

**Tillbridge Solar Project  
EN010142**

**Written Summary of Applicant's Oral Submissions  
at Issue Specific Hearing 2  
EN010142/APP/9.30**

**Infrastructure Planning (Examination Procedure) Rules 2010**

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## **Tillbridge Solar Project**

### **9.30 Written Summary of Applicant's Oral Submissions at Issue Specific Hearing 2 (ISH2) on 14 January 2025**

<b>Planning Reference</b>	<b>Inspectorate</b>	<b>Scheme</b>	EN010142
<b>Application Document Reference</b>			EN010142/APP/9.30
<b>Author</b>			Tillbridge Solar Project Team

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Rev 00	28 January 2025	Deadline 4 submission

## 1.0 INTRODUCTION

- 1.1 This note summarises the oral submissions made by Tillbridge Solar Limited (the “**Applicant**”) at Issue Specific Hearing 2 (“**ISH2**”) held on 14 January 2025 in relation to the application for development consent (“**Application**”) for the Tillbridge Solar Project (the “**Scheme**”).
- 1.2 Where the Examining Authority (the “**Exa**”) requested additional information from the Applicant on specified matters, or the Applicant undertook to provide additional information during the course of ISH2, that information is either set out in this document or provided as part of the Applicant's Deadline 4 submissions.
- 1.3 This note does not purport to summarise the oral submissions of other parties, and summaries of submissions made by other parties are only included where necessary to give context to the Applicant's submissions, or where the Applicant agreed with the submission(s) made and so made no further submissions (this is noted within the document where relevant).
- 1.4 The structure of this note follows the order of the items listed in the detailed agenda published by the Exam on 6 December 2024 (the “**Agenda**”). Numbered agenda items referred to are references to the numbered items in the Agenda. The Applicant's substantive oral submissions commenced at Item 3 (Environmental Matters) of the Agenda. Therefore, this note does not address Items 1 and 2 on the Agenda as these were procedural and administrative in nature.

## 2.0 WRITTEN SUMMARY OF THE APPLICANT'S ORAL SUBMISSIONS

Agenda Item	Applicant's Response
<b>Item 3a – Water Environment Including Flood Risk</b>	
<p><b>The flood risk of the site and its surrounds due to the Proposed Development over its whole life</b></p> <p><b>The management of surface water run-off</b></p> <p><b>Cumulative effects</b></p>	<p><b>Management of surface water runoff</b></p> <p>The ExA asked the Applicant for details of how realistic it is to contain surface water run-off on-site. Specifically, the ExA asked for assurance that any concentration of surface water as accumulated on solar panels and running off their edge to a concentrated “drip point” would behave in the same manner as if it were falling over a site without solar panels. This included clarification on whether this differs when solar panels are installed at static angles or are “tracking” solar panels which change angles over the course of each day.</p> <p>Mr Chris Brandon, Associate Director at AECOM, responded on behalf of the Applicant. Mr Brandon provided further context to the research paper referred to in the <b>Applicant's Response to the ExA's First Written Questions [REP3-062]</b> under Q1.14.2 by Cook and McCuen (2013) titled <i>Hydrologic Response of Solar Farms</i>. He clarified that this tested the difference in volume of run-off and peak runoff when solar panels are at various different angles, so can inform both the assessment of fixed panels and tracking panels, the latter of which are proposed for this Scheme. The paper found that, based on the angles of a baseline 45 degrees, and 30 and 70 degrees, the difference in volume of run-off was less than 0.5%.</p> <p>Mr Brandon noted the research did find an increase of up to 10 times the kinetic energy for the area of land beneath the edge of the solar panel from which any run-off would land, compared to the same amount of rainfall which would be occurring on a bare / agricultural site. However, he noted that even where the research accounted for a level of grassing / roughness of field which would mitigate this impact even less than the wildflower mix and grassing proposed for the Scheme, the research still concluded that run-off increases of panels from an agricultural baseline were negligible:</p> <ul style="list-style-type: none"> <li>• In terms of peak run off change, there was a ~0.35% change in run off volume compared with the existing scenario.</li> <li>• There was an increase of ~0.31% in peak rainfall compared with the existing scenario in the same location.</li> </ul> <p>Mr Brandon referred to two further studies which supported these conclusions:</p> <ul style="list-style-type: none"> <li>• July 2024 study by Pennsylvania State University, titled <i>Quantifying soil moisture and evapotranspiration heterogeneity within a solar farm: Implications for stormwater management</i>. This confirmed that there are no significant changes to runoff characteristics from solar farms with a well vegetated ground cover, when assessing for soil moisture distribution through the ground adjacent to and below solar panels, with a focus on stormwater management implications.</li> <li>• British Research Establishment (BRE)'s guidance titled <i>Agricultural Good Practice Guidance for Solar Farms</i> dated 2014; which includes several case studies showing typically, solar panel infrastructure disturbs less than 5% of the ground, and some 25-40% of the ground surface is over-sailed by the modules or panel.</li> </ul> <p>The ExA sought to clarify whether the land beneath the panels might be more susceptible to erosion by way of a natural drip channel in the areas where any surface water runs off the edge of the panels.</p>

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	<p>Mr Brandon noted the difficulty in predicting the extent to which run off may cause erosion, but that the native grassland and wildflower mix proposed underneath the panels, as set out within the <b>Framework Landscape and Ecological Management Plan (FLEMP) [REP3-043]</b>, means that it will be unlikely to cause erosion from run off, taking into account the conclusions of the above studies. He also noted that the Applicant is proposing edge swales, to ensure that in the unlikely scenario increase runoff and erosion did occur, these would mitigate any such marginal increase in erosion from run-off.</p> <p>The ExA sought the views of Interested Parties in respect of the drainage outcomes and strategy proposed. Ms Stephanie Hall of Counsel for Lincolnshire County Council (LCC) confirmed that, as outlined in their Local Impact Report, LCC is satisfied with the information provided on drainage. Mr Wayne Cattell for the Environment Agency (EA) confirmed that the studies cited aligned with the EA's position, which is to treat solar PV farms like greenfield sites.</p> <p><b>Consideration by project of climate-change induced weather impacts</b> Mr Tony Court, on behalf of 7000 Acres, raised concerns about the possibility for future, climate-induced weather events that could damage solar panels and increasing flooding impacts (including the loss of farmland) in the region.</p> <p>Ms Coleman, on behalf of the Applicant, noted that there is a demonstrated urgent need for the Scheme to address the effects of climate change, and that this deals with a few of Mr Court's points about the adverse effects of climate change. Ms Coleman added that the Applicant has carried out various assessments on the resilience of the Scheme to climate change, a large part of which were with the EA and focussed on flood risk. This included the response to the points raised by 7000 Acres in the <b>Applicant's Response to ExA's First Written Questions [REP3-062]</b>.</p> <p>Mr Brandon, on behalf of the Applicant, provided further context that <b>Appendix 10-3: Flood Risk Assessment</b> of the Environmental Statement (<b>ES</b>) <b>[REP3-023]</b> has assessed climate change in line with the relevant guidelines. Further, to address Mr Court's point on flood plains, Mr Brandon noted that the majority of the Solar PV Site is in Flood Zone 1, which is at low risk of flooding, while less than a hectare of the Solar PV Site is within Flood Zone 3, factoring in climate change.</p> <p>The ExA asked Mr Cattell, on behalf of the EA, to give assurance that the EA was happy that the approach for Critical National Infrastructure in respect of flooding had been followed, including the H++ assessments. Mr Cattell confirmed that the EA was satisfied these had been followed appropriately.</p> <p><b>Flood defences</b> The ExA asked Mr Cattell for confirmation, per <b>Q1.14.7 of Applicant's Response to ExA's First Written Questions [REP3-062]</b>, that there is adequate funding in place for the life of the development to maintain the flood defences on the River Trent (from which the works within the Scheme's Cable Route Corridor will benefit).</p> <p>Mr Cattell, on behalf of the EA, confirmed that such defences are important and the EA is doing whatever it can to maintain them for the future.</p>

