

North Kesteven District Council **Local Impact Report**



Heckington Fen Solar Park

Application by Ecotricity (Heck Fen Solar) Limited
PINS Reference: EN010123
NKDC Reference: 21/1572/NSIP



North Kesteven
DISTRICT COUNCIL

Heckington Fen Solar Park

Local Impact Report

A report prepared by North Kesteven District Council

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1 Terms of Reference and Introduction

- 1.1 This report comprises the Local Impact Report (LIR) of North Kesteven District Council (NKDC). The Council has had regard to the purpose of LIRs as set out in s60(3) of the Planning Act 2008 (as amended), DCLG's (now DLUHC) Guidance for the examination of applications for development consent and the Planning Inspectorate's Advice Note One, Local Impact Reports, Republished April 2012 (version 2).

2 Scope, Purpose and Structure of the LIR

- 2.1 Unless otherwise specified (specifically, in the case of ecology and archaeology) the LIR only relates to the proposed development insofar as it affects the administrative area of NKDC. Specifically, it describes the impact of 'Works' (as described in the Development Consent Order (DCO)) as described below. This LIR does not consider the impacts of development insofar as they relate to the grid connection cabling works and the proposed works to Bicker Fen Substation (BFSS) which are located outside the Council's administrative area and are located within Boston Borough. It is understood that Boston Borough Council (BBC) and Lincolnshire County Council (LCC) will prepare and submit separate LIRs.
- 2.2 This LIR has been prepared to highlight the ways in which the proposed development of a solar park and associated battery storage facility on flat, low lying agricultural land at Heckington Fen will affect the locality and local community. It is not intended as a precise technical document – the application is accompanied by a great deal of technical information – but as a broad overview of the likely issues (positive, negative and neutral) that might arise from the proposed development.
- 2.3 This LIR is intended as a factual document and does not attempt to come to a conclusion on the acceptability of the proposals. It does, however, seek to identify where there is compliance (or conversely where there is a tension or conflict) with national but in particular local plan policy, and to distinguish between matters that are of most potential impact and those that are either temporary or less significant in the longer term.

3 Application description

- 3.1 The LIR does not describe the proposed development any further, relying on the applicant's description as set out at paragraph 4.1.3 of the Environmental Statement, namely;

“Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to, and extension at, Bicker Fen Substation and all associated infrastructure works”.

3.2 The key components of the proposed development, as set out in paragraph 4.5.1 of the Environmental Statement are:

- Solar PV panels;
- PV module mounting structures;
- Inverters, transformers and switchgear;
- Cabling (including extra high, high, and low voltage power, earthing, communication, and control) – below ground for the grid connection to Bicker Fen Substation, and in trenches and/or behind the panels on the Energy Park, along with above ground grid cable access points along the Cable Route Corridor;
- Battery Energy Storage Systems (BESS) (200-400MW notional storage capacity)
- Water storage tanks within the BESS (fire risk mitigation)
- Onsite substation comprising substation and control buildings;
- Fencing, Gatehouses and Security Measures (including CCTV cameras);
- Internal access tracks;
- Community orchard, landscaping and Biodiversity Net Gain/habitat creation areas;
- Permissive path;
- Construction of new access point from the Energy Park onto the A17 and improvement of existing access points off highways for construction access for Grid Route works; and
- Extension of Bicker Fen National Grid Substation (BFSS) and installation of above and below ground equipment
- A 400MW (export) and 250MW (import/storage via the ESS) connection from the site through the Bicker Fen Substation has been accepted with National Grid.

4 Site Description, Surroundings and Characteristics

4.1 The proposed Energy Park is located on an area of greenfield land within East Heckington, approximately 3.7km east of the village of Heckington and 8.9km west of the town of Boston, Lincolnshire.

4.2 The village of Heckington is separated from the Energy Park site by agricultural land within the surrounding fenland landscape. The main site (the Energy Park) extends to approximately 524ha hectares (ha) (1295 acres) in size.

4.3 The Energy Park site lies wholly within the administrative district of North Kesteven, abutting Boston Borough Council administrative boundary along the eastern edge of the Energy Park site. The cable route corridor spans across Boston Borough Council and North Kesteven District Council administrative area, with a section within the Energy Park running from the proposed Onsite Substation in the Energy Storage Compound, south through the Energy Park site and then offsite for a short distance once it has left the Energy Park site. At this point the cable route corridor leaves the administrative boundary of North Kesteven and enters the Boston Borough Council administrative boundary.

- 4.4 The Energy Park site comprises arable, agricultural land subdivided into generally rectilinear parcels by long linear drainage ditches that lie principally on a north-south alignment, connected east-west by shorter sections of ditches including Labour in Vain Drain. The ditches have an engineered profile, colonised in part by emerging aquatic plant species.
- 4.5 The Energy Park is bounded by Head Dike to the north, a smaller watercourse to the east, agricultural land to the south and the B1395 Sidebar Lane and further agricultural land to the west. To the south of the Energy Park site there are 3no. access points which connect to the A17.
- 4.6 The main vehicular access point will be provided via an access off the A17 frontage at Rectory Farm and at Elm Grange, with internal tracks then connecting through the site. A third access point would be located off the A17 towards 'Six Hundreds Farm'. The internal access tracks follow ditch alignments, and Six Hundreds Farm lies in the approximate eastern third of the Energy Park site.
- 4.7 In terms of landform and topography, the energy park site is very flat and low-lying at between 2m and 3m above ordnance datum (AOD) across the entire energy park site – reflective of the location of the energy park on the Lincolnshire fens. The site is predominantly in Flood Zone 3 'high risk'.
- 4.8 Land use across the Energy Park site is in arable, agricultural use. Agricultural land is graded, with Grade 1 being excellent quality and Grade 5 being very poor quality. Grade 3 is further divided into subgrades 3a "good" and 3b "moderate" quality land. Grades 1, 2 and 3a are defined as the "best and most versatile" in the National Planning Policy Framework (NPPF). 50.6% of the Energy Park site is Grade 3b, the remaining 49.4% of the area proposed for energy generation is a combination of Grade 3a (30.5%), Grade 2 (7.4%), Grade 1 (11.1%), and Non-Agricultural land (0.4%).
- 4.9 There is one public right of way (PROW) footpath ('HECK/15/1') running along the northern boundary, crossing a small part (about 280m) of the Energy Park site, however the proposals do not require the closure or diversion of this PROW.
- 4.10 There is sporadic residential and commercial property and development to the south and west of the Energy Park site along the A17 and on the B1395 Sidebar Lane (Elm Grange Studios, Wilson Prestige Vehicle Repairs, Mountain's Abbey Parks Farm Shop, Four Winds Service Station, and Shell Service Station) and a number of farms in East Heckington (Rakes Farm, Maize Farm, Rectory Farm, Piggery, Poplars Farm and Glebe Farm).
- 4.11 There are no European statutory designated sites (Ramsar, Special Areas of Conservation (SAC) & Special Protection Areas (SPA)), national sites (Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Local Nature Reserve (LNR)) or non-statutory sites (Local Wildlife Sites) either within the boundary of, or within 10km of the Energy Park site. The Energy Park site does not contain any designated heritage assets (Listed Buildings,

Scheduled Monuments, Registered Parks and Gardens, or Conservation Areas).

5 Planning History

s.36 of the Electricity Act (1989)/s.90(2) of the Town and Country Planning Act 1990

- 5.1 The approximate northern half of the main site was subject to three previous connected applications made by the same applicant under s.36 of the Electricity Act (1989) and for a direction under section 90(2) of the Town and Country Planning Act 1990 for the erection of a 22-turbine 66MW windfarm (revised during the course of determination down from 28 turbines). Two of those applications were determined and the third remains undetermined at the time of writing, albeit functionally this outstanding application is incapable of determination since the original 2013 consent has now lapsed. Further details are set out below.

