



**Application by Mallard Pass Solar Farm Limited for an Order  
Granting Development Consent for the Mallard Pass Solar Project  
– project ref. EN010127**

Submission by Mallard Pass Action Group (MPAG)  
– unique ID ref. 20036230

**Deadline 2:  
Written Representation (WR)  
15<sup>th</sup> June 2023**

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## 1. INTRODUCTION

- 1.1 Mallard Pass Action Group (MPAG) is an Interested Party (ID 20036230) in the DCO Examination.
- 1.2 MPAG<sup>1</sup> was set up in December 2021 during Stage 1 consultation, formed by a group of concerned residents living in villages close to the proposed development. Support for the group has grown organically over the last 19 months as locals have learned more about the extent of the scheme, its sheer scale and the likely impacts on their lives and the environment.
- 1.3 There is a significant level of opposition from within the local community to the proposed development, over 95% of the 1200+ Relevant Representations submitted are against it, and over 2,400 people have also signed a government petition.
- 1.4 Throughout this Written Representation (and all documents submitted by MPAG), the interested party identified as making the representations will be MPAG. However, the ExA should consider that any reference to MPAG means a reference to all the people in the community it represents.
- 1.5 MPAG is not opposed to the use and construction of solar panels but believe they are best placed on rooftops and brownfield land, not on productive agricultural land. MPAG is wholly cognisant of the climate change crisis and the rush to net zero, however deeper investigation of the figures presented in this Application raises concerns about the true green credentials of the proposed development.
- 1.6 Aside from the sheer scale, design and location of the scheme, there are a number other key concerns which we do not feel can be simply addressed through mitigation and further design.

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<sup>1</sup> See Appendix 16 for more details.

## 2. EXECUTIVE SUMMARY

- 2.1 The submissions cover a range of topics including the Sheer Scale of the Proposed Development; the approach to Site Selection; consideration of Alternatives; the Time Unlimited nature of the Application; the policy importance of Meeting the energy need; and the contribution of the Proposed Development to Net Zero.
- 2.2 Individual topics are then considered under further headings including the use of Compulsory Acquisition rights; Landscape and Visual Impact; Glint and Glare; the assessment and use of Best and Most Versatile Agricultural Land; Lane Use more generally; Soil Management; Flood Risk; Traffic and travel; Noise; Cultural Heritage; Biodiversity; Decommissioning; the Consultation Process adopted; Community Impact and Benefit; Socio-Economic Impacts; Infrastructure; and Cumulative Impacts.
- 2.3 The submissions draw that analysis together in considering the overall Planning Balance. **The conclusion of the analysis is that the order sought within the Application should not be made.**
- 2.4 Some of the main headlines that can be distilled from the analysis, and which are important to the overall planning balance, are:
  - 2.4.1 The benefits of the scheme have been substantially overstated on a proper application of policy, both in relation to its contribution to renewable energy provision and in relation to net-zero targets.
  - 2.4.2 Conversely, the substantial harms caused by the scheme have been substantially understated in a number of key respects, on a proper application of both national and recently adopted (in the case of SKDC) local policy. A number of those factors weigh heavily or substantially against the scheme even taken on an individual basis. Together, this combination of harms demonstrates very clearly the inappropriately chosen location for a scheme of unprecedented scale.
  - 2.4.3 A failure to fully consider any alternative sites, in a proposal of this scale with national significance, is an important shortcoming, especially in circumstances where the initial choice of site location appears to have been based on a poor understanding of the level of constraint provided by the site and the benefits it already offers. The additional failure to consider alternative technologies indicates a fixed position as to what should come forward on the land, rather than an open minded approach both as to location and technology.
  - 2.4.4 The loss of BMV land on the scale contemplated, and on a permanent basis, weighs heavily against the proposed scheme, applying both national and local policy.
  - 2.4.5 Similarly, the nature of extent of the harm to landscape and visual amenity is far beyond what would be necessary even for a solar farm of this size, were it to be appropriately located. The recreational use and enjoyment of PRoW will be severely undermined. MPAG has commissioned a full LVIA from Carly Tinkler which identifies serious shortcomings in MPSF's supporting material, and shows the extent of harm both in landscape and visual amenity terms. That harm should be accorded substantial weight.

- 2.4.6 The harm to heritage assets, subject to strong legislative and policy protection, also weighs heavily against the scheme. The development will devalue substantially the historic heritage of this deeply rural area. The local area is rich with a large number of designated heritage assets of outstanding quality.
- 2.4.7 Whilst relying on a significant amount of compulsory purchase provision, the scheme fails to make good the necessary case that there is compelling public interest for it to come forward.
- 2.4.8 There are a host of other harms that arise, all of which need to be factored in to the overall planning balance in due course. They are set out in more detail in this Written Representation.
- 2.4.9 As a result of these harms, the proposal has been subject to overwhelming opposition by the local population. Government has recognised the importance of “buy in” by residents to schemes that truly are appropriately located, and sensitively and well designed. The failure of a scheme in that regard undermines public trust and support for renewable energy projects, which it is clearly important to retain.
- 2.4.10 Accordingly, MPAG will invite the Panel to recommend that the order should not be made.**

## 3. SHEER SCALE

### 3.1 Summary

**3.2 The proposed development is on an unprecedented scale, there is no comparison to baseline the effects. This issue of scale feeds into all of the following main objections. It means proper alternative site analysis was required as a matter of law and/or in order for reasonable planning judgments to be made. The lack of any time limit on the proposal accentuates its unprecedented nature and exacerbates the many adverse impacts of the proposed development, such as the landscape and visual impacts, loss of BMV land, and impact on designated heritage assets.**

**3.3 The scale has led to the application of broad assumptions made by MPSF which do not necessarily fit the local context. It has led to the use of lower density surveys and baseline data which in turn have diluted the assessments and rendered the conclusions unreliable. The need for convincing evidence is clear in a scheme of this unparalleled nature.**

### 3.4 Submission

3.5 The proposed size and location of the 852Ha Mallard Pass Solar Farm (MPSF) would be such that it will **dominate** the area, and completely change the character and landscape forever, it would be a **utilitarian solar farm** on a vast industrial scale yet set amongst deeply rural communities. It dwarfs both the largely visually contained Cleve Hill, located on a flat and featureless coastal plain (176Ha of panels)<sup>2</sup>; and the 35 year development at Little Crow (max 226Ha) which had no significant landscape (or heritage) effects outside the order limits.<sup>3</sup>

3.6 The largest installed solar farm currently in operation is Shotwick Park solar farm in Flintshire. It occupies 101Ha and has a capacity of 72.2MW. It was built next to a paper mill solely to supply it with electricity.

3.7 There is no installed solar farm of the scale of MPSF to be able to appreciate the implications of the sheer size. It is **unprecedented and untested** and for that reason requires deeper investigation, assessment and consideration than previously approved smaller solar farms when weighing up the local harm vs the national interest. Proportionate evidence in this case should be convincing. This report highlights the shortcomings of many of the application documents, in that insufficient depth and analysis has been conducted in arriving at their findings.

3.8 Currently MPSF would be over 6.4km long with a perimeter fence of around 40km that does not take account of the impact if every field parcel were to be fenced. To put this into a local

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<sup>2</sup> SoS DL §§4.9, 4.10, 4.14

<sup>3</sup> SoS DL §§4.5, 4.50, 4.56, 4.62, 4.66, 4.73-4.74, 4.85



context, Rutland Water, the largest reservoir in England by area, has a 37km shoreline (including the peninsular) and an area of 1,260Ha compared to MPSF at 852Ha.

- 3.9 MPSF's Non-Technical summary para 2.2.1.a (APP-106) states that *"The land within Lincolnshire has the potential to locate large scale solar development. This is due to the existence of large open areas of undeveloped land, which is predominantly made up of gently undulating topography and generally sparse settlement patterns."* This is a broad brush overview by MPSF and does not represent the specific characteristics of all areas of the proposed development.
- 3.9.1 To start with the majority of land for MPSF is in Rutland (62%), not Lincolnshire. Rutland is known for its undulating rural landscape.
- 3.9.2 Lincolnshire is a huge county at nearly 700,000Ha and has many **landscape facets**, and therefore the general statement above cannot be applied across the whole county.
- 3.9.3 The use by MPSF of the term "undeveloped land" is technically correct. However, it overlooks that the land in question is currently utilised for food production and therefore serves an important purpose in helping protect our food security in the UK, assuring a more resilient supply chain. Nearly all of the land is used for **arable crop production** and its productive use should be assessed in that context. This existing agricultural use is consistent with the deeply rural environment in the locality.
- 3.9.4 The area in the vicinity of the proposed site is not sparsely populated. MPSF would almost envelop the village of Essendine. There are 8 villages within a short distance and more than twenty that will be impacted in the locality. Stamford, one of the most attractive Georgian towns in the UK, is only a 10 minute drive away.
- 3.10 The **validity of extrapolating EIA data obtained from smaller solar sites to larger ones is not proven**. Therefore MPSF should not rely on information based on smaller solar farms, but should conduct sufficiently extensive surveys and research to validate their conclusions and recommendations. e.g. if you have a large field parcel of panels surrounded by bio-diverse margins, it will take longer for that parcel to be colonised by flora/fauna from the margins and surrounding fields than would be the case for a smaller field parcel. It takes time and proximity to successfully establish habitat corridors, anything that acts as a barrier will impact both the speed and creation of strong biodiversity.
- 3.11 The risk is that the **various impact assessments are not completed at the same level of density, detail or complexity** in the interest of time and cost compared to smaller solar farms. This appears to be the case for MPSF with respect to:
- landscape assessment,
  - ALC grading,
  - biodiversity assessment

- heritage and archaeological assessment,
- traffic assessment and so on.
- This brings into question the validity of their findings and proposed plans. The findings are not robust and they are certainly not convincing.

## 4. SITE SELECTION

### 4.1 Summary

**This section draws together a number of observations about the nature of and approach to the site selection process, by reference to the list of topics provided by MPSF. It serves to provide the context for other areas of concern covered within this submission.**

- 4.1.1 MPSF identifies the following criteria when looking at site selection in chapter 7.2 Planning Statement (APP-203), following the list set out in draft EN-3 2023 para 3.10.9, identifying the key considerations (others may arise in relation to specific projects).

- Irradiance
- Topography
- Proximity to dwellings
- Capacity of the site
- Grid connection and capacity
- Land ownership
- ALC and land type
- Environmental considerations
- Previously developed land

### 4.2 Off-site flooding

- 4.3 A sequential test may have been carried out in respect of the siting of solar panels within the chosen development, but not as part of the original selection of the site. MPSF's design has taken into account that the river does flood some fields adjacent to it and are proposing appropriate design and mitigation measures to protect their infrastructure. What they have not considered or accepted is the impact of faster run-off levels into the river affecting areas adjacent to the site or within the 5km study radius e.g. Essendine, Banthorpe lodge, Greatford. Had the evidence available at grass roots level been identified during the site selection process, a different site might have been chosen on this basis alone given the prospect of an increased risk of flooding **off-site**.

### 4.4 Irradiance

- 4.5 Had the location been chosen based on irradiance, there would have been more suitable locations in the UK. The area identified has slightly above average irradiance levels, but further south and east would have offered better opportunities. Therefore, this factor cannot have any real weight in the overall balancing exercise or in justifying the decision to use the Land. Figure 1 shows the power potential in the UK based on irradiance levels.

Figure 1: Photovoltaic Power Potential in the United Kingdom

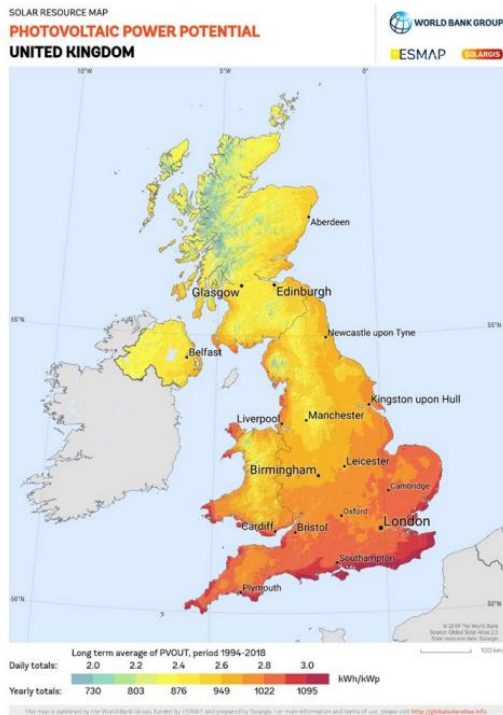


Figure 1: The World Bank: Global Solar Atlas 2.0, Solar resource data: Solargis

#### 4.6 Topography

- 4.7 The fact that the topography of the land is ‘acceptable’ not ‘optimal’ for placement of panels, does not mean it leads to satisfactory outcomes for the many impacts of the scheme. In fact it exacerbates many of the negative impacts. e.g. landscape and visual amenity, recreational amenity, transport.
- 4.8 The Order limit's topography ranges between 16 - 67m Above Ordnance Datum (AOD), with the lowest elevation running along the route of the East Coast Mainline railway. The highest elevation is present in the north-western part of the Order limits. **PPG<sup>4</sup>** for renewable and low carbon energy para 26 recognises that **large-scale solar farms can have an impact on the rural environment, particularly on undulating landscapes**. This has to be taken into account by decision makers when deciding whether or not to approve individual planning applications.
- 4.9 As stated in draft EN-3 2023, choosing land with an appropriate land topography is particularly important where the development covers a “**significant surface area**” (draft EN-3 para 3.10.86 and 3.10.51). Solar farms are recognized as a form of development where this risk is inherently high, due to the likelihood of a wider zone of visual influence than other types of onshore energy infrastructure (para 3.10.85). Para 3.10.86 identifies the potential ability of effective screening to work together with “**appropriate land topography**”. As the detailed comments in MPAG’s LVIA demonstrate, here the topography is not appropriate. The result is that the area of visual influence is not appropriately minimized, contrary to policy.
- 4.10 Consistent with the PPG guidance and the other guidance mentioned above, Solar Energy UK, the trade association for the industry to which both Windel and Canadian Solar belong, states “**Land selected should aim to avoid affecting the visual amenity of landscapes, maintaining**

<sup>4</sup> Department for Communities and Local Government Planning Practice Guidance

*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.”* That is not the case for MPSF.

4.11 MPSF has made a broad assumption that the county of Lincolnshire has flat land and high irradiance levels. The fact Lincolnshire is 700,000Ha large and spans from near Grimsby in the North to Stamford in the South (>120km), does not always support their hypothesis. The other factor is that 62% of the site is in Rutland which has a more variable topography than Lincolnshire.

#### 4.12 Proximity to dwellings

4.13 Identifying the grid capacity was a higher consideration than the impact on local residents.

4.14 Draft EN-3 2023 states at 3.10.12 that *“Utility-scale solar farms are large sites that may have a significant zone of visual influence”*, with visual amenity and glint and glare being most affected. For MPSF to say the area is characterized by dispersed small settlements, when there are 8 villages adjacent to the order limits and up to 20 in close proximity that would be affected on a day-to-day basis by the presence of a solar farm, is not an appropriate characterisation. There are local communities of people who thrive on living a rural life, who rely on supporting each other and integrating with other local communities. The characterisation ignores the true scope and scale of the project.

4.15 The new substation standing up to 13m high would be both in clear view to all passing traffic on the A6121 through Essendine and also to a number of residents facing the substation from the A6121 and Glen Crescent; as well as from some other distant views around the site. Effective mitigation is not possible due to the topography of the land. SKDC’s Local Plan para 3.20 states *“It will be a matter of judgement for the Council in considering whether cumulative impact renders a proposal unacceptable. There could also be cumulative impact with existing development. For example if there is an unsightly industrial development already located in a sensitive landscape area the construction of a solar farm adjacent could make an unacceptable combination in views.”* MPSF suggest as the east coast mainline is close by, along with a couple of warehouse rooftops, that it makes it acceptable to have the substation in the location they have planned, as opposed to being positioned mostly out-of-site of any residential areas.

#### 4.16 Substation capacity

4.17 **The Application is based solely on the existence of spare capacity in the Ryhall 400KV substation.** It is clear that the land for the solar panels has been chosen on the basis of proximity to the spare capacity at the Ryhall National Grid sub-station and by selecting enough land in the first place they will be able to meet the criteria that will generate the energy required to use the 240MW AC capacity at the Ryhall substation. **This criterion has therefore governed the processes of alternative site analysis and site selection, precluding a sufficiently comprehensive analysis of proper alternatives which might be used at this scale (or by subdivision) and relegating a panoply of other material considerations in a way which is not supported by current and emerging national policy.** That this has been MPSF’s approach is confirmed by para 7.1.28 of Appendix 1 to the Planning Statement (APP-203).

4.18 Moreover, as draft EN-3 2023 makes clear at 3.10.52 - 53, the question of capacity is directed towards an efficient use of the site. For reasons explained later in this document the proposed south facing configuration is not efficient and does not maximise the potential power output of the site.

#### 4.19 National Grid connection

4.20 In light of the scale of the proposed development, as discussed above, is it manifestly insufficient for MPSF to have considered only other grid connection points into the Ryhall substation, as opposed to looking at other high voltage substations around the UK.

#### 4.21 Land ownership

4.22 The land selected was based on which landowners agreed to lease out their land that were closest to the Ryhall substation, irrespective of the other considerations and impacts that needed a deeper review through the EIA process. Such a **“bottom up”** process is plainly not appropriate as part of the governing approach to a proposal which is nationally significant in its implications.

#### 4.23 ALC grading and land type

4.24 The land was chosen before MPSF had clear understanding of the ALC classifications, land type and impact on BMV land. The maps shared in Stage 1 Consultation (DWG No. 7863-006 3.11.21) and the Scoping Report (DWG No. Figure 2.6 Jan 2022) showed 95% grade 3 with a tiny piece of grade 2. MPSF proceeded assuming and hoping the land would largely be grade 3b, and therefore less likely to be challenged by the Planning Inspectorate. However upon completion of Phase 1 soil surveys, it turned out **53%** of the solar area was BMV. In an effort to reduce that figure, ‘selective’ additional soil surveys were done which managed to reduce the BMV to a claimed **41%** (this assessment is handled separately in this submission).

4.25 This is a totally unsatisfactory and unacceptable outcome given the policy laid out in NPPF and Draft EN-3 2023 which says you should not develop on BMV land (grades 1,2 or 3a): The use of agricultural land should only occur where that has been **“shown to be necessary”** and, even then, use of BMV should be avoided: Para 3.10.14 draft EN-3. That this issue is directly relevant to site selection is confirmed by draft EN-3 para 3.10.136. It marks a stark point of contrast between, for example, the proposed development and Little Crow (16.3% grade 3a, 77.2% grade 3b)<sup>5</sup> and Cleve Hill (2Ha grade 2, 9 ha grade 3a, and 360Ha (97%) grade 3b).<sup>6</sup>

4.26 The British Energy Security Strategy paper April 2022 (p.19, para 3) highlights **“we will continue supporting the effective use of land by encouraging large scale projects to locate on previously developed or lower value land”**, meaning ALC grades 3b, 4 or 5.

4.27 Accordingly, this factor should be given substantial weight against the adequacy of the choice of site location and, ultimately, in the planning balance as well.

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<sup>5</sup> SoS DL §4.43

<sup>6</sup> SoS DL §4.54

#### 4.28 Environmental considerations

4.29 MPAG are not in agreement that at the stage of selecting the land that MPSF had sufficient knowledge and understanding of all the environmental considerations. All subsequent work by MPSF was carried out in an effort to “prove” the suitability of an unsuitable site. The essential nature of the analysis has therefore been one of “retrofitting” which should be scrutinised with particular care.

#### 4.30 Previously developed land

As MPSF had already identified the grid connection and capacity first, the importance and prospect of using previously developed land as outlined in all planning guidance, was effectively ignored. Accordingly, the proposed development fails to accord with a central plank of both national and local planning policy which applies in its generality but also explicitly in relation to solar farms.

#### 4.31 Other considerations not made

4.32 It is interesting to note that whilst MPSF aligns themselves to the National Infrastructure Commission’s (NIC) ‘Design Principles for National Infrastructure’, it does not seem to incorporate all of them into their site selection process.

There are four thematic principles to shape the design of nationally significant infrastructure projects.

Climate - Mitigate greenhouse gas emissions and adapt to climate change.

People - Reflect what society wants and share benefits widely.

Places - Provide a sense of identity and improve our environment.

Value - Achieve multiple benefits and solve problems well.

4.33 At no stage during the site selection was there any real mention of gaining community support for the development. The belief that you can mitigate everything to be acceptable depends on who the audience is. As far as the local community is concerned, **mitigation** lives up to its dictionary definition of “*the action of reducing the severity, seriousness, or painfulness of something*”.

4.34 The community, even after 19 months of due process and mitigation, is still clearly not on board. Over 95% of the Relevant Representation responses (1206) are against this application. The Written Ministerial Statement (WMS) of 25 March 2015 emphasises the importance of preventing development in the wrong location which results in the unnecessary use of high quality agricultural land by solar farms. It recognised that insensitive siting of large-scale solar farms has eroded public acceptability of such schemes. Government therefore wishes 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 the absence of such a justification that has led to the overwhelming levels of objection to the proposed scheme. In reality, the only justification put forward is the tying of the proposed development to the Ryhall substation (Planning Statement, Appendix 1, para 3.1.12 (APP-203)).

## 5. ALTERNATIVES

### 5.1 Summary

5.2 In light of the scale and nature of this project, and the obvious adverse implications it has for many material planning considerations, MPSF and now decision maker are required as a matter of law to address **whether alternative site assessments were properly undertaken.**<sup>7</sup> Alternatively, in order for a reasonable planning judgment to be formed on the planning balance, it is necessary for robust assessment of alternative sites in light of the scale of the proposed development.

5.3 No sufficient assessment was undertaken. Alternative technologies were not considered. **Alternative sites were not considered.** There is no adequate investigation of whether land of lower agricultural value could accommodate the scheme.<sup>8,9</sup> Even if, which MPAG rejects, MPSF has done enough to comply with the law, as a matter of planning judgment this factor alone weighs heavily against the Proposed Development in the balance.

### 5.4 Submission

5.5 Draft EN-1 2023 para 3.3.21 sets out the role of wind and solar development and outlines “the requirement in the Energy White Paper for sustained growth in the capacity of on-shore wind and solar in the next decade”.

5.6 There has been much discussion within government over the last couple of years about whether to relax the planning guidance around on-shore wind. To date the public has not been given the opportunity to say which they would prefer if a renewable energy project were to go ahead.

5.7 By their own admission MPSF admits in para 7.1.29 of Appendix 1 Chapter 7.2 Planning Statement (APP-203) that ***“alternative technologies to solar PV were not considered. However it is noted that utility scale onshore wind is unlikely to be deliverable in this location given the current policy context and requirements for community support.”***

5.8 Reliance on the second factor is misconceived. It is clear from both the Stage 2 Consultation and Relevant Representations that there is not the support for this solar project either. The community was never asked whether they would accept a wind farm as an alternative to a solar farm in the event it was deemed one of them would have to go ahead. General feedback would be that the wind farm would use less space; it is 3 times more efficient than solar and agricultural land could still be farmed for arable purposes around the wind turbines. There would be no need for miles of fencing and CCTV. Nor has MPSF really sought to test the policy context with a realistic alternative onshore wind farm proposal. That is why para 7.1.29 starts by saying that **alternative technologies were (simply) “not considered”, i.e. they were discounted.**

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<sup>7</sup> Trusthouse Forte Hotels Ltd v Secretary of State for the Environment (1987) P. & C.R. 239; R. (on the application of The Forge Field Society, Barraud and Rees) v Sevenoaks DC [2015] JPL 22 at [81] – [82]

<sup>8</sup> This was recognized as a substantial failing in Last East of Pelham Substation, DCS ref 400-040-201 (11.5.23) – 49.9MW solar farm

<sup>9</sup> This issue has come about, at least in part, due to inadequate early assessment of the extent of BMV on the land.



5.9 MPSF, in spite of stating that it did not consider alternatives, went on to say in Chapter 4 Alternatives and Design (APP-034) that the Order Limits were not suitable for onshore wind due to the low wind yield relative to other parts of the UK.

5.10 This is manifestly incorrect. Biggar has the largest wind farm in the UK. It has the following wind profile. The above data is in the public domain and, as such, available to MPSF. The wind profiles for Biggar and Stamford are shown below.

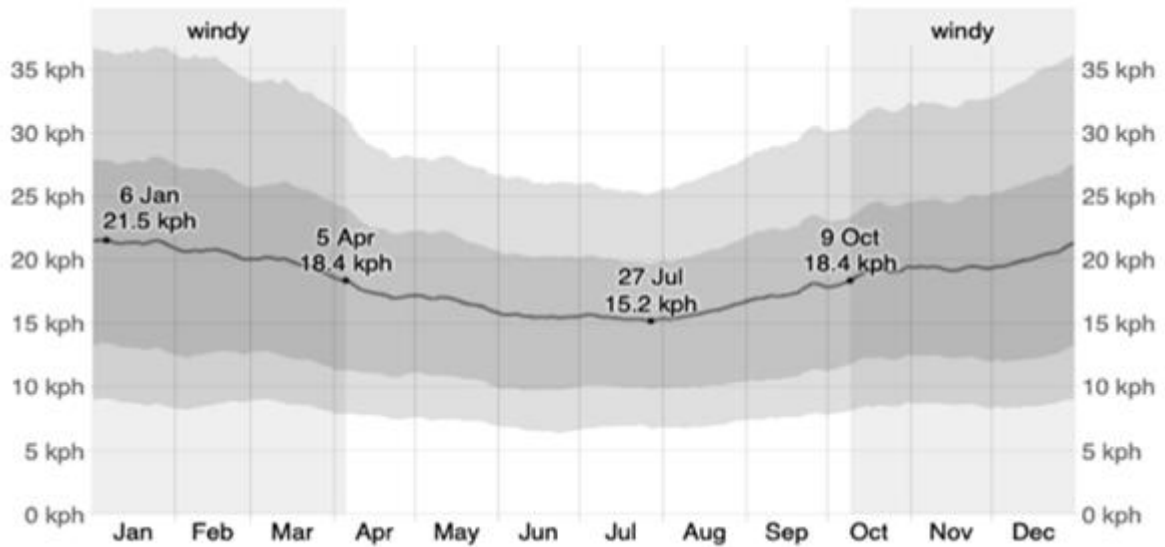


Figure 2 Website Weatherspark – Biggar wind profile (offers detailed reports of the typical weather)

Stamford at the same time had the following wind profile.

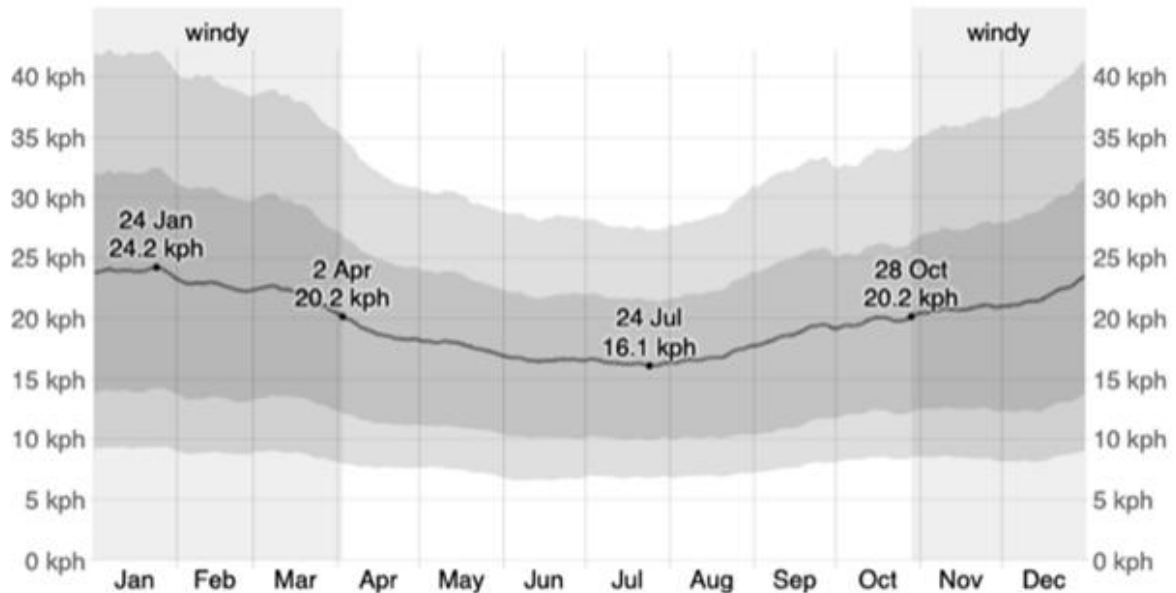


Figure 3 Website Weatherspark - Stamford wind profile

5.11 MPSF goes on to claim that it is not expected that the Order limits would be able to host an economically viable and successful onshore wind farm without causing greater environmental consequences than the proposed development. This “expectation” is arrived at with little or no justification; again consistent with the MPSF’s approach in that no consideration was given to technological alternatives.

- 5.12 Whilst solar may have the cheapest LCOE (Levelised Cost of Energy) which seemingly makes it attractive to introduce, on-shore wind is not dissimilar, is far more efficient and has less embodied carbon to displace. (The LCOE of projects<sup>10</sup> commissioning in 2030 in real 2018 prices are forecast as off-shore wind £47MWh, on-shore wind £45MWh and solar £39MWh.)
- 5.13 MPSF has elected to not consider an **east/west solar panel configuration**. Chapter 4 Alternatives and Design (APP-034) para 4.3.11 claims that it would not give the biodiversity gain or provide space between the panels for grazing. Even if commercial sheep production were possible the grassland management required would not be compatible with biodiversity gain. This is not a demonstrated or valid benefit such as to discount an east/west configuration.
- 5.13.1 It also claims that this configuration would potentially increase Heavy Goods Vehicle movements as it would allow greater concentration of panels per unit area. However, the greater concentration per area would reduce the amount of land required for solar panels.
- 5.13.2 Work carried out by Sheffield Solar (Sheffield University) found that panels facing east/west spread the peak generation associated with south facing panels more evenly throughout the day. The amount generated over that day was similar for both configurations. That could be highly beneficial for the grid where currently they have to use huge high carbon resources to balance the grid due to the unpredictable energy supply from solar. This specific benefit of east/west configuration is expressly recognized in draft EN-3 2023 para 3.10.53.
- 5.13.3 The annual output for an east/west orientated panel is less than that for a south facing one. However, it is compensated for by the increased panel density of the east/west configuration resulting in less land being used. The east/west panels are mounted at a less acute angle and therefore are lower than south facing ones - an important consideration with regard to visual impact as well.

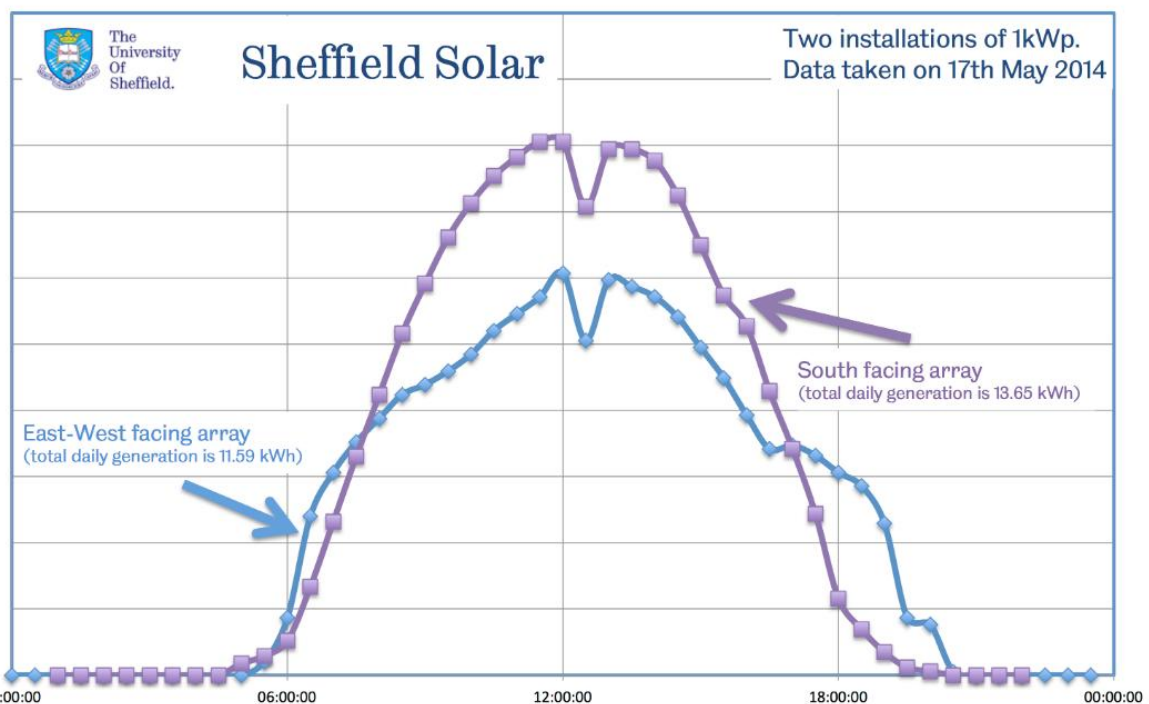


Figure 4 The University of Sheffield - Sheffield Solar (comparison of east-west arrays)

<sup>10</sup> BEIS Electricity Costs August 2020

## 6. TIME UNLIMITED APPLICATION

### 6.1 Summary

The absence of a time limited consent means the proposal should be treated as a permanent one in relation to adverse impacts. The temporary nature of other proposals has been important to the SoS's acceptance of adverse impacts arising in relation to landscape and visual harm, harm to the historic environment, and other material planning considerations.<sup>11</sup> None of that logic can be applied to this application.

Twinned with the unprecedented scale of the project, that means that adverse implications of the scale that arise by virtue of the proposed development have simply not arisen in the UK before in relation to solar farm development. Those adverse impacts should be given substantial weight based on the absence of any time limitation and their assessed impact.

This factor is accordingly important in the overall planning balance, and weighs heavily against the proposed development.

### 6.2 Submission

6.3 BRE Planning Guidance for the Development of Large Scale ground mounted solar PV systems<sup>12</sup> states ***“When development is proposed on agricultural land it is desirable for the applicant to propose a project end date to demonstrate the temporary nature of the solar farm.”*** MPSF is not seeking to do that. The proposal is permanent, as applying draft EN-3 2023 para 3.10.57 it cannot be described as “temporary”.

6.4 Draft NPS EN-3 2023 para 3.10.56 states that ***“Applicants should consider the design life of solar panel efficiency over time when determining the period for which consent is required. An upper limit of 40 years is typical, although applicants may seek consent without a time-period or for differing time-periods of operation”***. There is no sufficient justification here for departing from the typical “upper limit”.

6.5 Para 2.16.1 of the Non-Technical Summary (APP-106) MPSF states ***“The operational life of the Proposed Development is not proposed to be specified in the application and the Applicant is not seeking a time limited consent. All of the technical assessments have been carried out on the basis that the Proposed Development is permanent.”***

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<sup>11</sup> For example, at Little Crow issues of BMV loss and landscape and visual harm were substantially influenced by the limited 35 year lifetime of the development: SoS DL 4.50, 4.53, 4.66, 4.75

<sup>12</sup> BRE Planning Guidance for the Development of Large Scale ground mounted solar PV systems. Chapter 2 Item c

- 6.6 As MPSF is not seeking a time limited consent the operational life of the Proposed Development has not been specified within the DCO Application. However, it is recognised that the electrical infrastructure will have an **operational lifespan**, as such, for the purposes of assessing decommissioning with the ES, it has been assumed that the Proposed Development has a 40-year operational life span to enable an assessment of decommissioning to be carried out. The assessment does not assume that the operational phase will be limited to 40 years as the solar infrastructure may continue to be operating successfully and safely beyond this period.
- 6.7 As most solar farm applications seek permission for a period of 40 years or less, based on the above it is not clear what MPSF's intentions are, or what the planning implications will ultimately be. That makes it **extremely difficult to assess all the impacts as the solar farm might last 25, 40 or 70 years or any other number**. However, on the basis that MPSF are asking that the application be determined on the basis that it does not have a time limitation, the substantial quantities of BMV lost to the Application will be lost forever. That is inconsistent with national planning policy as set out in this document. **In particular, the permanent loss of such a significant amount of BMV land should weigh heavily in the balance against the proposed development. Similarly, substantial items of infrastructure such as the substation should be assessed on the basis that they will be permanently in place.**
- 6.8 However, it is also not clear whether the assumption MPSF have asked to be applied in relation to permanence is justifiable on the evidence. During the consultation meetings MPSF shared that they were planning to take out leases with the landowners for an initial 25 years, with the scope to extend another 5 years. This falls far short of the 40 years MPSF is using as the assumption for decommissioning.
- 6.9 Chapter 2 Overview of the EIA Process (APP-302) para 2.5.7 states ***"The decommissioning assessment is based on an assumption that decommissioning would take place after 40 years of operation, although it is noted that decommissioning could take place prior to or after this timeframe subject to how the technology is performing at that time."*** This is very vague; and again leaves a number of material planning considerations, and their implications to the planning balance, at large. It is an entirely unacceptable basis upon which to be invited to decide a scheme of this nature and scale.
- 6.10 Again, as the operational life of the Proposed Development is not proposed to be specified in the DCO and MPSF is not seeking a time limited consent, the EIA has apparently been carried out on the basis that the Proposed Development is permanent, it is said to ensure a worst-case assessment of likely significant effects. However, **the actual timeframe has huge implications for many of the assessments and calculations**, whether it is as short as 25 years or way in excess of the 40 years.
- Output claims and meeting the energy need – the energy contribution
  - Carbon payback – contribution to net zero

- Soil impacts
- Flood risk
- Traffic impacts
- General construction impacts
- Bio-diversity gains as putting in green infrastructure will take time to establish;
- Decommissioning – security of funding, change of use

6.11 **Adopting a proper and robust worst case scenario**, which depending on the implications could mean as low as 25 years or higher than 40 years, has clearly not been scoped and calculated within the EIA. This is serious omission by MPSF and one that has a fundamental impact on the validity of this application.

6.12 **Accordingly, these adverse factors should weigh heavily against the proposed development. Where substantial uncertainty exists as a consequence of the MPSF's choice to apply for a permanent form of development, those uncertainties should be resolved against MPSF in order to adopt a properly cautionary approach to development on a scale that has simply not been tested.**

## 7. MEETING THE ENERGY NEED

### 7.1 Summary

**MPAG accepts in general terms the national policy support for solar farms that are appropriately located and otherwise compliant with national and local policy. The need for renewable energy is a material planning contribution which weighs positively in the balance. However, in this case for the reasons set out below and in the next section, it should only be accorded moderate weight.**

**This is in particular because the provision in this location: is in conflict with central planks of recently adopted local policy directed expressly towards solar farms. It fails to:**

- **maximise the efficient use of land**
- **adequately account for its actual capacity**
- **provides low levels of benefit to the grid for the scale of development required**
- **maximise opportunities to improve security of supply.**

**MPSF's case is overstated in a number of important respects.**

### 7.2 Submission

7.3 Chapter 4 Alternatives and Design Development (APP-034) deals with the need for solar power generation in general rather than the need for MPSF in particular. It is perfectly possible to be supportive of the need for solar power without being supportive of this particular development. The benefit has to be weighed against the harm and sacrifices that the construction of this particular development causes.

7.4 In chapter 4.1 Statement of Reasons (APP-201) MPSF claims they will deliver power ahead of other potential technologies. This is not necessarily the case as an onshore wind farm could be constructed in a similar timeframe to a solar farm, would operate up to 3 times more efficiently and allow agriculture to carry on whilst in operation. **The ability for agriculture to carry on with the use of alternative available technology counts against the weight to be given to energy provision in this case, due to the extent of BMV that is compromised by the Proposed Development.** Wind power is already the leading source of renewable energy in the UK, with onshore wind only constrained by current planning guidance.

7.5 **Guidance given by the BRE<sup>13</sup> for commercial scale solar developments states that applications should be accompanied by information on Installed Capacity (MW), capacity factor, estimated annual production (MWh/annum), number of residential properties electricity equivalent.** (Ref: BRE Planning Guidance for the Development of Large Scale Ground mounted Solar PV Systems). Not all this information has been supplied, other than saying this application is for a solar photovoltaic (PV) array electricity generating facility with a total capacity exceeding 50 megawatts export connection to the National Grid.

7.6 **SKDC Local Plan 2011-2036 Policy RE1** provides support for renewable energy generation subject to meeting the detailed requirements of Renewable Energy Appendix 3, and meeting

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<sup>13</sup> BRE Planning Guidance for the Development of Large Scale ground mounted solar PV systems.

the further provisos in the policy. This is the central relevant policy to energy generation in that local plan. The Proposed Development is squarely in conflict with it. Dealing with the provisos in conflict in turn:

- 7.6.1 Does not **negatively impact the District’s agricultural land asset**: In light of the BMV land compromised by the development there is clear and substantial negative impact.
- 7.6.2 The proposal can demonstrate the **support of local communities**: There is manifest and overwhelming opposition to the Proposed Development, as set out elsewhere in these submissions.
- 7.6.3 The proposal details that **all apparatus** related to renewable energy production will be **removed** from the site when power production ceases: Due to the absence of any time limit this requirement will not be substantively met.
- 7.6.4 That the proposal complies with other relevant Local Plan policies and national planning policy.
- 7.7 The explanatory text in paras 2.149 to 2.160 provides crucial local context within a recently adopted Local Plan (Jan 2020 adoption). Amongst other things it emphasises the importance to the local context of the WMS of 2015, the protection of agricultural land (2.155)<sup>14</sup>, the potential alternative routes to providing good provision of renewable solar power (2.152), considering a correct balance of the energy mix in accordance with national policy and approach (2.151).
- 7.8 Renewable Energy Appendix 3 deals expressly with solar power as one of three forms of renewable for consideration. Paras 3.27 to 3.29 set out in clear detail why in South Kesteven development of BMV should **not be necessary or taking place in order to provide for solar farms. Criterion 9 makes the point that even for more modest proposals, the areas of search should not necessarily be confined to the District. Any proper application of that Criterion to a scheme of this unprecedented scale requires a regional search before local BMV land is entirely lost.**
- 7.9 Further, at para 3.17 it states ***“in balancing the case for and against a proposal the amount of power to be generated is a key factor. Developers will be required to provide evidence based assessments of power generation based on actual yield rather than simply installed capacity”***. This is a policy based requirement and recognition of the fact that actual yield in

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<sup>14</sup> The policy emphasis here is plain, para 2.155 states: *“A crucial context to consideration of renewable energy projects will be the importance of agriculture and food production in South Kesteven. This sector is not only key in the local economy but also the District, as part of Lincolnshire, provides a strategic role in national food production. This strength is rooted in the quality of the District’s farmland. Renewable energy projects that displace, sterilise or conflict with this economic asset will be unlikely to be considered favourably”*.

the real world may be well below the headline figures provided by an applicant. That is the case here for the reasons set out below.