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<b>Health safety and wellbeing</b>	
<b>Fire risk</b>	<p>Accounting for the availability of Mr Daniel Moss on behalf of Lincolnshire Fire and Rescue Service being unavailable to attend Issue Specific Hearing 3, where matters of fire risk and health and safety would be discussed, the Examining Authority brought forward discussion on these matters so as to pose questions to Mr Moss.</p> <p>Ms Coleman for the Applicant noted that while the Applicant would consider the questions raised, the Applicant's fire safety and BESS expert, Mr Paul Gregory, was not available today but would be available to address matters tomorrow (as per the published agendas).</p> <p><b>Internal sprinkler systems</b> The ExA referred to the Applicant's response in <b>Q1.14.3</b> of the <b>Applicant's Response to the ExA's Written Questions [REP3-062]</b> regarding an integral sprinkler system for fire-fighting. The ExA asked whether the sprinkler system would use some of the emergency water supply reserved for the Fire Service.</p> <p>Mr Moss, on behalf of Lincolnshire Fire and Rescue Service, confirmed the parties had discussed this matter. He confirmed that the <b>Framework Battery Safety Management Plan (FBSMP) [APP-225]</b> stipulates in accordance with the NFCC <i>Grid Scale Battery Energy Storage System Planning – Guidance for FRS</i> (Ref. 1-1)) that the water provided for any internal BESS fire-suppression system would be separate from the water supply reserved for use by the Fire Service.</p> <p><b>On site-water storage for firefighting</b> The ExA asked the Applicant to confirm whether it planned to import water for storage on-site for fire-fighting purposes, or if water would be collected from onsite sustainable urban drainage systems (SuDS). The ExA sought to clarify whether this would be sufficient to manage any onsite BESS fires, particularly if a fire occurred during summer when drainage may not provide sufficient water.</p> <p>Mr Brandon, on behalf of the Applicant, noted that the SuDs onsite are not designed to hold large volumes of water such that this would negatively impact ecological sites downstream. The swales adjacent to the BESS are however designed to be sufficient to capture any fire water run-off and drainage from a rainwater event occurring at the same time. Water to be used by the Fire Service would instead be provided separately.</p> <p>Ms Coleman, on behalf of the Applicant, noted in respect of further questions from interested parties including 7000 Acres regarding the volume of water to be stored and supplied to the Fire Service, that the Applicant's battery safety expert, Mr Paul Gregory, would be best placed to answer these questions and that he would be present to answer questions about fire safety on the following day.</p> <p><b>Post hearing note:</b> <i>The Applicant's response is recorded in the <b>Written Summary of Applicant's Oral Submissions at ISH3 [EN010142/APP/9.34]</b>, provided at Deadline 4, in particular under Agenda Item 3a. In summary, as per current NFCC guidance (Ref 1-1), each BESS-Solar Station Compound will be provided with a minimum supply of two hours water supply at 1,900 litres per minute.</i></p>

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	<p><b>Contamination from fire-water run off</b> Mr Jones, on behalf of 7000 Acres, asked how water contaminated after a fire would be contained from typical water run-off.</p> <p>Mr Brandon, on behalf of the Applicant, confirmed that run-off water from fires would be captured by lined swales which surround the BESS and sized to meet the volume of water stored for fire suppression. These would be confined within lock control systems to ensure water can be tested following the event, and either be taken offsite if contaminated or released to the environment if uncontaminated.</p> <p><b>Health impacts in relation to fire safety</b> The ExA referred to <b>Q1.8.3</b> of the <b>Applicant's Response to the ExA's First Written Questions [REP3-062]</b>, in which the Applicant noted that worldwide there are 0.3% of battery failures per gigawatt of cumulative deployed capacity, suggesting that there would be nine such fires in the lifetime of the development. The ExA further noted from the submission that the "BESS Quality Report" (February 2024) published by the Clean Energy Association (CEA) found that 26% of installed BESSs had defects with their fire suppression systems and 18% of their thermal management systems had defects. The ExA said that, in this context, it wanted evidence that the Applicant will improve the standard of its batteries and meet higher quality standards.</p> <p>Furthermore, the ExA asked the Applicant to explain how groundwater and/or air quality contamination risks resulting from a battery fire could affect local residents.</p> <p>In response, Ms Coleman, on behalf of the Applicant, noted that these questions would be best answered by Mr Gregory, who would be at the hearing on the following day. <b>Post hearing note:</b> <i>The Applicant's response is recorded in the <b>Written Summary of Applicant's Oral Submissions at ISH3 [EN010142/APP/9.34]</b>, provided at Deadline 4, in particular under Agenda Item 3a.</i></p> <p>Ms Coleman noted that Mr Gregory's experience ensured that lessons learned from past incidents have been reflected in the <b>Framework Battery Safety Management Plan [APP-225]</b> and proposed mitigation, including the provision of offsets to local communities and a range of other safety measures.</p> <p>Mr Moss, on behalf of the Lincolnshire Fire and Rescue Service, noted that, the <b>Framework Battery Safety Management Plan [APP-225]</b>, includes focus on preventative measures. The Fire and Rescue Service has ensured that these measures align with the NFCC Guidance from both a chemical and technological perspective. Mr Moss noted that while he has limited experience with large scale BESS fires, this is common across the sector, and the NFCC Guidance is developing firefighting tactics in relation to these types of fires. Mr Moss noted the <b>Framework Battery Safety Management Plan [APP-225]</b> aligns with the standards including where its focus is to first manage deflagration and release of gasses by looking to contain any fire within the one battery enclosure. The Fire Service would then be looking to cool the surrounding areas and limit any spread of the fire.</p> <p>In response to clarifying questions from 7000 Acres as to why BESS were proposed in a rural area where water is more scarce as opposed to a connected area (such as that of the Cottam Power Station site) Ms Coleman, on behalf of the Applicant, noted that there are technical and engineering reasons why the batteries are planned to be located close to the solar panels, which relate to loss,</p>

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	<p>maximising yield and exporting the energy that is created. Ms Coleman noted that DC coupled BESS means there are smaller areas of batteries which is helpful from a fire risk perspective but acknowledged that there must be sufficient access. She said the Applicant was aware of ensuring that access, and this is why it has been in close discussion with the Lincolnshire Fire and Rescue Service. Ms Coleman noted that Mr Gregory would speak to this on the following day.</p> <p><b>Other control and major incident sites</b> The ExA asked the Applicant how it will ensure that horizontal direct drilling (HDD) would not impact the Cottam Power Station and Uniper Gas Pipeline within the Order limits.</p> <p>Ms Coleman, on behalf of the Applicant, noted that these risks are dealt with in the protective provisions. The Applicant is negotiating protective provisions with both EDF (in relation to its apparatus within the Cottam Power Station site) and with Uniper in relation to the pipeline. Ms Coleman referred to <b>Q1.8.4</b> of the <b>Applicant's Response to the ExA's First Written Questions [REP3-062]</b> for details of these mitigations. Ms Coleman explained that the protective provisions mean the Applicant cannot carry out certain works without prior approval from the relevant statutory undertakers. Ms Coleman confirmed that she anticipates both sets of protective provisions (both in respect of EDF and Uniper) being in place by the end of the examination period.</p> <p><b>Site adjacent to the Order limits: the Glentworth K Oil Site</b> The ExA said he understood that the Applicant hadn't had any contact from IGas Energy plc (now trading as Star Energy Group plc) ("<b>IGas</b>") regarding Protective Provisions, and asked the Applicant to outline what the risks are should no agreement be reached.</p> <p>Ms Coleman, on behalf of the Applicant, said that Mr Gregory would be able to speak to the technical consideration of any risks in respect of BESS (see post hearing note included below). She noted that the Applicant has included within the <b>Outline Design Principles Statement [REP3-029]</b> a 30-metre buffer zone from BESS to the Glentworth K Oil Site in order to manage any safety risks.</p> <p>Ms Caroline Reeve, on behalf of the Applicant, noted that the Applicant has been engaging with IGas and received correspondence the day of the hearing about the proposal to include the 30-metre buffer. Ms Reeve explained the buffer is considered sufficient to ensure any BESS fire event would not interrupt the ongoing operation of the existing Glentworth K Oil Site in accordance with Policy M12 (<i>Safeguarding of Existing Mineral Sites and Associated Minerals Infrastructure</i>) of the adopted <i>Lincolnshire Minerals and Waste Local Plan</i>. Ms Reeve also noted that she understands that the existing Glentworth K Oil Site well site is unmanned, so from a human health perspective there is less risk.</p> <p><b>Post hearing note:</b> NFCC guidelines (Ref 1-1) advise that a 30-metre buffer zone be integrated from all BESS Enclosures within the BESS-Solar Station Compound to the fence for that compound which ensures any shrapnel or debris generated by a BESS deflagration is contained within the compound. The proposed 30-metre buffer zone from any BESS -Solar Station Compound boundary fence to both the existing Glentworth K Oil site and the proposed hydrocarbon oil well site to the west (subject to planning permission PL/0135/22) would provide an additional buffer should the BESS-Solar Station Compounds be sited adjacent to the existing and proposed oil well</p>



