CARE Suffolk

Community Alliance for a Rural Environment

www.caresuffolk.org

Dear Ms Curtis,

Ref: DC/22/00683 & DC/22/01243 – Full Planning Application – Cross-Boundary Application for Installation of a solar array, battery energy storage system and associated infrastructure and construction of vehicular accesses and roadways.

I am writing to you on behalf of CARE Suffolk regarding the planning application by Greybarn Solar Ltd (on behalf of Statkraft) for a solar farm, battery storage and associated infrastructure spanning the Suffolk countryside villages of Flowton, Burstall, and Bramford.

CARE Suffolk aims to enhance the local countryside environment and lifestyle, so that we can all enjoy the physical and mental health benefits that come from the openness and tranquillity of the valuable natural landscape in the area.

We **STRONGLY OBJECT** to the proposed development, and do not consider that its impacts can be made acceptable.

CARE Suffolk acknowledges that the transition to renewable energy is important in the UK's goals to reduce its carbon footprint in order to tackle the climate emergency. However we also recognise that carbon reduction is not just about energy production, nor is it the only way to tackle climate change. There is huge pressure on land use and a clashing of policy. We believe that a balanced approach must be sought to ensure the local community gains outweigh the losses. In this case they do not.

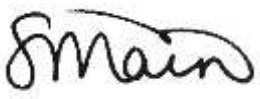
Whilst we appreciate that many of the assessments are more detailed and thorough than other recent applications, there are also significant omissions and oversights.

There are a lot of big claims, and little to zero evidence provided to support them.

CARE Suffolk has been working with several concerned members of the public in the area to review the application. With the impressive community effort involved from a wide range of professional and expert backgrounds, we have discussed our findings and concerns in the accompanying reports.

CARE Suffolk hereby asks the Mid Suffolk and Babergh District Planning Authorities to **REFUSE** the application, and ask that we be informed of the Planning Committee Meeting date so that we may attend.

Yours Sincerely,



Samantha Main

Director

CARE Suffolk

Report for Full Planning Application

DC/22/00683 & DC/22/01243

Contents

Overview

Site Selection Process: Statkraft propose to build a solar farm with associated infrastructure on a large area of Best and Most Versatile farmland with ancient woodland incorporated. This is situated within an undulating plateau, and valley landscape. This chapter examines whether environmental constraints of a site or the choice of connection to the grid comes first, whether Statkraft have followed policy and guidance, or whether they have simply chosen land adjacent to the Bramford Substation.

Landscape & Visual Impact: The Suffolk Landscape Character Assessment describes the site as predominantly Ancient Plateau Claylands, with a small area of Rolling Valley Farmlands. Both landscape appraisals describe these as open undulating arable countryside, interspersed with ancient woodland. Landscape character and visual amenity are discussed, noting concerns with when the visual images of the proposed site and site visits were undertaken. In addition, the industrialisation of the landscape is considered. The visual impact of this proposal will be seen across various parishes and the proposed hedge screening would be ineffective in a valley landscape, causing a degradation of visual amenity throughout the area. Cumulative impact is also considered, and one missing development.

Land Use & Soil: This proposal includes the use of BMV land which is graded between 2 and 3a. Contrary to local and national policy. Where solar farms should be situated is considered, along with the efficiency of solar PV panels. Tourism, and the conversion of arable land to grassland under solar panels is discussed. Nothing in the application supports the claim that the BMV land would not be harmed irreversibly, in fact it demonstrates that there would be a loss in this finite national resource.

Heritage: Harm to listed buildings, including to assets of the highest significance, are included in this chapter along with the importance of the settings of such buildings. National and local policy is considered, along with a holistic approach when considering buildings of historic importance. There is an underestimation for the potential that the development has to cause harm to the buildings and historical landscape surrounding the site and the development would neither protect nor enhance this valued landscape.

Flood & Water Management: This chapter examines serious omissions and issues associated with the Flood Risk Assessment. Flood risk and research are examined, beginning with soil compaction and the destruction of system drainage systems currently present. Along with the reduction in vegetation. Concerns that the applicant has not fully taken into account the risk of flooding caused by the construction of Greybarn Solar Farm are discussed.

Biodiversity: This chapter examines the unsubstantiated claims that this development will have positive impacts through the planting of hedges, a community orchard, wildflower and grass seeding and the introduction of suDs attenuation ponds. It examines the claims that there will be ecological and biodiversity improvements and underestimated baseline upon which the “improvements” are claimed.

Transport & PRoWs: Here, it is considered that there is insufficient information and a plethora of contradictory statements. There are concerns that there still seems to be an intent to use Tye Lane, despite its impracticalities. The issues of contradictory and insufficient information are discussed, construction safety, whether they will be closing PRoW or diverting them, what cameras will be recording, and the impact of glint and glare.

Noise: Information is insufficient, incorrect, or unclear. The site choice is very quiet and tranquil, and the addition of noisy and uncharacteristic 24/7 noise in this soundscape would have a detrimental impact for residents, users of the PRoWs, and wildlife. Certainly the cumulative impact of all the proposals, if granted, are not taken into account.

Climate Change: Evidence is examined as to the effect of this solar farm on the environment. This chapter examines various factors and whether this project manages to make a net zero contribution to anything at all. This leads to the discussion of the rationale of this project, and whether, at national and local level, it has any benefit.

Waste: This chapter examines the lack of clarity with regard to waste, although it is pleasing to see that an effort has been made in categorizing waste.

Decommissioning: There are significant concerns that this proposal only discusses a partial decommissioning and, indeed, could never really be fully decommissioned due to the obvious shortcomings in "restoring" land to its previous condition.

Major Accidents & Disasters: There are concerns that this huge subject receives but two very short paragraphs in this application. Issues of public safety and glint and glare are examined in detail, particularly with respect to local dwellings and businesses like Little Sage Hill. Concerns over the lack of safety of the battery storage system is examined, along with issues of fire suppression and thermal runaway.

Population & Human Health: The loss of tranquil open spaces is lamented for the sake of physical, mental, and social wellbeing of local communities, particularly if all renewable energy planning proposals are accepted. Many residents were well aware of the health benefits of being in nature long before the pandemic made it obvious.

Site Selection Process

Introduction

Statkraft proposes to build a ground-mounted solar farm and associated infrastructure on a large area of rural countryside in the parish of Bramford in Mid Suffolk. This site and design chosen is:

- currently in arable agricultural use, with all cultivated areas graded as 100% BMV land;
- sited within an undulating plateau and a valley landscape character areas, and partially in a Special Landscape Area;
- adjacent to Millers Wood (CWS Ancient Woodland), as well as woodland areas Gobert's Grove and Bushey Grove, and with the cable route passing adjacent to Fore Grove; and
- neighbours two Grade 2 listed farmhouses, as well as other residential properties.

The applicant discusses their site selection and alternatives process in ES Chapter 3 – Design Evolution and Consideration of Alternatives, and Technical Appendix 3.1 – Consideration of Alternatives.

Which Comes First – Site or Connection?

Within the application documents the applicant demonstrates that their primary site selection criteria was a close grid connection.

In the Planning Statement at paragraph 2.3.3 it states:

"The proximity to available grid connection point is a primary driver for locating commercial solar projects and the site sits within one such search area. The proximity to grid enables efficient connection and minimises environmental impact, whilst also providing an economic / viability advantage, enabling the delivery of this renewable energy infrastructure."

And at paragraph 3.4.15:

"The strategic location of the site relative to available grid connection is also material to the site selection process. A review of other alternative land within 3 km of the Bramford Substation has not identified any alternative sites that do not have sensitivities or constraints to development."

In ES Chapter 3, paragraph 3.3.1 states:

"Access to an available grid connection in close proximity is essential…. typically a 2 km area of search from an identified point of connection is applied in early stage development."

Although in Technical Appendix 2.1 at paragraph 3.3 it states 3km.

In Technical Appendix 2.1 chapter 3 it states:

"the study follows a four-stage assessment to consider alternative sites. The four stages are:

1. *To identify an available Point of Connection;*
2. *To define an Area of Search around that Point of Connection;*
3. *To consider whether there is land within the identified Area of Search, previously developed or of lower agricultural quality, which could potentially accommodate an alternative site for the proposed development; and*
4. *Where such land is identified, to undertake a comparison with the Application Site already identified and for technical or environmental reasons which would indicate whether the alternative site is suitable as an alternative for the proposed development itself to meet national and local planning policy requirements and other critical development criteria."*

Further at 3.1 it states:

"The grounds to progress a site are established using the criteria below:

1. *Sufficient solar irradiance received;*
2. *Feasible connection to the electricity grid;*
3. *Agreement can be reached with local landowners; and*
4. *A case to support planning consent can be justified which takes into account policy compliance and minimising environmental impacts."*

Policy Guidance

Emerging Joint Local Plan

Policy LP27 states *"1, Renewable, decentralised and community energy generating proposals will be supported subject to: (inter alia) Approval of connection rights, and capacity in the UK power network, to be demonstrated as part of the planning application."*

Solar Trade Association

The Solar Trade Association (STA), of which Statkraft are a member, provides 10 commitments for best practice design with respect to landscape and land use…

The STA 10 Commitments[1] are as follows:

1. We will focus on non-agricultural land or land which is of lower agricultural quality.
2. We will be sensitive to nationally and locally protected landscapes and nature conservation areas, and we welcome opportunities to enhance the ecological value of the land.
3. We will minimise visual impact where possible and maintain appropriate screening throughout the lifetime of the project managed through a Land Management and/or Ecology plan.
4. We will engage with the community in advance of submitting a planning application.
5. We will encourage land diversification by proposing continued agricultural use or incorporating biodiversity measures within our projects.
6. We will do as much buying and employing locally as possible.
7. We will act considerately during construction, and demonstrate 'solar stewardship' of the land for the lifetime of the project.
8. We will seek the support of the local community and listen to their views and suggestions.
9. We commit to using the solar farm as an educational opportunity, where appropriate.
10. At the end of the project life we will return the land to its former use.

It would seem from the STA 10 Commitments that the primary requirements for choosing a suitable site are based on environmental conditions and constraints matching the commitments. There is no mention of a suitable grid connection being a primary consideration.

Planning Practice Guidance

The PPG[2] further supports the selection criteria to be based on the environmental considerations and constraints of the site, such as choosing non-agricultural land or lower grade land, avoiding landscape designations and undulating landscapes, and protection of heritage assets.

It makes no reference to a nearby grid connection being particular to the planning considerations when choosing a suitable site.

[1] https://solarenergyuk.org/resource/solar-farms-10-committments/
[2] Paragraph: 013 Reference ID: 5-013-20150327

Case Law

It was noted in the High Court Case of Pearce v Secretary of State[3] that choosing a grid connection point was a subsequent decision in the development process, and finding a suitable site was put first and foremost:

"Chapter 4 of the ES addressed NVL's site selection process. This was summarised in paragraphs 4.4.5 to 4.4.8 of the ExAR. The offshore location was limited to areas within the East Anglia Zone which formed part of the Crown Estate's Round 3 Offshore Wind Farm development process. The developer adopted a strategic approach to Vanguard and Boreas, which included site selection based on the co-location of both projects. An iterative process resulted in the identification of the most suitable locations, having regard to technical constraints and environmental impacts. Following the identification of the offshore areas for Vanguard and Boreas, site selection addressed offshore cable corridor routes and a landfall with the aim of avoiding "high level designations". Three potential landfall sites were identified, from which the one at Happisburgh was selected. Then, National Grid Electricity Transmission plc and NVL worked on the identification of a National Grid connection point. This led to a grid connection offer being made by National Grid plc which NVL accepted in November 2016."

However, even more notable is within the decision by the Planning Inspectorate and Secretary of State during a joint appeal for Sawston Solar Farm Limited, Cambridgeshire. Appeals APP/W0530/W/15/3012014 and APP/W0530/W/15/3013863 were for ground-mounted solar farms, similar to this application, for a 28MW and 14MW site respectively.

At paragraph 48 of the Planning Inspector's report *"The benefits of a connection to the grid are noted but this is one of many development constraints that a developer has to take into account and should not be afforded weight."*

At paragraph 49 of the Planning Inspector's report *"No weight should be attached to [inter alia] the availability of a grid connection."*

At paragraph 76 of the Planning Inspector's report *"A connection to the national grid is an essential site requirement and the availability of a connection in a part of the network with capacity to accept the output is of assistance to the appellant but it does not bring a public benefit and adds no weight to the planning case for the proposals."*

And at paragraph 19 of the Decision Notice by the Secretary of State *"The Secretary of State agrees with the Inspector that no weight attaches to the assertion that a connection to the national grid is an essential site requirement."*

Back to Front

Based on policy guidance and available information, it would seem that the site selection process would be first decided based upon environmental considerations such as land use, landscape, heritage, and ecology. There is no mention in policy guidance that choosing a nearby grid connection is a primary consideration for site selection, nor does this aspect of the site choice carry any weight in the planning decision.

However, Statkraft seem not to have followed this guidance. They have found an area of good solar radiation, secured a grid connection, and only then attempted to look for a suitable site that meets the environmental considerations that planning guidance suggests to be the primary factors. By putting technical considerations before environmental considerations they have worked the site selection process in reverse, which has led to a site choice that falls short of its requirement to consider primary environmental constraints first.

Alternatives

As part of the EIA Regulations, developers are required at a minimum to discuss the reasonable alternatives to the final proposed development.

The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Chapter 18 states:

[3] [2021] EWHC 326 https://www.bailii.org/cgi-bin/format.cgi?doc=/ew/cases/EWHC/Admin/2021/326.html&query=(vanguard)

"(3) An environmental statement is a statement which includes at least—

(d)a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;"

Further, Schedule 4 of the same regulations states at p.2:

"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

A minimum requirement of the ES is to include a description of the alternatives explored by the applicant.

The applicant does provide a table of alternative sites studied, though some of the conclusions for rejecting the alternative sites conflict with the characteristics of the site chosen for the application:

- Site 1, 2, 3 concludes that they lie in close proximity to several designations which would require further reduction in overall developable land. Yet the chosen site lies adjacent to several designations such as Tye Farm and Bullenhall (both Grade 2 listed buildings) and within the Special Landscape Area.
- Site 3 states *"Site sits adjacent to proposed Bramford Solar Farm which would result in cumulative effects."* Yet the chosen site also sits adjacent to the development, in addition to the EDF Renewables solar application.
- Site Bramford Solar Farm *"Location between the villages of Flowton and Somersham increases the risks of impacts on the amenity of local residents and on the character of the local area."* Yet the chosen site joins Bramford Tye and Flowton, with the same effects on amenity and character.
- Site 9 states *"Presence of an existing overhead powerline… running through the site provide challenging constraints for this site."* Yet 11kV and 400kV overhead lines are a feature of the chosen site.

Conclusion

Based on the site selection and design process submitted by the applicant it can only be deduced that the applicant has not followed best practice guidance in choosing a suitable site. They have considered a nearby grid connection, where policy guidance makes no mention of this, as a primary consideration.

A close grid connection is a technical and economic factor for the applicant, but it provides no public benefit and, as established by the Secretary of State above, it carries no weight in determining the application. Where policy guidance does give particular constraints to be considered, these have been considered secondary by the applicant.

It should be noted that whilst policy LP27 of the emerging Joint Local Plan does require the applicant to demonstrate they have a connection, it does not indicate that this factor overrides the need to consider environmental concerns first, nor does it state is must be a **nearby** connection.

It is also apparent from recent news that solar farm developments really don't need to be 'near' the grid connection point. A solar PV & battery development in Australia, AA PowerLink, is set to connect 5,000km away in Singapore[4]. And the Xlinks project connects into Devon, UK, but the solar panels are located 3,800km away in Morocco![5]

Furthermore, it appears that several of the constraints under which the applicant has rejected alternative sites as unsuitable, are some of the same features of the chosen site.

We do not suggest that the application be refused on this particular failure to follow best practice guidance. We feel the significant adverse effects of the development discussed in other chapters are sufficient for the LPA to refuse the

[4] https://www.pv-magazine.com/2022/04/27/suncable-reveals-full-extent-of-its-giant-solar-plus-storage-project-in-australia/
[5] https://xlinks.co/morocco-uk-power-project/

application, so are not discussed further here. However, we do consider that the flawed site selection process has led to the significant adverse effects that are created as a result of the development proposed.

Landscape & Visual Impact

Proposal

1. The application is for a solar farm, battery storage and associated infrastructure on 148 acres crossing the District boundaries of Mid Suffolk and Babergh councils, and the Parish boundaries of Flowton, Burstall, and Bramford for a duration of 35 years.
2. The proposal would consist of 61,440 bi-facial fixed solar panels mounted onto a metal framework secured by posts[6], some pile driven into the ground and some secured by cement footings. These panels would be positioned in orderly rows about 3.5-6.25m apart depending on the ground conditions, with the minimum height of the panels being 0.8-1.35m from the ground, and the upper edge being up to 3m from the ground.[7]
3. The site is split into two sections – the larger parcel to the east, and a smaller parcel to the west. The eastern parcel contains fields 1 – 6, and the western parcel contains field 7.
4. We also understand there will be multiple field substations dotted around the site, however we could find no information to say how many. Figure 2.2 shows these would look like 20ft shipping containers measuring around 6m long, 2.4m wide, and 3.4m high including the concrete foundations.
5. There would be a further 50 large 40ft metal shipping containers uniformly arranged comprising batteries and transformers for a battery storage system, 52 power control systems (PCS), and 3 auxiliary transformers. Figure 2.6 shows the containers measuring about 12.2m long by 2.4m wide and a maximum height of up to 3.4m. The PCS units measuring around 3.2m wide, 2.9m high, and 1.0m wide. There are no measurements provided for the transformers or auxiliary transformers. The equipment will be constructed on top of concrete pads.[8]
6. There would be a high voltage (HV) area to connect the proposed site to grid and contains multiple elements which are apparently shown in Figure 1.3, but this document appears to be missing from the documents package. Assuming figures 2.7A and 2.7B are of the same area, this shows a compound measuring around 49.6m long x 19m wide, with the majority of heights being between around 6.75m-7.5m. I presume this area would be enclosed by high security welded mesh fencing as per UKPN requirements for HV infrastructure, but this information is not included and no figures for such fencing have been included.
7. Stretches of gravel track would be constructed permanently on the site and the operational vehicle access proposed is off Tye Lane.
8. Cabling between the panels and between the two parcels and from the proposal into the Bramford substation would be buried in trenches. The applicant states that a metal security fence of 2.0m high would be erected around the perimeter of the solar panels together with CCTV cameras every 5m on posts up to 4m high.[9] [Every 5m seems excessive and I wonder if this is a typo and should perhaps say 50m – this should be confirmed].
9. After construction the site would be sown with a grassland mix under the solar arrays. Some of the areas outside the solar panels would be sown with a grassland and/or wildflower mix.[10] Some hedging and trees alongside PRoWs and field boundaries would be introduced.

Relevant Policy

Local Policy

10. Planning law requires that applications for planning permission be determined in accordance with the development plan, unless material considerations indicate otherwise.[11]
11. The Mid Suffolk Local Plan 1998 policy GP1 states *"Proposals should maintain or enhance the character and appearance of their surroundings, and respect the scale and density of surrounding development;.."*

[6] Project Description p2.2.1
[7] Figure 2.1 Typical Solar Panel
[8] Project Description p2.3.1.4
[9] Project Description p2.2.5
[10] Figure 5.5
[11] NPPF p47

12. Further it states at p.2.4.3 *"The guiding principle in the countryside is that development should benefit the rural economy and maintain or enhance the environment. New development in rural areas should be sensitively related to existing settlement patterns and respect the historic, wildlife and landscape character of its surroundings."*
13. Further policy E10 states *"Applications for new industrial and commercial development in the countryside will not be permitted unless an overriding need to be located away from towns and villages can be demonstrated. Where such need can be demonstrated applications will be considered on their merits having regard to the following:- … the impact of the development on the surrounding countryside, including its landscape and wildlife features;…"*
14. The MSDC Local Plan at p2.4.11 states *"Major woodlands, whether ancient or otherwise, are relatively few in the Plan area. The most significant ancient woodlands are identified in Table 3. These woodlands make a significant contribution to the appearance and character of the landscape…"* Miller's Wood is intersected by the development and is one of the significant ancient woodlands listed in table 3, with other woodland areas also adjacent to the site.
15. MSDC Core Strategy 2008 states its core strategies as:
    a. *"SO1: To protect, manage, enhance and restore the landscape, biodiversity and geodiversity of the District."*
    b. "*SO4: To protect, manage, enhance and restore the historic heritage / environment and the unique character and identity of the towns and villages by ensuring that new developments are appropriate in terms of scale and location in the context of settlement form and character."*
    c. *"SO12: Promote high quality, sustainable tourism."*
16. Further policy CS5 states *"The Council will protect and conserve landscape qualities taking into account the natural environment and the historical dimension of the landscape as a whole rather than concentrating solely on selected areas, protecting the District's most important components and encourage development that is consistent with conserving its overall character."*
17. It writes further at p.3.103 for The Rural Economy where it states *"It is a key principle for sustainable development in rural areas that development in the open countryside away from settlements should be strictly controlled with the aim of protecting the countryside for the sake of its intrinsic character and beauty. The diversity of our landscape, heritage and wildlife contributes to the attractiveness of the area as a location to do business and as a source of tourist interest, which can be enjoyed by all."*
18. The MSDC Core Strategy Focused Review 2012 states in p.3.7 *"The environmental and landscape sensitivity of the district means that large-scale, on-shore renewable energy generation will often be difficult to accommodate in the landscape in an acceptable way. The attractions of the countryside for tourism for the district, an important sector of the local economy, mean that maintaining its environmental qualities while promoting access is essential."*
19. Moving to the Babergh Core Strategy 2014 policy CR07 of the Babergh Local Plan 2006 states *"If planning permission is granted for development in the countryside, a high standard of landscaping will be required. This must reflect the characteristics of the locality; use indigenous species; and avoid exotic trees or shrubs."*
20. The Babergh Core Strategy 2014 policy CS13 is generally supportive of renewable energy, however it's note 1 states that the *"impact of proposals on landscape, heritage assets and human health and well-being will also be relevant to assessing the suitability of proposals for renewable energy schemes"* needs to be considered.
21. Further policy CS15 requires all proposals *"where appropriate to their scale and nature to, amongst other things, respect the landscape, and make a positive contribution to the local character."*
22. The emerging Joint Local Plan policy LP19.1 states *"To protect and enhance landscape character development must: a. Integrate positively with the existing landscape character of the area and reinforce the local distinctiveness and identity of individual settlements."*

Special Landscape Area Policy

23. The Mid Suffolk Local Plan and Babergh Local Plan maps show that part of field 7 is located within the Gipping Valley Special Landscape Area (SLA).

Below image shows SLA in green and the Proposed Development site outlined in red.

24. The MSDC Plan identifies that the SLA is afforded this protection because of *"areas of countryside where undulating topography and natural vegetation, particularly broadleaved woodland, combine to produce an area of special landscape quality and character."*
25. At p.2.4.7 it states *"Traditional features, such as a pattern of small fields formed by hedges, ditches and ponds and interspersed with ancient woodland, give many parts of the District's landscape an interest and variety that is worthy of conserving in its own right..."*
26. Policy CL2 of the Mid Suffolk Local Plan 1998 relates to the SLA and states *"Within Special Landscape Areas, particular care will be taken to safeguard landscape quality, and where development does occur it should be sensitively designed, with high standards of layout, materials and landscaping."*
27. Policy CR04 of the Babergh Local Plan 2006 relates to the SLA and states "*Development proposals in Special Landscape Areas will only be permitted where they: maintain or enhance the special landscape qualities of the area, identified in the relevant landscape appraisal; and are designed and sited so as to harmonise with the landscape setting."*
28. The emerging Joint Local Plan at policy LP19 states *"To protect and enhance landscape character development must:*
    a. *Integrate positively with the existing landscape character of the area and reinforce the local distinctiveness and identity of individual settlements.*
    b. *Proposals must be sensitive to their landscape and visual amenity impacts (including on dark skies and tranquil areas); subject to siting, design, lighting, use of materials and colour, along with the associated mitigation measures;*
    c. *Enhance and protect landscape character and values and heritage assets such as; locally characteristic landscape features, for example by use of materials which complement the local individual landscape character, archaeological and historic patterns of settlement and land use and designations; being demonstrably informed by local guidance, in particular the Council's Joint Landscape Guidance, the Suffolk Landscape Character Assessment and Settlement Sensitivity Assessment.*
    d. *Consider the topographical cumulative impact on landscape sensitivity."*

National Policy

29. The NPPF has gone through several iterations, the latest version 5 in July 2021, with the latest putting beauty at the heart of the planning system.[12]
30. The NPPF p.130 states *"Planning policies and decisions should ensure that developments: a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development; b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping; c) are sympathetic to local character and history, including the surrounding built environment and landscape setting,…"*
31. The NPPF p.155 states *"To help increase the use and supply of renewable and low carbon energy and heat, plans should: a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);…"*
32. The NPPF p.158 states *"When determining planning applications for renewable and low carbon development, local planning authorities should: a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and b) approve the application if its impacts are (or can be made) acceptable…"*
33. The NPPF p. 174 states that *"Planning policies and decisions should contribute to and enhance the natural and local environment by: a) 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); b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;…"*
34. It is clear from these policies that, whilst renewable energy development is supported, it is not done so where there would be adverse impacts on the landscape and location it is sited in.
35. This was further reinforced, with a specific mention of large-scale solar development such as this proposal, in the House of Commons oral statement of 29 January 2014 when the Planning Minister, Nick Boles, stated *"The policies in the national planning policy framework are clear that there is no excuse for putting solar farms in the wrong places. The framework is clear that applications for renewable energy development, such as solar farms, should be approved only if the impact, including the impact on the landscape – the visual and the cumulative impact – is or can be made acceptable. That is a very high test."*
36. Further guidance is given in Planning Policy Guidance at paragraph ID 5-013-20150327 which states *"The deployment of large-scale solar farms can have a negative impact on the rural environment, particularly in undulating landscapes. However, the visual impact of a well-planned and well-screened solar farm can be properly addressed within the landscape if planned sensitively."*
37. The UK Solar PV Strategy Part 1 of October 2013 sets out four guiding principles for solar PV, the third of which states, amongst other things, that solar PV should be *"appropriately sited, give proper weight to environmental considerations such as landscape and visual impact."* Following publication of this strategy, the Minister for Energy and Climate Change, Greg Barker, produced a letter dated 1 November 2013 indicating that *"…inappropriately sited solar PV is something that I take extremely seriously and am determined to crack down on."*
38. The Solar Trade Association also maintains a list of "10 Commitments" for good solar farm development. These include *"2. We will be sensitive to nationally and locally protected landscapes and nature conservation areas, and we welcome opportunities to enhance the ecological value of the land. 3. We will minimise visual impact where possible and maintain appropriate screening throughout the lifetime of the project managed through a Land Management and/or Ecology plan."* It further states in the notes that *"Land selected should aim to avoid affecting the visual amenity of landscapes, maintaining their natural beauty, and should be predominantly flat, well screened by hedges, tree lines, etc., and not unduly impact upon nearby domestic properties or roads."*

[12] https://www.gov.uk/government/news/vision-for-building-beautiful-places-set-out-at-landmark-design-event

Baseline

39. The proposed site sprawls across three village parishes of Flowton, Burstall, and Bramford. The development would be visible from residential and public areas within all three parishes.
40. Bramford is a core village[13] and in the emerging Joint Local Plan is described as a fringe settlement of Ipswich. The village has been under severe encroachment from the town in recent years and subject to large housing increases, evidencing the change from core village to fringe settlement. It includes a number of scattered dwellings comprised under "Bramford Tye" into the rural countryside which has been well preserved from development.
41. The remaining settlements are dispersed across the landscape. Each parish contains a main central settlement, with the addition of scattered dwellings and farmsteads in the wider areas of the parishes. The remainder of the parishes is rural countryside in agricultural use, predominantly arable with some pasture around the valley floor. The site area is of arable agricultural use, with some field margins for biodiversity benefits and neighbouring woodland areas, some of them ancient woodland. There are distinct areas of unspoilt open countryside around each settlement.
42. The topography of the area is of sloping valley sides dissected by small river valleys. Due to the locations of PRoW's within the proposed site and established hedgerows, views out are of a medium distance. However, views into the site of from surrounding PRoW's are extensive. For example from viewpoint 2 there are extensive views across the landscape, where the site would be readily seen.