- 7.10 MPSF does not give an upper limit on the capacity, Chapter 3.2 Explanatory Memorandum (APP-018) states ***“there are clear advantages in not imposing an upper limit. For example, The Applicant may take advantage of technological improvements and innovations that may emerge before construction.”*** This makes no sense for 2 reasons:
- 7.1.1 As soon as approval is achieved, MPSF will have to finalise the design and plan all the raw materials required to be ready for construction 2 years later. There won't be much room for a significant step change in technology.
- 7.1.2 There is already an upper limit of 240MW AC export capacity to the 400KV Ryhall substation so MPSF is constrained by that, in any event.
- 7.11 The case for 'need' as stated in Chapter 7.1 Statement of Need (APP-202) is built upon the contribution of the Proposed Development to the three important national policy aims of decarbonisation:
- 7.12 To be **at scale** deploying zero-carbon generation assets:
- 7.12.1 MPSF's Statement of Need states ***“the Proposed Development, as a leading large-scale solar scheme in GB, represents 1% – 3% of the additional solar generation capacity projected in National Grid's Future Energy Scenarios which are compatible with Net-Zero. In this context, the Proposed Development is therefore an essential stepping stone towards the future of efficient decarbonisation through the deployment of large- scale, technologically and geographically diverse low-carbon generation assets.”*** MPSF cannot make this claim without demonstrating how they have arrived at this contribution.
- 7.12.2 The government's aim for solar is 70GW, so an additional 56GW of generation capacity is required. At best the MPSF's contribution to this shortfall would be 0.625% and just 0.5% of the total target noting this is maximum generating output not actual output.
- 7.12.3 However the reality of what is delivered is very different. Government data DUKES<sup>15</sup> shows that solar for 2021 solar had a Plant Load Factor of 10.0%. This compares with 23.2% for on-shore wind, 37.4% for off-shore wind and over 90% for nuclear. Applying the Plant Load Factor to the 350MW gives an average output over a year of 35MWh and an annual output of 306,600MWh. This is considerably lower than the 350,000MWh detailed in Chapter 13 Climate Change (APP-043).
- 7.12.4 These losses don't finish there as there are inverter, distribution, maintenance and grid outage losses equating to around 8% (could be as high as 15%), decreasing output to 287,000MWh.
- 7.12.5 On top of that there is solar degradation year on year. Mallard Pass assumes the panels would degrade on average by 12% over 25 years (2% yr1, 0.45% thereafter). Even taking MPSF's figures that would reduce the output to 247,000MWh. However the Renewable Energy Foundation says there is strong evidence that output falls 1-2% per year after 3 years

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<sup>15</sup> Digest of UK Energy Statistics 2022



which would lower the output even further. Studies<sup>16</sup> have determined that the degradation of solar panels may be logarithmic as opposed to linear.

The above figures are explored in more detail in the next section - Contribution to Net Zero.

- 7.1.1 **Given MPSF is unable to state the temporary time limit of this application; it makes it impossible to calculate over the lifetime the energy contribution this solar farm would actually make.** MPSF claim they will provide a significant amount of low carbon electricity over its lifetime. The use of the word “significant” is meaningless without a clear set of figures, essential when weighing up the advantages and disadvantages of the proposed scheme and looking at the contribution from other renewable projects.
- 7.13 **Security of supply** (geographically and technologically diverse supplies):
- 7.13.1 The challenge with security of supply is that you can’t generate solar energy when you want it, you are dependent on the light and irradiance levels. To compensate for this most solar applications include battery storage giving the grid more flexibility as to when they can call off the energy. The positive policy benefits of such provision have been recognised by the Secretary of State. In this case they are absent, and this represents a clear failure to maximise the efficient use of land for the purpose of renewable energy. It is a factor weighing against the Proposed Development in light of its unprecedented land-take for a project of this nature.
- 7.13.2 The limitations of this development are clear. In MPSF’s Statement of Need (APP-202) they admit ***“Electricity storage will play an important role in the development of a low-carbon GB energy system. Electricity storage may be connected as a standalone asset or co-located with a renewable generation scheme. The Scheme’s grid connection agreement does not provide sufficient import power capacity to justify the inclusion of electricity storage capability as part of The Proposed Development without a likely significant cost to upgrade facilities at the proposed point of connection. In the absence of electricity storage facilities, the Proposed Development’s overplanting strategy (see Section 7.7) seeks to maximise use of the grid connection capacity through its operational life.”***
- 7.13.3 When agreeing a connection to the Grid MPSF will have been given a maximum capacity that they could export (supply) to the grid, 240MW is that figure as they have secured an export license for that amount. They would have also been given a maximum capacity for downloading power from the grid to their plant, if they had a BESS. This is how solar plants and stand alone BESS can “trade” electricity. Downloading to BESS during periods of low price and exporting it to the grid during periods of high price is how the market should operate.
- 7.13.4 It is unclear why the amount of electricity MPSF can import from the Grid is so low, the substation has obviously reached its export capacity, and without considerable investment which either party do not seem willing to make, the opportunity for MPSF to have energy exported from the grid to a BESS is not viable. So whilst we are led to believe the proposed development meets this security need, it is clear the proposition is **sub-optimal**, and this limits the positive weight that can be accorded to renewable energy generation in these circumstances. **It may demonstrate that, in fact, Ryhall substation is not the right choice**

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<sup>16</sup> Profitability of Solar Voltaic Projects V.L. Morganti Oct 2022

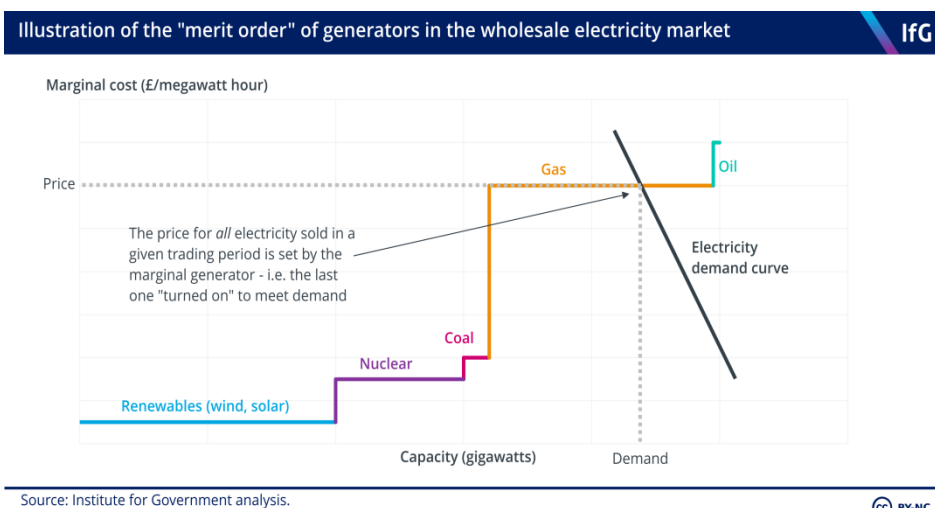
for MPSF’s solar development, especially when you also consider the huge public opposition and safety concerns about BESS in this location.

- 7.13.5 It is obviously the case that MPSF is compensating for the lack of a BESS facility by the overplanting of solar panels. MPSF will not produce power at times of high demand - evenings and winter, and the solar panels will degrade overtime.
- 7.13.6 This is one reason given by MPSF in para 7.7.1 in their Statement of Need (APP-202) for “**over-planting.**” A consequence of that is that some panels will be turned off and the opportunity to provide energy will be wasted when the panels are operating at maximum irradiance. Given the impact on land usage, it is critical to establish how much overplanting is proposed, there has to be a **balance between efficient land usage and land wastage.** MPSF does not state the size of the proposed area to be over-planted, or by what proportion the panels are overplanted.

## 7.14 Affordability

**7.14.1** Affordability can be assessed in a variety of contexts depending on who it relates to. MPSF states the case in Statement of Need (APP-202) saying the NPS talks about large scale solar delivering benefits for the UK. These benefits manifest by way of improvement in the affordability of electricity for consumers. This is a highly debatable point. With the current market structure, **the wholesale price of electricity is set globally by the most expensive generator required to fulfill the demand, namely gas.** So irrespective of how much it costs to produce solar energy, those **lower costs are never passed on to the consumer by way of cheaper tariffs.**

**7.14.2** MPSF states that the solar reduces the market price of electricity by displacing more expensive forms of generation from the cost stack and this delivers benefits for consumers. This is incorrect and misleading. In each half-hour trading period, the marginal cost of the last generating unit used to meet demand sets the price that the energy suppliers or traders pay to the energy generators or traders – known as a ‘pay as you clear’ model. The marginal producer of electricity in the UK is most often gas because it is one of the most expensive sources, so is chosen last in the ‘merit order’ on the spot market. **Therefore whilst gas is used globally it will set the market price.**



**Figure 5: Pricing chart Institute of Government Web Site “Eye activity Market” Author Olly Barron 15 September2020**

7.14.3 The **Levelised Cost of Energy** (LOCE) is a measure of the average net present cost of electricity generation over its lifetime i.e. It calculates present value of the total cost of building and operating a power plant over an assumed lifetime. The LOCE<sup>17</sup> of projects commissioning in 2030 in real 2018 prices are forecast as off-shore wind £47MWh, on-shore wind £45MWh and solar £39MWh. So solar and on-shore wind are similar, however what this measure does not take into account is the impact of the lost food production and additional inefficiencies of solar panels, unlike wind.

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<sup>17</sup> BEIS Electricity Generation Costs August 2020

## 8. CONTRIBUTION TO NET ZERO

### 8.1 Summary

8.2 The claimed benefits of the scheme have not been demonstrated. The output of the panels themselves is significantly overstated. Contrary to the requirements of the SKDC Local Plan, real world outputs have not been demonstrated or considered. There is no presumption of need in relation to solar farms in EN-1. Looking at the actual position reveals the following. An appropriately adjusted calculation suggests provision of 253 MWh against the 350 MWh headline claim. This large inaccuracy infects key MPSF calculations justifying the scheme. Embodied CO<sub>2</sub> of the scheme is also significantly understated. Consequently, the embodied CO<sub>2</sub> will not be displaced over a period of 40 years. The scheme calculations do not take into account the need to balance the national grid using carbon based fuels.

8.3 **In those circumstances the scheme will not contribute to the overall goal of net zero. No positive weight should be given to this factor in the planning balance.**

8.4 The following is an initial assessment of the accuracy, completeness and validity of the MPSF Environmental Statement on Climate Change (APP-043).

### 8.5 Abstract

8.6 Chapter 13 Climate Change (APP-043) paras 13.4.9 – 13.4.19 covering ‘influences of the Proposed Development on Climate Change’ provides figures for energy output, lifecycle CO<sub>2</sub>, emissions displacement and CO<sub>2</sub> reduction. These are incorrect and misleading, having been derived using incorrect mathematics, an over-simplified approach, and making assumptions which make a significantly favourable difference to the real-world expected benefits.

8.7 The reality is that, when applied correctly and with the right assumptions, the real-world output of the facility is 28% lower than the headline figure provided by MPSF, therefore only realistically supplying power for 67,000 homes. The lifetime carbon saving is between 30% and 50% of that stated, and the break-even point for carbon neutrality (saved carbon vs embodied carbon) is 18-24 years – which would be somewhere in the years 2046-2052. Further testimony to this is the MPSF entry of 240MW in the TEC register, which accounts for the aforementioned factors.

8.8 This brings into further question the validity of the unquantified statement in para 13.4.19 which states: *“This is considered to be a material beneficial change to the UK’s emissions of climate-changing GHG and is therefore a moderate beneficial effect that is significant.”*

8.9 **One thing which is portrayed accurately though is that due to the expected grid decarbonisation, the facility, according to the figures provided, never actually saves enough CO<sub>2</sub> to cover the embodied CO<sub>2</sub>, even using the advantageous figures presented.**

### 8.10 Submission

8.11 Appraisal of the chapter identifies that to establish the actual environmental credentials (key figures), they need to be recalculated considering the following 4 improvements:

1. Correct calculation of the annual panel output
2. Adjustment for real-world input to the grid

3. Application of degradation across all the lifetime calculations
4. Using realistic Lifecycle CO<sub>2</sub> estimates

8.12 Figure 6 is a table of values that show the comparative values for key figures presented in the ES, those same figures corrected and adjusted for real-world grid output and then figures for the most-likely scenarios, using the expected Lower and Upper range for the Lifecycle CO<sub>2</sub>. The most-likely lower-range scenario MP-CGD\_L should be considered as the realistic ‘best-case’ scenario (highlighted in green in the table).

### 8.13 Summary of revised calculations:

- MP: Mallard Pass Environmental Statement Values  
 MP-CGD: Mallard Pass ES figures Error corrected, Grid Adjusted and including Degradation  
 MP-CGD\_L: MP-CGD adjusted for expected lifecycle CO<sub>2</sub> – Lower value  
 MP-CGD\_U: MP-CGD adjusted for expected lifecycle CO<sub>2</sub> – Higher value

	MP	MP-CGD	MP-CGD_L	MP-CGD_U
Annual Production <sup>1</sup> (MWh)	350,000	253,057	253,057	253,057
Lifecycle CO <sub>2</sub> <sup>2</sup> (teCO <sub>2</sub> )	672,000	588,680	883,280	1,175,040
Emissions Displacement <sup>3</sup> (years)	10.5	11.9	18.2	24.6
Annual CO <sub>2</sub> Reduction <sup>4</sup> (teCO <sub>2</sub> )	64,000	46,056	46,056	46,056
Lifetime CO <sub>2</sub> Saving <sup>5</sup> (teCO <sub>2</sub> )	1.9m	1.25m	0.96m	0.66m

**Figure 6: Comparative values for key figures in Chapter 13 (APP-043)**

#### Reference

1. Energy Production (input to grid) using standard capacity factor, feed-in efficiency figures and averaged for degradation
2. Embodied CO<sub>2</sub> using the revised panel-level production and realistic interpretation of the IPCC stated ranges
3. Breakeven point for embodied CO<sub>2</sub>/Reduced grid CO<sub>2</sub> using degradation-adjusted figures for output/grid CO<sub>2</sub> replacement
4. Reduction in UK grid CO<sub>2</sub> from 2020 figures, including degradation and averaged over the lifetime of the facility
5. Total reduction over 2020 grid CO<sub>2</sub> levels, considered annually for the lifetime of the facility and subtracting embodied CO<sub>2</sub>

- 8.14 Ultimately, when considered critically, the realistic best-case headline figures are:
- The facility is likely to produce enough electricity for 67,000 homes (or 0.88% of the UK’s electricity demand).
  - It is expected to start to benefit the planet from a CO<sub>2</sub>-reduction perspective in 18.2 years
  - It should assist decarbonisation of the UK grid by 46,056 tonnes CO<sub>2</sub> annually (or a reduction 0.013% of the UK annual Grid CO<sub>2</sub>).

It should produce a total reduction during its lifetime of 0.96m tonnes CO<sub>2</sub>

### 8.15 Key Points

#### 8.15.1 The output of the panels has been overstated by 14%:

According to the figures provided in para 13.4.10 (APP-043), the installed capacity is to be 350MWp (peak). Using a widely accepted and empirically proven 10% capacity factor (% of peak power production) that is a 35MW average production for every operating hour. With 8,760 maximum hours per year available, **the annual Energy Production is 35MW\*8,760hours = 306,600MWh**, not the stated 350MWh. **This is an overstatement of production of 43,400MWh or 14.2%**. This corresponds to the unqualified increase in Capacity factor to 11.4% used by MPSF in their ‘Homes’ Calculation.

### 8.15.2 Impact on CO<sub>2</sub> saving calculations:

The reduced figure for the output of the facility means that the grid CO<sub>2</sub> reduction is reduced from the 64,000 by 14% (before other adjustments below), thereby reducing the climate benefit and the lifetime CO<sub>2</sub> saving of the facility.

### 8.15.3 Impact on Lifecycle CO<sub>2</sub>:

The lower output figure for the facility results in a lower embodied CO<sub>2</sub> calculation (lifecycle CO<sub>2</sub>) of 558,602teCO<sub>2</sub> (for the IPCC median of 48g/KWh/y used in the ES). The proportionality of this reduction with the grid CO<sub>2</sub> reduction means that from this recalculation alone, the displacement period is unaffected.

## 8.16 Real-world grid output has not been considered

The energy output has been stated and used in the energy savings calculations as the maximum production, based on the DC energy production of the sum of the panels and 24/7 operation. As set out in the previous section of these submissions, the recently adopted SKDC Local Plan recognizes this issue as a "key factor" and requires measurement against real world output: Policy RE1 , App 3 and para 3.17. **"To determine the real-world energy production for the grid, it is necessary to consider the cumulative losses from DC energy production to available AC energy for the grid."** These losses equate to approximately 8% of the DC production and are attributed as follows:

- a) **Inverter losses:** good inverters, in a well-designed/managed PV facility can operate at 98% efficiency (depending on climactic conditions) with minimal additional clipping losses. It is therefore expected that the losses in the AC conversion stage to be approximately 3%
- b) **Distribution losses:** It is expected that approximately 2% energy is lost in the various distribution stages of the facility - if it is well designed.
- c) **Maintenance and Grid outage losses:** It is common practice to allow 2-3% loss of production per annum through maintenance and grid outages, when feed-in cannot be achieved.

Source: website: [ratedpower.com/blog/utility-scale-pv-losses/](http://ratedpower.com/blog/utility-scale-pv-losses/) - this is not a hyperlink

**8.16.1 Impact on annual output calculation:** These real-world losses generate a **new revised annual energy production for the grid of 282,072MWh.**

**8.16.2 Impact on CO<sub>2</sub> saving calculations:** The real-world losses equate to a new **revised year 1 CO<sub>2</sub> saving of 51,337te CO<sub>2</sub>** (64,000 stated in para 13.4.14), before degradation in subsequent years, and reduces the lifetime CO<sub>2</sub> savings of the facility.

**8.16.3 Impact on Emissions Displacement Calculation:** The real-world output from the facility results in a lower annual CO<sub>2</sub> saving to off-set against the revised Lifecycle CO<sub>2</sub> established in point 1.

## 8.17 Output degradation has not been used in the Output, Displacement or CO<sub>2</sub> Savings calculations

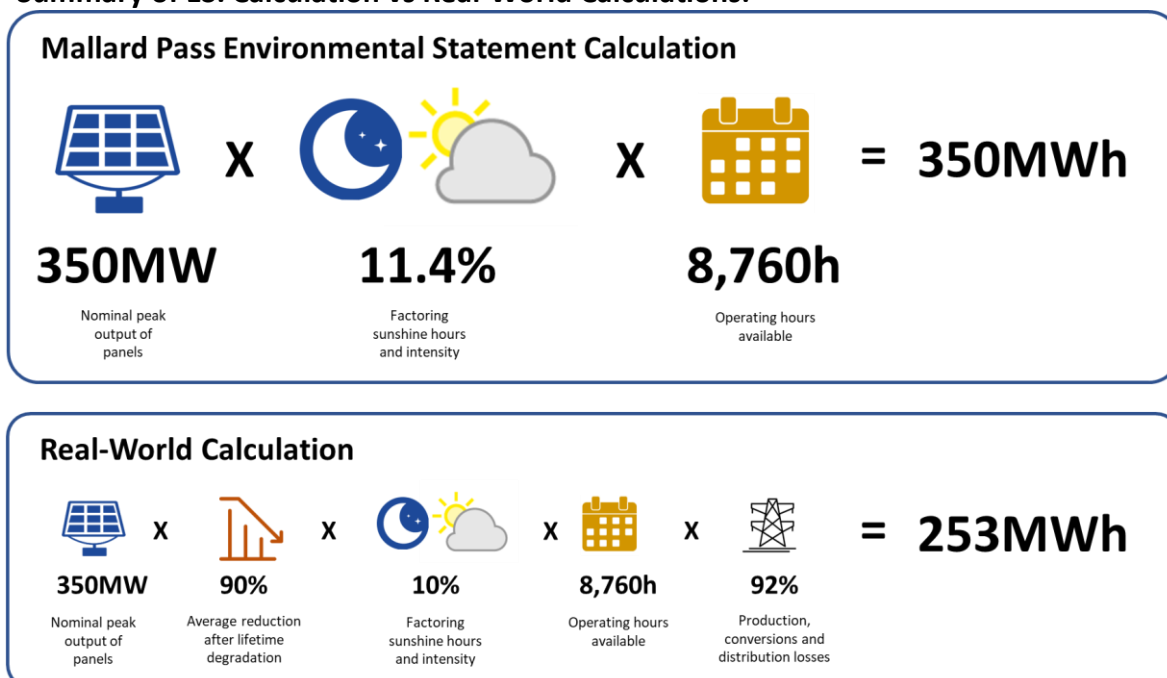
Consistent output-degradation is universally recognised and included in the specifications of the panels. This has been stated in para 13.4.17, however it affects output and has been ignored in the calculations. This degradation is not insignificant. Using the figures supplied, energy output will be degraded by 5.6% over the first 10 years, 12.35% by 25 years (realistic panel lifetime) and by 19.1% by the stated installation end-of-life.

8.17.1 **Impact on annual output calculation:** The degradation of the panels over time means the real-world output of the facility drops to 266,276MWh after 10 years, 247,236MWh after 25 years and 228,196MWh after 40 years, with an average output of 253,057MWh. This reduction means less CO<sub>2</sub> is 'avoided' impacting the CO<sub>2</sub> saving and emission displacement calculations.

8.17.2 **Impact on CO<sub>2</sub> saving calculations:** The real-world losses equate to an **annual CO<sub>2</sub> saving of 51,337teCO<sub>2</sub> in year 1, falling to 41,531teCO<sub>2</sub> in year 40, with an average of 46,056teCO<sub>2</sub>** (64,000 stated in para 13.4.14). The total net saving over 40 years is now **revised down to 1.25 million tonnes** (1.9m stated in para 13.4.18).

8.17.3 **Impact on Emissions Displacement Calculation:** The degraded output from the facility results in a lower annual CO<sub>2</sub> saving to off-set against the stated 672,000teCO<sub>2</sub> embodied CO<sub>2</sub>. This provides a new **revised displacement period of 11.9 years** (10.5 years stated in para 13.4.18).

### 8.17.4 Summary of ES. Calculation vs Real-World Calculations:



**Figure 7 Summary of ES calculation vs Real World**

8.18 **Embodied CO<sub>2</sub> (Lifecycle CO<sub>2</sub>) has been stated significantly below expectations:**

8.18.1 The embodied CO<sub>2</sub> has been estimated using the IPCC estimates of Lifecycle Emissions. The ES states that it has used the median value of 48kgCO<sub>2</sub>eq/MWh from the IPCC estimate of emissions in a range of 18 to 180 (stated in error in the chapter as 8 to 180). However, this installation is expected to be significantly over the median (50th percentile) due to manufacturing in China and the scale of the installation, which requires significant mitigations. Articles discussing Lifecycle Emissions identify that 70% of the Lifecycle CO<sub>2</sub> comes from the manufacturing of the panels, and compared with panels manufactured in Europe or North America, **panels manufactured and shipped from China have THE HIGHEST EMBODIED CO<sub>2</sub>, due to the 50% Coal-fired power-stations used in China’s energy grid. Transportation to the UK from China will be at the higher end of embodied CO<sub>2</sub>.**

8.18.2 It is expected, therefore that this installation will represent 75th to 95th percentile on the IPCC distribution. This distribution curve is not available to the author, however it is not unreasonable to expect, given the median and range, that this is at least 50% - 100% higher than the median value – i.e. in the range 72-96kgCO<sub>2</sub>eq/MWh.

8.18.3 **Impact on CO<sub>2</sub> saving calculations:** As the lifecycle CO<sub>2</sub> increases, the lifetime CO<sub>2</sub> savings decrease. Using the Median, lower expected, higher expected and maximum values for lifecycle emissions, and the revised output from this document, the **total CO<sub>2</sub> savings are expected to be in the range 0.66m – 0.96m teCO<sub>2</sub>**. Significantly lower than the stated 1.9m teCO<sub>2</sub> claimed in the ES. The table below compares the ranges for both the stated and revised outputs.

8.18.4 **CO<sub>2</sub> Saving ranges (40 years):**

Range	Lifecycle em. KgCO <sub>2</sub> /MWh	Total CO <sub>2</sub> Saving- stated output (teCO <sub>2</sub> )	Total CO <sub>2</sub> Saving- revised output (teCO <sub>2</sub> )
IPCC Median	48	1.61m	1.25m
Expected Lower range	72	1.26.m	0.96m
Expected Upper range	96	0.94m	0.66m
IPCC Maximum	168	-0.23m	-0.37m

Figure 8 CO<sub>2</sub> Savings ranges

8.18.5 **Impact of this on Emissions Displacement:** Higher lifecycle CO<sub>2</sub> takes longer to displace. Using the expected lower and upper ranges for lifecycle CO<sub>2</sub>, and the revised output from this document, the expected displacement period is expected to be in the range 18.2 – 24.6 years, significantly more than the stated 10.5 years. The table below compares the ranges for both the stated and revised outputs.

8.18.6 **Emissions Displacement ranges:**

Range	Lifecycle em. KgCO <sub>2</sub> /MWh	Disp. Period – stated output (years)	Disp. Period – revised output (years)
IPCC Median	48	10.50	11.9
Expected Lower range	72	15.75	18.2
Expected Upper range	96	21.00	24.6
IPCC Maximum	168	39.38	>40 years

Figure 9 Emissions displacement ranges



## 8.19 Additional Considerations:

- 8.19.1 **The lifetime of the panels, inverters and infrastructure has been understated.** Although most existing data is based on panel lifetimes of 25 years, it is accepted that monocrystalline panels may last up to 40 years. However, the IPCC lifecycle CO<sub>2</sub> data is based on 25-year operating span and there is little or no data on utility-level PV installations lifecycle CO<sub>2</sub> when operated for 40 years so it is not possible to assess failure rates or maintenance costs in this extended period. Suffice it to say, that given the normal 'bathtub curve' for failures, failure rates will be higher than those within the typical warranty period of 25 years - which is why warranty periods only extend that far, and that plant maintenance of the frames, cables, enclosures, roads and fencing will be higher in the period after 25 years.
- 8.19.2 **It should be noted that since warranties only extend to 25 years, typically, it makes for an attractive 'economic choice' to replace degraded panels with 'upgraded' newer panels around this time. No assurances have been given that this will not be done, neither has any allowance been made in the CO<sub>2</sub> calculations for effectively doubling the lifecycle CO<sub>2</sub> of the facility – effectively halving any expected low-carbon benefits on which the case for the facility is being built.**
- 8.19.3 Inverters, however, only have a lifespan of 10-15 years, so all the inverters will need replacing AT LEAST TWICE during the lifetime of the facility. This has not been mentioned, nor factored into the lifecycle CO<sub>2</sub> costs.

## 8.20 Due to Grid decarbonisation, the Embodied CO<sub>2</sub> will NOT be displaced in the lifetime of the installation.

Calculations for the CO<sub>2</sub> savings are made based on reduction of CO<sub>2</sub> from the current grid mix of generation. As the grid becomes decarbonized, the actual savings become lower, obviously. Para 13.4.17 examines this and identifies that the total actual lifetime CO<sub>2</sub> reduction from the grid CO<sub>2</sub> is 423,580 te CO<sub>2</sub>. This figure is lower than the lifetime CO<sub>2</sub> of the facility. **In short, if the facility were not built, and the grid decarbonised through other forms of low carbon production (Utility-Level Wind/Nuclear), there would be less CO<sub>2</sub> released into the atmosphere (See the IPCC table of lifecycle emissions in the appendices - the 'build an alternative' scenario is better for the planet, and the only feasible way to achieve 'net zero'.**

## 8.21 Fossil-fuel power stations are required to balance grid voltages from the variable output of utility PV installations.

Grid absorption losses, or the energy required to balance voltages in the grid due to over or under-supply of electricity from highly-variable energy sources must be considered when evaluating utility-level PV facilities. Currently, the DRAX power station (non-renewable) is required to operate (and emit CO<sub>2</sub>) to generate reactive power to 'absorb' loads and maintain the right grid voltages (differences in electrical potential) as a result of highly variable sources, such as PV and Wind. Input to the grid is not carbon free! This must be factored-in when looking at variable renewables and, ultimately, for the whole decarbonisation strategy for the grid.

This CO<sub>2</sub> cost of a highly variable supply from utility-level PV has not been considered in any part of the chapter. In order to achieve energy independence and genuine decarbonisation,

the national strategy for grid decarbonisation must consider the balance and timing of investments in highly variable (such as PV) and in green on-demand production (such as nuclear) to maintain grid-balancing through reactive power generation without CO<sub>2</sub> production.

Related article: Website: [medium.com/drax/what-is-reactive-power-and-why-does-it-matter-9dcd6aee7871](https://medium.com/drax/what-is-reactive-power-and-why-does-it-matter-9dcd6aee7871). This is not a hyperlink.

## **8.22 Environmental impact from water usage has been ignored:**

Without regular cleaning, the output (and therefore environmental benefits) can fall by 25-50%. Provision of water and waste water management is mentioned in para 13.4.12, however, the amount of water required to clean the panels to maintain efficiency has not been stated. It is expected that with 530,000 panels, it will require approximately 2.4 million litres of water to clean all the panels each time (4.5l each panel), and that this would be carried out many times per year. It has not been stated how the waste water will be managed, nor whether cleaning agents will be used and what their impact will be on the environment. These are significant quantities with potentially damaging environmental impacts, as well as a material impact on local water usage.

## Annex 1: Analysis of specific clauses

Clause	Comments
<p>13.4.10. When operational, the Proposed Development will generate electricity from a renewable source and export this to the National Grid. The Proposed Development is anticipated to have an installed capacity of 350 MWp, a capacity factor estimated at 10 % and would be available to operate for 8,760 hours per year.<sup>1</sup> This means that the Proposed Development is anticipated to generate approximately 350,000 MWh of renewable electricity per year.</p>	<p>As demonstrated in this document, this approximation equates to a 14% over-statement of annual production from the panels. When calculated using the figures provided, the actual output is 306,600 MWh</p>
<p>13.4.14. Each of these phases requires energy which involves CO<sub>2</sub> emissions through the production of energy consumed. The IPCC [Ref 13-16] estimated emissions of CO<sub>2</sub> for a range of electricity generation types. For utility scale solar photovoltaic cells, it estimated a lifecycle emission of 48 kgCO<sub>2</sub>eq/MWh (based on the median value from a range between 8 and 180 kgCO<sub>2</sub>eq/MWh) from construction through to decommissioning. In 2014, solar farms were expected to operate for 25 years, and the emissions data would have been based on this lifetime. The lifetime of solar farms is now estimated to be approximately 40 years which is an adequate assessment period for the ES. However, the GHG emissions within the lifecycle are generally weighted primarily to the construction and decommissioning of solar farms and therefore the additional 15-year lifespan of operational time will have limited GHG emissions. This leads to a total CO<sub>2</sub> cost of the Proposed Development of approximately 672,000 tonnes (te) of CO<sub>2</sub> over an assumed operational lifespan of 40 years with an annual total of 16,800 te assuming zero decarbonisation of lifecycle emissions.</p>	<p>It is unlikely that the lifecycle emissions for this facility will be at the IPCC median. Given the provenance of the panels, it is expected to be 75<sup>th</sup> to 95<sup>th</sup> percentile. This has a dramatic effect on the climate benefits for the project.</p> <p>The assumptions for the operating life impact on Lifecycle CO<sub>2</sub> are broadly accepted, subject to actual operating life of facility components.</p> <p>Lifecycle CO<sub>2</sub> has been recalculated in this document and expected to be between 883,280 and 1,175,040 teCO<sub>2</sub></p>
<p>13.4.17. Grid decarbonisation will reduce the average emissions of CO<sub>2</sub> and therefore the total reduction of savings above associated with the Proposed Development correspondingly. To achieve decarbonisation of the grid, energy sources such as the Proposed Development are required to meet Government targets relating to GHG emissions. Therefore, whilst the decarbonisation of the grid would reduce the savings associated with the Proposed Development, infrastructure such as the Proposed Development is a pre-requisite to such decarbonisation. In the National Grid Future Energy Scenario (FES) 'best case' decarbonisation scenario, grid CO<sub>2</sub> intensities and the output of Proposed Development accounting for panel degradation have been utilised to calculate the potential reduction of CO<sub>2</sub> emissions avoided as a result of the Proposed Development, which accounts for decarbonisation and degradation with results in Plate 13-1. This shows a total reduction in CO<sub>2</sub> of 423,580 teCO<sub>2</sub> across the lifetime of the Proposed Development and an average of 10,589 teCO<sub>2</sub>/y.</p> <p><b>Plate 13-1 Proposed Development CO<sub>2</sub> Reductions</b></p> <p>The graph shows a significant and rapid reduction in CO<sub>2</sub> emissions over the 40-year period. The emissions start at a high level of approximately 55,000 tCO<sub>2</sub> in year 1, drop sharply to around 10,000 tCO<sub>2</sub> by year 10, and then continue to decrease steadily, reaching near-zero levels by year 40.</p>	<p>This statement is accepted, and even without the output adjustment, demonstrates that the lifecycle CO<sub>2</sub> of the facility is never recovered throughout the lifetime of the facility in a real-world scenario.</p>


<p>Development is a pre-requisite to such decarbonisation. In the National Grid Future Energy Scenario (FES) 'best case' decarbonisation scenario, grid CO<sub>2</sub> intensities and the output of Proposed Development accounting for panel degradation have been utilised to calculate the potential reduction of CO<sub>2</sub> emissions avoided as a result of the Proposed Development, which accounts for decarbonisation and degradation with results in Plate 13-1. This shows a total reduction in CO<sub>2</sub> of 423,580 tCO<sub>2</sub> across the lifetime of the Proposed Development and an average of 10,589 tCO<sub>2</sub>/y.</p> <p><b>Plate 13-1 Proposed Development CO<sub>2</sub> Reductions</b></p> 	
<p>13.4.18. The CO<sub>2</sub> emissions of the Proposed Development would therefore be displaced within approximately 10.5 years, and all savings beyond that would be a net benefit of the Proposed Development to reducing climate change, relative to the baseline. Over 40 years, for example, the saving is estimated at approximately 1.9 million tonnes of CO<sub>2</sub>.</p>	<p>This statement is based on inaccurate output figures, uses the year 1 output, not the annually degraded output and assumes median value for Lifecycle CO<sub>2</sub> from the IPCC data.</p> <p>This document has demonstrated that the CO<sub>2</sub> displacement is likely to be 18-24 years and the lifetime CO<sub>2</sub> saving against 2020 grid CO<sub>2</sub> figures is between 0.66 and 0.96m tCO<sub>2</sub>.</p>
<p>13.4.19. This is considered to be a material beneficial change to the UK's emissions of climate-changing GHG and is therefore a moderate beneficial effect that is significant.</p>	<p>Firstly, no basis is given for this conclusion. Given that the facility will produce approximately 0.088% of the UK electricity needs, and saves just 0.013% of the current annual grid CO<sub>2</sub> its challenging to conclude that these CO<sub>2</sub> emissions savings make a 'material change' to the UK's CO<sub>2</sub> emissions from power generation, or that the beneficial effect would be significant. I would request further qualification and, indeed, quantification of this baseless statement.</p> <p>Secondly, this document has shown that the climate benefits are expected to be less than half what is claimed in the ES, making somewhat less of an impact to an already immaterial</p>

Figure 10: Annex 1: Analysis of specific clauses

## Annex 2: Calculations and Data Tables

### ‘Basic’ Calculation method used in the Environmental Statement

ES Calculations						
	Installed Capacity	(MW)	Capacity Factor	=		
<b>Output Capacity</b>	350	x	10%	=		<b>35 MWh</b>
	Output Capacity		hours/annum (h)	=		
<b>Annual Output (panels)</b>	35	x	8,760	=		<b>350,000 MWh</b>
	Annual Output (panels)	(MW)	Facility Efficiency	=		
<b>Annual Output (grid)</b>	350,000	x	100%	=		<b>350,000 MWh</b>
	Annual Output	(MWh)	Lifecycle Carbon (Te/MWh)	=		
<b>Annual Lifecycle Carbon</b>	350,000	x	0.048	=		<b>16,800 teCO2</b>
	Annual Output	(MWh)	Lifecycle Carbon (Te/MWh)	=		
<b>Annual Grid Equivalent Carbon</b>	350,000	x	0.182	=		<b>63,700 teCO2</b>
	Annual Lifecycle Carbon (teCO2)		Operating Years (y)	=		
<b>Total Embodied Carbon</b>	16,800	x	40	=		<b>672,000 teCO2</b>
	Total Embodied Carbon (teCO2)		Annual Grid Equivalent Carbon (teCO2)	=		
<b>Carbon Displacement Period</b>	672,000	/	63,700	=		<b>10.55 years</b>
	Operating Years (y)		Carbon Displacement Period (y)	=		
<b>Post Displacement Period</b>	40	-	10.55	=		<b>29.45 years</b>
	Annual Grid Equivalent Carbon (teCO2)		Post Displacement Period (y)	=		
<b>Total Carbon Saving</b>	63,700	x	29.45	=		<b>1,876,000 teCO2</b>

### Corrected ‘Basic’ Calculation method used in the Environmental Statement

ES Calculations Corrected for Output Error and Real-World Grid Output						
	Installed Capacity	(MW)	Capacity Factor	=		
<b>Output Capacity</b>	350	x	10%	=		<b>35 MWh</b>
	Output Capacity		hours/annum (h)	=		
<b>Annual Output (panels)</b>	35	x	8,760	=		<b>306,600 MWh</b>
	Annual Output (panels)	(MW)	Facility Efficiency	=		
<b>Annual Output (grid)</b>	306,600	x	92%	=		<b>282,072 MWh</b>
	Annual Output (panels)	(MWh)	Lifecycle Carbon (Te/MWh)	=		
<b>Annual Lifecycle Carbon</b>	306,600	x	0.048	=		<b>14,717 teCO2</b>
	Annual Output (grid)	(MWh)	Lifecycle Carbon (Te/MWh)	=		
<b>Annual Grid Equivalent Carbon</b>	282,072	x	0.182	=		<b>51,337 teCO2</b>
	Annual Lifecycle Carbon (teCO2)		Operating Years (y)	=		
<b>Total Embodied Carbon</b>	14,717	x	40	=		<b>588,672 teCO2</b>
	Total Embodied Carbon (teCO2)		Annual Grid Equivalent Carbon (teCO2)	=		
<b>Carbon Displacement Period</b>	588,672	/	51,337	=		<b>11.47 years</b>
	Operating Years (y)		Carbon Displacement Period (y)	=		
<b>Post Displacement Period</b>	40	-	11.47	=		<b>28.53 years</b>
	Annual Grid Equivalent Carbon (teCO2)		Post Displacement Period (y)	=		
<b>Total Carbon Saving</b>	51,337	x	28.53	=		<b>1,464,812 teCO2</b>

Figure 11: Calculations and data tables

Calculations allowing for panel degradation and realistic Lifecycle CO<sub>2</sub>:

Year	Degradation	Panel Efficiency	Annual Capacity MWh	Grid CO <sub>2</sub> /MWh Tonnes (Te)	Grid Equivalent CO <sub>2</sub> Tonnes	Cumulative GE CO <sub>2</sub> Tonnes	IPCC Median Value		Expected Lower range		Expected Upper Range	
							Lifecycle CO <sub>2</sub> Kg/MWh	Lifecycle CO <sub>2</sub> Tonnes	Lifecycle CO <sub>2</sub> Kg/MWh	Lifecycle CO <sub>2</sub> KG	Lifecycle CO <sub>2</sub> Kg/MWh	Lifecycle CO <sub>2</sub> KG
1	0%	100%	282,072	0.182	51,337	51,337	0.048	14,717	0.072	22,075	0.096	29,434
2	2%	98.00%	276,431	0.182	50,310	101,647	0.048	14,717	0.072	22,075	0.096	29,434
3	0.45%	97.55%	275,161	0.182	50,079	151,727	0.048	14,717	0.072	22,075	0.096	29,434
4	0.45%	97.10%	273,892	0.182	49,848	201,575	0.048	14,717	0.072	22,075	0.096	29,434
5	0.45%	96.65%	272,623	0.182	49,617	251,192	0.048	14,717	0.072	22,075	0.096	29,434
6	0.45%	96.20%	271,353	0.182	49,386	300,579	0.048	14,717	0.072	22,075	0.096	29,434
7	0.45%	95.75%	270,084	0.182	49,155	349,734	0.048	14,717	0.072	22,075	0.096	29,434
8	0.45%	95.30%	268,815	0.182	48,924	398,658	0.048	14,717	0.072	22,075	0.096	29,434
9	0.45%	94.85%	267,545	0.182	48,693	447,352	0.048	14,717	0.072	22,075	0.096	29,434
10	0.45%	94.40%	266,276	0.182	48,462	495,814	0.048	14,717	0.072	22,075	0.096	29,434
11	0.45%	93.95%	265,007	0.182	48,231	544,045	0.048	14,717	0.072	22,075	0.096	29,434
12	0.45%	93.50%	263,737	0.182	48,000	592,045	0.048	14,717	0.072	22,075	0.096	29,434
13	0.45%	93.05%	262,468	0.182	47,769	639,814	0.048	14,717	0.072	22,075	0.096	29,434
14	0.45%	92.60%	261,199	0.182	47,538	687,352	0.048	14,717	0.072	22,075	0.096	29,434
15	0.45%	92.15%	259,929	0.182	47,307	734,660	0.048	14,717	0.072	22,075	0.096	29,434
16	0.45%	91.70%	258,660	0.182	47,076	781,736	0.048	14,717	0.072	22,075	0.096	29,434
17	0.45%	91.25%	257,391	0.182	46,845	828,581	0.048	14,717	0.072	22,075	0.096	29,434
18	0.45%	90.80%	256,121	0.182	46,614	875,195	0.048	14,717	0.072	22,075	0.096	29,434
19	0.45%	90.35%	254,852	0.182	46,383	921,578	0.048	14,717	0.072	22,075	0.096	29,434
20	0.45%	89.90%	253,583	0.182	46,152	967,730	0.048	14,717	0.072	22,075	0.096	29,434
21	0.45%	89.45%	252,313	0.182	45,921	1,013,651	0.048	14,717	0.072	22,075	0.096	29,434
22	0.45%	89.00%	251,044	0.182	45,690	1,059,341	0.048	14,717	0.072	22,075	0.096	29,434
23	0.45%	88.55%	249,775	0.182	45,459	1,104,800	0.048	14,717	0.072	22,075	0.096	29,434
24	0.45%	88.10%	248,505	0.182	45,228	1,150,028	0.048	14,717	0.072	22,075	0.096	29,434
25	0.45%	87.65%	247,236	0.182	44,997	1,195,025	0.048	14,717	0.072	22,075	0.096	29,434
26	0.45%	87.20%	245,967	0.182	44,766	1,239,791	0.048	14,717	0.072	22,075	0.096	29,434
27	0.45%	86.75%	244,697	0.182	44,535	1,284,326	0.048	14,717	0.072	22,075	0.096	29,434
28	0.45%	86.30%	243,428	0.182	44,304	1,328,630	0.048	14,717	0.072	22,075	0.096	29,434
29	0.45%	85.85%	242,159	0.182	44,073	1,372,703	0.048	14,717	0.072	22,075	0.096	29,434
30	0.45%	85.40%	240,889	0.182	43,842	1,416,545	0.048	14,717	0.072	22,075	0.096	29,434
31	0.45%	84.95%	239,620	0.182	43,611	1,460,156	0.048	14,717	0.072	22,075	0.096	29,434
32	0.45%	84.50%	238,351	0.182	43,380	1,503,535	0.048	14,717	0.072	22,075	0.096	29,434
33	0.45%	84.05%	237,082	0.182	43,149	1,546,684	0.048	14,717	0.072	22,075	0.096	29,434
34	0.45%	83.60%	235,812	0.182	42,918	1,589,602	0.048	14,717	0.072	22,075	0.096	29,434
35	0.45%	83.15%	234,543	0.182	42,687	1,632,289	0.048	14,717	0.072	22,075	0.096	29,434
36	0.45%	82.70%	233,274	0.182	42,456	1,674,745	0.048	14,717	0.072	22,075	0.096	29,434
37	0.45%	82.25%	232,004	0.182	42,225	1,716,969	0.048	14,717	0.072	22,075	0.096	29,434
38	0.45%	81.80%	230,735	0.182	41,994	1,758,963	0.048	14,717	0.072	22,075	0.096	29,434
39	0.45%	81.35%	229,466	0.182	41,763	1,800,726	0.048	14,717	0.072	22,075	0.096	29,434
40	0.45%	80.90%	228,196	0.182	41,532	1,842,258	0.048	14,717	0.072	22,075	0.096	29,434
						1,842,258		588,672		883,008		1,177,344
Average						46,056	Saving	1,253,586	Saving	959,250	Saving	664,914