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	<p><i>sites. This would be a worst-case scenario and would provide a minimum 60-metre buffer from the nearest BESS Enclosure ensuring that a BESS failure event would not impact on Glentworth K site operations.</i></p> <p>Ms Reeve noted that in terms of the IGas site being subject to an extant planning permission, as the planning permission had not yet been implemented, and the expanded site is not yet currently operational, this site does not benefit from the same level of weight under the policy direction of Policy M12 as the existing (safeguarded) site. Despite this, Ms Reeve went on to clarify that the Applicant has treated the proposed hydrocarbon site as though it was an established/safeguarded mineral site and proposes to apply the same 30m buffer secured through the <b>Outline Design Principles Statement [REP3-029]</b>. Mr McBride, on behalf of LCC confirmed that he was supportive of the application of the buffer to both areas.</p> <p>Ms Garbutt, on behalf of 7000 Acres, asked, if in a worst-case scenario there was a battery fire which spread to the Glentworth K Oil Site, what plans are in place in terms of evacuation and safety of residents. Ms Garbutt requested that such plans be included in the measures relating to Glentworth K Oil Site.</p> <p>In response to further queries by Ms Garbutt on behalf of 7000 Acres asking what plans there would be for evacuation or other protections for neighbouring residents if a fire was to spread to the Glentworth K Oil Site, Ms Coleman noted that Mr Gregory would be able to speak to this point. <b>Post hearing note: The Applicant's response is recorded in the Written Summary of Applicant's Oral Submissions at ISH3 [EN010142/APP/9.34], provided at Deadline 4, in particular under Agenda Item 3a.</b> Ms Coleman also noted that the Applicant has provided for emergency scenarios, including in respect of safety and communication measures with local residents within the <b>Framework Battery Safety Management Plan [APP-225]</b> and emergency response plans in the <b>Framework CEMP [REP3-033]</b> and the <b>Framework Operational Environmental Management Plan [REP3-035]</b>.</p>
<b>Item 3b – Soils and Agriculture</b>	
<b>Proposed ongoing management of the land</b>	<p>In relation to the Applicant's response to First Written Question ("FWQ") 1.12.2, as set out in the <b>Applicant's Responses to the ExA's First Written Questions [REP3-062]</b>, the ExA asked the Applicant to advise if there would be a commitment to grazing the land of the Principal Site.</p> <p>Ms Alexis Coleman, on behalf of the Applicant, acknowledged that there is no firm commitment to grazing the land of the Principal Site emphasising that the Applicant has included measures to facilitate this, for example in the <b>Framework Landscape and Ecological Management Plan (FLEMP) [REP3-043]</b>, but it is difficult to commit to grazing at this stage, given the need to obtain agreement from third parties.</p> <p>In response to queries raised by 7000 Acres regarding the practicality and efficacy of sheep grazing, Mr Daniel Baird, on behalf of the Applicant, clarified that, in respect of the land within the Principal Site, at present no farmer would be under any obligation as to how they manage their land over the next 60 years. There are a range of other management techniques that could be utilised – any pasture needs to be managed otherwise it will revert to scrub. If graziers are not available, the necessary management could be done using machinery. Grazing remains a viable and cost-effective means of managing grass sward beneath and between solar panels. Mr Baird highlighted</p>

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	<p>that grazing under solar panels is a routine activity, referring to the BRE National Solar Centre's <i>Guide on Agricultural Good Practice for Solar Farms</i> (Ref. 1-2), which provides an evidence basis for this management technique and also cites a number of preliminary studies showing that the yield and quality of forage grown between and below solar panels is little different to similarly managed pasture without solar.</p> <p>Mr Baird went on to explain that sheep grazing under and between solar panels is routine and can be frequently observed on operational solar farms. There are various practices associated with grazing sheep on solar farms which ensure animal welfare, including controlling movement using areas with temporary electric fencing, water browsers for drinking water, GPS collars to track sheep, and virtual fences. There is an increasing market need in arable areas for new enterprises of sheep grazers to graze off the cover crops farmers are incentivised to use to minimise periods of bare soil. Furthermore, Mr Baird noted the proven benefits of having solar farms in arable areas in terms of preventing periods of bare soil, which risk soil erosion, with the attendant contamination by nutrients, pesticides and faecal indicator organisms of waterways downstream.</p> <p>Ms Coleman further added that the reason for not having obtained commitments to graze the land at this stage is the inherent uncertainty associated with such commitments not being able to be put in place for a minimum period of three years, based on the grid connection date of August 2028. They are dependent on the Applicant obtaining development consent for the Scheme and constructing it; only then would discussions with third parties about grazing take place. Mr Baird also noted that, not only in the context of solar developments but in the agriculture sector more broadly, there is a growing need for graziers in arable areas with the growing of cover cross and catch cross to prevent periods of poor soil quality. Farmers are being encouraged and paid to put in cover between the cereal crops, for example, such that these areas have to either be grazed or mechanically trimmed. The Scheme would therefore be assisting in the effective management of the remaining arable land by encouraging the presence of sustainable grazer activity in the local economy.</p> <p>In response to a comment from Mr Shemuel Sheikh of Counsel, on behalf of the West Lindsey District Council (WLDC), about the absence of a commitment or obligation that the Applicant would graze the Principal Site, Ms Coleman stated that, given the very small percentage of Best and Most Versatile (BMV) land that would be temporarily unavailable during operation and then reverted to agriculture use following decommissioning, the Scheme is entirely policy compliant in terms of NPS EN-1 and the written ministerial statement on <i>Solar and protecting our Food Security and Best and Most Versatile (BMV) Land</i>, dated 15 May 2024 (the "WMS") (Ref. 1-3) with respect to minimising impacts on BMV agricultural land. The Applicant does not rely upon grazing the Principal Site in order to justify the inclusion of the BMV as part of the Scheme in policy terms. Rather, it is an aspiration and something the Applicant is looking to implement – the Applicant is not seeking to have any positive weight attributed to the potential for grazing given it cannot be committed to at this stage.</p>
<p><b>The assessment of the agricultural land classification and proposed use with reference to the recent written ministerial statement and use of best</b></p>	<p>The ExA queried the impacts on loss of agricultural land in the context of the Government's <i>Powering up Britain</i> policy paper, in particular references to impacts on food production. The ExA went on to note the number of written representations received regarding the Applicant's soil surveys and the extent to which these comply with the "new government standard" for soil surveys as set out in the WMS.</p> <p>Ms Coleman, on behalf of the Applicant, clarified that the WMS did not establish a new government standard, such that there is no requirement for applicants to obtain independent certification of soil surveys.</p>

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<p><b>and most versatile agricultural land.</b></p>	<p>The ExA acknowledged this, requesting that the Applicant explain whether they are intended to meet the aspiration of the WMS in terms of soil survey certification. Responding to this query, Mr Baird, on behalf of the Applicant, noted that Natural England retains a number of soil scientists who specialise in agricultural land classification (ALC), and who are routinely consulted on the topic of agricultural land for solar NSIP applications, including for the Scheme. Mr Baird emphasised that Natural England have not raised any concerns over unreliability or dishonest assessment of ALC on such sites, noting that the WMS also does not identify any specific examples of such inaccuracy or unfairness. To the extent that such concerns have been raised in written representations, none of these have been substantiated.</p> <p>In response to a query from Mr Tony Court, on behalf of 7000 Acres, regarding the soil observation points relied upon in the Applicant's soil surveys, Mr Baird explained the difference between the number of soil inspection pits on the relevant plans as compared to those locations recorded with a "P" in the data recording column. The soil scientists who undertook the ALC field survey (Soil Environment Services) note that the soil pits shown on the survey plan are the subsoil inspection pits looking at subsoil structure down to a depth of up to 1.2m. The larger number of sample points marked "P" in the site data are the auger sample points where the surveyor dug a shallow pit into the upper subsoil to corroborate auger borings, for instance to check the depth of cultivation. Mr Baird also noted that Natural England's soil experts have reviewed the data and accompanying assessment. Natural England have raised questions, where they have any, and have confirmed they are content with the Applicant's responses.</p> <p>Addressing the points raised by Mr Roger Jones, of behalf of 7000 Acres, regarding the use of deep pits versus shallow pits, Mr Baird referred to the Natural England Technical Information Note (TIN049) <i>Agricultural Land Classification: Protecting the best and most versatile agricultural land</i> (Ref. 1-4), which explains how a detailed ALC survey takes sample points at a frequency of one boring per hectare for a detailed assessment. Soil samples are taken with a handheld auger which can look at the soil profile down to a depth of 1.2 metres, with subsoil inspection pits placed at representative locations guided by the auger boring observations. Mr Baird added that these can be supplemented by the occasional small inspection pits during the auger boring work to check and verify upper subsoil structure, such supplementary inspections being over and above the guidance of TIN049. There is therefore no deficiency in the ALC survey methods used for the Scheme – if there was, Natural England would have raised these in their review of the ALC assessment.</p> <p><b>Post-hearing note:</b> The Applicant would also like to highlight that Lincolnshire County Council appointed an external consultant to undertake a peer review of the ALC Survey forming part of the Preliminary Environmental Information Report. This confirmed that the scope and methodology adopted within the ALC survey confirming that the survey met the requirements of the MAFF 1988 Guidelines (Ref. 1-6) and TIN049 (Ref. 1-4).</p>
<p><b>The effects of the Proposed Development on the land including soil condition and agriculture.</b></p>	<p>The ExA asked the Applicant to provide evidence to support the assertion that the Scheme would be beneficial to soil health in respect of the Principal Site.</p> <p>Mr Baird referred to the Defra R&amp;D project SP08016, <i>Best Practice for Managing Soil Organic Matter (SOM) in Agriculture</i> (Ref. 1-5), specifically Table 1 on page 2, which provides an overview of the methods to increase the soil organic matter content of British agricultural soils. Organic matter in British soils becomes depleted by sustained arable production, regardless of the quantity of organic matter</p>

