considerable precision and accuracy (i.e., certainty) is ascribed. When coming to a conclusion on odour impact, the practitioner also needs to give the right amount of weight to the results provided by each tool according to how well-suited it is to the study scenario in question."*

2.18 It is therefore recommended that odour modelling also be undertaken for the major odour sources at the AD plant (namely, the digestate lagoon; however, other continuous sources should be included where appropriate) to increase the robustness of the assessment to support the planning application. The results of the modelling, along with the results of the risk assessment which has already been completed, should then be used to determine an overall significance of odour effects in accordance with the recommendations of the IAQM (IAQM, 2018).

## 3 Summary and Recommendations

3.1 The odour assessment report produced by SLR (SLR, 2022) to support a planning application for a proposed AD plant (reference: 22/02935/FUL) located approximately 200 m west of the residential properties at Hardwick House and Hardwick Barns, Kineton, has been reviewed by AQC.

3.2 The review has identified the following issues:

- Moderate Issue (a weaknesses which, individually, may or may not affect the conclusions):
  - whilst the desk-based, qualitative odour risk assessment has been produced in accordance with the guidance set out by the IAQM, and is considered generally robust, it is recommended that dispersion modelling be undertaken to support the assessment.
- Minor Issues (it is judged that the following issues, in combination, will not result in significant changes to the conclusions of the assessment):

- a failure to use more than one year of meteorological data when assessing the pathway effectiveness;
- further analysis of feedstock volumes and storage areas in determining the appropriate source odour potential; and
- incorrect distance used for the pathway effectiveness assessment between the AD plant and Receptor R1.

3.3 Based upon the review of the odour risk assessment, it is concluded that whilst it is generally robust, the choice of assessment method is basic and not sufficient on its own to draw a confident conclusion on the potential for odour impacts at the nearby farm. Whilst AQC does not find any considerable failings in the odour assessment and its conclusions, it is strongly recommended that the IAQM's guidance for a multi-tool odour assessment approach should be used to add robustness and reduce the uncertainty involved in the single assessment technique used.

3.4 It is acknowledged that the AD plant will operate in accordance with an Environmental Permit (EP) issued by the Environment Agency and will be subject to operating restrictions and conditions in accordance with the permit, which include control of odours. It is understood that odour abatement will be fitted to the reception building, the plant will operate in accordance with an Odour Management Plan (OMP), and daily boundary monitoring will be undertaken by site staff. AQC has extensive experience in the review and assessment of odours from AD plants across the UK, and based upon this experience, it is judged unlikely that odours will be detectable at the properties on Tysoe Road at frequencies, durations, and intensities to result in annoyance, assuming that the facility is operated efficiently and in accordance with the EP and OMP. Nevertheless, to ensure that the most odorous sources will be adequately controlled and for the reasons set out above, further odour assessment in the form of dispersion modelling should be required to support the planning application.

## 4 References

IAQM (2018) *Guidance on the assessment of odours for planning v1.1.*

SLR (2022) *Hardwick Green Power Proposed Anaerobic Digestion Facility.*

## A1 Professional Experience

### **Laurence Caird, MEarthSci CSci MEnvSc MIAQM**

Mr Caird is a Technical Director with AQC, with 17 years' experience in the field of air quality including the detailed assessment of emissions from road traffic, airports, heating and energy plant, and a wide range of industrial sources including the thermal treatment of waste. He has experience in ambient air quality monitoring for numerous pollutants using a wide range of techniques and is also competent in the monitoring and assessment of nuisance odours and dust. Mr Caird has worked with a variety of clients to provide expert air quality services and advice, including local authorities, planners, developers and process operators. He is a Member of the Institute of Air Quality Management and is a Chartered Scientist.

### **Paul Outen, BSc (Hons) MEnvSc MIAQM**

Mr Outen is a Principal Consultant with AQC, with 13 years' experience in the assessment of air quality and odours. He undertakes air quality and odour assessments covering residential and commercial developments, industrial installations, road schemes, energy centers and mineral and waste facilities. These involve qualitative assessments, and quantitative modelling assessments using the ADMS dispersion models, for both planning and permitting purposes. He has also presented evidence at public hearings. Mr Outen has a particular interest in odour assessment, and has extensive experience in the assessment of odours across a wide range of industries throughout the UK, Europe and Asia. He also has experience in pollutant monitoring techniques. He regularly undertakes site audits for various installations to advise on pollution control and mitigation strategies. He is a Member of both the Institution of Environmental Sciences and Institute of Air Quality Management.