Figure 12: Calculations including degradation and Lifestyle CO<sub>2</sub>

Calculations for the 'number of homes' electricity equivalent contrasting the MP calculation with both the real-world calculation, and that using the output stated in the TEC Registration:

MP Homes Calculation	Installed Capacity * MW	Capacity Factor * %	Annual operating hours = h	Annual Output MWh						Avg. Ann. Use MWh/home	# Homes
	350	11.40%	8,760	349,524						3.760	92,959
Actual Homes Calculation	Installed Capacity * MW	Capacity Factor * %	Annual operating hours = h	DC Generation MWh	Grid input losses = %	AC Grid input - 1/2 * MWh	Lifetime Degredation %	Annual Output Average MWh		Avg. Ann. Use MWh/home	# Homes
	350	10.00%	8,760	306,600	8%	282,072	20%	253,865		3.760	67,517
	UK Ann. Cons. MWh	MP avg. Output MWh									
	288,000,000	253,865									0.088%
TEC Homes Calculation	Annual Output MWh									Avg. Ann. Use MWh/home	# Homes
	240,000									3.760	63,830

Figure 13: Calculation 'number of homes' electricity equivalent

## IPCC Technology-specific Cost and Performance Parameters Annex III

**Table A.III.2** | Emissions of selected electricity supply technologies (gCO<sub>2</sub>,eq/kWh)<sup>i</sup>

Options	Direct emissions	Infrastructure & supply chain emissions	Biogenic CO <sub>2</sub> emissions and albedo effect	Methane emissions	Lifecycle emissions (incl. albedo effect)
	Min/Median/Max	Typical values			Min/Median/Max
<b>Currently Commercially Available Technologies</b>					
Coal—PC	670/760/870	9.6	0	47	740/820/910
Gas—Combined Cycle	350/370/490	1.6	0	91	410/490/650
Biomass—cofiring	n. a. <sup>ii</sup>	–	–	–	620/740/890 <sup>ii</sup>
Biomass—dedicated	n. a. <sup>ii</sup>	210	27	0	130/230/420 <sup>iv</sup>
Geothermal	0	45	0	0	6.0/38/79
Hydropower	0	19	0	88	1.0/24/2200
Nuclear	0	18	0	0	3.7/12/110
Concentrated Solar Power	0	29	0	0	8.8/27/63
Solar PV—rooftop	0	42	0	0	26/41/60
Solar PV—utility	0	66	0	0	18/48/180
Wind onshore	0	15	0	0	7.0/11/56
Wind offshore	0	17	0	0	8.0/12/35
<b>Pre-commercial Technologies</b>					
CCS—Coal—Oxyfuel	14/76/110	17	0	67	100/160/200
CCS—Coal—PC	95/120/140	28	0	68	190/220/250
CCS—Coal—IGCC	100/120/150	9.9	0	62	170/200/230
CCS—Gas—Combined Cycle	30/57/98	8.9	0	110	94/170/340
Ocean	0	17	0	0	5.6/17/28

**Notes:**

- <sup>i</sup> For a comprehensive discussion of methodological issues and underlying literature sources see Annex II, Section A.II.9.3. Note that input data are included in normal font type, output data resulting from data conversions are bolded, and intermediate outputs are italicized.
- <sup>ii</sup> Direct emissions from biomass combustion at the power plant are positive and significant, but should be seen in connection with the CO<sub>2</sub> absorbed by growing plants. They can be derived from the chemical carbon content of biomass and the power plant efficiency. For a comprehensive discussion see Chapter 11, Section 11.13. For co-firing, carbon content of coal and relative fuel shares need to be considered.
- <sup>iii</sup> Indirect emissions for co-firing are based on relative fuel shares of biomass from dedicated energy crops and residues (5-20%) and coal (80-95%).
- <sup>iv</sup> Lifecycle emissions from biomass are for dedicated energy crops and crop residues. Lifecycle emissions of electricity based on other types of biomass are given in Chapter 7, Figure 7.6. For a comprehensive discussion see Chapter 11, Section 11.13.4. For a description of methodological issues see Annex II of this report.

**Figure 14: IPCC technology-specific Cost and Performance Annex III**

**References:** (there are no active hyperlinks in this table).

Article	Reference URL
Load (Capacity Factor) UK	<a href="https://www.statista.com/statistics/555697/solar-electricity-load-factor-uk/">https://www.statista.com/statistics/555697/solar-electricity-load-factor-uk/</a>
Utility Scale PV losses:	<a href="https://ratedpower.com/blog/utility-scale-pv-losses/">https://ratedpower.com/blog/utility-scale-pv-losses/</a>
Lifecycle CO <sub>2</sub> Emissions (China Vs Europe and 70% from sourcing & fabrication)	<a href="https://journalistsresource.org/environment/lifecycle-greenhouse-gas-emissions-solar-wind-energy/">https://journalistsresource.org/environment/lifecycle-greenhouse-gas-emissions-solar-wind-energy/</a>
Reactive power and Grid Balancing	<a href="https://medium.com/drax/what-is-reactive-power-and-why-does-it-matter-9dcd6aee7871">https://medium.com/drax/what-is-reactive-power-and-why-does-it-matter-9dcd6aee7871</a> .

## 9. COMPULSORY ACQUISITION (CA) RIGHTS

### 9.1 Summary

- 9.1.1 **The necessary compelling case in the public interest has not been made out. Accordingly, there is no legally sufficient justification for the use of CA for the reasons set out below.** The main issues are as follows. There has been no feasibility assessment of the 3 cabling options and status to date.
- 9.1.2 There is no adequate assessment of the impacts to the receptors, whether it be residents, environment and biodiversity, of the use of CA. There has been no apparent or effective effort to minimise the impact on Essendine residents due to blanket coverage with the CA. It remains unclear to residents whether the removal of rights is temporary or permanent, and what temporary and permanent mean given the time unlimited application. The Proposed Development does not provide tangible benefits to local residents to help justify the CA.
- 9.1.3 It is also worthy of note that poor consultation, both in terms of distribution of information and clarity of information has undermined what justification has been advanced for the use of what are exceptional powers to expropriate property. Similar, there has been no adequate or sufficient mention of compensation entitlements.

### 9.2 Background

- 9.3 Chapter 5 Project Description (APP-035) para 5.7.3 ***“stated higher rated voltage cables (33kV) are required between Solar Stations and the Onsite Substation. The 33kV cables will be buried underground in a trench.”*** The trench will be 1.3m deep and 1m wide.
- 9.4 ***“The electrical design of the Proposed Development will be fixed at the detailed design stage, but it is anticipated that the 33kV cables will run alongside the internal access tracks to the access point onto the adopted highway. From that point, the cables would be located within the adopted highway and/or agricultural land within the extents of Work No. 4 in order to connect back to the Onsite Substation. Any cables that are located within the adopted highway would be located within the carriageway and/or verge so to avoid the loss of boundary hedgerows or trees. The cables would be contained within Work No 4 as shown on the Works Plan [EN010127/APP/2.2]. The flexibility to locate electrical and other cables within Work No 4 is required to ensure that the Proposed Development can be implemented as efficiently as possible.”***
- 9.5 Whilst this text was also provided in the PEIR, there was no indication compulsory acquisition rights were being sought. Given the compulsory acquisition rights request to the Secretary of State, and the potential impacts for residents, the cable option route needs to be evaluated and justified, and if approved clear planning conditions laid down protecting the interests of the local residents.
- 9.6 Para 5.7.7. states electrical cabling will be required to connect the Solar Stations located to the east of the East Coast Main Line to the Onsite Substation which is located to the west of the East Coast Main Line. Three cable routes /methods are being considered for crossing the East Coast-Mainline railway, the location of which are shown on Figure 15 below.



- 9.6.1 Option 1 - cables would be run through the existing brick culverts underneath the East-Coast mainline and Horizontal directional drilling (HDD) underneath the West Glen River;
- 9.6.2 Option 2 - HDD underneath the East Coast mainline and the West Glen River; or 500mm bore per 50MW AC generation, consisting of 3 x 200mm + 1 x 110mm. Maximum 5 bores distanced 5m centre to centre  
Maximum Depth – 12m  
Approximate length – 150m
- 9.6.3 Option 3 - cables to be routed within the adopted highway and over the railway bridge within Essendine.

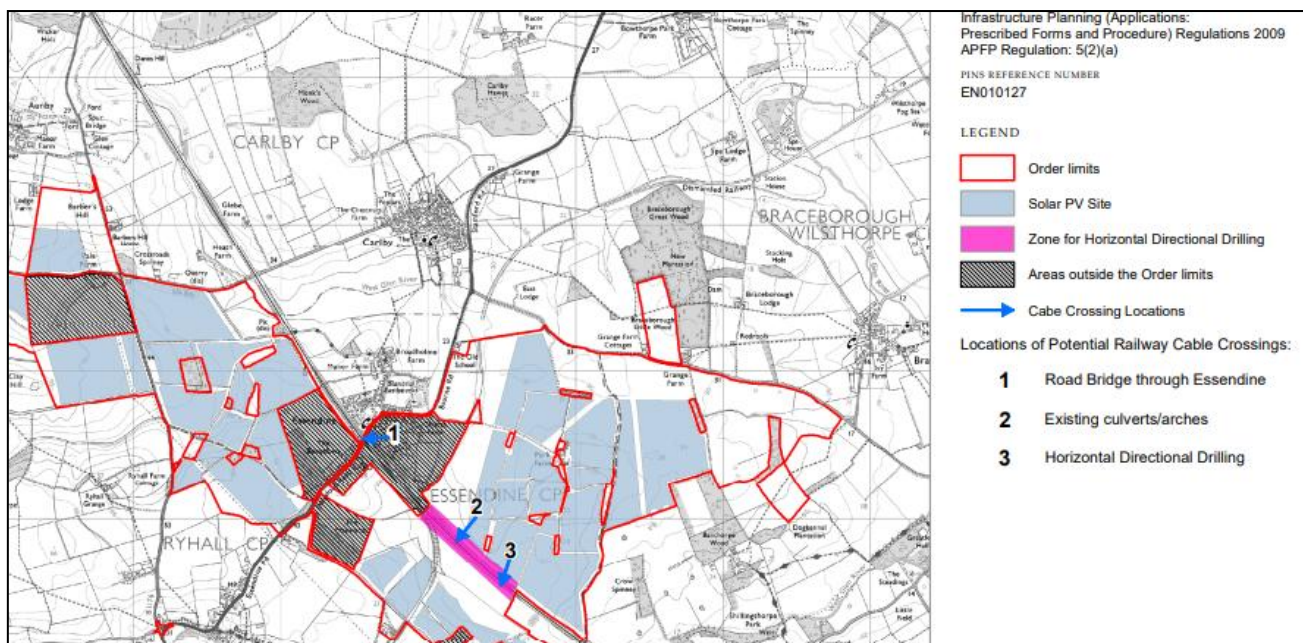


Figure 15: MPSF Figure 5.8 Cable Crossing Options of the East Coast Main Line (APP-XX)

9.7 MPSF claim they have considered the environmental impacts of all three options. **However there does not appear to be an assessment of any of the options, surely key for justifying the requirement of CA in the draft DCO.** Why is Mallard Pass unable to confirm why either of 2 underground cable routes under the east coast mainline is possible or not possible after all this time? Table 5-8 provides the basis of assessment for the onsite cabling, for which there is almost no detail.

Onsite Cabling			
Electrical cables	Cable trench dimensions	Depth	Max. depth 1.3m
		Width	Up to 1.5m
East Coast Main Line Electrical Cable Crossing			
Electrical Cable route options	Option 1	Cables would be located within a trench(s) through the existing brick culverts underneath the East Coast Mainline Railway in accordance with Network Rail and Cadent Gas requirements.	
	Option 2	Cables would run through ducts that have been horizontal directionally drilled underneath the East Coast Mainline Railway.	
	Option 3	Cables to be routed within the bridge deck of the adopted highway along the A6121.	

Figure 16: MPSF Table 5.8 On-site cabling parameters

9.8 The recent Relevant Representation from Network Rail (RR-0826) shows little progress has been made in determining the route or potentially even having detailed discussions with them. *“The Applicant has not provided sufficient information in its application to justify why all Route Options are necessary, putting pressure on Network Rail to determine which option would be most suitable to protect the integrity of the EC Main Line during the course of the Examination. By not determining which Route Option to pursue, the Applicant is seeking to acquire land which is not required for the development to which the Scheme relates and is doing so without a compelling case in the public interest to justify it.”* MPAG agrees that the necessary compelling case has not been made out, both in this respect and more generally.

## 9.9 Design statement

9.10 Considering the NIC (National Infrastructure Commission) Design Principles have been used to frame the Project principles of this application as outlined in the Design and Access Statement (APP-204), applying extensive compulsory acquisition rights is not in accordance with those principles as outlined below.

### People

PE1- Engage openly and transparently with local communities, stakeholders and neighbours, making use of local knowledge to improve our project.

PE2 – Consider feedback carefully and engage and respond meaningfully.

PE3 – Behave as a considerate neighbour though both construction and operation.

PE4 – Respect public amenity.

## 9.11 Unclear description of the proposed CA

9.12 In the Statement of Reason (APP-021) under Source and Scope of Powers Sought in the Order (Section 5) para 1.4.1 “Section 120 of the PA 2008 provides that an order granting development consent may make provision relating to, or to matters ancillary to, the development for which consent is granted. Schedule 5 to the PA 2008 lists the matters ancillary to the development, which includes the acquisition of land, compulsorily or by agreement, and the creation, suspension or extinguishment of, or interference with, interests in or rights over land, compulsorily or by agreement. v. The powers sought with the Application of the Order are:

9.12.1 all interests in land, including freehold (Article 20 in the Order) – shown edged red and shaded pink on the Land Plans;

9.12.2 permanent acquisition of new rights (Article 22 in the Order) - shown edged red and shaded blue on the Land Plans; and

9.12.3 temporary use of land to permit construction or maintenance where the Applicant has not yet exercised powers of compulsory acquisition (Articles 29 and 30 in the Order) and extinguishment and/or suspension of rights (Article 23 in the Order) and overriding of easements and other rights (Article 26 in the Order) – shown edged red and shaded yellow on the Land Plans.

9.13 There appears to be a possible discrepancy/inconsistency in this description. For Essendine village on A6121 the CA shading is shaded blue on Land Plans maps (APP-005). Blue shading as described in para 1.4.1 above indicates permanent. Yet the key on the page denotes both temporary and permanent. Any resident looking at this information would be confused. With

the poor overt consultation, the residents are confused and bewildered by the lack of clarity in any of the documentation.

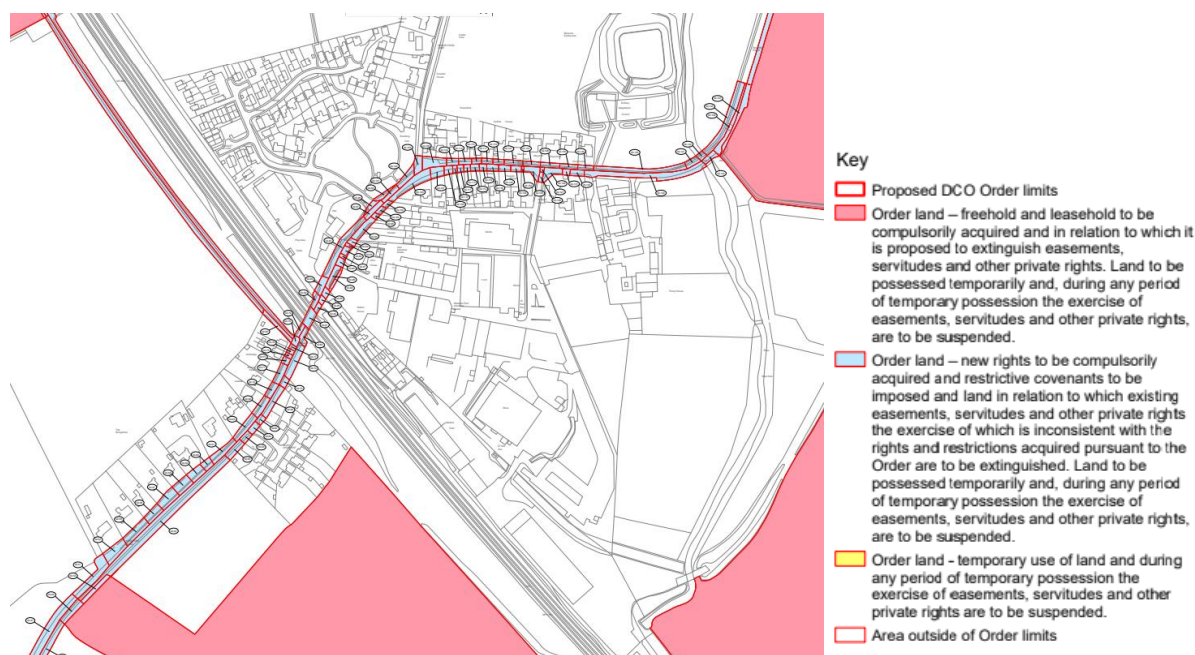


Figure 17: Land Plans Sheet 2A of 6 (APP-005)

#### 9.14 Temporary Use

9.15 It is still very unclear from the above descriptions exactly how those statements relate to the shading on the Land Plans, and exactly whether the method of seeking both temporary and permanent rights will be in the interests of the residents affected. MPSF suggest permanent rights will only be defined after construction finishes, shouldn't this be 100% clear in the DCO what the temporary and permanent rights will be.

#### 9.16 Is there a compelling case?

9.17 Justification for the Compulsory Acquisition Powers (Section 7). Under section 122 of the PA 2008, compulsory acquisition powers may only be granted if the Secretary of State is satisfied that the land is required for the Proposed Development (or is required to facilitate it or is incidental to it), and if there is a compelling case in the public interest for inclusion of the powers.

9.18 The CA Guidance related to procedures for the compulsory acquisition of land (DCLG, September 2013) also states that: (a) there must be a clear idea how the land to be acquired is to be used and (b) it must be no more than is reasonably required;

9.18.1 **There must be compelling evidence that the public benefits would outweigh the private loss from the acquisition.**

9.18.2 **All reasonable alternatives to compulsory acquisition should have been explored.** 3 different options have been put forward, the cable option being very different to going under the east coast mainline. There are already culverts being used to route utilities. This solution would be the least disruptive to the community and minimise the extent of CA powers

needed, it would certainly negate most of them through the village of Essendine on a main trunk road.

It is questionable whether both sides of the highway need to be used and therefore if the blanket CA coverage of properties is necessary

- 9.18.3 **There must be reasonable prospects of the required funds for the acquisition being available.** Given the vagaries of the shareholding, how can this be the case? Given the site is likely to be sold upon approval to an installer, what guarantees the funding for compensation and the correct adherence to all the conditions should the CA rights be granted?
- 9.18.4 **The purposes for which the land is sought are legitimate and sufficient to justify interfering with the human rights of affected people.** Given the chosen location of the new substation was established at the outset, why has it taken this long to resolve the cabling routes back to this new sub-station and identify the smallest impacts to the least number of people i.e. not cabling through the centre of a village.

## 9.19 Other Rights and Powers

- 9.20 MPSF has included powers to ensure that easements and other private rights identified as affecting the land are extinguished or suspended, so as to facilitate the construction and operation of the Proposed Development without hindrance. Furthermore, there may be unknown rights, restrictions, easements or servitudes affecting that land which also need to be extinguished in order to facilitate the construction and operation of the Proposed Development. Articles 23 and 26 of the Order are relied upon in respect of this land and apply in relation to land in which compulsory acquisition or temporary possession are proposed (that is, land shaded pink, blue or yellow on the Land Plans). With respect to land shaded yellow, in respect of which temporary possession only is sought, Article 23(3) makes clear that any private rights or restrictive covenants are only suspended for the period in which the Applicant is in lawful possession of the land (i.e. they would only be suspended temporarily).

## 9.21 The Statement of Need

- 9.21.1 This is not fully defined and quantified.
- 9.21.2 The grid is most under pressure during the winter months, solar will do little compared to say wind to help relieve the pressure on energy demand
- 9.21.3 Solar is the least efficient form of renewable energy, currently only delivers 10% of its maximum stated output. Without battery storage this development will deliver even less as during the higher performing summer months the grid may not be able to take the energy and the potential will be wasted.
- 9.21.4 Solar is low cost to install, but none of those benefits are passed on to the consumer as electricity tariffs are determined by global gas wholesale prices.
- 9.21.5 MPSF's carbon payback does not include the impacts of replacing solar panels as well as all the extra food that will have to be imported due to the loss of production in the UK. Again given the time unlimited nature of this application, all the assumptions cannot be validated.

## 9.22 Justification for the CA Powers

9.23 MPSF agree that *“the Guidance states that there must be no doubt in the decision maker’s mind as to the purposes to which the land to be acquired is to be put. It should be demonstrated that the land is needed for the authorised development and that it is no more than is reasonably required for the Proposed Development. Any land that is incidental to or is required to facilitate the development should also be limited to that which is no more than reasonably necessary and it should be made clear to the decision maker that this is the case.”*<sup>18</sup>

9.24 MPSF is **not** demonstrating they are taking more than is necessary on 2 counts:

- All roadside residents on A6121 (both sides) are subject to the CA, blanket approach.
- The fact that only 50% of the chosen site is for solar, therefore the wider CA powers across the whole site could be deemed excessive.

9.25 There is a distinction between looking at alternatives for cabling routes, and alternatives for site selection for solar panels. The generally inadequate approach to site selection alternatives has been dealt with elsewhere in this document. **The choice of routing cables has become a function of the siting of solar panels.** The uncertain CA implications arising from the scheme have thus been driven by MPSF’s approach, in allowing the Ryhall connection to govern the scheme design. This betrays a lack of holistic analysis inconsistent with the application of the principles relating to CA, and it fails to demonstrate the necessary compelling case.

## 9.26 Public benefits

9.27 There are simply **no benefits** for the local community

9.27.1 PRoWs surrounded by solar panels, fencing, solar stations, even with the extra permissive paths is not seen as a benefit by locals. Retaining the PRoWs which already exist is not a benefit of the scheme. Moreover, the PRoW will be substantially degraded as a result of the physical impacts of the proposed development including impacts on the landscape, visual amenity, and tunneling effects caused by the extensive fencing and built features. It is a disbenefit of the Proposed Development.

9.27.2 MPSF suggests 50% of the staff will be sourced from the local area. Of the communities affected, MPSF has not understood the demographic and skill set of the local area. Local employment on this project will, in all likelihood, be very low.

9.27.3 All the energy generated goes direct into the National Grid which could go anywhere in the country.

9.27.4 There are no lower tariffs for the local communities, so only the developers and middle men will benefit financially.

9.28 According to MPSF the carbon effects will be adverse for a minimum of 10+ years, some of them felt in the local community by the impacts of the construction traffic. MPAG’s calculations suggest 18-24 years.

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<sup>18</sup> CA Guidance Section 122 of PA 2008

9.29 Accordingly, the case for use of CA is substantially weakened by the absence of local benefits. It is notable that MPSF (correctly) identified the importance of the need to be able to make out such a case in support of a claimed compelling public interest, but the reality of the case does not stack up.

### 9.30 Compensation

9.31 Compensation may be payable for the compulsory acquisition of land or rights and for loss or damage caused by the exercise of any power of temporary use of land. Any dispute in respect of the compensation payable is to be determined by the Lands Chamber of the Upper Tribunal.

9.32 MPSF state they have sufficient funds available to meet compensation needs, but equally do not feel any will need to be paid. No reassurance has been given in this respect.

9.33 MPSF need to clarify this point as certainly where residents (not landowners) are concerned, they were unaware about the CA and have had no negotiations until the application was accepted and documents loaded on the portal – for the ‘eagle-eyed’ only though.

### 9.34 Alternatives to Compulsory acquisition

9.35 As outlined above they have not explored the options within the original design to avoid CA powers against residents, there has been no change in field parcels, apart from removing 2 tiny fields within the scheme. Nothing has been added or moved around to minimise the amount of CA necessary. Getting CA right from the beginning was obviously never a consideration and the residents affected feel they are “collateral damage”.

### 9.36 Human Rights

9.37 The Human Rights Act 1998 incorporated into UK law the European Convention on Human Rights (the "Convention"). The following Articles of the Convention are relevant to the Secretary of State's decision as to whether the Order should be made so as to include powers of compulsory acquisition:

9.37.1 Article 1 of the First Protocol to the Convention – protects the rights to peaceful enjoyment of possessions and provides that no one can be deprived of their possessions except in the public interest.

**9.37.2 Article 6 – entitles those affected by the compulsory acquisition powers sought in the Order to a fair and public hearing. Part of this right involves a proper opportunity to know the case that has to be met. That fundamental requirement breaks down when consultation is performed as poorly as it was in this case, because a substantial number of those affected may well not have understood the nature and extent of the case being advanced in claimed support of CA. This point is of particular importance given the sheer volume and arrangement of material that has been generated by MPSF and submitted in support of the Application.**

9.37.3 Article 8 – protects private and family life, home and correspondence. Interference with this right can be justified if it is in accordance with law and is necessary in the interests of, among other things, national security, public safety or the economic wellbeing of the country.

- 9.38 In light of the absence of the scheme to demonstrate the necessary compelling public interest, it follows that the scheme is also being advanced in breach of the Articles set out above.
- 9.39 Consultation of the CA**
- 9.40 MPSF claim they have taken pro-active steps to engage through formal consultation and informal engagement to understand the direct and indirect impacts on them.
- 9.41** At no stage during Stage 2 consultation from 26th May to 4th August was it ever apparent there was going to be a compulsory acquisition element to this application. There were no consultation materials at the events or online that indicated any such requirement. Naturally it would have been a perfect opportunity to provide materials and an explanation at the on-site events and webinars so that residents could consider the impact. **The words ‘compulsory acquisition’ were never used in ANY communications.**
- 9.42 Whilst the PEIR document at Stage 2 consultation mentioned about 3 cabling options, there was no explanation as to the implications of any one choice of cable route.
- 9.43 When the application was lodged in November and the documents became available on the portal, it was only then that MPAG and a very small number of residents realised they may be affected by some kind of compulsory acquisition.
- 9.44 2 public meetings were called on 8th and 12th February, MPAG co-chaired the meetings with Essendine Parish Council. Most of the residents who attended were ‘affected persons’ with properties roadside on the A6121 through Essendine. A Section 42 letter was shared with them to ask whether they had received a similar letter. In all cases no one recalled such a letter.
- 9.45 The Consultation Report (APP-025) alludes to difficulties with Royal mail in para 9.8.4 and 9.8.5. Given the lack of feedback from residents, it brings into question how many residents did receive a letter. As they went recorded perhaps the records should be checked. An alternative explanation for the lack of feedback from residents is that the letter, for those who did receive it, was not clear. Letters of 23rd May and 17th June focused on the overall consultation and there was a brief mention about ‘having an interest in land’, no mention of the words ‘compulsory acquisition’. Interestingly MPSF sent out another letter on 13th September (3 weeks after the end of the consultation period) to only 6 properties which did more clearly spell out a potential impact on their properties.
- 9.46 In a recent letter from MPSF to MPAG on 7th March, MPSF suggested the 13th Sept letter was much the same as the 2 other letters: ***“The content of this letter is very similar to the letters sent on 23 May and 17 June, but the verb tenses have been changed, in addition to a reference to properties adjacent to the DCO boundary”***. That is absolutely not the case, the wording of the relevant section was completely different. Had 13th September letter been sent out earlier, the residents would have been clearly alerted, and would have had a better opportunity during the consultation period to ask questions and respond.
- 9.47 Consultation Report (APP-025) Para 9.5.10 states in total MPSF received 2 responses from Section 44 consultees to the Stage Two statutory Section 42 consultation. The responses to

the Section 44 consultees can found in Consultation Report Appendix 5.3 (APP-027). MPAG are concerned about the clarity of any communication and actually whether they were received by residents given only 2 responses were received , 1 of them was to do with land interests outside of Essendine.

- 9.48 On 5th January a section 56 letter was sent out to residents affected by CA, but again the letter focused on the registration of Interested parties, and only alluded briefly in 1 paragraph about 'having an interest in land', a statement which means nothing to residents. They also received a version of the Land Plans maps, but with all the plot numbers removed, so the maps made no sense without plot numbers.
- 9.49 NOTE: Section 42 letters can be made available for dates 23rd May, 17th Jun and 13th September – the differences are very clear.
- 9.50 The upshot of all of this is that the necessary compelling case in the public interest has not been made out, and the scheme cannot proceed in its proposed form.



## 10. LANDSCAPE & VISUAL

### 10.1 Background

In January 2023 Carly Tinkler, a landscape and visual expert was commissioned jointly by MPAG and CPRE (the countryside charity) to advise on landscape and visual matters in relation to an application for a Development Consent Order (DCO) for Mallard Pass Solar Farm. Due to the complexity and importance of the issue, MPAG felt they needed an independent and unbiased assessment from an expert with suitable experience. Carly made several visits to the site over the winter period to help inform her assessment.

### 10.2 Relevant Experience

10.3 Carly is a chartered member of the Landscape Institute (CMLI), a Fellow of the Royal Society of Arts (FRSA), and a Member of the International Association for Landscape Ecology (MIALE). She specialises in landscape, environmental and colour assessment / planning, landscape history and archaeology, masterplanning, and design, in the UK and overseas, and has done so for over 40 years. She is also a Design Council Expert, and an author.

10.4 She has been instrumental in the promotion of the landscape-led and iterative approach to development, which has been adopted by local planning authorities and others. She was a contributor to the Landscape Institute (LI)'s Guidance for Landscape and Visual Impact Assessment 1st edition, and a reviewer of GLVIA3. She is a member of LI and Natural England working groups tasked with updating current guidance, and providing consultation responses such as to the revised National Planning Policy Framework (NPPF), the Government's 25 Year Environment Plan, and the Agriculture Bill.

10.5 She is regularly called as an expert witness for planning inquiries, giving evidence on behalf of appellants, defendants and Rule 6 Parties. She advises bodies responsible for National Parks and AONBs, and local planning authorities, producing guidance documents, carrying out character, sensitivity, capacity and effects assessments and reviewing planning applications for many different types of development including energy production, some of which are NSIPs.

10.6 In 2020 she was invited to speak about 'valued landscapes' at the Planning Inspectorate's Annual Training Event.

**10.7 The full report is available in our Written Representation appendices as a separate document, along with the corresponding Annexes CT-A, CT-B and CT-C. Below this Submission sets out some of the key elements of the report.**

## **10.8 Method and structure of the report**

- 10.9 She clearly identifies that “new development will almost always result in changes to the existing landscape and visual situation, which will affect landscape character, views and social amenity in some way. Professional judgements must be made about what and who would be affected, what the degree of change would be, and whether the change would be ‘acceptable’, in order to ensure properly-informed planning decisions”. (Para 2.2.1)
- 10.10 “The main aims of this review were therefore to determine whether the Applicant’s submission satisfactorily answers the above questions, and, in particular:
- whether it identifies and addresses the key landscape-related issues;
  - whether it provides sufficient evidence-based and objectively-quantified information to ensure that informed and balanced judgements about levels of landscape, visual and other effects can be made, and on which decision-makers can confidently rely; and
  - whether what is proposed is likely to comply with the requirements of relevant landscape-related planning policy and guidance.”
- 10.11 “An independent assessment of landscape and visual effects was carried out in accordance with published guidance including Guidance for Landscape and Visual Impact Assessment Edition 3 (‘GLVIA3’). Having completed that assessment a more in-depth analysis and review of MPSF’s information, especially their LVIA, was carried out. Then the results of her GLVIA3 were compared with those of MPSF’s LVIA. The final step was to draw conclusions about whether *‘the degree of proposed change is considered to be acceptable or not, especially in terms of whether it complies or conflicts with relevant planning policy and guidance.’* “ (Para2.2.3)

## **10.12 Assessment**

- 10.13 “In order to achieve the above aims, I carried out an independent assessment of landscape and visual effects, in accordance with published guidance, and undertook in-depth analysis and review of the LVIA and other information. The first stages of the process entailed gaining a full understanding of the background to, and nature of, the proposals; and carrying out desktop and field studies to establish the existing landscape and visual baseline situation. In this, I was assisted by people from the local communities.” (Para 1.3)

## **10.14 Scale**

- 10.15 “From plans and documents, it is very difficult to comprehend the sheer size and scale of the proposed development. The main site measures almost 8km from west to east, and at its widest point is c. 5.5km from north to south, with solar arrays / ancillary infrastructure

occupying the majority of those extents. The area of the Order limits is c 852ha, and the Solar PV area is c.420ha. To put that into the context of the wider landscape, it is worth noting that the whole of the settlement of Stamford, including its green spaces, covers c. 515h.” (Para 1.4)

A final point that I would like to make relates to levels of effects, and scale. It is agreed that the proposed development is of a very large scale indeed, and would give rise to levels of adverse landscape and visual effects which are ‘significant’. “ (Para 6.16)

10.16 “It is useful to look at that judgement in a wider context, in terms of ‘significant’ adverse effects judged likely to arise from other solar developments in similar locations / landscapes (ie rural, unsettled, tranquil and so on, with no reference to the type of development proposed within the area of interinfluence / intervisibility). “ (Para 6.17)

10.17 “Below is a decision made by an LPA in Worcestershire relating to a planning application<sup>19</sup> for a solar development in such a landscape:

*‘The proposed development by virtue of the scale and visual prominence, especially from the footpaths through, bounding and accessing the site would result in an industrialisation of a large area of the less developed and unspoilt countryside resulting in loss and major alteration to key elements and features of the landscape, impacting the intrinsic character and beauty of the countryside, introducing new development that is uncharacteristic of the surrounding landscape and representing an alien and discordant feature within the pastoral setting that would have a significant adverse impact on the enjoyment of the countryside by users of the public rights of way and Monkwood, contrary to policies SWDP21, SWDP25, SWDP27, SWDP6 and SWDP24 and the NPPF’ (my emphases). (Para 6.18)*

The capacity of the Mallard Pass scheme is c. 350MW, and the Order limits cover c. 852ha. The above proposal was for a 49.9MW scheme, covering c. 36ha.

**Thus, whilst the effects of both are deemed to be ‘significant’, the scale and extent of effects arising from the Mallard Pass proposals would be many times greater than those of the much smaller scheme.”**

### **10.18 Close Proximity**

10.19 “The Applicant’s LVIA concluded that the proposed development would give rise to significant adverse effects on the landscape character of the site, and on views on, or in close proximity to, the site, but that beyond, levels would be relatively low. However, they also concluded that these levels of effects would only be experienced until the proposed planting grew tall enough to screen the development from view, when effects would no longer be significant. (Para 1.5)

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<sup>19</sup> Website [plan.malvern hills.gov.uk/Planning/Display/21/01846/FUL](http://plan.malvern hills.gov.uk/Planning/Display/21/01846/FUL) (this is not a link)

I agree that there would be significant adverse effects on the landscape character of the site, and on views on, or in close proximity to, the site; however:

- levels of effects on character cannot be mitigated by screen planting, and
- I do not agree that levels of effects beyond the site would be low.” (Para 1.6)

10.20 “The reasons for the method and process, in particular the lack of baseline information, lack of analysis of the information provided, erroneous / unfounded assumptions, and lack of transparency in the reasons for judgements and conclusions. (Para 1.6)

#### **10.21 Wider landscapes**

“My own assessment concluded that the proposed development would give rise to significant adverse effects on the landscape character of both the site and the wider landscapes, and almost certainly, on views at viewpoints lying several kilometres from the site. It would also significantly adversely affect people’s health and wellbeing, and the quality of their lives.” (Para 1.7)

#### **10.22 Fencing impact**

“Furthermore, it seems very likely that the proposal to erect deer-proof fencing will have to be reconsidered before decisions are made, as it is highly likely that the fencing would have to be far more robust than timber post and wire netting in order to deter thieves and satisfy insurance requirements.” (Para 6.14)

However, if the high-security fencing now being recommended by police forces around the country had to be used instead, the levels of adverse effects on landscape character and visual amenity would without doubt be unacceptably high.” (Para 6.15)

#### **10.23 MPSF Methodology**

Carly identifies a number of areas where the methodology is not consistent or robust.

- The baseline landscape character information provided in the LVIA is inadequate.
- The LVIA did not factor in all the scheme elements and activities likely to affect landscape character and visual / social amenity.
- The LVIA did not consider the nature of many of the effects on character and visual amenity that would arise during construction, operation and decommissioning.
- LVIA double-counts mitigation measures as enhancements / scheme benefits.
- the loss of the existing view due to the screening gives rise to a high level of magnitude of effects.
- The LVIA assessors appear not to have applied key differences / distinctions between landscape and visual effects, and as a result, they have been conflated.

#### **10.24 Benefits**

“It must also be noted that the proposed development would not deliver any landscape or visual benefits or enhancements, as the LVIA confirms. “ (Para 1.8)

## 10.25 Policy and guidance

“For these and other reasons, in my opinion, the proposed development would not comply with the requirements of the relevant landscape-related policies and guidance. “ (Para 1.9)

## 10.26 Full Report

**The Landscape & Visual report structure is outlined in the table below – Figure 18. The full report is available in our Written Representation appendices as a separate document, along with the corresponding Annex CT-A, CT-B and CT-C.**

Contents	Page no
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<b>Appendix CT-B:</b> Extracts from <i>Will's Walks</i> (not bound in report – see separate document)	
<b>Appendix CT-C:</b> Landscape & Visual Effects Assessment Criteria	

**Figure 18: Contents of landscape & Visual Report by Carly Tinkler.**

On a thorough investigation and assessment of the scheme it is clear that it will have **substantial adverse impacts on the landscape** and also in relation to **visual amenity**. These harms go well beyond what can be anticipated as necessary to arise with a well-located scheme of size. The present scheme is patently **not well located**, and causes real harm in these respects to a presently deeply rural area with a locally valued landscape. **This factor should be accorded substantial weight in the overall planning balance.**

## 11. GLINT & GLARE

- 11.1** The Application material on this topic is not robust. It inappropriately relies on existing and proposed vegetation; overstates the likely mitigation effects of such vegetation in any event; fails to recognize local patterns of gappy hedgerows; fails to adequately assess the implications of users of the PROW; and fails to address adequate mitigation for affected households.
- 11.2 Chapter 15 Other Environmental Topics (APP-045) section 15.4 summarises the potential effects of the Proposed Development from Glint and Glare upon surrounding receptors.
- 11.3 Scene setting**
- 11.4 Glint and Glare can cause a distraction or lead to an after-image being experienced by an observer. This can present a nuisance and, under some circumstances, a safety hazard.
- 11.5 MPSF commissioned an independent report to assess the impact of Glint and Glare on all road users, residential amenity, aviation activity and railway operations and infrastructure. The report considered both fixed and single-axis trackers solar panel layouts.
- 11.6 The report concluded that there are no significant impacts on surrounding aviation activity, road users or rail operations and infrastructure are predicted for either fixed or tracker panels.
- 11.7 Significant impacts are identified on one dwelling for both types of panel layouts with mitigation in the form of screening recommended to remove the impacts, but no significant impacts for any other dwellings.
- 11.8 Comments from MPAG**
- 11.9 As MPAG represents residents living within and regularly travelling through the area where the scheme will be situated, and visitors to the area for recreational purposes, our comments are therefore confined to the risks of Glint and Glare on:
- Residential Amenity
  - Road Users of all types travelling through the area
  - People accessing the many PROW within the DCO limits whether by walking, Cycling or horse riding.
- 11.10 We leave others better informed to comment on the effect of Glint and Glare on rail drivers and users, and the aviation industry.
- 11.11 The conclusion that there will be no significant impact from Glint and Glare has been reached based on the view that proposed mitigation for the overall scheme will negate any Glint and Glare to road users and residential dwellings.
- 11.12 The independent Landscape and Visual Review (full report) commissioned by MPAG states very clearly in paragraphs 5.1.30 to 5.1.33 that experts do not recommend relying on either existing or proposed vegetation to screen views in the long term since there is no guarantee it will remain or where newly planting is planned will establish at all.