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	<p>returned – regular aeration of soils through arable farming activities such as ploughing will always result in a decline soil organic matter content towards a low equilibrium. Mr Baird explained that, conversely, when land is not excessively aerated by ploughing and there are living roots in the soil year-round, organic matter content in the soil recovers, regardless of the rate of input, returning to a higher equilibrium for grassland soil. Mr Baird further noted that part of the difficulty for farmers in taking arable land out of production and turning it to grassland is that it is not always financially viable due to the loss of income. However, in the case of the Scheme, the Applicant will be bearing that cost. In addition to recovery of soil health, there is a highly positive environmental impact and biodiversity is also increased. The benefits are demonstrated by the existing practice whereby farmers are being paid to revert arable land to grassland due to the environmental benefits that stem from this.</p> <p>In response to a query from Mr Jones, for 7000 Acres, regarding the distribution of water where solar panels are installed, Mr Baird explained that the lateral diffusion of water in moist soil is very rapid, particularly where there is a year-round growth of roots maintaining soil structure and permeability. The soil surface is also protected from capping by the year-round green cover, which decreases the likelihood of soil erosion. Erosion occurs where there is an exposed bare soil such as a seedbed or recently ploughed areas where the raindrop smashes apart the soil aggregates and causes an effect called 'capping' that reduces rainfall infiltration and allows surface runoff to then occur, which in turn also carries sediment over the surface towards watercourses. Mr Baird added that in arable fields, the water may not infiltrate into the soil as easily, and so the water is not attenuated in peak flow, leading to flooding, whereas a pasture field with year-round green cover presents a much-reduced risk. The examples shown in the BRE NSC Agricultural Good Practice Guidance for Solar Farms (Ref. 1-2) show established solar farms with bright green grass below panels being grazed by livestock.</p> <p>Addressing the concern raised by Ms Garbutt, on behalf of 7000 Acres, regarding impacts on soil structure during construction as a result of heavy vehicles, Mr Baird noted that this issue has been covered in the <b>Framework Soil Management Plan (SMP) [REP1-050]</b> which, at section 4.2 (Construction and Decommissioning), includes a number of measures to protect soil, including the use of appropriate plant such as low ground pressure tracked excavators, and the suspension of work when rainfall has wetted the soil to a plastic consistency. The need to avoid working when soil is wetted to a plastic consistency acts to push the work programme towards the dryer months.</p> <p>Ms Garbutt, on behalf of 7000 Acres, queried whether the Applicant will always be able to carry out work in dry conditions. Mr Baird confirmed that the Applicant will in all cases adhere to the <b>Framework Soil Management Plan [REP1-050]</b>, section 4.2 Construction and Decommissioning general principles, including that all works will occur when soil is sufficiently dry to be friable, which the local planning authorities will hold it to, in order to ensure the Applicant is not causing any damage to soil structure. The landowners also have a keen interest in their land not being unnecessarily damaged. Mr Baird further highlighted that the machinery used for construction of the Scheme is very small, being equipment which inserts a very narrow pile into the ground. Damage from this work will be minimal compared to heavy farming machinery, such as tractors and combine harvesters, used in arable farming, which can smear the soil surface, making it impermeable and causing additional runoff. Such land work needs to take place in narrow windows such as harvest and sowing so cannot avoid soils that are wet and plastic at that time.</p> <p>Ms Stephanie Hall, on behalf of Lincolnshire County Council (LCC), raised the issue of potential damage to pre-existing drains on the land of the Principal Site as a result of piling into the ground during construction and deconstruction. LCC would like to see reference to impacts on drainage apparatus included in the <b>Framework SMP [REP1-051]</b>.</p>

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	<p><b>Post-hearing note:</b> The Applicant can confirm that measures for the protection of existing land drainage are included within the <b>Framework Construction Environmental Management Plan (CEMP) [REP3-033]</b>, which states within Table 3-5, page 39, that:</p> <p><i>“The Principal Contractor will coordinate drainage surveys to establish the existing drainage position including any related field drainage that may be affected by the Scheme and these will be marked where encountered. The Principal Contractor shall record the location, condition and characteristics (e.g. depth of installation, pipe type and diameter) of drains cut or disturbed by construction of the Scheme. Any field drainage affected by the Scheme shall be either reinstated or diverted to secondary channels if reasonably practicable. Landowners and occupiers shall be informed, through the Environment Manager of the design and timing of drainage works required during construction and following completion of the Works, including, where relevant, in relation to pipe layout, falls, dimensions and outfalls.”</i></p> <p>In connection with the point raised about drainage and the interface with ALC grades, Mr Baird, for the Applicant, explained that the MAFF guidelines (Ref. 1-6) set out the approach to classifying land. Mr Baird referred the ExA to the land classification guidelines referred to in <b>Chapter 15: Soils and Agriculture</b> of the ES [APP-046] and <b>Appendix 15-2: Agricultural Land Classification Baseline Report</b> of the ES [APP-116], which give a consistent approach for classifying land, and assumptions that should be made. Namely, land is graded according to the degree to which hydrological or chemical properties impose long term limitation on agricultural use; it is assessed on capacity at ‘good’ but not ‘outstanding’ standard. Therefore, land that could benefit from drainage is assessed as if it were drained. This is an important principal for ALC assessment as it was designed to inform land use planning decisions so must avoid creating a perverse incentive for landowners to manage land poorly in the hope of lowering ALC grade to facilitate obtaining planning consent.</p>
<p><b>The overall effect of the Proposed Development on UK food security; and socioeconomic impacts.</b></p>	<p>Ms Stephanie Hall, on behalf of Lincolnshire County Council and others, noted the difference between LCC and the Applicant with respect to the impact of the loss of agricultural land in terms of socioeconomics, impact on tenant farmers and employment more generally, specifically how this should be weighed in the planning balance. Mr Sheik, on behalf of WLDC, stated that WLDC broadly aligns with LCC.</p> <p>Ms Coleman, on behalf of the Applicant, noted the Applicant's disagreement with the local authorities in relation to the planning balance, noting section 7.4 of the Applicant's <b>Planning Statement [REP3-027]</b>, which says that <i>“the permanent loss of BMV land is not significant”</i> and would have a <i>“limited negative weight”</i>, which reflected the decision in respect of the Cottam Solar Project. In addition, with the removal of the text on the availability of agricultural land used for food production from former Footnote 62 (now superseded by Footnote 65) of the NPPF, this should now be considered neutral weight. In terms of impacts on tenant farmers, the Applicant has considered these as part of its assessment. While there will be some loss in this respect, the Applicant notes that the tenant farmers either do not object to the Scheme or have now withdrawn their objections. In practice, the impact is acceptable and there will also be benefits to freehold farmers in terms of diversification of income.</p>

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	<p><b>Post-hearing note:</b> In response to the points raised by LCC and WLDC regarding the socioeconomic impacts arising from the loss of agricultural employment, the Applicant notes that there are 12 landowning farming businesses across the Principal Site. There would be no likely direct impact on the permanent employee numbers of these businesses, as the Scheme represents a diversification of their farming operations, and they would receive an income from the Scheme. Part-time employees that may have been seasonally employed would no longer be required. The 10 FTE jobs lost associated with this, which informed the assessment of operational phase employment in <b>Chapter 14: Socio-economics and Land use</b> of the ES [APP-045], was based on impact assessments undertaken for other NSIP solar schemes where the existing land use is predominantly arable agriculture. Consultation with the affected agricultural businesses has occurred as a result of statutory requirements and land negotiations. Discussions with the two tenant farmers affected has indicated that existing employment levels are such that less than 10 jobs will be lost, and as such this number represents a reasonable worst-case appropriate for informing the assessment.</p> <p>The socio-economic impact of the use of the Principal Site on the wider rural economy has been considered through the application of the HCA Additionality Guidance (Ref 1-44) 'ready reckoner' in respect of the multiplier effect being applied to the existing jobs on-site to estimate off-site employment. This is as described at paragraphs 14.8.11 to 14.8.12 and 14.8.51 of <b>Chapter 14: Socio-economic and Land Use</b> of the ES [APP-045] with job numbers presented in Table 14-20. The table shows that for the 10 jobs identified as the worst-case direct employment on site lost through the operation of the Scheme, four induced and indirect jobs within the supply chain would also be lost. This assessment is considered to be appropriate to considering the effect of the socio-economic impact of the Scheme on the wider rural economy based on the level of existing employment on-site and as being a typical methodology of estimating net employment effects arising from development proposals at planning stage.</p> <p>Ms Caroline Reeve, on behalf of the Applicant, highlighted that, in relation to national policy on BMV land, with the removal of the consideration food production from the NPPF there is no longer a need to consider food production in land use planning terms. The remaining policy tests are whether the use of agricultural land is justified and whether the loss of BMV land has been minimised through site selection. Ms Reeve drew the ExA's attention to the site selection process for the Principal Site set out in <b>Chapter 4: Alternatives and Design Evolution</b> of the ES [APP-035] and confirmed that the Applicant's site-selection process exclusively followed these criteria. This involved looking at alternatives and ensuring the minimisation of planning conflicts and environmental damage. This process involved excluding Grade 1 and 2 land from consideration and then undertaking an ALC survey of the Principal Site to ascertain the split between Grade 3a and 3b land. Ms Reeve added that the Applicant also considered the availability of brownfield land for the Scheme, the largest of which was the former Cottam Power Station site. Ms Reeve confirmed that no sites were suitable and in the case of the former Cottam Power Station, as this is safeguarded land for mixed use development beyond the current plan period. Ms Reeve explained that as a strategic site for future redevelopment, the Cottam Power Station site is unavailable for solar development.</p> <p>Regarding cumulative impacts, Ms Coleman stated that the reason for the clustering of solar farms in the area was driven by the grid connection and capacity of the substation at Cottam Power Station. The WMS note (May 2024) states that there is a need to assess cumulative impacts, which has been done in respect of the Scheme and also by the Secretary of State in the context of the Gate Burton and Cottam decisions, where such effects were determined to be acceptable and development consent granted. Furthermore, Ms Coleman clarified that the WMS does not change or add to existing national policy, nor did it introduce any additional policy tests (neither</p>