Table 5.1

Application reference	Description of development	Location	Decision/Status
09/1067/S36 (application submitted under s.36 of the Electricity Act (1989))	Erection of 22 wind turbines with associated infrastructure and new vehicular access from the A17	Six Hundred Farm, Six Hundred Drove, East Heckington	NKDC resolution to object; s36 Consent and deemed planning permission approved by the Secretary of State on 8/2/13
15/0416/S36	Revised scheme to enable erection of 22 turbines (maximum tip height of 125m), and amended wording of condition 5 of S36 Electricity Act consent to prohibit the construction of a wind turbine until a radar mitigation scheme (RMS) has been submitted and approved by the Secretary of State	Six Hundred Farm, Six Hundred Drove, East Heckington	Application undetermined
18/1384/S36	Application pursuant to s36C of the Electricity Act 1989 to vary the 2013 s.36 consent and associated deemed planning permission to extend the date before which the development shall be commenced, from 5 years to 10 years	Six Hundred Farm, Six Hundred Drove, East Heckington	Refused 28/7/22

- 5.2 As summarised above consent was granted by the Secretary of State on 8 February 2013 to construct and operate a 22 turbine onshore windfarm of up to 66MW capacity on part of the proposed solar farm site subject to a number

of conditions including that it must commence within 5 years of the date of the decision and that a Radar Mitigation Scheme (RMS – condition 5) must be prepared, submitted and approved prior to the commencement of development.

- 5.3 The applicant subsequently applied to the Department of Energy and Climate Change (DECC) on 6 February 2015 to vary the original consent, through proposing alterations to some sections of the onsite access track, relocation of the onsite substation and an increase in the rotor diameter of the turbines to maximise the renewable energy generation of the site.
- 5.4 No changes were proposed to the overall tip height of the turbines (125m), the maximum number of turbines (22) or the locations of the turbines. The 2015 Variation Application also sought to vary condition 5 of the original consent to allow the discharge of the RMS condition prior to installation of the turbines rather than prior to the commencement of the development. The applicant considered that this variation still provided the necessary protection for military and civilian radar whilst allowing the development to be commenced whilst studies continued in parallel to identify, test and agree (in consultation with the relevant aviation and military bodies) an appropriate mitigation scheme. No decision was made on the 2015 variation.
- 5.5 The 2018 variation application sought to extend the date by which the development must be commenced from 5 years to 10 years from the date on which consent was granted (i.e. that development must commence by 8 February 2023). The 2018 application was received by the Secretary of State on 2 February 2018, shortly before the original consent was due to expire.
- 5.6 The Secretary of State refused the 2018 Variation Application by notice dated 28 July 2022, noting that there was no valid Radar Mitigation Scheme, nor had the Secretary of State seen any credible prospect of one being secured within the extended timeframe sought by the Applicant. The decision letter noted this to be a factor which ‘weighed significantly against the granting of the variation’ and having considered all matters raised concluded that it was of sufficient weight to mean that the planning balance overall weighed against consent being granted for the 2018 Variation Application.
- 5.7 The decision letter also noted that given that the original consent can no longer be implemented unless the 2018 Variation Application is granted (the original consent having lapsed on 8 February 2018), the Secretary of State considered that the 2018 Variation Application was, in effect, an application for a new consent and was therefore subject to the revised local and national policy provisions (of general prohibition) relating to onshore wind issued through Ministerial Statement HCWS42 dated Thursday 18 June 2015.
- 5.8 The applicant accepts that the windfarm has not been constructed and become operational due to difficulty in satisfying the Grampian RMS condition, and that whilst the development process for a technical solution is still progressing, to date a suitable solution for the MOD has not been found.

- 5.9 The applicant's view is that the wind farm consent remains extant however that if the proposed solar scheme was to gain consent and become operational the wind turbines would not be progressed further and the wind farm consent would be allowed to lapse.
- 5.10 However, The Council's view (which would appear to be supported by the 2018 variation application decision letter) is that the original consent has now time-lapsed and therefore the wind farm is not capable of being implemented. Condition 5, which at the time of writing remains Grampian in nature, has not been discharged. Whilst the 2015 variation application seeking to vary Condition 5 to prohibit the construction of a wind turbine until the RMS has been agreed remains undetermined, the Secretary of State opined that there did not appear to be any credible prospect of one being secured within a reasonable timeframe. Moreover, since the original consent has lapsed without commencement, the 2015 Variation is incapable of being determined since the original consent which it seeks to vary no longer persists.

Other Relevant Planning History

Application Reference	Description of Development	Location	Decision/Status
N/29/0076/88	Erect Overhead Lines	Parish of East Heckington	No objections
N/31/1033/90	Overhead Line	Main Road East Heckington	No objections
N/31/0376/80	Erection of covered cattle yard	Rectory Bottom Farm, East Heckington	Approved 18/4/80
97/0057/PNTEL	Installation of Telecommunications mast	Land at Side Bar Lane Heckington	No comments made
97/0855/FUL	Extension to telecommunication mast and erect cabin	Side Bar Lane Heckington	Refused 28/2/98, Dismissed on Appeal 11/6/98
98/0720/FUL	5 metre extension to existing 15 metre high mast	Side Bar Lane Heckington	Refused 9/10/98, Dismissed on Appeal 12/2/99
17/0165/FUL	Erection of one new grain store	Six Hundreds Farm Buildings Six Hundreds Drove East Heckington	Approved 6/4/17
22/1597/OHL	Proposed removal of existing 11kv overhead power line and erection of new overhead power line	Land At Heckington Fen Lincolnshire	No objection
09/0628/FUL	Installation of a 70m high wind monitoring mast for a temporary period of 18 months	Land at Six Hundred Farm Six Hundreds Drove East Heckington	Approved 22/10/09

- 5.11 A review of the planning history does not identify any specific issues, constraints or factors which the Council needs to draw to the attention of the Examining Authority. The telecommunication works at Sidebar Lane fall are adjacent to but outside the extent of the Order limits and the cattle yard and grain store planning permissions do not appear to be impacted by the site

layout. The Viking Link and Triton Knoll cable connection projects are also relevant in terms of relatively recent planning history in the wider area, however these works do not impact the main energy park site and are contained within the Boston Borough boundary.

6 Legislative and Policy Context – National Policy Statements

- 6.1 NKDC recognises the application as one made under the Planning Act 2008 (PA2008) for a Development Consent Order (DCO) for development that falls within the definition of energy generating stations set out in section 15 of the PA2008.
- 6.2 The proposed development comprises the construction, operation and decommissioning of solar arrays for the generation of electricity, also including a (BESS), the import/export connection to the National grid and onsite converter stations.
- 6.3 The PA2008 provides for two different decision-making procedures for NSIP applications;
- i) Sec. 104 - where a relevant National Policy Statement (NPS) has been designated and has effect; and
 - ii) Sec. 105 – where there is no designated NPS or there is a designated NPS but which does not have effect.
- 6.4 The application falls to be determined under section 105 of PA2008 due to electricity generation by solar generating stations being excluded from the scope of NPS' EN-1 'Overarching National Policy Statement for Energy' and EN-3 'National Policy Statement for Renewable Energy Infrastructure' (both 2011). In addition, energy storage infrastructure also does not fall within the scope of EN-1 and EN-3. There is therefore no designated NPS that has effect in relation to the proposed development.
- 6.5 EN-5 'National Policy Statement for Electricity Networks Infrastructure' (2011) is relevant to the proposed development as the policy recognises electricity networks as 'transmission systems (the long distance transfer of electricity through 400kV and 275kV lines), and distribution systems (lower voltage lines from 132kV to 230V from transmission substations to the end-user) which can either be carried on towers/poles or undergrounded' and 'associated infrastructure, e.g. substations (the essential link between generation, transmission, and the distribution systems that also allows circuits to be switched or voltage transformed to a useable level for the consumer) and converter stations to convert DC power to AC power and vice versa'.
- 6.6 Section 105 of the PA2008 states that in determining the proposed development, the decision maker must have regard to:
- a. Any local impact report (within the meaning given by section 60(3)) submitted to the Secretary of State before the deadline specified in a notice under section 60(2);