- 11.13 Logically this reasoning is equally relevant to Glint and Glare where existing and new planting is being relied on entirely to protect residents and road users from Glint and Glare.
- 11.14 The Glint & Glare report assumes the same level of vegetation cover all year – this is most definitely not the case during autumn and winter months with full leaf cover on hedges not achieved until end of April. In those autumn and winter months the sun is a lot lower in the sky causing more glare.
- 11.15 In the report all road users are treated the same – can this be correct when speed of vehicle whether car, bus, motorbike, cycle or horse rider may impact the exposure to a potential Glint and Glare experience.
- 11.16 The report does not recognise that on some local roads there are significant gaps in the hedgerow, this is particularly the case on the road from Essendine to Uffington – there are a number of double width gateways which could potentially expose road users (including horse riders) to an unexpected Glint and Glare experience on what is a very narrow road.
- 11.17 The report identifies that there are potential Glint and Glare risks on sections of the B1176 and A6121 and mitigating these effects is entirely dependent on screening. Given the comments in the LVIA report this raises a question whether this measure is appropriate.
- 11.18 There are a number of PROWs including bridleways across the site, some which will be surrounded by solar panels either side. The report is remiss in not considering the impact of Glint and Glare on users of PROWs i.e. walkers, horse riders and cyclists.
- 11.19 The British Horse Society's Advice on Solar Farms outlines that "***arrays should be avoided where glare is likely to affect users on a bridleway or any other equestrian route***".<sup>20</sup> There is also the combined effect to consider of glint & glare, noise and visual impact of the panels, electrical infrastructure and fencing. For a horse, particularly when surrounded, that could prove too frightening; putting both the rider and horse in danger of an accident should it shy or bolt.
- 11.20 Whilst a walker does not face the same challenges as a horse rider, the combined effects as stated above do not make for a pleasant experience for the user; in stark contrast to the existing position.
- 11.21 There were a number of properties identified in the report with moderate impact but with the exception of one property no additional mitigation beyond that proposed for the scheme was required. This takes no account of the time in the early years of the scheme after commissioning when much vegetation will be newly planted and unlikely to give the mitigation from Glint & Glare required.
- 11.22 An assumption has also been made that living accommodation is on the ground floor and dismissing the impact that Glint and Glare may have on upper floors as not relevant. This does not recognise the flexible way in which people may choose to use their homes. With many now working from home, upper floor rooms may well provide office accommodation; some may choose to have upper floor reception rooms to enjoy the open landscape and long vistas thus creating an unpleasant impact for those residents.

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<sup>20</sup> The British Horse Society – Advice on Solar Farms pdf 2017

11.23 Overall, this factor should be accorded moderate weight against the scheme in the overall planning balance.



## 12. BMV ASSESSMENT

### 12.1 Summary

**12.2 National and recently adopted local plan guidance is strongly against the loss of BMV land for solar farm use: the loss here is manifestly in conflict with central planks of policy. It is vast in size in terms of the loss; the lack of any time limitation means the loss is permanent. These factors weigh heavily in the planning balance against the scheme.**

**12.3 The Application was predicated on a serious misunderstanding of the actual levels of BMV land across the Proposed Development; the site was thus selected on the basis of fundamental misapprehension as to the likely planning balance; the ALC assessment carried out by MPSF is not robust.**

**12.4 The Application fails to properly assess cumulative effects in this regard.**

### 12.5 The policy context

National policy provides strong protection for retention of BMV land. At the local level that is reinforced by key provisions of the recently adopted (2020) SKDC Local Plan as set out earlier in this document. The WMS of March 2015 sets out specific elements of Government policy to the loss of BMV land to solar farms. Draft EN-3 2023 recognises the continuing need to provide high levels of protection to BMV land where site selection and development of solar farms is being considered.

### 12.6 Importance of correct assessment of BMV land

12.7 In appendix 12.2 Land Use & Soils Assessment Methodology (APP-089) MPSF's clearly states the methodology considers land of ALC Grades 1 and 2 to be of very high sensitivity, and land of Subgrade 3a to be of high sensitivity, so they are acknowledging the importance.

12.8 In terms of magnitude of impacts, the loss of more than 50Ha of BMV land is considered to be a large/major magnitude. The 20ha threshold is the trigger point for consultation with Natural England<sup>21</sup> on losses of BMV agricultural land.

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<sup>21</sup> Natural England Guidance Guide to assessing development proposals on agricultural land 5 February 2021

**Table 3: Significance of Effect Matrix**

		Sensitivity of Receptor / Receiving Environment to Change / Effect				
		Very high	High	Medium	Low	Negligible
Magnitude of change/effect	Major	Very large	Large or very large	Moderate or large	Slight or moderate	Slight
	Moderate	Large or very large	Moderate or large	Moderate	Slight	Neutral or slight
	Minor	Moderate or large	Slight or moderate	Slight	Neutral or slight	Neutral or slight
	Negligible	Slight	Slight	Neutral or slight	Neutral or slight	Neutral or slight
	No Change	Neutral	Neutral	Neutral	Neutral	Neutral

**Figure 19: IEMA Guide -Table 3 Significance of Effects**

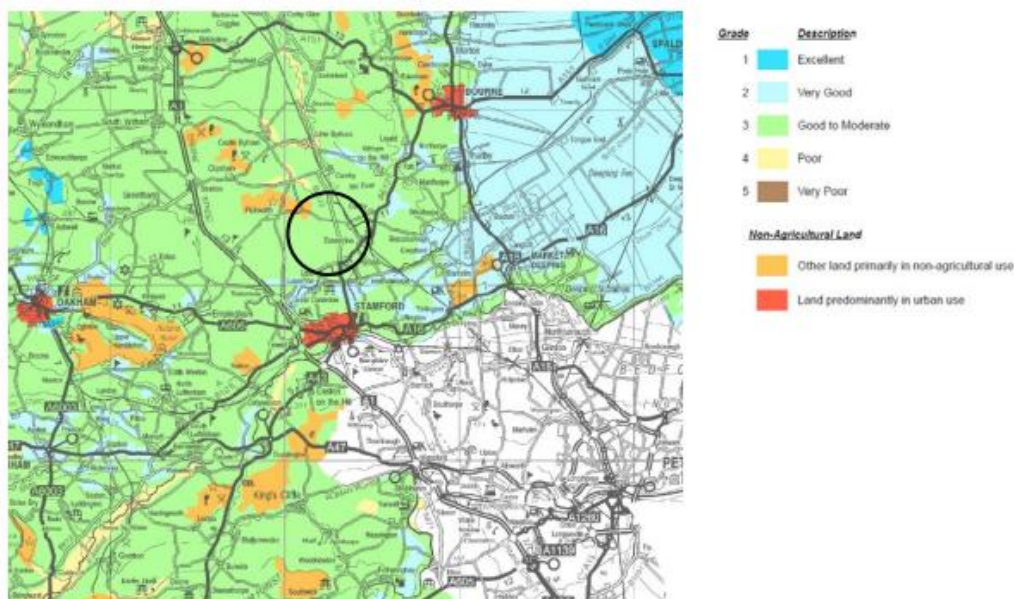
- 12.9 At stage 1 consultation 570Ha had been allocated for solar, by Stage 2 consultation this had reduced to 463Ha, in the final application the area for solar is 426Ha\* including the substation area. (Note:\* the actual area tested for solar was 531Ha as field margins were added).
- 12.10 An Extract from 1:250,000 East Midlands Region Provisional ALC Map, the analysis shows 42% of agricultural land in England is of BMV quality which would equate to 223Ha of the proposed solar area inc margins. As MPSF has extrapolated from the UK data that Lincolnshire would be 71.2% BMV and Rutland 45.2% BMV, the BMV area could be as high as 337Ha and 239Ha respectively. For MPSF to arrive at a figure of 217Ha seems an underestimation and at the bottom end of the scale.
- 12.11** BMV is a key determining factor in the decision making process, so ensuring it is scoped, correctly surveyed and assessed, is critical to the outcome of the application. This is confirmed in the IEMA Land and Soils Guidance<sup>22</sup> which states that: *“The Planning Practice Guidance for the Natural Environment advocates use of the ALC to enable informed choices to be made about planning decisions on the future use of agricultural land. Therefore, the ALC of the site must be known, to determine whether the requirements of planning policy are being met”*.
- 12.12 Site selection**
- 12.13 **Little importance was given to the likely extent of BMV from the outset. The land selected was primarily chosen for its proximity to the National Grid substation.** This is evident by the fact the first ALC survey identified 53% of the solar area as BMV.

<sup>22</sup> A New Perspective on Land and Soil in Environmental Impact Assessment

- 12.14 Rather than conducting ALC testing before site selection, a far bigger site was chosen than necessary in the hope they could refine to an area with minimal BMV. The end result is 41% BMV for the solar area, but this was based on incomplete testing at all stages.
- 12.15 Fortuitously for MPSF areas that happened to be grade 3a were also areas where more residential setback was required and these field parcels were subsequently removed as MPSF had more land than needed.
- 12.16 Draft EN-3 2023 recognises while the applicant’s development may use some agricultural land, applicants should explain their choice of site, noting preference to be on brownfield and non agricultural land. Agricultural land should only be used where that has been shown to be necessary, and even in that case **poorer quality land should be preferred** (para 3.10.14). That is manifestly not the case in the application.

**12.17 Why fully detailed surveys are required?**

- 12.18 The Agricultural land Classification was introduced in the 1970s and last updated in 1988. The ALC system uses a climate data set from 1950 – 1980. Given that it continues to be used in planning decision making, it is assumed that the ALC methodology will not be amended, and that climate change will not therefore alter ALC grading. That may be the case but does not represent modern farming today and there are alternative measures of soil quality such as Soilscape for informing such important planning decisions.
- 12.19 In Chapter 12 Land Use and Soils (APP-042), by MPSF’s admission the desk based data forms an inadequate basis for making any outline decision. ***“The published “provisional” ALC maps (Insert 12.3) are of limited use, given their age and the changes to the ALC system since they were published. Whilst no updated maps have been produced, in 2017 Natural England published predictive best and most versatile maps (Insert 12.4), showing the proportion of land expected to be of BMV quality”***, but as this is based on little up-to-date real data, it is not regarded as being reliable.



**Figure 20: Extract from 1:250,000 East Midlands Region Provisional ALC map**

- 12.20 The UK Soil Observatory map for the area shows a diverse range & distribution of soil parent materials from which the diverse range of soil types within the site are derived.

The known variability within the site should have caused MPSF to conduct a proper ALC survey following Natural England guidance so as to properly establish on a hectare by hectare basis the ALC grading of the whole site.

12.21 As explained in Natural England's TIN049<sup>23</sup>, the whole of England and Wales was mapped from reconnaissance field surveys in the late 1960s and early 1970s, to provide general strategic guidance on agricultural land quality for planners. This Provisional Series of maps was published on an Ordnance Survey base at a scale of One Inch to One Mile (1:63,360). The Provisional ALC map shows the site undifferentiated Grade 3. However, TIN049 explains that:

"These maps are not sufficiently accurate for use in assessment of individual fields or development sites, and should not be used other than as general guidance. They show only five grades: their preparation preceded the subdivision of Grade 3 and the refinement of criteria, which occurred after 1976. They have not been updated and are out of print. A 1:250 000 scale map series based on the same information is available. These are more appropriate for the strategic use originally intended ..."

## **12.22 Natural England requirements for ALC testing**

12.23 Natural England guidance "Guide to assessing development proposals on agricultural land" (Updated February 2021) as published on the government website Para 2 should be consulted for development proposals that are :

- Likely to cause the loss (or likely cumulative loss) of 20Ha or more of BMV land
- Not in accordance with an approved development plan.

12.24 Section 7 of the guide also states: "Developers: check if your proposal affects agricultural land. Use the post 1988 ALC Magic map and detailed site survey reports to help you assess whether a development proposal is likely to affect BMV agricultural land. If no suitable data exists, you may need to carry out a detailed survey to support your planning application."

Note this guidance states detailed NOT semi-detailed.

12.25 Natural England Para 6.3<sup>24</sup> clearly states: For a detailed ALC assessment, a soil specialist should normally make boreholes;

- Every hectare on a regular grid on agricultural land in the proposed development area
- Up to 1.2m deep using a hand-held auger

They should:

- Dig small inspection pits by hand to a minimum depth of 1m to add supporting evidence to the borehole data
- Dig pits where there is a change in main soil type and ALC grade to provide a good depiction of the site
- Combine survey results with local climate and site data to plot on an OS base map
- Use a base map at an appropriate scale for detailed work, such as 1:10,000 scale

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<sup>23</sup> Natural England: Agricultural land Classification: protecting the best and most versatile agricultural land (TIN049)

<sup>24</sup> Natural England: Guidance: Guide to assessing development proposals on agricultural land. February 2021

- 12.26 According to the British Society of Soil Science (BSSS) Proficiency in ALC Survey Grading of land using the ALC system is not straightforward. ***“For individual development sites this normally involves a detailed ALC field survey, according to the MAFF 1988 ALC guidelines. Proficiency in the conduct of an ALC survey requires knowledge and experience of field soil survey and the interpretation of soil, topography and climate data. There are comparatively few experts capable of carrying out ALC to a sufficient professional standard. For this reason, BSSS has published a professional competency document 4 that outlines the qualification, knowledge, skills and experience required to carry out ALC. It is in our opinion essential that the practitioner carrying out this survey is suitably qualified and experienced.”*** Were the experts from Kernon Countryside Consultants fully qualified and therefore knowledgeable about the sampling requirements? If that is the case, why do the subsequent results show gaps and shortfalls in the methodology?
- 12.27 Natural England wrote a letter to the Planning Inspectorate on 10th March 2022 (published in the Preliminary Environmental Information Report (PEIR) documentation) stating:
- 12.27.12 ***“The Agricultural Land Classification (ALC) mapping published by Natural England indicates that the site comprises of predominantly Grade 3 agricultural land, with an area of Grade 2 agricultural land located in the southern extent of the site. The ALC maps do not differentiate Grade 3 into subgrades 3a and 3b. We acknowledge the intention, that to fully assess the impacts to BMV land, a detailed ALC survey will be carried out. This should normally be at a detailed level, e.g. one auger boring per hectare, (or more detailed for a small site) supported by pits dug in each main soil type to confirm the physical characteristics of the full depth of the soil resource, i.e. 1.2m”***. The expectation was clearly set by Natural England that a detailed survey was required.
- 12.27.13 ***“In-Combination/Cumulative impacts. The Environmental Statement should include in-combination/cumulative assessment. We are aware of several other solar Nationally Significant Infrastructure Projects in Lincolnshire/ Nottinghamshire, including Heckington Fen, West Burton, Cottam, Gate Burton and Little Crow. Due to the size of each of these individual projects, we would like to see these projects also included within the cumulative assessment, where appropriate.”*** This point was also re-iterated by North Kesteven District Council highlighting the potential loss of BMV due to 5 NSIPs in Lincolnshire already registered with PINS. The number of solar NSIPs in Lincolnshire has risen considerably since this letter last year, the latest count is 11.
- 12.28 The available data consulted by MPSF covering the soils within the solar site was clearly limited and often conflicting. The known variability within the site should have caused MPSF to conduct a proper ALC survey following Natural England’s guidance so as to properly establish on a hectare by hectare basis the ALC grading of the whole site.
- 12.29 **The conclusion is that any ALC assessment will not be representative unless it is carried out in accordance with Natural England’s Technical Advice Note 49 as also detailed on the government’s website.<sup>25</sup> The site has not been previously surveyed, deeming it even more important full guidelines were followed.**

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<sup>25</sup> Natural England: Agricultural Land Classification: protecting the best and most versatile agricultural land (TIN049)

### **12.30 ALC testing phase 1**

- 12.31 In direct contravention with Natural England guidelines MPSF carried out a semi-detailed survey late 2021, rather than consulting Natural England in advance of any survey work. Just because the site is huge, does not mean that the full guidelines should not be followed as Natural England subsequently responded during the Scoping Opinion process. BMV is a key consideration in the planning assessment. In fact, the scale of the site, and therefore the prospect of the scale of the loss of BMV, means that it is all the more important that a survey complying with Natural England's guidance should have been undertaken.
- 12.32 In total 217 observations were made across the whole site of 906Ha, giving an observation density of 1: 4 hectares vs 1:1 hectare, that is to a quarter of the density required.
- 12.33 Subgrade 3a land is capable of consistently producing moderate to high yields of a narrow range of arable crops or moderate yields of a wide range of crops. Subgrade 3b is land capable of producing moderate yields of a narrow range of crops or lower yields of a wider range of crops or high yields of grass. That is the theory; the reality can be very different as the differences are so marginal between grade 3a and 3b compared to grade 3b and grade 4. It has been reported last year many farmers experienced higher yields with 3b crops vs 3a due to water retention qualities of the soil due to the slightly higher proportion of clay particles present.
- 12.34 TIN049 does not provide comment on semi-detailed surveys.
- 12.35 Reading Consultants working on behalf of Stantec Consultants for SKDC and RCC published the following findings:
- 12.35.12 The survey was generally undertaken on a regular 200m x 200m grid pattern and so may have missed localised variability that has been acknowledged to exist.
- 12.35.13 Does the soil described correspond with the mapped data? The report contains no description of the main soil types found or an indication of their distribution.
- 12.35.14 Are the full soil profile logs available and described? 209 profile logs are appended to the report; six are omitted. No reason given. 46 soil profiles are not logged to a full depth of 120cm due to increasing stoniness/limestone in the subsoil. The soil profile logs in Annex 3 are set out for 11 'sites' which, as explained in paragraph 2.4, were established for the purposes of organising and managing the ALC survey. These sites bear no relation to the development proposals (e.g. areas proposed for solar panels, areas for mitigation etc) and the presentation of data in this format is not particularly helpful to the reader or for cross-referencing with other parts of the PEIR.
- 12.35.15 Were any soil pits dug? Two pits were dug. More pits would be expected in a site of this size (over 900ha) and with five soil associations mapped. There should be a soil pit per main soil type identified but, as the report is silent on the number of soil types actually identified during the survey, the number of pits that should have been dug is unknown. Annex 4, Description of Soil Pits includes two recording sheets for the soil pit data. One of the two is incomplete (no ALC grade given; topsoil shown as borderline medium clay loam/heavy clay loam (not verified by laboratory analysis); the log notes limestone at 30cm but it is not noted whether the limestone is solid, fragmented or very stony).

- 12.35.16 Has the correct Wetness Class (WC) been identified? Mostly – all but six profiles.
- 12.35.17 Has the topsoil texture been verified with laboratory analysis? Three samples were analysed and demonstrate a range of textures (heavy clay loam, sandy silt loam, clay) but this is a low number to cover approximately 900ha of land. Furthermore, the samples are not distributed evenly across the site but are all from the east. Neither of the pit locations was sampled which is surprising given that the texture is described as borderline medium clay loam/heavy clay loam which could influence grading.
- 12.35.18 Profile 119 is shown in Table 2 as a medium sandy silt loam (based on the laboratory analysis) but recorded and assessed as a medium clay loam in Annex 3. If this sample was used as a typical example of a soil texture found on site, it is possible that many other profile logs shown as medium clay loam should be described as sandy silt loam, which again could influence grading upwards, potentially over large areas of the site. There are no profile logs in Annex 3 shown with a sandy silt loam topsoil. This raises significant questions as to the validity of the ALC grading as reported in the semi detailed survey.
- 12.35.19 Similarly, those profiles borderline to medium and heavy clay loam as found in one of the soil pits, may not be correctly graded.
- 12.35.20 Profiles logged as being limited by droughtiness to Grade 4 may not be graded correctly. If the limestone is soft or fragmented/fissured, the limitation would be less severe to Subgrade 3b.
- 12.35.21 Similarly, deeper profiles with fewer stones listed as Subgrade 3b could improve to Subgrade 3a. See Appendix 2 for a comparison of the calculations for the applicable profiles.
- 12.35.22 Only one profile (201) is noted as having a topsoil stone limitation. Several profiles have undeclared topsoil stone limitations equal to the reported most limiting factor (wetness or droughtiness) but based on the percentages of stone larger than 2cm and 6cm, a more severe limitation is applicable to:
- Profile 69 to Subgrade 3b (currently 3a);
  - Profile 83 to Subgrade 3b (currently 3a);
  - Profile 179 to Subgrade 3b (currently 3a);
  - Profile 198 to Subgrade 3a (currently 2);
  - Profile 203 to Subgrade 3b (currently 3a).
- 12.36 Have photographs been included in the report? For completeness, photographs should be included, particularly to illustrate the structures identified from the soil pits and the nature of the underlying limestone.
- 12.37 Given ‘so-called’ qualified specialists were used to conduct this survey work, why are there so many omissions, errors and inconsistencies. MPAG has no confidence in the data or results which will subsequently be used for such an important planning consideration. At the time SKDC published the report for a full council meeting, a ‘holding objection’ was agreed by full council.**

**12.38 ALC Testing Phase 2**

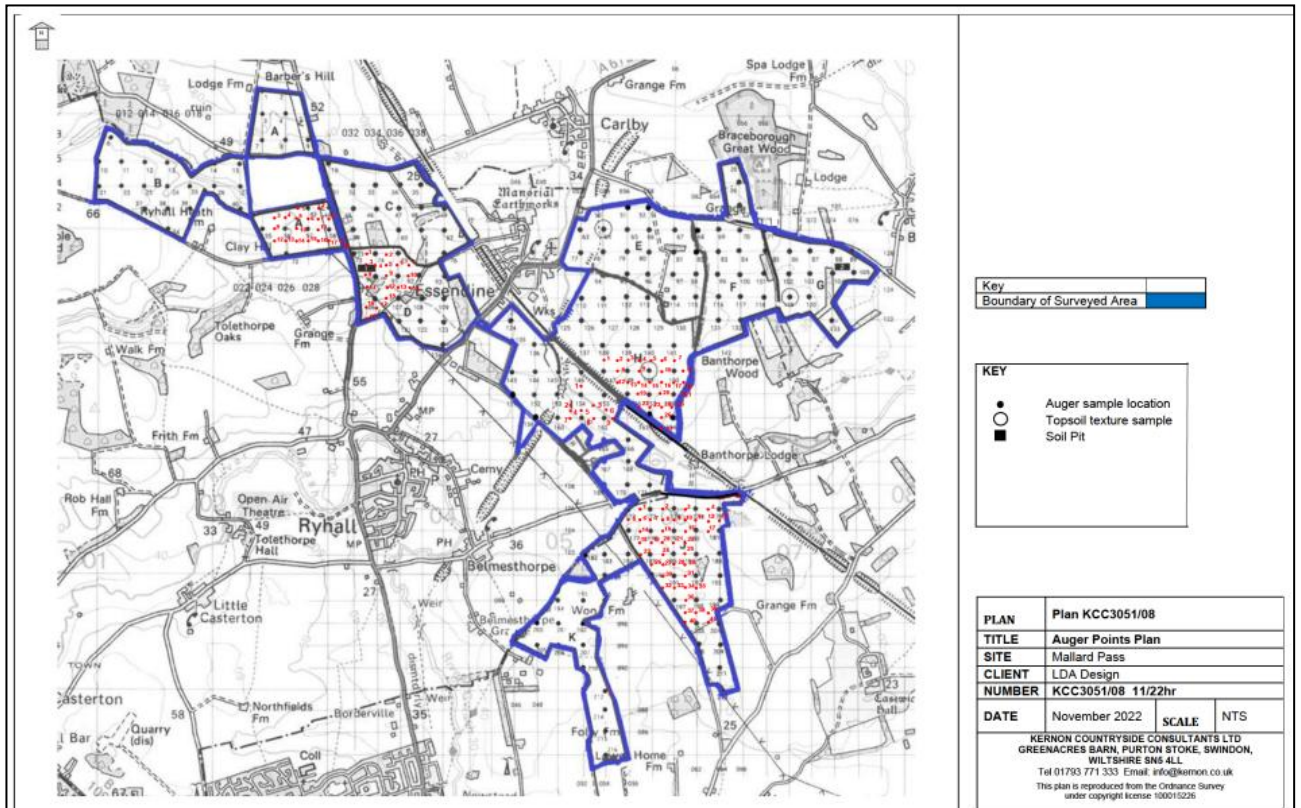
Having realised that the phase 1 auger testing was inadequate, more testing was conducted by MPSF.

12.39 A further 117 auger samples were taken in autumn 2022 where the land was shown to be variable. The further survey work carried out at correct frequency of 1 sample per hectare but only 5 of the 11 sample blocks were sampled at the correct sample frequency. The total auger samples amounted to 334. The areas re-sampled at a higher density appear to be targeted at BMV land potentially with the objective of down-grading the result, otherwise a more representative re-sampling would have taken place.

12.40 A further 4 soil pits were dug, although not to the depth required by TINS049. There seem to be no results for these soil pits, which is concerning considering 2 out of 4 soil pits results were also missing from phase 1.

12.41 Archaeological trial trenches were being excavated at the time of the survey and observation was made of some 10 of these to inform understanding of the soil structure. 11 samples of soil were sent for particle size distribution analysis to confirm the percentages of silt, sand and clay. It is not clear if the 11 samples of soil sent for testing were from the archaeological trenches or elsewhere. Certainly some of their choice of locations are odd given 3 out of 8 were not inside the solar area, surely important for the final results, assuming the solar area BMV is more important than the site level of BMV.

12.42 The auger points plan KCC3051/08 in Figure 11 provides an incomplete picture of soil pits from phase 1 and phase 2 survey work.





**Figure 21: KCC 3051/08 Appendix 12.4 Land Use and Soils: Agricultural Land Classification Survey (APP-091)**

- 12.43 There is an overall lack of clarity from the data provided at Phase 2 as well as Phase 1.
- 12.44 It is not clear from the information provided in Appendix 12.3 Land Use & Soils – Consultation Summary (APP-090) exactly what was said and the responses regarding re-sampling methodology. Given the significance of this subject, all correspondence on sampling across all consultees should be made available.
- 12.45 Results of ALC re-grading -Appendix 12.4 Agricultural land Classification Survey (APP-091).**
- 12.46 Intensive sampling in block:
- a) A changed ALC 3a to a mixture of 3a & 3b.
  - b) D resulted in little or no change in ALC grading.
  - c) H resulted in little change, however there was no intensive sampling in the north of block H which was classed as grade 4. The Stantec report commissioned by RCC & LCC suggests that this grading could be incorrect and it could be classed as 3b, however no further sampling of this area was undertaken, a clear indication that the developer deployed some detailed sampling only in areas where a downgrading of ALC grade was thought probable.
  - d) I changed a small area from ALC grade 3a to 3b but this has been removed from the solar PV area.
  - e) J resulted in the **upgrading** of some ALC grade 3a land to grade 2, and down-grading some grade 2 land to 3a, and some 3a to 3b & to a very small area of grade 4 although the overwhelming majority of block J is grade 2 & 3a and is thus BMV land and should not be developed.

Areas that were never retested at a higher density sampling have still changed from 3a to 3b.

How is this possible? e.g.

- a. Area C, field 5
  - b. Area E, field 29,
  - c. Area F, field 36,
  - d. Area K, field 46
  - e. Area I, field 18-19
- 12.47 The soil textural analysis (percentage sand, silt & clay) of the sample submitted for area G should be classed as a sandy, silty loam (see below Figure 22) but is referred to as a medium clay loam / medium sandy silt loam. While the sample is bordering clay loam it is another example of how MPSF is trying to down grade the ALC grading across the site.

## Soil Texture Triangle

### Particle size class estimator

Here is a tool that allows you to estimate the particle size class of a soil sample from the proportions of sand, silt and clay. The estimator is based on the texture class intervals of the Soil Survey of England and Wales - note that other international standards also exist, such as the USDA and FAO triangles.

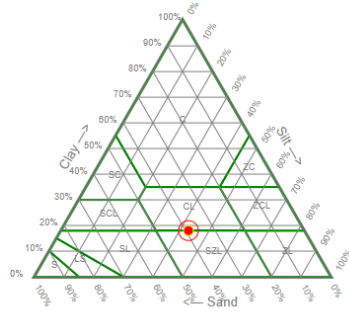
### Enter soil sample proportions:

Clay:

Sand:

Silt:

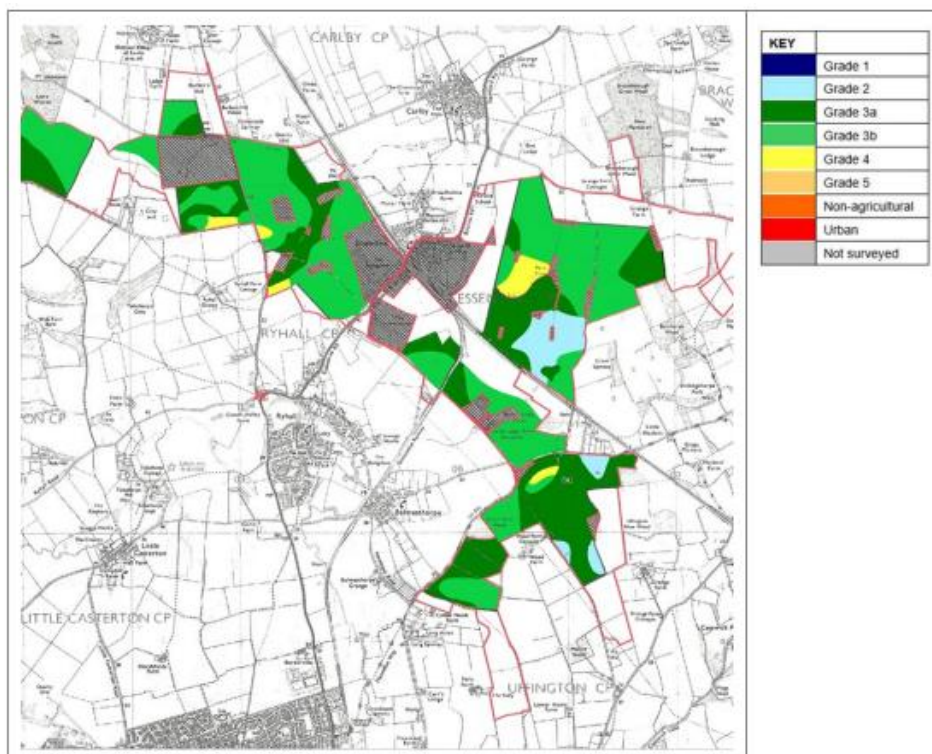
**Soil sample is a Sandy Silt Loam**



**Figure 22: LandIS Soil Texture Triangle calculator**

12.48 When you overlay phase 2 overall results on top of Phase 1 results detailed in the PEIR report, there are inconsistencies. Areas that were never retested at a higher density have still changed from 3a to 3b.

E.g. for example the area of grade 3a land opposite Grange Farm in area F is smaller in the map submitted in the DCO application than it was in the map submitted in the PEIR, though this was not part of the semi-detailed survey. How is this possible?



**Figure 23: ALC across the Order Limits - Appendix 12.4 land Use and Soils – Agricultural Land Classification Survey**

<b>ALC Grade</b>	<b>Area (Ha)</b>	<b>Area (%)</b>
Grade 1 (Excellent)	0	0
Grade 2 (Very Good)	35	6.6
Subgrade 3a (Good)	181	34.1
Subgrade 3b (Moderate)	297	55.9
Grade 4 (Poor)	18	3.4
Grade 5 (Very Poor)	0	0
Non-agricultural / Other land	0	0
Urban	0	0
<b>Total</b>	<b>531</b>	<b>100.0</b>

**Figure 24: Solar PV Array and Field Margins, Appendix 12.4 Land Use and Soils – Agricultural Land Classification Survey**

12.49 The application very clearly identifies 419Ha allocated to solar throughout many of the documents, yet the reality is that 531Ha will be taken out of arable production as the field margins need to be taken account of. This is a further 112Ha of land, around 50% of which is probably BMV that should be considered as part of the DCO loss of land consideration.

**12.50 Chapter 12 Land Use & Soils (APP-042), para 12.3.3 states: “The site design aims to minimise disturbance to BMV land particularly grade 2 land, aiming as far as is practical to locate solar stations on land of poorer quality.”**

**If this is the case blocks H & J should not be developed as they are predominantly made up of BMV grade 2 & 3a soils.**

12.51 All these inconsistencies, missing data, incorrect application of sampling guidance all lead us to believe these results cannot be relied upon, especially when the land that was re-sampled at the correct density did not take a representative cross section of the solar area, but targeted previously graded 3a resulting in re-classification to 3b. Stantec’s report clearly highlighted that many grades could have gone up rather than go down. Given the estimated 71% BMV in Lincolnshire it leads us to believe that the final 41% BMV for solar, from the previously estimated 53%, is understated.

## **12.52 Conclusions**

**12.53 The points arising on the permanent loss of a vast quantity of BMW land are set out above in the Summary on this section. They weigh heavily against the scheme in the planning balance; and also underscore the inadequate nature of the site selection process.**

## 13. LAND USE

### 13.1 Summary

The discussion below draws together a number of topics which bear on policy compliant and appropriate land use. It builds on the site selection section provided earlier, and demonstrates the agricultural importance and productivity inherent in the Application land. It draws on the increasingly important need for food security (which need not be at the cost of energy security – it is about site selection). The need for food security weighs against the Proposed Development in the planning balance.

The loss of BMV land here leads to the prospect of cumulative harm as further proposals continue to erode highly productive farmland both due to future proposals emerging, and the risk that the principle of consistency is used as precedent to support losses of the scale and kind contemplated by the Proposed Development. In that context the grossly sub-optimal use of land by the Application carries substantial weight against its acceptability in the planning balance, as does the risk of cumulative harm generated thereby.

### 13.2 Site selection

- 13.3 Greenfield land, in this case high quality, productive agricultural land, is a finite resource. Site selection must take full account of both the benefits of the proposed scheme and the significant consequences of what will be lost should this site be selected.
- 13.4 A site requiring 50% of total mitigation does not suggest a site well-chosen. The whole site covers 852Ha, the area to be developed with solar amounts to 426ha (50% of the site). The initial purpose of some of the mitigation area was to try and provide a sufficient level of residential setback. In the process of providing that, MPSF acknowledged that rather than keeping all of the mitigation & enhancement area as grassland, more should remain productive and in continued arable use. Thereby they implicitly acknowledge the importance of productive agricultural land, especially as some of it is BMV, yet inappropriately still keep it under their control within the site order limits.
- 13.5 The dictionary definition of mitigation is *“.....the action of reducing the severity, seriousness, or painfulness of something”* so effectively about making something less awful/bad. **Mitigation does not necessarily erase the adverse impacts. In policy terms, and qualitatively, it is inferior to avoidance of harm.** Having to set aside 187Ha of productive land (22% of the site) purely as grassland raises serious questions about the appropriateness of the scheme and the site selection. What MPSF don't allude to in most of their documents (other than Chapter 12 Land Use and Soils (APP-042)) is that 112Ha of the 187Ha are actually required as grassland margins for the solar area. The reality is 531Ha have to be set aside to enable the solar development to take place.

### 13.6 Change of Land Use and the natural environment

- 13.7 There are many significant global, national and local factors facing the world as a whole, the UK as a nation and the local communities who will be impacted by the Mallard Pass proposal.

- 13.8 Where land use change takes agricultural land out of production for at least a generation it is essential that, when assessing the merits of the scheme, the consequences of the loss of food production capacity at both a macro and local level is fully considered.
- 13.9 The UK Food Security Report 2021 provides a useful reference for UK food security and is an important document providing context and crucial information for those proposing projects that take significant productive land from production, yet is not referenced in MPSF's application documents. Information has been drawn from this document to help set the scene.

### 13.10 Scene Setting

- 13.11 The effect of **Climate change** and climate variability, biodiversity loss caused by agricultural land expansion, and overexploitation of natural capital resources, including fish stocks and water resources, is well documented. It is projected to increase the occurrence of adverse conditions including droughts and floods, and is, therefore, expected to increase the likelihood of yield shocks. These are already being seen across the world including the UK.
- 13.11.1 For example, as a consequence of unusual weather patterns associated with climate change, wheat yields in 2018 were 7% below the 2016 to 2020 average, and in 2020 were 17% below that average.
- 13.11.2 In contrast in 2022 the prolonged dry conditions through summer led to an exceptional early harvest and lower than normal moisture content in the harvested crops. (ref Provisional Cereal & Oilseeds Production Estimates for England 2022 Defra)
- 13.11.3 The biggest medium to long term risk to the UK's domestic production comes from climate change and other environmental pressures like soil degradation, water quality and biodiversity. In the long term, climate change impacts are likely to have a negative effect on the proportion of high-grade arable farmland available in the UK. This further strengthens the argument to protect good quality farmland, in particular BMV land.
- 13.12 To ensure a consistent supply of food, the UK relies both on its own production and on imports. Home-grown produce is the largest source of food for the UK. Resilience is ensured through a combination of strong domestic production from the UK's productive agriculture and food manufacturing sectors, and a diverse range of overseas supply sources.
- 13.13 The UK currently **produces about 60% of its domestic food consumption** by economic value, part of which is exported. This means around half of the actual food on plates is produced in the UK, including the majority of grains, meat, dairy, and eggs. If this is to continue maintaining productive capacity of staple foods such as cereals for human and animal feeds along with oilseeds, potatoes and sugar is essential.
- 13.14 As the **world population** continues to grow from 7.7 billion people in 2021 to an estimated 8.5 billion in 2030, it is essential to understand and consider how agricultural production levels will keep up with growing food demand. The UK should at least maintain its current level of food production as outlined in the UK Food Security Report 2021. To do otherwise risks opening up the food import market to cheap food, produced to lower standards abroad. This would mean exporting all the environmental harms we wish to avoid, while undercutting and potentially making UK farmers more vulnerable.

- 13.15 The experiences of the **invasion of Ukraine** by Russia in 2022 brought into sharp focus the impact of **global food security** when a war between two of the greatest cereal producing nations significantly disrupted both food and energy supplies.
- 13.16 The **disruption** in vegetable and particular salads due to **weather events** in early 2023 just serve to reinforce the need to maintain food production capacity.
- 13.17 Since World War II there have been tremendous advances in agricultural **science and technology** which saw a rapid increase in yields and efficiencies of production. Whilst there may continue to be future opportunities to further increase yield and develop varieties more tolerant to changing weather patterns it cannot be assumed that further substantial yield increases will be made in future years which further questions the merits of large areas of agricultural land being used for ground mounted solar.
- 13.18 **UK Farming Systems** vary from Organic to more intensive production systems for both livestock and arable production driven by farming preference, ethos (Organic), land type and location and subsidies. All have a rightful place in the UK and need to balance the competing needs of food and environmental sustainability. Land use overall has changed little in the last thirty years, with variation in cropping determined by weather, agricultural policy and prices rather than long-term or systematic variation.
- 13.19 In 2020 **71% of UK land area** used for agricultural production was **grassland** for grazing rather than crops. **The high proportion of grassland primarily reflects the unsuitability of much of the UK's land for growing crops, meaning taking good quality arable land from production should not be taken lightly.**
- 13.20 **Domestic production** faces a number of **short-term and long-term risks**, including soil degradation, drought and flooding, diseases, risks to fuel and fertiliser supplies, and changing labour markets. In the long term, climate change impacts are likely to have a negative effect on the proportion of high-grade arable farmland available in the UK.
- Defra-commissioned research**<sup>26</sup> suggests climate change impacts under a medium emissions scenario could reduce the proportion of **'best and most versatile'** arable farmland (ALC 1, 2, and 3a) from **38.1%** of agricultural land on a 1961 to 1990 baseline to **11.4%** by 2050, with consequences for food production and meeting Net Zero. Under a high emissions scenario it could reduce to 9.2% of agricultural land; however there is quite high uncertainty about projections of this kind.
- 13.21 Meeting Net Zero, climate change mitigation, and biodiversity goals will increasingly add to existing, **competing pressures on agricultural land use**. This is a sobering thought and one that should be at the forefront of the minds of those advocating ground-mounted solar on arable land as a solution for reducing our dependence on fossil fuels and achieving net zero when there are **more efficient and less impactful alternatives** available.

Food production does not happen in isolation from society or the environment. Farming can damage soil, air, and water, drive species loss and contribute to climate change, which will

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<sup>26</sup> SP1104 The Impact of climate change on the capability of land for agriculture as defined by the Agricultural Land Classification (prepared for DEFRA and Welsh Government Sept 2014)

threaten productivity and sustainability of agriculture, and therefore food security. But good farming practices can reduce or reverse these harms, encourage biodiversity, and capture carbon all while producing healthy food and much of current Defra policy is focused on achieving this.

### 13.22 The Policy Landscape

- 13.22.1 The key policy documents which should be taken into account when considering change of land use for the purpose of energy generation from ground mounted solar are:
- 13.22.2 **Draft National Policy Statement for Renewable Energy Infrastructure (draft NPS EN-3 2023, paras 3.10.13 – 3.10.16)** gives guidance on ground mounted Solar PV projects. It states *“that in determining the suitability of the site location applicants should, where possible, utilise previously developed land, brownfield land, contaminated land and industrial land”*. It goes on to say that *“where the proposed use of any agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land (avoiding the use of “Best and Most Versatile” agricultural land where possible).”* The whole of this project is built on good quality productive agricultural land, due to that being unavoidable, in what the applicant claims is an otherwise suitable location in terms of land type, but in reality it is a scheme using a vast quantity of BMV and productive agricultural land in an entirely unsuitable location.
- 13.22.3 **National Planning Policy Framework (NPPF July 2021 revision)**  
The NPPF Chapter 15 para 174 is a key paragraph on protecting landscape and so Land Use. The full wording is given below. The reference to this document in Appendix 12.1 Land Use and Soils Policy Context (APP-088) does not fully reflect this wording and the scheme should be considered in this context.

(a) **NPPF Chapter 15 “Conserving and enhancing the natural environment. 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;*
- *(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.”*

(b) The **recent House of Lords Inquiry on Land Use** in England (published 13 December 2022) also raised a concern regarding the development of solar farms on BMV which is also relevant. The key paragraph is in respect of Para 132, which sets out the conclusions of the committee regarding solar farms on BMV land:

*“Although there are provisions within the NPPF to dissuade the development of solar farms on Best and Most Versatile land, from the evidence received we are concerned that too many exceptions are being made. We believe that a consistent policy toward encouraging the installation of solar panels on industrial, commercial and domestic buildings is needed and would negate the need for large-scale ground mounted solar farms. Alongside that, we would like to see stricter regulations put in place to prevent the development of solar farms on BMV land. We also believe*

*onshore wind turbines still have a crucial role to play in achieving national energy self-sufficiency”.*

13.22.4 The call of that inquiry for the use of a ‘**land use framework**’ to provide spatial coherence to NSIP scale projects should not be overlooked. That call was repeated specifically in relation to these kinds of projects in Para 133 of the report. It highlights the risk of permitting poor schemes, in this case, of huge size, in isolation from a sufficiently full consideration of other alternative locations. **This lacuna in policy, increasingly recognized, reinforces the need for truly persuasive alternative site analysis for projects of this scale, until the failure of national policy in this respect is rectified.**

### **13.23 Levelling-up Bill**

At the report stage of the Levelling-up Bill, which is returning to the House of Commons, Ministers have agreed to ‘beef up’ the NPPF with stronger protection for agricultural land in the planning system. This intent is further confirmed in a letter from Felicity Buchan MP, Minister for Housing & Homelessness, to Greg Smith MP. She refers to valuable agricultural land stating the department will “**be making it harder for developers to build on it and ensuring the importance of food security is recognised.**” This statement chimes with the House of Lords report referred to above.