Viewpoint 2 looking north west

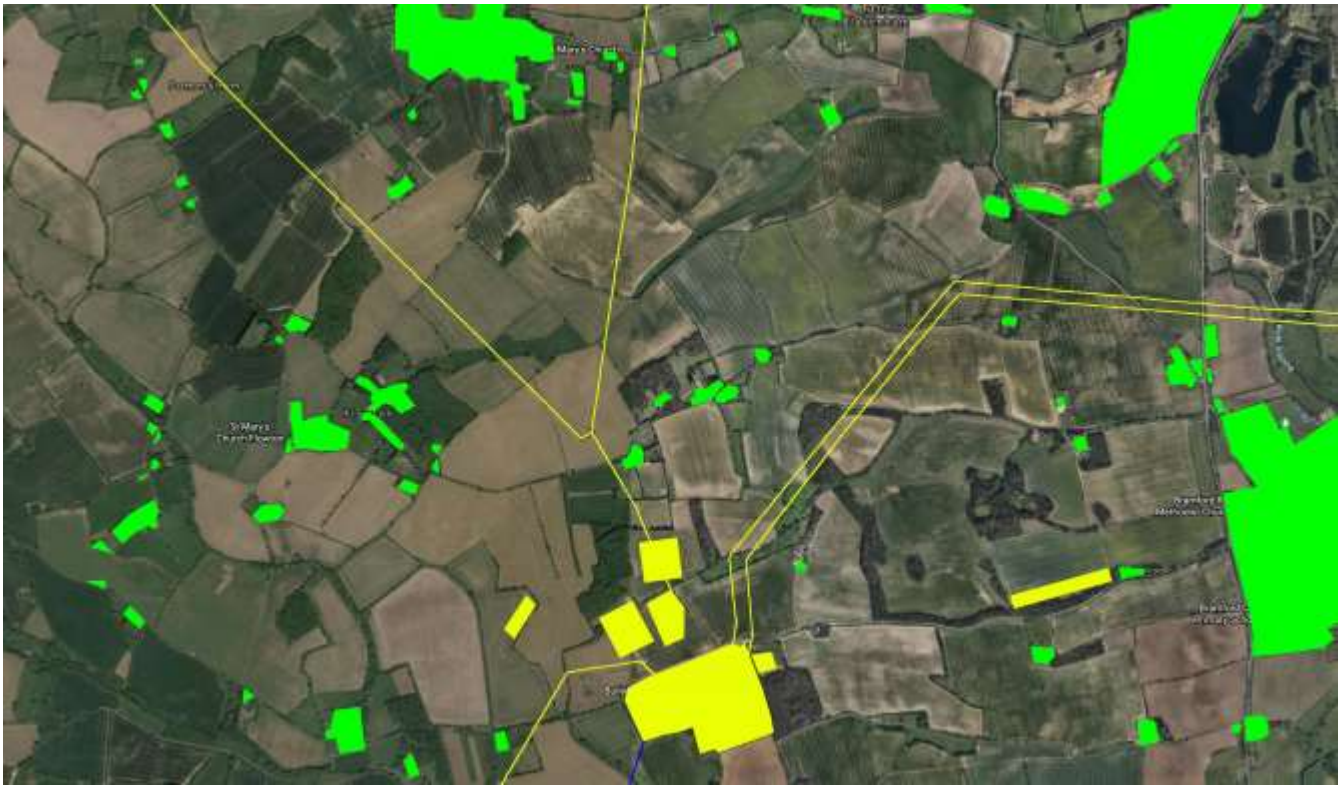
Statkraft site

43. The topography of the area is impossible to comprehend from the topography map supplied by the applicant (figure 5.2) due to the poorly chosen colour scheme. Using the topography map supplied by the Enso Energy application in the same area, the site varies between 20m and 65m AOD. This height difference will make screening difficult, as 3m hedges will provide little screening to a difference in elevation of 45m.
44. There are 4 PRoWs that would see a direct impact by the proposal. Bramford FP2, Bramford FP3, Flowton FP10, and Burstall FP7. These either transect the site or are immediately adjacent to it. I am also aware of several residents of Bramford Tye who also have permissive walking access to field margins adjacent to the site.

[13] Mid Suffolk Local Plan 1988

45. The Suffolk Landscape Character Assessment (SLCA) describes the site as predominantly Ancient Plateau Claylands, with a small area of the eastern edge as Rolling Valley Farmlands. Both landscape characteristics are of open undulating countryside with sloping valley sides created by small river valleys, with areas of plateau, and *"The characteristic land cover is arable farmland divided by an irregular sinuous field pattern, and scattered with woodland."* These features are very evident in the area.
46. There are few mentions of development, and of what there is mentioned it is of a *"dispersed settlement pattern of loosely clustered villages, hamlets and isolated farmsteads of medieval origin"*[14] which was shaped by the *"agricultural prosperity"*[15] of the area. The below map shows the dispersed nature of existing settlement patterns.

Below photo shows existing residential, agricultural and business development in green. Built and approved industrial energy infrastructure is in yellow.



47. In terms of development guidance in the Ancient Plateau Claylands it states the aim *"To retain, enhance and restore the distinctive landscape and settlement character. In particular strengthening the woodland, parkland and prairie landscape with appropriate planting and safeguarding the dispersed settlement pattern."*
48. In the Rolling Valley Farmlands Guidance Note that *"In these valley side landscapes, the visual impact of new vertical elements is increased by the landform. Therefore new buildings are likely to have a significant impact on both the character and visual amenity of valley floor and valley side landscape types. The setting of specific features and elements of these landscapes, such as small-scale enclosure patterns or historic buildings and monuments, can also be significantly damaged. The majority of development will, to some degree, be subject to this problem. Therefore, it is essential to manage this issue effectively, taking every opportunity at the earliest stages of the development of the proposal to modify and improve it or to be clear with the applicant that the impact of the proposal is unacceptable or may be at a high risk of refusal due to landscape impacts."*

[14] Ancient Plateau Claylands
[15] Rolling Valley Farmlands

Analysis

Landscape Character

49. It is clear from both the descriptions of the landscape character and visiting the site that it is deeply rural and tranquil in nature. The GLVIA3 on tranquillity states it is *"considered to be a significant asset of landscape."* Given the unspoilt nature of the site, it would be of high sensitivity to uncharacteristic development. The noise report submitted by the applicant states *"The soundscape at all three NMLs consisted of typical rural noise sources such as birdsong, occasional passing traffic, and resident activity."*[16] Whilst the surrounding landscape does include some energy infrastructure, it is currently sporadic, distinctly separate in the landscape, and the noise report suggests that *"noise attributable to these activities was audible*."[17] The existing energy infrastructure does have an adverse impact on the landscape character, but it is still clearly arable agriculture and in keeping with the Ancient Plateau Claylands landscape character.
50. Within the new East Anglia GREEN transmission line documents[18] it with respect to this location *"There is high potential for the development of a 400kV OHL within this section to give rise to significant adverse effects on local landscape character in combination with the existing NG and DNO assets that converge at Bramford substation. This is because it is possible that this landscape has reached its capacity to accommodate such infrastructure."* This assessment is stated even without the various solar developments proposed.
51. The hedging proposed by the applicant would mitigate the developments impact on the landscape. However, the proposed hedging would take time to mature to the 3m height needed (around 10-15 years) and would not completely screen the development, particularly in the winter months. Even when the hedge was in full leaf, there would still be a perception of the industrial development beyond.
52. Hedge screening along the site boundaries would reduce the site's openness and create a sense of enclosure. As a consequence it would detract from the open character of the immediate area by blocking views of the ancient woodland and wider landscape.
53. Furthermore, due to the nature of the undulating topography and openness of the surrounding area, views into the site would remain. We do not agree with the applicant's assessment of a *"not significant impact*"[19] on the plateau landscape character. Even the applicant states *"The primary change in landscape character will arise from a localised change in landcover from arable fields to a solar scheme with energy storage."*[20] Given the large size of the site – 60 hectares – this is a large area over which to change one of the primary characteristics.
54. Whilst the proposal is described as temporary in nature, 35 years is nonetheless a long time. Given that the applicant states that they may apply to extend its duration towards the end of the 35 years, the possibility of it being permanent cannot be ruled out. And for the duration of this development, there would be a *"fundamental change in character from an arable field to a solar farm"*[21] on a large scale as the site would be filled with conspicuous and incongruous regimented rows of metal and glass over the site which would represent an industrial development in the open countryside. With the development as a whole, the structures would create a significant industrial feeling in the landscape and be conflicting to the landscape character of the site and surrounding areas.
55. The site would connect Bramford Tye to Flowton with development. This would effectively join the settlements together and would not be in keeping with the current dispersed development pattern. This would not be in keeping with the dispersed settlement pattern of the landscape character.

Below image shows as previously but with Statkraft site in purple.

[16] Chapter 8.6
[17] Chapter 8.6
[18] NG EA GREEN Project Corridor and Preliminary Routing and Siting Study Appendices: Appendix B
[19] Chapter 5.1
[20] Chapter 5.1
[21] Chapter 5.8.2

56. With respect to noise, the evidence suggests that the development would generate low levels of noise beyond the site boundary, with the potential for significant adverse effects along important footpath PRoWs. This would add an uncharacteristic noise element to the area and have an eroding impact on the tranquillity of the environment.
57. The development does not demonstrate that it would maintain or enhance the qualities of the Special Landscape Area, and the design and type of development would do it harm.
58. The development would be incongruous with the existing landscape character of the area. We believe that the proposal would result in an adverse impact on landscape character of major significance. We do not believe this would reduce over time because the characteristic open views and arable landscape would be turned to close views of high hedging with industrial man-made equipment behind. The development therefore fails to meet policy relating to landscape impacts, including the conditions related to policies on renewable energy generation.
59. Within the same EA GREEN Project Document regarding the SLA it states *"Development of a 400kV OHL within this section would be in conflict with saved policies CR04 and CR05 (Special Landscape Areas) of the Babergh Local Plan 2006 as approximately the northernmost 3.5km of this section within Babergh District is within an area identified as an SLA."* If industrial equipment of pylons and an overhead line would be in conflict with the SLA, then covering large areas of it in industrial solar panels must also be in conflict.
60. The Emerging JLP no longer includes the SLA designation as local authorities have been encouraged to move away from this in favour of landscape character assessments. This is because local landscape designations have been inconsistently applied due to past changes in emphasis in national planning guidance.[22][23] However, the absence of a local landscape designation does not necessarily indicate there are no landscapes worthy of local designation. Additionally, the lack of designation does not mean that a landscape has no value. This is supported in GLVIA3 p 5.26. The fact that the landscape is currently designated as an SLA indicates that it has been assessed as being worthy of designation as a valued landscape.

[22] NG EA GREEN Project Corridor and Preliminary Routing and Siting Study Appendices: Appendix B
[23] Landscape Insitutute Guidance Note 02/21 p2.2.5

Visual Amenity

61. The visual impact based purely on the submitted application documents is difficult to assess. All visualisations are presented as summer images, and therefore obscure the scale of the impact of the Proposed Development within the landscape.
62. Professional guidelines on Landscape and Visual Impact Assessment[24] identify the need to consider the maximum effect scenario, e.g. winter views. In a townscape where there is typically less natural greenery a summer visualisation is likely to be considered appropriate. However, in a rural environment where the landscape is heavily influenced by the seasonal impacts on leaf cover, such as this one, then winter visualisations are considered appropriate to ensure the maximum effect scenario is identified and assessed. There is nothing to indicate that summer visualisations cannot also be included, but at a minimum visualisations need to be provided in the winter when leaf cover and screening are at their lowest.
63. Views of the site would be available from a significant number of public places, in particular the 4 PRoWs that run through or next to the site. Footpaths Flowton10 and Burstall7 are particularly well used as they provide an important connecting route between Flowton and Burstall villages.

View from Burstall FP7 looking NNW

Extent of Statkraft field 7 in the background, which would be visible in conjunction with Enso Energy solar and BESS in the forefield

64. Tye Lane and Flowton Road are also part of the Sustrans National Cycle Route 48, from which views of the development would be easily visible.

[24] GLVIA 3rd Edition paragraphs 4.3, 6.28

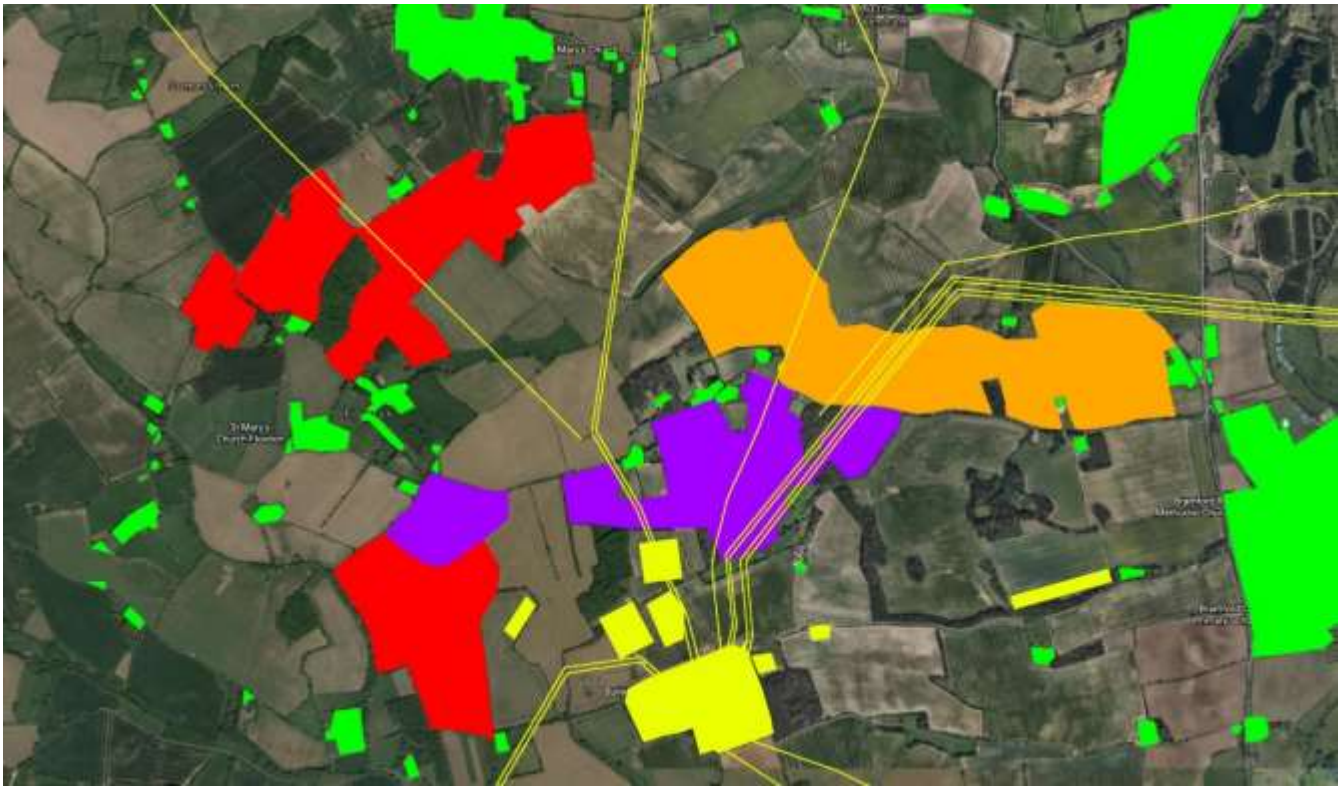
65. Viewpoints along the all the footpaths would be of high sensitivity. The views are currently very open and rural in nature, which would change to an enclosed corridor. This would result in a magnitude of change of substantial due to the long term duration of the development, resulting in major significance, reducing the major/moderate. This is a significant adverse impact. The reduction would be based on the success of the mitigation planting along these routes.
66. For these reasons and those given above under "landscape character", we are not persuaded that the scale of impact from these viewpoints would reduce to much less than major-moderate in the medium to long term. Moving further away from the site, the scale of visual impacts would generally be considerably less and would not be extensive, though views into the site would ultimately remain due to the topography.
67. We believe that there would be a significant adverse impact on visual amenity and this is not supported in planning policy.

Cumulative Impact

68. We appreciate the considerably better quality of cumulative information provided by the applicant compared to other similar applications in the area. The cumulative impact assessment assesses the relationship between the proposed development and other developments in more detail, and in more ways than just landscape and visual impact, such as noise.
69. However, we note that it is incomplete as it is missing an approved development – DC/19/03008. This development is for a 57MW battery storage and is immediately adjacent to pending application DC/21/05468 which was scoped in. We see no reason why this development has not been assessed, and without it the cumulative impact assessment is incomplete.
70. A recent High Court judgement[25] on 18th February 2021 reaffirmed that the cumulative impact of energy developments must be taken into account during the decision-making process.
71. The area here is already under significant energy development pressure due to the location of the Bramford Substation, which in itself is 45.8 acres. The substation currently serves as a key route for energy transmission for projects of significant electrical generation, as can be seen by the East Anglia One and East Anglia Three Substations also in the area, as well as the proposals for more high voltage transmission cables into the area from nuclear and offshore wind, and out of the area for transmission to the south west and London. However, this pressure for connection to high value developments, does not automatically approve developments such as this which consume a significant scale of land for an insignificant amount of energy.
72. In addition to this there are two other solar farms proposed adjacent to this site: Enso Energy (DC/20/05895 & DC/21/00060); and EDF Renewables (DC/21/04711). Together these three proposals would take out almost 600 acres of productive arable farmland, and they would join together the villages of Bramford, Bramford Tye, Flowton, Somersham, and Burstall. This would not be in keeping with the dispersed settlement pattern nor the landscape character, and the applicant comes to the same conclusion in chapter 5.1 stating "It has been assessed that Significant effects on landscape character will arise in LCT 3: Ancient Plateau Claylands if any combination of the three proposed solar farms were to be constructed together."
73. There are a lot of isolated existing developments, either in the rural countryside or on the fringe of rural villages, and they are already close to having a significant cumulative impact. It is questionable how much more, if any, development can be accommodated in the area since it is already so close to the threshold of moving into a significant cumulative impact. If the proposed solar farm development were approved they would no longer be isolated. They would be connected up either physically or visually. Thus creating an industrial estate larger than the sum of its parts due to the boundless extent of it. A never ending dot-to-dot of industrial development if it were. The cumulative effect would tip quite sharply into a significant effect.
74. The development plan makes no allowances or proposals for what amounts to a piecemeal industrial estate in the rural countryside in this location, with the effects of the proposed development contrary to several policies in the local development plan, such as E10 and H16 of the Local Plan 1998. Although policy E10 supports development in the countryside for large-scale renewable energy, the application fails to meet the conditions attached to them, and so fails to meet the principle of development.

[25] R (Pearce) v Secretary of State for Business, Energy and Industrial Strategy [2021] EWHC 326 (Admin)

Below image shows extent of development, with EDF Renewables in orange and Enso Energy in red.



75. At chapter 5.1 the applicant claims that *"At Viewpoints 2, 3, 6, 7, 8 whilst there will be some visibility of the Proposed Development, there will be no view of the other sites and, again therefore, no cumulative visual effect."* If the applicant had visited and provided visuals in the winter months, they would know this is untrue.

Viewpoint 2 looking north – Field 3 of the proposed site is visible through the vegetation, as is EDF Renewables site

Statkraft site

EDF Renewable site (yellow field of oilseed rape)

76. At paragraph 5.1 the applicant concludes *"Whilst in some cases (at Viewpoints 1, 5, 9 and 10) there will be clear views of either Bramford or Tye Lane solar farms, at these viewpoints there will be no greater than a negligible*

glimpse of the Proposed Development and this no significant cumulative visual effects." Again the use of summer visualisations obscures the views available.

Viewpoint 10 below shows clear views of the EDF Renewables site, but also a minor view of field 3 of the Proposed Development for motorised users of Tye Lane and moderate view for all other users of Tye Lane

Statkraft field 3 EDF Renewables

77. The applicant further concludes at paragraph 5.1 that *"It has also been assessed that there will be Major adverse (Significant) sequential cumulative effects on the local network of PROWs in the event that all three solar farms were constructed together."*

Conclusion

78. The omission of visualisations taken in the winter months, without the benefit of full foliage screening, seriously compromises the accuracy of information provided to consultees and the conclusions drawn by the applicant. Visualisations from within winter months is required to make a full and reliable assessment of the maximum effects of the proposed development.
79. The LVIA at paragraph 5.5.4 states *"Landscape and visual effects can be beneficial or adverse, and in some instances may be considered neutral… changes to rural landscapes involving construction of man-made objects of a large scale are generally considered to be adverse and that is the position adopted in the LVIA."*
80. We agree with the applicant's conclusion that the adjacent landscape characters, those fully outside the site, and the partial area of Rolling Valley LCT would not be adversely impacted, but the same cannot be said of the Ancient Plateau Claylands LCT which the development would have a significant adverse impact on.
81. The development of this project would contribute significantly to the industrialisation of a rural agricultural area. It would not be in keeping with the landscape character of the area, it would cause substantial harm to a valued landscape, and it would adversely impact the visual amenity of the public.
82. The development fails to meet local and national policy previously listed. Whilst renewable energy is supported by planning policy, development must respect the landscape, and applications should only be approved if the impact is (or can be made) acceptable. We do not believe that the applicant has made those impacts acceptable, nor do we believe that they can be made acceptable due to the dominating scale of the site, and any cumulative impacts should other proposed solar farms be approved. The application should therefore be refused.

Land Use & Soil

Use of BMV Land

The MSDC Local Plan 1998 policy CL11 seeks to resist the loss of Best and Most Versatile (BMV) land[26], meaning grades 1, 2 and 3a as defined in the NPPF Glossary and the MAFF 1988 guidance for grading the quality of agricultural land. Further policy E10 states that applications in the countryside will need to have particular regard for *"the loss of high quality agricultural land."*

The following paragraphs are all from the Planning Statement:

2.1.1 *"The Proposed Site comprises approximately 60 hectares (ha) of lower grade agricultural land located on land south of Tye Lane, Bramford, Suffolk, IP8 4LB with a developed area of approximately 44 hectares. The grid reference of the approximate centre point of the Site is 609747, 246685."*

4.2.45 *"The proposals do not exert an unacceptable change to landscape character and avoid where possible the use of best and most valuable agricultural land."*

4.2.48 *"The use of agricultural land is unavoidable due to the need for proximity to grid connection and the extent of land area required…. The Proposed Development is predominantly sited on lower value land."*

5.1.3 *"The Proposed Development is advantageously located within close proximity to an available grid connection and is a viable and efficient use of in the main, lower quality agricultural land, supporting farm diversification and enhancing local biodiversity."*

This repeated description of the agricultural land as "lower grade" is incredibly misleading. We can only presume the person writing the Planning Statement hadn't been privy to the ALC report, which graded the land as:

Classification	**% of Overall Site**
Grade 2	19%
Grade 3a	76%
Unclassified (e.g. waterways, woodland, etc)	5%

This is NOT lower grade agricultural land. With the exception of a small area of the site which cannot be classified under ALC, because it is not croppable such as waterways, the entire area of agricultural land is grade 2 and 3a. Grades 2 and 3a ARE Best and Most Versatile Land, which is higher grade land.

The Agricultural Land Use Statement at Section 5b para 2 confirms the value of this BMV land *"**The Site does perform better than national averages, as is expected of BMV land**, especially in poor years like 2020 averaging 8 tonnes per hectare for wheat compared with 7 tonnes per hectare nationally"* which further demonstrates the value of retaining this land in agricultural use.

Whilst applications must be determined according to the local development plan, it is necessary to consider other material considerations to determine if they may be an indication to deviate from the local plan. Such material considerations are the NPPF 2021 and PPG.

The NPPF at paragraph 174 states *"Planning policies and decisions should contribute to and enhance the natural and local environment by: a) 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); b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;…"*

It continues at paragraph 175 which states *"Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[58]; take a strategic approach to maintaining and enhancing networks of habitats and green*

[26] *"The District Planning Authority will encourage the conservation of agricultural land. Particular protection will be afforded to the best and most versatile agricultural land (namely grades 1, 2 and 3a of MAFF's Agricultural Land Classification)."*

infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries."

Note 58 states: *"Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality."*

Paragraph 013 of the Planning Practice Guidance makes reference to a speech by the then Minister for Energy and Climate Change in April 2013 in which they state that: *"Where solar farms are not on brownfield land, you must be looking at low grade agricultural land which works with farmers to allow grazing in parallel with generation…"*

Paragraph 013 also references a written ministerial statement of 25th March 2015 which states: *"In light of these concerns we want it to be clear that any proposal for a solar farm involving the best and most versatile agricultural land would need to be justified by the most compelling evidence."*

It is clear that BMV land should be avoided for development, especially where significant development is proposed, such as for solar farms which use a lot of land, and that there is no indication from national policy to deviate from the local plan in respect to agricultural land. The application on BMV land is not supported by the local plan, and should be refused.

Current and proposed business model

The land proposed to be used for Solar PV is productive agricultural land producing chiefly grain for human and animal consumption.

The Executive Summary of the Agricultural Land Use Statement states *"Crop choice, which is limited by the versatility of the poorest soil on the site, is restricted to conventional combinable commodity crops, for which the UK fluctuates in and out of a trade deficit/surplus position year on year. The land cannot viably produce specialist niche crops for which the UK is consistently a net importer, so the implications of its temporary loss are not material at a national or regional scale."*

This is nonsense. The biggest limitation to crop choice is the farm's current choices of machinery for planting, maintaining, and harvesting crops. The soil will play some part in this, but it is far from being a major influence. Since the current farmer of the land is a contractor who specialises in arable crops, then this has determined the current choice of crops. A different niche contractor could choose alternatives. For example the land included in the Statkraft site produced sugar beet in the 2021 growing season. Potatoes are known to be grown in the area as have peas for fresh picking for market. None of these are combinable.

Missing from the crops list are Rape seed for cooking oil and Sunflower for the same. Sunflower is grown a few miles away but has not been chosen by the owner on this land. Linseed (for oil) is another locally grown crop. There are many more crops than those specified which could be grown on this land. Consider nearby home gardeners who, having almost identical soil, are able to successfully grow a huge range of crops. This is after all the best and **most versatile** land.

Also from the Executive Summary *"The proposed development will not affect the viability of the remaining farm business as the land represents only 2.4% of the total land farmed."*

Since this appears to represent the contract farm enterprise currently farming the land it is very misleading. It does not relate to the landowner's holding, which by way of the solar PV development, may cease to be an agricultural business. The information has not been given.

We are concerned that there is a distinct lack of information regarding socio economic activity and would like to see more detail particularly outlining the impact on the local economy of taking such a significant amount of land out of food production. Farming businesses play a vital role in the rural economy, particularly supporting the agricultural supply chain to include feed merchants, machinery sales, maintenance and repair businesses, local builders, delivery drivers and professional services, to name but a few.

Removing crop production and replacing it with PV panels will eliminate the work done by the farm contractors resulting in a net employment loss to the area.

Similarly, as referred to above, trade with merchants, suppliers, machinery sales and maintenance used by the contractor will also be lost further, reducing expenditure in the agricultural industry.

The Executive Summary further claims "Solar energy is one of the most effective and efficient forms of renewable energy production for the site." Solar PV is about the least efficient form of renewable energy per acre possible. At this latitude it is about 11% efficient in operation because of day length, available sunlight and the angle of sunlight. However, maintaining agricultural production will continue to boost UK food sustainability because of the higher than average yields this land currently produces, even if poor years as mentioned above.

The NPPF seeks to conserve the national resource of the best and most versatile agricultural land and to conserve future options for exploitation. Agricultural land and the soil associated with it is, for all practical intents and purposes, a non-renewable resource. With solar panels all over it the versatility of the land is lost, as it can be used for nothing else for the duration. 35 years is a long time to tie up our BMV land for a renewable technology which is already outdated.

There are no guarantees about what could benefit agriculture income in the next 35 years so the future potential is unknown. What we do know is the Mid Suffolk Local Plan 1998 policy states at p.2.4.3 *"The guiding principle in the countryside is that development should benefit the rural economy and maintain or enhance the environment."*

Aside from the possibility of some local employment during the 20 week construction phase, which is not guaranteed, there are no long term gains to local employment as the applicant claims the site will be visited by a small vehicle 10-20 times per year. There is nothing to suggest this employment is local.

Tourism Land Use

Our countryside land is not solely provide socio-economic benefits for agriculture though. It provides a mixed use alongside that of tourism.

The Mid Suffolk Core Strategy 2008 at 1.32 states *"The Mid Suffolk economy remains narrowly focused, with approximately 17.5% of Mid Suffolk industry in manufacturing, and 4.9% in agriculture (Suffolk Observatory, 2005). However, there is the potential for developing tourism as the district has many attractive villages and large areas of unspoilt and tranquil countryside."*

The popularity of the Little Sage Hill camp site supports the notion that the area of this development is one such area prized for its large area of unspoilt and tranquil countryside. It is advertised saying:

"Here, in the beautiful, Suffolk countryside you will find peace, quiet, an abundance of wildlife and be surrounded by many varied species of trees and plants."

Reviews[27] [28] [29] include "would recommend to anyone looking for a quiet and peaceful break set in lovely surroundings", "Peaceful & relaxing" "Gem of a site" Very quiet and lovely location if you want peace and quiet" "This site is so good that it has made me submit my first ever review. If you want a peaceful site set in the most beautiful surrounding, this is it." "it is ideal for those who seek peace and quiet in a restful, beautiful location, surrounded by many different varieties of trees and the Suffolk countryside."

However, it must not be forgotten that the reason for this unspoilt and tranquil countryside is precisely because of the arable agricultural production. If the arable agriculture is removed the potential for developing tourism in the area is removed with it. And the existing businesses, especially those who are prized for their tranquil and rural locations such as Little Sage Hill campsite, will suffer and may even be lost entirely. Alongside the economic support that tourists bring to other business in the area such as shops, pubs and restaurants.

Conversion of Arable Land to Grassland vs Grassland Under PV Panels

The conversion of arable land to grassland can indeed improve soil health, such as increasing soil organic matter (SOM), and hence soil organic carbon (SOC), increasing soil biodiversity, and improving soil structure. This is consistent with aims and objectives for improving soil health in the Government's 25 Year Plan for the Environment. However, this

[27] https://www.campingandcaravanningclub.co.uk/campsites/uk/suffolk/bramford/littlesagehillatcopenhagencottage/#Reviews

[28] https://www.searchforsites.co.uk/markerMobile.php?id=23385

[29] https://www.ukcampsite.co.uk/sites/reviews.asp?revid=12632

is not what is proposed. The applicant proposes to oversail the grassland with solar PV panels, which creates a different effect on the soil.

The below is the abstract from a 2021 study: The potential land requirements and related land use change emissions of solar energy[30].