- b. Any matters prescribed in relation to development of the description to which the application relates, and;
 - c. Any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision.
- 6.7 Whilst this LIR refers to the NPSs, primarily EN-1 and EN-3, to highlight potential compliance issues in some of the topic areas, the Council is particularly mindful of the role section 105 of the Planning Act 2008 plays in this process. Nevertheless, as a proposed solar energy park does not fall within the scope of the existing (2011) NPSs, it is recognised and accepted that both EN-1 and EN-3 are still relevant as they relate to renewable energy development generally, and therefore the Secretary of State must have regard to it.

EN-1 'Overarching National Policy Statement for Energy' (2011)

- 6.8 NPS EN-1 is a very general document delegating most advice to five technology-specific NPSs (none including solar power or battery storage) but setting the stage for promotion of low carbon energy production facilities and a reduction in greenhouse gas emissions. To that extent EN-1 is relevant and supportive of the principle behind this application, but the NPS also supports reducing energy demand, greater interconnection of systems and decentralised and community energy systems.
- 6.9 The EN-1 sees most scope for new renewable energy to be from wind, wave, waste and biomass systems and does not highlight solar power or battery storage as having a role in a new energy mix. In overall summary EN-1 highlights the need for (then) Infrastructure Planning Commission (IPC) decisions to have regard to habitats and to consider whether the project may have a significant effect on a European site, consider alternatives, seek good design and minimise flood risk by not consenting development in flood zones 2 or 3 unless the sequential (and exception) test is applied. In terms of flood risk, the advice is to locate more vulnerable parts of the development in areas of least flood risk.
- 6.10 In terms of landscape issues the overarching commentary in EN-1 is that the landscape and visual effects of energy projects will vary on a case by case basis according to the type of development, its location and the landscape setting of the proposed development.
- 6.11 EN-1 requires the applicant's Landscape and Visual Impact Assessment to include reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project, as well as any relevant policies based on these assessments in local development documents in England.
- 6.12 In terms of decision making, EN-1 requires the IPC to have regard to the degree to which projects have been carefully designed to take account of the potential impact on the landscape. The general aim is that with reference to siting, operational and other relevant constraints harm to the landscape

should be minimised, providing reasonable mitigation where possible and appropriate. The guidance also notes that decisions should be mindful that landscape impacts are temporary and capable of being reversed.

- 6.13 EN-1 also notes that the IPC will have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the project. When considering whether reductions to the scale of a project could help to mitigate adverse visual and landscape effects, EN-1 cautions that reducing the scale or otherwise amending the design of a proposed energy infrastructure project may result in a significant operational constraint and reduction in function – for example, the electricity generation output – which needs to be factored into decision making.
- 6.14 In relation to impacts on Best and Most Versatile (BMV) land, paragraph 5.10.8 of EN-1 requires applicants to seek to minimise impacts on BMV (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations. Applicants should also identify any effects and seek to minimise impacts on soil quality taking into account any mitigation measures proposed.

EN-3 ‘National Policy Statement for Renewable Energy Infrastructure’

- 6.15 Part 2 ‘Assessment and technology-specific information’ of EN-3 only contains technology-specific guidance in relation to Biomass and Waste Combustion, Offshore and Onshore Wind, and confirms that the guidance should be read alongside EN-1, rather than replacing it.
- 6.16 Only Part 2, sections 2.3 ‘Climate Change Adaptation’ and 2.4 ‘Criteria for “good design” for energy infrastructure’ are applicable to the Heckington Fen proposals. Paragraph 2.3.1 refers back to Section 4.8 of EN-1, reminding the IPC that it should ensure that renewable energy infrastructure is itself resilient to climate change (which therefore includes flood risk). Paragraph 2.4.2 sets out that proposals for renewable energy infrastructure ‘should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology’.

2021/2023 draft NPS consultation

- 6.17 A review of the NPS was announced in the 2020 ‘*Energy white paper: Powering our net zero future*’. This review was to ensure the NPSs were brought up to date to reflect the policies set out in the white paper. The Government published a suite of consultation documents on 6 September 2021, updated for further consultation in March 2023. The consultation period ended on 23 June 2023 however the consultation website does not update on the next steps nor any timescale for the adoption of the emerging revised NPSs. The emerging draft update to NPS EN-3 would bring solar Nationally Significant Infrastructure Project (NSIP) developments into the coverage of the National Policy Statements (NPSs).

- 6.18 Whilst none of the draft NPSs are yet designated (and therefore also do not 'have effect' for the purposes of section 104) they have clear relevance to the Heckington Fen Energy Park not least due to the inclusion of solar photovoltaic-specific policy in draft EN-3. It is NKDC's view that these NPSs, both current (2011) and draft (2023), are likely to be matters the Secretary of State will consider relevant and important, and where both of the 2023 draft versions (EN-1 and EN-3) note that those NPS 'may be helpful to local planning authorities (LPAs) in preparing their local impact reports'.
- 6.19 The 2023 draft EN-3 proposes specific policies for solar photovoltaic generation and notes that such is a key part of the Government's strategy for low-cost decarbonisation of the energy sector. It states that factors that will influence site selection by the application include irradiance and site topography, proximity of site to dwellings, capacity of a site, grid connection, agricultural land classification and land type and accessibility (section 3.10 refers).
- 6.20 Under the sub-heading of 'Solar photovoltaic generation: factors influencing site selection and design', paragraphs 3.10.14 to 3.10.16 note that where possible, ground mounted Solar PV projects should utilise previously developed land, brownfield land, contaminated land, industrial land, or agricultural land preferably of classification 3b, 4, and 5 (i.e. avoiding the use of "Best and Most Versatile" land where possible); albeit that development of ground mounted solar arrays is not prohibited on agricultural land classified 1, 2 and 3a.
- 6.21 The draft statement confirms that the Agricultural Land Classification (ALC) system should be applied in the overall assessment of the construction, operation and decommissioning phases.
- 6.22 The draft statement notes that whilst the development of ground mounted solar arrays is not prohibited on sites of agricultural land classified 1, 2 and 3a (BMV land), or designated for their natural beauty, or recognised for ecological or archaeological importance, the impacts of such are expected to be considered in detail by the applicant. Whilst the draft statement recognises that solar farms of the scale governed by the Planning Act may use some agricultural land, applicants are expected explain their choice of site, noting the preference for development to be on brownfield and non-agricultural land.
- 6.23 Section 5.11 'Land Use, Including Open Space, Green Infrastructure, and Green Belt' of the 2023 draft EN-1 makes complimentary recommendations in relation to agricultural land, noting at paragraph 5.11.12 that 'Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5)'.
- 6.24 Section 3.10 of the draft EN-3 suggests that technical considerations for the Secretary of State include access tracks, site layout, design and appearance, security and lighting, project lifetimes, and flexibility. The draft also advises

that consideration should be given to biodiversity and nature conservation, landscape, visual and residential amenity, glint and glare, construction including traffic and transport noise and vibration, and cultural heritage.