### **13.24 British Energy Security Strategy April ‘22<sup>27</sup>**

*“We will continue supporting the effective use of land by encouraging large scale projects to locate on previously developed or lower value land”*

### **13.25 Food Strategy report June ‘22<sup>28</sup> (para 1.2.2)**

*“...it is possible to target land use change at the least productive land”*

13.26 Agricultural land is a major asset of the nation and a **finite resource**. The report<sup>29</sup> prepared by the House of Lords Land Use Committee, published in Dec’ 2022 clearly identifies the many competing demands for Land Use and recognises that our landscape is changing with land required for:

- Food production
- Nature & biodiversity restoration
- Carbon sequestration
- Building & infrastructure development

In addition to land for energy, access and well-being is taking on greater priority.

**It is crucial that the decision made for this application is done having taken full account of the short and long term implications on food production and food security.**

**13.27 Overall the relevant policy documents and other documents from both the Houses of Parliament provide clear guidance and comment that would steer away from large scale ground mounted solar on productive arable land.**

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<sup>27</sup> Policy Paper - British Energy Security Strategy April 2021

<sup>28</sup> Policy Paper – Government Food Strategy June 2022

<sup>29</sup> House of Lords, Land Use in England Committee – Making the most out of England’s land Dec 2022



### **13.28 MPSF Change of Land Use**

- 13.29 MPSF will be sited entirely on agricultural land which is currently well farmed and making an important contribution to primary food production. Greater Lincolnshire is one of the UK's most important agricultural areas with farming the dominant land use for centuries. Defra 2009 data estimated that 81% of the county is farmed with 71% used for arable, horticulture and temporary grassland compared to 39% for England overall. This is a reflection of its high-quality soils and its climate and weather patterns.
- 13.30 Chapter 12 Land Use & Soils (APP-042), Table 12-3 shows the Area and Proportion of ALC Land in England, and in Lincolnshire & Rutland. This demonstrates the overall high quality of the land in Lincolnshire and Rutland and why it is important for food production. The ALC soil classification shows it is grade 2, 3a & 3b across the site. Whilst it is claimed that 239Ha of the 852Ha within the Order Limits will be available to be farmed, of the remaining land within the scheme, 40.7% of the land where arrays will be sited will be Best and Most Versatile land (BMV) i.e. grade 2 & 3a land. This is contrary to the guidance in both draft EN-3 and the NPPF (July 21 revision).
- 13.31 The soil classification and long-term land management practices demonstrates that all of the land is able to successfully grow cereals, oilseeds, beans, and in parts of the proposed site potatoes and sugar beet, with the BMV land potentially a wider choice of crops than currently being grown. As set out above, DEFRA commissioned research mentioned in the UK Food Security Report indicated climate change impacts under a medium emissions scenario could reduce the proportion of 'best and most versatile' arable farmland (ALC 1, 2, and 3a) from 38.1% of agricultural land on a 1961 to 1990 baseline to 11.4% by 2050, with consequences for food production and meeting Net Zero. Under a high emissions scenario it could reduce to 9.2% of agricultural land. These changes will occur during the lifetime of this project and whilst accepting there will be some uncertainty around such predictions, to knowingly take high quality land out of production and replace with an inefficient form of energy generation (ground mounted solar panels) in this location is inappropriate on the facts and contrary to current and emerging national policy.
- 13.32 The MPSF Statement of Need (APP-202) sets out the case for this scheme. The document concludes that a significant capacity of low-carbon solar generation is urgently needed in the UK and that this scheme will be an essential first step in achieving this need and achieving government objectives of sustainable development to enable decarbonisation. What this analysis does not do, is address in sufficient detail the consequences for other policy areas and in particular Food Security, should this scheme go ahead. And given the risk to BMV outlined above, this is a major omission.

### **13.33 Loss of agricultural production**

- 13.34 Paras 12.4.66 to 12.4.77 describes the implications of land use change. They make a series of general statements which set the context to consider the impact of land use change.
- 13.35 Para 12.4.72 highlights that it is only the 531Ha of mostly arable land within the Solar PV site that will not be cropped during the lifetime of the project and that this is the only land considered in the national and regional context in terms of field use and economics. This approach underestimates the true loss of crop production capacity should this scheme go ahead.

13.36 MPAG propose that all land within the DCO order limits, currently in arable production, should be included in the calculation of lost crop production. The point is made at para 12.4.81 that the 239ha of BMV land in the ‘mitigation area’ will continue in arable farming however nowhere does it categorically state that this land will definitely be farmed for crop production throughout the life of the scheme so on a ‘worst case scenario’ it is suggested that this should not be assumed. It is not clear, in any case, how that position could realistically be made the subject of an obligation enforceable by interested third parties over any or all of the area the Applicant relies upon for these purposes.

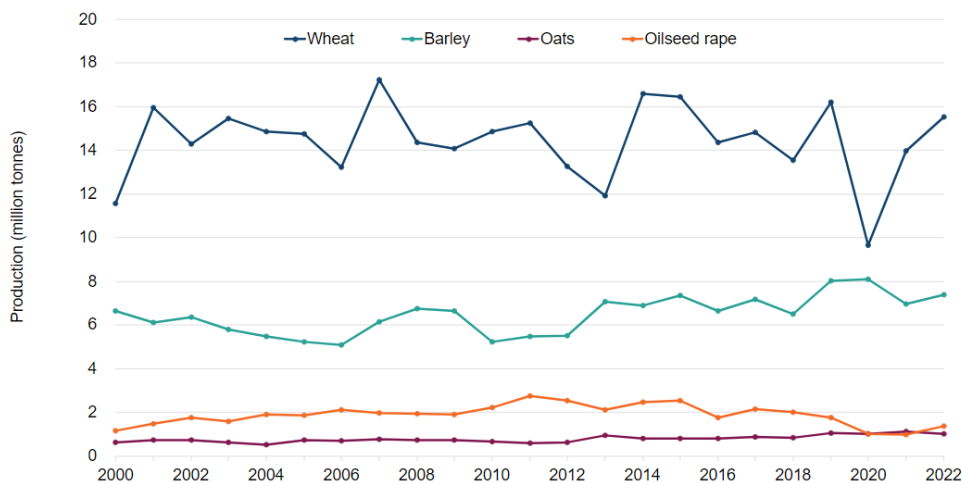
13.37 The calculations only consider the loss of annual crop production and compare this Defra published yield data for harvest 2022 which was a very high yielding season compared to some yields in previous years.

**13.38 Summary of Defra UK Cereal and Oilseeds Production Data for 2022 (Published Dec 2022)**

13.39 Figure 24 below is taken from the published data from Defra on Cereal and oilseed production in the UK published Dec 22. This figure shows the variation in crop production over the last decade reflecting the weather, growing conditions and acreages sown. This variation highlights that there are many factors that influence crop production in any one season and given there are many other options for solar energy which could be located on brown field sites, less productive land and roof tops together with wind power and other forms of renewable energy all of which are less demanding on productive agricultural land – this raises a serious question of the merits of this scheme taking good quality land out of agriculture.

**Production**

**Figure 3: United Kingdom crop production**



**Figure 25: Trends in UK Arable production (Defra Statistics Dec 2022)**

13.40 In 2022 the **Total cereal production** in the UK rose to 24 million tonnes. Higher yields across all the main cereal crops in 2022 compared to 2021, more than offset a small decrease in the total cereal area. The prolonged dry conditions through summer led to an exceptional early

harvest and lower than normal moisture content in the harvested crops. UK Oilseed rape production has greatly increased by 43% to 1.4 million tonnes in 2022. This was driven by a 20% increase in area and a 19% increase in yield.

13.41 Despite the exceptional harvest it is these most recent figures which have been used to make the following observations on the **implications** of taking all arable land within the DCO limits out of production.

13.42 Figure 26 below provides an indication of the annual lost production and the loss over the estimated period (40yrs) of the project. The calculations for the lost production have been based on the rotations and yield estimates provided by the applicant. The scheme has no end date and is expected to be in place for at least 25 years and potentially to 40 years and beyond. A simple calculation based on data given in the table and using the total UK production for both cereals and Oilseeds suggests that the **loss of annual production on current yield performance and crop rotation will be circa 6,186 tonnes/annum.**

Crop	%age of Total Area	Cropped Area (ha)	Average Annual Yield (t / ha)	Annual Production (t)	Total Production incl Yield Improvement (t)
Winter Wheat	67%	549	8.60	4,725	217,343
Winter Barley	17%	135	7.30	988	45,434
Spring Barley	0%	-	5.60	-	-
Oats	0%	-	5.80	-	-
OSR	17%	135	3.50	474	21,783
Field beans	0%	-	3.70	-	-
Peas	0%	-	3.70	-	-
	100%	820		6,186	284,560

Co-Products	Cropped Area (ha)	%age of Area Baled	Average Annual Yield (t / ha)	Annual Production (t)	Total Production incl Yield Improvement (t)
Wheat Straw	549	30%	3.50	577	26,536
Barley Straw	135	30%	3.00	122	5,601
OSR Straw	135	15%	2.00	41	1,867
				739	34,005

**Figure 26: Loss of Output of Human and Animal feedstuffs from the land within the DCO of Mallard Pass Solar Farm both annually and over the 40yr life of the project. (Calcs MPAG)**

13.43 The total yield of **UK cereal production** was **24 million tonnes** (Defra Dec 2022) which means that lost production from MPSF will be 0.023% of UK production.

13.44 If just the combined production of **Wheat and Barley 22.9 million tonnes**, as the 2 crops in the indicated rotation, are used then the lost production is equivalent to 0.025%

13.45 The total yield of UK **Oilseed production** was **1.4 million tonnes** (Defra Dec 2022) which means that lost production will be 0.033% of UK oilseeds production.

13.46 At face value these losses could be considered as insignificant however when compared to the relatively insignificant contribution of the power generated from the proposed Mallard Pass Solar farm to total annual UK Energy production, which is estimated to be only **0.082%**, the loss of crop production should not be simply dismissed as insignificant as MPSF suggests. That is an argument that can be repeated too often, and it downplays if not ignores the policy protection provided to BMV land which yields these kinds of agricultural results.

- 13.47 The estimated the loss of production over the lifetime of the project also needs careful consideration, the calculation at Figure 26 assumes a similar rotation but with a modest yield increase of 15% over the lifetime of the project. This loss of production must be considered in the context of the forecasts provided by Defra’s Food Security Report listed earlier in this report – and in particular with the potential loss of BMV land forecast over the lifetime of this proposal. This further re-inforces how inappropriate this scheme is.
- 13.48 As mentioned previously the indicative crop rotation used by MPSF in their documentation is a very simple arable rotation. Experience of those who live in the area report that a much **wider range of crops** has been and could continue to be grown on land across the proposed site depending on specific soil type which includes field beans, potatoes, linseed, oats, and possibly sugar beet. With economics driving the decisions of those currently farming the land, with our changing climate it is also possible that other crops not currently grown may become a possibility in future years – there is already a vineyard operating successfully close to the site boundary.
- 13.49 The impact on **straw production** has also been included for completeness which was not recognised in the calculations completed by MPSF. Straw has a value for both animal feed, bedding and ethanol production and should therefore be included for completeness.
- 13.50 To bring more context to the loss of crop production Figure 27 takes this information and quantifies what the loss of agricultural output means in terms of **human food supply** and the **many uses of feed Wheat & Barley**. These figures relate to just one year’s loss of production for MPSF.

Commodity	%age of Annual Production	Annual Production (t)		Facts
Milling Wheat	30%	1,417	12,000,000	loaves of bread sold daily in UK
			43	loaves per person per year
			5,000,000	tonnes flour produced in the UK annually
				85% of the milling wheat required for the flour is homegrown
				15% of the milling wheat required for the flour is imported
			1,500	loaves per tonne of milling wheat
			19,700	population of Stamford
			11,000	population of Oakham
			49,446	the number of people who's annual bread consumption would be produced by this land
			2.51	the number of years of bread consumption for Stamford
Feed Wheat	70%	3,307	4.50	the number of years of bread consumption for Oakham
			800	grammes of wheat a laying chicken can eat per week
			79,505	the number of laying hens the feed wheat could feed for a year
			420,000	litres of ethanol from 1,000,000t of feed wheat
			420	litres of ethanol from 1 tonne of feed wheat
			1,389,103	litres of bioethanol that could be produced from the feed wheat
Malting Barley	25%	247	192,000,000	litres of bioethanol produced in the UK at peak (2017)
			1.3	tonnes of malting barley to make 1 tonne of malt
			15,553	pints of beer from 1 tonne of malt
			11,964	pints of beer from 1 tonne of barley
			2,954,143	pints of beer from the total malting barley produced

**Figure 27: The Implications of lost crop production (MPAG)**

- 13.51 The **milling wheat** used for bread making from this land would provide the annual requirement of loaves of bread for **49,446 people** based on the assumptions in the table.
- 13.52 Over the lifetime of the project (with no yield increase) this is equivalent to sufficient loaves of bread required for **1,977,840 people**.

- 13.53 The **malting barley** produced will make **2,954,143 pints of beer/year** and over the life of the project that would be **118,165,720** million pints of beer.
- 13.54 As described in the table **feed wheat** has many uses from feeding both intensive and grazed livestock to ethanol production for energy use and the table gives examples of the output from the amount of feed wheat produced.
- 13.55 With the high level of self sufficiency that the UK has, for milling wheat particularly but also in feed wheat, means that loss production would have to be made up from **imported grain potentially transferring environmental impacts** to other parts of the world. Is this responsible when other alternatives for renewable energy which are less dependent of agricultural land are available?

### 13.56 Proposed Agricultural use in Solar Area

- 13.57 Para 12.4.94 suggests **continued agricultural use** potentially involving food production within the area covered with PV panels. The example given is that this will be through uses such as **fodder and sheep farming**. There are no further details and whilst it is well recorded that sheep can graze within the PV areas of a solar farm there are no details that suggest this is little more than a possible option suggested due to the concerns raised by many opposed to the scheme because of the loss of farmland.
- 13.58 MPSF PV area is a very large (531Ha) fragmented site making managing a flock of sheep of any size challenging, it will require:
- Good and easy access to the array grazing areas 24/7 when sheep are present
  - Mobile sheep handling facilities for loading and unloading
  - a holding pen for sheep should there be a need to corral and hold the sheep in each grazing area.
  - A well-trained steady sheepdog/s
  - Clean water supply and drinking troughs in all grazing areas
  - Food troughs for supplementary feeding depending on time of year when sheep are grazed.
- 13.59 MPSF suggests a **stocking rate of 8 – 10 Sheep/ha** when considering labour requirements. On a site of this size this suggests a very significant number of sheep, but that said, the stocking rate is that for **organic production** rather than commercial sheep farming. The land does not currently have organic status therefore there will be no organic premium on sheep meet produced. To be able to properly evaluate whether meaningful farming and food production will continue as suggested requires clearer proposals to be presented and evaluated.
- 13.60 There is no detail on the mix of grass species which will be planted on land which will house solar arrays. It is therefore difficult to know the potential for both animal grazing and fodder production, almost certainly hay, as the quality of the grazing and the fodder is entirely dependent on the grass sward and the time of grazing, cutting and baling. With no clear proposals presented it has to be assumed that both sheep grazing, if practical, and 'fodder production' are most likely to be part of the **overall management of the grassland** across the site rather than for meaningful agricultural output.

### 13.61 Energy efficiency vs Land take

13.62 Using DUKES\_6.3 (Digest of UK Energy Statistics) Figure 28 produced by BEIS clearly shows solar has one of the lowest plant load efficiency factors, significantly lower than onshore and offshore wind. By virtue of its design and the fact it is so inefficient compared to other renewable sources of energy, solar takes up a disproportionate amount of land. Wind turbines can be installed in agricultural fields with relatively little disruption to existing agricultural practices. Solar not only uses the area required for the solar panels, but a huge amount of mitigation land to offset the impacts.

Load factors - based on average of beginning and end of year capacity [note 1]	2018	2019	2020	2021
Wind	31.5	32.0	35.6	29.3
Onshore	26.7	26.5	28.3	23.2
Offshore	39.9	40.4	45.7	37.4
Marine energy (wave and tidal stream)	5.5	7.5	5.7	2.8
Solar photovoltaics	11.2	10.7	10.9	10.0
Hydro	33.2	36.1	41.5	33.1
Small scale	36.9	39.2	43.1	37.7
Large scale	32.1	35.2	41.1	31.8
Bioenergy (excludes cofiring and non-biodegradable wastes)	58.6	55.4	56.7	56.6
Landfill gas	42.0	39.1	37.7	35.8
Sewage sludge digestion	46.0	48.6	49.3	47.3
Energy from waste [note 3]	35.8	35.4	36.1	36.0
Animal biomass [note 4]	56.0	58.3	57.0	54.3
Anaerobic digestion	61.7	63.0	61.7	64.3
Plant Biomass [note 5]	70.6	64.1	67.1	67.5
<b>All renewable technologies (excluding cofiring and non-biodegradable wastes)</b>	<b>29.8</b>	<b>30.0</b>	<b>32.3</b>	<b>28.5</b>

Figure 28: Load factors- UK Gov Digest of UK Energy Statistics (DUKES) Table 6.3

13.63 Additionally the land required to deliver 350MW for MPSF is far higher at 2.4ha/MW than other local projects across Lincolnshire and Rutland averaging 2ha/MW, as shown in the table below. This further calls into question **the suitability of the site chosen. Any implication that such intense land take should be permitted, as would occur through an order being made in this case, would likely lead to other examples of grossly suboptimal land requirements for such schemes.**

Lincolnshire/Rutland solar farms							
Town	Solar Farm	Developer	Ha	MWp	Ha/MW	Stage	Date
Ashby de La Launde, Blankney	Springwell Solar	EDF/Luminous Energy	1700	800	2.13	Pre-appl	Jan-23
Cottam	West Burton Power Station	Island Green Power	1150	600	1.92	consultation	Nov-21
Heckington/Helpingham	Beacon fen Energy park	Low Carbon	1150	600	1.92	Pre-cons	Apr-23
Gate Burton	Gate Burton	Low Carbon	684	500	1.37	consultation	Nov-21
Gainsborough	Tillbridge Solar	Canadian Solar/Tribus	1400	500	2.80	Pre-appl	Q3/4 -22
<b>Essendine</b>	<b>Mallard Pass</b>	<b>Canadian Solar/Windel</b>	<b>852</b>	<b>350</b>	<b>2.43</b>	<b>planning</b>	<b>Nov-21</b>
East Heckington	Side Bar Lane/Heckington Solar Park	Ecotricity	587	300	1.96	scoping req	Nov-21
Healing/Aylesby	Grimsby West	Aura Power	60	49.9	1.20	approved	Feb-21
Wainfleet	Low Farm	Anesco	60	49.9	1.20	approved	Mar-21
South Holland	Sutton Bridge	EDF	118	49.9	2.36	approved	Mar-21
South Holland	Caudwell Farm	Green Energy	110	49.9	2.20	planning	Aug-21
Sleaford	Little Hale Fen	AGR Solar	79	49.9	1.58	screening	Sep-21
Marston	Gonerby Moore	Lightsource BP	76	49.9	1.52	approved	Oct-21
Horncastle	Hatton Farm	Push Energy	60	49.9	1.20	planning	Jan-23
Exton	Exton Energy	Ecoenergy	81	45	1.80	planning	Aug-22
Pilton	Stavely Solar Farm	Bluestone Energy/Anglian Water	80	40	2.00	planning	Jan-23
Thurlby/Northope	Wood Lane	Intelligent Alternatives	51	39	1.31	screening	Jan-22
South Ferryby	Winterton		16	9.7	1.65	planning	Aug-21
Folkingham	Washdyke Farm	GS Ignis Ltd	26	27	0.94	planning	Mar-23
			<b>8339.5</b>	<b>4160</b>	<b>2.00</b>		

Figure 29: List of Solar Farms in the development and planning process (Lincs/Rutland)

Note the figures in red in Figure 29 table are estimates based on MW output as no published acreages can be found.

#### **13.64 Impact on land prices**

Should MPSF be approved it has the potential to distort the local land market in favour of those landowners/farmers who have chosen to have their land included in the scheme. As recipients of large returns for the land involved in the project this disposable income gives them the resources, should they wish, to go out and rent/buy more land to replace the land lost to MPSF. This could push prices up and make it more difficult for those farmers/landowners not involved in the scheme to compete for new land tenures in the future.

#### **13.65 Potential Crop Damage**

13.66 The area in which MPSF is planned currently has several large wild deer herds grazing freely. The tall fencing which will surround the solar arrays will be designed to obstruct the free movement of the deer and they will find themselves trapped in pockets of land and corners of fields. This will lead to increased grazing and trampling damage in these areas.

13.67 Assuming the fences are successful at keeping the deer out of the solar farm there will be less land available for them to graze and therefore the farmland will be grazed more intensively with the associated crop losses.

#### **13.68 Cumulative impact of Land Use Change**

13.69 This application does not appear to have considered the cumulative impact of this scheme alongside other planned infrastructure projects locally, regionally and nationally, all of which have an impact on both land use and local communities. These include:

##### **13.69.1 Locally:**

- Stamford North a 184 acre Urban Extension to the North of Stamford between A6121 and Little Casterton Rd which is currently arable or undeveloped open land.
- Proposed Extension to Ryhall on arable land around the edge of the Jelson Estate along the A6121. This is in early stages of the planning process.
- RCC: This stage in the Local Plan process is to identify a supply of land which may be suitable, available and achievable for future housing and economic development in Rutland. Their interactive map (Call for Sites Feb 2022 – see Figure 30 below) highlights land areas both close to and adjacent to the proposed development.
- Solar Farm Application near Pilton, Rutland
- Solar Farm Application at near Barnsdale, Oakham on Exton Estate, Rutland



**Figure 30: Rutland County Council - Call for Sites submissions – Feb 2023**

**13.69.2 Regionally:**

- 13.69.3 Lincolnshire, the 2nd largest County in the UK, recognised as a major and important producer of home grown human and animal feedstuffs and often described as one of the ‘bread baskets’ of UK food production. The question is for how much longer? It also seems to have been identified as a suitable county for multiple applications for ground-mounted solar panels.
- 13.69.4 A recent article in The Lincolnite on 27th March 2023 identified seven major solar farms in the planning stages or being proposed in Lincolnshire, with an 8th identified which was not included in the article. Local MPs voiced their concerns with Gainsborough MP Sir Edward Leigh stating this land would be much better used for agriculture instead. He said: “With the war in Ukraine, and wheat prices going through the roof, it is madness to take this amount of good agricultural land out of production.” In the same article MPs Alicia Kearns and Gareth Davies say that the huge Mallard Pass development would spoil large amounts of wildlife environment, take away productive agricultural land and would be seen for miles around.
- 13.69.5 A comprehensive search has identified that there are actually 19 schemes being proposed (within the counties of Lincolnshire/Rutland) which are at varying stages of the planning process. As will be seen in Figure 29 List of Solar Farms above, all of these schemes to be approved at the acreages show it would result in a total of 8339.5Ha (20,362 acres) of farmland being taken out of food production with an estimated 4228MW of energy total output.
- 13.69.6 This appears disproportionate when compared to current solar farm applications nationally. The Solar Campaign Alliance, a national action group, currently have over 80 schemes represented within the group with 15,333.4Ha (37,876 acres) being taken from their current use much of which is productive farmland. Lincolnshire/Rutland schemes amount to 50% of the land being taken at national level, yet account for just 19 of the schemes (25%).



13.69.7 Of particular concern is that seven of the regional applications will be for Solar Farms of over 500Ha, a size and scale for which the UK has no experience and no evidence on which to properly assess all the impacts. This reinforces the disproportionate risk of significant land take in Lincolnshire which must be carefully considered given the statistics provided earlier in the report showing the importance of Lincolnshire and its neighbouring counties for food production; and shows the importance of having mechanisms like the land use framework in place before prematurely reaching individual decisions on a sequence of cases that will undoubtedly have regional and national impacts. The case of the MPSF scheme, with the high proportion of the area of BMV land both within the overall order limits and in the area where solar arrays will be sited, provides an exemplar case for such a more considered approach.

### **13.70 Nationally**

13.70.1 At a national level the rapid rise in the number of applications for ground mounted solar has the potential to result in significant amounts of productive land being taken out of food production for up to 40 years and beyond. The shortfall for the 70GW target for 2035 is 56GW.

- Taking an average of approximately 2Ha/MW or 5 acres/MW, 112,00ha/280,000 acres of land would be required for solar.
- If MPSF's figure of 2.4Ha/MW were used, that would amount to 134,400Ha/332,102 acres

That is a land mass equivalent to the county of Bedfordshire – 123,512Ha/305,000 acres!

**13.70.2 The rapid proliferation of solar farms if approved (particularly NSIPs) will lead to a material impact on availability of productive land for food production, it will reduce our self-sufficiency, increase our reliance on imports of staple food items and puts additional pressure on global food production, AND won't be easily reversible in a hurry.**

13.70.3 Home produced grain accounts for 84% of wheat used in the UK milling industry. A figure to be proud of and one at huge risk if we don't retain our valuable land resource for food production. The recent experience of shop shelves being empty is an example of how quickly food supplies can be impacted by the 'just in time sourcing and delivery policies' of many large retailers and suppliers. Unchecked this will only get worse if more reliance is placed on imports to secure our food security. Whilst many of the empty shelves in the early part of 2023 were due to shortages of fruit and vegetables if we also put our staple food supplies of wheat and other combinable food stuffs at risk from unexpected global shocks wider food shortages could become a reality.

## 14. SOILS MANAGEMENT

### 14.1 Summary.

**14.2 The protection of soils is a material planning consideration. Soils need to be protected from damage that could affect their ALC grading long term and hydrology of the area short term.**

### 14.3 Crucially:

- **the soils need to be in a suitable state to cope with the rigours of construction before it commences. The scheme as proposed does not provide for that.**
- **Sowing a suitable grass ley 24 months prior to development will enhance soil resilience and help to prevent soil damage, provided the soil is not work or trafficked when it is too wet.**
- **A soil moisture content measuring and monitoring system should be deployed to identify when the soil cannot be worked.**
- **Insufficient detail is provided as to how the grass swards within the solar arrays are to be managed including the grazing of sheep.**

**These failures to make guaranteed adequate provision for soil management and protection are a factor of significant weight that counts against the scheme in the planning balance, especially in light of the scale of the project and the proportion of BMV land affected by the Proposed Development.**

### 14.4 Soil Types

14.5 During the construction, operation and decommissioning phases of the planned solar farm, the soils supporting this operation will be subject to varying amounts of trafficking by vehicles carrying out these operations.

14.6 Chapter 12 – Land Use and Soils (APP-042), Figure 31 from the IEMA Guide ‘A New Perspective on Land and Soil in Environmental Impact assessment’ is used to classify the soils as of medium sensitivity to structural damage, this also means they only have medium resilience to damage and are susceptible to damage of both the top and sub-surface soil layers if handled or trafficked inadequately.

Sensitivity of Topsoil and Subsoil	Soil Texture, Field Capacity Days and Wetness Class
High sensitivity (low resilience to structural damage)	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and organo-mineral and peaty soils where the Field Capacity Days (FCD) are 150 or greater. Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where the FCDs are 225 or greater. All soils in wetness class (WCV or WCVI).
Medium sensitivity (medium resilience to structural damage)	Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils where the FCDs are fewer than 150. Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225. Sands, loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in wetness classes WCIII and WCIV.
Low sensitivity (high resilience to structural damage)	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in wetness classes WCI to WCII.

**Figure 31: Sensitivity of Soil Receptors (Table 7.2 Reproduced from the ICE Environmental Impact Assessment handbook – A practical Guide for Planners, Developers and Communities (3rd edition)**

14.7 Chapter 7.12 Outline Soil Management Plan (oSMP)(APP-213) states that the clay and heavy clay soils in the proposed development have a medium resilience to soil damage where the FCD (field capacity days) are <150. It also refers to lighter soils including medium clay loams being of medium resilience where field capacity days are less than 225 are at low risk of structural damage. This is incorrect (as highlighted by Natural England in their consultation response), all of the soil types found throughout the proposed development should be classed in the above table as having medium sensitivity (or resilience) to structural damage. Note: The word sensitivity is not used in the oSMP.

14.8 The oSMP also defines the soil types (see figure 32) present across the site as being medium clay loam, heavy clay loam or clay. If these broad soil types are cross referenced with the IEMA table 4 table (above) they are all classed as medium sensitivity to structural damage, though if wet they move into the high sensitivity to structural damage section.

3.7 The predominant soils for the topsoil and upper subsoil in each area are recorded in the table below.

Table 1: Predominant Soil Type

Area	Topsoil		Upper Subsoil	
	Depth (cm)	Predominant Texture	Depth (cm)	Predominant Texture
A (North)	0-35	HCL/C	30-60 (occ deeper)	C
A (South)	0-35	MCL and HCL	35-60	MCL/HCL/C
B	0-35	MCL and HCL	35-60+	MCL/HCL/occ C
C	0-35	MCL/HCL, C to the south	35-50+	C
D	0-25	HCL/C	25-50	C,
E	0-30	MCL/HCL/C	30-50+	C, occ SLC
F	0-30	MCL/C	30-60	HCL/C
G	0-30	MCL/HCL	30-60	MCL/HCL/C
H	0-25/30 (variable)	MCL/HCL/C	25-50+	HCL/C
I	0-25	C	25-50+	C
J	0-25	HCL/C	25-50+	C
K	0-30	C	25-50	C

Figure 32: oSEMP - Table 1: Predominant soil type

**14.9 Working of the soils**

14.10 The sensitivity of the soils should limit when construction can take place, construction should only be undertaken when the soil is dry enough, and should cease if it becomes too wet. Not constructing when the soils are wet will impede project progress and potentially extend their expected build time of 2 years. By downplaying the sensitivity of the soils to trafficking, it helps reduce the downtime in their construction schedule.

14.11 Creating compaction during the build phase will adversely affect the soil quality and also drainage and hydrology of the area for the long term. It could also affect the ALC grading when the land is returned to agricultural use when the site is decommissioned as natural soil processes that rely upon the free, unimpeded movement of water and air through the soil profile, will be impeded by compacted layers within the soil profile.

14.12 The oSMP details when and how soils can be worked, and advises on the periods when soils are suitable for being handled or trafficked. However there are no metrics deployed to control this, other than they will not construct when the soil is wet from early November to end of February. There should be an agreed metric for soil water content across each of the different soil types that have been identified within the ALC soil survey. Soil moisture content needs to be monitored by a suitably qualified expert to determine when trafficking and construction can and can't proceed. This would provide a better protection of the soil during all phases of operation should the DCO be granted.

14.13 Remote soil moisture monitoring equipment is relatively inexpensive and easy to deploy, it is widely used in the sports turf and agriculture industries, it can be deployed to different soil depths, and monitored remotely which could allow both the developer, and interested stakeholders to monitor soil moisture content to ensure the soil is not being adversely affected by solar farm activities during construction, operation, and decommissioning.

#### **14.14 Soil management in Operation**

14.15 Chapter 12 – Land Use and Soils (APP-042) makes reference to sheep grazing, or fodder production within the solar array area. There is no detail as to how this will be managed. This is a significant omission as poorly managed grazing can result in surface compaction (commonly referred to as 'poaching') if livestock are present on wet, clay soils. This could adversely affect the soil and lead to problems with drainage and runoff from the soil.

14.16 There is no reference to a proposed stocking density for grazing animals in the DCO application, this will also be critical to maintaining healthy soils during the operational phase, overstocking in wet weather will create poaching. Overstocking could also lead to the close cropping of grass reducing sward height which could potentially allow runoff of water from heavy rainfall event to occur.

14.17 There is no reference as to how the welfare of the grazing animals will be maintained or managed, for example there is no detail as to the provision of water for livestock across the area.

#### **14.18 Establishment of grassland**

14.19 There is also no detail given as to how or when the grassland will be established. This will be critical as to how the soil will be maintained in good health both during the construction phase, and afterwards in the operational phase. A well established grass sward will be significantly more resilient to trafficking and damage than bare soil or a green stubble left over from the last arable crop.

14.20 There should be a timeframe as to when the grassland under the solar area will be established, this was also referenced in the Natural England relevant representation.

14.21 In order to establish a good quality, hard wearing, long term grass sward it should be planted 2 years before construction is due to commence, and managed properly through the pre-construction period by mowing and mulching, and perhaps some limited, light grazing so as to build up soil organic matter in the soil during the 2 years prior to construction which will to help maintain soil structure & resilience when trafficking commences during construction.

- 14.22 The documents make no reference to sward composition, proposed sward management etc. Proprietary solar farm seed mixes are available from seed suppliers but there is no mention in either the PEIR or the EIA which is a glaring omission.
- The sward should be made up of hard wearing, shade & drought tolerant species such as creeping red fescue, meadow fescue, tall fescue, late perennial ryegrass (diploid) and white clover.
  - Establishment of these slow growing species should commence 24 months prior to construction so that they have time to establish properly, enabling them to recover adequately from any damage caused during construction.

#### 14.23 Preparation of the site.

- 14.24 Chapter 12 Land Use and Soils (APP-042) highlights the potential for adverse effects on agricultural land during the construction phase are listed in order as:-
- the construction & use of temporary compounds;
  - the construction of access tracks and solar stations;
  - the installation of PV arrays;
  - the trenching of electrical cabling;
  - site fencing; and
  - on-site substation.

14.25 There is no preparation of the site listed that would prepare the ground for construction, the above lists infrastructure only. This is a significant omission.

14.26 This list should be preceded by the establishment of a suitable, hard wearing grass ley capable of withstanding the associated rigours of the construction phase as discussed above, and also as mentioned in Natural England's relevant response (below).

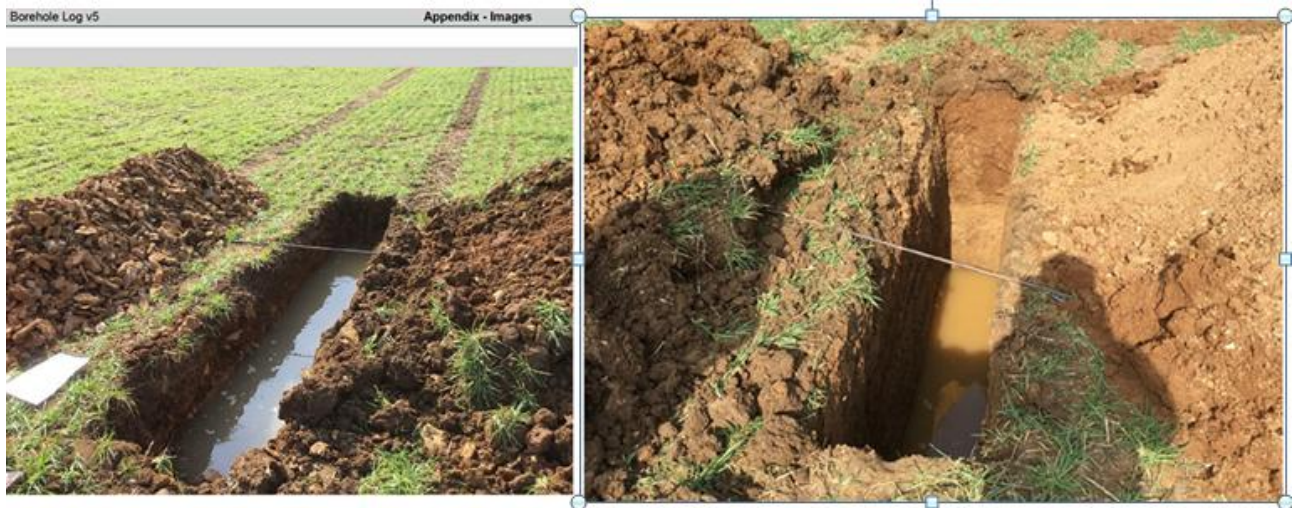
**14.27 There is a huge difference in the potential damage to soils where work is undertaken on bare ground compared with an established grass land, and the establishment of a suitable grass ley at least 24 months before the start of construction should be a condition of any planning consent.**

#### 14.28 Solar array infrastructure

14.29 oSMP (APP-213) states: "***The installation of the mounting structures and the assembly of PV tables does not require movement or disturbance of soil....***" **We would dispute this point.** Pile driving posts to cater for 530,000 solar panels into the soil to 2.5m will result in soil disturbance throughout the soil profile. Given the density of the pile driving there is also the potential to damage land drains and most certainly damage archaeological remains. Given the results are incomplete at this stage for trial trenching, approval should not be given to proceed with this application.

14.30 Furthermore removing these posts during decommissioning will inevitably lead to soil disturbance and this aspect of soil disturbance has not been addressed in the documents.

14.31 There is also evidence from the soil infiltration test pits that the legs of the mounting structures will encounter ground water as it was present in 2 of the 6 infiltration test pits (see photos below in Figure 33).



**Figure 33: Soil Infiltration test pits by MPSF**

- 14.32 This is contrary to information in Appendix 11.3 Water Resources and Ground Conditions – Consultation Summary Consultation (APP-084) responses, where, in a response to PINS (Scoping opinion) regarding steel mounting posts being driven into the ground and having an effect upon ground water, MPSF addressed the matter by referring to an absence of ground water within the trial pits dug for infiltration testing (see below).

Due to the overlying superficial geology across the Order Limits and **absence of groundwater encountered within the trial pits for infiltration testing**, groundwater is unlikely to be present at depths at which the PV Array racking system will be driven into the ground. As such, there is limited potential for effects, including cumulative effects, on groundwater resources and receptors which rely on the resource.

- 14.33 This clearly isn't the case as trial pits 2 & 5 had water present in them as can clearly be seen in the photos above taken from the soil infiltration testing report in Appendix 11.6 (APP-087) Surface Water Drainage Strategy (pages 45 & 51). These photos were taken in March 2022 following a relatively dry winter when ground water levels would be expected to be below average.

**14.34 Carbon sequestration**

- 14.35 MPSF rightly points out *“soil condition can change over time. The general health of soils is influenced by many factors, including the Soil Organic Carbon levels within the soil. The British Society of Soil Science booklet “Soil Carbon” (2021) [Ref 12-7], reproduced in Appendix 12.7 (APP-094), explains that soils with a greater Soil Organic Carbon level have a more stable structure and are less prone to runoff and erosion, have greater water infiltration and penetration, increased biological activity and improved nutrient supply compared to similar soils with a smaller Soil Organic Carbon (SOC).”*

14.36 **That is why it is essential that the baseline is correctly set in terms of the handover from mainstream agriculture to development of the grassland.** There are no details to determine how Soil Organic Carbon (SOC) levels will be maximized in the period prior to construction e.g. straw incorporation, addition of organic matter.

14.37 A change in land management can increase soil organic carbon but the rate of increase slows over time as the equilibrium is attained. Carbon sequestration is fully reversible and a change back to agricultural practices after decommissioning will render all the gains reversed, and at a far faster rate than was accumulated. This needs to be factored into the carbon calculations.

#### 14.38 Conclusion

14.39 Natural England state in their Relevant Representation (RR-0823): *“It should be noted that whilst arable reversion to grassland has been shown to benefit Soil Organic Matter (SOM), this benefit will only extend to the duration of the reversion, i.e., during the operational phase and restricted to those areas of land currently under cultivation. However, there could be a disbenefit to the soil resource due to unknowns as a result of the solar development infrastructure. It is currently unclear as to what impact the solar panels may have on the soil properties such as carbon storage, structure and biodiversity. For example, as a result of changes in shading; temperature changes; preferential flow pathways; micro-climate; and vegetation growth caused by the panels. “*

Therefore, it is unknown what the overall impact of a temporary solar development will have on soil health.

## 15. FLOOD RISK

### 15.1 Summary

- 15.2 National policy in the NPPF and PPG requires that development should be made safe for its lifetime and not increase flood risk elsewhere. Flood risk encompasses risk to both people and property.
- 15.3 Some of the site falls within flood zones 3a and 3b. Whilst it is possible to install solar panels high off the ground or re-locate, it is not possible for existing residential properties within the site or in close proximity to mitigate additional risk caused by a development. This section will demonstrate the extent of the flooding currently and the reasons why we believe the development will heighten the risk.
- 15.4 Had MPSF conducted a sequential test during site selection they would have had to identify a suitable site area (including study area radius) that had the lowest flood risk. That has not been explored; there has been no acknowledgment of the impacts for Banthorpe Lodge, St Mary's Church and Castle at Essendine, and the village of Greatford which all flood regularly. Equally, a proper site selection exercise would have taken into account flood risk as one key material planning consideration. In those circumstances it plainly would be possible for development to be located in an area at lower risk of flooding and/or increasing flood risk elsewhere.
- 15.5 MPSF quote in Appendix 11.6 Surface Water Drainage Strategy (APP-087) that ***“the energy of the flow which drains from PV arrays will be greater than that of rainfall. Therefore, this could result in erosion under the dripline and possibly lead to ground instability.”*** MPAG has calculated soil infiltration needs to cope with **15.7 times more water than is currently the case. MPSP acknowledge the run-off could increase by 256%, an increase of 14,417 litres per second across the solar footprint.**
- 15.6 MPAG has calculated 6.3% of the area underneath the solar panels will receive 100% of the rainfall falling across the solar panels. The majority will fall via gravity underneath the drip lines, either able to infiltrate the soil or run off. MPSF's assumption, the same % of ground is available for infiltration as was the case before the panels were mounted, is flawed.
- 15.7 Soil type and level of compaction will determine where the water goes. It should be noted that much of the solar area is not on completely flat land and therefore once the ground is saturated it will run off into any available water course or downhill across the land.
- 15.8 MPSF make the assumption that ground water is at a depth below the mounting poles and they will have a negligible impact on groundwater flows. Soil pits dug in March 2022 clearly show the water levels would not be below the mounting poles which are piled to 2.5 m deep.
- 15.9 MPSF acknowledges that a suitable grass mix is required to aid permeability, and construction should not be carried out on saturated soils. What they don't acknowledge and factor in is that the grass should be established for 2 years before any construction commences and even soils that are semi-saturated should not be worked on.
- 15.10 This section seeks to demonstrate the current sensitivity of the area to flooding and the added risks arising as a result of the construction of a utility scale solar farm. MPSF focus primarily



on the on-site risks, whilst our concern is primarily the risks to residential properties in areas on the edges of the site but still within the study area.