"Although the transition to renewable energies will intensify the global competition for land, the potential impacts driven by solar energy remain unexplored. In this work, the potential solar land requirements and related land use change emissions are computed for the EU, India, Japan and South Korea. A novel method is developed within an integrated assessment model which links socioeconomic, energy, land and climate systems. At 25–80% penetration in the electricity mix of those regions by 2050, we find that solar energy may occupy 0.5–5% of total land. The resulting land cover changes, including indirect effects, will likely ***cause a net release of carbon ranging from 0 to 50 gCO$_2$/kWh****, depending on the region, scale of expansion, solar technology efficiency and land management practices in solar parks."*

The study was worldwide and relevant to the UK. The paper states that under solar panels there is a reduction of plant growth. This is caused by a loss of sunlight due to shading from the panels, and the concentration of rainfall because of the roof effect of the panels. So some areas are kept dry and some areas are oversaturated. Further, the microclimate effect under the panels is cooler, which reduces the metabolism of small insects and microorganisms in breaking down any organic matter to be stored as carbon in the soil. It confirms that, by not maintaining the carbon cycle (by not maintaining a sequence of planting, harvest, cultivation and planting again) the carbon cycle cannot be maintained. The ability of soil to sequester carbon is severely reduced by panels compared to modern farming where the plant residues are incorporated into an area where the next crop will be seeking nutrients.

The calculation of CO2 potentially lost to soil sequestration, and instead released into the atmosphere is up to 50gCO2/kWh of generation. Statkraft quote 41,555MWh per year, for 35 years. 41,555MWh is 41,555,000kWh. Multiplied by 50g = 2,077,750,000g, or 2,077.75 tonnes of CO2 released into the atmosphere per year.

Not only does this loss in the soil cycle and that of the microorganisms in the soil have a negative impact on the soil quality, but the PV arrays have a continuous negative effect on Carbon Footprint (in addition to the initial Carbon Footprint costs of construction). Developers' claims that soils require a rest so will benefit from a period under panels are a fallacy. The soil will be there after the panels have gone but in a very much worse state than if they had been farmed properly.

Paragraph 9.8.1 states *"The Proposed Development has the potential to deliver wider environmental benefits such as improvements to soil structure and health, carbon sequestration…"*

The applicant has supplied no references here to back up this claim. There is known to be a lack of baseline data to enumerate such claims accurately because solar PV panels have not been tested over 35 years to enable improvements to be known, if at all. But based upon the recent study cited above, albeit it over a shorter period of time, the applicants claim would appear to be untrue and would result in a carbon release.

Aims and objectives for safeguarding and, where possible, improving soil health are set out in the Government's 'Safeguarding our soils: A strategy for England'.[31] The Soil Strategy for England, which builds on Defra's Soil Action Plan for England (2004-2006), sets out an ambitious vision to protect and improve soil to meet an increased global demand for food and to help combat the adverse effects of climate change.

The Soil strategy for England states that *"…soil is a fundamental and essentially non-renewable natural resource, providing the essential link between the components that make up our environment. Soils vary hugely from region to region and even from field to field. They all perform a number of valuable functions or ecosystem services for society including:*

- *nutrient cycling;*
- *water regulation;*
- *carbon storage;*
- *support for biodiversity and wildlife;*
- *providing a platform for food and fibre production and infrastructure"*

[30] The potential land requirements and related land use change emissions of solar energy | Scientific Reports (nature.com)

[31] https://www.gov.uk/government/publications/safeguarding-our-soils-a-strategy-for-england

It would seem that putting solar PV panels on this agricultural land would have detrimental effect on the soil health, but also be counter-productive to the goal of using soils for carbon storage.

Soil Erosion and Degradation of BMV Land

Paragraph 9.8.1 states *"The Proposed Development will not result in the permanent loss of a finite national resource (BMV land)…"*

The entirety of this statement relies on the 'temporary' nature of the development. It makes no consideration to the factors that determine the grade of land, resulting in it being BMV land, and the impact upon which the Proposed Development would have on those factors.

Paragraph 9.8.1 further states *"It has found that the Site contains a mix of subgrade 3a (76%) and grade 2 (19%) with the former consisting of primarily heaby soils formed in chalky glacial till and the latter of loamy soils with moderately high topsoil clay content."*

Clay soil is prone to compaction (when worked during wet periods) and erosion (if worked during dry periods). This is reflected in the farmer's crop management practices of using tramlines (to reduce the area worked) and not working the land when wet.

Soil depth is an important factor when grading agricultural land. The following is from the MAFF ALC 1988[32]

> Soil depth is an important factor in determining the available water capacity of a soil and is considered in that context in Section 3.4. Shallowness affects cropping in other ways, notably by influencing the range and type of cultivations which can be carried out but also by restricting nutrient uptake, root growth and, in the case of fruit trees, root anchorage. It is therefore necessary to specify minimum soil depth requirements for the grades and subgrades.
>
> Limiting depths are given in Table 4 for soil overlying consolidated or fragmented rock which cannot be penetrated satisfactorily by cultivation implements.

Table 4 – Grade according to soil depth

Grade/ Subgrade	Depth limits (cm)
1	60
2	25
3a	30
3b	20
4	15
5	<15

Paragraph 3.5 of the applicants Agricultural Land Use Statement confirms the soil depth of the site as:

"Average topsoil depth varies across the Site, but at an average of 31.1cm, however, the most common depth across the test points was 30cm in line with the subgrade 3a limits. This average figure suggests that the site has a good layer of topsoil and therefore is not seen as a limiting factor to performance apart from in exceptionally dry years."

The applicant makes many references throughout the application that they have sought to use activities that minimise the impact of the development on soils, and proposes to do the majority of groundworks during the dry summer months[33] when the soil is less prone to compaction. However, the summer is when it most prone to soil erosion.

Regardless of all these impact reducing activities, paragraph 7.12 of the applicants Flood Risk Assessment (FRA) considering the soil infiltration rates of the site after construction states:

[32] Agricultural Land Classification of England and Wales 1988
[33] Traffic Impact Assessment chapter 5 paragraph 1

"As a consequence of solar farm development it is assumed that up to 10% of the Site could be subject to erosion and hence partial loss of vegetation."

A loss of 10% soil erosion across the site would see soil depths decrease by around 3cm, putting the average soil depth around 27-28cm. This would be subgrade 3b, and as a direct result of the Proposed Development, the entire site would be reduced to grade 3b. A devastating blow to what is currently BMV land.

The 10% loss considered by the FRA is after construction only. Decommissioning will be a repeat of the soil damage which would happen during construction, except that there will be many more vehicle movements. Materials will arrive on site for construction on neat pallets, maximising loads to save shipping costs. Steelwork will, for decommissioning, be grab-loaded into roll-on-offs for shredding probably at a local scrap merchant so loading will be done for speed, not to minimise shipping long-distances. There will be very large quantities of roadstone, now contaminated with soil, which will all be classed as waste. All the batteries will be hazardous waste.

A further loss of 10% soil erosion would take the 27-28cm average down to around 24-25cm. Remediation work proposed by the applicant does not come close to returning these soil depths to their pre-construction levels.

Planning policy at all levels is opposed to such destruction to BMV land and our soils in general.

Heritage

The National Planning Policy Framework (NPPF para 194) requires clear and convincing justification for all levels of harm to heritage assets, including their settings.

And S66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 requires special regard to be held to the desirability of preserving the settings of listed buildings.

The Planning Practice Guidance calls for great care to be exercised to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting.

The NPPF and the PPG also recognise that the *"significance derives not only from a heritage asset's physical presence, but also from its setting."* The need for robust interpretation and application of the NPPF has been explained in analysis of planning authority decisions carried out for the statutory consultee, Historic England: *"Many local planning authorities could take bolder action to protect heritage assets to achieve NPPF objectives… to avoid or minimize conflict between heritage assets' conservation and any aspect of a proposal, local planning authorities should more vigorously consider the wider alternatives to the submitted scheme: this is supported in case law.."*

This is continued in local development plans. The MSDC Local Plan 1998 policy HB1 states *"The district planning authority places a high priority on protecting the character and appearance of all buildings of architectural or historic interest. Particular attention will be given to protecting the settings of listed buildings."* And the MSDC Core Strategy 2008 objective SO4 seeks *"To protect, manage, enhance and restore the historic heritage / environment and the unique character and identity of the towns and villages by ensuring that new developments are appropriate in terms of scale and location in the context of settlement form and character."*

We understand that the applicant acknowledges 15 listed buildings within 4km.

In addition, there is fresh guidance on assessment of landscape and heritage value that supports objections already made.

The National Policy Framework (NPPF) provides protection for 'valued landscapes' in para 170: *"Planning policies and decisions should contribute to and enhance the natural and local environment by; a) 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)."*

This sentence has helped afford protection to nationally designated sites but has often resulted in confusion with regard to areas of local value that lack designation.

The Landscape Institute's new *Technical Guidance Note 02/21- Assess landscape value outside national designations* provides useful direction and a historical perspective of relevant legislation.

Applying the factors set out in Table 1 (reproduced in Heritage Appendix A) of the LI's Guidance Note provides a holistic approach which takes account not merely of natural heritage but also of cultural heritage, landscape condition, perceptual values and functionality.

The site in question scores highly for these factors.

While no single feature or attribute may be exceptional, the preservation of a historical, farmed landscape with a large number of listed heritage assets, each in their original setting, makes this a valued landscape for local people and tourists alike.

Landscape condition is in a good physical state in terms of individual elements and overall landscape structure. The area has a high perceptual rating while retaining its functional purpose for versatile, high quality agricultural production. It is also remarkable for what the Guide describes as "cultural time depth" in that field patterns and related farmsteads remain in situ.

Landscape qualities = characteristics/ features of a landscape that are valued.

The report explains that *"this term is being used to distinguish landscape qualities from landscape characteristics which are elements, or combinations of elements, which make a particular contribution to landscape character. Landscape qualities (in the sense meant in this TGN) are usually referred to as "special qualities"' or "special landscape qualities."*

Precedent for protection on the grounds cited above predates the new Guide. In August 2019 the Inspector concluded that a development would harm a valued landscape at Poplar Hill, Stowmarket, even though the site was not located within a nationally or locally designated area.

Further, the large number of listed farmhouses within the site area is evidence of important and prosperous agricultural history and landscape in the area. And whilst independently they may not, collectively they paint a picture of greater importance.

<u>Tye Farmhouse – Grade 2 Listed</u>

At paragraph 6.8.2 it states *"Tye Farmhouse is situated upon the northern boundary of the Site and consists of a timber-framed, two storey farmhouse with attics, arranged in a loose L-shaped plan. The property if thought to date from the 16th century, although it has been largely renovated and extended in the 17th to 19th centuries, once forming part of a wider farm complex….. The Site forms part of the wider agricultural setting of the Farmhouse, and as such contributes to its historic interest."*

It is important to note that the ONLY public view of Tye Farmhouse is from Tye Lane, a designated Quiet Lane and National Cycle Network route 48

Tye Farmhouse

The field in front is part of the proposed development, and the installation of 3m high solar panels here would mean a total loss of experience of the heritage asset to the public.

The applicant continues *"However, it is considered that the proposals would represent a change in land use from agriculture to an industrial land use, and would therefore represent a change to the way the wider rural surroundings contribute to aspects of the Listed Building due to a change in its wider rural setting… The magnitude of impact is considered to be Low, with a resulting Minor Adverse effect. This is considered to be Not Significant."*

We disagree with this conclusion. The applicant has considered only the change in setting, and has failed to recognise that the development would block the only public view of the asset.

The **Medium** Significance of the heritage asset as a Grade 2 Listed Building (table 6.2), and the **Very High** magnitude of impact due to the total loss of experience (table 6.3), culminates in a Significance of Effect of **Moderate** (table 6.4), and thus is considered **Significant**.

We also wish to note that the converted barns (Stable House and Tawny Barn) while not listed as Grade II are of equal period being once part of the original farm and 1/2 Tye Cottages being farm workers residents when it was an active farm.

Conclusion

Whilst the development is of a temporary nature, it is nonetheless for 35 years which is a very long time, during which the adverse impacts would be experienced by very many people. Given the potential for the applicant to reapply for the site to remain in place at the end of the 35 years, as indicated in the proposal, the possibility of it remaining a permanent development cannot be ruled out, particularly factoring in the change of land use aspect of this application. The application fails to protect the settings of listed buildings, which is given particular consideration in the local plan, and fails to protect the heritage of the valued landscape.

Heritage Appendix A

Table 1: Range of factors that can be considered when identifying landscape value

Note: the Associations factor has been removed as it is not relevant to this application site.

FACTOR	DEFINITION	EXAMPLES OF INDICATORS OF LANDSCAPE VALUE	EXAMPLES OF EVIDENCE
Natural Heritage	Landscape with clear evidence of ecological, geological, geomorphological or physiographic interest which contribute positively to the landscape	Presence of wildlife and habitats of ecological interest that contribute to sense of place Extent and survival of semi-natural habitat that is characteristic of the landscape type Presence of distinctive geological, geomorphological or pedological features Landscape which contains valued natural capital assets that contribute to ecosystem services, for example distinctive ecological communities and habitats that form the basis of ecological networks Landscape which makes an identified contribution to a nature recovery/ green infrastructure network	Landscape character assessment LANDMAP Geological Landscape and Landscape Habitats Aspects (in Wales) Ecological and geological designations Ecological and geological designations Geological Conservation Review Habitat surveys Priority habitats Nature recovery networks/ nature pathways Habitat network opportunity mapping/ green infrastructure mapping Catchment management plans Ecosystem services assessment/ schemes Specialist ecological studies
Cultural heritage	Landscape with clear evidence of archaeological, historical or cultural interest which contribute positively to the landscape	Presence of historic landmark structures or designed landscape elements (e.g. follies, monuments, avenues, tree roundels) Presence of historic parks and gardens, and designed landscapes	LANDMAP Historic Landscape and Cultural Landscape Services Aspect (in Wales) Historic environment and archaeological designations

		Landscape which contributes to the significance of heritage assets, for example forming the setting of heritage assets (especially if identified in specialist studies) Landscape which offers a dimension of time depth. This includes natural time depth, e.g. presence of features such as glaciers and peat bogs and cultural time depth e.g. presence of relic farmsteads, ruins, historic field patterns, historic rights of way (e.g. drove roads, salt ways, tracks associated with past industrial activity)	Conservation Area appraisals, Village Design Statements Historic maps Historic landscape character assessments, Historic Land Use Assessment and Historic Area Assessments Place names Specialist heritage studies
Landscape condition	Landscape which is in a good physical state both with regard to individual elements and overall landscape structure	Good physical condition/ intactness of individual landscape elements (e.g. walls, parkland, trees) Good health of elements such as good water quality, good soil health Strong landscape structure (e.g. intact historic field patterns) Absence of detracting/ incongruous features (or features are present but have little influence)	Landscape character assessment LANDMAP condition and trend questions (in Wales) Hedgerow/ tree surveys Observations about intactness/ condition made in the field by the assessor SSSI condition assessments Historic landscape character assessments/ map regression analysis
Distinctiveness	Landscape that has a strong sense of identity	Landscape character that has a strong sense of place (showing strength of expression of landscape characteristics) Presence of distinctive features which are identified as being characteristic of a particular place Presence of rare or unusual features, especially those that help	Landscape character assessment LANDMAP Visual & Sensory question 3 and 25, – Historic Landscape question 4 (in Wales) Guidebooks Observations about identity/ distinctiveness made in the field by the assessor

		to confer a strong sense of place or identity Landscape which makes an important contribution to the character or identity of a settlement Settlement gateways/approaches which provides a clear sense of arrival and contribute to the character of the settlement (may be ancient/historic)	
Recreational	Landscape offering recreational opportunities where experience of landscape is important	Presence of open access land, common land and public rights of way (particularly National Trails, long distance trails, Coastal Paths and Core Paths) where appreciation of landscape is a feature Areas with good accessibility that provide opportunities for outdoor recreation and spiritual experience/ inspiration Presence of town and village greens Other physical evidence of recreational use where experience of landscape is important Landscape that forms part of a view that is important to the enjoyment of a recreational activity	Definitive public rights of way mapping/ OS map data National Trails, long distance trails, Coastal Paths, Core Paths Open access land (including registered common land) Database of registered town or village greens Visitor surveys/ studies Observations about recreational use/ enjoyment made in the field by the assessor
Perceptual (Scenic)	Landscape that appeals to the senses, primarily the visual sense	Distinctive features, or distinctive combinations of features, such as dramatic or striking landform or harmonious combinations of land cover Strong aesthetic qualities such as scale, form, colour and texture	Landscape character assessment LANDMAP Visual and Sensory scenic quality question 46 (in Wales) Protected views, views studies Areas frequently photographed or used in images used for tourism/

		Presence of natural lines in the landscape (e.g. natural ridgelines, woodland edges, river corridors, coastal edges) Visual diversity or contrasts which contributes to the appreciation of the landscape Memorable/ distinctive views and landmarks, or landscape which contributes to distinctive views and landmarks	visitor/ promotional purposes, or views described or praised in literature Observations about scenic qualities made in the field by the assessor Conservation Area Appraisals Village Design Statements, or similar
Perceptual (Wildness and tranquillity)	Landscape with a strong perceptual value notably wildness, tranquillity and/or dark skies	High levels of tranquillity or perceptions of tranquillity, including perceived links to nature, dark skies, presence of wildlife/ birdsong and relative peace and quiet Presence of wild land and perceptions of relative wildness (resulting from a high degree of perceived naturalness, rugged or otherwise challenging terrain, remoteness from public mechanised access and lack of modern artefacts) Sense of particular remoteness, seclusion or openness Dark night skies A general absence of intrusive or inharmonious development, land uses, transport and lighting	Tranquillity mapping and factors which contribute to and detract from tranquillity Dark Skies mapping Wildness mapping, and Wild Land Areas in Scotland Land cover mapping Field survey LANDMAP Visual and Sensory Aspect
Functional	Landscape which performs a clearly identifiable and valuable function, particularly in the healthy functioning of the landscape	Landscapes and landscape elements that contribute to the healthy functioning of the landscape, e.g. natural hydrological systems/ floodplains, areas of undisturbed and healthy soils, areas that form carbon sinks such as peat bogs, woodlands and	Land cover and habitat maps Ecosystem services assessments and mapping (particularly supporting and regulating services) Green infrastructure studies/strategies

		oceans, areas of diverse landcover (benefits pest regulation), pollinator-rich habitats such as wildflower meadows Areas that form an important part of a multifunctional Green Infrastructure network Landscapes and landscape elements that have strong physical or functional links with an adjacent national landscape designation, or are important to the appreciation of the designated landscape and its special qualities	Development and management plans for nationally-designated landscapes, Local Plans and SPDs Landscape character assessments

Flood & Water Management

There are a number of serious issues and omissions associated with the applicant's proposal that are likely to have a significant effect on the extent of flooding in the area. The likely impact of this will be to restrict road access to the surrounding villages as well as significantly elevate the risk of flooding to a number of residential properties that are already at risk from the increased rainfall associated with climate change.

The following sections detail the main issues that CARE Suffolk has identified, however as the applicant's proposal has significant omissions associated with its Flood Risk Assessment and Drainage Strategy it is simply not possible to provide a full analysis of the expected detail as it absent from the applicant's submission. These omissions are also identified at a high level, and should updates or further submissions be provided by the applicant, CARE Suffolk shall conduct further a review and make a representation back via the LPA.

1. **The applicant's Flood Risk Assessment is based on the flawed assumption that "..solar farm developments are unlikely to have significant effects on the local hydrological characteristics (of the site)" (FRA 7.7)**
   This false assumption - unlike the two other developers, EDF and ENSO - has been tempered by a acknowledgement that there is an expectation that the development will introduce multiple changes to the local hydrological regime the effect of which *"..could become cumulatively significant.."* (FRA 7.7) and a recognition that *"..the proposed development would have the potential to result in a net increase in the peak rate and total volume of surface water runoff from the site.."* (FRA 7.10)
   Furthermore it is welcome that the applicant's FRA goes on to unpack the specific hydrological changes that can be expected, and lists these as: soil compaction, reduction in vegetation growth and area of cover, and site levelling and flatting.
   Their conclusion that these effects are likely to result in a net reduction of soil infiltration capacity and a reduction in hydraulic resistance is supported by our assessment of the primary research cited (REF.1) in this and the other solar farm proposals, however from reviewing their FRA it is clear that they have not sufficiently considered the potential scale of the effects detailed in the primary research.

   In reality the primary research cited (ref.1) in the FRA details empirical evidence that runoff volumes and peak discharge rates can be significantly affected by the installation of solar farms where suitable ground cover is not present & adequately maintained from the point of installation.

   The paper states the following potential effects:

   - *"If maintenance vehicles used the spacer section regularly and the grass cover was not adequately maintained, the soil in the spacer section would be compacted and potentially the runoff volumes and rates would increase. Grass that is not maintained has the potential to become patchy and turn to bare ground. The grass under the panel may not get enough sunlight and die. Fig. 1 shows the result of the maintenance trucks frequently driving in the spacer section, which diminished the grass cover."*

   - *"The effect of the lack of solar farm maintenance on runoff characteristics was modelled by changing the Manning's n to a value of 0.02 for bare ground. In this scenario, the roughness coefficient for the ground under the panels, i.e., the dry section, as well as in the spacer cell was changed from grass covered to bare ground (n 1⁄4 0.02).The effects were nearly identical to that of the gravel.* ***The runoff volume increased by 7%*** *from the grass-covered to the bare-ground condition.* ***The peak discharge increased by 72%*** *when compared with the grass-covered condition. The runoff for the bare ground condition also* ***resulted in an earlier time to peak by approximately 10 min.****"*

   - *"With the spacer section as bare ground,* ***the peak discharge increased by 100%****"*

   - *"If the grass cover of a solar farm is not maintained, it can deteriorate either because of a lack of sunlight or maintenance vehicle traffic. In this case, the runoff characteristics can change significantly with both runoff rates and volumes increasing by significant amounts."*

   - *"If bare ground is foreseen to be a problem or gravel is to be placed under the panels to prevent erosion, it is necessary to counteract the excess runoff using some form of storm-water management."*

   - *"Water draining from a solar panel can increase the potential for erosion of the spacer section. If the spacer section is bare ground, the high kinetic energy of water draining from the panel can cause soil detachment and transport (Garde and Raju 1977; Beuselinck et al. 2002)."*

   - *"****The energy of the water draining from the panel onto the ground can be nearly 10 times greater than the rain itself falling onto the ground area.*** *If the solar panel runoff falls onto an unsealed soil, considerable detachment can result (Motha et al. 2004). Thus, because of the increased kinetic energy, it is possible that the soil is much more prone to*

erosion with the panels than without. Where panels are installed, methods of erosion control should be included in the design."

- *"Bare ground beneath the panels and in the spacer section is a realistic possibility (see Figs. 1 and 5). Thus, a good, well-maintained grass cover beneath the panels and in the spacer section is highly recommended."*

After conducting a thorough review of the primary research that the FRA selectively cites, it is our assessment that each of the potential effects detailed in the research is of concern in relation to the specifics of Statkraft's proposed development, and should be properly considering when sizing the mitigations necessary.

The application of these effects to specific factors associated with the proposal is expanded in the next section.

2. **There is a significant risk that the way the construction & management of the site is conducted will dramatically increase surface runoff rates.**

As cited above, primary research provides evidence that there is potential for dramatic increase to:

- The surface runoff peak discharge rate (Approx. 100% increase)
- The total flood volume emanating from the site (Approx. 10% increase)
- The concentration of rainfall & kinetic energy available to produce soil erosion (Approx. 1000%, 10x increase)

It is our assessment there there are a number of risk factors associated with, and heightened by, the nature of the proposed development - some of which are in *addition* to those already identified in the primary research as having a significant effect on flood risk.

These risk factors include:

A. **Soil compaction**
(Hydrologic impact = reduced loss rate, increased surface smoothness)

The soil classifications documented as part of recent local soil surveys identify the site to be composed of soil prone to compaction due to the presence of clay and silt within the soil structure. These soil types are noted as being prone to "structural damage when wet" as well as having a "tendency to cause surface runoff and erosion".
During the 6 month construction phase the applicant has indicated that there will be over a thousand vehicle movements (of mass up-to 44 tonnes) accessing the site and each of these movements will be multiplied further internally within the site to facilitate the construction of the solar arrays and associated infrastructure.
Each of these movements will cause significant compaction of the soil and furthermore:

- The compaction will be across the entirety of the developed area of the site - far exceeding the surface area of compaction associated with traditional farming techniques (which post-drilling restrict vehicle movements to a single pair of "tramlines" within a given area)
- A significant proportion (approx. 20%) of the activity causing the compaction will occur during a period when the land is too wet to work on and when the land is normally left free of all farming activity (Due to the 6 month construction period a conservative estimate would assess that a least two months of construction activity will take place during this period)
- Following the construction phase there is expected to be regular maintenance activity conducted at the site which will continue to cause soil compaction throughout the run-phase of the development. Some of this activity (for instance grass cutting & site maintenance) will involve regular vehicle movement across land not accessible by the internal roads and is expected to cause further compaction.

All of the activities detailed above will have the effect of increasing the density of the soil at the surface and directly below in the subsurface, this increased density will reduce the ability of water to be absorbed within the soil structure (reducing water storage) as well as reduce the ability of water to be transported within the soil (both down - to aquifers, and across - to other areas of soil or to ditches and other watercourses)

Evidence of the direct effect of solar farm construction on soil compaction and stormwater management was a recently documented in *Environmental Science & Engineering* magazine, (*Lessons learned: Solar projects present unique stormwater management challenges*). This reflected on key lessons learned following Canada's initial liberalising of planning law enabled a flurry of more than 100 10MW solar farms to be constructed under Renewable Energy Approvals (REA) in Ontario.
The article detailed findings that *"In hindsight, it has become apparent that the selection of sites must place*

great significance on topography, existing site conditions and constraints such as nearby watercourses and soil types. All of these factors readily influence the volume and flow rate of runoff that, if not properly managed, can result in negative impacts to downstream and neighbouring properties.

In general, undeveloped sites either did not possess known existing stormwater concerns or were in locations where seasonal flooding occurred. In either case, fields would remain untouched until they were stable enough to be worked. However, in a situation where a solar farm is constructed on an existing row crop, the land is drastically transformed from a site that would see minimal usage/disturbance until planting to a site that requires complete year-round accessibility by machines and workers during construction and early stages of operation."

Fig.X+1 - Typical standing surface water present following soil compaction during typical solar farm construction

Alarmingly Statkraft's FRA does not properly consider the effects of soil compaction on the surface water run-off rate as it assumes only a 10% reduction in soil infiltration capacity as well as assumes that only 10% of the site will be subject to erosion and vegetation loss - the remaining 90% being assumed to act as healthy short grass vegetation. From considering the typical conditions of the ground post solar-farm construction (see Fig X+1 above) this assumption seems recklessly optimistic.

B. **Increased proportion of impermeable surfaces due to the construction of solar array frames, access tracks, buildings and other infrastructure**
(Hydrologic impact = reduced loss rate both vertically - from rainwater above and horizontally as a result of a subsurface "damming" effect preventing water transport laterally across the subsurface, increased surface smoothness)

The applicant's plans exclude any consideration of the effect of transforming a significant proportion of the 58 hectares of currently cultivated greenfield land into impermeable surfaces associated with the concrete pilings used for the solar array frames as well as ancillary buildings and access tracks.

Increasing the proportion of the surface area of the site that has a reduced permeability relative to the current soil structure will reduce the amount of water that is able to be absorbed into the soil (the loss rate) as well as transferred and stored in other areas of soil or transferred to other established drainage.In addition, increasing the proportion of the surface area of the site that has an increased surface smoothness and decreased hydrophilicity will have the affect of increasing the rate at which water can travel across the surface of the site (the discharge rate associated with surface runoff).

C. **Destruction of existing land drainage systems currently present**
(Hydrologic impact = reduced loss rate)

As detailed in the Land Use and Soil section of our report the land currently has an established drainage system which makes use of channels present in the soil (created either naturally by root structures and invertebrate movement, or through techniques such as the construction of "mole-drains") to aid water transport laterally across the fields for evacuation via a network of ditches linking the fields to the surrounding watercourses. One of the secondary effects of the activities which produce soil compaction (Section A, above) and are used in the creation of access and other infrastructure (Section B, above) will be destruction of existing drainage systems which make use of the current (un-compacted) soil subsurface.

The destruction of the land drainage systems currently present at the site (either through soil compaction or through activity like access track construction which will change the soil subsurface) will have the affect of reducing the ability of the land to safely & slowly transport & store water within its structure, this will in-turn mean that the soil above the existing permeable layer will more quickly become saturated with flood water, rapidly decreasing the loss rate of the soil when subjected to rainwater.

The drainage strategy detailed in Statkraft's FRA details that *"..Field drainage systems will continue to operate as at present.."* (FRA 5.7) but does not detail how these will be protected during the construction phase. This represents a significant flaw in their drainage strategy as it relies on an element that may well not be present post-construction.

D. **Reduction in surface vegetation - in the period from the commencement of the construction phase to the point where planted vegetation has reached suitable maturity.**
(Hydrologic impact = increased surface smoothness & reduced soil surface shear strength)

Initially there will be a significant reduction in the surface vegetation present across the site area, this will be as a result of:

- The cessation of activity to produce arable crops
- The clearance of vegetation to allow access to the site
- Increased soil compaction and water saturation of soil associated with vehicle movements and other construction activity (creating highly unfavourable growing conditions)

The presence of established and well maintained surface vegetation and the improved surface roughness that this provides has been identified (REF 1) as the key factor that helps mitigate surface runoff by reducing the speed at which water is able to flow across the surface of the land. A pronounced decrease in vegetation will therefore increase the smoothness of the surface and enable rainwater to flow across the surface at significantly increased speeds. This in-turn then means that other drainage infrastructure will be presented with a higher volume of water within a smaller time period making it more likely that its drainage capacity will be breached and flooding will occur.
In addition, reducing the level of vegetation will reduce the shear strength of the soil as this is usually enhanced by the root structures of the vegetation present. The reduction in this soil strength will make soil erosion more possible which will have a secondary affect of reducing the efficacy of existing drainage systems downstream of the site (as these will now be presented with larger volumes of solid matter / silt in addition to the increased volumes of rainwater)

Statkraft have assessed that there is a potential for the development to reduce the growth of vegetation and the proportion of this cover available at the site (FRA 7.8), however they significantly underestimate the proportion of the site that could be impacted - stating this at 10% (FRA 7.12) but without referencing any underlying assumptions or modelling.
From assessment of the primary literature, a figure of 10% would appear excessively conservative as it is referenced that the nature of solar panels is to harvest sunlight and therefore create extremely large areas of effective shadow under which grass struggles to grow. A safer assumption would be to assume that the majority of land covered by panels is at risk of not being cultivated into grassland, furthermore land in between panels is also at risk due to the effect that use of these maintenance access tracks will have on vegetation growth.