## APPENDIX 01 - PLANNING PRECEDENTS

Tysoe Parish Council believe that there are several planning decisions, made by Stratford on Avon District Council and other Planning Authorities that provide precedents for our objection to this application.

### 1. Application for digester refused by Stratford upon Avon District Council in 2017

Planning application 16/01490/FUL, for a significantly smaller digester (in Alderminster) than is being proposed in application 22/02935/FUL, was rejected on the following grounds:

*The proposed development, by virtue of its size, height, bulk, mass and intensity, would be visible within the landscape including from within the Feldon Parkland Special Landscape Area (SLA) and further afield in views to the SLA. There would be an apparent impact on the landscape character of the site and consequently on this part of the SLA.*

*The proposal is not considered to maintain or enhance landscape quality and it would not safeguard, manage or promote the special attributes and key qualities of the SLA designation acceptably (as described in the Stratford on Avon District Special Landscape Areas Study 2012). Therefore, the proposal is harmful to the distinctive character and appearance of the SLA.*

*Whilst measures have been proposed to protect landscape quality (including landscaping around the site), and it is also considered that the proposal would secure several benefits which are in the wider public interest, these factors are not considered sufficient, individually, or cumulatively, to outweigh the identified harm. As such, it has not been demonstrated that the impacts are, or can be made, acceptable.*

*The proposal is therefore contrary to Policies CS.3, CS.5, CS.9, CS.12 and AS.10 of the Stratford on Avon District Core Strategy 2011-31 and paragraphs 17(5), 98 and 109 of the NPPF.*

We believe that there are strong parallels with application 22/02935/FUL

See refusal letter at:

<https://apps.stratford.gov.uk/eplanning/AppDetail.aspx?appkey=O6PG8HPMKSU00>

### 2. Application for a 12,000-bird free-range egg production unit in Lower Tysoe

Planning application 03/02381/FUL for an egg production unit in Lower Tysoe, north of the settlement and south of the A422 was rejected at appeal for the following reasons:



*The proposals relate to the erection of a large building in an area of undeveloped and flat landscape characterised by few buildings or structures of any sort. Because of this undeveloped character which gives the area a sense of rural remoteness the building would be a dominant and discordant feature. The building would be seen as an uncharacteristic feature in the landscape when viewed from the public footpath known as Centenary Way located on the top of Edge Hill within the Cotswold Area of Outstanding Natural Beauty. The proposal would therefore be harmful to people's enjoyment of the AONB in the area of Edge Hill.*

The site of this application is approximately 1,200m from the proposed digester site of application 22/02935/FUL. We believe that this decision demonstrates that the views from the AONB are valued and any potential damage that would arise from an application should be weighed against any benefit accruing from the application.

See appeal decision at:

<https://apps.stratford.gov.uk/EDMSDeepZoom/DeepZoom/PDF/39f2ba46-6428-c2d8-fd5e-08d025f32348.pdf>

### **3. Proposal to build an anaerobic digester in Tollerton, Yorkshire**

Appeal dismissed (APP/P2745/W/19/3225559) on following grounds:

*...the main issues in this case are the effect of the proposal on: the character and appearance of the local landscape; the living conditions of occupants of residential and commercial properties in the local area...*

*...with particular reference to odour as well as dust and dirt on the highway; the safety and convenience of highway users.*

### **4. Proposal to build an anaerobic digester in Metherringham Heath, Lincolnshire**

Appeal dismissed (APP/R2520/W/20/3250750) on following grounds:

*...The existing plant is already a noticeable development in an otherwise rural landscape, being a large industrial plant with a series of silos and structures set in undulating fields interspersed with hedgerows and trees and occasional agricultural buildings...*

*As such I consider the increase in height of the silage clamps, being such large features to the front of the site, would result in an incongruous feature that would adversely affect the landscape and as a consequence would be contrary to the provisions of Policies LP17, LP19, and LP26 (part (c)) and LP55 (part E) of the Central Lincolnshire Local Plan (2017) which amongst other things aim to ensure the local landscape character is protected from unsuitable development and of a scale commensurate with that use in a rural location.*

### **5. Proposal to build an anaerobic digester in Pickwell, Melton Mowbray, Leicestershire**

Appeal dismissed (APP/M2460/W/19/3241616) of following grounds:

*...Focusing on the immediate locality, the proposal would introduce a substantial combination of intrusive elements into the countryside and, by their very nature and scale, extend the already strong influence of built development which is present along a relatively short stretch of Stygate Lane. In my opinion, even with the benefit of the proposed landscaping, and association with existing buildings and their established vegetation, the proposed development would be very damaging to the rural landscape...*