15.11 There is a wealth of hands-on experience and knowledge to support our conclusions. The Flood Warden for Greatford (also a resident of over 40 years) has worked tirelessly over the last 10 years helping the Environment Agency and Local Flood Authorities understand the issues and try and find solutions. Limited resources means, whilst there has been some flood defence improvements, it is acknowledged they are not sufficiently robust in the event of extreme weather conditions.

**15.12 Accordingly, the scheme does not comply with national policy in relation to flood risk. This is a factor which counts against the scheme in the planning balance.**

15.13 This section is designed to explore the assumptions underpinning MPSF's flood risk assessment and the subsequent strategy to manage any flood risk. MPAG's basic premise is that water from the solar arrays will enter the drainage system more quickly than is currently the case, particularly when the ground is more saturated. Less of the soil surface area will be available to absorb the received rainfall. If this happens then the drainage water will run off more quickly into local rivers than is currently the case

**15.14** The policy framework is provided at a national level by the **NPPF at paras 153 – 169**. Increased risk of off-site flooding is specifically addressed in para 167 which requires that decision makers ***“should ensure that flood risk is not increased elsewhere”***. Planning Practice Guidance ID:7 provides further detail. ID:7-049-20220825 provides that ***“Where is it not possible to fully mitigate the impacts of development on flood risk elsewhere, now and in the future, the site-specific flood risk assessment will need to fully detail the extent and nature of the increase in risk and to assess its significance. This is likely to be a key consideration as to whether planning permission is granted”***.

#### **15.15 Testing**

15.16 No soil infiltration testing has been conducted other than at the site of the new substation. Therefore MPSF do not know what the limits are. In order to provide an accurate assessment of how the soil would react to the increased runoff from the panels MPSF should have deployed modelling tools applicable to this scenario and type of run-off, especially in the event that the soil is compacted. Modelling tools that could have been applied include Hydrology of Soil Types (HOST), and another is Winter Rain Acceptance Potential (WRAP), there is no evidence that any modelling for the water running off the panels has been undertaken and this is considered a major omission.

15.17 The baseline level of compaction is unknown. For MPSF to assume the effects from trafficking the whole site would be less than is currently the case is unlikely to be the case. Agricultural equipment runs in controlled traffic wheelings, uses low ground pressure equipment and is significantly lighter than the 80T equipment that will be required to position the shipping containers for the inverters and transformers.

#### **15.18 Testing the assumptions made by MPSF**

15.19 A number of key assumptions relating to flooding are set out in or arise from Appendix 11.6 Water Resources and Ground Conditions (APP-087). They are dealt with in turn below

## 15.20 Run-off rate

15.20.1 MPSF themselves state “the run off rate from the panels may increase by 14,147 litres per second across the footprint compared to the baseline, which would equate to an approximate 256% increase in runoff rates”.

15.20.2 ***“The energy of the flow which drains from PV Arrays will be greater than that of the rainfall. Therefore, this could result in erosion under the driplines and possibly lead to ground instability. In addition, intensification of the runoff from panels, along the ‘drip line’, into small channels / rivulets, could be exacerbated where PV Arrays are not positioned in alignment with topography.”*** Therefore MPSF clearly acknowledge the increased run-off rate.

15.20.3 MPAGs calculations are based on the following:

- 530,303 to be deployed across the site and a panel size of 2384mm x 1303mm (3.06m<sup>2</sup>) This panel size represents a mid-point in the range of panels offered by Canadian Solar. 530,303 panels x 3.06m<sup>2</sup> = 16,222,727m<sup>2</sup> which is 162.27Ha of the 420Ha of solar panel area
- The quoted design of the solar arrays means that each panel will drain from its lower edge which measures 1.303m, equaling 690,984m of drip lines.
- It is assumed the water will drip onto a 15cm wide strip of soil underneath the drip lines which equates to 0.195m<sup>2</sup> per panel.
- The area receiving the water from all of the panels will be 530,303 x 0.195m<sup>2</sup> = 103409 m<sup>2</sup> or 10.3Ha. Therefore 6.37% of the area underneath the solar panels will receive 100% of the rainfall falling onto the solar panels.
- This means that the soil beneath the drip lines needs to be able to cope with 15.75 times more water than is currently the case.

15.20.4 There is no data available for the infiltration rates of the soil types associated with the proposed development; however Food Agriculture Organisation (FAO) data suggests that clay loam soils have infiltration rates of 5 to 10mm of water per hour, and clay soils have infiltration rates of 1 to 5mm per hour. Most of the proposed site has been classed as medium clay loam, heavy clay loam or clay and will thus have a relatively low water infiltration rate. This will be even lower if the soil is compacted.

- Using the metric of 1mm of rain across an area of 1Ha being equivalent to 10m<sup>3</sup> of water (10,000 litres), the area covered with solar panels will receive a total of 1650m<sup>3</sup> of water for each millimetre of rain falling onto the solar panels of the proposed site.
- This 1mm of rainfall will be concentrated into 15.75mm of rainfall in the area below the drip lines.
- Using the higher FAO infiltration rate of 10mm per hour, it would take the soil 1 hour 34minutes to absorb 1mm of rainfall. In reality the soil below the drip lines would quickly become saturated and the excess water will start to move down slope towards drier soil, or if none is available over land.
- If we take a moderately wet day that led to significant flooding in Greatford such as 20/12/2020 when 12.9mm of rain fall was recorded, 12.9mm of rain across 162.27Ha of panels is 20,932m<sup>3</sup> of water.

- In this scenario the area underneath the drip lines would receive in the equivalent of 203mm of rainfall which would take over 20 hours to infiltrate at 10mm per hour. If a mid-point FAO infiltration rate of value of 5mm per hour were used than this would take more than 40 hours to infiltrate. With a very low infiltration rate, such as in a compacted clay soil, the infiltration rate can be as low as 1mm per hour, where it would take over a week to infiltrate the rainfall received during one wet day.
- In all of these scenarios a significant proportion of the water falling onto the panels and running off them would run to other (lower) areas with the potential to cause rilling and erosion, unless the water can be intercepted by appropriate and established vegetative cover.

## 15.21 Solar panel run-off characteristics

- 15.21.1 MPSF explain *“once rainfall has fallen on a PV array, the water will be able to spread and flow along the ground under the PV arrays evenly into the rain-shadow of the row below so as to mobilise the same percentage of the ground for infiltration as was available prior to the installation of the PV arrays.”*
- 15.21.2 Basic physics determines that water will move downwards under gravity and infiltrate into the soil at a rate defined by the (predominately clay) soil type and the level of compaction. It may move slightly sideways through capillary action. If it begins to flow along the ground under the PV arrays as suggested above, then it has the potential to cause erosion, rilling, and a loss of soil which will impact the local hydrology and wider ecosystem. This ultimately will lead to more rapid run-off and increase the risk of flooding vs the current baseline.
- 15.21.3 MPSF believe despite the water run-off being 256% higher, the vegetation under the drip lines will slow the transfer of run-off, and the “generally flat” topography will help the water flow more evenly. That can only be true if the soil is not compacted in the first place; vegetation (grassland) has been allowed to establish properly over 2 years and the land is flat, which is not the case.**
- 15.21.4 As the whole construction period is scheduled to be 2 years, the risk is corners will be cut to hit deadlines and this basic requirement will not be met.

## 15.22 Soil characteristics

- 15.22.1 It is a significant omission that MPSF has not undertaken a proper assessment of the soil infiltration capacities across the site, and restricted this work only to the area where they plan to build the substation.**
- 15.22.2 **There appears to be no evidence that any modeling for the water running off the panels has been undertaken.** In order to provide an accurate assessment of how the soil would react to the increased run-off from the panels, modeling tools should have been deployed applicable to this scenario and type of run-off, especially in the event that the soil is or becomes compacted in places. Those tools include Hydrology of Soil Types (HOST), and Winter Rain Acceptance Potential (WRAP).
- 15.22.3 In appendix 11.6 Water Resources and Ground Conditions (APP-087) MPSF claim “the baseline superficial geology cover is predominately clay soils overlain by a mix of superficial soils which are tilled or left as stubble for large parts of the year which is likely to limit infiltration and promote surface water runoff leading to concentrations of surface water

entering the surrounding hydrological network. The proposed grass and vegetation cover during the operational period of the Proposed Development is likely to generate lesser surface water runoff rates.”

15.22.4 With no soil infiltration rate testing this assumption has no real validity. If the land is in winter cropping it may be in stubble for a short period between harvest and drilling (the period will depend upon the following crop and could be a matter of days (for oil seed rape), a few weeks for winter barley, winter wheat, winter beans, or over winter if a spring sown crop is following. In the case of over-wintered stubbles infiltration should be adequate as the soil has been undisturbed and root channels can improve water infiltration. Also soils being worked at these times of year are generally dry and damage will be minimal as agricultural machines tend to operate at low ground pressures for the most part.

15.22.5 The grass and vegetation cover will only help control surface run-off if it is well established before installation of solar panels.

### 15.23 Grass management

15.23.1 Natural England TIN101 states:<sup>30</sup> ***“The key to avoiding increased run-off and soil into watercourses is to maintain soil permeability and vegetative cover. Permeable land surfaces underneath and between panels should be able to absorb rainfall as long as they are not compacted and there is some vegetation to bind the soil surface”.***

**15.23.2** MPSF acknowledge this statement and therefore claim ***“in order to avoid increased erosion rates, the grass beneath the panels would be well maintained throughout the lifetime of the Proposed Development.”***

15.23.3 ***“During the operational phase the likelihood of soil erosion occurring as a result of the Development is therefore assessed to be minimal. During the construction phase, unnecessary soil disturbance on saturated soils would be avoided in order to minimise soil compaction. As such the area under the drip line should be seeded with a suitable grass mix to prevent rilling and an increase in surface water run-off rates.”*** What they don’t give is any detail to demonstrate the how and what. i.e.

- What type of seed mix is to be used and when. MPSF just suggest using a ‘suitable’ grass seed mix but nothing more. MPAG believe for this type of operation it should be made up of hard wearing, shade & drought tolerant species such as creeping red fescue, meadow fescue, tall fescue, late perennial ryegrass (diploid) and white clover. These are generally slow growing species and should be established two years before construction commences.
- a clear strategy on how it will be maintained
- How long will the grass be allowed to establish, ensuring any prior compaction has been recognised and addressed.
- MPSF acknowledge that construction should not be carried out on saturated soils, however as a policy this is insufficient to prevent soil damage as it could allow

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<sup>30</sup> Natural England – Solar parks: maximising environmental benefits (TIN101) Sept 2011

construction up until the point of saturation. Trafficking semi-saturated soils will cause significant damage and create compaction, and all of the associated problems that compaction would create around soil water infiltration. There should be agreed metrics regarding soil moisture content and at what soil moisture content construction should cease so as to avoid damaging soils when they are too wet to be trafficked.

- MPSF assume that mitigation and enhancement planting will “increase the interception potential of surface water within the solar PV site”. This is only true if the planting is downhill from the solar area, and even then there are a number of fields which already have grassland margins as a baseline.
- Chapter 11 Water Resources and Ground Conditions (APP-041) states: ***“Land under the PV Arrays would be allowed to naturally vegetate and possibly be grazed by livestock. As vegetation becomes established under the PV Arrays there is likely to be a decrease in surface water runoff rates and a reduction in the potential for sediment and agricultural chemicals (e.g., phosphates and nitrates) to transfer into the wider hydrological catchment compared to the baseline scenario.”***

**There is no baseline data provided.** If run-off into water course is greater as demonstrated, then there is a risk of higher chemical run-off and sediment, whether from the panels or from chemicals applied to wash the panels.

## **15.24 Impact of mounting poles**

15.24.1 Appendix 11.3: Water Resources and Ground Conditions - Consultation Summary highlights (APP-084), PINS (Scoping opinion) raised questions about the effect of mounting poles being driven into the ground and the effect upon ground water, and the impacts of changes to surface runoff off the panel and impermeable ground coverings.

15.24.2 MPSF claimed that ground water was at a depth below lower limits of the mounting poles (2.5 metres). ***“Due to the overlying superficial geology across the Order Limits and absence of groundwater encountered within the trial pits for infiltration testing, groundwater is unlikely to be present at depths at which the PV Array racking system will be driven into the ground. As such, there is limited potential for effects, including cumulative effects, on groundwater resources and receptors which rely on the resource.”***

15.24.3 However photographs of the soil infiltration pits in para 14.31 as shown in Figure 32 (dug end March 2022 when the land was dry), clearly show ground water present, and at a depth that would be affected by mounting poles. **The issue of run-off has not been addressed in the response.**

## **15.25 Construction activities**

15.25.1 ***“The movement of construction traffic, in the absence of construction good practice, can lead to compaction of the soil. This can reduce soil permeability, potentially leading to increased run-off rates and increased erosion. The superficial geology underlying the Proposed Development is generally of low permeability and is in agricultural use, so the effects of compaction would not result in a substantial increase in runoff from existing conditions.”***

15.25.2 The first point MPSF make is very true, the second statement cannot be validated as there is no indication a soil penetrometer has or will be used. MPSF's baseline assumption is that agricultural soils are farmed badly and are suffering from compaction. Farmers take care to only work soils when they are dry enough, using controlled wheelings, and low ground pressure equipment. The type of compaction caused by construction machinery if the soils are wet is worse than that caused by agricultural machinery when the soils are dry.

## 15.26 Natural England feedback.

**15.26.1** *"Whilst the method proposed for the installation of the solar PV arrays does not involve any digging or soil mixing, there is the risk of soil damage due to trafficking, especially when the soils are wet. The physical loosening of compacted soils may only provide temporary alleviation, while actively damaging the soil's biological capability to recover and maintain its structure in the long-term, with frequent cultivation often a factor associated with poorly structured soils. Therefore, compaction should be avoided as far as possible in the first instance. Any decompaction or remediation activities should be done when the soils are in a suitably dry condition."*

15.26.2 A key mitigation measure to minimise the potential detrimental impact of construction activities on the soil resource is to ensure that the grass sward is fully established (i.e. no bare ground), prior to the installation of the panels and associated infrastructure. This should be specified in the Outline Soil Management Plan.

**15.26.3** It is clear that Natural England are in agreement with MPAG's view that in order to preserve soil functions such as infiltrating soil water adequately to prevent overland flow, and flood risks downstream off the site, the soil should be respected and prepared properly if the DCO is granted.

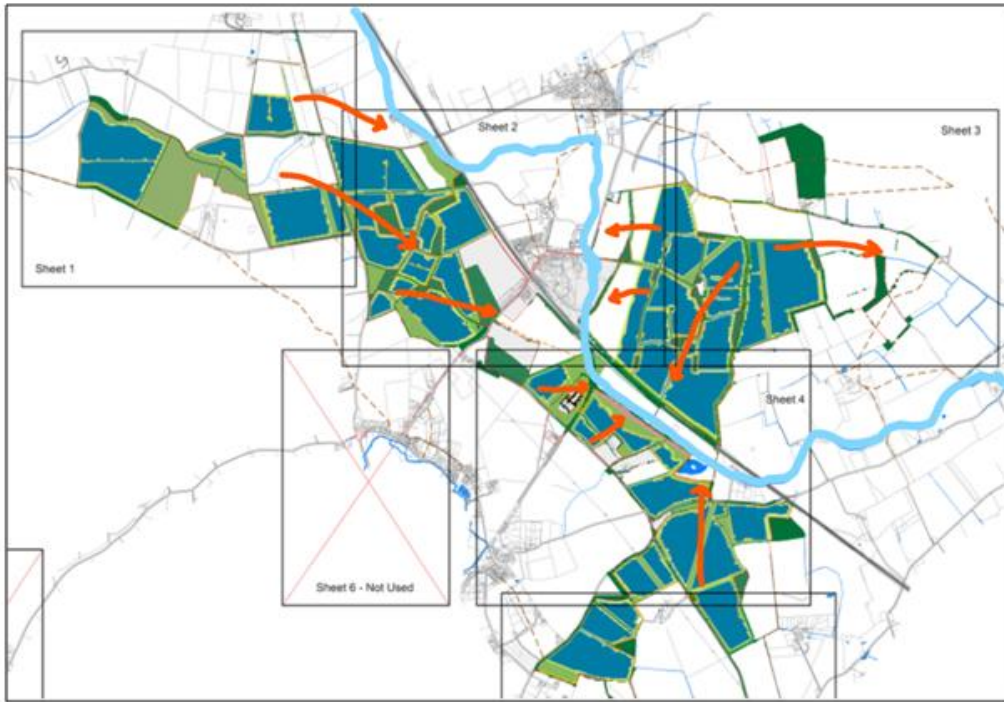
15.26.4 **This can only be achieved by establishing a suitable, hard wearing grass sward 2 years before any construction activities commence.** This will allow the soils to build the necessary resilience required to cope with the rigours of construction (provided construction is prohibited when soils are wet); and to be able to perform the changing functions it would be forced to undertake in terms of uneven water infiltration and preventing overland flows, erosion, siltation and downstream flooding.

## 15.27 Significance effect

*"Therefore, impact of compaction on soils of High Sensitivity is considered to be of Negligible Magnitude and therefore to have a Negligible significance of effect. This is considered Not Significant."* **This statement is incorrect**, the soils are classed as being of medium sensitivity, and the impact would be of significant magnitude and would definitely be of significant effect. It is not possible to drive on wet, clay based soils content without causing significant compaction.

## 15.28 Flooding Background & History

- 15.28.1 This section details the flood risk to the area around the proposed site for Mallard Pass Solar Farm across the Rutland-Lincolnshire border area on each side of the main north-south railway line at Essendine. There is already periodic flooding in areas within and around the proposed solar site, which would become more serious if such a site is constructed and operated for decades to come. Specific details and photos are included in this section.
- 15.28.2 The Environment Agency (EA) is responsible for flooding from rivers, while the county council Lead Local Flood Authorities (LLFAs) are responsible for surface flooding - in this case the Lincolnshire and Rutland County Councils (LCC & RCC).
- 15.28.3 Despite the obvious logic that increased (Pluvial) surface flooding would lead to increased water in rivers, leading in turn to increased (Fluvial) river flooding, the evidence which should be provided by the LCC LLFA and RCC LLFAs does not appear to reflect this; neither do the inputs seen to date from the EA.
- 15.28.4 The Greatford flood Warden has been a resident for 40 years and Flood Warden for 10 years, so has considerable experience and insight. He has had many discussions with Environment Agency (EA) officials while walking river banks, and discussing the issues; and read and commented on a number of EA studies and reports about the flood risk. Apart from the Greatford sluice being adjusted down to open 100mm lower from 1st Nov to end Mar each winter (at the Flood Warden's suggestion), there have been no significant changes at Greatford in recent years other than periodic maintenance of the Greatford and Fitzwilliam sluices and clearance of river banks, fallen trees, branches and other debris in the water.
- 15.28.5 After flooding in Greatford during Christmas 2012 and late Jan 2013, an EA study was carried out which led to the proposal for a large water storage area to be constructed in half of a large field immediately upstream of Greatford. However, at a projected cost of £1m, this was rejected on the basis of the cost-benefit ratio.
- 15.28.6 In the context of the proposed development, there has been relatively little written information seen from the EA, or the Rutland and Lincolnshire LLFAs about the flood risk associated with it, other than an acceptance of the Mallard Pass Flood Risk Assessment (FRA).
- 15.28.7 The vast area of Rutland and Lincolnshire countryside proposed for the Mallard Pass Solar Farm has 3 significant rivers:
- West Glen – this river has an existing flood problem, with periodic flooding to Essendine, Banthorpe, Shillingthorpe, Greatford, Wilsthorpe (merger of E&W Glens)
  - East Glen – a minor flood risk to Braceborough in one short section of when leaving Braceborough towards Wilsthorpe area.  
The West & East Glens combine to become the river Glen near Wilsthorpe, with extensive field flooding near the rivers junction south of Wilsthorpe.
  - Gwash – Ryhall flood risk was largely eliminated since the creation of Rutland Water during the late 1970s, with its dam and sluice control.



**Figure 34: MPSF Illustrative Development Layout(APP-009) with MPAG overlaying direction of surface water run-off**

### 15.28.8 Essendine Flood Risk

The area where the West Glen flows near the ancient church in Essendine is prone to serious flooding, as shown below:

#### Essendine Flooding





**15.28.9 Banthorpe Flood Risk**

15.28.10 A mile downstream of Essendine, the West Glen river flows along the south frontage of Banthorpe Lodge properties before passing under the main north-south railway line. The aerial photo below shows the impact of river overflow alongside these properties.

15.28.11 Banthorpe flooding aerial



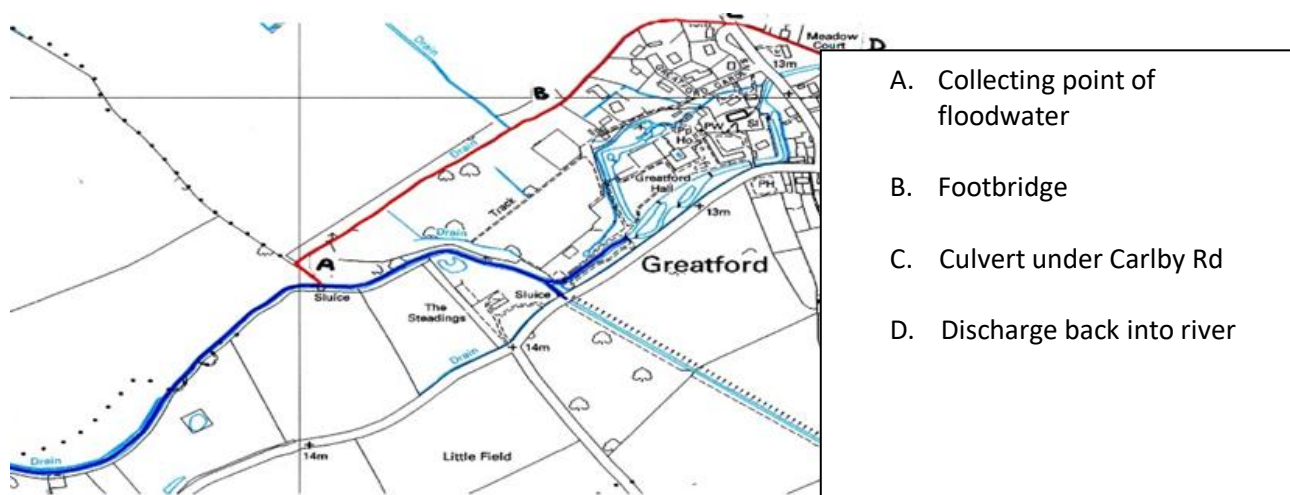
Banthorpe Lodge Properties, looking north-west along the railway line towards Essendine with its large white warehouse

**15.28.12 Greatford Flood Risk**

The West Glen River from the railway crossing (bottom left corner) to lower edge of Shillingthorpe park (left of centre) then Greatford (top right)  
Greatford has a long history of flooding, mainly caused by the re-routing of the river long ago (perhaps during the 1700s when the Greatford Watermill was constructed) to flow along the front gardens at Greatford Hall upstream of the mill.



Greatford Main Street Flooding 27Aug1912  
  
This flooding extended along the Main Street until 1956 when the Greatford Sluice was installed with an associated Cut to divert excess water to the Welland river near Market Deeping. Although the sluice and cut have been effective in reducing the overall flood risk, there continues to be periodic flooding in the area of Greatford Gardens where 14 properties were built in the early 1970s in a 5-acre field known to flood.



**Figure 35: Section of Environment Agency Easimap 31/01/2103 with Flood Warden mark-up**

First, the river overflows extensively in the area of Little Maidens and Shillingthorpe (upstream of Greatford), some of which continues across a large field from the south-west towards a collecting area at Point A on the map above.

Then the river overflows along the low riverbank of Greatford Hall between A and the Greatford Sluice.

From there it flows through the old Watercress beds in the now wooded area of Greatford Hall;

Once this area is saturated the flood water continues onwards in a sudden rush to surround several of the houses in Greatford Gardens. In parallel, the overflowing river water also flows into a small bypass stream shown in red on the map (the section A-B was probably the original river bed) which now continues around Greatford Gardens, thence back into the river at D just downstream of Greatford.

For monitoring purposes at Greatford, the EA gauging station half a mile upstream at Shillingthorpe provides the height of water in the West Glen:

- Flood Alert 1.18m
- Flood Warning 1.32m
- Actual flooding begins at around 1.37m.
- Highest recorded 1.56m (27Jan 2013)

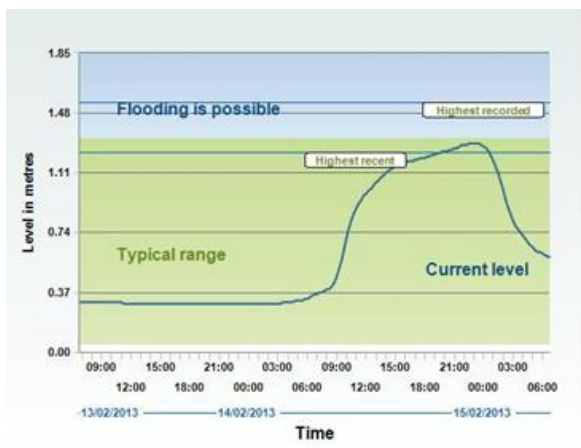
#### **15.28.13 Greatford Flooding Dates and River Heights**

Feb 1988	(height of river at the Shillingthorpe gauge unknown)
April 1998	c1.54m
Nov 2000	1.39m
21 Dec 2012	1.43m
27 Jan 2013	1.56m – the highest known height of river recorded
24 Dec 2020	1.55m
29 Jan 2021	1.44m

15.28.14 **Flood Alert 14 Feb 2013** - This section puts the flood risk at Greatford into context, by illustrating the already serious situation at around Flood Alert height. At higher levels it can be too dangerous to try to record the flooding in open countryside.

15.28.15 The following photo record along the riverbank was made when the height of the river at the Shillingthorpe gauge only around 1.18m - 1.20m). On other occasions heights of the river up to 1.56m have been recorded.

15.28.16 Note: When the Flood Warden started on 1st Feb 2013, it soon became clear that the figures being used by the EA for Flood Alert (1.32m) and Flood Warning (1.57m) were not representative of reality. Based on what he had learned by then, on 18th Feb 2013 the EA agreed to change these figures to Flood Alert 1.18m and Flood Warning 1.32m



**Figure 36: EA Online Check-for-flooding.service/station/6027 14/2/13(screenshot)**

These photos are included to show how the West Glen begins to overflow at a modest Flood Alert height, to begin its over-land progress towards properties in Greatford.



Looking upstream from Shillingthorpe Bridge with overflow into Shillingthorpe Park



River and secondary drain combined with rising water. Looking from field edge towards Steadings bank.



River and secondary drain combined with rising water. Looking from field edge towards Steadings bank.



Extensive overflow in this area towards Little Maidens

15.28.17 Of note for these photos, the height of the river at Shillingthorpe was then only at around Flood Alert height around 1.18m, yet the river overflow was along most of the West Glen between Little Maidens, and through Shillingthorpe towards Greatford. As listed below, the West Glen has reached much higher levels, sometimes at night, making it too dangerous to walk the area to record with photos.

**15.28.18 Flooding 12/13 Dec 2012**

15.28.19 Photos of flooding around Greatford houses





Continuing Christmas precautions after flooding 12/13Dec2012

The flooding over Christmas 2012, was followed by further flooding a month later on 27/28 Jan 2013, during which the height of the river at 1.56m was the highest known height of river recorded.

### 15.28.20 Christmas 2020

15.28.21 This section details the photo sequence of the flooding in Greatford during daylight on 24 Dec 2020. The flood water took three days to drain away. Then an identical situation took place again in the dark a month later overnight 28/29 Jan 2021, with similar depths of flooding which also took three days to drain away.

[Check for flood warnings in this area](#)

Latest recorded level **0.48m** at **9:30am Monday 28 December 2020.**

#### River levels at this location in the last 5 days

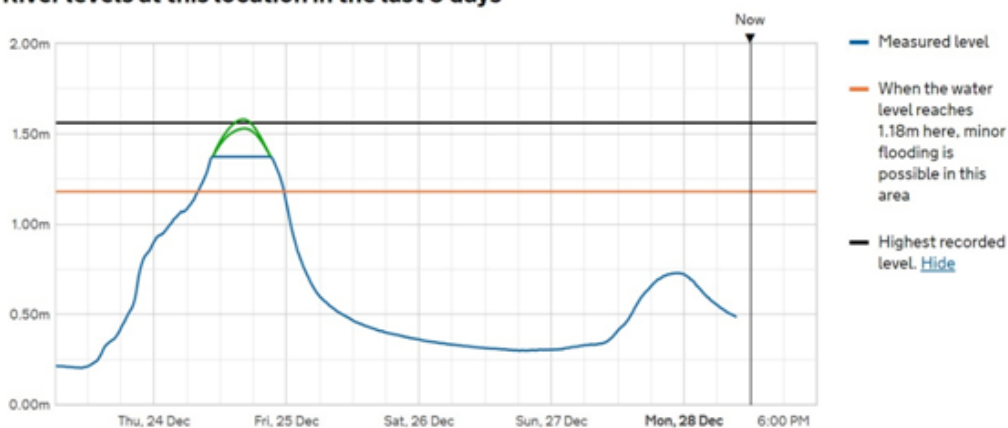


Figure 37: EA Online Check-for-flooding.service/station/6027 28/12/20 (screenshot)

- 15.28.22 As the gauge at Shillingthorpe flat-lined for a period indicating about 1.37m, projections in green by the author is based on historic river height curves at the Shillingthorpe Gauge. The actual peak height appears to be about 1.55m.
- 15.28.23 A similar horizontal line occurred at 1.37m - 1.39 m on three other occasions in Jan 2021, as below for the flooding on 29 Jan incorrectly indicating a constant 1.39m with no peak.
- 15.28.24 The flat-lining was caused by river water overflowing the container walls surrounding the measuring equipment at the Shillingthorpe gauge station. The sides of the gauge walls have since been built up to prevent this gauging problem in future.

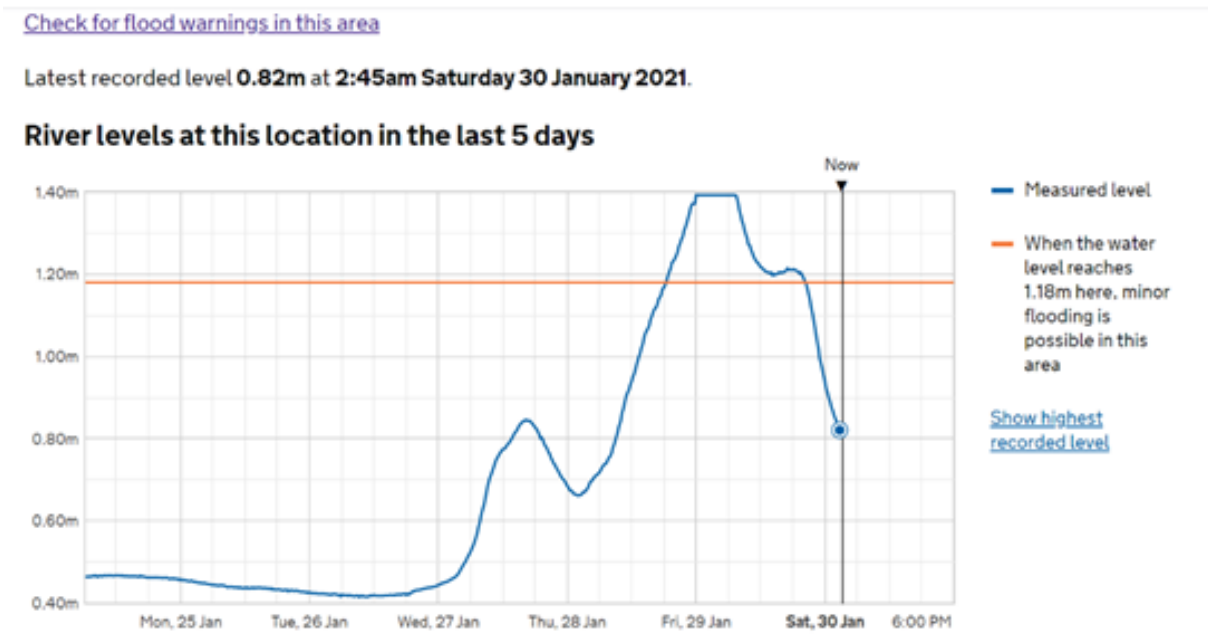


Figure 38: EA Online Check-for-flooding.service/station/6027 30/12/21 (screenshot)

**15.28.25 Photos of flooding during Christmas Eve 2020**



Flood water advancing towards the camera from the rear gates of Greatford Hall and up the private drive past 'Woodlands' house on the right. Once started the water progressed swiftly at walking speed.



Flooding to the rear properties in Greatford Gardens. (property owner photo with permission).



Water overflowing from the small watercourse (flowing left to right behind the large tree) into the garden of a property in Greatford Gardens. Christmas Eve pm 2020.



The junction of the small watercourse around Greatford Gardens with the drainage ditch alongside Carlby Road. The water is backing up against the brick front of the overloaded culvert under Carlby Rd (constructed 1837). The water height is above the flooded arch. Christmas 2020



Overflow from small watercourse in the Old Rectory stables area



Looking out across flooded drive of property in Greatford Gardens







Centre of Braceborough flooding, Christmas Eve 2020



North of Braceboro'-Wilsthorpe Rd; East Glen overflowing Braceboro'; East Glen bridge area Braceboro'

## 16. TRAFFIC & TRAVEL

### 16.1 Summary

16.2 The construction period of 2 years is a long one. During that period there will be significant issues relating to highway safety and more generally in relation to the suitability of the rural network to carry large numbers of additional HGV/LGV units. The way in which the traffic routing has had to be designed in the context of the rural network is a further demonstration of the unfavourable nature of the site for a utility-scale solar farm. In reality it will not be possible to enforce effectively the proposed traffic routing, but even if that is done the routing is anathema to a renewables energy project, being as inefficient as it is.

16.3 This factor counts against the proposal in the planning balance.

### 16.4 Introduction

16.5 Table 9.4 Summary of Effects of Chapter 9 Highways and Access (APP-039) acknowledges the value of most receptors as being HIGH, but concludes the impacts are negligible. It is clear the lack of local knowledge has resulted in a theoretical set of conclusions, rather than understanding the ‘real-life’ effects for those that live in and around the community. The fact this development takes 2 years to construct, in itself demonstrates the sheer size of it.

Table 9-4: Highways and Access -Summary of Effects

Description of Effect/Activity	Nature of Effect	Receptor	Value of Receptor	Embedded Mitigation Measures	Magnitude of Impact	Potential Significance of Effect	Additional Mitigation Measures	Residual Effect Significance	Monitoring Requirement
Construction Phase									
Severance	Adverse, Local, Temporary, Medium term	NMUs having to cross local road network	High	Adherence to routes, vehicle routing, (including internal routing) and measures within CTMP.	Negligible	Negligible (non-significant)	None	Negligible (non-significant)	None
Driver Delay	Adverse, Local, Temporary, Medium term	Drivers of motor vehicles	Low	Adherence to CTMP and improvements within the Order limits such as	Negligible	Negligible (non-significant)	None	Negligible (non-significant)	None
				passing places.					
Pedestrian Delay	Adverse, Local, Temporary, Medium term	NMUs using local highway network	High	Adherence to routes within CTMP and reductions in vehicles through consolidation	Negligible	Negligible (non-significant)	None	Negligible (non-significant)	None
Fear and Intimidation	Adverse, Local, Temporary, Medium term	NMUs using local highway network	High	Adherence to routes, vehicle routing, (including internal routing) and measures within CTMP	Negligible	Negligible (non-significant)	None	Negligible (non-significant)	None

Description of Effect/Activity	Nature of Effect	Receptor	Value of Receptor	Embedded Mitigation Measures	Magnitude of Impact	Potential Significance of Effect	Additional Mitigation Measures	Residual Effect Significance	Monitoring Requirement
Accidents and Safety	Adverse, Local, Temporary, Medium term	All receptors	High	Adherence to CTMP and improvements within the Order limits such as passing places.	Negligible	Negligible (non-significant)	None	Negligible (non-significant)	None

**Figure 39: Table 9-4 Highways and Access – Summary of Effects**

**16.6 Cumulative impact. There is significant concern about the combined effects of all the traffic restrictions and components that will be necessary during the 2 year construction process.**

Draft DCO schedule 4,5,6,7 and 8

- Street works for cable (Schedule 4) = 10 locations
- Permanent Alteration of street for access (Schedule 5) = 9 locations
- Temporary alteration of streets (Schedule 5)
- Passing places = 4
- Major street works = 2
- Ryhall junction with B1176 and A6121
- Great Caster ton junction with Old Great North Road
- ProW (Schedule 6) = 3 locations temporarily 'stopped up', namely E169 and 2 places on BrAW1/1 for temporary use of motor vehicles.
- Permanent access to the works (Schedule 7) = 10
- Temporary speed limits (Schedule 8) = 10
- Temporary road closures (Schedule 8) = 4
- Temporary traffic signals (Schedule 8) = 10

16.7 The site is made up of 8 construction compounds (including the Primary compound) and 9 Access locations. An 852Ha site represents 3.12 sq miles, therefore when you look at the cumulative impact of all the alterations and additions largely within that area, the impacts are felt north, south, east and west rendering it hugely disruptive to all forms of traffic (vehicle, pedestrian, rider, and cyclist).

16.8 There are a number of significant housing developments which if approved would substantially impact the area, in particular the Great Casterton junction with Old North Road.

**16.9 Access and Construction compound locations**

Some poor choices have been made

16.1.1 The construction compound associated with site access H.

- It is only catering for part of field 4 on the site. This solar area will make a tiny contribution as a proportion of the total solar area.
- Field 4 is cut off from other parts of the site by the B1176 4-way crossroads junction.
- The access is also problematical at the top of the hill with restricted views requiring additional road alterations to manage traffic to and from the site
- The compound itself is situated directly opposite residential properties at Barber's Hill showing no acknowledgment of the proximity to sensitive residential receptors.

- 16.1.2 There are 2 access locations either side of Main St next to BrAW1/1 on the Belmesthorpe/Greatford road. These 2 access points and construction compound are very close to Banthorpe lodge, a recognized heritage asset and the public bridleway.
- 16.1.3 Access point E on Carlby Road is to be moved from its current farm entrance a few yards down the road. Whilst the swept path analysis has identified a better turning angle on paper, it has failed to notice it is placing the access more into the oncoming bend in the road where the visibility is limited. Currently all types of agricultural traffic successfully manage to navigate the farm entrance, it seems unnecessary street works to make a new one.

#### **16.10 Traffic routes**

- 16.10.1 The plan is flawed as it assumes that all traffic will come from the West via the A1. If that is not the case and it comes from the East, there is no alternative plan.
- 16.10.2 Currently both LGV and HGV traffic cuts across country through villages where there are no traffic restrictions using more rural roads. When stopped and challenged, whilst they may have been asked to use a designated route, based on fuel costs, distance and time, the driver always seeks a quicker route.
- 16.10.3 Route 3 is so circuitous that the chance of HGV drivers adhering to this at the end of a long day is unlikely.
- 16.10.4 The assumption that LGV traffic will use the 3 routes equally again is flawed. Their sat nav will tell them the quickest route and that is what will be used.
- 16.10.5 The consequent effect of the above is that a far wider area of the LRN than is proposed will be used by all drivers with huge impacts for the local communities affected.

#### **16.11 Traffic activity**

- 16.11.1 Mallard Pass both assumes and provides no phasing of HGV traffic over the 2 years, unlike Sunnica Solar Farm and Cleve Hill. It states in the oCTMP “the number of vehicles generated will be consistent across the construction programme.” This is totally unrealistic, there will be different stages to the project which will require different transport types and frequency of trips. In order to correctly ascertain the forecast of 54 2-way HGV trips, surely there should be more data available to arrive at this conclusion, otherwise the reader has little confidence in the headline numbers.
- 16.11.2 The LGV peak traffic of 105 2-way trips seems very low when there could be up to 400 workers at peak.

#### **16.12 A6121 accidents**

There is an accident black spot on the bend of A6121 next to the junction to Uffington Lane. There have been some fatalities. The extent of the accidents are such that blue rumble strips have been added to try and slow cars down, they just seem to make the road more slippery. The increase in traffic at that junction turning right as they enter Uffington Lane and then right again as they leave it, will only increase the risks of accidents if the solar farm were to be

approved. To demonstrate no one is exempt, even a police car overturned on the bend, and they were not blue lighted at the time.



### **16.13 Passing places & LWS**

It is of concern that required passing places on Uffington Lane also coincide with Local Wildlife sites as illustrated in the oCTMP. It claims in the oCEMP verges will be re-instated, but the verges are categorized in some places as LWSs and therefore the biodiversity will be affected. There is no acknowledgement of how this will be managed.

### **16.14 Car Parks**

The oCTMP says the car park will be located initially within the primary compound, but may be relocated to other parts of the site. There is a potential gap between the number of car park spaces (150) and having upto a maximum of 400 workers on site. This is very vague and has implications in a number of areas.

### **16.15 Severance**

With so many traffic alterations and restrictions effectively many areas of the local community will be cut off from using normal routes and will have to go out of their way to avoid all the restrictions. That will be difficult as the restrictions and alterations run both across the east and west sides of the main arterial road, the A6121.

### **16.16 Driver delay**

As a result of speed limit reductions, temporary traffic lights and diversions in some cases, both the local community and wider rural communities will be affected heavily going about their daily business. Worst case scenario roads are likely to be closed to facilitate the installation of cabling, yet the impact is deemed negligible. Diversions could be quite long as so many areas of the site could be subject to closures unless the process is carefully phased. It seems unlikely the impacts for the roadside residents in Essendine can be mitigated if the Compulsory Acquisition rights are granted to run the cabling through the centre of the village.

### **16.17 Pedestrian delay**

There will be a challenge in particular for school children trying to navigate the various street works, with the possibility bus stops and pick-up points may have to be moved.

### **16.18 Pedestrian & Cyclist amenity**

Walkers and cyclists will have to think very carefully how they avoid the area which will be congested with street works and restrictions, leaving them few alternatives as the whole extent of the site and more becomes a 'no-go' zone. This should be extended to look at ProW amenity for horse riders as well, as 2 key bridleways used for walking, cycling and riding, will

be closed off due to vehicles traversing along a section of them. This leaves little alternative than for horse riders, in particular, to use the same roads as all the construction traffic. This is not just an amenity concern but a real safety concern.

**16.19 Fear and Intimidation**

It is possible some members of the community – older demographic, remote residents – feel exposed and vulnerable with the insurgence of up to 400 workers coming to a site which is potentially not their local area. The fear of damage, break-ins, typical construction behavior could easily intimidate and upset the local community.