E. **The topography of the land**
(*Hydrologic impact = acceleration of overground surface water flow)*

There are three variables directly associated with the topography of the land that have a direct impact on the velocity of the surface runoff flow observed.(REF3)

1. Slope length

2. Slope gradient
3. Flow path convergence

The site of the proposed development contains a range of topographical features that will cause acceleration of the surface water that flows across it.
These include:

- A range of slopes of significant lengths (Up-to approx. 400m before being intersected with a drainage ditch)
- Field slope gradients >12%
- Multiple converged flow paths leading to watercourses to both the east & south-west of the site

Statkraft have topographical survey but have not conducted associated flow path modelling or analysis. It is therefore not possible to analyse the contribution of each topographical feature and quantify its affect on overground flow rates. Without this analysis it is also not possible to assure that the location of proposed stormwater attenuators and storage is likely to be effective.

F. **The angle of the panels when in operation**
(*Hydrologic impact = acceleration of rainwater, increased rainwater kinetic energy per unit area, variation in uncovered ground surface area able to act as a rainwater buffer)*

The applicant has stated that the angle of the solar panels will be fixed at 22° (Figure 2.1 typical solar panel)

Selection or variation in panel angle will have the following effects on the rainwater presented to the surface of both the panels and the ground below.

Broadly this can be summarised by two contrasting effects:

Increasing panel acuteness
This would increase the accelerating effect of the panel, however it would also present a smaller panel surface area for the collection of rainwater (reducing the volume of water flowing across the panel) and present a larger ground surface area beneath the panel.

Decreasing panel acuteness

This would decrease the accelerating effect of the panel, however it would also present a larger panel surface area for the collection of rainwater (increasing the volume of water flowing across the panel) and present a smaller ground surface area beneath the panel.

In summary, variation between the two extremes in panel angle will affect the volume of water accelerated across the panels and the amount of increased kinetic energy the water possesses when it is discharged from the edge of the panel and made available for further flow across the ground and erosion of the surface.
At each panel angle extreme (or indeed the optimum angle in between) the acceleration of water across the panel surface will be significantly above that of bare ground or vegetation, this being true even if the panel were to be completely flat as the panel surface has a significantly increased smoothness coefficient relative to bare ground or ground cover.

It is not clear from Statkraft's proposal how a tilt angle of 22° has been selected, however it is clear that their Flood Risk Assessment includes no assessment of how the chosen tilt angle may impact the flood risk associated with water accelerated across the panels and subsequently directed into the existing distribution of flow paths specific to the site and its topography.

G. **The location & distribution of the panels when installed - specifically the surface area between the panel rows**
(*Hydrologic impact = reduced loss rate due to water saturation)*

The importance of spacer sections between panel rows and "buffer" sections located at strategic points has been well documented (REF1, 5) as a necessary mitigation for surface run-off emanating from landscapes incorporating solar arrays or those with high rates of overground pluvial flow.
The action of spacers or buffers is to strategically present ground surfaces and subsurfaces at places where the

velocity of overground flow needs to be attenuated or the total volume of the flow reduced. This is achieved by maintaining ground with increased surface roughness (relative to the ground beneath solar panels, or the surface of the panels themselves) and increased ability to “absorb and store” or “absorb and slowly transport” the water through vertical or lateral percolation in the subsurface.

Statkraft’s plans do not identify in any meaningful detail the distribution, location or size of buffer/spacer sections between the panels, and without the size and placement of buffers/spacers being correctly calculated and incorporated within the plan it is evident that the ground will be less able to absorb the increased volumes and velocity of water that it is presented with and therefore surface water flow rates and volumes emanating from the site are likely to increase significantly.

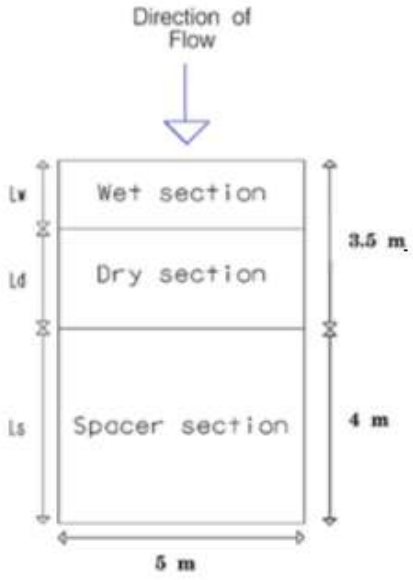


Fig. X+2 - Schema showing a typical spacer arrangement between solar panel rows relative to the direction of overground flow paths. (REF 1)

3. **The Environment Agency data already documents a high degree of flood risk associated with surface runoff emanating from flow paths crossing the location.**

The Environment Agency's Surface Water Risk Map (Fig X+3) details areas of high surface water flood risk associated with overland flow paths emanating from the site and transporting surface run-off into Flowton Brook or directly into the Gipping via a drainage ditch and culvert.

Fig. X+3 - EA Surface Water Risk Map identifying the site as being directly associated with areas of high surface water risk for Flowton Brook, The Gipping, and Tye Lane (REF 4)

4. **The applicant's Flood Risk Assessment lacks has significant flaws within its quantitative / hydraulic analysis - these flaws minimise the potential flood risk associated with the proposal and mean that the proposed mitigations are unlikely to be suitably sized as to fully mitigate the heightened flood risk.**

   The applicant's FRA states (7.11) *"..drainage rates at the site have been evaluated through application of ReFH2 rainfall runoff modelling.."*
   This desk-based modelling has then been used to determine estimates for the peak runoff rate and total runoff volume pre and post construction.

   CARE Suffolk welcomes the inclusion of hydraulic modelling within the applicants FRA (and notes that this is the first of the solar farm proposals to do so) however it is our assessment that the modelling is flawed based on it's core assumptions.

   Specifically:
   A) Soil infiltration capacity - Statkraft have used a "generic estimate of potential infiltration capacity change" based solely on reference to two soil types (Slowly permeable and impermeable), with the coefficients used being taken from reference material rather than by conducting empirical infiltration tests at the actual site.

   The effect of this over-simplified and inaccurate approach is to minimise the difference in soil infiltration capacity pre and post-construction - this caused them to significantly underestimate the increase in runoff volumes and rates from the post-development surfaces.

   B) Hydraulic resistance - Statkraft have used yet more generic and crude assumptions relating to the resistance values of land assumed to be of one of three broad types; Cultivated land, Short grass, and Unvegetated.
   They make further crude assumptions relating to the proportion of land that could be classed into each of these three categories pre and post-construction, but do not provide any supporting calculations, assumptions or reference to empirical evidence relating to the actual site.
   Their assumption that the land will instantly transform from being 100% Cultivated (Pre-development) to 90% Short grass and 10% Unvegetated (Post-development) seems both extremely simplistic as well as unsubstantiated by evidence.

   Statkraft's FRA should (and currently does not) include a full consideration of:

   - The current fluvial & pluvial flow volumes & rates for all areas impacted by the proposal (this would include ranges to include the 1/100 year storm events, and an allowance for the expected 35% increase in flow rates due to climate change etc.)
   - The specific soil types present at the site (across a range of areas) & their associated loss rates calculated through field-tests
   - The ground slope / topography of the site & its impact on specific overland flow paths
   - The range of panel angles and orientations to be used & their hydrologic impact within the context of the site
   - The distribution of the solar panels across the site and relative to these the distribution of any spacer/buffer areas should they be proposed
   - Changes to the surfaces over-which flow occurs (specifically how the range of roughness coefficients and loss rates will be impacted & the distribution of these different surfaces across the site)
     This should separately consider the construction phase (when there will be expected to be significant soil compaction as discussed in Section 2A above)), during the run phase (when the panels & access tracks will be installed & in use, and maintenance activity conducted) and during the decommissioning phase.
   - Any changes to direction of expected flow paths as a result of the development.
   - The current capacity for drainage at the site & how this is likely to be impacted by construction activity

It is our assessment that without a comprehensive quantitative analysis of the above factors it is simply not possible to determine the degree to which the flood risk will be elevated by the activity & construction proposed by the applicant. And without this analysis it is also not possible to provide assurance to those likely to be impacted by flooding emanating from the site that any proposed mitigation would likely to be effective.

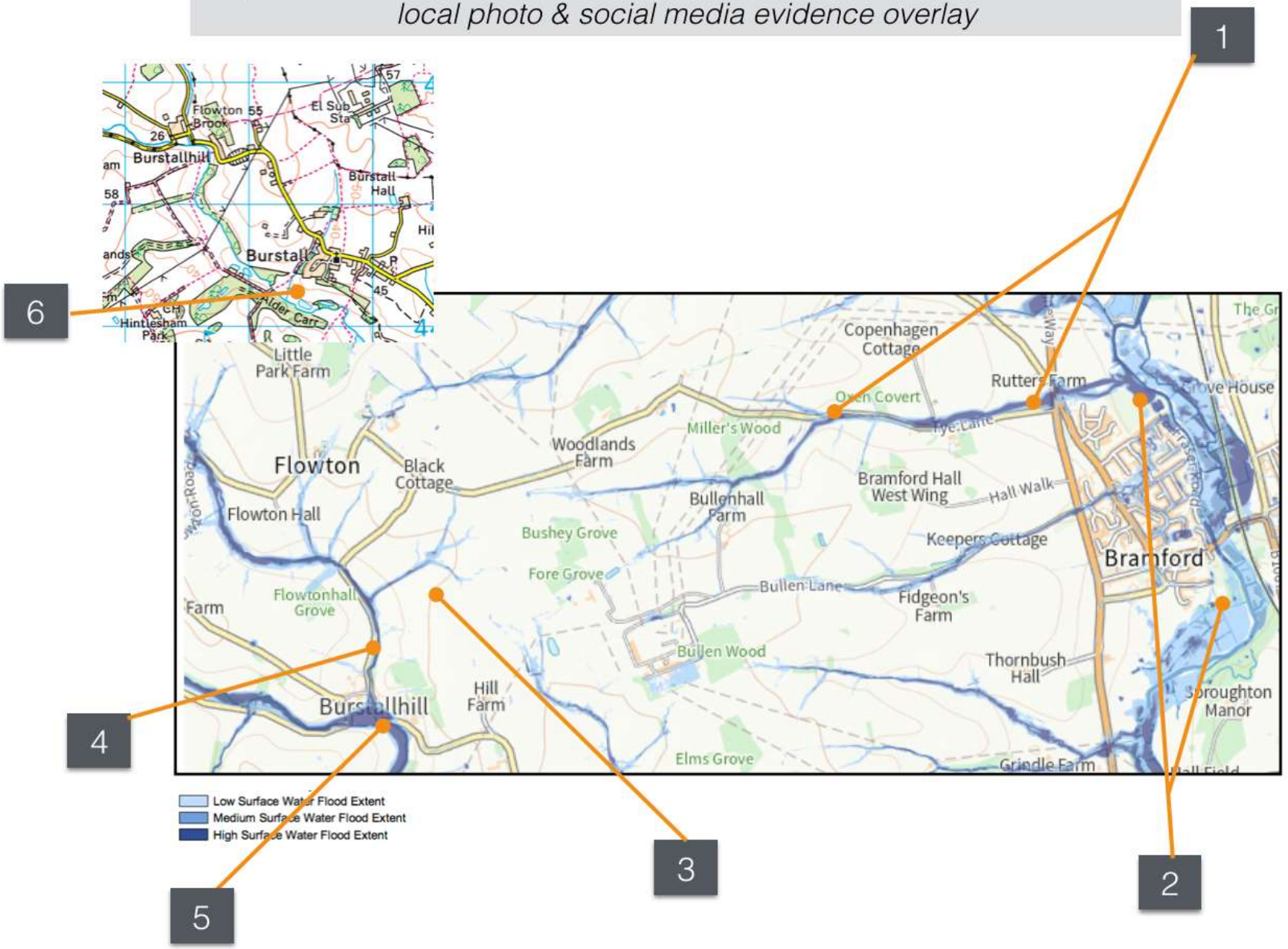
The applicant's Flood Risk Assessment does not assess the current impact of flooding associated with overground flow from the area

Statkraft's FRA does not seek to reference *any* local flood events associated with surface water runoff emanating from the site. This is a serious omission as this information could have been made available to them through contacting the local flood authority or by not overlooking important information regarding the impact of flooding provided to them during their community consultation in 2021 - The flooding on Tye Lane being repeatedly raised by members of the local community (as detailed in their Statement of Community Involvement).

Statkraft's neglect of the information provided to them by the community during their own consultation is of some obvious concern to CARE Suffolk as the impact from flooding emanating from this site is well known to local residents - with regular road closures restricting access to the surrounding villages, and numerous properties at risk of flooding downstream of the site & this set to increase in line with increased rainfall expected as a result of climate change alongside increased residential development proposed within various local plans.

To support a better understanding of the current local impact of flood water emanating from the site CARE Suffolk has conducted some open-source / community research relating to flood events observed in the last 24 months and these are further evaluated in the following section.

Proposed development DC/22/00683 - EA Surface Water Flood Map with local photo & social media evidence overlay

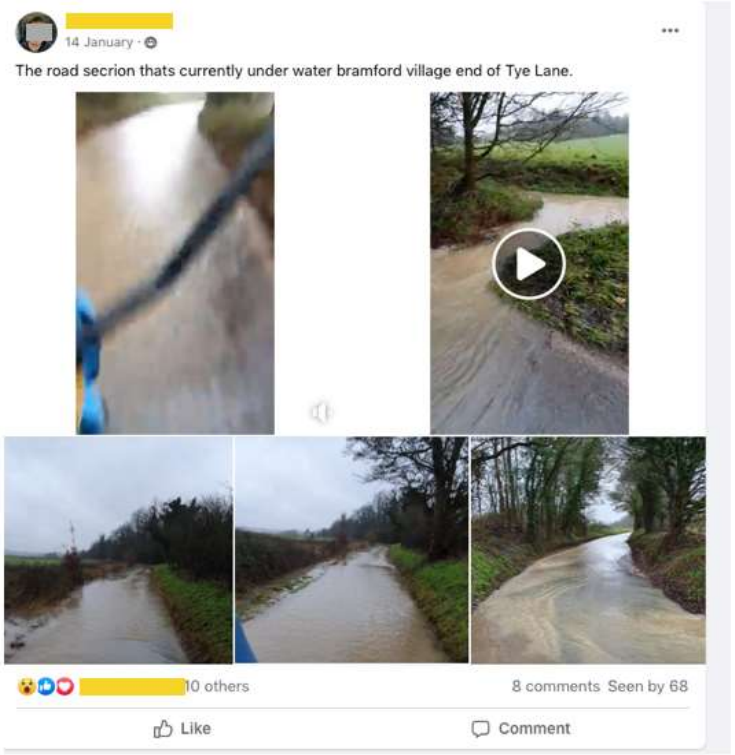


1

Proposed development DC/22/00683 - Historic flood evidence - Impact to essential access to Flowton, Tye Lane (Associated with Fields 1, 2, 3 and 6)

Flooding at Tye Lane, Bramford Tye on 4th December 2020.

Flooding on Tye Lane, 14th Jan 2021



2 *Proposed development DC/22/00683 - Historic flood evidence - Impact to Bramford & risk to new residential developments adjacent to the Gipping (Associated with Fields 1, 2, 3 and 6)*

Sal [redacted]
Unfortunately the flooding just moves along. I totally agree **Sharon** [redacted] our houses will be flooded - our gardens already flood and 200 extra houses will make it worse even if they put a small pond in - it wont be enough. I have photos of how far the water goes up to the field boundary and the water level is only going to get worse with global warming

Abbi [redacted]
Oh god! They are ruining our wonderful countryside we are now experiencing more flooding than ever before and now they want to build more!!!! They are ruining one of the prettiest areas round ipswich!

Paul [redacted]
25 December 2020 ·
The Lake is back 3rd time in 7 years.

Chris [redacted]
28 December 2020 ·

Proposed development DC/22/00683 - Historic flood photographic evidence (Associated with Fields 7, 4 and 5)

3

Standing water in field 5m to the south of field 7 31/01/21 observed by Angela & John Schwarz

4

Flooding of "Church Hill" and "The Channel" Roads from flow paths emanating from Field 7, 4 and 5 28/01/21 observed by Steve Packard

Proposed development DC/22/00683 - Historic flood photographic evidence (Associated with Fields 7, 4 and 5)

5

Flooding of "Church Hill" and "The Channel" Roads adjacent to Fields 4 & 5 24/12/20 observed by Clare Limond

Proposed development DC/22/00683 - Historic flood photographic evidence (Associated with Fields 7, 4 and 5)

5

Flooding of "The Channel" Road adjacent to Fields 7, 4 & 5 15/01/21 observed by Paul Boulton

Flooding of "Church Hill" Road below Fields 7, 4 and 5 17/01/21 observed by Claire Boulton

6

Flooding in Burstall at footpath to Hintlesham, adjacent to Flowton Brook <1000m downstream from the edge of Field 7, 24/12/20 observed by Ann Burchnall

3 4 5

20th December 2019

Flowton, Suffolk
about a year ago

Amazing but scary photos!

Dan722. Aerial Photography and Drone services
Business service · 1,162 likes · 20 December 2019

You cannot get though via Flowton, Suffolk in a standard car! It's only going to get deeper people! Your car insurance won't cover if you choose to drive through 😔

1 3 5

Flood risk today for some areas as more rain falls

Mariam Ghaemi

Published: 11:33 AM December 21, 2019 Updated: 6:39 PM October 11, 2020

One drone pilot managed to capture the state of the roads near Flowton from the air Picture: DAN722 - Credit: DAN772

https://www.eadt.co.uk/news/flood-risk-in-suffolk-and-essex-2636664

Lora Caie
14 January at 14:05 ·

Just a heads up if anyone is heading out or has anyone returning from work the usual places (Flowton/Burstall and out past Somersham i think its Somersham Road?) are very badly flooded and water levels high..cars getting stuck and having to be pushed through already

4 1 comment 1 share

2019 | **2020** | **2021**

Maria O'Donnell ▸ **Elmsett & Aldham Noticeboard**

27 Nov 2019 · A1071 accident/incident. Blue flashing lights involved. Traffic backed up to The Beagle going towards Hintlesham. Lots of traffic on the road to Aldham but Flowton Brook is flooded. Take care when out and about

2

Sharon Simmonds ▸ **Elmsett & Aldham Noticeboard**

14 Nov 2019 · Flowton Brook has flooded so take care when driving!

3 1 comment

Laura Hammond
Visual storyteller · 24 December 2020 ·

Good morning. The main road out past the village hall is flooded. It too deep for even me to consider taking my land rover through. **Edit** Barking is also flooded badly by the nursing home

8 14 comments Seen by 152

Sharon Simmonds ▸ **Elmsett & Aldham Noticeboard**

4 Dec 2020 · Flowton Brook has burst its banks and flooded road! Please drive with care or use alternative route 👍

5

5. Recent research has been conducted which identified at least four serious flood events in the last 24 months. The most significant of these occurred in December & January 2020 when the Gipping severely burst its banks at Bramford flooding areas within 50 metres of sites selected for residential development within the area's local plan. In addition historical and repeated flooding of Tye Lane, and the flooding of The Channel adjacent to Flowton Brook has caused the communities reliant on access via The Channel, Church Hill and Tye Lane to be effectively cut off from essential services.

   The significantly adverse impact of this flooding is clearly demonstrated by the evidence collated below. This catalogues photographic, print and social media evidence to help provide a picture of the current impact of flooding emanating from the site in the two years preceding the receipt of the applicant's proposal.
   The applicant has not provided sufficient detail regarding the construction or management of necessary flood mitigations or an adequate drainage strategy within their proposal

   The applicant's Surface Water Drainage Strategy proposes only one flood mitigation measure and this measure, it's scale, location and integration with existing field drainage systems is not sufficiently detailed to enable proper evaluation of it's potential effectiveness, furthermore the detail provided and their surrounding assumptions contain some serious flaws.

   The main areas of concern are detailed below:

   1. **The sizing of the SuDS based mitigations are based on overly conservative assumptions which do not have an empirical basis** (this is discussed in more detail in section 4). Assessment of the assumptions used by Statkraft against the primary literature shows the potential for error in their modelling - Statkraft estimating a potential for a 10% increase in peak runoff rate where the literature suggests up to a 100% increase.

   2. T**he location of the mitigations** (new open water storage and associated hydrobrakes using existing field drainage systems currently in place) **has not been properly considered**, with only "general location(s)" proposed (FRA 7.36) and the location of these not being based on any flow path analysis as this is missing from the FRA.

Additional mitigations relating to the surface water risk factors themselves (eg. reduced infiltration and increased surface smoothness) have not been incorporated alongside the SuDS.
Whilst the inclusion of an SuDS is welcomed, this should be incorporated alongside a control of the aspects of the development (associated with construction, layout, planting and maintenance) that are heightening the risk, rather than expecting that the impact can be fully mitigated by a separate means.
Indeed the conservation of vegetation and establishment of planting as a mitigation strategy is identified as being critical from the primary literature however it is missing in the Drainage Strategy in entirety.

In sizing the SuDS Statkraft makes an assumption that 90% of the site consist of established grassland, however there is no assessment of how realistic this is or indeed of the effect of the grassland not being present or being of sufficient maturity. This should be considered by the applicant should as the importance of this factor is highlighted by recent research (REF6) that demonstrates the significant impact the maturity of vegetation has upon the runoff coefficient observed.

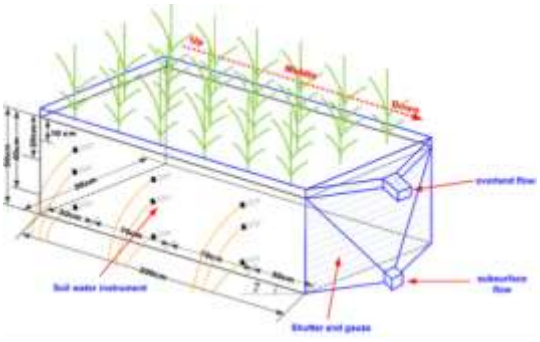


Fig. X+4 - The structure of the experimental plots used in recent research to assess the effect of vegetation maturity on surface runoff coefficients (REF 6)

Fig X+4 Provides an illustration of how this research was conducted, and Fig X+5 demonstrates the results which show how the growing stage of a particular crop (in this case Maize, NB for Maize vegetation density at ground level is inversely proportional to maturity) affects the vegetation density at the surface of the ground and how this in turn can alter the runoff coefficient by a factor of between 3.1 and 3.6x depending on the gradient of the ground.

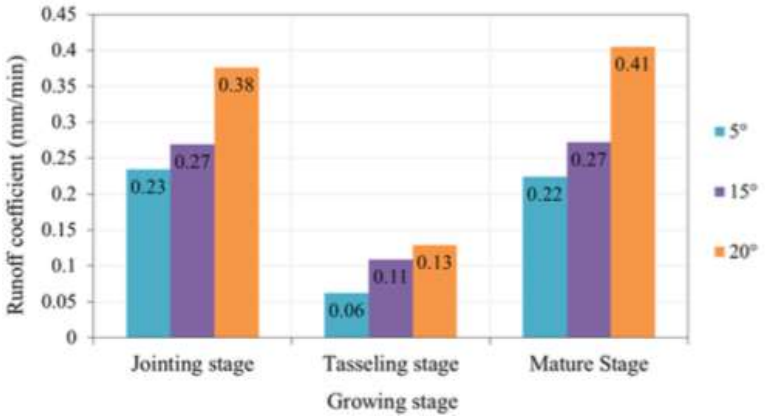


Fig. X+5 - Results of recent research to assess the effect of vegetation maturity) on surface runoff coefficients (REF 6)

4. **The sequencing of the mitigation proposed is not detailed enough to establish whether it will be effective prior to the point that the construction activity will heighten the surface water risk associated with the site.**
   In Statkraft's Schedule of Mitigation and Monitoring they simply state that runoff control measures will be applied during design, prior to construction and during construction. There is no statement regarding when precisely the measures will be operational relative to the other (risk producing) activities being conducted on the site.
   Further detail is needed regarding the sequence of the establishment of the mitigations within the applicant's installation plan or schedule of works & a statement regarding the point within this plan that the mitigations are expected to be effective.

   In addition to this lack of detail there are also concerns regarding the presence of commercial incentives that would encourage the applicant to commence operation of the solar array before ground cover is established and to continue to neglect the management of this ground cover.

   These incentives relate to:

1. The time-costs associated with rent of the land, grid connection, business rates & cost of finance
2. The need to conduct maintenance activity (panel cleaning and grass cutting) that would further compact the soil post-construction but potentially before grassland and vegetation buffers have been allowed to establish.

Fig. X+6 - Example of heavy machinery proposed to perform maintenance activity producing compaction of essential buffer and spacer sections between panel rows

Without commitment to an appropriate set of mitigation measures and management strategies, and adherence to these being enforceable, it is clear that these commercial incentives are likely to de-incentivise mitigation of flood risk, the reduction of which is of critical importance to the local community.

5. **The mitigation proposed is reliant on its ability to be incorporated within exiting field drainage systems currently in place (FRA 7.36 -7.38),** however:
    - The existing drainage systems currently in place are not able to deal with the current volume of surface runoff regularly emanating from the site (as evidenced in section 6 which details recent flood events)
    - The current drainage systems in place are likely to be adversely effected by construction activity conducted at the site, and yet this risk and a suitable mitigation has not been detailed in Statkraft's FRA.

6. **There is no assessment of the cumulative effects of other neighbouring solar-farm developments upon the effectiveness of mitigations proposed or indeed the surrounding environment's ability to process the elevated runoff rates and volumes associated with this construction alongside that proposed by EDF and ENSO.**
   This is despite:
    - A number of the field drainage systems which Statkraft's mitigation relies upon being effectively shared as the boundary between fields that act the boarder between Statkraft and ENSO, or Statkraft and EDF developments - and where these boundaries also align with the flow-path of runoff, representing significant convergence of the volume of runoff.
    - The specific aspects of the local community that are at risk (specific roads, houses and residential development areas) being in common to multiple applications.

6. **Conclusion**

The NPPF makes it clear that *"development should be made safe for its lifetime without increasing flood risk elsewhere" (p.159) and "should consider cumulative impacts in, or affecting, local areas susceptible to flooding"* (p.160).

Further the NPPF states development should be *"using opportunities provided by new development to reduce the causes and impacts of flooding (where appropriate through the use of natural flood management techniques)"* (p.167c).

The NPPF continues in paragraph 167 *"When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere."*

The MSDC Core Strategy 2008 states at policy CS4 *"The council will support development proposals that avoid areas of current and future flood risk, and which do not increase flooding elsewhere…"*

The MSDC Local Plan 1998 saved policy E10 states applications for development in the countryside must have regard for (inter alia) *"the prospect of pollution including the effect on nearby watercourses and groundwater sources."*

The emerging Joint Local Plan states at policy LP29 that *"Proposals for new development can be approved where…*
2. In areas at medium or high risk from flooding, it has been soundly demonstrated that the new development or intensification of development, can be made safe for its lifetime without increasing flooding elsewhere.
3. Mitigation is provided against existing and potential flood risks throughout the life of the development (including fluvial, surface, coastal and sewer flooding) through application of a sequential approach to flood risk, the implementation of Sustainable Drainage Systems (SuDS), and risks to ground or surface water quality.
4. Above ground, appropriate SuDS are incorporated within new developments wherever possible, and take opportunities to provide multifunctional benefits, including biodiversity, landscape, amenity and water quality enhancement.
5. Proposals are submitted appropriate to the scale of development detailing how on-site surface water drainage will be managed so as to not cause, or increase flooding elsewhere. This includes the cumulative impact of minor developments.
6. Opportunities to provide betterment of greenfield runoff rates to reduce the overall risk of flooding, have been provided wherever possible."

In summary it is our assessment that the applicant's proposal is woefully deficient in its consideration of both the latent flood risks present at the site, as well as the likely contribution that the construction will make in further heightening this risk and how this escalation will impact those who live, work and access the environment within which the site is situated.

Given the factors considered above it is clear that the proposal contains activity that will significantly elevate flood risk by increasing peak discharge rates, volumes and the kinetic energy associated with pluvial flow whilst removing existing mitigations associated with the land's current use & before planned mitigations are in place.

It therefore seems likely from the plans submitted that the worst case flood scenario is *likely* to occur should the proposal be approved - this would be represented by:

i. Reduction of vegetation at the site
ii. Soil compaction during construction
iii. Destruction of existing drainage systems
iv. Increased proportion of impermeable surfaces due to the construction of access tracks, buildings and other infrastructure
v. Installation of solar panels concentrating & accelerating rainfall
vi. The delayed establishment of mitigation through grassland & vegetation - this not being mature enough to sufficiently slow or absorb water flow at the point when the soil is most compacted
vii. Notional application of water storage areas as a mitigation strategy but these this not being sized or located appropriately
viii. reliance on current field drainage strategies currently not fit for purpose
ix. Insufficient application of spacing and buffer areas to retard the pluvial flow
x. Maintenance activity further compacting the soil
xi. A storm event occurring within this time (Nb. The construction is likely to take around 20 weeks, and, as over the last 13 months at least 4 storm events have been recorded, it is therefore reasonable to assume at least two storm events are likely to occur during the construction phase.)