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	<p>with regard to food production nor the approach to cumulative assessment). Rather, the WMS simply reiterated existing policy at the time in the NPPF and NPS EN-1 around ALC and the use of BMV land.</p> <p>Mr Baird, on behalf of the Applicant, also referred to Figure 2.1.1a of the Department for Environment, Food &amp; Rural Affairs (Defra) <i>United Kingdom Food Security Report 2024</i>, (Ref. 1-7) which sets out the UK food production-to-supply ratio from 2003 to 2023. This identifies a rate of approximately 60% self-sufficient domestic food production in the UK. Mr Baird explained that this figure has remained fairly consistent over the 20-year period despite policy changes. There are caveats to the figures presented in the Defra report, for example the UK produces domestically grain, wheat, milk and eggs sufficient for its consumption, but the food production to supply ratio is in terms of economic value and the UK tends to export cheaper and import more expensive foodstuffs. In 2005, the UK started its departure from previous agricultural soil support system where 10% of all arable land could not be used for agricultural activity (set aside); however, this had no discernible impact on food production or agricultural employment. Agricultural employees are in fact more difficult to get a hold of now, alongside a declining need for them as further mechanisation of agricultural practices occurs.</p> <p>The ExA noted that Mr Baird referred to a new <i>UK Food Security Report 2024</i>, while the chapter referred to a 2021 report and said it would be helpful to provide an update after the hearing.</p> <p><b>Post-hearing note:</b> <i>The ExA requested that the Applicant review and update as necessary statements made in previous representations which refer to the 2021 Defra report to ensure they align with the 2024 report. The Applicant included the Defra's 2021 UK Food Security Report as Appendix E of Applicant's Responses to Relevant Representations [REP1-028] and referred to the Defra 2021 report within Applicant's Responses to Relevant Representations [REP1-028], Applicant's Response to Written Submissions at Deadline 1 [REP2-007], Applicant's Responses to Local Impact Reports [REP3-061], Applicant's Response to Examining Authority's First Written Questions [REP3-062] and Applicant's Response to Written Submissions at Deadline 2 [REP3-063]. The Applicant referred to the Defra's 2021 UK Food Security Report for evidence that the UK grain production is approximately equivalent to UK grain consumption. The same is also true of UK production and consumption of meat, milk and eggs. This therefore demonstrates that the UK is self-sufficient producing as much food as is consumed. In addition, the Defra UK Food Security Report 2021 notes the following: "In terms of medium and long term risk to UK domestic food production, the biggest risks include climate change and soil degradation." Land use and land use change are not listed as risks to UK domestic food production. The Applicant also referred to the Defra 2024 UK Food Security Index in the Applicant's Response to Written Submissions at Deadline 1 [REF] and provided a copy of this 2024 report at Appendix A of that document. The Defra 2024 UK Food Security Report was published on 11 December 2024, after Deadline 3 of the Examination had passed. The Applicant has now considered the 2024 Food Security Report, and concludes that the above statements relating to the Defra 2021 Food Security Report still remain valid with the publication of Defra's 2024 UK Food Security Report.</i></p> <p>Ms Coleman, on behalf of the Applicant, reiterated the benefits of the Scheme for tenant farmers and freeholder farmers, referring to the relevant representation by Mr Simon Elwess [RR-277], which notes that the Scheme would benefit his family's farm by allowing them to employ additional staff and diversify their activities due to the guaranteed income. The relevant representation stated:</p>

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	<p><i>"This solar scheme will benefit our farm and allow us to employ another one or two members of staff for our free range eggs business. Our land will not need government subsidies to survive the worsening situation for agriculture on lower grade soils."</i></p> <p>Ms Coleman also referenced representations in support from Mr Timothy Elwess [RR-307] and Ms Victoria Elwess [RR-322] which states: <i>"The proposed solar development will have a positive impact on employment for our farm. The guaranteed income from the solar project will allow us to concentrate on developing our egg business, securing current levels of employment and hopefully providing for expansion in the future."</i></p> <p>Accordingly, there are positive impacts for those farmers who continue to use the land on the Principal Site.</p> <p>In response to a statement by Ms Garbutt, on behalf of 7000 Acres, regarding impacts on supply chains of farm businesses arising from the loss of agricultural land, Ms Coleman noted that this argument assumes that the agricultural land within the Order limits would otherwise continue being farmed. In addition, only 4.5% of the Scheme is on BMV land and the Applicant has avoided Grade 1 and mainly Grade 2 land altogether. Ms Coleman added that the Applicant has also looked at the cumulative impact on agricultural land in line with the other solar schemes (Gate Burton, Cottam and West Burton). When considering the region as a whole, the cumulative impact of these schemes is actually quite small. Mr Baird also referred to Natural England's <b>Responses to the ExA's First Written Questions [REP3-071]</b>, specifically their response to FWQ 1.12.5, which notes that inherent soil, site and climatic properties required to determine the ALC Grade would remain unaffected by solar developments, and therefore not alter the ALC grade in the long term. The purpose of retaining BMV land is not to manage land to any particular food production or any particular intensity – rather, it is to keep the land there as a strategic resource to protect against future uncertainty.</p>
<b>Item 3c – General and Other Planning Matters</b>	
<b>BESS – associated development</b>	<p>The ExA referred to the Applicant's response to First Written Question 1.1.22, in the <b>Applicant's Response to the ExA's First Written Questions [REP3-062]</b>. The ExA noted the Applicant's answer that the commercially sensitive information is not relevant to planning matters, but the ExA said it requires the information on typical unit prices for the export of energy. The ExA asked if the Applicant considers typical unit prices to comprise commercially sensitive information.</p> <p>In response, Ms Coleman, for the Applicant, confirmed that the Applicant would consider such information to be commercially sensitive, but the greater point is that such further information is not relevant to the consideration of whether the BESS is associated development. In this regard, Ms Coleman referred the ExA to the Secretary of State's Decision Letter in relation to the Gate Burton Energy Park DCO, which at paragraph 4.2 says:</p> <p><i>"The ExA considered that, notwithstanding the lack of a detailed financial breakdown, it was not unreasonable to conclude that providing these grid balancing services through the BESS would have a commercial benefit but acknowledged that the Guidance advises development should not be treated as associated development if its only</i></p>



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	<p><i>purpose is as a source of additional revenue [ER 1.3.17]. The ExA was satisfied that co-location of a BESS with a solar generating station is a reasonable and appropriate function and in line with 2024 National Policy Statement ("NPS") EN-3 [ER 1.3.15]. The ExA concluded, given the reasonable and legitimate benefit associated with the provision of storage, Government support for co-location and that the BESS has not been proposed only as a source of additional revenue, that the BESS is appropriately included as associated development [ER 1.3.17]. The Secretary of State agrees with the ExA that the BESS constitutes associated development, noting that it will enable grid balancing and is ancillary to energy generation: as storage directly linked to operational generation and efficiency, the BESS will help deliver a secure and reliable energy supply."</i></p> <p>In relation to this, Ms Coleman concluded that the Scheme, especially in relation to the DC-coupled approach given it encourages storage directly from Solar PV to avoid any losses in energy, is designed with the primary aim of maximising efficiency of the solar PV. The Applicant would provide grid balancing services and there will be contracts for those; however, this does not negate the main objective of the BESS to support the efficiency of the solar generating station through exporting electricity to the grid when it is in greatest demand. Ms Coleman added that further detail around how those ancillary services may operate is not relevant, since there is very clear support for them in NPS EN-1 and the need for electricity storage established at paragraphs 3.3.25-28 and 3.3.34-36; in any event, the role of BESS in supplying those services is compliant with associated development tests, given the grid balancing services address an impact of the Scheme and other intermittent renewable energy generation providing energy to the national grid.</p> <p>The ExA referred to the Department for Communities and Local Government (DCLG)'s <i>Guidance on associated development applications for major infrastructure projects</i> mentioned by the Applicant, in particular, paragraph 5 of that guidance which says that a development should not be treated as associated development if it is only necessary as a source of additional revenue for the applicant. In this context, the ExA asked to Applicant whether it is more profitable for the BESS to provide alternative functions (ie grid balancing) as opposed to direct support of the solar array.</p> <p>Ms Coleman, for the Applicant, responded that this question presupposes that the Applicant would be influenced by the different revenue which could be generated by different uses of BESS, where considerations are not part of that test for associated development. Ms Coleman further explained that BESS is 3% of the developable area, and that alone shows it is not the main aim of the development. The DC-coupled nature of the BESS, also ensures smaller BESS are spread around the site, which couldn't be a standalone activity in itself as it is integrated alongside the solar PV. Ms Coleman also noted that there is a need for electricity storage to support that.</p> <p>The ExA noted that the Applicant places reliance on a DC-coupled approach for the Scheme and asked if the <b>draft DCO [REP3-004]</b> precludes a different approach from being taken.</p> <p>In response, Ms Coleman, for the Applicant, referred to wording in Schedule 1 of the <b>draft DCO [REP3-004]</b> and the <b>Outline Design Principles Statement [REP3-029]</b> which confirmed the use of DC/DC converters, and therefore the use of a DC-coupled system. However, she clarified that even an AC coupled system would meet the test for associated development, as demonstrated by the consent for AC-coupled schemes such as Longfield Solar Farm, Sunnica, Cottam and Gate Burton. She confirmed that the capacity of the BESS</p>