- 6.25 With reference to the latter, the ‘cultural heritage’ sub-section of Section 3.10, draft EN-3, sets out at that below ground impacts of solar farms may include ‘direct impacts on archaeological deposits through ground disturbance associated with trenching, cabling, foundations, fencing, temporary haul routes etc’. Paragraph 3.10.105 then notes that in some instances, field studies may include investigative work such as trial trenching beyond the boundary of the proposed site to assess the impacts of any underground cabling on archaeological assets, and that the extent of investigative work should be proportionate to the sensitivity of, and extent of proposed cabling in, the associated study area.
- 6.26 Where applicable, the Council further references the 2011/2023 NPSs under the technical chapter sub-headings below insofar as they relate to matters which the Examining Authority should have regard to.
- 6.27 Finally the draft NPS EN-5 (2023) recognises that new electricity networks required for electricity generation, storage and interconnection infrastructure are vital to achieving the nation’s transition to net zero. The draft includes a new section on ‘Environmental and Biodiversity Net Gain’ at Section 2.5, which states that when planning and evaluating a projects contribution to environmental and biodiversity net gain, it will be important, for both the Applicant and examining Authority, to recognise that ‘the linear nature of electricity networks infrastructure allows excellent opportunities to: i) reconnect important habitats via green corridors, biodiversity stepping zones, and re-establishment of appropriate hedgerows; and/or ii) connect people to the environment, for instance via footpaths and cycleways constructed in tandem with biodiversity enhancements.’

7 National Planning Policy Framework (NPPF), NPPG and Written Ministerial Statement

- 7.1 The National Planning Policy Framework (NPPF) was published in 2012 and updated in 2018, 2019 and 2021. In December 2022 the Department for Levelling Up, Housing and Communities published a consultation on the Government’s approach to updating the NPPF; the consultation ending on 2 March 2023.
- 7.2 Paragraph 5 of the NPPF states that the document does not contain specific policies for NSIPs. These are to be determined in accordance with the decision-making framework set out in the Planning Act and relevant NPSs for nationally significant infrastructure, as well as any other matters that are considered both important and relevant (which may include the NPPF).
- 7.3 The NPPF does, however, state that the planning system should support the transition to a low carbon future and support renewable energy and associated infrastructure (paragraph 152) and that local planning authorities should, when determining planning applications for such development, approve the application if its

impacts are (or can be made) acceptable. Applicants are not required to demonstrate the overall need for renewable or low carbon energy (paragraph 158(a)).

- 7.4 The National Planning Policy Guidance (NPPG) outlines guidance on the specific planning considerations that relate to large scale ground-mounted solar PV farms (013 Reference ID: 5-013-20150327). It states that one consideration amongst others should be whether land is being used effectively; recommending that large scale solar farms are focused on previously developed and non-agricultural land.
- 7.5 The NPPG advises that where a proposal involves greenfield land, decision making should consider whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/or encourages biodiversity improvements around arrays.
- 7.6 The potential impacts of large-scale solar farms were also addressed through a speech by the then Minister for Energy and Climate Change to the solar PV industry on 25 April 2013 and subsequent Written Ministerial Statements. The speech highlighted the importance of considering the use of low grade agricultural land which works with farmers to allow grazing in parallel with generation, and the WMS (dated 25/3/15 - UIN HCWS488) stressed that meeting our energy goals should not be used to justify the unnecessary use of high quality agricultural land, noting 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’.
- 7.7 Notwithstanding, the NPSs provide the predominant policy context; and whilst the applicant’s DCO application has cross referred to the NPPF and NPPG where applicable, where there are any inconsistencies between the NPPF and the relevant NPSs, it is policies within the latter that prevails.

8 Central Lincolnshire Local Plan (April 2023)

- 8.1 The Central Lincolnshire Local Plan forms part of the development plan for North Kesteven (replacing the previous Central Lincolnshire Local Plan, adopted in 2017). The Local Plan was adopted in April 2023 and therefore represents an ‘up to date’ statutory development plan, which is ‘important and relevant’ for the purposes of section 105 of the PA 2008 and to which significant weight should be afforded in decision making. The relevant policies and a brief summary of each are set out are set out below.

Table 8.1

Policy	Summary
Policy S1: The Spatial Strategy and Settlement Hierarchy	<p>The spatial strategy will focus on delivering sustainable growth for Central Lincolnshire that meets the needs for homes and jobs, regenerates places and communities, and supports necessary improvements to facilities, services and infrastructure.</p> <p>Development should create strong, sustainable, cohesive and inclusive communities, making the most effective use of previously developed land and enabling a larger number of people to access jobs, services and facilities locally.</p>

Policy S2: Level and Distribution of Growth	The economic vision and strategy of this plan is to seek to facilitate the creation of 24,000 new jobs over the plan period, 2018-2040. To help facilitate that target and ensure the provision of new homes is in balance with job creation, this plan aims to facilitate the delivery of 1,325 dwellings per year, or 29,150 dwellings over the Plan period.
Policy S10: Supporting a Circular Economy	<p>The Joint Committee is aware of the high energy and material use consumed on a daily basis, and, consequently, is fully supportive of the principles of a circular economy.</p> <p>Accordingly, and to complement any policies set out in the Minerals and Waste Development Plan, proposals will be supported, in principle, which demonstrate their compatibility with, or the furthering of, a strong circular economy in the local area (which could include cross-border activity elsewhere in Lincolnshire).</p>
Policy S11: Embodied Carbon	All development should, where practical and viable, take opportunities to reduce the development's embodied carbon content, through the careful choice, use and sourcing of materials.
Policy S14: Renewable energy (matters for solar based energy proposals)	<p><i>(specific matters for solar based energy proposals)</i> Proposals for ground based photovoltaics and associated infrastructure, including commercial large scale proposals, will be under a presumption in favour unless there is clear and demonstrable significant harm arising; or the proposal will take place on Best and Most Versatile (BMV) agricultural land and does not meet the requirements of Policy S67, or the land is allocated for another purpose.</p> <p>Proposals should be accompanied by evidence demonstrating how opportunities for delivering biodiversity net gain will be maximised in the scheme taking account of site specific factors.</p>
Policy S16: Wider Energy Infrastructure	<p>The Joint Committee is committed to supporting the transition to net zero carbon future and, in doing so, recognises and supports, in principle, the need for significant investment in new and upgraded energy infrastructure.</p> <p>Where planning permission is needed from a Central Lincolnshire authority, support will be given to proposals which are necessary for, or form part of, the transition to a net zero carbon sub-region, which could include: energy storage facilities (such as battery storage or thermal storage); and upgraded or new electricity facilities (such as transmission facilities, substations or other electricity infrastructure).</p>
Policy S21: Flood Risk and Water Resources	All development proposals will be considered against the NPPF, including application of the sequential and, if necessary, the exception test. Development proposals that are likely to impact on surface or ground water should consider the requirements of the Water Framework Directive.
Policy S28: Spatial Strategy for Employment	<p>In principle, employment related development proposals should be consistent with meeting the following overall spatial strategy for employment.</p> <p>The strategy is to strengthen the Central Lincolnshire economy offering a wide range of employment opportunities focused mainly in and around the Lincoln urban area and the towns of Gainsborough and Sleaford, with proportionate employment provision further down the Settlement Hierarchy</p>
Policy S47: Accessibility and Transport	<p>Development proposals which contribute towards an efficient and safe transport network that offers a range of transport choices for the movement of people and goods will be supported.</p> <p>All developments should demonstrate, where appropriate, that they have had regard to the following criteria: a) Located where travel can be minimised and the use of sustainable transport modes maximised;</p>