Furthermore it should be noted that all of the above issues discussed throughout this section also apply to adjacent solar farms proposed within the proximity of this site, producing a cumulative impact of flood risk on the surrounding areas and the River Gipping that they all drain into.

We therefore are highly concerned as to how the heightened risk of flood water emanating from Statkraft's site would interact with unmitigated flow-paths emanating from the ENSO and EDF sites. From examining Statkraft's application it is clear that EDF and ENSO have the potential to produce cumulative flood risk to the Channel, Somersham Road and Gipping. Whereas EDF and Statkraft's proposals have the potential to produce cumulative food risk to Tye Lane and Gipping (via the culverts present adjacent to Tye Lane), and Flowton Brook.
We would therefore urge planners and the LLFA to consider the cumulative effect of all three applications in terms of how their ability to elevate flood risk to the areas interact.

Given this assessment we ask that the local planning authority REFUSE the application on the grounds of the heightened flood risk it represents and the applicant's neglect to propose an acceptable mitigation strategy.

References
1. Hydrologic Response of Solar Farms, J. Hydrol. Eng., **2013**, 18(5): 536-541

2. Section 4.4, FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY, RMA-RC2097

3. Reaney, S.R. and Bracken, L.J. and Kirkby, M.J. (**2014**) 'The importance of surface controls on overland ow connectivity in semi-arid environments : results from a numerical experimental approach.', Hydrological processes., 28 (4). pp. 2116-2128.

4. EA's Low Risk Surface Water Flood Depth Map

5.Dabney, S. M., Moore, M. T., and Locke, M. A. (**2006**). "Integrated management of in-field, edge-of-field, and after-field buffers." J. Amer. Water Resour. Assoc., 42(1), 15–24.

6. Effects of Rainfall Intensity and Slope Gradient on Runoff and Soil Moisture Content on Different Growing Stages of Spring Maize, Water, **2015**, 7, 2990-3008

Biodiversity

1. The developers claim that, "with the implementation of the embedded design measures and mitigation as described in this [biodiversity] chapter, residual effects of the Proposed Development on habitats and species within and around the Site will be Not Significant."[34] They also say that "the impacts associated with the proposal have been avoided or minimised *wherever possible* [our italics]."[35] These are ominous words. It is clear that, with the use of the word 'residual,' they expect negative effects during the construction period. They then add that "the creation of new habitat areas post-construction along with provision of refuge, roosting and nesting features will lead to clear Biodiversity Benefit once established over the lifetime of the Proposed Development (or at least thirty years)."[36] Thirty or more years is a very long time to remedy the damage that these proposals would cause in the first place, and the very limited features that they propose *wherever possible* - in other words, when it suits them - would be completely unnecessary if the development did not go ahead. Instead, this peaceful part of rural Suffolk would remain much as it is, with undisturbed wildlife in its natural setting, rather than being surrounded by acres of steel, glass, fencing, shipping containers and cameras.

Background

2. A considerable range of legislation and planning and related guidance is relevant to the proposals in respect of wildlife and biodiversity. Much of this is summarised in documents submitted with the planning application and is not repeated here.[37] Further guidance was provided in response to the Scoping Opinion.[38] In essence, the requirement is for developers to protect and enhance biodiversity and not to damage irreplaceable habitats or vulnerable species. Statkraft have gone some way in trying to follow this guidance but their claims are based on limited data and take no account of the substantial length of time that any proposed new habitat would take to grow and be populated.

Research done by the applicants is patchy

3. Some useful ecological surveys, which we welcome, have been carried out for the applicants along with some additional desk research. This is limited, however. The developers say that "key sources were consulted"[39] but, in reality, this was largely done only to confirm that there are some records on the SBIS database. That database, however, does not represent anything like the totality of information available. No attempt seems to have been made, for example, to have sought additional information from any of the organisations contacted during the desk study, and there are other sources which appear not to have been contacted at all. One example is the Suffolk Moth Group, which records and maps moth sightings,[40] with 130,000 records in 2020;[41] and there are individuals who keep detailed records of sightings in the areas potentially affected by the proposal.

4. Many vulnerable species, especially of invertebrates, may have been ignored. Records of species' presence do not, of course, necessarily indicate that they are breeding in the area - though there is some evidence that many of them are - or that they would be directly damaged by the plans, but the general conclusions of the ecological surveys that little damage would be caused by the proposals must be doubtful. What is more, little or virtually no account is taken of the two other current proposals[42] for large-scale solar installations in the immediate area. If

[34] Environmental Statement Chapter 7 'Biodiversity' para 7.11
[35] Environmental Statement Chapter 12, page 204
[36] ibid.
[37] See, for example, Design and Access Statement section 1.2.3 and Environmental Statement Chapter 7 'Biodiversity' pages 111-114
[38] ibid pages114-116
[39] Ibid. para 7.5.1
[40] https://suffolkmoths.co.uk/
[41] Recording Moths in Suffolk Facebook page, 3.2.21
[42] ENSO and EDF

either or both of these were approved along with the Statkraft plan, the overall damage would be considerably more than the sum of its parts, as some 600 acres of habitat would be destroyed together with much wider damage (in the medium term at least) resulting from the construction processes. This would not only have a direct impact, but also indirect impacts, for example on deer and other animals which regularly use the fields to get from one piece of woodland to another. In this context, the advice of Natural England should be noted, that "consideration should be given to the wider context of the site, for example in terms of habitat linkages and protected species populations in the wider area." This has not been done here.

Biodiversity gain or loss?

5. Statkraft say that a Biodiversity Net Gain Assessment has been carried out, and that this shows a net gain of just over 70%. Despite their assertion[43] that the biodiversity metric has been provided separately – it is listed as Technical Appendix 7.8 in the Application Documents Structure Index Guide - this is not one of the many documents now on the MSDC planning website and it is therefore impossible to check either the results or the assumptions that have gone into them. There is, anyway, considerable and increasing scepticism about these calculations which have been described as an "ecological accounting scam based on a highly questionable and debunked system of metrics involving deliberate misclassifying of habitats."[44] The fundamental problem is that the metrics are calculated and quoted – to ludicrously unrealistic and therefore spurious degrees of accuracy – without any reference to many caveats, some of which are included in the metrics documentation itself. So, for example, indirect impacts of a development are not taken into account; species are not explicitly included, but habitat types are used as a proxy for so-called biodiversity value; any results need to be interpreted using ecological expertise and common sense; and so on. As a recent expert study concludes, "we now have the chance to peer under the bonnet at what these biodiversity gains actually are, and many of these come in the form of habitats which might score a lot of 'biodiversity units', but are unlikely to improve English biodiversity in an ecologically meaningful sense."[45]

6. Although some of the enhancements and mitigations that Statkraft propose may have some value, and doubtless contribute to the apparently substantial biodiversity net gain that the metric produces, the reality is that these enhancements do not necessarily possess real ecological properties such as connectivity with surrounding habitats. What's more, it seems likely that there is a significant governance gap that is likely to undermine claimed net gain – a lack of monitoring and enforcing the implementation of habitat enhancements within developments. Local authority guidance advises councils not to take enforcement action unless the violation results in a 'serious harm to a local public amenity'. In most cases, a failure to deliver the appropriate quality or type of habitat within the development footprint will not fall under this category. Indeed, given the opacity of the net gain calculations, it will be hard (if not impossible) to work out how and where the apparent gains are supposed to be realised. As such, claims such as Statkraft's will be essentially unenforceable – there is no guarantee that there will be genuine biodiversity gain at all, while at the same time it being certain that many natural habitats will be seriously damaged during the construction period and subsequently. If the application were to go ahead, a condition should be that biodiversity changes should be monitored and publicly reported and that the developers' biodiversity management plan should be amended if the gains claimed now were not realised.

7. Furthermore, as one of the fundamental principles underlying the biodiversity metric states, "metric design aims to encourage enhancement, not transformation of the natural environment. Proper consideration should be given to the habitats being lost in favour of higher-scoring habitats, and whether the retention of less distinctive but well-established habitats may sometimes be a better option for local biodiversity. Habitat created to compensate for loss of natural or semi-natural habitat should be of the same broad habitat type … unless there is

[43] Environmental Statement para. 7.9.2.1
[44] Suffolk Bird Group *The Harrier* Spring 2022 *page 16*
[45] Sophus zu Ermgassen and Dr Joseph Bull, researchers at the Durrell Institute for Conservation and Ecology at the University of Kent at wcl.org.uk

good ecological reason to do otherwise."[46] In this context, it is highly questionable whether the new hedges and other mitigations proposed by the developers would really lead to gains compared with retaining the current slowly evolving habitats, shaped over centuries by local farming practices, where wildlife, soils and vegetation are in harmony – especially when they would be accompanied by masses of fencing surrounding enclosed areas and permanent industrial noise.

8. From the documentation that Statkraft have provided, it is hard to get any real idea of what their proposed habitat enhancements really mean. The Biodiversity Management Plan includes a good deal of boilerplate material relating to the technical aspects of planting and the like – all of which should be implemented should the application be approved - but the only real detail of what this applies to seems to be confined to a single sketch plan listed as 'Figure 5.5: Landscape and Biodiversity Management Plan' and some short sections of the Non-technical Summary. This is unhelpful.

9. The applicants say that an "extensive programme of mitigation planting will be implemented, which over a period of 5 to 10 years will strengthen the existing fabric of the site, soften the appearance of the Proposed Development and mitigate effects on landscape and visual receptors. In doing so, the Landscape mitigation will deliver a long term legacy of landscape compensation."[47] This is an extraordinarily vague claim which is somewhat at odds with the aim stated elsewhere that new hedgerow – presumably the new habitat which would be most likely to soften the developments; appearance - should achieve target condition in 12 years.[48] There is also considerable doubt as to whether some of the mitigation measures proposed would be successful, so much so that Statkraft have proposed a number of contingency measures if these habitats are not growing successfully. These measures are, however, amazingly vague – for example "If it is considered it is not possible to achieve either the proposed habitat type or target condition, the management regime and/or biodiversity calculator will be revised, rectification steps taken and any additional contingency measures implemented as appropriate."[49] It is hard to have confidence in any of the developer's biodiversity proposals in the light of such statements.

10. It is quite possible – given the damage that would be caused during the lengthy construction period, and the inevitable displacement of many species - that there would be no real gains for many years, if ever. And, even if there were gains in the long run, these would be lost when the life of the installation came to an end and the land returned to arable production, if that is indeed Statkraft's plan.

11. As the Technical Supplement to the Defra Biodiversity Metric says, "Many factors influence how long a habitat takes to go from the point of creation or restoration to the desired end point condition. Factors are often site dependent but can include soil nutrient status, soil types and pH, site preparation, climate and the neighbouring habitats and species matrix available to colonise the new or restored habitat. The timeframe is also resource dependent ..."[50]

12. The developers claim that "hedgerow loss is therefore a temporary and low magnitude impact on the availability of hedgerows in the area and their function as a connecting habitat."[51] This is an unusual definition of the word 'temporary.' Ten years is nearly one-third of the proposed life of the project and, until that time, there would be no effective screening of the panels and shipping containers, and no real habitat for wildlife. The visual impact will be huge: 61,440 solar panels, 53 shipping containers, 26 transformers, 52 power control systems and miles of fencing punctuated with numerous CCTV cameras. The ambiguity over the time that plants would take to grow

[46] Natural England *Biodiversity Metric 3.1 User guide* Principle 5, page 13
[47] Non-technical Summary page 16
[48] Appendix 7.7 Biodiversity Management Plan para 6.2.1
[49] ibid para 6.2.3
[50] Natural England Joint Publication JP029 *The Biodiversity Metric 2.0 Technical Supplement Beta Edition* Paras 2.33, 2.34
[51] Environmental Statement Chapter 7 'Biodiversity' para 7.8.1.5

casts considerable doubt both over the extent to which there would be any genuine biodiversity gains, and on the claim that new planting would really screen the development or mitigate the potential effects of glint and glare.

13. It is possible that even the lengthy timescale that Statkraft imagine is an under-estimate. The proposed new hedges are to be maintained at a minimum 3 metre height.[52] Estimates of the time hedges take to grow vary, depending on species and ground conditions, from 3 to 12 inches a year.[53] In other words, 10 years is an absolute minimum for new hedges to grow to the target height, but this could take much longer – as much as the entire life of the project. Furthermore, the height of a hedge is not the only important criterion – hedges need to be thick and dense, both to provide good habitat and for effective screening. Full density typically takes between 10 and 17 years but this requires regular annual maintenance.[54]

14. To illustrate these points, the picture below shows supposedly remedial hedge planting from the EA1 underground cable where it crosses Tye Lane, very close to the proposed Statkraft site. This shows virtually no growth at least two years after planting.

Dangers of fencing

15. If approved, the site would be surrounded by 1.8 to 2.0 metre high deer fencing. Although some routes for smaller mammals would be provided under this, the evidence for the effectiveness of such gaps is mixed.[55] Furthermore, the creation of fenced areas and corridors (such as footpaths across fields) would likely have a number of impacts on the wildlife that currently lives and breeds in the area, beyond the direct damage to their habitats. It would remove or reduce animals' access to their natural areas for grazing and hunting, and also to important water sources available in surrounding ponds. And it would drive larger animals (in particular deer and badgers) onto the narrow roads – where the development would inevitably make drivers' sight lines worse – risking damage to both animals and to vehicles and their occupants. There is also evidence that such fencing can act as a trap to deer and cause them injury.[56] These impacts would be bad enough were there just one solar installation in the vicinity; the prospect of three which were more or less contiguous would be horrifying.

[52] Landscape and Biodiversity Management Plan Figure 5.5
[53] Information from range of hedge growers' websites.
[54] Leigh Hunt, Principal Horticultural Advisor to Royal Horticultural Society, email 4.12.20
[55] See, for example, Huijser et al *Construction guidelines for wildlife fencing and associated escape and lateral access control measures* Western Transportation Institute – Montana State University, 2015
[56] Photographic evidence is available of the impact on Roe Deer from similar fencing at Bramford sub-station

Impact of the construction period

16. The developers say that they will implement a range of mitigation measures aimed at avoiding disturbance to some vulnerable species present in the area. As far as the potentially destructive construction period is concerned, they say that they will bring forward a Construction Environmental Management Plan (CEMP) but provide little detail of what this might contain. MSDC should not consider the proposal until full details of this plan have been published and both statutory and other consultees have had an opportunity to comment on them.

17. The developers make much of their long-term plans but say very little about the damage – possibly permanent – that would be caused by the lengthy construction period that they propose. A 20 week[57] construction period (which experience shows is likely to over-run), during which there would be considerable noise,[58] would do considerable harm to landscape, habitats and breeding wildlife which in some cases could be irreversible. The Suffolk Biodiversity Validation Requirements[59] show that the key seasons for the main species likely to be impacted by the plans cover, between them, every month of the year. The lack of a Construction Ecological Management Plan makes it impossible to know what is suggested to mitigate this damage.

18. The developers say that "it is likely that vegetation clearance and preparatory groundworks will take place during spring and summer and hence will potentially overlap either the bird breeding season."[60] They go on to say that suitable protection measures will be included within the CEMP. It is impossible at this stage to know whether this can be relied upon or, indeed, if such a claim could be effectively policed were planning permission to be granted. If the application is approved there should be a pre-commencement planning condition that all work – including hedge removal, and any other impacts (such as noise) take place outside the bird breeding season.[61]

Some individual species

19. Badgers. The application acknowledges that there could be a direct negative impact on badgers. The Biodiversity Management Plan appears to take a highly cavalier approach to this, suggesting that – should disturbance to badgers be likely once construction has started – working methods or development design would be amended or a development licence obtained from Natural England. This is hardly within the spirit of the *Protection of Badgers Act 1992,* under which it is an offence to disturb a badger while it is occupying a sett. Should the proposals be agreed, much clearer and more specific mitigation measures should be put in place.

20. Furthermore, no account is taken of the impact that badgers could have on the development. In 2018, nearby Flowton Road collapsed owing to badgers digging a sett underneath it. It was closed for several months as the County Council ruled that repairs could not proceed until the badger breeding season had finished and Natural England had issued a licence.[62] There is no mention in Statkraft's documents of the potential impact of badgers digging under the anti-deer fencing and solar panels, or of the damage and pollution that could bring about.

21. Great Crested Newt. Given that the applicants did not survey nine out of the 13 ponds in the area,[63] there can be no confidence in their conclusion[64] that there would be a "negligible or, at worse, minor adverse" effect which is "not significant" on the local GCN population.

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[57] Non-technical Summary page 7
[58] And potentially artificial lighting – see para 7.8.1.7 of the Biodiversity chapter
[59] https://www.midsuffolk.gov.uk/assets/DM-Planning-Uploads/Suffolk-Biodiversity-Validation-Requirements.pdf p4
[60] Environmental Statement Chapter 7 'Biodiversity' para 7.8.1.7
[61] See National Solar Centre *Biodiversity guidance for solar developments*
[62] https://www.eadt.co.uk/news/motorists-ignore-warning-signs-after-badger-family-set-up-camp-2437752
[63] Appendix 7.6 para 2.3.1
[64] Environmental Statement Chapter 7 'Biodiversity' para 7.8.1.11

22. Moths and butterflies, and other invertebrates. Statkraft somewhat glibly claim that "operational effects of the Proposed Development on invertebrates, once new planting and habitat creation has established alongside the cessation of chemical applications[,] are assessed to result in a Low Positive magnitude impact and a minor positive effect which is not significant."[65] We hope that this does not refer to any chemical applications planned by Statkraft, which would undoubtedly be harmful to invertebrates, as will the lengthy period before new planting has become established, which is unacceptable. Furthermore, it is known that there are many vulnerable species in nearby Flowton, and it is likely that many of these, and maybe others, also live in the area covered by these plans. Many of these are dependent on hedgerow trees, flower-rich margins and less-managed hedges[66] that would, at best, be impacted by the construction period and, at worst, permanently displaced.

23. Statkraft appear to be making some welcome proposals for bees and other insects, such as six insect hotels and bumblebee posts[67] but it is impossible to comment on these as they say only this about them: "the Applicant is working with the Bumblebee Conservation Trust to ensure that opportunities are taken to"[68] after which the sentence stops.

24. Birds. Some mitigation measures are proposed,[69] but there is no guarantee that they will be effective during the lengthy construction period, when some species could be driven away from the area permanently, or in the longer term. The developers claim that there will be provision for nesting skylarks within their plans – note that two skylark breeding territories were identified from their breeding bird survey – but, as Suffolk Wildlife Trust have pointed out in their comments on the application, ignore evidence that skylark nesting is negatively impacted by solar installations and that Statkraft's proposals are inadequate.

25. Bats. We have concerns that the data on which Statkraft base their conclusions are deficient at best. They claim that the first of their bat transect surveys, on 24 May 2021, was carried out in appropriate weather conditions, but we believe that the actual local temperature was 7 degrees C, not 11 as they claim,[70] which is well below the optimal temperature suggested in the guidance for bat surveys[71] and particularly inappropriate in a year when the winter was long and as a result, bats emerged from hibernation later than usual.

26. While some welcome mitigation measures in respect of bats are proposed,[72] it is impossible to say whether they are adequate. The developers say that further detailed roost assessments would take place in advance of any tree removal and that, were any bats to be confirmed as roosting, application for a licence to destroy or disturb the bat roost would be made. This would take some time and it is hard to imagine a planned construction programme being held up for this reason. More likely is that there would be no action and damage caused as a result. At the very least, any consent to this application should ensure that suggestions such as this should be policed effectively. No mention is made of the limited evidence that some bats are more prone to fatal collisions owing to mistaking solar panels for water to drink.[73] No evidence has been provided of the potential impact of noise during the construction or operational phases on bats, which use ultrasonic sound for navigation and hunting. Evidence should be provided and mitigation measures proposed if necessary.

Trees and plants

[65] Ibid. para 7.8.3.10
[66] Butterfly Conservation webinar 17.11.20
[67] Biodiversity Management Plan para 4.2.6
[68] Non-technical summary page 22
[69] Biodiversity Management Plan paras 3.2.1-2; Biodiversity Chapter paras 7.8.1.6, 7.8.3.4
[70] Environmental Statement Appendix 7.4 *Bat Survey Report* Table 2.2
[71] Bat Conservation Trust *Bat Surveys for Professional Ecologists Good Practice Guidelines* para 2.6.1
[72] See, for example, the Biodiversity chapter para 7.8.1.7
[73] https://environment-analyst.com/global/76375/ecologists-review-impacts-and-opportunities-from-solar-farms

27. The developers claim that there will be a new community orchard that "will provide benefits for biodiversity as well as a community facility which enhances the experience of those using the public footpath that passes through it."[74] Bizarrely, there is no substantive mention of this orchard in either the Biodiversity chapter of the Environmental Statement or the Biodiversity Management Plan, so it is impossible to make any comments about it, other than to ask how it would be maintained and by whom, and what biodiversity benefits are envisaged.

28. It is disappointing that no suggestions have been made for planting climbers on the proposed security fencing.[75] Plants such as honeysuckle, clematis and blackberries are good nectar sources and would provide additional screening. Such planting could be a condition of planning approval.

Conclusion

29. The developers claim that their proposals would have positive impacts on biodiversity through the planting of some new hedges, a community orchard, wildflower and grass seeding and the introduction of SuDS attenuation ponds. [76] In reality, however, any marginal ecological and biodiversity improvements would be hugely outweighed by the physical short- and long-term damage to the area, as well as by the noisy low hum that would come from the 26 transformer units proposed and the extensive network of CCTV cameras,[77] something that would be off-putting to both animals and people used to a quiet walk. The evidence that Statkraft provide for any benefits is limited and unconvincing, and they even try to create virtue from evil. For example, they say that "the battery storage system and onsite high voltage electrical equipment have been sited in locations away from residential properties."[78] That might be true, but wildlife and walkers both frequent these areas and would suffer as a result if the plans went ahead.

30. In reality, the proposal taken as a whole would be damaging in many ways, even on its own, let alone combined with similar impacts from the other local proposals for solar arrays. Local residents and visitors alike currently enjoy the openness of the landscape, wide views, wildlife and trees and plants in the area as a coherent whole. That would be impossible if every footpath were surrounded by fencing, views dominated by huge solar panels and shipping containers that would not even be partially screened for many years, and any possibility of seeing wildlife in its natural context removed.

31. It is possible that some tiny areas of new habitat would be created, but many existing habitats would be destroyed or damaged. There might, in time (possibly a very long time) be some small marginal gains from any newly-created habitat but new habitat is clearly not dependant on a solar installation being built; there are many other ways in which habitat is created or develops over a period of several decades. Even if any marginal gains could be attributed to Statkraft's plans, any enjoyment or indeed visibility of them would be limited at best. Wildlife and biodiversity in the area would far better be served by the current situation, in which both farmed and unfarmed areas support a wide range of animals, birds, invertebrates, plants and trees in their historic natural context.

[74] Non-technical Summary page 15
[75] As recommended by the BRE National Solar Centre in their Biodiversity Guidance for Solar Developments p4
[76] See, for example, the Non-technical Summary page 9.
[77] Non-technical Summary page 12, 13
[78] ibid page 15

Transport & PRoW's

Transport & Access

MAIN CONCERNS

1. Our main concerns are, as with previous solar farm applications, around insufficient information, incorrect and contradictory information or unclear information. The main areas are the use of Tye Lane, the estimated numbers and types of vehicle movements (including contractors' vehicles) and the impact on the local communities.

USE OF TYE LANE

2. Residents could not believe, at a public consultation Zoom meeting on 26th May, that Statkraft were considering using Tye Lane as their sole access point. We explained that Bullen Lane would be much more appropriate. Thankfully, they have seen the errors of their ways, but they still intend to use part of the road. **Tye Lane is unsuitable for ANY use for the following reasons. SCC Highways, in their Holding Objection issued 7 April, have expressed their concerns too.**

3. **SCC Highways have stated in their response, "Tye Lane is a narrow single track road with limited passing places and uneven verges. It is also a designated 'Quiet Lane' and subsequently is used by non-motorised road users and was designated as such on the basis that it carries less than 1,000 vehicles per day. The proposal will place the permanent site access on Tye Lane as well as use a significant length of Tye Lane as a construction route (to access the most westerly area of the proposal - field 7). There is also a neighbouring application (DC/21/04711) that proposes to use Tye Lane, resulting in a potentially significant impact. Subsequently, we require further details of the forecast permanent and temporary increase in vehicle movements and vehicle type on Tye Lane. This is not clear from the submitted Traffic Impact Assessment, This impact will need to reduced or mitigated wherever feasible to ensure that the proposal is in accordance with NPPF para.111 and there is not 'an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe'. Holding objection until the above comments have been addressed.**

4. Tye Lane is designated and signed as a Quiet Lane, where the priority order is pedestrians, horses, cyclists and then cars. For all the relevant part it is a mainly single-track road with no official passing places – only the odd driveway and irregular cutting made into the banks over decades by drivers. It is hilly (rising from about 8m to 58m AOD on the 3.8km from the B1113 to their Field 7 at The Channel). It is twisty, with sharp bends, and has the national speed limit. There are no designated sidewalks and the road is often shared by dog walkers, other pedestrians, horse riders, cyclists (it is signed as National Cycle Route 48) – hence the Quiet Lane application. Caravans (for the Little Sage Hill camp site), farm vehicles as well as the usual cars, vans, lorries etc. add to the mix. Although the official traffic collision figures are negligible, we often witness near-misses as vehicles race from one passing place to the next and have to brake suddenly and reverse. The road is subject to flooding between Bramford Tye and Lorraine Way, Bramford (the B1113) as rain water floods off the fields and is sometimes impassable. **The additional traffic will only cause more disruption, danger to all types of users and damage to the roadside and passing places.**

5. Another point this is often missed is the situation with Flowton Road. The stretch between Blood Hill and Somersham School is disrupted by badgers digging under it every year. In 2018 it was closed to traffic between March and late Summer, until the repair work could legally be started. Closure was threatened in 2019 and it was again closed in 2020. Last year it was threatened with closure and many of us avoided it because it was dangerous to cars. This meant additional diverted traffic onto Tye Lane as it is the most suitable (sometimes only) alternative route, as vehicles also avoid using Blood Hill and The Channel which can be treacherous roads. The construction period will likely coincide with the badger breeding season.

6. Statkraft still propose to use a 500m stretch of Tye Lane to access field 7 (on the corner of The Channel) from the rest of the site. **Crucially, they have failed to provide details of the types and numbers of vehicles that will be used. SCC Highways have requested "further details of the forecast permanent and temporary increase in vehicle movements and vehicle type on Tye Lane".** The Non-Technical Summary states, "a small amount of traffic will travel along Tye Lane" and "the effects are not likely to be significant". But there is no evidence to support this. Will HGVs drive straight through the site and then onto Tye Lane and then into field 7? We know from Enso (DC/20/05895 & DC/21/00060) that the bends in internal tracks will be too tight for that. In any case, the Outline Construction Traffic Management Plan (OCTMP) para 5.2 states that the offloading of plant and equipment will be made at the construction compound (location unknown – see para 14 below). The Construction Method Statement (para 3.7.2) states that components will be delivered by tractor and trailer to localized distribution points along the tracks, so I assume this will be the method for delivery to field 7. The Traffic Impact Assessment (TIA) para 1.5 states, "in some cases, deliveries will be broken down into smaller units on the main site and transported separately along Tye Lane to field 7". It appears that this field has about 33% of the total panel area. Statkraft should know this figure as they have calculated the total number of panels and length of tracks. These trailers will not be carrying a full HGV 44-ton load – we would like to see clarification on how many of the proposed dual-wheeled tractor movements would be required between field 7.

7. Statkraft's use of the term construction related traffic is confusing. Para 1.5 of the TIA says that all construction related traffic will be via Bullen Lane. Para 4.1 states that all construction related traffic (including cars, vans) will use A14 J52 but only says that HGVs will use Bullen Lane. The TMP para 4.3 states that construction traffic must not deviate from the agreed egress route but general work vehicles (such as cars, vans etc.) are permitted to use a different route. **It should be made clear that ALL traffic, including cars and vans, must use the B1113 and Bullen Lane route.** Otherwise, we will have constructors' cars and vans using unsuitable roads through Sproughton (including the High Street), Bramford, Tye Lane and The Channel. This will add massively to the traffic problems as they represent about two thirds of the construction related traffic. **In their holding objection, SCC Highways have stated, "Whilst the proposal to utilise Bullen Lane for all construction traffic access is welcomed and acceptable (subject to an acceptable construction traffic management and delivery plan requiring all construction traffic and contractors traffic to use that route), there are concerns over the use of Tye Lane". This suggests they are assuming that ALL traffic connected with the construction (apart from the Tye Lane transfer) uses Bullen Lane.**

8. Statkraft claim there will be no "spoil" on the highway - TIA para 7.1. Our experience is that field traffic brings mud onto the road at any time of the year. They have failed to provide the DM04 drawings that SCC Highways require and we question the sight lines for these exits, especially as they are based on speeds of 50kph. The entire length of Tye Lane until you reach the village of Flowton is national speed limit. They have tried to use traffic speed figures for Copenhagen Cottage, which is 3.2km away and where traffic is slower because there is a blind hill there next to the exit for caravans (on one side) and a wholesaler with HGVs on the other. Even here, 15% of the vehicles exceed 59kph. The stretch of Tye Lane proposed between field 7, between the bends at Woodlands Farm and the top of The Channel, is the fastest part of Tye Lane. Cars accelerate quickly once they have cleared these hazards. Visibility on egress from the fields is poor. The Channel exit has had a number of near misses recently. **We would like to see Statkraft carry out a traffic survey this stretch of Tye Lane to ensure safety of the public and their workers are assessed correctly. Statkraft also need to assess the Impact of Construction traffic for Tye Lane too, rather than just Bullen Lane. This should factor in the other projects that are known of, including EDF (DC/21/04711).**

9. Statkraft are not even using the shortest route between fields 4 and 7. They propose to use the NE corner of field 4, which requires cutting down 82m of hedgerow. **We would recommend that they extend the internal road to the NW corner of Field 4 and then negotiate to use the next field edges for the remaining 450m. It would also avoid any problems with the legality of operating agricultural machinery on public roads. This means that there would be no construction traffic in Tye Lane at all.** The use of traffic lights will cause waiting vehicles to back to Woodlands bends or the top of the Channel,

even if no loads are being transported. Experience shows that backed up traffic causes immense problems on this type of road because of the single-vehicle passing places. If Tye Lane is to be used, there must be traffic marshals.