**16.20 Accidents and Safety**

With so many street works and restrictions on A6121 through Essendine and along the B1176, dangerous junctions off the main A6121 and B1176 and at Great Casterton, it is inevitable there will be RTAs of some type. If both HGV and LGV traffic don't adhere to their travel window of 9-3, there is a serious risk for users of the 2 schools at Great Castert

## 17. NOISE & VIBRATION

- 17.1** Both noise and vibration are key concerns of the community especially given the long working hours and short distances from the site for many receptors. The subject is highly technical and complex and we are reliant upon the expertise of the Planning Inspector and other more qualified consultees to audit the data presented. Whilst MPSF seem confident of their findings and mitigation they clearly state *“Full details of the exact construction method, plant and duration for the Proposed Development are not available at this stage.”* It follows that MPSF are unable to fully assess all the impacts. It is therefore important for MPSF to clarify that the noise assessments have been conducted on a realistic worst case scenario.
- 17.2** Accordingly, allowance should be made for this uncertainty in the planning balance and this factor weighs against the proposal. At least some weight should be accorded to this consideration.
- 17.3** Areas for clarification
- 17.4** BS 5228-1 para 6.2<sup>31</sup> *“Whichever measure is used to describe environmental noise, it should always be made clear to which period of the day any particular value of the measure applies.”* This requires clarification in MPSF’s assessment.
- 17.5** MPSF assumes in Table 1 of Appendix 10.5 Noise Modeling (APP-081), and in all subsequent related noise calculations that “jacked-in piling” would be used. This is the ‘least noise’ method and, should contractors selected by MPSF choose to use an alternative method, noise levels would increase substantially. The noise levels for worst case should be supplied. It is hard to understand how piling frames 2.5m into the ground is the least noise method.
- 17.6** Over 530,000 solar panels are to be installed, a huge amount of pile driving per day. In reality this part of the construction will not be spread over 2 years, it will take place relatively early on in the process. That would require multiple equipment to be doing the same job at the same time, therefore has MPSF considered the cumulative noise impacts across the site?
- 17.7** MPSF undertakes to restrict piling to no more than two periods of four hours each with at least one hour of no piling when works are undertaken within 400m of residential properties. Residents would be subject to noise from piling for eight hours per day over an extended period of time. This is an unacceptable duration, especially for those residents residing at home during the day. There are a considerable number of households within 400m distance.
- 17.8** Can MPSF clarify the baseline for the distance from a residential property to the solar PV site? Is that to the edge of the solar PV site to the fencing, or to the start of a solar PV array or to where the inverters and transformers are placed? Some of the distances look incorrect.
- 17.9** MPSF proposes to provide a board on which residents can write comments about excess noise. This seems an inadequate method for residents to give feedback to contractors. The design and construction should be such to minimize noise impacts as far as possible. MPSF

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<sup>31</sup> BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites

should be required to set up a regular meeting with resident representatives to discuss all areas of concern.

- 17.10 Article 1 of the First Protocol to the Convention of the Human Rights Act 1998 protects the rights to peaceful enjoyment of possessions. This does not seem that it will be adhered to.
- 17.11 PRoW receptors are at least 50m from any central inverters and are located more than 800m from the On-site substation. The modeling results of Appendix 10.5 shows that operational noise levels would not exceed 50 dB LAeq, which is therefore clearly below a precautionary level. Making comments in relation to the precautionary level and concluding that PRoW are of medium sensitivity to noise and vibration, because users are passing through is misleading. PRoW's are used for leisure, relaxation, well-being and any significant noise negates the benefit of using the paths.
- 17.12 The PRoWs both identified are bridleways and whilst there is no firm policy or guidance for animals vs. humans, it is a safety concern that horses will be in such close proximity to this unusual noise. A horse does not experience noise in the same way humans do, and the tone and frequency may be more of an issue than the level of noise.
- 17.13 The permissive paths are positioned by MPSF as being a benefit to the community, but because the inverters and transformers are relatively close, along with the visual impact of solar panels, it renders them of minimal benefit or enjoyment to users.
- 17.14 Solar panels will have a 25 to 30 year life. The noise and vibration levels caused by the replacement of all of the panels, has not been assessed. This is a major omission.
- 17.15 Noise levels affecting residents appear to be have been forecast on the basis that residents are in their houses with the windows closed. Thus no account is taken for the impact of noise when, for example, residents are in their gardens during the warmer months and in bed at night with their windows open.
- 17.16 With an 852Ha site, the level of noise testing seems fairly basic in terms of locations chosen and the frequency. This need be re-evaluated to ensure it is fully representative across such a vast site.
- 17.17 It is concerning that the baseline methodology assumes low to moderate wind conditions. In parts of the site where it is very open and undulating the prevailing SW wind can have a significant impact on noise levels. The best example is the train line. It can be clearly heard up to 1.5 miles away, as it is a transient noise it is more acceptable.
- 17.18** MPSF state in Chapter 10 Noise and Vibration (APP-040) *“As the noise from the Onsite Substation is likely to include a tonal character which may be clearly audible (as a worst-case), a penalty of +4 dB is applied in accordance with BS 4142 (see Appendix 10.5). This potentially results in rated noise levels of 33 dB LAr which is similar to typical lowest background noise levels of at least 31 dB LA90 experienced at the closest dwellings identified during the daytime, resulting in a low impact.”*
- 17.19 That may be the case theoretically, but this constant tonal noise at night will be experienced very differently compared to the levels of daytime noise and could have serious implications



for the mental and physical health of residents affected. Had the substation been sited behind Freewards woodland, it would have provided both a natural sound and visual barrier.

17.20 Appendix 10.5 noise modeling: It is hard to see how the total sound power of 99 dB(A) for the onsite substation will be reduced down to 33 dB LAr over such a short distance to the residential receptor. Taking a similar distance from the inverters, the end resulting noise for receptors is not that different, but the starting point at source is much lower. How can that be the case?

17.21 Technology opportunities. If MPSF genuinely want to minimize the impacts on residents and there is technology available which reduces the dB of inverters by 3dB, why are they not considering using that technology across the whole site?

## 17.22 Reducing the impacts on the community

17.22.1 MPSF regularly refer to the terms '*Best Practicable Means (BPM) will be applied*' and '*as far as reasonably practicable*' during construction to reduce the impacts. In this case they apply it to noise and vibration at noise sensitive receptors, including neighbouring residential properties and other sensitive receptors. Is this tentative offer of pseudo mitigation good enough for a development of this scale? Does it just not demonstrate that the site is unsuitable in the first place?

17.22.2 This final design will be determined such that total rated noise levels (LAr), including the applicable character correction, do not exceed 35 dB at residential properties. This noise limit would apply to the total noise from the Onsite Substation and all solar PV plant (inverters, transformers and other ancillary plant).

On paper MPSF may meet the guidance criteria, but there is an opportunity to demonstrate to the community they intend to go 'over and above' to minimize the impacts by:

- Re-siting of the substation with better visual and noise screening.
- Monday to Friday working only with more frequent time-outs for noisy construction activity.

17.23 Vibration. Can MPSF assure ALL residents there will be no vibration impacts to any buildings adjacent to the site? The baseline assumption of 50% soft ground and 50% hard ground when piling and digging out surfaces may not be representative across the site. Some of the trial trenching activity clearly shows solid stone/rock only a few inches below the surface. Does BS5228 pay heed to the impact on older buildings, some without foundations, some sensitive to high vibration levels?

## 18. CULTURAL HERITAGE

### Heritage

#### 18.1 Summary

**18.2 Designated heritage assets are strongly protected by statute and national policy. They represent irreplaceable assets. The settings of assets can be central to their value and appreciation. National policy requires great weight to be given to any harm to designated heritage assets. Local policy reinforces the importance of that national policy. The unprecedented scale of the scheme will have important implications for the settings of designated heritage assets individually and on a cumulative basis, devaluing substantially the historic heritage of this deeply rural area. The local area is rich with designated heritage assets of outstanding quality. The significance of the collection of designated heritage assets in Stamford is hard to overstate, and should be recognized and protected from alien forms of development. The appreciation of the special architectural and historic interest in the area will be permanently and substantially negatively affected.**

**Accordingly, this factor weighs heavily against the Proposed Development in the planning balance. It must be accorded considerable importance and weight.**

#### 18.3 The statutory and policy framework

18.4 Regulation 3 of the Infrastructure Planning (Decisions) Regulations 2010 sets out the obligations on the SoS. It requires:

18.5 1) When deciding an application which affects a listed building or its setting, the Secretary of State must have regard to the desirability of preserving the listed building or its setting or any features of special architectural or historic interest which it possesses.

18.6 2) When deciding an application relating to a conservation area, the Secretary of State must have regard to the desirability of preserving or enhancing the character or appearance of that area.

18.7 3) When deciding an application for development consent which affects or is likely to affect a scheduled monument or its setting, the Secretary of State must have regard to the desirability of preserving the scheduled monument or its setting."

18.8 NPPF Para 199, which postdates EN-1, states: ***"When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance."***

18.9 Section 5.8 of EN-1 provides further guidance on the historic environment. By para 5.8.10 the applicant is required to ensure that ***"the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and supporting documents"***. Paras 5.8.12 – 5.8.15 provide further guidance reinforcing the need to protect heritage assets for the value they hold for this and future generations, as irreplaceable assets.

18.10 Section 5.9 of draft EN-1 2023 updates this guidance. Para 5.9.9 provides ***“Consideration will also need to be given to the possible impacts, including cumulative, on the wider historic environment”***. This obligation has particular resonance in the current application. Para 5.9.25 now reflects the NPPF guidance to give great weight to the conservation of designated heritage assets.

#### 18.11 MPSF’s assessment

18.12 First it is important to note that in LCC’s Relevant Representation (RR-0634) they state ***“LCC has serious concerns about the approach and conclusions made with regard to the impacts of this application on cultural heritage assets within Lincolnshire. It is our view that the approach taken has been dismissive and expresses a wholesale devaluation of cultural heritage and the submission does not meet the evidential requirements as set out in the relevant policy and guidance including Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Regulation 5 (2d)), National Planning Statement Policy EN1 (Section 5.8) and the National Planning Policy Framework.”***

18.13 MPAG considers there is no doubt that the sheer size of the proposed solar farm will cause harm to some heritage assets in a way that cannot be overcome.

18.14 MPSF claim in Chapter 8 Cultural Heritage (APP-038) : ***“Assumptions and Limitations: This assessment relies in part upon desk-based research which has utilised secondary information derived from a variety of sources. The assumption is made that this data, as well as that derived from secondary sources, can be assumed to be accurate, in so far as their own limitations will allow”***. How much on-site work actually took place to understand and establish what harms would be caused to heritage assets or their setting?

18.15 The NPPF makes it clear that the extent of the setting of a heritage asset ***‘is not fixed and may change as the asset and its surroundings evolve’*** (NPPF, Annex 2: Glossary). This is much the case for Essendine Castle and Banthorpe Lodge referred to later on in this chapter.

18.16 The historic character of a place is the group of qualities derived from its past uses that make it distinctive. That surely applies to how the proposed site would affect the truly historical characteristics of the market town of Stamford just 1 mile away.

18.17 MPSF state: ***“Whilst no designated heritage assets comprising Listed Buildings, Conservation Areas, Scheduled Monuments or Registered Parks are located within the Order limits, over 1000 Listed Buildings lie with 5km of the Order limits, many of these lying with historic centre of Stamford. 98 Listed Buildings lie within 1km of the Order limits, mostly within clusters within the villages (and sometimes Conservation Areas – see below) of Ryhall, Braceborough, Uffington, Little Casterton and Great Casterton.”***

18.18 A wider study area should have been adopted to capture heritage assets that may potentially be affected by the Proposed Development. Given the length of the site is 2/3rds the study area, that doesn’t leave much scope for assessing other important heritage asset and settings. Why were a number of scheduled monuments scoped out?

18.19 Para 8.2.9. ***“Within and just beyond 1km of the Order limits lay twelve Scheduled Monuments. The closest, Essendine Castle, is discussed below, however, the preliminary analysis also identified the following Scheduled Monuments, before being scoped out of***

***further detailed assessment. Roman Town and section of Roman Road near Great Casterton; the two Causewayed Camps west of Uffington village and south of Barholm; the deserted medieval settlement remains in Shillingthorpe Park; the prehistoric and Romano-British settlement remains east of Greatford (comprising four distinct scheduled areas); Castle Dyke moated site, northeast of Pickworth; and Carby Wood Camp, south-east of the village. “***

- 18.20 Why were they scoped out? Six Registered Parks and Gardens lie with 5km from the Order limits. MPSF suggests there are no meaningful historical associations or intervisibility between the Proposed Development and the following: ***“Greatford Park, Uffington Park, Burghley House, Exton Park, Holywell Hall Park, and Grimsthorpe Castle. Only Greatford Park and Uffington Park lie within 1km of the Order limits but over 1km from the Solar PV site, and for that reason they do not need to be assessed in further detail.”*** The focus by MPSF is on the intervisibility rather than the setting and importance of the historical asset relative to the solar PV site. Burghley House can probably be regarded as the most significant historical tourism asset in the area. Aligned with the historic Georgian market town of Stamford, their combined importance only serves to illustrate how damaging such an industrial scale solar park would be to the area given the proximity.
- 18.21 The settings assessment within the Appendix 8.4 Cultural Heritage Impact Assessment (APP-068) presents a detailed assessment of a selection of proximate heritage assets. These comprise: Essendine castle and Grade 2 listed church of St Mary’s; Banthorpe Lodge.
- ***“The Scheduled Monument of Essendine Castle is located c. 60m to the west of the Order limits. Essendine Castle moated manorial site is one of the most impressive of its kind in Leicestershire, with its exceptionally large ditches and pronounced inner banks indicating the defensive nature of the location [Ref 8-6]. The surrounding landscape, including the Order limits may have once formed part of the estate or more likely, agricultural hinterland of Essendine Castle. These assets are of high importance, with their values deriving from the evidential, historical, aesthetic and communal components embodied within their physical form. The assets are situated within an area of known medieval remains, including earthworks and cropmarks associated with the medieval village of Essendine, which represent a crucial aspect of their setting.”***
  - ***“The incorporation of Mitigation and Enhancement Areas within the north and north-eastern parts of the Order limits serves to maintain a degree of separation between the Proposed Development and surrounding designated heritage assets, including the Scheduled Essendine Castle and Grade II\* Listed Church of St. Mary, and Grade II Listed Banthorpe Lodge. “***
- 18.22 That may be true for the inter-visibility for Essendine Castle & Church of St Mary, but the solar PV site envelops the village of Essendine and these significant heritage assets. It does not adequately answer the point about setting, which goes beyond mere intervisibility. It is absolutely plain that those seeking to appreciate these assets will be alive to the presence of a vast solar farm in close proximity to the assets, and that will negatively impact upon their significance.
- 18.23 ***“The Grade II Listed Banthorpe Lodge located c. 190m to the east of the Order limits. Banthorpe Lodge represents a heritage asset of medium importance, and draws its values from the evidential and historical components inherent in its physical form and fabric. The most important aspect of the asset’s setting is its immediate surroundings formed by***

*associated farm buildings and gardens, which represent its historical and functional context. The land within the Order limits forms part of the wider agricultural landscape surrounding the asset...”*

The solar panels on fields 49 and 53 will be clearly visible, and be very damaging to this heritage asset. There is no mitigation or separation between Banthorpe lodge, MPSF admits to not having visited the properties and therefore has not been properly able to assess the assets.

- 18.24** The overall consideration seems to more about whether there is intervisibility between the site and the asset, rather than looking at harm to the setting. MPSF has made the same floored assumptions with respect to the Conservation villages of Ryhall, Braceborough, Greatford and Uffington. **These conservation villages and their individual conservation assets takes much of their character from their rural hinterland, so an industrial development within the rural surroundings will constitute harm to that more extensive asset as well as any individually listed buildings within it. This key element of the “wider historic environment” and harm to its significance has, accordingly, been seriously understated if not entirely overlooked in reality.**
- 18.25 Para 8.3.1 *“Retained farmland and Mitigation and Enhancement Areas are proposed immediately surrounding the non-designated Braceborough Grange on Carlby Road, therefore reducing any visibility of the Proposed Development from the asset.”* Again this is not true. The proposed mitigation is a new tree line set back about 150m from Braceborough Grange which will take more than the 15 years quoted to provide some screening in summer and little in winter. It is adjacent to field 36 which is one of the largest on the site and has expansive views across to solar fields south of the railway line. Also the proposed tree line is **inappropriate mitigation** as previously this was a hedgerow field boundary.
- 18.26 Many of the local villages and Stamford town centre have conservation areas and historic buildings, some listed, some not. The placement of a solar plant in close proximity to these buildings and on such a large scale undermines the value and historical setting of the area.
- 18.27 **The sheer concentration and value of designated heritage assets in Stamford illustrates that cumulatively those assets have a broader setting which relates to the place as a whole. The nature and extent of the scheme will significantly undermine the architectural and historic importance of this wider historic environment.** The unique heritage of Stamford can be straightforwardly understood from the entries contained in the Stamford Town Council web pages “Stamford Buildings” and “Discover Stamford” which sketch out the rich history of the town and the wider importance of some of its designated heritage assets. The text of those pages is appended for ease of reference in **Appendix 13** of this report. This material serves to demonstrate the inadequacy of the analysis provided by MPSF in support of the Proposed Development.
- 18.28 Archaeology**
- 18.29 MPSF state *“Archaeological remains dating to the pre-historic period are in abundance within the Solar PV site and its surrounding area”*. This was very clear from the geophysical survey results and trial trenching surveys. What is not clear is why MPSF is giving so little credence to all of these remains, with no clear plan as to which areas are particularly sensitive and what mitigations are planned.

- Suspected Bronze Age barrow surviving as an outstanding monument in Field 35 which is in the centre of the Solar PV Site, therefore the landscape suggests that there has been considerable funerary activity.
- In the centre of the Solar PV Site, there is evidence of an Iron Age settlement in Fields 18 and 19- postholes, ditches, and a possible waterhole dating from the 5th century BC till the 2nd century BC.
- Further geophysical surveys required due to the presence of Roman occupation as a result of the discovery of a Roman male skeleton in a sarcophagus and artefacts dating from the 4th century AD in Field 36 (Figure 8.2: Asset 10) to the west of Braceborough plus more Roman artefacts found in Fields 24,26 and 29.

18.30 LCC has clearly articulated their concerns in their Relevant Representation (RR-0634) regarding the archaeological assessment. ***“Insufficient evaluation has been undertaken to allow for an understanding of the archaeological potential or to provide the basis for reasonable mitigation to deal with the impacts of this development.”***

***18.31 “Throughout the process we have advised on detailed specific requirements to provide a sufficient evidence base and therefore to allow for sufficient understanding of the site specific archaeological potential across the full extent of the proposed impact zone as is required by the NPPF, EIA Regulations and National Policy Statement EN-1. “***

18.32 The assessment has not been undertaken to the standard LCC would expect, the Cultural Heritage section was based upon only a limited amount of evaluation work and yet initially, when the application was lodged, it was presented as the complete and full understanding of the archaeological resource across the site.

18.33 Subsequent to LCC’s Relevant Representation (RR), a 2nd phase of trial trenching was declared as having taken place, the report submitted very late (11th May published on the portal), just before the Examination begun. This has not given any consultee or Interested Party time to fully assess the report data. Despite all the findings, there is no changes been made to Phase 1 trial trenching results.

**18.34** LCC were of the view in their RR that ***“further archaeological evaluation within the red line boundary is necessary to understand the extent, nature and significance of surviving archaeology so that appropriate mitigation can be determined.”*** It is not clear whether the 2nd phase results identified any details of specific mitigation required. **Overall It is felt that MPSF has paid ‘lip service’ to the assessment activity, this is also borne out by the fact they tried to scope Cultural Heritage out of the EIA.**

18.35 It is clear **MPSF is underestimating the impact this solar farm will have on the archaeology of the proposed site**. The Preliminary Environmental Impact Report (PEIR) states that ***“this form of proposed development has little effect on the disturbance of archaeological remains compared to the construction of foundations for residential developments or during the extraction of minerals”***, but there is no doubt that due to the sheer scale of the solar area and piles for 530,000 solar panels being driven into the ground 2.5m deep, that will undoubtedly cause irreparable damage to some archaeological remains.

18.36 The applicant also suggests modern ploughing techniques would cause more damage than an installation of solar arrays, yet typically ploughing only goes 8” deep, 14” max for sub-soiling. Most farmers use minimum cultivation techniques and direct drilling nowadays.

18.37 The archaeological trial trenching investigations comprised c210 2m x 50m trenches, excavated in September, October and November 2022. It is not clear from the documents which results are outstanding and how significant they might be in requiring alterations to the design of the scheme.

18.38 Whilst MPSF tries to assure us on the one hand that mitigation will solve most issues, it goes on to say....

- In para 6.7 Appendix 8.4 Cultural Heritage Impact Assessment: ***“the detailed design process will allow for important (specifically sensitive) buried archaeological remains to be protected from any form of disturbance. This will be achieved by the embedded measures set out within the outline Construction Environmental Management Plan such as localised use of ‘no-dig’ construction solutions such as ‘concrete or ballast shoes’ to avoid piling; and/or localised areas where the installation of PV Arrays (and other construction work) can be avoided altogether.”***
- In para 4.40 they state: ***“When the detailed design determines that ‘no-dig’ solutions are not viable or warranted small-scale and localised archaeological excavations will take place, to record the expected buried remains in advance of construction. These locations are more likely to be those where ground disturbance for the construction of the Onsite Substation and other infrastructure is proposed and where there is less flexibility in the design (regarding the specific location of the works or the required construction methods).”***

This seems very **dismissive**. If the mitigation is not possible, they will just proceed and records will be kept. This does not seem a satisfactory solution.

18.39 MPSF makes the following statements:

**18.39.1** Chapter 8 Cultural Heritage (APP-038) para 8.4.4 states ***“The overall footprint of development that has the potential to impact on buried archaeological remains (encompassing piling, topsoil stripping, cable trenching and foundation excavation) is anticipated to be very limited in extent (typically a fraction of a percent of the total Solar PV Site). With regard to piling, the quantity of displaced archaeological remains in the case of larger features such as ditches would be insignificant compared to that left undisturbed. For discrete or less robust buried features such as pits, post holes or stake holes, the probability that piles would be aligned in such a way that any more than a small percentage of the features would be affected is very low. As such, the magnitude of impact in the worst-case scenario upon archaeological remains (holding evidential and historic values) within the Solar PV Site, which are expected to be of no greater than Medium Importance, would be Low Adverse (via the loss of evidential value), resulting in a Minor Significance of Effect (not Significant)”***.

This conclusion was drawn based on interim results when the application was submitted, yet despite conducting a 2nd phase of testing, they declare none of their conclusions have changed.

**18.39.2** Para 8.4.5 states ***“During construction, impacts upon the proximate designated heritage assets and the non-designated Braceborough Grange would derive from the presence of***

*machinery, perimeter fencing and Temporary Construction Compounds, with other experiential impacts associated with noise and traffic within the Order limits and the surrounding road network. However, construction operations of this nature would be temporary and limited, resulting in No Impact and thus a Neutral Effect. “*

When it comes to heritage assets or archaeological remains, how can this kind of statement be acceptable?

- 18.39.3 Para 8.4.6 states *“The existing hedgerow boundaries, identified being of potential historical Importance, will be retained and there will therefore be No Impact upon these assets of Negligible Importance. Retention of these boundaries would serve to preserve the integrity of the current field system, resulting in No Impact on this Negligible Importance asset, and thus a Neutral Effect.”*

However there are some ‘important’ historic hedgerows that will be taken out as detailed in 2.5 Hedgerow Plans, so the above statement is not true.

- 18.39.4 Para 8.4.11 states *“In specific regard to the historic landscape character in so far as it forms part of the setting of the building (Braceborough Grange) , the Solar PV Site will retain elements of agricultural character for the duration of the operational phase, being managed as grassland and/or grazing.”*

Just by way of an example how can the historic landscape character retain an agricultural feel when it will be saturated with solar panels, fencing, CCTV and solar array infrastructure and ineffective and inappropriate mitigation in this instance?



## 19. BIODIVERSITY

### 19.1 Summary

**Any increase in biodiversity on the land as a result of the Proposed Development should be accorded limited weight in the planning balance. It is not a justification for a solar farm, let alone one of this scale. BNG is now a firm expectation of policy, and accordingly merely meeting policy does not command positive weight in the balance.**

The biodiversity assessments in the Application are inadequate. The impact report relies too heavily of local record data which is likely to underreport relevant sitings. The survey work is insufficient. Buffers and other mitigation are insufficient and too heavily qualified to ensure proper protection of protected species. The BNG calculation is not robust. It artificially removes woodland areas from the baseline. It does not provide any any adequate allowance for biodiversity harm that is likely to arise during an extended construction period. The baseline has been incorrectly assessed.

There is a clear risk to SSSI sites during construction, contrary to policy. Large sections of important historic hedgerows will be removed. The proposals fail adequately to avoid harm to biodiversity.

**The understanding of the effects of large-scale solar farming on biodiversity are still developing. Accordingly, a cautionary approach should be adopted, with avoidance of harm the preferred approach. Suggestions that no significant adverse impacts will arise should be carefully scrutinized.** The Proposed Development generates a risk of harm in relation to many species; including a significant risk of fragmentation.

Taking all of these points together, the proposed increase in biodiversity should be accorded neutral weight.

### 19.2 Background

Having sought the views of experienced and qualified ecologists and environmentalists we believe there are key weaknesses in MPSF's assessment, and therefore the baseline assessment is inadequate and unrepresentative and does not fully protect the ecology and environment.

### 19.3 Local Record data

Firstly the impact report relies heavily on local environmental record data, but it is well known records for common species in particular are often out-of-date or insufficient. Most of the land is cut off to members of the public, with only limited access via PRoWs, therefore reported sitings are likely to be highly limited.

### 19.4 Survey work

Secondly insufficient survey work has been undertaken and it has not been adequately focused. There appears to be a lack of survey for bats, newts, reptiles and harvest mice. Within the area there are a number of European and nationally protected species including great crested newts, harvest mice, red kites, otters, water voles, hares, bats, badgers, deer and a variety of flora. Some quantities of species found we know are on the low side based on

local knowledge of the area. That is no doubt down to the limited survey work, survey timing in some cases, and the sheer expanse of the huge site that has not been covered properly.

## 19.5 Protected species

19.6 Why does the application not provide draft protected species licenses to demonstrate their 100% commitment to these important species? It shows a disregard for the important role they play in the environment, just to leave it until the conditions within the final DCO is concluded.

19.7 Buffers of just 30m are not sufficient for badgers and will cause disturbance.

19.8 Controls on lighting/illumination to minimise visual intrusion and potential adverse effects on sensitive ecology, such as bats, MPSF state will be considered ***“as far as reasonably practicable”***. **This statement is used many times across the documents (ref. oCEMP) and gives great cause for concern.**

## 19.9 Land Use

**19.10 To justify putting solar panels on arable land on the basis it is of ‘low ecological value’ and that it can be made to be of ‘higher ecological value’ is not a valid reason. Agricultural land’s prime use is to produce crops for feeding humans and animals, its remit is not to have the highest ecological value as that was never its intended purpose, and therefore a comparator should not be made.**

19.11 Ironically it looks like MPSF has realised that arable production is actually more important than 50% of the site being retained as grassland. Otherwise they would have just left the mitigation land all as grassland, and not continued with growing crops on 28% of the site. Fortuitously for MPSF it provides an opportunity to compensate for the loss of skylark habitats on the solar panel area, by providing new skylark areas on the arable land now removed from the mitigation area. Surely these points were apparent at Stage 1 consultation.

## 19.12 Biodiversity net gain

19.13 The scheme focuses on habitat creation, rather than the delivery of measurable long term ecological benefits and outcomes. If a large proportion of the gain is temporary, not only will that category not deliver a 10% BNG, but also it is not ecologically sound.

19.14 Habitat & hedgerow outcomes take many years to deliver the benefits. One of the challenges with the hedgerow and trees being planted is that the deer, having lost a lot of their habitat due to fencing, will consume as much new planting as they can access. Local experience has proven that to be the case.

19.15 MPSF assume they will be able to construct and deliver the project with no harms. Realistically a development that takes 2 years to build should build in a factor for damage/disturbance/removal of habitats when calculating the BNG%. Perfection is desirable, but not realistic or achievable.

19.16 MPSF assume no off-site loss or gains? Surely they will need to factor in the negative impact of damage from construction traffic, particularly on SSSi and LWSs?

**19.17 Habitat BNG:**

19.17.1 *Field Margins*: There are areas within the site which already have bio-diverse margins and are part of stewardship schemes e.g. field 10. The BNG baseline needs to take account that these margins exist rather than assume the whole area moves from arable to grassland.



North margin field 8 looking towards railway



Margin field 5. South east corner.



Field 20 by river towards Essendine



19.17.2 *Game cover crops*: these crops provide a mixture of rich bio-diversity and they are going to be ploughed in and replaced with less bio-diverse grassland for the solar panels. Has MPSF built this negative impact into their BNG calculation? The fields affected are believed to be 6, 8, 11, 15, 16, 22, 25 – many are marked with markers no doubt to confirm the different shooting locations.



Game cover - mix of spices planted



Game cover crop running alongside pond near railway bridleway. Field 25.

19.17.3 Habitat BNG could be as low as 0% or even negative as the land that started off as arable and/or a field margins will all be returned to arable after decommissioning and therefore there is no permanent benefit. Chapter 7 Ecology & Biodiversity (APP-037) para 7.5.16 confirms ***“At the decommissioning phase, certain habitats, such as the grassland areas underneath the PV Arrays, may be removed and returned to arable land resulting in an adverse effect of significance at up to District level. However, this adverse effect is likely to represent only a return to the pre- development baseline conditions within the Solar PV Site.”*** Therefore the gain is lost.

### 19.18 Hedgerows/Trees BNG

- 19.19 Given most of the site is surrounded by hedgerows of some description, where is there the room to accommodate 40% more on-site, consistent with local landscape character as the BNG claims?
- 19.20 The hedgerow BNG % looks strong at 40% but is misleading as it assumes there are no/few trees in the first place on the site. The order limits surround in excess of 20 areas of woodland, but yet MPSF have at final application stage left the tree blocks isolated within the order limits perimeter. The landowners seemingly retain responsibility but in many cases won't be farming any of the land adjacent to them and will need special access to look after them. If these woodland areas were part of the baseline, the % would look very different, much lower. If biodiversity is truly important MPSF should take full responsibility for all the land within the order limits outer perimeter, rather than leaving these tree blocks as isolated islands.

### 19.21 Overall BNG

Baseline units =  $1922.69 + 264 + 88.01 = 2274.70$

Post project =  $1922.69 + 371.81 + 88.01 = 2382.51$

% change =  $2382.51 / 2274.70 * 100 = 104.74\%$ .

### 19.22 Soil health

- 19.23 It will take time to establish mature grassland, yet there is a sense project timescales have taken precedence over delivering an effective biodiversity outcome. Looking after the soil health and ongoing fertility and improving carbon sequestration can only start to be achieved by avoiding soil compaction at the construction phase. That means the grassland needs time to establish before heavy vehicles run up and down all over the solar areas to erect the solar array frames.
- 19.24 If the soil is out of production for a long time it will affect soil fertility. Normally once the crops are harvested, farmers spread organic manure onto the fields, ready for them to then sub-soil the land. This process undoes any compaction from the year, and the mixed in organic manure adds extra structure (as well as nutrients) to the soil. This won't be able to happen once the fields are moved over to solar arrays and any construction damage is embedded. Successful growing of crops after decommissioning is highly unlikely as there will have been no sufficient way to protect the soil health. How does MPSF plan to look after the soil health during operation?

### 19.25 Unlimited time application

**Natural England stipulate that habitat enhanced or created for mandatory BNG must be secured, managed and maintained for at least 30 years and must achieve the distinctiveness and condition as intended. The unlimited time nature of the application creates additional uncertainty in this respect. If the life span of the solar farm were only to be 25 years (the length of the lease with landowners), how will the Order ensure that landowners are required to wait another 5 years before they can revert the land to arable land?**

### 19.26 SSSI

There are a number of SSSIs close to and within the site. During construction there is a high probability those SSSIs will be damaged in terms of the habitat and species living there or

close by. This is due to the level of HGV traffic, cabling activity, pollution and air quality impacts in those areas. **This is a strong indicator that harms to nationally protected assets will not be avoided by the use of this location at this scale.** It will not be possible to recover the damage caused to all habitat and species due to the unprecedented levels of disturbance, noise, dust and pollution down Uffington Lane with both a primary and secondary compound as well as new substation.

### 19.27 Hedgerow removal

There are a number of important historic hedgerows listed in Appendix 8.4 Cultural heritage (APP-068) that are affected by hedge removal in Part 2 2.5 Hedgerow plans (APP-012) in relation to accesses being created.

### 19.28 Effects of 'large scale' solar

- 19.28.1 The following is a summary of the impacts of solar farms on birds, bats and general ecology made by Chris Harrison, Huw Lloyd and Chris Field, Manchester Metropolitan University 2016, published by Natural England.
- 19.28.2 It is fair to say there is no peer reviewed experimental scientific evidence that exists relating solely to the ecological impacts of solar PV developments, however utility scale solar PV developments are likely to have a greater ecological impact than distributed scale developments due to their larger size and the requirement for new and extensive infrastructure.
- 19.28.3 With the largest site in the UK standing at just 220 acres, it is 1/10th of the size of Mallard Pass. It is located next to a UPM paper manufacturing plant which it supports. The ecological context for the development is entirely different to Mallard Pass which is set in a deeply rural environment. Therefore, the assumptions applied cannot be robustly extrapolated to a solar farm of this size. Extreme caution should be taken particularly in respect of species.**
- 19.28.4 Natural England has identified birds and bats as the taxa most urgently requiring an evidence base for potential impacts relating to solar PV developments.
- 19.28.5 Evidence from both the grey literature and the peer-reviewed scientific literature suggests that protected areas should be avoided when considering site selection of solar PV developments, with some sources suggesting that locations close to protected areas should be avoided as well. (This preference for avoidance of harm is entirely in line with national policy. But this will not be the case with Mallard Pass).
- 19.28.6 Solar panels have the capacity to reflect polarised light, which can attract polarotactic insects, which has the potential to impact their reproductive biology. The polarizing effect of solar panels may also induce drinking behaviour in some bird taxa, where the birds mistake the panels for water.
- 19.28.7 Birds and bats should be assessed by taxon or guild, with different behavioral traits and habitat requirements taken into consideration. The potential for solar developments to attract or repel birds or bats should be considered, alongside the potential for negative interactions to occur between these taxa and solar farms.

19.28.8 Future research should focus on examining the potential of solar PV developments to support biodiversity. The grey literature often refers to mitigation/enhancement practices such as wildflower meadow planting, hedgerow laying and tree planting with some grey literature studies attempting to quantify diversity on solar PV sites. These studies should be formalised and replicated within a scientific framework.

19.28.9 Governmental and non-governmental organisations that provide advice and guidance that may have ecological implications have a duty to contribute to evidence towards their guidance, especially where evidence is lacking. In the case of solar farms, there is almost no evidence and research into their ecological impacts is urgently needed. The potential ecological impacts of solar PV installations are poorly understood and there is a lack of coherent guidance in the UK for local planning authorities, statutory bodies, charities, non-governmental organisations, commercial enterprises and ecological consultancies to make informed decisions or provide advice on the potential ecological effects of new and existing solar PV developments.

**19.29 In the absence of clear peer reviewed research MPSF cannot confidently claim there will be no adverse ecological impacts, especially for large utility solar farms of this scale. Poor siting of large scale solar developments can result in ecologically adverse land-use change, including outside of protected areas where the removal or conversion of habitat providing contiguity and corridors between protected areas, may lead to habitat fragmentation.**

### **19.30 Construction impacts and concerns**

#### **19.30.1 Water vole**

- They are protected in the UK under the Wildlife and Countryside Act, 1981 and are a Priority Species under the UK Post-2010 Biodiversity Framework. Water voles are listed as endangered on both the Great Britain and the England Red List for Mammals. MPSF must take every measure possible to protect them.
- Survey results show water vole presence in the West Glen River that runs through the middle of the proposed development, they will also be present in the large pond/lake just south of this stream. Both areas are very close to proposed panel locations.
- MPSF may have to consider moving water vole off-site during construction to avoid potential contamination and also the impacts of HDD drilling under the West Glen. They could then be moved back once the work is finished.

#### **19.30.2 Badger**

- Badgers and their setts (tunnels and chambers where they live) are protected by the Protection of Badgers Act 1992 and 18 setts have been recorded although local people consider there may be many more not picked up due to the limited survey work over 852Ha of site.
- Machinery passing within 30m of a sett entrance increases the risk of damage & possible injury to badgers. Badgers will be affected by noise, lights, vibration, fires or chemical use. There is a real risk during piling activities they will be adversely affected.
- Their foraging & watering areas will be affected due to the many fencing corridors. They will be forced to change their habits, possibly forcing them to cross & use roads more which inevitably will lead to accidents. Failing that they will tunnel under the fences – their modus operandi locally has been to undermine a gas pipeline and shut off a local road due to subsidence of the road caused by the badger activity. Building activity

between dusk & dawn should be avoided as it will also disturb badgers as this is their main active period.

#### 19.30.3 Brown Hare

- They are protected in the UK under the Wildlife and Countryside Act, 1981 and are a Priority Species under the UK Post-2010 Biodiversity Framework.
- Habitats will be affected all year round, especially in early spring during breeding season. Leveret mortality is higher in areas they inhabit when machinery is active.
- Leverets are born between March & September.
- Their foraging & watering areas will be affected & along with the security fencing they will be forced to change their habits, either becoming trapped in a solar field or being forced to cross more roads where the fence finishes, again leading to more casualties.

#### 19.30.4 Deer, Fox, Rabbit & Small Mammals

- All mammals will suffer in a similar way to badger & hare, being displaced by fencing, constant disturbance from machinery, security lighting, destruction of their habitat, rutting stands, territory, foraging grounds. There does not appear to be any suitable mitigation to compensate for their loss of normal habitat.

### 19.31 Ground Nesting

The arable land proposed to be developed on is important habitat to ground nesting birds such as Skylark, Lapwing & Yellow Wagtail. Disturbance from proposed development will stop these red listed species from nesting in the area where nesting numbers are currently doing quite well.

#### 19.31.1 Skylark:

- MPSF state in Appendix 7.3 Ecology and Biodiversity (APP-061) ***“skylark, a species known to not breed within solar farms and an SPI will be adversely affected by the proposal in isolation. Their favoured habitat for nesting is crop between 20 & 50 centimetres high.”***
- The Skylark is fully protected under the Wildlife and Countryside Act 1981, which makes it an offence to kill, injure or take an adult skylark, or to take, damage or destroy an active nest or its contents. This rare protected species will not nest on any of the proposed development land whilst disruption from construction is going on. Nesting season April to August.
- **There is no mention of how many skylark plots per Ha of arable land. Also a better practice would be not to spray off as the reduced natural vegetation cover will reduce the opportunities for skylarks to forage for insects.**

#### 19.31.2 Lapwing:

- Classified in the UK as Red under the Birds of Conservation Concern 4: the Red List for Birds (2021). Priority Species under the UK Post-2010 Biodiversity Framework. Listed as Near Threatened on the global IUCN Red List of Threatened Species.
- Nesting season March to July.

#### 19.31.3 Yellow Wagtail:

- Classified in the UK as Red under the Birds of Conservation Concern 4: the Red List for Birds (2021). Priority Species under the UK Post-2010 Biodiversity Framework.

#### 19.31.4 Nesting

- Many of the species recorded are red listed and the many nesting areas within the proposed construction area would be disturbed during construction having a negative effect between the months of March & July. Species such as Barn Owl are known to nest all year round.

#### 19.32 Great crested newt & other amphibian & reptiles

MPSF has reported a GCN in 1 pond, although they have indicated they will request a license to allow works within 250m of the pond, this does not address the request by Natural England to conduct further survey work in 2022. Our local ecologist (resident) knows that GCNs have been seen in Essendine and Braceborough in ponds just 20m and 70m from the proposed development. The survey timing may have limited the opportunity to find them and crucially the work should not just have been conducted on-site, but should have taken in the wider area likely to be affected

Amphibians & reptiles will forage & over winter within the proposed site boundary & should be treated as present.

#### 19.33 Sheep grazing

If sheep were to be grazed, it would have to be strictly managed as sheep graze 'tightly' and could damage the biodiversity in the grassland, especially if they are allowed to graze at the wrong times of year.



## 20. DECOMMISSIONING

### 20.1 Time-unlimited application

Given the uncertainty around the life span of the development, is it sufficient and realistic, in generating a likely worst case, to have a baseline assumption for decommissioning of 40 years? There is a possibility the scheme could end after 25 years and the original leases with farmers (25 years) are not renewed, or that it continues to 40 years and beyond. **There are other considerations that need to be factored in:**

### 20.2 Replacement life cycle

What has not been factored into the plans is the replacement life cycle of panels and other electrical infrastructure like inverters. They are currently in the region of 25 and 15 years respectively and therefore would need to be replaced considerably in advance of the assumed lifespan. These impacts have not been factored into any assumptions or calculations.

Replacing the panels would be an expensive business and solar technology could well be out-of-date in 25 years. The DCO should provide and stipulate that as soon as the solar farm ceases operation, decommissioning has to be put in place and the site must not lay idle up to year 40. The provision should include a requirement the land should be restored sufficiently that it may be returned to its prior agricultural use within 12 months.

### 20.3 Returning the site to its prior nature

**The plan indicates not all infrastructure will be removed, in respect of cabling “only cabling on or near the surface” will be removed. This does not accord with returning the site to its former state.**

**The plan also indicates that landowners will be able to do as they wish with any green infrastructure put in place. Surely the point of the green infrastructure is to improve biodiversity and contribute towards Net Zero targets.**

### 20.4 Carbon impact

MPAG question whether the full carbon impact of decommissioning has been factored into the calculations i.e.

- Recycling of panels
- Reversal of grassland carbon sequestration back to the starting point before construction commenced
- Traffic & transport carbon emissions

### 20.5 Guaranteed Decommissioning Bond

There is no mention of any bond or fund to ensure the safe and timely decommissioning of the site. Given the operational life span uncertainty this needs to be a condition of the DCO and put in place upfront by the owner, not several years on into the operation as there is a risk not enough funds would accumulate if the site were to be decommissioned at 25 years. Restoring the land and the countryside to its former status is essential to protect food security in the longer term. The government’s Food Strategy document June 2022 is clear that “we will seek to broadly maintain the current level of food we produce domestically”. Since this report was published the food supply chain has exposed some fundamental weaknesses and it is more important than ever that the UK improves its own self-sufficiency in this respect.