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	<p>for the Scheme would be comparable to those examples, noting that in each case, the BESS have been designed to tailor the electricity generation capacity for the Solar PV so they are proportionate. She also directed the ExA and 7000 Acres to the detailed technical note included at Appendix B of the <b>Written Summary of the Applicant's Oral Submissions at ISH1 [REP1-046]</b>, which explains the benefits of the DC-coupled approach. Furthermore, in response to the question about financial viability, Ms Coleman referred to NPS EN-1, which says, at paragraphs 4.1.21 – 4.1.22, that financial and technical viability is a matter of judgment for the Applicant.</p> <p><b>Post-hearing note:</b> <i>The Applicant agreed to review the articles of the draft DCO to confirm a commitment to the DC-coupled approach. Whilst the Applicant considered Schedule 1 of the draft DCO and the Outline Design Principles were sufficiently clear in this respect, for the avoidance of doubt at Deadline 4 the <b>Outline Design Principles Statement [EN010142/APP/7.4(Rev03)]</b> have been amended to record that the BESS will be DC-coupled.</i></p> <p><i>It is also noted that following the ISH2, the Secretary of State granted consent for West Burton solar farm on 24 January. In the SoS's decision letter, he dealt with questions in the examination of the application as to whether the BESS was associated development, and his conclusions in this respect are important and relevant to the issues before the ExA in relation to the Scheme and go to the heart of the questions raised to date (including by 7000 Acres):</i></p> <p><i>“4.2. During the Examination, the campaign group 7000 Acres questioned whether Work No. 2, the energy storage facility, could properly be considered associated development for the purposes of the Proposed Development, noting that it would operate in a separate segment of the energy market rather than being strictly associated with the Proposed Development [RR-001]. 7000 Acres claimed the energy storage facility being included as associated development was at odds with guidance published by the Department for Communities and Local Government, ‘Planning Act 2008: Guidance on associated development applications for major infrastructure projects’ (“the Guidance”) as the energy storage facility would be an additional source of income capable of trading power with the National Grid at night and in winter months when the solar PV panels would not be generating power and therefore should be viewed as a separate application [REP1A-021]. 7000 Acres also raised concerns that the Applicant had not provided details of the size and capacity of the energy storage facility [REP1A-021].</i></p> <p><i>4.3. The Applicant explained that Work Nos. 2 to 11 are all directly associated with the NSIP and subordinate to it, not necessary only as a source of additional revenue, all proportionate to the nature and scale of the NSIP, all of a nature typically brought forward alongside a solar generating station and all listed in or analogous to the types of associated development listed in Annexes A and B to the Guidance, meaning that all tests for associated development have been met [REP6-013].</i></p> <p><i>4.4. The ExA noted that the energy storage facility would support the operation of the Proposed Development by storing and exporting electricity generated, and there would therefore be a direct relationship between the principal and associated development. It further considered that, while the energy storage facility would assist in providing grid balancing services to help increase the resilience of the electricity distribution network, the primary purpose of the</i></p>

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	<p><i>energy storage facility would be a direct association with the primary energy generating function of the principal development [ER 3.2.104]. The ExA considered it reasonable to assume that there would be commercial implications resulting from the energy balancing function but noted that the Guidance advises development should not be treated as associated development if it is only necessary as a source of additional revenue for the applicant and refers to the fact that it is not unreasonable that associated development should cross-subsidise the principal development [ER 3.2.105]. The ExA noted that the parameters of the energy storage facility would be limited by those set out in the Concept Design Parameters and Principles document [REP5-094] and it would not be disproportionate to the overall scale of the Proposed Development [ER 3.2.103]. The ExA, having regard to the Guidance and the 2024 National Policy Statement ("NPS") EN3 in relation to solar development provisions, which sets out government support for solar co-located with other functions, was satisfied that the energy storage facility would serve a legitimate storage purpose that is supported by government, would support the transition to net zero, does not have the sole purpose of an additional source of income, and can therefore appropriately be regarded as associated development [ER 3.2.106].</i></p> <p><i>4.5. The Secretary of State agrees with the ExA that the energy storage facility constitutes associated development, noting that it will enable grid balancing and is ancillary to energy generation: as storage directly linked to operational generation and efficiency, it will help deliver a secure and reliable energy supply."</i></p>
<p><b>Consistency of wording in the draft DCO</b></p>	<p>The <b>ExA</b> referred to queries it raised in Issue Specific Hearing 1 (ISH1) about the consistency of wording and use of defined terms for BESS in Schedule 1 of the <b>draft DCO [REP3-004]</b>, including in relation to Work No. 2 and the <b>Outline Design Principles Statement [REP3-029]</b>.</p> <p>In response, Ms Coleman, for the Applicant, explained that the delay in these updates has been due to a desire by the Applicant to ensure its draft DCO provisions and associated wording within the <b>Framework Battery Safety Management Plan [APP-225]</b> align with the NFCC Guidance. Ms Coleman explained that the NFCC guidance relates to fire safety and so are relevant to updates in the <b>d DCO [REP3-004]</b> relating to battery safety.</p> <p>However, Ms Coleman noted that the release of the NFCC Guidance is delayed, and that the Applicant has been working to update Schedule 1 of the <b>draft DCO [REP3-004]</b>, the <b>Outline Design Principles Statement [REP3-029]</b> and consequential amendments to the <b>Framework Battery Safety Management Plan [APP-225]</b> for Deadline 4 regardless of whether the new Guidance is released in time.</p> <p><b>Post hearing note:</b> <i>The Applicant has completed the proposed amends to the <b>draft DCO [EN010142/APP/3.1(Rev05)]</b> and the <b>Outline Design Principles Statement [EN010142/APP/7.4(Rev03)]</b> and consequential amendments to the <b>Framework Battery Safety Management Plan [EN010142/APP/7.13(Rev01)]</b>, <b>ES Chapter 3 Scheme Description [EN010142/APP/6.1(Rev03)]</b> and the <b>Explanatory Memorandum [EN010142/APP/3.2(Rev02)]</b>. <b>Appendix A</b> of the <b>Written Summary of the Applicant's Oral Submissions at ISH3 [EN010142/APP/9.34]</b> explains in detail the changes made and their alignment with the assessments undertaken in the ES.</i></p>

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<b>Need/energy (in response to representations from IPs)</b>	<p>Noting the Applicant's response in FWQ 1.1.17, in the <b>Applicant's Response to the ExA's Written Questions [REP3-062]</b>, which sets out the Applicant's position that the terms of the grid connection agreement are not relevant to the determination of the Scheme's compliance with the relevant policy nor the scheme's benefits and impacts, the ExA queried whether the Applicant would accept that the grid connection agreement is relevant in terms of the limit placed on export capacity, and therefore the benefit of the Scheme.</p> <p>Ms Coleman, for the Applicant, confirmed that the Applicant has provided a screenshot of the Transmission Entry Capacity (TEC) register (attached as <b>Appendix A</b> to the <b>Written Summary of the Applicant's Oral Submissions at Issue Specific Hearing 1 [REP1-046]</b>), which records the grid connection agreement for the export of 500 megawatts, but maintains that the grid connection agreement itself is commercially sensitive. Ms Coleman noted that the Applicant also understands this to be the position of the National Energy System Operator (NESO) (formerly National Grid Electricity System Operator) generally in relation to other agreements]. The need for the Scheme is also established; in particular, paragraphs 3.2.6 – 3.2.8 and 4.2.6 of NPS EN-1 set out the overarching need case for each type of energy infrastructure and requires that substantial weight be given to demonstrated need. Ms Coleman added that the grid agreement for 500 megawatts has already been shown in the TEC register provided to the ExA, and the Applicant's position remains that sufficient information has been provided regarding the established need for the Scheme and the substantial weight to be given to it under EN-1. The Secretary of State is not required to consider the individual contribution of any given scheme to that need (EN-1 paragraph 3.2.8), and the Applicant is not aware of any other solar schemes to date having to disclose the details of their grid connection agreements as part of the examination process.</p> <p>In response to the ExA's query regarding whether NESO's position regarding commercial sensitivity dependent on the Applicant's position, Ms Coleman explained that the Applicant's understanding is that there are differing terms between NESO and promoters across different schemes.</p> <p><i><b>Post-hearing note:</b> The ExA asked if the agreements with NESO could be provided. Ms Coleman maintained that it was not necessary to provide the agreements, given the established need and the substantial weight given to demonstrated need, but that the Applicant would follow up and provide any further available information at Deadline 4. The Applicant reiterates that it considers, to the extent any confirmation is required, the TEC Register, which is a register hosted by NESO and which is updated twice weekly to capture any changes, to be sufficient evidence of the Applicant's agreement to export 500MW. The Applicant understands that NESO is supportive of this position and considers the TEC Register to be sufficient as it lays out all information required by an external body.</i></p> <p>Addressing a query from the ExA regarding the balance to be struck between the benefits of renewable energy generation and its potential impacts, with reference to heritage, where there is less than substantial harm, for example, Ms Coleman emphasised that NPS EN-1 is quite clear on this point, with paragraph 3.2.8 stating (in bold text) that the Secretary of State is not required to consider separately the specific contribution of any individual project to satisfying the need established under EN-1. The Applicant understands this wording has been adopted following cases in the High Court on this point where the ExA started to investigate specific contributions in specific projects (see for example <i>Clientearth, R (on the application of) v Secretary of State for Business, Energy and Industrial Strategy &amp; Anor [2020] EWHC 1303 (Admin) (22 May 2020)</i>) (Ref. 1-8). NPS EN-1 establishes the urgent need for all types of renewable, low carbon energy</p>