10. **In summary, no vehicles (HGVs, tractors, cars, vans etc.) should use any part of Tye Lane** and Statkraft should reconsider a cross-field route to field 7 rather than cause significant aggravation and risks for local users of Tye Lane.

NUMBERS AND TYPES OF VEHICLE MOVEMENTS

11. We need to make sure we don't end up with the position we have with Anesco at Burstall (DC/19/01601) who significantly underestimated their vehicle movements. Mid-way through construction they have had to seek permission to increase the HGV traffic numbers nearly 2 1/2-fold - from 352 movements to 852 movements – and they say it might be more! And they're only building a 20 container BESS.

12. The numbers given do not seem to include the additional on-site transfers along Tye Lane by, presumably, tractors – see para 6 above. **These should be provided to ensure the traffic increase on Tye Lane is accurately assessed.**

13. Statkraft specify that they intend to minimise compaction of the site by using low ground pressure equipment. This is commendable. They mention tractors with dual wheels to spread the load. Dual wheels are common for cultivation across agriculture to the end. However, dual wheels make tractors very wide by design. The maximum legal width of an unescorted vehicle on the highway is 9ft 6in (RTA and Construction & Use Regulations). Anything over this, which tractors with dual wheels are likely to be) requires an escorting vehicle. These wide tractors will effective block Tye Lane for the use of other vehicles while on the road, causing traffic hold-ups and queues and much reversing by other road users plus likely damage to road verges.

14. Statkraft need to clarify what they mean by "construction-related traffic" (para 7 above) and the restrictions they will make on non-HGV vehicles. HGVs can only access this area from the A14 Jct 52, as there are restrictions through Bramford - Jct 53, Sproughton river bridge - Jct 54 and Sproughton High Street (from A1071) – Jct 55. However, construction workers could use any of the rat runs, especially coming from the A12 south. **We should seek assurances from Statkraft that construction worker traffic will be required to use Jct 52 as well. SCC Highways have assumed that ALL traffic will go via Bullen Lane, but I have asked them to confirm that.**

15. It is important to know the location of the constructors' compound, as this will impact on non-HGV movements. Also, it may impact on local residents, both because of the noise and, I assume, it will be lit at night for security. It will also determine how workers will get around the site – which they haven't covered either. The Design and Access Statement para 1.4.2.6 states it is likely to be located north of Tye Lane. We assume this is an error since none of the site plan goes north of Tye Lane. This needs to be clarified.

OTHER ISSUES

16. Glint and Glare – Non-Technical Summary para 5.4.3. This recognizes that "solar reflections are geometrically possible at all 20 of the assessed road receptor locations along Tye Lane". They expect this to be minimized by existing and proposed vegetation screening. No assessment has been made of The Channel (the West side of Field 7) for traffic heading North-East**. The blanket solution of planting hedging needs to be looked at carefully.** Firstly, it can take 8-15 years to grow to the required height. Secondly, it can create risks to traffic visibility. This is an issue that has been raised with the EDF Renewables application (DC/21/04711), where the current gaps in hedging in Tye Lane allow drivers to look across the fields and see traffic coming the other way ahead of blind corners. In Monmouthshire, permission was granted in 2016 for hedging 3m high for screening around a solar farm. An application has now been made by the farmer to

reduce this because it is dangerous – he has "zero visibility over the hedges" and cannot safely exit his farm. This confirms our view that indiscriminate screening of 3m high to hide panels is impractical and dangerous.

Public Rights of Way (PRoW)

MAIN CONCERNS

1. Our main concerns are, as with previous solar farm applications, around insufficient information, incorrect and contradictory information or unclear information. They include the main areas affecting PRoWs users, such as Tye Lane, which is used by pedestrians to access the PRoWs), the routes, construction safety, and the impact on users during the operational period.

ROUTES

2. Two PRoWs have been identified – FP Flowton 250/10 (which appears to become FP Burstall 174/7 as it enters Babergh part way through Field 7) and FP Bramford 155/3 (leading onto 155/2 at the eastern junction of Fields 1 & 6). There are route issues with both these footpaths as the official route and the used route differ. It is likely there would little, if any, disagreement with current routes being preserved over routes on the definitive map, with amendments made official. However, this amendment needs to be co-ordinated with both Enso Energy, Statkraft, the various landowners, and the PRoW team to ensure everyone is on the same page and we do not end up with no footpath because it has been built on using different ideas about the footpath location.

3. PROW 3. This is more problematic. It appears possible that the owners of Bullenhall Farm have diverted footpaths 3 and 2, which appears to be the stretch from Bullenhall Farm to Bullen Lane. We assume that the OS map and the definitive map both show exactly the same routes. We have not found Figure 3.4 that is referred to in para 1.4.3 of the Design and Access Statement. Originally FP3 continued straight on to the end of Field 2, where the other tree is, and then turned sharp left across the field, to rejoin the current footpath in the north east corner of Field 6. It makes sense to retain this diversion alongside the field edge, as signposted. It is unclear if the internal tracks will be inside fields 2 and 1, rather than next to the footpaths and this should be clarified. This could be a dangerous point during construction (see para 8 below). It is just after the north east corner of Field 6, and after the double power lines, that the major diversion of FP3 takes place. The footpath originally continued towards the north (left side) of the white house (Bullenhall Farmhouse) but has now been diverted to the west of the buildings. In fact, it appears to almost follow the Red Line on Statkraft's map, through point 10240/46612 and point 10191 46515 and then heads due east past 10302/46446 to join the original footpath at the woods. These points run through the hatched area on Statkraft's map for their main access road from Bullen Lane and possibly the (undisclosed) location of the constructors' compound. This could be a dangerous area! Especially as all these footpath signs have been placed to be seen by people walking from Bullen Lane to Tye Lane, but 2 are hidden for people travelling the other way. It is not clear where the footpath is (see Landscape and Visual Impact Statement LVIA para 5.8.4.4) and could account for the perceived lack of use. We need a clear map of this area, showing the proposed footpaths, the fencing lines, the internal tracks and construction areas. While we do not have a problem with the diversion of this footpath to the west being made official, we have concerns about its use during construction and it may be better to reinstate the path to the east, at least temporarily.

CONSTRUCTION SAFETY

4. **Tye Lane.** This is an important pedestrian route for access to the PRoWs and also is used by many residents for walking their dogs during bad weather and is part of the National Cycle Route 48. NCR Route 48 allows cyclist coming from the west (NCN Route 51) to avoid most of Ipswich town and to continue south to Colchester (NCN Route 1). It covers the whole length of Tye Lane and leads to Hadleigh, where it joins up with the NCN Route 1. Residents could not believe, at our consultation Zoom on 26th May, that Statkraft were considering using Tye Lane as their sole access point. It is designated and signed as a Quiet Lane, where the priority order is pedestrians, horses, cyclists and then cars. We explained that Bullen Lane

would be much more appropriate. Thankfully, they have seen the errors of their ways, but they still intend to use a 500m stretch of the road to run tractors up and down to access Field 7. The developer hasn't decided if they are having traffic marshals or traffic lights (presumably the latter are cheaper). The build-up of queueing cars and mud on the road (even in the spring and summer!) will increase risks. **Tye Lane is unsuitable for ANY use for the reasons given further above.**

5. **Footpath 10.** In the Construction Traffic Management Plan (CTMP) para 5.2.1, Statkraft state that there will be no temporary or permanent closures but fences will be installed, at least 3m apart. On the next page they then talk about temporary PRoW closures. **Will they be closing PRoWs or diverting them or not?** Maps will be available showing temporary diversions and alternative PRoWs. It is not clear where these will be, but they should be freely available and at the start of any PRoW. **We would be interested to know what alternative PRoWs they are proposing.** These are walkers, not cars, and any additional distance can be impracticable. We are all aware of the mess that Anesco have made with just a short length of FP 174/6 made into a very difficult diversion through a muddy ploughed field. Statkraft feel their constructors should be holding up users of the PRoWs for their own work. Surely, we shouldn't have to point out that they should delay their vehicle movements for PRoW users, not the other way round. PRoW users have the right of way (the clue is in the name!) **No assessment has been made for noise on PRoW users – but it appears that high levels of noise from the development will be heard along the footpaths.** The Non-Technical Statement NTS figure 3.1 shows a storm water pond next to the footpath. **Will this cause flooding onto the footpath or present a drowning risk to children and animals?**

6. **Footpath 3.** The points made above for Footpath 10 also hold true for here. In addition, Design and Access Statement para 1.4.3 shows the internal tracks will interact (cross!) this footpath in two places. **What is the exact route of the track?** Will it go through field 2 to distance it from the PRoW? Will it pass through the gap between fields 6 and 1 (photo 8)? Also, we have expressed concerns (paragraph 5 above) about the entrance internal track in the hatched area (and possible constructors' compound) which appears to be over the diverted footpath. **Exactly where will fencing be?** We also have concern around the proximity of the Red Line to the diverted path. **As stated above, would they be better reinstating the original footpath, as shown on the definitive map, temporarily, during construction?**

7. **Other PRoWs.** The larger map App A Fig. 1.1 CTMP shows the grid access area impinges on several other PRoWs, including some south of the Bridleway joining Bullen Lane to Hill Farm. There is no mention of any construction adjustments to these e.g., Burstall 174/12 and 174/9 (a bridleway). **Will these be affected?**

IMPACT ON USERS DURING OPERATIONAL PERIOD (35 YEARS)

8. **Visual impact.** The LVIA acknowledges that this application, visually, has a Large scale effect on FP 3 (Substantial magnitude and Major significance) as well as FP 10. The solar panels will reach 3m above the ground. The cumulative impact will increase this. Yet the viewpoints selected tend to be close to the start of the PRoW, where the developer proposes to plant screening. Even this will take 10 years to be effective. The pictures were also conveniently taken in the summer months when there was full leaf cover (LVIA para 5.6.8). **What would these look like in winter? Will they confirm that they have no plans to screen the vast majority of the panels visible from the PRoWs and roads?**

9. **CCTV -** The Construction Method and Decommissioning Statement para 3.8.3 shows that CCTV will be installed 2m inside the fence line. **Will any of these cameras be recording users of the PRoWs or view peoples' properties (for example cameras could look outside the fenced area if positioned across a corner of a field)?**

10. **Glint and Glare** – It is nice to see a developer actually assess the effect of glint & glare on PRoWs, and has assessed three public footpaths. However it is of concern that the Executive Summary of the Glint & Glare assessment confirms that solar reflections are possible in reality at all assessed footpath locations.

Noise

Baseline

1. The development is located across 2 parishes in Mid Suffolk (Bramford and Flowton) and 1 parish of Babergh (Burstall). Bramford is typically considered in two very distinct areas: the main village of Bramford which now adjoins the town of Ipswich due to significant development in recent years; and Bramford Tye away from the main village and nestled within countryside to the west. Due to the very different characters of Bramford and Bramford Tye the two will be considered as separate entities in this report.
2. Flowton, Burstall and Bramford Tye are all rural countryside villages. They are particularly small villages with no village services (such as shops or pubs), and as such are typically very quiet and tranquil.
3. In 2021 Tye Lane, the only road through Bramford Tye, was designated under the nationally recognised Quiet Lane Scheme. Three lanes in Flowton have formally been proposed as Quiet Lanes and are awaiting the next reopening of the scheme to register.
4. The remaining roads through the villages are all small narrow single track country roads. Many of the roads are sunken into deep verges and/or lined with hedges. There are no A or B roads passing through or nearby, so what traffic there is, is very intermittent and even shielded by the deep verges and hedges.
5. Bramford is a core village and within the village boundary noise is typically higher than that of the wider countryside. Due to the distance of Bramford from the proposed development, we do not anticipate noise from the development to adversely impact the village. So for that reason the main village of Bramford will not be considered further in this report.
6. The areas surrounding all three villages are undeveloped rural countryside, which provide a very quiet and tranquil environment. Common noises you might hear outside of the main settlements, and within and near the site itself, are birdsong, vegetation in the wind, a twig falling from a tree, the wind, a scurry from a small animal in the undergrowth, and your own footsteps and thoughts.
7. The area is well supported by a number of well-connected PRoWs. These PRoWs are well used by the local community for recreational purposes, as well as by tourists visiting from further afield. In particular those staying at Copenhagen Cottage, a nearby caravan and camping site.
8. The noise report submitted by the applicant conducted three noise surveys. NML001 near Bullenhall, NML002 near residences in Bramford Tye, and NML003 near Flowton. The survey was conducted over a 7 day period, however when this was done exactly is unclear. At 8.1 the applicant states "*A baseline noise survey was undertaken in May 2020…*" but at 8.6 states *"…between 5th and 11th of May 2021*." When the noise level was monitored needs to be made clear.
9. The true LA_{90} results are unclear, as large amounts of the dataset were arbitrarily removed by the applicant.[79] And none of the data recorded has been submitted as part of the report nor in the appendices. The reported results are between 30-34dB during the day, and between 27-32dB during the night.[80]
10. No baseline has been established for the open areas of the countryside, such as along the footpath PRoWs.
11. The noise survey reports at all locations that *"Subjective observations onsite noted no significant or atypical sound sources present during both installation and collection of equipment at all three NMLs. The soundscape at all three NMLs consisted of typical rural noise sources such as birdsong, occasional passing traffic, and resident activity."*[81]

Proposal

12. The proposal seeks to install an industrial solar PV plant in the area for a minimum of 35 years, of which by its very nature will make noise. The noise survey does not assess the actual equipment that will be used in the final installation, but by *"using data for plant that is typical for a development of this size and class. Final plant*

[79] Paragraph 8.6
[80] Table 8.8
[81] Paragraph 8.6

specification, however, will be undertaken at a later stage during the tendering process and may differ from that used within the model."[82]

13. Equipment considered in the model are: 148 string inverters, one at the end of each array; several solar transformer stations dotted around the site; 53 battery storage (BESS) containers with liquid cooling systems; 27 inverter and transformer units to accompany the BESS; 3 large auxiliary transformer units also for the BESS; and a single main HVDC transformer.
14. The noise report uses the reported LA_{90} recordings taken at each of the 3 NML sites and the typical noise ratings for each piece of equipment, alongside some assumed weather averages, to predict the noise levels at other residential receptors. There are also some cumulative noise assessments.

Policy

Local Policy

15. In the Mid Suffolk Sore Strategy 2008 policy CS4 states *"Pollution: To protect people and the environment from unsafe or unhealthy pollutants. Development that harms the quality of soil or air and/or causes noise, dust, odour or light pollution will be avoided wherever possible."* and is reasoned in the supporting text at 3.13 *"Pollution is a strategic issue for Mid Suffolk. Noise pollution (from domestic and commercial sources) is the most frequent cause of complaint by residents."*
16. The Joint Babergh and Mid Suffolk Landscape Guidance 2015 p. 2.2.1 states *"Some areas within Babergh appear to be remote, tranquil and removed from the noise and activity of busy roads and places. These intangible qualities contribute to the character and local distinctiveness of those areas and should be retained…"*

National Policy

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

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

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

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

18. The NPPF p. 174 states *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*

    d. minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

    e. preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability."

[82] Paragraph 8.8.2.2

19. The NPPF p. 185 further states *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

    a. mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

    b. identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."

Additional Planning Guidance

20. The Noise Policy Statement for England (NPSE) has a noise policy vision to *"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."* Further the NPSE policy works in a hierarchy format to *"avoid significant adverse impacts on health and quality of life; mitigate and minimise adverse impacts on health and quality of life; and where possible, contribute to the improvement of health and quality of life."*
21. The NPSE states that it is not possible to set a definitive noise limit, but that in accordance with NPSE and National Planning Practice Guidance (NPPG) which for Noise states *"Plan-making and decision making need to take account of the acoustic environment and in doing so consider: whether or not a significant adverse effect is Page70 occurring or likely to occur; whether or not an adverse effect is occurring or likely to occur; and whether or not a good standard of amenity can be achieved."*
22. Sound Assessment Criteria BS4142:2014+A1:2019 states: *"The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs."* An estimation of the impact of the specific sound can be obtained by the difference of the rating sound level and the background sound level and considering the following:

    a. "Typically, the greater this difference, the greater the magnitude of the impact."

    b. "A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context."

    c. "A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context."

Analysis

23. Reviewing the assessment we have several concerns, as follows:
    a. No consideration has been made for noise sensitive receptors other than residents, such as public amenity for users of the PRoW and wildlife in the surrounding habitat;
    b. Weather data, used in the baseline desk study, is inappropriate for the area;
    c. The cumulative study omits a development which is relevant to this one, and as such the cumulative study is incomplete;
    d. None of the baseline data has been supplied for independent analysis; and
    e. The background dataset carried forward for final analysis has been manipulated inappropriately and contrary to policy guidance.

Noise Sensitive Receptors

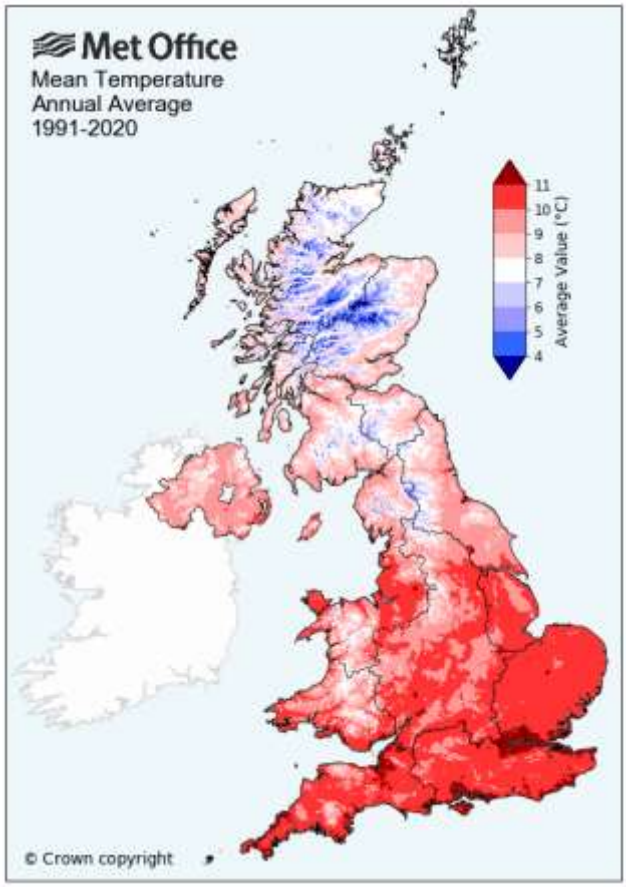
24. The applicant states at paragraph 8.4.1 *"Noise Sensitive Receptors (NSRs) are properties, people or fauna which are sensitive to noise and, therefore, may require protection from nearby noise sources."*
25. However, all NSRs evaluated are residential properties. No consideration has been made for the public amenity of users of the PRoW network, nor fauna in the surrounding and adjacent habitat such as ancient woodland,

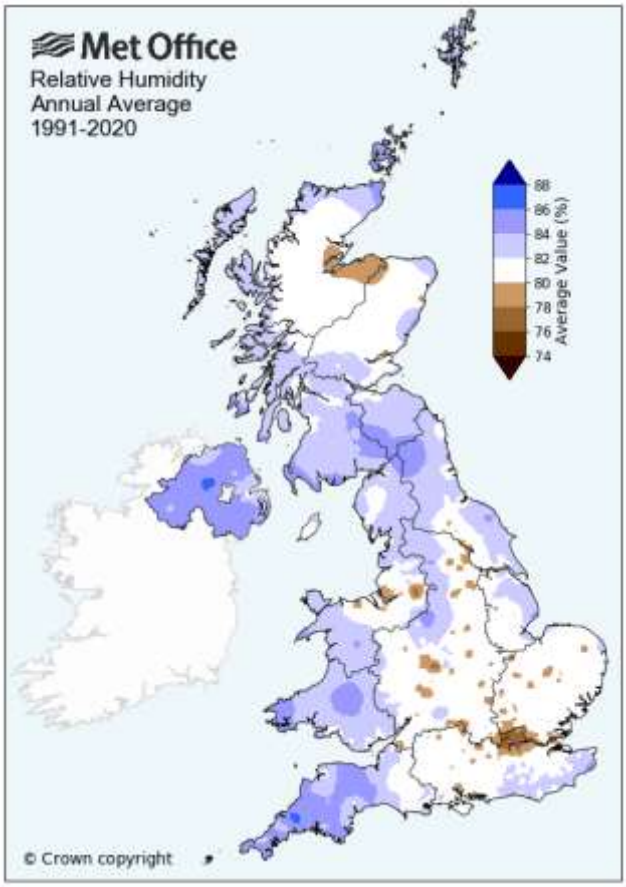
hedges, grasslands, and trees. Further, only the façade of residential houses has been considered, not the full residential curtilage as would be more appropriate.

26. Furthermore, no assessment has been done of the sequential noise impact of development on the PRoW network and Tye Lane, a designated Quiet Lane and National Cycle Route.
27. According to the Figure 8.2 Operational Noise Contour Plot some footpaths will experience an increase between 8-13dB. An adverse to significant adverse impact according to BS4142:214+A1:2019. The noise maps of other solar proposals (Enso Energy and EDF Renewables) show similar if not higher noise levels on the PRoWs, which all together would span 4km as the crow flies from east to west. This is a significant impact for users of the PRoW network in the area.

<u>Weather Data</u>

28. At paragraph 8.6 the applicant states *"Typically, measurements undertaken during periods of adverse weather are excluded from the dataset, however, **publicly available meteorological data was analysed** [our emphasis] and it was found that average windspeeds did not exceed 5 m/s throughout the duration of the survey and no precipitation events occurred."* The data referred to has not been referenced in the application documents, making it impossible to independently check this. And we note that the applicant does not appear to have taken on site weather measurements during the recording period as per BS4142:2014+A1:2019.[83] According to Wattisham Weather station data[84] this statement isn't entirely accurate.
29. However, it is also a shame that publicly available data was analysed at one stage, but then not used when determining the weather parameters for the baseline noise model. At paragraph 8.5.1 it states *"Air absorption based on a temperature of 10°C and 70% relative humidity has been **assumed**." [our emphasis].*
30. Average weather data using the Wattisham weather station[85] (the closest publicly available weather site at just under 9km away) puts the mean temperature at 10-11°C and the average relative humidity between 80-82%.





[83] BS4142:2014+A1:2019 paragraph 6.4
[84] https://meteostat.net/en/station/03590?t=2021-05-05/2021-05-11
[85] https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/u128tbey2

31. Dry air absorbs more acoustical energy than moist air.[86] So where the air has a higher humidity noise can be expected to travel further. The lowest average air humidity for the area of Bramford is in August, at 75%.[87] With averages more commonly in the low 80's.
32. Assuming a figure when meteorological data is available, and then using a figure substantially lower than the true figure may produce misleading results, and thus is unacceptable. The correct humidity should be used so as to avoid producing unreliable results. The source of the weather data used to assess wind speeds must also be provided to check it is an appropriate source and independently check the applicants conclusion.

Baseline Data

33. None of the baseline data recorded has been submitted as part of the application. This makes it impossible for it to be independently analysed and for the claimed results to be checked.
34. Whilst paragraph 8.6 states *"Technical Appendix 8.1 contains the equipment and laboratory calibration details"* this has not been submitted with the application, and even so it does not suggest the baseline data has been included here either. The baseline data for each 15 minute time interval recorded should be supplied.

Cumulative Impact

35. At paragraph 8.8.3 the applicant lists other developments which it has identified for cumulative assessment. One scheme is missing. The Pivot Power BESS approved under application DC/19/03008. This application is sited adjacent to the Cambridge Power Ltd application.
36. The Pivot Power BESS development is approved, but is not yet built. This means it is not included within any background noise monitoring. But, its absence from the cumulative impact assessment means it has also not been assessed.
37. The cumulative noise is likely to impact only one common property – Bullenhall Farm. A grade 2 listed building. The cumulative noise from all three developments together is likely to have a significant adverse impact on Bullenhall Farmhouse due to the proximity and convergence of all three developments on the property.
38. The cumulative noise from all three developments on the PRoW and wildlife habitat in close proximity to Bullenhall Farmhouse is also likely to be of a significant adverse impact.

Background Dataset

39. Relevant guidance for background noise levels[88] states *"For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods."*
40. At paragraph 8.6 the applicant states *"Subjective observations onsite noted no significant or atypical sound sources present during both installation and collection of equipment at all three NMLs. The soundscape at all three NMLS consisted of typical rural noise sources such as birdsong, occasional passing traffic, and resident activity."* This is to be expected.
41. However, it continues… *"Construction works were being undertaken at the Bramford Substation (located to the south of the Proposed Development) during the survey period. However, at all three NMLs,* ***noise attributable to these activities was not audible*** *[our emphasis]. Despite this… data obtained during typical construction working periods (08:00-18:00 on weekdays and 08:00-13:00 on Saturday) has been excluded from the dataset."*
42. Within BS 4142:2014+A1:2019 there is provision for data taken during poor weather conditions to be removed[89] but there is no provision for data to be arbitrarily removed for a noise source that the assessors claim couldn't be heard. Removing the entire typical working day from the dataset, for a noise that was not subjectively audible by the assessors, does not provide a reliable background level for the daytime. The noise assessment should include the data that was removed.

[86] https://www.sweetwater.com/insync/effects-of-temperature-humidity-live-sound/
[87] https://www.weather-atlas.com/en/united-kingdom/bramford-climate#humidity_relative
[88] BS4142:2014+A1:2019 paragraph 8.1
[89] BS4142:2014+A1:2019 paragraph 8.1.1

Conclusion

43. In summary, it is my view the noise impact assessment is fundamentally flawed and thus should be rejected.
44. It may be, of course, that the corrections and assessments described above make little or no change to the outcome, as well as independent analysis of the baseline data, but it would be remiss of me not to flag these errors so that a revised noise report can be submitted for consideration.
45. We would like to see the weather data used to assess the wind speed, Technical Appendix 8.1, and the background data measurements that were taken.
46. Excessive noise from industrial sources can have both short and long-term physical and mental health effects on the occupiers of properties and give rise to statutory nuisance under the Environmental Protection Act 1990 so should therefore be avoided. To go from only typical countryside noise, to constant 24/7 industrial noise is unacceptable. Especially for the neighbouring residents.

Climate Change

Wouldn't it be obvious, that as a solar PV installation, that it contributes positively to reversing the effects of climate change??

Policy

As to types of development such as this, it is important that the planning concerns of local communities are properly heard in matters that directly affect them.[90] *"Local and neighbourhood plans are the key to delivering development that has the backing of local communities. When drawing up a Local Plan local planning authorities should first consider what the local potential is for renewable and low carbon energy generation. In considering that potential, the matters local planning authorities should think about include:*

- *the range of technologies that could be accommodated and the policies needed to encourage their development in the right places;*
- *the costs of many renewable energy technologies are falling, potentially increasing their attractiveness and the number of proposals;*
- *different technologies have different impacts and impacts can vary by place;*
- *the UK has legal commitments to cut greenhouse gases and meet increased energy demand from renewable sources. Whilst local authorities should design their policies to maximise renewable and low carbon energy development, there is no quota which the Local Plan has to deliver."*

The NPPF is supportive of renewable energy projects, and as such states that developments do not need to demonstrate the overall need for renewable or low carbon energy (p 158). Local policy is also supportive of renewable energy projects, a factor that is mutually acceptable to both parties. The need to transition to low carbon and renewable energy is widely accepted and well publicised by local and national authorities, and we welcome this. We note, however, the caveat that authorities should only *"approve the application if its impacts are (or can be made) acceptable."* Local policy supports this caveat, specifically regarding landscape and heritage impacts. As these topics have been addressed in previous chapters, it is not essential to repeat them here.

Local Policy

The current Adopted Development Plan for Mid Suffolk Council consists of the saved policies from the 1998 Local Plan, alongside the 2008 adopted Core Strategy and its 2012 Focussed Review and states that applications for planning permission be considered in accordance with the development plan, if there are no material considerations to dictate why this should not be the case. We believe that this application will cause great harm and cannot be justified as a sustainable project when so much high grade arable land is taken out of food production. Although this project states that it will employ the use of grasslands to facilitate carbon capture, the "staple" crops traditionally grown also facilitate carbon capture. The idea that this is lost once farm machinery runs over the fields is not valid, as in this application, it states that they intend to use the same sort of two wheeled vehicles in order to minimise the impact of said vehicles on the land.

The application is clearly in conflict with many of the criteria relating to the principles of farm diversification under policy CL17 from the Local Plan 1998. For the purposes of this chapter, we would consider the application to be in conflict with conditions: "*C) Proposals are compatible with the protection of the countryside in terms of its landscape, wildlife, natural resources and intrinsic recreational value. D) Proposals do not involve the permanent loss of agricultural land of grades 1, 2 and 3a E) There is no excessive traffic generation or adverse effect on the free flow and safety of traffic."*

Further, the application is clearly in conflict with the criteria relating to policy E10 for industrial and commercial development in the countryside (as discussed in detail in other chapters):

[90] Paragraph: 002 Reference ID: 5-002-20150618 https://www.gov.uk/guidance/renewable-and-low-carbon-energy

- The impact of the development on the surrounding countryside, including its landscape and wildlife features
- The prospect of pollution including the effect on nearby watercourses and groundwater sources
- The amount of traffic generated and the likelihood of unacceptable traffic movements, particularly lorries, on non-principal roads
- The loss of high quality agricultural land
- The contribution to the rural economy
- The employment opportunities created for nearby communities.