	<p>b) Minimise additional travel demand through the use of measures such as travel planning, safe and convenient public transport, car clubs, walking and cycling links and integration with existing infrastructure; c) Making allowance for low and ultra-low emission vehicle refuelling infrastructure.</p>
Policy S50: Community Facilities	<p>New stand alone facilities will be supported in principle, and should prioritise and promote access by walking, cycling and public transport, be accessible for all members of society, be designed so that they are adaptable and can be easily altered to respond to future demands and where applicable, be operated without detriment to local residents.</p>
Policy S53: Design and Amenity	<p>All development, including extensions and alterations to existing buildings, must achieve high quality sustainable design that contributes positively to local character, landscape and townscape, and supports diversity, equality and access for all.</p>
Policy S54: Health and Wellbeing	<p>The potential for achieving positive mental and physical health outcomes will be taken into account when considering all development proposals. Where any potential adverse health impacts are identified, the applicant will be expected to demonstrate how these will be addressed and mitigated. Part (c) of the policy promotes schemes that will safeguard, create or enhance the role of allotments and orchards.</p>
Policy S57: The Historic Environment	<p>Development proposals should protect, conserve and seek opportunities to enhance the historic environment of Central Lincolnshire. Development should protect the significance of heritage assets (including where relevant their setting) including through protecting and enhancing architectural and historic character, and take into account the desirability of sustaining and enhancing non-designated heritage assets and their setting.</p> <p>Where a development proposal would result in less than substantial harm to a designated heritage asset, permission will only be granted where the public benefits, including, where appropriate, securing its optimum viable use, outweigh the harm.</p> <p>Development affecting archaeological remains, whether known or potential, designated or undesignated, should take every practical and reasonable step to protect and, where possible, enhance their significance.</p>
Policy S59: Green and Blue Infrastructure Network	<p>The Central Lincolnshire Authorities will safeguard green and blue infrastructure in Central Lincolnshire from inappropriate development and work actively with partners to maintain and improve the quantity, quality, accessibility and management of the green infrastructure network.</p>
Policy S60: Protecting Biodiversity and Geodiversity	<p>All development should a) protect, manage, enhance and extend the ecological network of habitats, species and sites of international, national and local importance (statutory and non-statutory), including sites that meet the criteria for selection as a Local Site; b) minimise impacts on biodiversity and features of geodiversity value; c) deliver measurable and proportionate net gains in biodiversity in accordance with Policy S61; and d) protect and enhance the aquatic environment within or adjoining the site, including water quality and habitat.</p> <p>Development should avoid adverse impact on existing biodiversity and geodiversity features as a first principle, in line with the mitigation hierarchy. Where adverse impacts are unavoidable they must be adequately and proportionately mitigated. If full mitigation cannot be provided, compensation will be required as a last resort where there is no alternative.</p>

	If significant harm to biodiversity resulting from development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission will be refused
Policy S61: Biodiversity Opportunity and Delivering Measurable Net Gains	<p>Following application of the mitigation hierarchy, all development proposals should ensure opportunities are taken to retain, protect and enhance biodiversity and geodiversity features proportionate to their scale, through site layout, design of new buildings and proposals for existing buildings with consideration to the construction phase and ongoing site management.</p> <p>All qualifying development proposals must deliver at least a 10% measurable biodiversity net gain attributable to the development. The net gain for biodiversity should be calculated using Natural England's Biodiversity Metric. Biodiversity net gain should be provided on-site wherever possible.</p>
Policy S66: Trees, Woodland and Hedgerows	<p>Development proposals should be prepared based on the overriding principle that the existing tree and woodland cover is maintained, improved and expanded; and opportunities for expanding woodland are actively considered and implemented where practical and appropriate to do so. Proposals for new development will be expected to retain existing hedgerows where appropriate and integrate them fully into the design having regard to their management requirements.</p> <p>Loss of hedges of high landscape, heritage, amenity or biodiversity value unless the need for, and benefits of, the development clearly outweigh the loss and this loss can be clearly demonstrated to be unavoidable.</p>
Policy S67: Best and Most Versatile Agricultural Land	<p>Proposals should protect the best and most versatile agricultural land so as to protect opportunities for food production and the continuance of the agricultural economy. Significant development resulting in the loss of the best and most versatile agricultural land will only be supported if:</p> <p>a) The need for the proposed development has been clearly established and there is insufficient lower grade land available at that settlement; and</p> <p>b) The benefits and/or sustainability considerations outweigh the need to protect such land, when taking into account the economic and other benefits of the best and most versatile agricultural land; and</p> <p>c) The impacts of the proposal upon ongoing agricultural operations have been minimised through the use of appropriate design solutions; and</p> <p>d) Where feasible, once any development which is supported has ceased its useful life the land will be restored to its former use (this condition will be secured by planning condition where appropriate).</p>
Policy S84: Ministry of Defence Establishments	Part Two 'Development affecting MOD establishments' of policy S84 states that development 'will not be supported where it would adversely affect military operations or capability unless those impacts can be appropriately mitigated in agreement with the MOD'.

9 Neighbourhood Plans and Other Local Policy, Guidance and Strategy

9.1 There are no NKDC Neighbourhood Plans relevant to the energy park site and cable route corridor. The Council considers that the following key plans, studies, strategies and guidance (some of which comprise part of the

evidence base to the preparation of the CLLP) are also material to the assessment of the proposed development.

- NKDC Climate Emergency Strategy to 2030
- NKDC Climate Emergency Action Plan 22/23
- NKDC Environment Policy
- The NK Plan 22-25
- NK Community Strategy
- North Kesteven District Council Landscape Character Assessment (2007)
- North Kesteven District Council Strategic Flood Risk Assessment (2009)
- Central Lincolnshire Level 1 Strategic Flood Risk Assessment (SFRA) (2015 and 2022)
- Biodiversity Opportunity Mapping for Central Lincolnshire
- Central Lincolnshire Green infrastructure mapping for Central Lincolnshire
- Historic Landscape Characterisation Project for Lincolnshire
- 4th Lincolnshire Local Transport Plan (LTP4) and consultation draft LTP5
- Central Lincolnshire Economic Needs Assessment (ENA) March 2020
- NKDC criteria for the assessment of non-designated heritage assets

A number of these are summarised below.

NKDC Climate Emergency Strategy (CES) to 2030 and Climate Emergency Action Plan (CEAP) 22/23

9.2 The NKDC CES is the Council's vision for a sustainable transition to net zero by 2030 for both North Kesteven District Council (NKDC) and the District of North Kesteven, supported by mitigation measures to reduce emissions and adaptation measures to improve resilience to the effects of climate change. The CES establishes three strategic aims:

- 1. For North Kesteven District Council to achieve net zero 2030 through a 95% reduction in Council Greenhouse Gas emissions compared to 2008/09 levels, with offsetting and/or negative emissions technologies to be used only for the final 5% of emissions from hard to eliminate sources;*
- 2. To support the District of North Kesteven to achieve the aspirational net zero 2030 target through a 95% reduction in carbon emissions from energy compared to 2005 levels, with offsetting and/or negative emissions technologies to be used only for the final 5% of emissions from hard to eliminate sources; and*
- 3. To support a just transition to net zero to create a sustainable future for North Kesteven in alignment with our Community Strategy 2030 vision to create a District of Flourishing Communities.*

9.3 The NKDC CEAP establishes the actions being taken across the Council and the District to reach net zero and address the climate emergency, and complement the CES. The Strategy and Action Plan are fundamentally integral to one another and shape the Council's activities, building upon its Climate Emergency Declaration in July 2019. The CEAP contains nine

themes used to categorise our climate actions, including 'decision making' and 'energy'.