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	<p>generation that fall within the definition of critical national priority (CNP) infrastructure. In terms of residual adverse effects, Ms Coleman noted the presumption in favour of CNP under EN-1, and that this presumption is not informed by the amount of energy generated.</p> <p>The ExA queried whether the need for renewable energy generation is in fact a separate concept to the benefit. Ms Coleman clarified that meeting the demonstrated urgent need for renewable, low carbon energy generation is a benefit, and that the Scheme satisfies this and substantial weight should therefore be given to it.</p> <p>In response to comments from Ms Garbutt, on behalf of 7000 Acres, regarding the efficacy of renewable energy generation, Ms Coleman, referred the ExA back to the provisions of EN-1, and highlighted that ultimately these are questions of policy and the representations from 7000 Acres go to the merits of policy, which are beyond the scope of this examination. The ExA noted that section 94 of the Planning Act 2008 expressly states that, in a hearing relating to an application for a DCO, the ExA may refuse to allow representations if they relate to the merit of policy set out in a national policy statement.</p>
Overplanting	<p>Referring to the Applicant's response to FWQ 1.1.18, as set out in the <b>Applicant's Response to ExA's Written Questions [REP3-062]</b>, the ExA queried whether there are any commitments or parameters that require the Applicant to adopt a DC-coupled approach for the Scheme.</p> <p>In response, Ms Coleman, for the Applicant, noted that both the solar PV and BESS elements of the Scheme are controlled by the <b>Outline Design Principles Statement [REP3-029]</b> and the <b>Works Plans [REP2-004]</b> and the measures set out in the various Environmental Management Plans, which are directly aimed at mitigating and controlling their impacts. Installed generation capacity does not control impacts – it is the design parameters which are controlling the environmental impacts. The Applicant does commit to a DC-coupled approach in the <b>Outline Design Principles Statement [REP3-029]</b>, as the parameters are not compatible with an AC-coupled approach, for example the definition of BESS under Work No. 2 (e) requiring a DC/DC converter, which can only be used under a DC-coupled approach.</p> <p>Addressing a subsequent query from the ExA regarding the interaction between the draft DCO and Work No. 2, Ms Coleman explained that the <b>draft DCO [REP3-004]</b> authorises what the Applicant is able to build, which is then subject to the design principles set out in the <b>Outline Design Principles Statement [REP3-029]</b>. In this way, the Applicant is authorised to construct the DC-DC converter, as set out under Work No. 2 (e), then the <b>Outline Design Principles Statement [REP3-029]</b> sets out the requirements which it has to comply with in designing, constructing, operating and maintaining this component. As such, any BESS station submitted by the Applicant would need to comply with these design principles and include a DC/DC converter.</p> <p><b>Post-hearing note:</b> <i>The Applicant agreed to review the articles of the draft DCO to confirm a commitment to the DC-coupled approach. Whilst the Applicant considered Schedule 1 of the draft DCO and the Outline Design Principles were sufficiently clear in this respect, for the avoidance of doubt at Deadline 4 the <b>Outline Design Principles Statement [EN010142/APP/7.4(Rev03)]</b> has been amended to record that the BESS will be DC-coupled.</i></p>

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	<p>The ExA queried why the DC-coupled system requires a higher degree of overplanting than AC-coupled systems.</p> <p>Ms Caroline Reeve, for the Applicant, noted that, from a planning perspective, the ratio of overplanting should be considered in accordance with policy and related to land use. The ratio of 1.57 (157%) for the Scheme compares with the over-planting ratio in relation to the Mallard Pass Solar Farm, of 1.3 to 1.5. However, Ms Reeve went on to explain that Mallard Pass is not directly comparable to the Scheme, as it is a standalone solar project with no BESS. Ms Reeve confirmed that the Scheme complies with NPS EN-3, which says that reasonable overplanting is acceptable so long as it is justified.</p> <p>In response to a further query from the ExA regarding whether a DC-coupled approach requires a higher degree of overplanting than an AC-coupled approach, Mr Gergely Czuczor, on behalf of the Applicant, clarified that it is not necessary to overplant in order to compensate for loss of energy when storing the energy generated if you are using a DC-coupled solution; the aim of the Scheme is to maximise the efficiency of land use and energy generated, so it is a benefit if you overplant. Referring to <b>Appendix B of Written Summary of Applicant's Oral Submissions at Issue Specific Hearing 1 [REP1-046]</b>, which sets out the Applicant's approach to overplanting, Mr Czuczor further explained that the benefit of overplanting arises due to the intermittent nature of solar technology. Overplanting allows the Applicant to export electricity for a longer period of time because the Scheme is able to generate more energy, thereby maximising the grid connection for a longer period of time. The BESS supports this process and that is why they are located close to the PV arrays; the BESS minimise the loss of energy coming from the overplanted PV panels by storing it, allowing it to then be exported later when demand is higher. Mr Czuczor also highlighted that the Scheme is not an outlier in terms of the ratio of overplanting.</p> <p>Ms Reeve, for the Applicant, added that, from a technical perspective, the Applicant needs to create an efficient scheme that makes efficient use of the land. Without overplanting, this would be effectively capping the Scheme's energy generation, which would be inconsistent with the demonstrated urgent need for the renewable electricity generated by the Scheme.</p> <p><b>Post-hearing note:</b> <i>In response to a query from the ExA and LCC, the Applicant agreed to provide further clarification and justification for the overplanting ratio of 1.57 for the Scheme.</i></p> <p><i>In summary, the justification for the overplanting for the Scheme is based on a number of factors, all of which are aimed at enabling the grid connection to be maximised across the lifetime of the Scheme and ensuring that in maximising the grid connection, land is used efficiently.</i></p> <p><i>The current indicative design of the Scheme is the result of several iterations of multidisciplinary collaboration. Experts from technical, land, legal, environmental, and other fields contributed to refining the design, ensuring that it balances efficiency, environmental sustainability, and complies with legal, planning policy and regulatory requirements. This has been an iterative process that has evolved as constraints were identified and addressed.</i></p> <p><i>The starting point for the Scheme's design was the availability of grid capacity as set out in <b>Chapter 4: Alternatives and Design Evolution of the ES [APP-035]</b> and the <b>Design and Access Statement [APP-212]</b>. Following the identification of available grid</i></p>

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	<p><i>capacity, a land search was conducted within the search area to locate a contiguous, viable site for the Scheme. In this case, a bilateral grid connection agreement was secured for 500 MW import and export capacity, and this formed a key parameter or criteria that the Scheme needed to respond to ensure that the benefits that the Scheme could deliver were maximised (reflecting urgent demonstrated need and substantial benefit to be derived from this need).</i></p> <p><i>A key design consideration of the Scheme was to seek to efficiently generate a substantial capacity of renewable electricity to the national energy system through its careful siting, thereby supporting the delivery of the Government's objectives and commitments for the development of a secure, affordable and low carbon energy system as set out on page 40 of the <b>Design and Access Statement [APP-212]</b>. A key design objective therefore of the Scheme is to maximise the use of the grid connection capacity that it has secured to deliver substantial benefits to people, the electricity grid, and the environment. Efficient use of the grid connection ensures a longer duration of electricity export (throughout the day and year), supporting the national energy system. This represents an efficient use of infrastructure, balancing technical feasibility with land availability and environmental considerations.</i></p> <p><i>The Scheme's design has undergone an iterative design process to explore and optimise different feasibility options and design concepts to achieve maximum benefit in terms of electricity generation whilst balancing this against environmental considerations to ensure that the Scheme minimises significant effects. Paragraphs 2.10.60 – 2.10.62 of EN-3 reflect that there are various factors that applicants will consider when looking at the design and layout of their site. This reflects that the different technology and design options all feed into a site's efficiency and potential power output (and therefore its overplanting ratio). In the case of the Scheme, those factors have included the following design concepts and options, and it is decisions taken on these aspects that have influenced the overplanting ratio of the Scheme. The factors that have been considered included but are not limited to:</i></p> <ol style="list-style-type: none"> <li><i><b>1. PV Solar Panel structures:</b></i> <ul style="list-style-type: none"> <li><i>○ Fixed South: Panels face south to optimise sunlight capture during and around midday.</i></li> <li><i>○ Fixed East-West: Panels face east and west to spread generation throughout the day focusing mainly on peak demand hours in the morning and evening.</i></li> <li><i>○ Tracker Systems: Panels move to follow the sun, maximising energy capture throughout the day.</i></li> </ul> </li> <li><i><b>2. Panel Orientation:</b></i> <ul style="list-style-type: none"> <li><i>○ Portrait: Panels are mounted vertically.</i></li> <li><i>○ Landscape: Panels are mounted horizontally.</i></li> </ul> </li> <li><i><b>3. Additional Parameters:</b></i> <ul style="list-style-type: none"> <li><i>○ Row-to-row distance (also known as pitch).</i></li> <li><i>○ Tilt angle of the panels.</i></li> <li><i>○ Orientation of sub-construction systems.</i></li> </ul> </li> </ol> <p><i>The above factors all influence the amount of generation as well as land needed for the Scheme – hence why they are relevant to overplanting. However, given the various factors at play, the degree or ratio of overplanting does not directly correlate with land take. Land requirements depend on design choices, such as row-to-row pitch and panel tilt, rather than the overplanting ratio alone. This means, it cannot be assumed that more overplanting results in more land being required - for instance, a scheme with a larger pitch may</i></p>