*...Drawing together my findings on this issue, I am satisfied that the effects of artificial lighting could be kept to a minimum through a well-designed scheme secured by condition. Nonetheless, I have reached the conclusion that the proposal would have an adverse landscape impact in that it would not contribute positively to the character and quality of the area...*

*...However, from the information before me, I consider that, in overall terms, having regard to the transportation of both raw materials and end products as set out above, and taking account of the overall increase in traffic movements, the links with the land associated with Leesthorpe Farm are not sufficiently close to be in accordance with relevant policies in the development plan...*

#### **6. Proposal to erect 4 wind turbines on land between Bishops Itchington, Gaydon and Knightcote**

Planning application 12/00330/FUL was refused by SDC and was appealed by the applicant with the appeal eventually considered by the Secretary of State who rejected the appeal on grounds including, *inter alia*, the following:

*...[the Inspector] finds that the proposed turbines would appear dominant and overbearing...*

*...With respect to the public visual impacts of the proposed turbines identified in IR10.46 the Secretary of State agrees with the Inspector's conclusion that these would be very significant and adverse.*

*...The Secretary of State agrees with the Inspector's conclusion at IR10.49 that the impact of the proposed turbines would materially and unacceptably reduce the amenity value of the Country Park and the public's enjoyment and use of it.*

Although some of these comments are site and application specific, they demonstrate that the harm done to the amenity and landscape value of the surrounding countryside, especially when protected as in a Country Park (or an AONB) is to be taken into consideration and weighed against any benefit that might accrue from the proposal.

See appeal and other decisions at:

<https://apps.stratford.gov.uk/eplanning/AppDetail.aspx?appkey=LZ2TD1PM03Y00>

## APPENDIX 02 - CONSULTATION PROCESS

For such a large and sensitive application, the consultation with local Parish Councils, residents and Planning Authority Ward Members has been extremely poor.

No attempt was made by the applicant, ahead of submitting their Screening application or their full Planning application, to engage with the Parish Councils representing residents who would clearly be affected.

The first that any resident knew of the proposal was a letter, sent to a seemingly random selection of addresses, announcing an open meeting in Oxhill Village Hall to be held on 23rd August 2022. This meeting was attended by several representatives of Acorn Bioenergy Ltd. Residents who attended described the Acorn presentation and response to questions as “evasive”, “contradictory”, “dissembling”, “badly informed” and generally of very little value.

The next public consultation was on 27th September when Acorn attended a meeting of Kineton Parish Council. On this occasion two Acorn representatives were present and, following a short presentation, they answered questions for approximately 45 minutes. Their responses were again criticised by residents attending the meeting as being poorly informed (not even getting the name of “Kineton” correct and not recognising the SDC Ward Member), evasive and contradictory.

Acorn’s final consultation engagement took place when they were invited (having thus far avoided any contact with the parish council in whose parish the application was made) to a meeting of Tysoe Parish Council. This took place on 10th October. Again, two Acorn representatives attended and their responses to questions followed the, by then, established pattern of being ill-informed, contradictory, and evasive. We discovered at that meeting that Acorn had submitted their application several days before the meeting. This made the meeting less of a consultation and more of a formality of attendance as clearly no comments by residents or the Parish Council would affect the application.

The three public meetings detailed above are the extent of Acorn’s engagement with the public and with the Parish Councils representing residents in the surrounding villages.

No meaningful engagement has taken place with SDC Ward Members or with the institutions (e.g. Cotswold AONB, CPRE etc.) representing the landscape, environment and ecology that this proposal will so significantly affect.

We understand that the applicant met with the Leader of SDC, Cllr Tony Jefferson, prior to the determination of their Screening Application. Unfortunately, a request by the SDC Ward Member for Cllr Jefferson to meet with Tysoe Parish Council was refused.

The arrogance demonstrated by Acorn's insulation from those so badly affected by this application is extremely disappointing and has certainly influenced the huge response by residents evidenced by the number of objections submitted.

## APPENDIX 03 - REFERENCE REPORTS AND DOCUMENTS

Following are some useful references that have been used in compiling the evidence to support the assertions made in the body of this objection submission.

### PLANNING

Stratford on Avon District Council Core Strategy:

<https://www.stratford.gov.uk/templates/server/document-relay.cfm?doc=173518&name=SDC%20CORE%20STRATEGY%202011%202031%20July%202016.pdf>

Government National Planning Policy Framework (NPPF):

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