We are aware that Core Strategy policy CS2 is supportive of renewable energy projects being built in the countryside, however the National Planning Practice Guidance tells us: *"The National Planning Policy Framework explains that all communities have a responsibility to help increase the use and supply of green energy, but this does not mean that the need for renewable energy automatically overrides environmental protections and the planning concerns of local communities."*

'Renewable and Low Carbon Energy'

We have concerns that the applicant has provided very little detail in the application perhaps because there is an element of expectation involved. This chapter will outline the areas that we would like to be provided with significantly more detail, in line with the information requested by the EIA.

Paragraph 158 provides specific guidance on determining planning applications for renewable and low carbon development required Local Authorities to:

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

b) approve the application if its impacts are (or can be made) acceptable. Once suitable areas of renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent application for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas".

We would like more evidence that the impact of this project's impacts can be made acceptable in light of the following:

a) food shortages in the UK

b) food self sufficiency requirements in the UK

c) the impact of this project on our undulating landscape

d) the likely failure to reinstate the BMV land

e) the reliance on fossil fuels to complete the project

f) what is required at the end of the life of the project

Sustainable Construction & Land Use

Babergh and Mid Suffolk District Council (BMSDC) is seeking to ensure that all new development contributes towards sustainable development, reduces or minimises carbon emissions, is resilient to future implications of climate change and protects residents from fuel poverty.[91]

We welcome the fact that BMSDC seeks to ensure that all new development contributes to sustainable development, and would like to see this policy put into action, noting that a number of recently built warehouses have no solar panels, and additionally new residential construction in the Bramford and Sproughton area will not be built with solar panels. In order to be resilient to the current and future implications of climate change, we would urge that BMSDC adopts the strategy of putting solar panels on warehouses, carparks, brownfield sites and all new builds. The new solar panels currently being installed at Mid Suffolk Leisure Centre in Stowmarket is an excellent choice for large solar panels such as those proposed in this application.

Indeed, following the British Energy Security Strategy, released in early April, it would seem that although solar energy is supported, the ideal would be that it is placed on rooftops and brownfield sites:

"We will also look to increase the UK's current 14GW of solar capacity which could grow up to 5 times by 2035, consulting on the rules for solar projects, particularly on domestic and commercial rooftops"

We have taken the liberty of providing some calculations of our own to illustrate this point and show that, from warehouses and industrial estates alone, we can generate renewable energy without destroying our countryside and putting our food supply at risk. Local parks are included to give an idea of size and perspective.

- Proposed Site size is 60ha. This is 148.263 acres.
- Chantry Park, Ipswich is 124 acres.
- Bramford Meadows, Bramford is 38 acres.
- Combined, this is 162 acres.

Local Industrial Estates and Warehouses without rooftop solar panels:

- The La Doria building has a footprint of 6 acres.
- The Amazon warehouse is 3.3 acres.
- The entire Eastern Gateway site is 22.9 acres.
- Anglia Retail Park (the one opposite Asda @ Whitehouse) is over 30 acres.
- Whitehouse Industrial Estate is over 92 acres.
- Ransomes Industrial Estate is around 298 acres.

Combined, these are all wasted opportunities to fulfil the climate change and renewable energy agenda, and it can be done without allowing solar farms to destroy our countryside, either as a standalone project or cumulatively. It also reflects the government's new strategy for solar energy.

The planning practice guidance provides more detail on renewable and low-carbon energy. It notes that

"large-scale solar farms can have a negative impact on the rural environment, particularly in undulating landscapes. However, the visual impact of a well-planned and well-screened solar farm can be properly addressed within the landscape if planned sensitively."

That is key. In a recent debate in Westminster Hall it was emphasised that the guidance also states that solar farms should be focused on

91 https://www.midsuffolk.gov.uk/assets/Strategic-Planning/Mid-Suffolk-Core-Strategy/Core-Strategy-with-CSFR-label-and-insert-sheet-07-01-13.pdf

"previously developed and non-agricultural land…that it is not of high environmental value".[92]

Indeed, following the aforementioned debate on 9th March 2022, MPs have urged the government to introduce stricter controls, ensuring large scale solar farms are not built on good agricultural land.

This point is taken further, with the government being asked to look at what our country did in the last great war, which was to start setting aside large swathes of our arable countryside.

Following Russia's invasion of Ukraine and subsequent land grab, the government is being urged to look at wheat supplies and ensure that more wheat is grown locally. We are already seeing the effects of the Russia Ukraine war on our supermarket shelves. Oil seed rape, one of the "staples" grown by Forrest Farms (the tenant of the proposed site) is in short supply, with the UK only being 50% self-sufficient, the rest coming from Ukraine, and the UK more or less dependent on the Ukraine. Iceland boss Mr Walker told BBC Radio 4's Today programme: *"If you look at commodity prices, sunflower oil has gone up 1,000% in terms of the commodity cost in the market, palm oil (up) 400% and then there is things like wheat, 50%, fertiliser, 350%.e for sunflower oil."*[93]

The points about large scale solar farms were summed up recently by Ian Paisley MP[94], who outlined *"I will make six points, very briefly. First, solar cannot deliver power output value for land use. Secondly, large-scale solar is useless without battery energy storage plants, which can pose inherent dangers to human health and the environment. Thirdly, large-scale solar developments are a poor use of valuable agricultural land. Fourthly, there are human rights abuses in the solar supply chain, and the UK taking economic advantage and benefit from those abuses should be called out and challenged.* [We are told in chapter 2 that *"the exact model of panel will not be confirmed until a manufacturer is chosen."* We would like to see a less ambiguous statement, confirming that the solar panels will not be coming from China.] *Fifthly, the use of coal-powered electricity in the solar panel supply chain means that we reduce our carbon footprint here at the expense of somewhere else. That is not right. Finally, there is a lack of consideration of end of life recycling of solar panels, or of those subject to being upgraded. That should also be examined."*

Mr Paisley goes on to say:

"I will focus on only three of those matters, which you will appreciate.....The first is the value for land use. Take, for example, Sunnica's proposed solar development in Cambridgeshire. Sunnica claims that it will be a 500 MW solar power station, delivering 23.5 million MWh over 40 years, and it will occupy 11 sq km of valuable arable land. That is impressive. However, when you break down the facts, per year that is 588,000 MWh, which, when divided by 8,760 hours per year, is only 67.2 MW, not 500 MW. That is an important distinction because 67.2 MW is less than one seventh of the rated power of the scheme."

<u>Better Than Agriculture?</u>

Although the main aim of this project is to store renewable energy, we are also told about wider environmental benefits. Fixed bifacial panels will have grass growing between rows. This will serve to capture carbon which, once captured, will not be disturbed, therefore released, for a period of time. We are led to believe that this is a far more efficient practice then, for example, carbon sequestration in farming practices, which, we are told is inefficient due to procedures requiring the use of machinery which disturbs the ground regularly, therefore releasing the carbon back into the atmosphere.

We have concerns that the applicant is too critical of general farming practices resulting in carbon capture, vastly ignoring the science behind techniques that farmers are using today to successfully sequester carbon in a a variety of different ways.

92 Brendan Clarke –Smith MP https://hansard.parliament.uk/Commons/2022-03-09/debates/22030973000001/details
93 https://nationalworld.com
94 https://hansard.parliament.uk/Commons/2022-03-09/debates/22030973000001/details

For example a major new study carried out by Sheffield University shows adding rock dust to UK agricultural soils could remove between 6 and 30 million tons of carbon dioxide (CO2) from the atmosphere annually by 2050.

The study, led by Dr Euripides Kantzas, a senior research associate in the Leverhulme Centre for Climate Change Mitigation at the University, provides the first detailed analysis of the potential and costs of greenhouse gas removal by enhanced weathering in the UK over the next 50 years.

"Deployment could be straightforward because the approach uses existing infrastructure and has costs of carbon removal lower than other Carbon Dioxide Removal (CDR) strategies, such as direct air capture with carbon capture storage, and bioenergy crops with carbon capture and storage."

Professor David Beerling, Director of the Leverhulme Centre for Climate Change Mitigation at the University of Sheffield and senior author of the study, said: "Our analysis highlights the potential of UK agriculture to deliver substantial carbon drawdown by transitioning to managing arable farms with rock dust, with added benefits for soil health and food security."[95]

Energy Production and Carbon Footprint

The applicant proudly states in many prominent locations paragraphs such as this:

"The Proposed Development would allow the generation of approximately 41,500 megawatt hours (MWh) of renewable electricity per year, enough to power approximately 9,200 homes in the Babergh and Mid-Suffolk area. As a result, the Proposed Development will contribute to the UK's goals to decarbonise the generation of electricity and so assist in the drive towards Net Zero and limit the impacts of man-made climate change. The inclusion within the Proposed Development of a large battery energy storage system will help to support the operation of the grid network as it evolves to accommodate greater levels of renewable energy generation."

However, tucked away the applicant also states: *"The precise carbon balance will not be known until planning permission has been obtained and a procurement exercise has been undertaken."*[96]

How can the developer confirm that the application will contribute to a reduction in CO2 emissions, let alone the Local Authority, with no analysis?

The most recent UK Government evidence[97] shows that ground mounted solar PV sites have a carbon cost of around 75g CO^2e per kWh. At 41,555kWh per year, over 35 years, that is 109,081 tonnes of CO^2.

Assuming a year on year decrease in the amount of CO^2 per kWh in the UK Energy Mix, down to zero in 2050 and remaining at zero afterwards until decommissioning, the development might save 180,140 tonnes of CO^2.

This equates to an average of 2,030 tonnes saved per year over the course of the development compared to the UK Energy Mix.

However, if we consider this application against the energy mix supplied to the Bramford Substation, where it is connecting then a very different story emerges.

Bramford Substation is supplied by nuclear and various off-shore wind farms. According to the same UK Government evidence for solar PV, nuclear has a carbon footprint of 26g CO2e per kWh, and off-shore wind 13g. Assuming a

95 https://www.sciencedaily.com/releases/2022/04/220425121054.html
96 Non Technical Summary 5.4.7
97 https://www.parliament.uk/globalassets/documents/post/postpn_383-carbon-footprint-electricity-generation.pdf

worst case scenario (100% nuclear) then the Proposed Development would never save any tonnes of carbon. In fact, it would add an average of 1,998 tonnes of CO2 per year.

However, it must be noted that the carbon cost of the development does not include the replacement of solar panels, which would occur around 25-30 years from the construction, nor does it include the decommissioning. So the carbon cost will be much higher than stated above and thus the overall saving, if there is any saving left at all, would be much lower (or the addition even higher). Furthermore, none of these calculations include the cost of transporting the displaced food production back to the UK.

A final total of all these considerations makes it easy to see that the solar farm proposed by the applicant will be far from carbon neutral, and the sacrifice of the loss of BMV land, and the damage to our communities, is just too great.

Decommissioning

Energy sector policies have focused historically on the planning, design and construction of energy infrastructures, while typically overlooking the processes required for the management of their end-of-life, and particularly their decommissioning. *"However, decommissioning of existing and future energy infrastructures is constrained by a plethora of technical, economic, social and environmental challenges that must be understood and addressed if such infrastructures are to make a net-positive contribution over their whole life."*[98]

As this suggests, if a solar farm actually manages to make a net positive contribution over the lifespan, which is unlikely, it is the decommissioning that calls into question just how green the project is. Or isn't. The sheer horror of decommissioning is beginning to be realised.

Eager to bolster their green credentials, banks and institutional investors are widely touting the growing capital they are pouring into renewable energy and decarbonisation projects. Some $750bn is forecast to go into the sector this year alone, according to the International Energy Agency.

But many in the financial sector are overlooking – or choosing to ignore – a key issue at the heart of this market: what happens to these assets at the end of their life.

Globally, 43 million tonnes of wind turbine blades and 60 to 78 million tonnes of photovoltaic solar panels must be decommissioned by 2050, according to respective studies by Cambridge University and the International Renewable Energy Agency. Meanwhile, the boom in electric vehicles is raising concerns about what will be done with the thousands of tonnes of spent batteries.

"For the purpose of this ES, it is assumed that the solar array and its infrastructure including; modules, mounting structures, cabling, inverters and transformers will be removed and recycled or disposed of in accordance with good practice." In accordance with good practice seems to be a misleading statement - what actually is good practice? This is certainly something that will have to become known in years to come, but it certainly does not exist now.

Albedo

In a question to the Scientific American[99], the topic of albedo was addressed: *"I wonder how much the albedo change of your roof offsets gains from electricity, much of the suns short wave energy must be being converted to heat therefore enhancing greenhouse (as well as producing some electricity) can you prove you are actually energy balance positive?"*

[98] Developing policies for the end-of-life of energy infrastructure: Coming to terms with the challenges of decommissioning Invernizzi et al 2020
[99] scientificamerican.com/solar-at-home/the-albedo-effect/

So, the view is that solar improves the environment – can it be true that it actually harms it? The short answer is yes. We are further told that:

"Silicon solar cells convert about 1/6 of incident sunlight into electricity and dissipate most of the remaining 5/6 as heat. So, in terms of their direct climate effect, they have an albedo, or reflectivity, of 1/6. This is comparable to the albedo of standard asphalt shingles, so for most people, installing solar panels do not have a net heating effect."

However, the increase in heat absorption is a one off climate forcing, which is the same as adding a certain amount of CO2 into the atmosphere, and, eventually, reaches a point where it is no longer beneficial to the environment.

A system that is rated at 3 kW of DC power, dissipates on the order of 10^4 W of heat. Its area is about 10 square meters, about one part in 10^{14} of the Earth's surface, so the system amounts to a global climate forcing of about 10^{-10}W per square meter. To convert this to a carbon-dioxide equivalent, note that the cumulative industrial emissions of 200 billion tonnes of carbon dioxide have produced a forcing of 1.5 W per square meter, or about 10^{-11} W per square meter per tonne.

Going even further with this, Gavin Schmidt of NASA GISS did his own calculation based over a year of solar panels providing renewable energy for the USA. He imagines that it would take a photovoltaic array about 200 kilometers square to power the entire USA, estimating the albedo forcing to be about 0.01 W per square meter, equivalent to about 1 ppm of atmospheric carbon dioxide, which the U.S. adds to the atmosphere in about three years.

This would suggest that the impact of solar panels on the environment is significant, and must be taken into consideration when calculating the overall carbon footprint of a solar farm. We ask that the applicant also include these calculations when considering the total cost to the environment of a solar farm installation.

<u>Latest Government Announcements</u>

So, the main aims of the UK government net zero strategy published w/c 18/10/2021 reinforces the commitment to fully decarbonise electricity generation by 2035. At this time, solar energy, in the form of solar farms appeared to have taken a back seat, with far more emphasis being put on offshore wind and solar to generate electricity for the UK.

MAIN AIMS OF UK GOVERNMENT NET ZERO STRATEGY – BUILD BACK GREENER (The Times)

- A "zero emission vehicle mandate" requiring manufacturers to sell a rising proportion of electric cars and vans from 2014
- 620 million of additional funding for electric vehicle grants and charging points
- Two projects to capture and store carbon from industry selected for 1 billion of public funding subject to value for money tests
- £120 million Future Nuclear Enabling Fund to develop technologies such as small modular reactors
- £450 million "Boiler Upgrade Scheme" Providing £5,000 grants for heat pumps in up to 90,000 homes over three years from April 2022
- Quadrupling offshore wind farm capacity to 40 gigawatts by 2030, including up to one gigawatt of floating turbines.
- £124 million for tree planting and peatland restoration, adding to the existing £640 million Nature for Climate Fund.

There is some irony that £124 million is pledged for the "Nature for Climate Fund ", considering either the impact of this proposition and/or cumulative impact of multiple solar farms potentially causing industrialisation of the countryside in Suffolk.

Looking at this fund in more detail, the UK government pledges:

"Halting climate change and protecting the natural world are two sides of the same coin, so we will restore our countryside to reduce emissions, sequester carbon and build our resilience to climate change at the same time. We will support farmers to implement a range of low carbon farming practices that can help increase productivity and enable more efficient use of land....."

We feel that this absolutely contributes to the debate of food production versus energy production. There are other ways to produce energy, but only one way to produce crops. The UK and a significant part of the rest of the world are under pressure to become self-sufficient in their production of food as well as energy. Considering the debate in all its forms, solar farms are not an effective use of arable land. The claims of net biodiversity gain, improvement in soil health and reduction in emissions can all be brought about without covering arable land in steel and glass.

Summary

We have considered the following paragraphs from the NPPF in order to establish project rationale at a local level. Although the applicant has provided adequate information, we could not see any evidence of this having been carefully considered at a local level. This project will, after all, have a dramatic impact on the local area, either as a standalone project or in a cumulative sense.

p152. *"The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure."*

We cannot see any rationale for this at a local level, Bramford substation is known to be powered by significant amounts of offshore wind and nuclear energy (renewable and low carbon energy and associated infrastructure). On a local level, we do not need solar energy in the form that the applicant proposes, however, we do need our farmland for growing food and carbon capture.

p153. *"Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures."*

From a local standpoint, this project will INCREASE flood risk, impact severely on biodiversity and landscapes. Taken cumulatively, the proposed solar farms are likely to cause our local temperature to rise.

p155. *"To help increase the use and supply of renewable and low carbon energy and heat, plans should: (a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);"*

The project rationale provides no evidence to suggest that the project will be of local benefit. Local people will be subject to adverse impacts from this project in both a standalone and cumulative capacity. A community fund will certainly not begin to address the issues that the local people would be subjected to.

We ask that the applicant provide more detail with regard to how many tonnes of CO_2 Graybarn Solar Farm would offset taking into account the matters that have been presented in this chapter.

We do not believe in predictions or potential, and we find real numbers tend to tell the truth. But the sun does not shine all the time, and solar plants only generate electricity roughly 10% of the entire year.

We have real concerns that there is insufficient information in this application for a planning committee to be able to make an informed decision. Evidence tells us that the claims that this project will produce clean, renewable energy is subject to many more factors that we have explored in this chapter.

Policy CS13 renewable/low carbon energy - Requires all new development to minimise dependence on fossil fuels and make the fullest contribution to the mitigation of climate change. The commissioning, lifespan and decommissioning of Graybarn Solar Farm has a reliance on fossil fuels and is not likely to achieve a positive contribution to reducing carbon emissions.

Policy CS15 to implement sustainable development in Babergh - New development is required to respect local context and character and demonstrate the principles of sustainable development by inter alia: respecting the landscape and heritage assets; making a positive contribution to local character; enhancing green infrastructure; enhancing biodiversity and habitat connectivity; minimising waste during construction and using energy efficient materials; and, protect and enhance designated landscape and heritage assets.

To quote Brendan Clarke-Smith[100] "*few people are against renewable energy and solar farms in general are not the issue, it is very much a planning issue of getting things in the right place at the right time".*

From the same source Sir John Hayes *"until we have solar on every building, there should be none in fields at all".*

100 https://hansard.parliament.uk/Commons/2022-03-09/debates/22030973000001/details

Waste

National Planning Policy for Waste 2015 states *"Positive planning plays a pivotal role in delivering this country's waste ambitions through: - helping to secure the re-use, recovery or disposal of waste without endangering human health and without harming the environment; and - ensuring the design and layout of new residential and commercial development and other infrastructure (such as safe and reliable transport links) complements sustainable waste management, including the provision of appropriate storage and segregation facilities to facilitate high quality collections of waste."*

Definitions of Waste

The definitions of Waste and Hazardous Waste are simple enough. As per the Guidance on the legal definition of waste and its application[101] states:

"…any substance or object which the holder discards or intends or is required to discard…"

This definition of waste has been in use in its current wording for over three decades and it is now embedded in the 2008 Waste Framework Directive (Directive 2008/98/EC).

And the HSE defines hazardous waste[102] as:

"Waste is considered 'hazardous' under environmental legislation when it contains substances or has properties that might make it harmful to human health or the environment. This does not necessarily mean it is an immediate risk to human health, although some waste can be."

Solar Panel & Electrical Waste

From the arrival of the very first solar panel on site, to the removal of the very last there is the risk of solar panels being damaged. This may occur during transit to site, during operation, and during decommissioning and removal from site. This applies to all components arriving on site (except maybe the gravel used for access tracks), not just the solar panels and electrical equipment.

Photovoltaic (PV) panels have been in the scope of Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) since August 2012 and are classified as category 4: "large equipment".[103] This means they are prohibited from being dumped into landfill in the UK.

"A solar panel lasts approximately 30 years. At the end of its life cycle, it has to be treated as a special waste. Numerous elements compose a PV panel, including toxic substances such as copper, lead, gallium, selenium, indium, cadmium and tellurium. The separation and recovery of these metals is not an easy process. These substances, potentially hazardous to health, are in small percentage compared to the most non-hazardous, such as glass, polymers, and aluminum. Since photovoltaics is a relatively new product, today we have to face the first phase of development of the photovoltaic recycling industry, which could convert this waste into a resource. It is not difficult to understand that proper recycling is a precious resource for the production of materials in production chains, photovoltaic panels and more. To do this, it is necessary to disassemble the panel and correctly separate the elements that compose it."[104]

This, although it appears to have potential for successful recycling, is not an attractive prospect for those in the industry. This might explain why, in the UK, there is only one recycling plant that carries out this work, "Recycle Solar" carries out not just solar panel recycling for the UK but also for Ireland. Another point to be made here is that solar

101 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69590/pb13813-waste-legal-def-guide.pdf

102 https://www.hse.gov.uk/waste/hazardouswaste.htm

103 https://weee-forum.org/wp-content/uploads/2021/06/WEEE-Forum-PV-Panels-Issue-Paper-2021-Final.pdf

104 https://www.onlynaturalenergy.com/the-true-carbon-footprint-of-photovoltaic-energy/

panels last for thirty years, and this application proposes to run a solar farm for 35 years. So, we have the recycling issue, and also the issue of what will happen to the solar panels that have recently been replaced.

Who is responsible for Waste?

The Statutory Consultees referred to the Planning Application were the District Waste Team which only deals with domestic waste in the Council area. Since the development had no Domestic applications the Waste department replied that they have no concerns (or indeed, interest). Business/Commercial waste, as applicable to this application, is a matter for the company with the waste to take responsibility for it themselves, using commercial operators.

We are concerned that the Planning Application form with respect to Waste has been completed incorrectly and should be corrected. In completing the Planning Application the developer has misunderstood/ misrepresented the interpretation of the form.

In answer to the question *"do the plans incorporate areas to store and aid the collection of waste?"* we are surprised to see that the applicant has answered "**no**". Every business has responsibility under waste regulations to take care of, keep safe and dispose of its waste. Waste production and responsibility for it will commence on day one of entry by Statkraft and their contractors. The first sweet wrapper will be waste as will all packing materials for the materials delivered, all pallets, any spilt fuel or oil, any product damaged in transit. In the TNEI documentation much is made of containment of waste but the application states there will be no compound for doing so. Some of the waste, damaged solar panels and scrap metal for example, is a high target for theft. There needs to be proper storage in a secure compound on site for containment of all hazardous and non-hazardous discards.

In answer to the question *"have arrangements been made for the separate storage and collection of recyclable waste?"* the applicant has also answered "**no**". As above, the responsibility rests with the business operator so details are required to be provided. Since all areas of the site have been allocated to solar panels arrays, supporting infrastructure, or claimed biodiversity improvements, we wonder where waste will be stored ready for collection?

Other sections of the Application Form appear to be misleading too.

In answer to the question *"does this proposal involve the carrying out of industrial or commercial activities and processes?"* the applicant has said "**no**". Storage of electricity is a commercial activity (it is carried out for commercial benefit) 'No' is a misleading answer.

The applicant is further asked *"does the proposal involve the use or storage of Hazardous Substances?"* and again, answers "**no**". In England Hazardous Substances are controlled the Planning (Hazardous Substances) Act 1990.[105]

We have discussed this in more detail in the Major Accidents and Disasters section, but a provision found in "Part 3" (Substances Used in Processes) is frequently overlooked, but is relevant to this application. This provides that where it is "reasonable to foresee" Hazardous Substances specified in Parts 1 or 2 being generated "if control of the processes is lost", then any "Substance(s) S" that are "used in the process" are to be regarded as Hazardous Substances. Large-scale BESS are well-known to generate several Hazardous Substances listed in Parts 1 or 2 during "loss of control" accidents (popularly if incorrectly known as "battery fires").

Summary

The lack of clarity on waste invites the criticism that this development is not as sustainable as the applicant is proclaiming it to be. Indeed, business models that include reuse, repair, remanufacture and recycling of materials from low carbon infrastructures are entirely absent, and plans to manage the waste arising from decommissioning low carbon infrastructure are still at a preliminary phase.

[105] https://www.legislation.gov.uk/ukpga/1990/10/contents

Plans for waste disposal are essential and we would welcome clarification on waste storage facilities and disposal prior to the application being determined.

Decommissioning

We understand that decommissioning is, in fact, a reference to *"the suite of processes involved in withdrawing a facility from service at the end of its life; and the removal of components for reuse, remanufacturing, recycling, storage and/or disposal".*[106]

Energy sector policies have focused historically on the planning, design and construction of energy infrastructures, while typically overlooking the processes required for the management of their end-of-life, and particularly their decommissioning. *"However, decommissioning of existing and future energy infrastructures is constrained by a plethora of technical, economic, social and environmental challenges that must be understood and addressed if such infrastructures are to make a net-positive contribution over their whole life."*[107]

We note that the application is for 35 years, but the research suggests panels have a lifespan of around 25-30 years. If the panels are all replaced around the 30 year mark, only to be decommissioned 5 years later this would be a huge waste of a reasonably new product. Combined with the applicant's numerous references to apply for an extension at the end, it is reasonably questionable whether the applicant ever intends to decommission the site at all. This would mean the significant adverse impacts highlighted in other chapters would therefore be **permanent**.

We welcome the inclusion of the Decommissioning and Reinstatement chapter of the application as it is considerably more detailed than the few sentences of other similar applications nearby. However, we have four major concerns about the information provided:

1. Infrastructure would be left in the ground
2. Feasibility of reinstating the agricultural land
3. Lack of foresight for Decommissioning Management Plan
4. What would happen should the Limited Company responsible for the decommissioning liquidate prior to decommissioning

<u>Infrastructure left in the ground</u>

Statkraft have suggested that decommissioning will generally be completed to a depth of about 4ft. Everything below that would remain on site. With the exception of the Development Substation foundations, the Energy Storage Facility foundations, and the Electrical Compound foundations, which would all remain on site in their entirety.[108]

We would like the applicant to provide further information on exactly HOW land can be returned to agriculture with so many underground structures remaining.

Further the application states *"The future of the electrical compound including the substation and the BESS will be discussed with the distribution network operator and agreed with the landowner and the local planning authority prior to commencement of decommissioning. This is because there may be an ongoing need for the BESS as a balancing facility on the distribution network… Site access tracks could remain in-situ…"*

We have concerns that the language used here is particularly vague. There is also a word that seems to be missing from this statement, and that is PERMANENT. With so much of the structure being left on the land, this simply is not an application of a temporary nature.

The NPPF at paragraph 8 states that part of the environmental objective of development should be, inter alia, to "minimise waste and pollution." If the Council were minded to approve the application, **ALL** components of the Proposed Development must be removed as part of a condition. The degradation of anything left in the ground over time risks pollution of plastics and metals in the soil and groundwater. Further, keeping anything in site would hinder reinstating the agricultural land (see next point).

[106] Developing policies for the end-of-life of energy infrastructure: Coming to terms with the challenges of decommissioning: Invernizzi, D.C et al (2020)
[107] Developing policies for the end-of-life of energy infrastructure: Coming to terms with the challenges of decommissioning Invernizzi et al 2020
[108] Table 2 of Technical Appendix 2.1

Feasibility of reinstating the agricultural land

Statkraft say they will ensure that any problems with returning the site to agriculture will be remediated for the following five years after decommissioning.[109] Since remediation cannot take place in a growing crop that means that a further five years production will be lost. According to our maths, this actually means that BMV land will be taken out of food production for a minimum of 40 years.

Statkraft states *"Monitoring and remediation of two complete growing seasons will be implemented following the date upon which the agricultural land is first planted post decommissioning of the Proposed Development… Monitoring will identify any remaining impacts directly associated with the construction and operation of the project."*

We have already established in the flood section that there would be considerable compaction of the soil during the construction phase. This would be further exacerbated during the decommissioning phase. Mole drilling is going to be required to even attempt to return the land to agricultural use. Mole drills go down to a depth of around 2m. Any equipment (cables, posts, concrete, gravel, etc) left in the ground would inhibit any realistic chances of starting to recover the land.

Further they write *"An annual report on the above for each growing season will be provided to the English Government (Soil Policy and Agricultural Land Use) and will include date stamped photographs illustrating crop growth in the restored agricultural area. These findings will be compared [sic: to] the productivity of the nearest adjacent undisturbed agricultural land of similar crop type within the same field."*

Firstly, since Statkraft aim to use entire fields we would like clarification on how they will compare crops within the same field.

Secondly, a neighbouring field had some areas disturbed in recent years during the laying of the EA1 and EA3 cables.

EA1 & EA3 cable site compound

[109] Technical Appendix 2.1 Chapter 5 paragraph 9

The agricultural land was “restored” back to its previous condition of course, and it is now in its second year of planting. It has wheat growing on it as per the following photo which was taken on 8th April 2022.

But why are there some light patches and some dark patches? Well, the light patches are the footprint of the temporary site compound and access track and thus the “restored” land.

Here is another photo showing just how defined the difference is between the undisturbed land (dark green) and the restored land (light green) also taken on 8th April 2022. The crop on the restored land is 2-3 months behind in development compared the same crop in the same field but on land that is undisturbed.

Further evidence in how easy it is to damage the soil can be seen in part of the Enso Energy site as a result of the archaeological excavations. Top soil and sub soil was carefully removed and backfilled accordingly, yet light patches of poorer crop behind in its growth can now been seen where the trenches were dug. In some areas the compaction caused by the excavator tracks, where no soil was even dug up, has caused damage, much like the equipment that will travel all over the fields during construction and decommissioning.