- 9.4 The 'decision making' theme includes embedding climate actions and activities within Council Service Delivery Plans and accounting for climate implications as part of its corporate decision-making processes.
- 9.5 The 'energy' theme focuses on reducing fossil fuel dependence and associated emissions by promoting renewable energy generation opportunities for both NKDC and the District. It sets out to do this by supporting renewable energy generation opportunities across the District of North Kesteven.

NKDC Environment Policy

- 9.6 This document sets out NKDC's corporate environment policy and provides guidance through 8 key principles to ensure that all necessary steps are taken to help protect and enhance the natural environment, address the climate emergency, and work towards net zero carbon. The key principles include;
- supporting and work towards a sustainable net zero future for North Kesteven District Council.
 - empowering everyone within NKDC to act to protect and enhance the natural environment, take action to address the climate emergency, and work towards our net zero 2030 target
 - ensuring that the decisions we make at all levels consider the climate emergency, reaching net zero, and protecting and enhancing the natural environment.
 - protecting and enhancing the natural environment, supporting ecosystems, habitats, and biodiversity.

The NK Plan 22-25 and Community Strategy

- 9.7 The NK Plan and the overarching Community Strategy drive forward the Council's priorities for 'Our Economy', 'Our Homes', 'Our Environment', 'Our Communities' and 'Our Council' through to 2030. The 'Our Environment' Key Ambition is to 'Champion greenhouse gas reduction, both within the Council and across the District'. Given the extent of the target for net-zero by 2030, the 2021 NKDC Corporate Peer Challenge identified the Council's 'excellent ambitions for tackling climate change'. The NK Plan commits to fulfilling, with its partners, a review of the Central Lincolnshire Local Plan with an aim to it becoming the first of its kind to aim for carbon neutrality and to further develop meaningful climate action, and a costed pathway to achieve net-zero by 2030.

10 EIA Methodology

- 10.1 The ES is required to contain the information specified in regulation 14(2) and must meet the requirements of Regulation 14(3) and 14(4) of the Infrastructure Planning (Environmental Impact Assessment) Regulations

2017. It must also include any additional information specified in Schedule 4- Information for Inclusion in Environmental Statements of the EIA Regulations at (Regulation 14(2)) which is relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected. The Council and its consultees do not identify any overarching areas where the submission documents do not accord with these regulations, although we do highlight some matters in relation to assessment methodology in relation to ecological impacts.

- 10.2 The Council also notes that where the applicant has identified that flexibility is required in relation to design and layout considerations (in particular the general arrangement within the BESS/substation), guidance produced by the Planning Inspectorate with regard to the use of the 'Rochdale Envelope' has been applied within the relevant ES chapters to ensure a robust assessment of the likely significant (and worse case) environmental effects of the proposed development. We note that this involves assessing the maximum (and where relevant, minimum) parameters, size (footprint, width, and height) technology, and locations of the different elements of the proposed development for the elements where flexibility needs to be retained.
- 10.3 The Council also agrees that the applicant has applied relevant 'Zones of Influence' for each environmental topic area based on the extent of likely effects as identified as the study area in each of the individual topic chapters of this ES. In most cases these have been agreed with the Council and its consultees at pre-application stage and in feedback in relation to the Preliminary Environmental Impact Report (PEIR).
- 10.4 Finally, the Council has also discussed and agreed the 'Cumulative Sites Long List and Shortlist' (document reference 6.3.2.3) which presents the identified long list of existing and/or approved developments within the search area and sets out the threshold criteria applied to identify the shortlist of existing and/or approved developments for each environmental topic.
- 10.5 The exceptions to this are the Springwell, Beacon Fen and Fosse Green NSIP solar projects, and the Lincolnshire Reservoir elsewhere within North Kesteven District. There is no 'fault' as such in the applicant's DCO submission, this reflecting the timings of those submissions. However, mindful that those projects have since advanced to a greater or lesser degree the Council wishes to draw the Examiners attention in particular to potential cumulative effects of the Heckington Fen development with the four other NKDC NSIP projects, alongside the 6 other PA2008 solar projects noted in tiers 1 and 2 of the applicants' assessment.

11 North Kesteven District Council Assessment of Impacts

- 11.1 The following sections identify the relevant policies within the development plan and other local policy, the key issues raised by the proposed development, the extent to which the applicant addresses them and thus the degree to which the Council considers the proposal to comply with local policy and where applicable the NPSs (adopted and draft).

12 Landscape and Visual Impacts

- 12.1 EN-1 states that the ExA needs to consider the design of a scheme carefully. They should have regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate.
- 12.2 Paragraph 5.10.34 of draft EN-1 (2023) states that the ExA should ‘judge whether any adverse impact on the landscape would be so damaging that it is not offset by the benefits (including need) of the project’. Paragraph 5.10.35 then sets out that the ExA should ‘consider whether any adverse impact is temporary, such as during construction, and/or whether any adverse impact on the landscape will be capable of being reversed in a timescale that the Secretary of State considers reasonable’.
- 12.3 Paragraph 5.10.5 of the 2023 draft EN-1 states that ‘Virtually all nationally significant energy infrastructure projects will have adverse effects on the landscape, but there may also be beneficial landscape character impacts arising from mitigation’. Paragraph 5.10.6 then states that projects need to be designed carefully, taking account of the potential impact on the landscape, and that they should have regard to ‘siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate’.
- 12.4 The specific guidance relating to Solar Photovoltaic Generation in section 3.10 of the 2023 draft EN-3 notes at paragraph 3.10.85 that ‘Solar farms are likely to be in low lying areas of good exposure and as such may have a wider zone of visual influence than other types of onshore energy infrastructure’. Paragraph 3.10.86 states that ‘whilst it may be the case that the development covers a significant surface area, in the case of ground-mounted solar panels it should be noted that with effective screening and appropriate land topography, the area of a zone of visual influence could be appropriately minimised’.
- 12.5 CLLP policy S14 ‘Renewable Energy’ supports proposals for renewable energy schemes subject to the direct, indirect, individual and cumulative impacts of development on, amongst other things, landscape character and visual amenity being acceptable or capable of being made acceptable.
- 12.6 Policy S53 ‘Design and Amenity’ states all development must achieve high quality sustainable design which contributes positively to the local character and landscape. Development should, amongst other things, be based on a sound understanding of the context, integrating into the surrounding, relate well to the site, protect any important local views into, out of or through the site, reflect the identity of area and contribute to the sense of place and maintain landscape quality and minimise adverse visual impacts through high quality building and landscape design.

12.7 The applicant has identified a number of specific elements of the Energy Park site (i.e. the works within North Kesteven District) identified as having the potential to result in adverse landscape and visual effects, including;

- extensive areas of fixed PV mounting (solar modules) up to 3.5m high,
- the main onsite substation compound with a footprint of approximately 185m x 110m and the maximum height of the equipment assumed to be up to 15m (but mainly between 4m – 6m in height, with 3 no. ‘step-down’ Transformers of up to 12m in height)
- The Battery Energy Storage System (comprised of energy storage containers, inverters, transformers, switchgears and control room) with a footprint of approximately 280m x 280m and with infrastructure up to 6m in height
- 3m high perimeter security fencing around the site with 3.5m high CCTV mounted on steel poles within the perimeter fence and within the Energy Park.