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	<p><i>occupy more land while having a smaller overplanting ratio. The land use strategy is tailored to the preferred design approach, balancing efficiency, environmental impact, and technical feasibility.</i></p> <p><i>Assumptions around degradation of panels over the Scheme's lifetime is another of the factors taken into account when designing the Scheme and which therefore also informs the overplanting ratio (as reflected by EN-3 2.10.55).</i></p> <p><i>The technical design team for the Scheme appraised each of the options referred to above to derive an optimal design solution to maximise the use of the grid connection during the lifetime of the Scheme whilst also having regard to the degradation of panels over time and the impacts of this on land take. In addition, design iteration evolved to have regard to outcomes of survey work feeding into the ES to ensure the application of the mitigation hierarchy in the first instance to avoid impacts. For example, embedded mitigation to include buffer zones around woodland and trees and land excluded from development with archaeological potential following trial trenching.</i></p> <p><b>Appendix B of the Written Summary of Applicant's Oral Submissions at Issue Specific Hearing 1 [REP1-046]</b> sets out the Applicant's approach to overplanting confirming that the Scheme has been designed with an overplanting ratio of 1.57 (157%). This takes into account all of those factors described above.</p> <p><i>The principle and acceptability of overplanting is established by national policy with paragraph 2.10.55 of NPS EN-3 confirming that:</i></p> <p style="padding-left: 40px;"><i>"The installed generating capacity of a solar farm will decline over time in correlation with the reduction in panel array efficiency. There is a range of sources of degradation that developers need to consider when deciding on a solar panel technology to be used. Applicants may account for this by overplanting solar panel arrays."</i></p> <p><i>Footnote 92 of NPS EN-3 confirms that reasonable overplanting is acceptable in a planning context so long as it is justified. The Applicant has demonstrated in <b>Appendix B of its Written Summary of Applicant's Oral Submissions at Issue Specific Hearing 1 [REP1-046]</b> that the level of overplanting is required to address panel degradation and ensure that the grid connection is maximised across the lifetime of the Scheme.</i></p> <p><i>The benefit of the overplanting (in particular when the solar PV is co-located with BESS) is that it enables the Scheme to export electricity in accordance with its grid connection for longer on a daily and annual basis; this is what is meant by maximising the grid connection. The above factors have been combined to arrive at the ratio of 1.57 which is a balance to ensure maximum benefits are realised whilst also ensuring an efficient use of land and impacts that are appropriate (especially when having regard to the substantial benefits of the Scheme). A lower ratio of overplanting would not necessarily result in less land being required (given the various factors at play, as set out above), but would mean that the Scheme would over time be constrained and would export less electricity than the export capacity – in other words, it may well require the same amount of land and have the same adverse effects, but without the benefits being fully optimised. This would not be efficient and would reduce the substantial benefit and opportunity that derives from the Scheme.</i></p> <p><i>Efficient use of land for solar farms under the DCO regime is often demonstrated by reference to EN-3 paragraph 2.10.17 which explains that a solar farm, along with associated infrastructure, requires between 2 to 4 acres for each MW output (although it notes this may</i></p>



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	<p>vary). This is useful in the context of overplanting, as it helps demonstrate that the approach to the Scheme's design (and therefore its overplanting ratio) is proportionate and reasonable, by being within the range of what EN-3 envisages with respect to acres per MW.</p> <p>The approach in Mallard Pass established that the land to derive the acre per MW figure for the Scheme should exclude ecological mitigation and enhancement areas. The Applicant understands the calculation on Mallard Pass to have been done only based on land required for Work No. 1 (the solar PV generating station), however, in the case of the Scheme, the Applicant has calculated this based on both the land only needed for Work No. 1 (solar PV generating station) as well as Work No. 1 + associated built infrastructure including BESS, onsite substation, operation and maintenance buildings, and in practice the approach makes very little difference to the ratio of acres/MW.</p> <p>In terms of calculating the acres/MW for the Scheme, the Principal Site comprises the following components:</p> <ul style="list-style-type: none"> <li>• Work No. 1 (a) solar panels fitted to mounting structures comprising up to 739.56 hectares (1827.49 acres)</li> <li>• Work No. 1 (b) solar stations and Work No. 2: BESS comprises 24.75 hectares (61.15 acres)</li> <li>• Work No. 3: development of onsite substations and associated works comprises 2.54 hectares (6.27 acres)</li> <li>• Work No. 4: works in connection with high voltage electrical cabling (not applicable in terms of land take).</li> <li>• Work No. 6: associated works including but not limited to cables connecting Work Nos. 1, 2 and 3 to one another (not applicable in terms of land take).</li> <li>• Work No. 8: works to develop a solar farm control centre and equipment storage comprises 0.15 hectares (0.37 acres)</li> <li>• Work No. 9: works associated with habitat management and protection comprises 283.76 hectares (701.18 acres) and a further 207.66 hectares (513.13 acres) for retained habitats.</li> <li>• Work No. 10: works to facilitate access to Work Nos. 1 to 9 including Work No. 10A to facilitate permanent access, Work No. 10B to facilitate temporary construction and decommissioning accesses to Work Nos. 1 and 9 and Work No. 10C to facilitate emergency access to Work No. 2 (BESS) comprises 12.79 hectares (31.60 acres) (including internal access tracks).</li> <li>• Work No. 11 sensitive archaeological site protection and management works comprises 73.57 hectares (181.79 acres).</li> </ul> <p>In deriving an acres/MW ratio, the Applicant has applied the same approach that was agreed and therefore established as a reasonable interpretation of policy by the ExA and the SoS for Mallard Pass Solar Farm which incorporates the Single Access Tracker (SAT)</p>

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	<p><i>configuration (as per the Scheme) and presented an acres/MW ratio based on the solar PV associated with Work No. 1 (a) and the MWp dc.</i></p> <p><i>Applying this methodology derives 1827.49 acres/784 MWp dc, which equates to 2.33 acres/MW.</i></p> <p><i>If only land for habitat management and protection and land for the protection of archaeology was removed from the calculation (which means land for onsite substations, BESS etc is included), a net site area of 1926.88 acres/784 MWp dc would be derived, which equates to 2.45 acres/MW.</i></p> <p><i>In either scenario, the ratio is within the 2-4 acres / MW envisaged by EN-3.</i></p> <p><i>The proposed level of overplanting will support the delivery of an efficient Scheme from a technical perspective having regard to degradation as well as ensuring an efficient use of land. In land use terms, the Scheme will utilise between 2.33 and 2.45 acres of land per MW. This is within the lower end of the range set out at paragraph 2.10.17 of NPS EN-3 (that is, the more efficient end of the range, as less land needed per MW). This is based on maximum output based on optimum conditions (in line with the approach taken on Mallard Pass). If we apply a "worst case" using the 500MW grid connection capacity (assuming installed capacity was 500MW), this derives a range for the Scheme at the upper end of the range but still within it at 3.65 acres per MW based on 1827.49 acres/500 MW. Doing the calculation based on 500MW serves as a useful sense check to ensure the overplanting has not driven inclusion of more land for solar PV than is reasonable (noting also that there is not necessarily a direct correlation between overplanting and land take) – however, given the exact same area of land with installed capacity of 500MW would also be considered an efficient use of land and within the range in EN-3, it is demonstrated in this case that the balance of overplanting is appropriate and reasonable. In either case, the Scheme is within the guideline 2-4 acres per MW that is set out in NPS EN-3, albeit benefits are optimised when the installed capacity includes allowance for overplanting.</i></p> <p><i>The Applicant has also compared the Scheme against other consented solar NSIPs comprising SAT panels and confirms that most fall within the suggested guideline range of 2-4 acres/MW, but some exceed this. For example, Mallard Pass Solar Farm comprises 2.9 acres per MW and Cottam Solar Farm comprises 4.94 acres per MW. The Scheme falls below the range of each of these (i.e. greater efficiency in terms of use of land per MW). In addition, the East Yorkshire Solar Farm [EN010143] utilises SAT and generated a ratio of 3.85 acres/MW, albeit a decision has not yet been made on this Scheme.</i></p> <p><i>Both Mallard Pass and East Yorkshire are PV only schemes with no BESS. Despite having less infrastructure than the Tillbridge Solar Project, the level of overplanting for Mallard Pass was considered acceptable (East Yorkshire is not yet determined). However, both Schemes in terms of efficiency are at the upper end of the 2 to 4 acre/MW. Tillbridge offers additional efficiencies through the incorporation of BESS, which requires land and a DC-coupled design solution, and the Scheme still falls within the lower end of the range based on MWp dc.</i></p>

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	<p><i>In summary, the Applicant considers that the Scheme adheres to NPS EN-3, has an appropriate level of overplanting that is justified, and uses a reasonable amount of land (within the 2-4 acre / MW guideline outlined in NP EN-3), which maximises the renewable energy yield for the grid connection offer.</i></p> <p><i>The Applicant has demonstrated that its approach to overplanting is reasonable and justified and supported by NPS EN-3. The reasons for this are expanded upon in paragraphs 8.2.16 to 8.2.18 of <b>Appendix B</b> of its <b>Written Summary of Applicant's Oral Submissions at Issue Specific Hearing 1 [REP1-046]</b>.</i></p>

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