Soils in this area have developed slowly over hundreds of years of agricultural practice. Even with the best intentions, this process cannot be matched in 2 years of growing crops. Considering this, we would question the claim that the project is fully reversible and that the BMV land can even be restored.

<u>Decommissioning Management Plan</u>

Regarding decommissioning the applicant writes[110] *"These works will be undertaken according to legislation, regulations and best practice that are current at the time of decommissioning. At that time, it may be necessary to review and update this outline document. A Decommissioning Environmental Management Plan (DEMP) and Decommissioning Traffic Management Plan (DTMP) will be prepared to ensure that decommissioning is undertaken in line with prevailing good practice at the time."*

It is important that all of the equipment be removed at the end of the 35 year permission, and should the Council be minded to approve the application we understand a condition would be included to ensure the decommissioning of the site in line with the request for temporary use.

However, we should also consider what might happen if the solar farm were to fall into disuse before then, because in that case the minimal benefits of low carbon electricity (compared to coal and gas powered electricity) would no longer apply. In application 21/0050/FULEI for a 49.9MW solar farm the Hertsmere Planning Officer considered this at p10.40 of his report *"The planning officer has discussed this with the applicant's agent, who has pointed out that some other councils have applied conditions requiring the submission of such a statement towards the end of the temporary permission. The planning officer's opinion is that this could be problematic in the event that the solar farm were to unexpectedly go out of business prematurely because in that case the land owner would be expected to remove the equipment in accordance with an approved Decommissioning Statement, which would be impossible if no such statement had yet been submitted and approved. For that reason it is considered better to word the condition so that the statement is submitted for approval at an early stage."*

[110] Technical Appendix 2.1 Chapter 5

Further he recommended the following condition:

"Recommended Condition 3

Decommissioning Method Statement (prior to first commercial export)

A.) **Prior to the first commercial export of electricity from the site, a Decommissioning Method Statement (DMS) shall be submitted to the Local Planning Authority for approval.** The DMS shall detail how the equipment is to be removed from the site (including access tracks and any underground structures, posts or cables), how the land is to be returned to its former condition, and how this is to be conducted so as to avoid disturbing biodiversity within the site. The removal of the equipment shall thereafter be carried out in full accordance with the approved DMS.

B.) Decommissioning of the site for energy generation, as agreed in the Decommissioning Method Statement, shall be fully implemented no later than one year following the expiry of the temporary planning permission, or no later than one year following the date on which the site has ceased to be in continuous use for energy generation (whichever is the sooner).

Reason: In the interests of the visual amenity of the site, and to ensure that no environmental harm is caused during decommissioning, and to ensure that any impact that the development might have on the openness of the Green Belt or on neighbouring heritage assets (which might be justified so long as the solar farm is in operation) would cease when it is no longer in use, pursuant to Policies SADM26 (Development Standards in the Green Belt), SADM11 (Landscape Character) and SADM29 (Heritage Assets) of the Hertsmere Local Plan (2016). **Part A of the condition is justified in requiring submission prior to the first use (rather than towards the end of the 35 year period) because in the event that the solar farm were to cease operating prematurely there would be a requirement under Part B to remove the equipment in accordance with the approved Decommissioning Statement - hence the need to approve that document at an early stage."**

We ask that, should the Council be minded to approve the application, that they also request the DEMP and DTMP prior to the first export of electricity. However, we also ask that it be a condition for these documents to be reviewed and updated regularly to ensure decommissioning does not unduly cause further environmental harm, and that a time frame for the cessation of continuous use of energy generation be included.

Limited Company Liquidation

Should the solar farm fail to meet expectations and/or the owning company of the infrastructure at the time ceases to exist for whatever reason, part of the decommissioning plan should specify who will be responsible for returning the site back to agriculture. We believe this would be the landowner.

If this is correct we request that the Council seeks legal guidance on whether a financial bond could be secured through a legal agreement with the landowner. This would be in place to cover the costs of proper decommissioning and disposal to ensure its return to agriculture. Selling the components on marketplace websites such as Gumtree[111] is not appropriate. The value of this bond should be reassessed and adjusted on a regular basis to ensure the changing costs of decommissioning and waste disposal are fully covered.

[111] https://easypm.ie/2021/10/sun-sets-on-one-of-northern-irelands-first-solar-farms-belfast-telegraph/

Major Accidents & Disasters

Major Accidents & Disasters receives a very brief two paragraphs in Chapter 9 of the ES. One of these paragraphs states that safety concerns of the Battery Energy Storage System have been included in chapter 3 of the ES - "Chapter 3 includes a description of the health and safety measures that are particularly associated with the battery energy storage element of the Proposed Development." - but no such information could be found there.

Risk to Wattisham Flying Station (WFS)

In the NPPF under paragraph 97 it states:

"Planning policies and decisions should promote public safety and take into account wider security and defence requirements by: a) anticipating and addressing possible malicious threats and natural hazards, especially in locations where large numbers of people are expected to congregate. Policies for relevant areas (such as town centre and regeneration frameworks), and the layout and design of developments, should be informed by the most up-to-date information available from the police and other agencies about the nature of potential threats and their implications. This includes appropriate and proportionate steps that can be taken to reduce vulnerability, increase resilience and ensure public safety and security; and b) recognising and supporting development required for operational defence and security purposes, and ensuring that operational sites are not affected adversely by the impact of other development proposed in the area."

The Executive Summary of the Glint & Glare Assessment states *"Solar reflections are not geometrically possible for aircraft approaching runways at RAF Wattisham or towards personnel at the aerodrome's air traffic control tower. No impacts upon aviation activity at RAF Wattisham are therefore predicted."*

This is further discussed in paragraph 4.7.2 with regards to the *"approach paths taken for aircraft landing at Elmsett Airfield and RAF Wattisham, at all runways."*

This may be true for fixed wing aircraft. However, the assessment fails to identify that WFS has a large fleet of helicopters as well as an open helipad for the Air Ambulance. Helicopters are not limited in their landing approach pathway like fixed wing aircraft, and can approach from any direction. Without assessing the impact on helicopters, and without engaging with WFS, a major disaster from glint and glare cannot be ruled out with the information currently presented, which is contrary to NPPF policy 97b stated above.

Risk to Little Sage Hill

The HSE's Planning Advice Web App confirms the site lies within the consultation distance of at least one major accident hazard pipeline. As such the HSE needs to be consulted by the LPA on any developments on this site. Due to the proximity of the solar farm to Little Sage Hill, the underground high pressure gas mains under the proposed solar farm, and therefore the potential for a high volume of dangerous material to be around in the event of an explosion at one of the hazards, the vulnerability of visitors to Little Sage Hill caravan and camping ground needs to be considered in the decision of this application.

Battery Energy Storage System (BESS)

There are many concerns relating to the safety (or more aptly lack of) of battery energy storage systems (BESS) including risks of fire and explosions, toxic gas emissions and contamination of ground water from run-off of water used by the fire services in an emergency.

Lack of Safety and Risk Management Information

The only mention of BESS safety is brief in chapter 2.2.3, stating:

"The Applicant has a fire and safety management plan, hazards and fire risks have been identified, analysed and addressed to minimise likelihood and severity…. The Applicant has identified and scored all identifiable risks in a Risk Assessment Matrix…"

However, we could see no management plans or matrix's included for independent assessment. We ask that the applicant provides this information for public consultation before any decision is made.

The section further includes some documentation relevant to BESS safety, but omits the most recent reports and advice from Merseyside Fire & Rescue (MFRS) who dealt with a significant BESS explosion and fire in September 2020 and made recommendations for improved safety based on their direct experience.

CARE Suffolk strongly objects to an application which potentially ignores the well-known safety issues and recommended protection measures associated with this technology. The cavalier attitude displayed by the applicant is in itself alarming.

BESS Details and Fire Suppression

Strangely more information about the BESS system to be used can be gleaned from the noise report – *"Each BESS container will be cooled by a liquid cooling unit. The applicant provided data for a Sungrow ST2752UX…"* – and a subsequent Google search than Statkraft have disclosed in any section discussing the actual BESS. Assuming this is of course the specific technology that will be used, as Statkraft have continually stated the final technology will be chosen after any permission might be granted.

The spec sheet of the Sungrow ST2752UX includes three levels of fire suppression option:

- Deluge sprinkler heads (standard)
- Fused sprinkler heads (optional)
- NFPA69 explosion prevention and ventilation IDLH gases (optional)

The most significant risk from BESS to public health is called thermal runaway. The very real possibility of thermal runaway occurring is an alarming prospect. It is a low incidence high impact event and as such the catastrophic consequences, should they occur, simply cannot be ignored when planning permission is considered. Thermal runaway is a chemical reaction that does not involve oxygen, like a fire does. This is why chemical gas fire suppressants, such as the optional one included in the Sungrow ST2752UX, are of limited use because shrouding out oxygen is of no benefit and the gas does not offer sufficient or prolonged enough cooling. That is if they even activate in the first place unlike the BESS incident in Merseyside where they failed. It is because of this that the most poignant recommendation of the MFRS is for onsite or nearby water hydrants to be installed. Without onsite water hydrants the sprinkler systems are of course futile.

It is appropriate to refer to the experience and recommendations of those who have dealt with an incident on such a site, like that by MFRS. Paragraph 97(a) of the NPPF 2021 supports this by stating *"Planning policies and decisions should promote public safety and take into account wider security and defence requirements by: (a) anticipating and addressing possible malicious threats and natural hazards, especially in locations where large numbers of people are expected to congregate. Policies for relevant areas (such as town centre and regeneration frameworks),* ***and the layout and design of developments, should be informed by the most up-to-date information available from the police and other agencies about the nature of potential threats and their implications. This includes appropriate and proportionate steps that can be taken to reduce vulnerability, increase resilience and ensure public safety and security;"*** (our emphasis).

CARE Suffolk welcomes the comments from the Suffolk Fire and Rescue Service which highlights the issues that need to be addressed in relation to safety. We ask that their recommendations, specifically the need for water hydrants for onsite cooling and an upwind access, are designed into the site at a minimum. We do not know whether the author of the Risk Reduction Strategy compiled the document with access to the Merseyside Fire Incident Report from the MFRS but we have asked that any recommendations from that report not already covered be added.

An April 2021 BESS fire in Beijing occurred in a relatively small (25 MWh) BESS, using the allegedly "safer" Lithium Iron Phosphate (LFP) electrodes (the Sungrow ST2752UX uses LFP technology), yet required 235 firefighters and 47 fire trucks to control – Suffolk Fire & Rescue have 43 fire trucks across the entire county[112]. There were two fatalities in the Beijing incident.

[112] https://en.wikipedia.org/wiki/Suffolk_Fire_and_Rescue_Service

A more recent BESS fire occurred in Chandler, Arizona at a 10MW facility.[113] The fire at the Dorman battery storage facility began on 18th April 2022. The sprinkler system was deployed automatically and continued to spray water for several days to keep the temperature down, and was turned off on April 29. That is 11 days of continuous water supply. There were no injuries and no wider damage to electrical equipment. This is the polar opposite to an incident in Surprise, Arizona in 2019 when four firefighters suffered severe life-changing injuries because the BESS relied on a gas-suppressant.[114]

These examples clearly demonstrate how important a continuous water supply is to adequately deal with such a high impact risk.

It is absolutely critical that a BESS site has a plentiful water supply. There is no such supply available on or near to the site and therefore the location is entirely unsuitable. Should the application not be redesigned to include a suitable water supply, on this ground alone we **OBJECT** to the application and recommend that it is refused.

Hazardous Substances

Legislation, regulation and planning policies are lagging behind the rapid technological developments for these large industrial energy plants. The lists of hazardous substances and tonnages[115] do not immediately identify BESS, which are not a substance per se but are produced in the chemical reactions in the battery. However, a provision found in "Part 3" (Substances Used in Processes) is frequently overlooked, but is relevant to this application. Part 3 provides that where it is *"reasonable to foresee"* Hazardous Substances specified in Parts 1 or 2 being generated *"if control of the processes is lost"*, then any "Substance(s) S" that are *"used in the process"* are to be regarded as Hazardous Substances.

The MFRS IIT Report paragraph 8.6.3 states *"Based on my investigations, the evidence is consistent with the initial cell having suffered an exothermic reaction which then lead to a thermal runaway which resulted in flammable and toxic vapours being produced."*

It is widely understood that battery failure is a loss of control of the normal process. Sadly a subsequent product of that failure is a mix of gases including flammable gases as evidenced at the Merseyside incident, where "Due to the nature of the contents, the incident was declared as a fire containing hazardous materials and a Hazardous Materials Environmental Protection Officer (HMEPO) was requested."[116]

In a recent paper produced by Edmund Fordham[117] he analyses several different chemical compositions of BESS and determines that the threshold for Hazardous Substances under Part 3 falls well below 50MWh and states that *"In such cases, unless HSC has been applied for and granted, it would appear that an offence under S. 23 of the Planning (Hazardous Substances) Act 1990 has occurred."* The application here is for a BESS of 104MW, significantly higher.

We believe that this legal framework absolutely applies to this application and no planning permission should be issued without Hazardous Substances Consent. We note that the enforcement of this Act is the responsibility of the local Planning Authorities which carry an enormous responsibility and clear legal obligation to protect public safety.

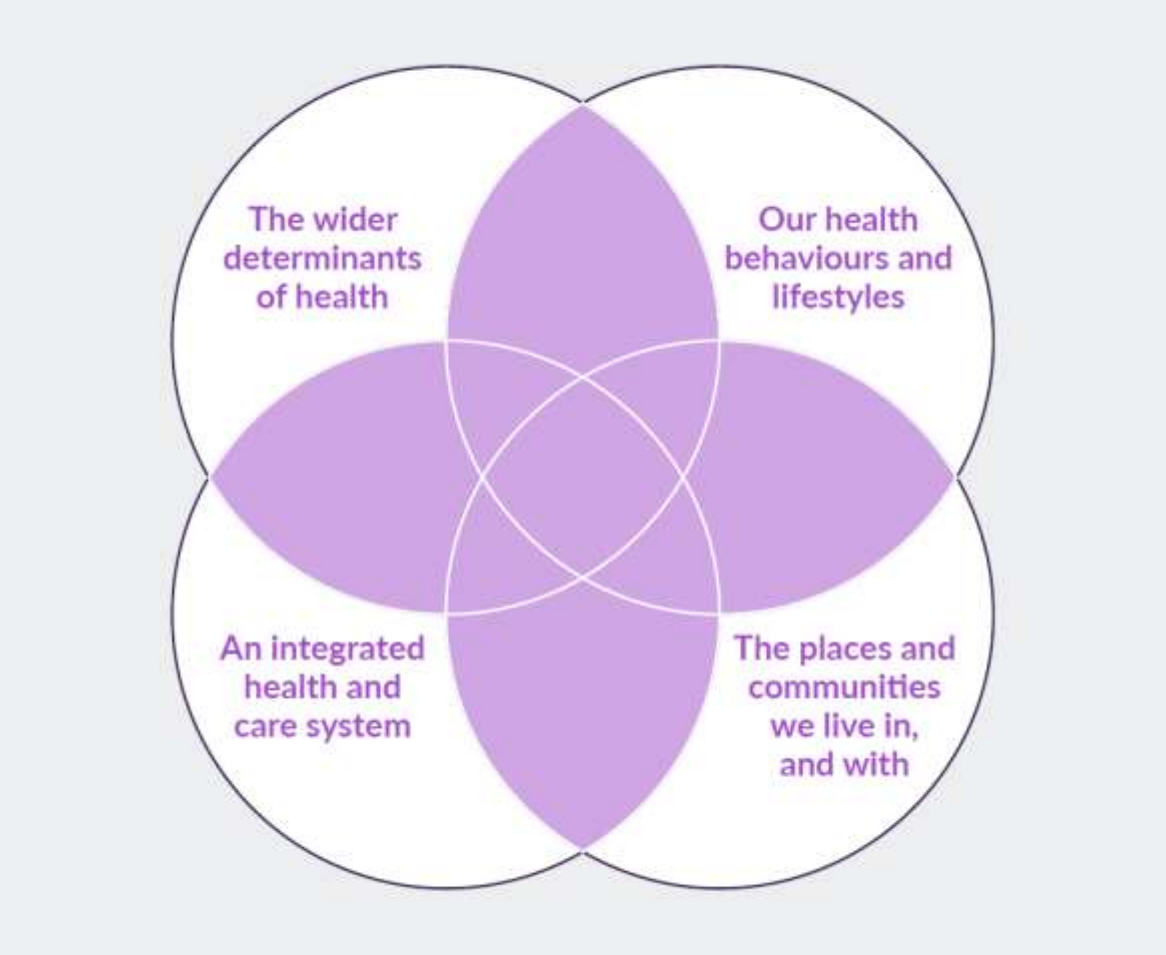
[113] https://www.energy-storage.news/aes-investigating-cause-of-thermal-runaway-at-arizona-site/
[114] https://fsri.org/research-update/report-four-firefighters-injured-lithium-ion-battery-energy-storage-system
[115] Parts 1 & 2 of the Planning (Hazardous Substances) At 1990
[116] MFRS Significant Incident Report page 6
[117]https://www.researchgate.net/publication/359203817_Hazardous_Substances_potentially_generated_in_loss_of_control_accidents_in_Li-ion_Battery_Energy_Storage_Systems_BESS_storage_capacities_implying_Hazardous_Substances_Consent_obligations

Population & Human Health

There are several definitions of population health in use. The King's Fund defines it as:

"An approach aimed at improving the health of an entire population. It is about improving the physical and mental health outcomes and wellbeing of people within and across a defined local, regional or national population, while reducing health inequalities. It includes action to reduce the occurrence of ill health, action to deliver appropriate health and care services and action on the wider determinants of health. It requires working with communities and partner agencies."

A population health system. Four pillars of population health.



The diagram above shows the significance of Community and Environment in overall Wellbeing. It also shows the significant inter-reaction between Environment and the Health Providers.

A welcoming environment, space and fresh air encourage relaxation and reduced levels of stress. This has a pronounced impact on Wellbeing and general fitness and self-esteem and is known to reduce the need to call on Medical and Mental Health Services.

It has been known for many years that exercise has amazing benefits. If this can take place outside the benefits are greatly increased. Doctors now prescribe walking and other forms of exercise for a range of illnesses with amazing results.

Here in the Suffolk countryside we all have access to the freedom of open space and glorious views, just looking at this can help lower the blood pressure and still the mind and it is FREE, no prescription necessary.

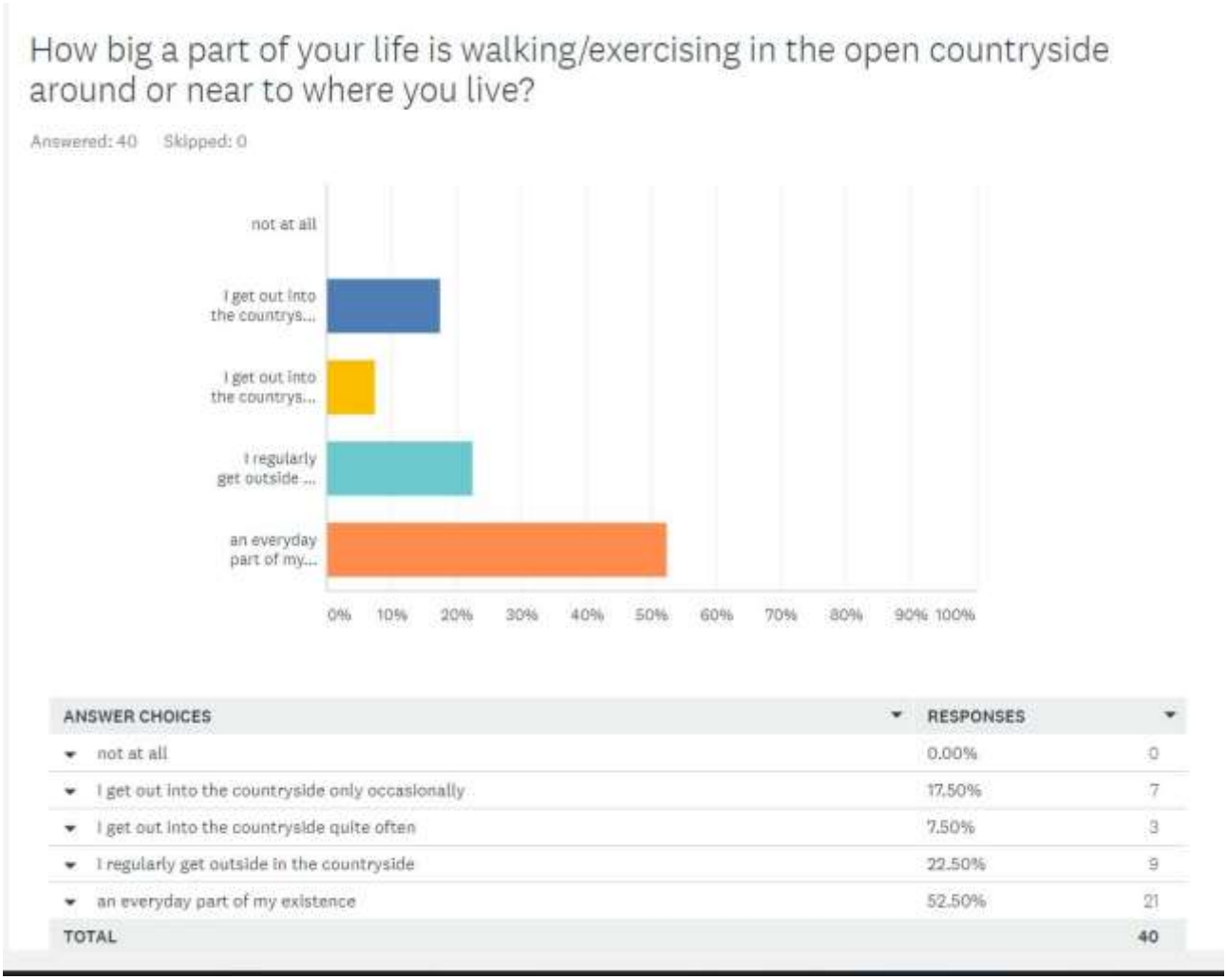
Solar panels on our farmland will change all this. We will no longer benefit from seeing the changing colours of the fields and the wonderful smell as the soil is ploughed for the next crop, nor the song of the Skylark which brings great joy as they fly up from the secret nesting sites on the stubble.

Walking and being outdoors leads to the benefits of the wonders that are fresh air & sunlight:

- Vitamin D is essential for your immune system, bones and blood cells, and helps the body to absorb important minerals.
- Helps to build relationships.
- Being outside can help to improve your self-esteem, even more so if you are near greenery or running water.
- Being outside could help to heal you from illness and injury more quickly.
- Concentration is improved; generally outside helping to improve focus, and generate new ideas.
- Being outside is linked with being generally happier and healthier.

For residents of the villages surrounding these solar panels walking and enjoyment of the countryside will change fundamentally. With footpaths bordered by 6ft high fence panels, the sense of freedom and views of rolling fields will be lost, replaced by wire caged corridors.

CARE Suffolk conducted a voluntary survey in the area which saw 40 respondents. One question asked was “How big a part of your life is walking/exercising in the open countryside around or near to where you live?” More than 50% of respondents said this is “an everyday part of my existence.”



ANSWER CHOICES	RESPONSES	
not at all	0.00%	0
I get out into the countryside only occasionally	17.50%	7
I get out into the countryside quite often	7.50%	3
I regularly get outside in the countryside	22.50%	9
an everyday part of my existence	52.50%	21
TOTAL		40

The Landscape and Wellbeing Study noticed that *"a natural landscape is more restorative than an urban one. Hartig et al. (2003)*[118] *showed that walks in natural landscapes have a stronger effect on the ability to concentrate than urban walks. This goes with other studies that emphasised that people prefer natural landscape such as beaches, waters, forests, parks, and mountains for recovery from mental fatigue."*

ANSWER CHOICES	RESPONSES	
It makes no difference	5.00%	2
natural views seem to reduce my stress a bit	10.00%	4
developed views seem to reduce my stress a bit	0.00%	0
natural views seem to reduce my stress a lot more	85.00%	34
developed views seem to reduce my stress a lot more	0.00%	0
TOTAL		40

Walking is also a social activity which has been so appreciated during the recent pandemic when we could walk at a safe distance and still speak to each other. On my daily walk the weekly total of people enjoying the footpaths and bridleway in the area recently has been about 30. This is social contact and a way to make friends which is such an important part of our lives.

More people have discovered what this lovely area has to offer as they have had free time to get out and about. Children have benefited from parents feeling less stressed as together they enjoy the freedom of exploring where our food comes from and what nature has to offer. This is quality family time, making memories to take forward for the next generation.

This is evidence indeed that we need to preserve our beautiful and productive land for the future.

The transfer of public health from the NHS to local government and Public Health England (PHE) is one of the most significant extensions of local government powers and duties in a generation. It represents a unique opportunity to change the focus from treating sickness to actively promoting health and wellbeing.

Green exercise is physical activity while simultaneously being exposed to nature. It comprises three physical components: the individual, the exercise and the environment, become one process component encompassing a range of psychological and physiological processes.

[118] Hartig T, Evans GW, Jamner LD, Davis DS, Garling T (2003) Tracking restoration in natural and urban field settings. J Environ Psychol 23:109–123

The NPPF at paragraph 130f states *"Planning policies and decisions should ensure that developments create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users…"*

Further at paragraph 185 it states *"Planning policies and decisions should ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life: b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and c) limit the impact of light pollution from artificial light on local amenity."*

The Planning Practice Guidance (PPG) for Renewable and Low Carbon Energy states: *"it is important to be clear that:*

- *the need for renewable or low carbon energy does not automatically override environmental protections;*
- *cumulative impacts require particular attention, especially the increasing impact that wind turbines and large scale solar farms can have on landscape and local amenity as the number of turbines and solar arrays in an area increases;*
- *protecting local amenity is an important consideration which should be given proper weight in planning decisions."*

Air Quality

The key considerations in terms of air quality are the emissions associated with the construction phase traffic of the development. The construction works have the potential to generate additional vehicles on the local road network, which in turn creates more pollution in the area. Further, the applicant's desire to most of the work during the Summer months means dust from moving vehicles across is highly likely, which may cause an adverse impact on nearby walkers.

Noise

We have discussed the tranquillity of the area in the Noise chapter. A tranquil landscape is particularly beneficial to human (and wildlife) health. The evidence suggests that the development would generate low levels of humming noise beyond the site boundary, with the potential for significant adverse effects along important footpath PRoWs. This would add an uncharacteristic noise element to the area and have an eroding impact on the tranquillity of the environment.

A study noted *"the importance of low sound levels for rest and relaxation: Gidlöf-Gunnarsson and Öhrström (2007)*[119] *point out that people who have easy access to green areas, can reduce noise annoyances and thus become more relaxed."*

But if those noise annoyances are present in the green areas, as they would be here, then the benefit of such is not possible.

Confinement

The result of fencing the footpaths would not be limited to a visual impact. High fencing can give a perception of being contained, which is not conducive to the enjoyment of the open countryside.

[119] Gidlöf-Gunnarsson A, Öhrström E (2007) Noise and well-being in urban residential environments: the potential role of perceived availability to nearby green areas. Landsc Urban Plan 83:115– 126

Also, with no “escape” route available, this can be daunting for lone walkers, making the use of the footpath a potentially uncomfortable and unpleasant experience, one to be hurried. This could possibly lead to an alternative route being chosen, if such is available considering the numerous number of routes affected by the large scale of this development, or result in people being deterred from walking at all.

The loss of an “escape” option will also be detrimental to wildlife who may get startled and nervous using the route, and in an attempt to escape could cause themselves harm by getting trapped by the fencing.

Fear of using PRoWs at night

It is well known that solar PV facilities attract metal thieves to the area. We appreciate the focus of the metal thieves will be on the solar site itself, and so not a significant risk of theft to nearby properties. However, as evidenced elsewhere the PRoWs are well used, and continue to be used during the twilight and night time hours. There is therefore an increased risk of the public disturbing an intruder and the consequences and risk of harm in doing so. And the corridors within the facility would provide very few escape routes. This fear would be sufficient to deter people from using the PRoWs and would be even more unfortunate were someone to be harmed as a result of the attraction to metal thieves.

Summary

Loss of tranquil open spaces where people can walk freely will have an impact on health and wellbeing at a cost to the NHS and also, Local Government.

Changes in Government policy will shift the responsibility for Mental and Physical wellbeing to Local Councils. Any negative effect on local facilities for improving these conditions will fall, in future, directly on Local Authorities.

The recent Open Space Study of May 2019 conducted jointly by the Babergh and Mid Suffolk Districts noted that Burstall and Flowton have zero open accessible space. Well below the recommended levels. However, the wide views and openness of the landscape available from the footpath network here gives a perception of open accessible space.

The NPPF at paragraph 100 states *“Planning policies and decisions should protect and enhance public rights of way and access, including taking opportunities to provide better facilities for users, for example by adding links to existing rights of way networks including National Trails.”*

The applicant’s proposal does nothing to protect or enhance the public rights of way. The loss of the wide open views, the containment from creating corridors, and the significant increase of noise along them, will have a significant adverse impact on health and wellbeing at a cost to the NHS, UK Government, and also the local County and District Councils.

“In order to promote health, landscapes need to have certain characteristics that influence human well-being directly or indirectly, and which turn them into ‘‘good places’’ for health. Most important among these are easy access to natural landscapes and the availability of nearby (green) public open spaces. Landscapes need to be perceived as pleasant and attractive for all senses...”[120]

This needs to be taken into consideration by the Planning Committee before deciding to turn good fertile land and tranquil countryside with miles of integrated footpaths into an industrial site.

[120] Landscape and Wellbeing Study 2009