12.8 The applicant has agreed the general approach to LVIA with the landscape advisor acting on behalf of Lincolnshire County Council, along with North Kesteven District and Boston Borough Council. This included the scope of work, study area (preliminary 5km radius), methodology and viewpoint selection; the latter being expanded at the statutory consultation stage.

12.9 In terms of the baseline assessment the site is located within Character Area 46 ‘The Fens’ of the National Landscape Character Area, the key characteristics being;

- Expansive, flat, open, low-lying wetland landscape influenced by the Wash estuary, and offering extensive vistas to level horizons and huge skies throughout, providing a sense of rural remoteness and tranquillity
- Sparse woodland cover notably comprising of few small woodland blocks
- Predominant arable land use is arable
- Open fields, bounded by a network of drains and the distinctive hierarchy of rivers; strongly influencing a geometric/rectilinear landscape pattern.
- A dispersed settlement pattern with scattered farms.

12.10 Similar characteristics are described in the 2007 North Kesteven Landscape Character Assessment (LCA), with Energy Park site being located within the Fens Regional Landscape Character Type in the east of the district, and the associated ‘Fenland Landscape Character Sub-Area’, of particular note being the baseline characteristic of ‘generally extensive vistas to level horizons and huge skies’ and the reference to an intensively farmed, managed and almost entirely man-made landscape. The same underlying characteristics are reported in the Boston Borough Council LCA, for character area ‘A1 Holland Reclaimed Fen’.

12.11 The applicant’s assessment generally finds that the landscape associated with the Energy Park corresponds to the descriptions contained across the

three national/local character area descriptions, being large scale, geographically extensive, and where any features within and surrounding the site tend to appear isolated and small. Some existing, and potentially mitigating features are however noted, including small scale blocks of woodland to the north west of the Energy Park, tree planting around Glebe Farm, farm buildings near Elm Grange, blocks of woodland within the site (in particular immediately west of the proposed substation and BESS), and other lines of trees and tree groups.

- 12.12 There are no nationally designated landscape areas within North Kesteven, and the site is not located in an Area of Great Landscape Value. Nevertheless, the applicant's assessment concludes that the local landscape is of 'high sensitivity' to the proposed development. Field assessment confirms that that views from within the site of the Energy Park are medium to long range but, in places, particularly to the south, are interrupted by tree belts, and built form and vegetation that line the A17 - including Elm Grange, Home Farm, Rectory Farm and petrol station along the A17, Nos. 1 – 12 'Council Houses' East Heckington, and Rakes Farm. There is also enclosure by an embankment associated with Head Dike, Holland Dike, and Skerth Drain, however theoretical visibility extends across South Kyme Fen, Ewerby Fen, and Howell Fen - beyond the 5km LVIA assessment radius.
- 12.13 The applicant has undertaken landscape and visual assessment of the impacts of development from 23 viewpoints, representing views experienced by a range of receptor groups, including residents/local community, users of public rights of way and road users. The viewpoints were spread in a 360 degree range around the site, with a slight concentration to the west and north west and fewer to the south east, and at distances to the Order Limit boundaries ranging from around 275m to around 4km.
- 12.14 Taking a 'collective' approach to the viewpoint analysis, the applicant finds that because the level landform and topography of the Energy Park is 'uncomplicated', locally widespread and not exhibiting any visual relationship with any elevated landscape, then the 'light' and largely level footprint of the proposed solar panels would mean that the perception of the landform would continue as currently experienced, therefore reflecting the existing level topography.
- 12.15 In summary, in terms of construction impacts on the overall local Fens landscape character (2007 NKDC LCA), the applicant finds a high degree of change and major significant short-term temporary effects on local landscape during the construction stage. Construction 'visual' impacts to road users of the A17 are assessed as 'highly localised and moderate' (adverse), increasing to major/significant (adverse) to motorists travelling along Sidebar Lane between the A17 and Head Dike (a distance of about 2.5km). Construction affects on users of the Public Footpath Heck/15/1 running along the northern edge of the Energy Park are assessed as 'major significant adverse'.
- 12.16 Landscape impacts on the overall local Fens landscape character (2007 NKDC LCA) during the operational phase are collectively assessed as 'highly

localised' but significant adverse within the Energy Park itself, however beyond the immediate context and close range visibility, the applicant finds that 'approximately up to 500m away from the Energy Park, the degree of change upon the character of the local landscape and its understanding would quickly diminish to a low magnitude of change resulting in minor (negative), thus not significant, effects'.

- 12.17 Operational visual effects are found to be 'significant' (adverse) at year 1 (prior to landscaping) for residential receptors in East Heckington and on Sidebar Lane; as analysed by Viewpoint locations 4 and 6. Operational visual effects on road users of the A17 are, similar to construction impacts, assessed as minor adverse – primarily on the basis that views would be gained by motorists at speed, with movement and noise. In comparison, and consistent with the effects identified during the construction phase, road users of Sidebar Lane to the west would be subject to significant (adverse) visual effects for the same stretch of road, namely approximately 2.5km from between the A17 and Head Dike.
- 12.18 Operational visual effects on users of the Public Footpath Heck/15/1 running along the northern edge of the Energy Park are similarly assessed as 'major significant adverse'.
- 12.19 The applicant highlights that the proposed layout, which has evolved during the pre-application stage, incorporates a number of built-in mitigation measures such as reduction in the extent of the proposed solar modules and refinements to the layout to provide increased physical separation to receptors. This is in part in response to agricultural land impacts, to mitigate noise impacts (operation of the BESS/substation) and in response to flood risk modelling.
- 12.20 Additional landscape mitigation is proposed through planting a new hedgerow of varied height along the perimeter of the Energy Park, including along the edges of PROW Heck/15/1. In general the hedgerow would be grown to and maintained at approximately 3m – 3.5m height to break up lines of sight between the nearby visual receptors and the interior of the proposed Energy Park, increasing to approximately 5m in height in places to resemble overgrown hedgerows. It is modelled and anticipated that by year 5, developing hedgerow would help to 'visually disintegrate the proposed Energy Park', substantially diminishing its scale and horizontal extent.
- 12.21 The applicant also considers cumulative LVIA effects arising from the development and a number of primarily solar projects (NSIP and TCPA 1990 scale). The majority of the above listed cumulative schemes are not located within National Character Area 46 'The Fens' and with the exception of the registered Beacon Fen Solar Park (NSIP) all of the remaining NSIP-scale solar are located significant distances (including within West Lindsey and South Kesteven/Rutland) from Heckington Fen such that there would be no cumulative LVIA impacts. Whilst the Lincolnshire Reservoir NSIP is not referenced in the cumulative assessment, it is located outside of the screened

ZTV for Heckington Fen as illustrated on document APP-138 and APP-139; being located about 7.5m to the south west at its closest.