20.6 **MPSF cannot state that decommissioning will return the site to its prior nature and use. It can only undertake to carry out the work in compliance with the Environmental Management Plan. MPSF itself appears unsure about its ability to do that saying it will be "*re-instated as far as possible*" (APP-209)**

## 21. CONSULTATION PROCESS

### 21.1 Summary

**The consultation process was substantially confusing and confused. It has compromised the ability of interested individuals to have a voice and to make representations likely to improve decision making. In any event, and more importantly, the responses provided demonstrate that if localism matters this proposal should not proceed: The communities are firmly against it, and have properly criticized many parts of MPSF's analysis. The absence of a sufficient process militates indirectly against the weight that can be given to features MPSF wishes to rely upon, because many will not have been as thoroughly tested as they ought to have been, through consultation in the public domain at an appropriately early phase.**

### 21.2 Submission

- 21.3 It is important to set the context of such a project. Grappling with the NSIP process is, as this examination amply demonstrates, entirely different to any member of the public from any previous experience they may have had in making representations to a local planning application. Here the NSIP process is raising all the complexities of a utility scale solar farm on a scale as never seen before. That means there needs to be great guidance and signposting to understand the implications of such an application, in order for the consultation process to inform the usual purposes of such a process: (1) To allow those consulted to meaningfully input on proposals whilst they remain at a stage where the consultation may shape what occurs; and (2) To facilitate such input so that the decision making process can be improved by the consultation.
- 21.4 Even if MPSF may be able to claim they have strictly ticked the statutory requirements of the consultation process, MPAG feels they have not facilitated the process in a meaningful way. It has been made an uphill struggle for residents in every respect. Had it not been for the team behind MPAG, the level of awareness and understanding of everything about the scheme and the process would have been woefully inadequate. Distribution and accessibility of information across all demographics, quality and accuracy of responses, speed of responses, overall the feedback is that MPSF has done the minimum they can get away with.
- 21.5 The community still wishes for their feedback to be heard and understood.
- 21.6 The level of response throughout Stage 1 consultation, Stage 2 Consultation and finally the registration of Interested Parties, demonstrates the strength of feeling in the local community.
- 21.6.1 **Stage 1: 978 responses.** The Consultation Summary Report published Feb '22 showed, of the public filling out the prescribed questionnaire (only 481 out of 978), 72% were against, 17% unsure and 11% in favour. At this early stage the public were just trying to familiarize themselves with the whole concept of a utility solar farm and an NSIP application process.

**Table 11: Total Amount of Feedback Received to the Stage One Non-Statutory Consultation**

Feedback Type	Breakdown	Amount Received
Feedback Form	Digital	418
	Hard copy (Freepost; Events; Scanned and submitted via email)	63
Communications Lines	Project inbox (Emails)	474 (incl. 7 late)
	Letters (Freepost address; Events)	7
	Freephone information line	16 (incl. 3 voicemails)
Total		<b>978</b>

**Figure 40 Stage 1 Consultation Responses**

- 21.6.2 **Stage 2 Consultation:** 1,097 responses were received. The outputs from the analysis were based on those recipients that filled out questionnaires only (only 304 of 1097). Had MPSF analysed the ‘for’ and ‘against’ responses from the emails, it is highly likely those ‘against’ would have been significantly higher.
- 21.6.3 **Registration of Interested parties:** 1206 responses were made with 95.7% against.

<b>Non-statutory registrations</b>		
For MPSF	36	3.0%
Against MPSF	1154	95.7%
Unsure	16	1.3%
	<b>1206</b>	<b>100.0%</b>

Figure 41: Registration of Interested Parties Responses

- 21.7 After 20 months of the NSIP process the level of opposition is unwavering and this needs to be properly factored into the decision as to the harm it will create in and amongst the local community. If the Government and its policy is intended to reflect and embrace principles of localism, the responses to the consultation process here, and the objections that have been made, there should be no room for doubt what the conclusion of the examination process should be.**
- 21.8 Distribution of consultation leaflet – complaints**
- 21.9 Some were never received within the consultation zone.
- 21.10 Some received late w/c 30th May instead of 26th May.
- 21.11 Raised concern with draft SoCC that the consultation zone was **poorly targeted**. The majority of the 13,000 distribution was to the town of Stamford, the residents who are least affected by the scheme. The remainder went mostly to villages adjacent to the site and not any further afield. Rural populations however are affected not just by the village they live in, but surrounding villages and countryside and therefore should have been consulted.

## **21.12 CAP venues**

- 21.13 MPSF did not fully research, understand or plan the role of the Community Access Points (CAPs), the biggest issue being opening hours of the 2 village halls. The facilities are kept locked unless there is an event or class going on, therefore documentation was not freely available to take away or look at. Hence why Essendine village hall was only able to commit to being open for 2 published slots, totally inadequate for a 10 week consultation. The village hall went out of their way however to facilitate better access as they were keen for residents to see more comprehensive information.
- 21.14 MPSF did not also appreciate or communicate to the CAP their expectations for making the PEIR available to be read (over 4000 pages). With over 10 large ring binder folders, space needed to be made to lay out the folders somewhere and not just leave it in a box. To be properly understood by the general public, it needed someone to explain what it was all about – but there was no briefing. In addition to the space needed for the PEIR, space was also needed to lay out the other consultation documents. For all 3 CAPs MPAG had to go and explain what was required of these facilities so that residents would have the best chance of accessing all the documents.
- 21.15 With the opening time issues, it was suggested by Ryhall village hall that Ryhall library would be a better venue, as it had longer opening hours and more space to lay out documents. This decision had to go through the village hall committee and Rutland County Council. Had MPSF planned better in advance they could have explored and sorted this option out, rather than the locals having to intervene. In addition Ryhall village hall and MPAG still had to keep an eye on literature levels and arrange for signage to direct residents across the road to the library.

## **21.16 Literature**

- 21.17 The Stage 2 A5 consultation leaflet itself was wholly inadequate to explain the depth of such a huge scheme. It was suggested to Mallard Pass they should be delivering the full A4 brochure rather than rely on residents to have to go to an event or a CAP if they wanted more physical information. This is a scheme being imposed by the developer, not something the community proactively has called for.
- 21.18 MPSF were asked to provide higher levels of literature continuously. There were repeated failed deliveries and only 50 of each item was supplied initially, despite being asked for a few thousand of the main A4 consultation brochure by a CAP at the beginning of the consultation. It always felt obstacles were being put in the way and nothing was made easy for residents. With a consultation zone of 13,000 residents, there should have been adequate planning for the consultation ensuring that significant levels of supporting literature were available from Day 1.
- 21.19 There were only 3 PEIRs made available in Essendine, Ryhall and Stamford locations, effectively forcing other villages to go further afield if they wanted to read some of it. Many of the demographic are old and don't drive, and are also not comfortable with navigating thousands of pages online. There were no proper accessible options made available for them.
- 21.20 There was no clear correlation between online PEIR files and the way the PEIR ring binders were put together. It made it extremely difficult to navigate between one to the other.

## 21.21 Consultation events

- 21.22 Whilst there was significantly more MPSF personnel attending stage 2 than stage 1, their level of knowledge of the proposal and materials was very poor. Many residents reported being dissatisfied and frustrated with the process, either not receiving answers or being given different answers to the same question by different people there.
- 21.23 The attitude from some (not all) MPSF staff was inappropriately aggressive at times, particularly Canadian Solar. Some residents also reported feeling uncomfortable with the way the 2 large intimidating security men tried to listen in on the conversations between residents. Also the security men were a little disproportionate in their actions at the Ryhall event which Alicia Kearns MP would be happy to elaborate on. The very fact MPSF thought they needed security personnel at the venues made residents feel uncomfortable and created a hostile environment – not a great way to build trust and empathy.
- 21.24 Timings. During the draft SoCC process MPSF were asked for more flexible event timings, to cater better for the working population and holidays. It was felt the final timetable was derived more to suit the needs of MPSF, rather than reaching the broadest population possible. The resulting outcome was that attendance could have been significantly higher.
- 21.25 MPAG held 6 village hall events the week after the Stage 2 Consultation events, as so many people were confused and had questions they wanted answered about the proposed development.

## 21.26 Feedback

- 21.27 One of the biggest complaints during pre-application was that residents were not getting answers to questions emailed in. During the consultation period residents needed those answers to better inform their consultation responses.
- 21.28 The same applied to webinars. At both webinars it was requested:
- 21.28.1 The recording was to be made available on their website immediately after the webinar - there were problems at Stage 1 consultation, this did happen at Stage 2 consultation with prompting.
- 21.28.2 A transcript was to be provided – this never happened. It is far easier for someone unable to attend a webinar to browse through a transcript than sit through 2 hours of a webinar recording.
- 21.28.3 Questions unanswered in the webinar were to be addressed promptly –
- 17th June webinar unanswered questions appeared 9th September
  - 5th July webinar unanswered questions appeared 22nd September
- 21.29 Response times throughout have been very poor with MPSF claiming they were/are overwhelmed by the amount of questions. That is not a good or sufficient reason for compromising residents' ability to understand the scheme. **The process should have been adequately resourced, because providing good consultation information was bound to be fundamental to informing residents' consultation responses.**

### **21.30 Section 42 (and 44) of the Planning Act**

- 21.31 It is questionable whether MPSF has diligently fulfilled their obligations with regard to contacting parties under Section 44 that are identified as meeting the condition of Category 1, 2 and 3. This was initially raised over concerns about residents who were believed to be Category 3, yet had not received the appropriate letter. This concern has grown further when cross-checking with residents supposed to have received category 1 and 2 letters as outlined in the Compulsory Acquisition section.
- 21.32 The importance of Category 3 was that a resident might be entitled to compensation under part 1 of the Land Compensation Act 1973.
- 21.33 Subsequent interrogation of the Consultation Report App 9-13 (APP-029) consultation documents reveals the Category 3 letter was sent out on 15th June. Checking the consultees (p336 onwards) on that date, 17 have been redacted leaving only 4 individuals on the list. Therefore an expectation was set with residents, only to be rescinded down track in the application documents, but never re-communicated with residents to explain why they were no longer considered a Category 3 person. (I suspect the same is true of some Category 1 and 2 letters that went out).
- 21.34 MPAG Consultation response dated 1st August asked the following question of MPSF and never received a reply: "We would ask that the Mallard Pass Action Group seek independent advice on behalf of residents we believe to be in Category 3, concerning the potential down track for residents to bring a claim of compensation. Given the solar farm application, if approved, is being imposed upon residents, we would ask that Mallard Pass pay for this independent advice. Please could you advise whether you will support this activity?" No response was ever received.
- 21.35 One resident received a Category 1 & 2 relating to land completely outside the scheme which made no sense. After questioning Ardent Land Management they never received a satisfactory response. The resident later suggested that more appropriately they might be a Category 3 resident and promptly received a letter. They have now received a Category 1& 2 letter pertaining to sub soil interests directly in front of their property, very different to the original letter.
- 21.36 Understandably the way this has been handled has been very confusing for residents.

## 22. COMMUNITY BENEFITS (and Impacts)

- 22.1 MPAG can attest that the community feels strongly there are no tangible community benefits that will compensate or mitigate the impacts of the proposed scheme. This factor should be given no or little weight in the overall planning balance.
- 22.2 SKDC's Local plan 2011-2035 Policy RE1 states that proposals for renewable energy generation will be supported subject to meeting the detailed criteria set out in the accompanying Renewable Energy Appendix 3 .... *"that the proposal can demonstrate the support of affected local communities."* That is most certainly not the case. 2,400 people have signed a paper petition trying to stop the solar farm going ahead; 1206 people recently registered a Relevant Representation with the Planning Inspectorate with 95.7% opposing the proposed development.
- 22.3 Much of the marketing literature has been misleading, representing every facet of the project through rose tinted glasses.
- 22.4 Brochures talked about powering 92,000 homes and low cost energy generation, the reality is this energy going into the grid could supply anywhere in the country and it won't power 92,000 homes as demonstrated in the section 7 and 8. If it was for the local region it would more than likely be cabled straight into the local distribution network. There is no possibility of cheaper energy tariffs for local residents, as the price of energy is determined by the global wholesale price of gas. We have all seen in this last year, irrespective of the cost to produce the energy, the market price has been determined by other variables, notably the war between Russia and Ukraine. So long as the UK is unable to decouple them self from the way energy is priced globally, consumers will see no benefit.
- 22.5 The construction of the solar farm, due to its industrial nature, is likely to affect the value and desirability of some properties, depending on proximity to the solar panels. Residents should not suffer any financial losses as a result of this development.
- 22.6 MPSF are keen to stress no PRoWs will be removed and they have an additional 4 permissive paths. What is not understood by them at all is that locals can see no pleasure in walking on any PRoW that has 3.3 m high solar panels/infrastructure/fencing/CCTV adjacent to a path. The sense of peace, tranquility and well-being of walking in amongst beautiful rolling countryside, watching the seasons and harvest go by, will be completely lost.
- 22.7 In the same vein erecting Interpretation boards all over the site shows no understanding of what is important to locals. The people that enjoy the PRoWs **do not want** to turn the area into some kind of commercial entity. Its beauty is in its simplicity.
- 22.8 There is no evidence that LPAs will receive full funding to recover the costs of damage incurred to council infrastructure and the environment during the construction process.
- 22.9 The whole premise of this project for Windel and Canadian Solar is based on you receiving a significant return on your investment. Yet there is no offer of any Community Benefit Fund to compensate for the negative impacts this project will have on the local community.



## 22.10 Trust and credibility

- 22.11 Part of this process should have been about building up trust and confidence with the local community, but that has been seriously lacking, and is having a knock-on effect on some resident's mental health and well-being.
- 22.12 Communication with MPSF has been a challenge throughout with residents either getting no response, a slow response, or their questions not being satisfactorily answered.
- 22.13 That a project investing £250m delivering 350MW max rated capacity can start out using 570Ha, 6 months later can deliver the same output using 463Ha and finally at application 426Ha, inevitably raises questions about the creditability of MPSF. It would have been better understood had the max rated capacity also reduced at the same time as the land required.
- 22.14 The same can be said about the battery storage being included in Stage 1 proposals but removed from Stage 2 and may be introduced 'at a later date'. The benefits of an integrated approach on this issue are well understood, and the applicant's approach appears at odds with Government policy in that respect. Gary Toomey admitted in the webinar that even if Mallard Pass don't introduce it, someone else possibly will (and via the back door through local planning). A potentially key element of the proposal has been left in an unsatisfactory state of confusion. The public feel they have been misled. Whilst residents don't want battery storage for safety reasons, without it MPSF cannot provide the stability and reliability the grid need at key times of need.
- 22.15 350MW output is the maximum output that could be achieved when the solar plant is at its most efficient. On average across a year it only has a plant load factor of 10%, a third of wind power. Perhaps some transparency on this would have been helpful in the core consultation leaflet and document.
- 22.16 The stage 2 consultation document did not represent the reality of the project through construction, operation and decommissioning. There was just 1 picture of some solar panels (no other associated equipment) a sketchy hand-drawn map of the site and a high degree of what is felt to be marketing rhetoric about green credentials.
- 22.17 Residents are skeptical about the decommissioning, whether it would ever take place and how the funding to do this would be protected.
- 22.18 Negative reporting on human rights issues in the supply chain of Canadian Solar does not sit comfortably with the community. It should not sit comfortably with the Government.

## 22.19 Mental & physical well-being

**All the issues raised in this Written Representation have been causing upset and anxiety for residents, affecting peoples' mental health and well-being.** Not all residents will share the same concerns, but the combined impact of some of the issues just heightens the impact for them. It is totally understandable given the unprecedented scale of the proposed development how people feel. It is important for the community to feel their voice has been heard and listened to.

It is hard to portray in a few words the strength of feeling amongst the local community, but MPAG are sure it would have been apparent had MPSF shared the Stage 2 consultation responses in full with the ExA. MPAG were copied in on over 400 responses ourselves and held numerous village meetings to talk to residents, so we have a fairly comprehensive understanding of all the points residents raised. Continued feedback helps inform and shape our knowledge and understanding.

**This is not a short term impact just due to construction issues, but a long term concern affecting the rest of peoples' lives and next generation of their families, so long as they continue to live in the area. The harm is so great in this respect that it should not be underplayed in the examination process or in the planning balance.**

## 23. SOCIO-ECONOMICS

### 23.1 Summary

**The case is unproven and highly likely to be overstated. It should be accorded minimal weight on the planning balance.**

### 23.2 Assessment of impacts

**MPSF state in Chapter 14 Socio Economics that their approach to the socio-economic assessment is based on professional experience and best practice. To date there is no experience in the UK of the impacts of such a large scale project. MPSF uses 8 times more land than the largest installed solar farm in the UK and in a very different location. MPSF is rural, whilst, as discussed above, Shotwick Park is next to a paper mill to which it supplies its energy. There is no convincing basis for extrapolating from one case to the other. There is no basis to assume key assumptions made by MPSF in this respect are robust.**

23.3 They state the assessment should consider **all relevant impacts**, including:

23.3.1 **The creation of jobs and training opportunities** - This is likely to be very limited.

23.3.2 **The provision of additional local services and improvements to local infrastructure**, including the provision of educational and visitor facilities. There are 2 separate points in this respect.

- Rural economies always need more support and helping to make improvements to local infrastructure especially when the whole construction will have such a negative impact on it. There are no suggestions or offers of infrastructure improvements from MPSF.
- Secondly the area of the site would not be suitable for educational facilities and educational boards as this would commercialise what is a quiet tranquil rural area. The attraction for visitors (and locals) is the lack of commercialisation. There are plenty of other visitor attractions locally they can enjoy whilst staying in this peaceful rural area.

23.3.3 **Effects on tourism** – see below.

23.3.4 **The impact of a changing influx of workers during the different construction, operation and decommissioning phases of energy infrastructure.** Having up to 400 workers on site is not a welcome prospect for the local community with the consequent effects of traffic, noise, disruption, and damage to the local environment.

23.3.5 **The cumulative socio-economic impacts or consenting a number of projects within the area which could be delivered in a similar timeframe and Cumulative effects.** There is a high level of concern about the likely number of housing projects being constructed in and around Stamford at the same time (over 3000 new homes for a population of 22,000). This will put immense pressure on the road network as there are limited suitable routes to use. If approved they will all use the same 'pinch point' through Great Casterton, the only recommended route in for MPSF HGV transport.

23.3.6 **The contribution to the development to low carbon economies.** In theory it should contribute to the low carbon economy, but very little of the financial benefit will be realised by the local community. Canadian Solar is not a UK company and most of the profits will be

retained by them. In terms of low carbon credentials, the development will take significantly longer to displace the carbon emissions than has been calculated by MPSF. Their estimate of 10.5 years rises to a more realistic 18-24 years, explained in the Net Zero section of this report.

23.3.7 **Any direct beneficial impacts for the region hosting the infrastructure, in particular in relation to the use of local support services and supply chains.** There is unlikely to be any benefits for local businesses in the area as the workers will no doubt be contracted in from another area and stay on-site all day and then leave. Working 12 hour days they will want to return home

**23.4** Chapter 14 Socio-Economics (APP-044) also states *“Potential adverse effects may arise from impacts on the tourism economy, including the operation of nearby attractions and accommodation providers, as well as users of the PRow network. During the construction and decommissioning phases effects on tourism and recreation could arise from noise, visual and air quality effects of construction, whilst during the operational phase the effects are more associated with the visual impact of the Proposed Development.”*

This would absolutely be the case, and these impacts should not be underestimated. The impacts won't just be restricted to the construction phase, it will also have a knock on effect once in operation. Why would any tourist want to book accommodation in an area blighted by solar panels, unless they needed accommodation purely for business purposes?

23.5 AirBnB accommodation is on the increase as it gives homeowners the flexibility to top up their income when it suits, as and when they have the space and time to host. The presence of the solar farm will inhibit the development of pure tourism by hosts and also the return rate of previous existing customers. If people come to enjoy the local area which includes using the PRowS, they will struggle to escape the impacts if they plan to use them in the vicinity of the Order limits. **Appendix 14** lists provides a good cross section of some of the local accommodation in the local rural area that could be impacted, it is not inconsiderable.

23.6 MPSF alludes to up to 50% of the workforce being supplied by the local area as a justification of the project's contribution to the local area. This depends on the definition of local area. From our perspective the local area is made up of rural population largely and the demographic does not lend itself to providing the workforce for the construction phase. This is highly likely to be sub-contracted from outside the area, bringing more noise, traffic and disruption. Below are the headline demographics which reinforce why 50% employment from the area is highly unlikely. **Appendix 15** provides the details.

- More economically inactive
- Lower unemployment
- Older population than average
- Few manufacturing operations in the area
- Higher socio-economic classification
- More highly qualified labour less suited to a construction site

23.7 The construction employment is only **temporary** it cannot be deemed as a benefit to the project, in the same way the Applicant tries to dispel the negative impacts of all the construction activities as only being temporary.

23.8 In terms of operation, the impacts are likely to be neutral. There will be employment and income lost through the supply chain activities of all the agricultural farming activities, in the same way there will be employment and income gains from managing the solar farm in operation.

## 24. INFRASTRUCTURE PROTOCOL, SECURITY and SUPPLY CHAIN ISSUES

### 24.1 Summary

**It is important that a project on this scale should not be granted consent unless the decision maker is satisfied it is in capable hands and it is deliverable. If not, it will not be effective. It will also risk skewing the regional and potentially national picture in terms of other schemes which are under consideration, because decision making here will doubtless be referred to and potentially applied elsewhere in seeking consistent decision making.**

**In considering whether something is properly deliverable it is legitimate to consider the application of the Human Rights Act 1998 provisions both to those who stand to be adversely affected by the proposed development, and those whose rights may not be protected as a result of involvement with the project.**

**MPAG has no direct knowledge on these matters, but draws attention to certain facts on record raising concerns about the effective delivery, security and working practices of the Applicant in respect of the Proposed Development.**

- 24.2 To date, Windel Energy Limited has not completed any renewable projects.
- 24.3 Although the specific shareholding is not given, the share structure of MPSF gives control of the company to CS UK II Limited with Windel Energy Limited being a minority shareholder.
- 24.4 If the project reaches the ready-to-build stage all of the shares held by Windel Energy Limited are likely to be transferred to Canadian Solar. Therefore Canadian Solar, a foreign company, will be responsible for all aspects concerning construction, operation and decommissioning.
- 24.5 This is a model used by Canadian Solar in other developments. For example, The Ballygarvey Solar Farm was developed by Elgin Energy and Canadian Solar. It was sold to Canadian Solar pre-construction. It was then sold to Next Energy Solar Fund in 2019.
- 24.6 It is possible that Mallard Pass will be sold on by Canadian Solar and will be a “flip” investment driven project with all the attendant problems often associated with such projects.
- 24.7 Canadian Solar is widely considered to be a “de facto” Chinese company and reportedly involved in some unacceptable labour practices. These are described in the written statement supplied to the Environmental Audit Committee<sup>32</sup> by Alicia Kearns MP - Chair of Foreign Relations Committee.
- 24.8 In an interview on BBC TV (19/03/23) regarding the banning of the Government of TikTok on Government phones, Oliver Downing, Secretary of State - Cabinet Office, said that there was a risk as the ultimate ownership of TikTok is in China and companies in China are subject to Chinese National Security laws, which means that information gained has to be shared with the Chinese Government.

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<sup>32</sup> Submission by Alicia Kearns to Environmental Audit Committee 11th January 2023 - Technological, Innovations and Climate Change. On-shore Solar Energy

The Government has been very concerned about the TikTok app and national security risks. Should it also carefully investigate the ownership of Mallard Pass? From a national security point of view should such a Company be involved in the development and operation of this NSIP that would supply power to the National Grid?

- 24.9 Given the level of public unease amongst the community, MPAG respectfully request in the interests of national security and for the protection of all human rights, that the ExA and the SoS fully review all these concerns and issues during the Examination process.

## 25. CUMULATIVE/COMBINED IMPACTS

- 25.1 It is important that in considering the harms arising from the Proposed Development they are not ultimately considered in isolation, but in their totality and the likely impacts both on the local community and more generally.
- 25.2 The harms that will or are likely to arise have been set out in previous sections of these submissions.
- 25.3 Further, in terms of cumulative effects, whilst MPAG does not have the resources to analyse the potential implications of the Proposed Development coming forward at a time when several other strategic developments are planning locally, these are matters we invite the Panel to bear firmly in mind, in particular in relation to the Land Use and Traffic and transport implications of the Proposed Development.
- 25.4 **The shortcomings that are apparent in many elements of MPSF's analysis logically lead to the conclusion that the cumulative impacts both across topic areas, and when this Proposed Development is placed alongside other proposed strategic development, are likely to have been substantially underestimated.**



## 26. PLANNING BALANCE

26.1 This section brings together with various parts of the planning balance discussed during the course of this Submission, substantially drawing on the Summaries that are contained in relation to those individual topic items.

### 26.2 Sheer scale and Alternatives (Sections 3 and 5)

26.3 The unprecedented nature of the scale of the proposed development means that proper alternative site consideration analysis was required as a matter of law. The lack of any time limit on the proposal simply exacerbates its negative effects temporally, so that they are to be treated as permanent. That demonstrates further the need to consider proper potential alternatives. That has patently not been undertaken. **No alternative sites have been considered.** Even if, which MPAG rejects, MPSF has done enough to comply with the law, as a matter of planning judgment this factor alone **weighs heavily** against the Proposed Development in the balance.

26.4 Further, **alternative technologies were not considered.** The reasons for rejecting, even *considering* those alternatives, are nonsensical. MPSF placed reliance on two main factors; one was the need for community support, which has plainly not been forthcoming. **The community resoundingly rejects this scheme.** In those circumstances one of the twin planks for not looking at alternatives is removed. Nor does the other make sense as an abstract statement: The extent of policy support for alternative technology (whether onshore wind or other) would depend upon the conception, design, power generation, and other elements of the scheme. None of these points have been tested or analysed.

26.5 The sheer scale has raised a further point relating to poor evidence gathering to support the scheme. In a scheme which, due to its size and implications, should be proportionately supported by a comprehensive and robust evidence base, instead assumptions have been made on various issues as set out in the submissions. This has diluted those assessments and robbed them of any claim to be of a robust nature. This is a further factor weighing against the scheme overall. Its weight needs to be borne in mind against each factor where MPAG or others have criticized the lack of a sufficient evidential basis to support the scheme.

### 26.6 Site Selection (Section 4)

This section draws together a number of observations about the nature of and approach to the site selection process, by reference to the list of topics provided by MPSF. It serves to provide the context for other areas of concern covered within this submission.

### 26.7 Time Unlimited Application (Section 6)

26.8 The absence of a time limited consent means the proposal should be treated as a **permanent** one in relation to adverse impacts. The temporary nature of many other proposals has been important to the SoS's acceptance of adverse impacts arising in relation to landscape and

visual harm, harm to the historic environment, and other material planning considerations. None of that logic can be applied to this application. The harms are thus taken to be irreversible, and the **community** which has resoundingly rejected the proposals will know that and regard them in that way from their implementation. This also means that particular care and scrutiny must be applied to claims of mitigation, whether in relation to landscape and visual impacts, or otherwise.

26.9 This permanence of presence and effects, twinned with the unprecedented scale of the project, that means that adverse implications of the scale that arise by virtue of the proposed development have simply not arisen in the UK before in relation to solar farm development. This is a risk factor of its own, and it weighs against the proposal.

26.10 The other adverse impacts identified in this submission are heightened by their permanence, and the permanence of the proposal itself is a negative factor in light of the many issues surrounding the Proposed Development. The factor of permanence should **weigh heavily** against the scheme overall.

#### **26.11 Meeting the Energy Need (Section 7)**

26.12 There is no presumption of need in relation to solar farms in EN-1. However, the emerging draft national policy support for solar farms that are **appropriately located** and **otherwise compliant** with national and local policy is clear. Accordingly, the need for renewable energy weights positively in the planning balance. In this case that factor should be accorded **moderate positive weight**.

26.13 That is because the scheme is in conflict with many central planks of recently adopted local policy *specifically directed towards solar farms* (SKDC Local Plan, January 2020). The scheme fails to: maximise the efficient use of land; adequately account for its own capacity / actual power generation; provides low levels of benefit to the national grid when compared to the landtake and scale of development required; or maximise opportunities to improve security of supply.

26.14 Further to that, the actual likely benefits of the scheme are overstated in a number of important respects, as detailed within this submission.

#### **26.15 Contribution to Net Zero (Section 8)**

26.16 The claimed benefits of the scheme have **not been demonstrated**. The output of the panels themselves is significantly overstated. Contrary to recently adopted requirements of the SKDC Local Plan, **real world outputs** have not been demonstrated or considered. There is no presumption of need in relation to solar farms in EN-1. Therefore, it is important to consider the actual position. This Submission shows that an appropriately adjusted calculation suggests provision of 253 MWh against the 350 MWh headline claim. This large inaccuracy infects key MPSF calculations justifying the scheme. In addition, embodied CO<sub>2</sub> of the scheme is also

significantly understated. Consequently, the embodied CO<sub>2</sub> will not be displaced over a period of 40 years. Nor do the the scheme calculations take into account the need to balance the national grid using carbon based fuels, even though this is a real world consequence of the scheme.

26.17 In those circumstances the scheme will not contribute to the overall goal of net zero. **No positive weight** should be given to this factor in the planning balance.

### **26.18 Compulsory acquisition (Section 9)**

26.19 Law and policy continues to provide strong protection against compulsory expropriation of property interests. It is fundamental to the importance given to individual rights. The protection lies in the obligation on MPSF to demonstrate a **compelling case in the public interest** before it can compulsorily acquire land. **That case has not been made out.**

26.20 The failings in consultation in that respect are particularly lamentable given the effect of compulsory purchase powers. Not only are they poor on their own terms, the result has been a **failure to ensure proper community input** on this vital issue. Moreover, the MPSF approach does not accord with the Design Principles MPSF purported to apply, which would have provided for a proper **Gunning**<sup>33</sup> compatible consultation process. The overall effect of these failures is to compromise the protection provided by **Article 6 ECHR**<sup>34</sup> which the courts have repeatedly acknowledged has an important procedural component to it. The need for proper consultation is heightened by the sheer volume of documentation generated in support of the Applicant.

26.21 Even putting those serious procedural flaws to one side, the substance of the MPSF case is fatally undermined by the absence of a proper analysis and comparison of the 3 options put forward in relation to compulsory purchase of land in Essendine and its surrounds. Network Rail agree that insufficient information has been provided to justify why all the route options are necessary. They specifically agree the necessary compelling case is the public interest is not made out.

26.22 MPSF have failed to demonstrate that a blanket approach to acquiring land on both sides of the A6121 is necessary.

26.23 Further, the insufficiency of the overall site selection process and the fact that the location of the scheme and panels is being largely dictated by the Ryhall connection removes any compelling case in the public interest.

26.24 The absence of any real local benefits and the limited public benefits as set out in the Submission, also weaken the case in Compulsory Acquisition.

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<sup>33</sup> The Gunning Principles: consultation that is only legitimate if 4 principles are met

<sup>34</sup> Article 6: European Convention on Human Rights

26.25 For the reasons set out in more detail in the Submission the order cannot support Compulsory Acquisition and, accordingly, the scheme cannot proceed.

#### **26.26 Landscape and Visual Impact (Section 10)**

26.27 MPAG has commissioned a full LVIA from Carly Tinkler, which is appended to this Submission. Section 10 of the Submission above sets out some of the key elements of that analysis, but it is necessary to see the analysis in whole to appreciate the extent to which this issue is underplayed in MPSF's evidence.

26.28 Accordingly, this section does not seek to rehearse the considerable detail now available on this issue. MPAG's conclusion is that on a thorough investigation and assessment of the scheme it is clear that it will have substantial adverse impacts on the landscape and also in relation to visual amenity. It will interfere with PRoW, entirely compromising the enjoyment presently taken from their use. These harms go well beyond what can be anticipated as necessary to arise with a well-located scheme of size. The present scheme is patently not well located, and causes real harm in these respects to a presently deeply rural area with a locally valued landscape. The rural location of the site also heightens the risk that much greater volumes of imposing and intrusive security fencing will ultimately be required for the scheme to be rendered properly secure and effective.

26.29 Overall this factor should be accorded **substantial negative weight** in the overall planning balance.

#### **26.30 Glint and Glare (Section 11)**

26.31 Glint and glare is a well recognized issue in relation solar farms. The Application material on this topic is not robust. It inappropriately relies on existing and proposed vegetation; overstates the likely mitigation effects of such vegetation in any event; fails to recognize local patterns of gappy hedgerows; fails to adequately assess the implications of users of the PROW; and fails to address adequate mitigation for affected households. It will have impacts on a wide variety of sensitive receptors including residents, road users of all types, and people accessing the many PRoW within the DCO limits, whether by walking, cycling or horse riding. This factor should be accorded **moderate weight** against the scheme in the overall planning balance.

#### **26.32 BMV Assessment (Section 12)**

26.33 The Government continues (rightly) to provide strong support for the protection of the Best and Most Versatile Agricultural Land. The protection applies to cases involving development for solar farm use. Recently adopted local policy (SKDC Local Plan, January 2020) applies that national guidance locally and explains very well why in the local context it is critical to protect BMV. The BMV loss here is manifestly in conflict with central planks of policy. It is vast in size

in terms of the loss; the lack of any time limitation means the loss is permanent. These factors **weigh heavily** in the planning balance against the scheme.

26.34 In terms of the overall approach to the progression of this Application, it is right to note that the Application was predicated on a **serious misunderstanding** of the actual levels of BMV land across the Proposed Development, as set out in detail in this Submission; **the site was thus selected on the basis of fundamental misapprehension as to the likely planning balance**. Even now, as set out in the Submission above, the ALC assessment carried out by MPSF is not robust.

### **26.35 Land Use (Section 13)**

26.36 This section of MPAG's Submission draws together a number of topics which bear on policy compliant and appropriate land use. It builds on the site selection section provided earlier, and demonstrates the agricultural importance and productivity inherent in the Application land. It draws on the increasingly important need for food security (which need not be at the cost of energy security – it is about site selection) in light of current policy, the changing global environment, and recent world events. The need for food security **weighs against** the Proposed Development in the planning balance. It is also right to note that because of the factors mentioned above this situation is one of flux and the balance is moving towards greater protection of BMV from solar farms – the House of Lords Inquiry on Land Use (December 2022) made plain their concern about the number of what should be exceptional cases coming through on BMV land. The cumulative risk of that is obvious, and here even leaving cumulative impact on one side, the extent of the loss for this one proposal is vast. This factor is particularly important in relation to a scheme which is proposed as a permanent one – the highly productive agricultural land will not be recovered.

### **26.37 Soils management (Section 14)**

26.38 The protection of soils is a material planning consideration. Soils need to be protected from damage that could affect their ALC grading long term and hydrology of the area short term. Any grant of an order should ensure adequate protection of the soils.

### **26.39 Flood risk (Section 15)**

26.40 National policy in the NPPF and PPG requires that development should be made safe for its lifetime and not increase flood risk elsewhere. Flood risk encompasses risk to both people and property. Some of the site falls within flood zones 3a and 3b. The area proposed for development has 3 significant rivers: West Glen, East Glen, and Gwash. In addition, there has been no acknowledgment of the impacts for Banthorpe Lodge, St Mary's Church and Castle at Essendine, and the village of Greatford which all flood regularly. MPAG has calculated soil infiltration needs to cope with 15.7 times more water than is currently the case. MPSF acknowledge the run-off could increase by 256%, an increase of 14,417 litres per second across the solar footprint.

26.41 The scheme will fail to ensure that it does not increase flood risk elsewhere. This is a factor which counts against the scheme in the overall planning balance. It should be given **moderate weight**.

26.42 The fact this issue arises is also indicative more generally of the poor site selection, and reflected in the fact that no potential alternative sites were in fact investigated, nor alternative technologies. Both of these factors could have influenced the flooding issue.

#### **26.43 Traffic and travel (Section 16)**

26.44 During construction (and decommissioning) there will be substantial impacts on the local highway network. The layout of the Proposed Development is poor from that perspective and the local road network deeply unsuited to volumes of heavy traffic. The construction period is substantial at two years, i.e. more than 500 working days. The network will not be capable of satisfactory mitigation and/or enforceable control in terms of HGV routes. Significant issues of highway safety are likely to arise both in relation to known accident black-spots and the use by volumes of HGV / LGV traffic along roads which serve the two schools at Great Casterton junction.

26.45 One of the consequences of the unsuitable local network is that the routing, assuming it is adhered to, requires extraordinarily inefficient movements of HGVs across the network, in a way that runs contrary to the claimed ethos of a renewable energy project.

26.46 This factor counts against the scheme in the overall planning balance. It should be given **some weight** in light of the fact it is primarily referable to the construction period of 2 years.

#### **26.47 Noise and Vibration (Section 17)**

26.48 The scheme lacks clarity in important respects in relation to noise and vibration effects. The absence of a suitable specificity (or range) to construction method, plant and duration mean that MPSF have not been able to properly assess these impacts. Accordingly, an allowance must be made for that in the planning balance, and it should be made on a worst case basis. This is a factor which should command at least **some weight** in the planning balance.

#### **26.49 Cultural Heritage (Section 18)**

26.50 Designated heritage assets are strongly protected by statute and national policy. They represent irreplaceable assets. The settings of assets can be central to their value and appreciation. National policy requires great weight to be given to any harm to designated heritage assets. Local policy reinforces the importance of that national policy.

26.51 The unprecedented scale of the scheme will have important implications for the settings of designated heritage assets individually and on a cumulative basis, devaluing substantially the

historic heritage of this deeply rural area. The local area is rich with designated heritage assets of outstanding quality.

26.52 The significance of the collection of designated heritage assets in Stamford is hard to overstate, and should be recognized and protected from alien forms of development. The appreciation of the special architectural and historic interest in the area will be permanently and substantially negatively affected.

26.53 Accordingly, this factor **weighs heavily** against the Proposed Development in the planning balance. **It is required to be accorded considerable importance and weight.**

#### **26.54 Biodiversity (Section 19)**

26.55 Any increase in biodiversity on the land as a result of the Proposed Development should be accorded **limited weight** in the planning balance. It is not a justification for a solar farm, let alone one of this scale. BNG is now a firm expectation of policy, and accordingly merely meeting policy does not command positive weight in the balance.

26.56 In any event, the biodiversity assessments in the Application are inadequate. The impact report relies too heavily of local record data which is likely to underreport relevant sitings. The survey work is insufficient. Buffers and other mitigation are insufficient and too heavily qualified to ensure proper protection of protected species. Further, **the BNG calculation is not robust**. It artificially removes woodland areas from the baseline. It does not provide any any adequate allowance for biodiversity harm that is likely to arise during an extended construction period. The **baseline has been incorrectly assessed**.

26.57 Within this part of the balance it is also necessary to take into account that there is a **clear risk to SSSI sites** during construction, contrary to policy. Large sections of important historic hedgerows will be removed. The proposals fail adequately to avoid harm to biodiversity.

26.58 Lastly, the understanding of the effects of large-scale solar farming on biodiversity is still developing. Accordingly, a cautionary approach should be adopted, with avoidance of harm the preferred approach. Suggestions that no significant adverse impacts will arise should be carefully scrutinized. The Proposed Development generates a risk of harm in relation to many species; including a significant risk of fragmentation.

26.59 Taking all of these points together, the proposed increase in biodiversity should be accorded **neutral weight**.

## **26.60 Decommissioning (Section 20)**

26.61 The proposals in relation to decommissioning lack certainty and may well lack effective enforceability. It would be unsatisfactory and inappropriate to allow the scheme to proceed unless and until these are fully addressed.

## **26.62 Consultation process (Section 21)**

26.63 The consultation process was substantially confusing and confused. It has compromised the ability of interested individuals to have a voice and to make representations likely to improve decision making. Central Government has recognized the importance of proper consultation to proposals of this scale.

26.64 More importantly, the responses provided demonstrate that **if localism matters this proposal should not proceed**: The communities are firmly against it, and have properly criticized many parts of MPSF's analysis.

26.65 The absence of a sufficient process militates indirectly against the weight that can be given to features MPSF wishes to rely upon, because many will not have been as thoroughly tested as they ought to have been, through consultation in the public domain at an appropriately early phase.

## **26.66 Community – Impacts and Benefits (Section 22)**

26.67 MPSF seek to rely on claimed local benefits of the scheme. For the reasons set out in our submission no tangible community benefits related to the scale of this scheme are likely to arise. This factor should be given **no or little weight** in the overall planning balance.

## **26.68 Socio-economics (Section 23)**

26.69 The case put forward by MPSF is unproven and highly likely to be overstated. It should be accorded **minimal weight** on the planning balance.

## **26.70 Infrastructure protocol, security and supply chain issues (Section 24)**

26.71 It is important that a project on this scale should not be granted consent (with all that entails for CA etc) unless the decision maker is satisfied it is deliverable. If not, it will not be effective. It will also risk skewing the regional and potentially national picture in terms of other schemes which are under consideration, because decision making here will doubtless be referred to and potentially applied elsewhere in seeking consistent decision making. In considering whether something is properly deliverable it is legitimate to consider the application of the Human Rights Act 1998 provisions both to those who stand to be adversely affected by the proposed development, and those whose rights may not be protected as a result of involvement with the project.



## **26.72 Cumulative / combined effects (Section 25)**

26.73 It is important that in considering the harms arising from the Proposed Development they are not ultimately considered in isolation, but in their totality and the likely impacts both on the local community and more generally

26.74 The harms that will or are likely to arise have been set out in previous sections of these submissions

26.75 Further, in terms of cumulative effects, whilst MPAG does not have the resources to analyse the potential implications of the Proposed Development coming forward at a time when several other strategic developments are planning locally, these are matters we invite the Panel to bear firmly in mind, in particular in relation to the Land Use and Traffic and transport implications of the Proposed Development

26.76 The shortcomings that are apparent in many elements of MPSF's analysis logically lead to the conclusion that the cumulative impacts both across topic areas, and when this Proposed Development is placed alongside other proposed strategic development, are likely to have been substantially underestimated.

## **26.77 Overall Conclusion**

26.78 On analysis it is clear that the limited benefits brought by an unjustified and vast scheme in this deeply rural, location with substantial value in terms of landscape, amenity, heritage, and BMV land do not come close to supporting progression of this scheme.

26.79 It has occurred because there has been no proper consideration of alternatives, in breach of legal requirements. Once fixed in its relative geographical place by the Ryhall substation, the reality is that the remainder is retrofitting. It is the only explanation for why so many different types of harm, of the nature and extent explained above, have arisen through the promotion of this scheme. The initial locational decision was apparently taken on an understanding of the land and its surrounds which was (at best) substantially incomplete, and therefore liable to lead to error (as it had undoubtedly done).

**26.80 The Panel is invited to recommend that the proposal be rejected.**

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