- 12.22 As set out in section 25 below, the three other registered solar NSIP projects at Springwell, Beacon Fen and Fosse Green in North Kesteven District are not referred to in the applicant's assessment (save for limited reference to Springwell) owing to the timings of those registrations with the Planning Inspectorate.
- 12.23 With reference to the applicant's ZTV analysis in documents APP-138 and APP-139, and mindful of the respective separation distances between the application site and Fosse Green and Springwell (about 28km and 15k respectively) the Council is satisfied that cumulative landscape and visual impacts are unlikely to arise with those sites. However, the ZTV analysis shows that the application site would be intervisible with Beacon Fen, which at its closest is located only around 2.9km north west of the Heckington Fen site.
- 12.24 The applicant identifies possible cumulative adverse construction effects with two approved solar energy projects in Boston Borough at Vicarage Drove and Land West of Cowbridge Road, Bicker Fen, Boston – owing to the very close proximity to the existing National Grid Bicker Fen Substation. Minor operational effects (Heckington Fen and Boston Borough solar schemes) are estimated for areas around West Low Grounds and Bicker Fen in Boston Borough but not necessarily for NKDC properties owing to the embankment of the South Forty Foot Drain.
- 12.25 Overall the applicant concludes that the construction stage would bring about 'major and significant' (adverse) visual effects upon District receptors at East Heckington, road users present along the B1395 Sidebar Lane (north from the junction with the A17) and users of Public Footpaths SKym/2/1 (South Kyme) and Heck/15/1 (running partly through the site).
- 12.26 The operational phase is assessed as potentially causing 'geographically highly limited yet significant adverse effects' upon the character of the Fenland Landscape Character Sub-Area as identified in the NKDC LCA, within the Energy Park itself and its immediate surrounding landscape context of up to approximately 500m. In addition 'static' viewpoint receptors at viewpoints 1 and 2 (both footpaths), viewpoint 4, and viewpoint 6 are predicted to experience 'significant adverse effects' prior to mitigation plantings, reducing to between minor and moderate (adverse). Viewpoint 4 is representative of residential properties along the B1395 Sidebar Lane west of the site and viewpoint 6 (footway in East Heckington, near Six Hundred Farm House) is representative of residential property around Old Main Road, East Heckington.
- 12.27 The Council agrees that both construction and operational landscape and visual impacts are **negative** upon the character of the Fenland Landscape Character Sub-Area as set out in the 2007 NKDC LCA, even after the maturing of screen planting at year 5. The Council agrees that **negative** visual effects are particularly pronounced to properties ('static' receptors) on Sidebar

Lane represented notionally by Viewpoint 4, most of which have front or rear elevations facing towards the western edge of the site. Similarly, impacts are **negative** in particular from the open areas benefitting from less natural screening or by intervening buildings around Rose Cottage, Rainbow Cottage, Blacksmith's Cottage, Beech House, Rectory Cottages, 1-12 Council Houses, The Wheel, Park View Cottage, Rakes Farm and Six Hundreds Farmhouse along the A17 corridor south of the site. In the Council's view, **negative** cumulative operational impacts might also occur with the proposed Beacon Fen Solar Park.

13 Residential Visual Amenity (RVAA)

- 13.1 Neither the 2011 or 2023 NPSs contain specific guidance regarding RVAA, however paragraph 3.10.88 of the 2023 draft EN-3 advises that an applicant's landscape and visual assessment should include visualisations 'to demonstrate the effects of a proposed solar farm on the setting of heritage assets and any nearby residential areas or viewpoints'.
- 13.2 The 'Uses' sub-heading of CLLP policy S53 'Design and Amenity' requires development to be "compatible with neighbouring land uses and not result in likely conflict with existing uses unless it can be satisfactorily demonstrated that both the ongoing use of the neighbouring site will not be compromised, and that the amenity of occupiers of the new development will be satisfactory with the ongoing normal use of the neighbouring site". In addition buildings should be designed to not result in harm to people's amenity either within the proposed development or neighbouring it including through overlooking or overshadowing.
- 13.3 The applicant's assessment notes that it is a widely accepted and long held planning principle that no individual person has a private right to a view, however, that there are situations where the effect on the outlook or the visual amenity of a residential property and associated living conditions would be so great that it would not be considered in the public interest to permit such conditions to occur where they did not previously exist.
- 13.4 This is however a high threshold in terms what would be regarded as 'unacceptable' in terms of residential visual amenity and the impact for large scale solar PV developments of low vertical elevation is relatively novel. As a general rule, the 'Lavender' test (established through the Carland Cross windfarm appeal referenced APP/D0840/A/0921030260) requires that the magnitude of change and scale of effects must be of such a degree (in terms of being overbearing or overwhelming) that a property would become widely regarded as an unattractive place in which to live.
- 13.5 The RVAA assessment focusses on the Energy Park element of the scheme, and the applicant posted a total of 105 letters to the residential properties identified through local postcode data seeking access to properties and gardens for the purpose of RVAA assessment. 9 properties responded, and the applicant visited those properties and made a number of general

assumptions on impacts to other properties contacted but where no response was received.

- 13.6 The sensitivity of areas of the property was then graded, with highest sensitivity being views from ground floor windows on principal elevations likely to correspond to primary living rooms such as lounge, dining rooms, kitchens, or conservatories, and views from rear gardens where an appreciation of the surrounding landscape is likely to be fundamental to the enjoyment of the space. Medium sensitivity areas correspond to upper floor windows likely to correspond to bedrooms and study / office rooms, and front gardens with a lesser 'landscape appreciation' role, and lower sensitivity areas related to side elevation window views and areas such as driveways and other circulation area (rather than 'gardens').
- 13.7 The RVAA considers effects of development on both individual and clustered dwellings but was carried out prior to certain changes to the scheme design and layout. The closest properties to the site are Rakes Farm and the Old Church, East Heckington, and then No. 1 – 12 ('Council Houses, Old Main Road') which are between 140m and 240m from the order limits.
- 13.8 Taking account of the sensitivity assessment, the initial site layout, the orientation of properties and the presence or otherwise of screening and intervening structures, the applicant identified major adverse effects of 22 individual or clustered properties (primarily along Sidebar Lane and Boston Road/Old Main Road), namely Chapel House/Chapel Cottage, NG34 9LY, The Bungalow, NG34 9LY, No. 1 – No. 4 New Cottages, NG34 9LY, Fen Farm, NG34 9LY, Broad Green, NG34 9LY, Meadow View, NG34 9LY, The Bungalow, NG34 9LY, Derwent Cottage, NG34 9LY, No. 3 The Bungalow, NG34 9LY, No. 2 The Bungalow, NG34 9LY, Elm Grange, PE20 3QF, Rose Cottage, PE20 3QF, Rainbow Cottage, PE20 3QF, Home Farm, PE20 3QF, Beech House, PE20 3QF, Oatsheaf Cottage, PE20 3QF, Rectory Farm House, PE20 3QF, Rectory Cottage, PE20 3QF, No. 1 – No. 12 Council Houses, PE20 3QB, The Old Church, PE20 3QB, Six Hundreds Farmhouse, PE20 3QA and Rakes Farm, PE20 3PZ.
- 13.9 However, through a combination of factors such as a reduction in the spatial extent of the proposed solar modules and increased physical separation from nearby residential properties (the solar panels now being no closer than 250m north of No. 1- 12 Council Houses and around 270m west of properties on Sidebar Lane), a reduction in the panel height from 4.5 to 3.5m or 3m (depending on flood risk), and the revised/centralised location of the onsite substation and BESS the applicant's overall assessment is that effects to these 22 individual or clustered properties reduces to moderate adverse. This does however take into account planned fencing and the planting of new hedgerow to filter and break sight lines; the benefits of which would only accrue at year 5 onwards in the case of the latter. No 'overbearing' effects akin to the Lavender tests are predicted.
- 13.10 Officers agree however that even through the revised scheme layout and increased buffer distances, the magnitude of change even with mitigation

means that construction/operational residential visual amenity impacts on the 22 named properties are **negative**.

14 Ecology, Ornithology and Arboriculture including Biodiversity Net Gain (BNG)

- 14.1 Section 5.3 of the 2011 EN-1 states that ‘development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives (...); where significant harm cannot be avoided, then appropriate compensation measures should be sought’.
- 14.2 It also notes that due consideration should also be given to regional and local biodiversity and geological designations this is because these sites have a fundamental role to play in meeting overall national biodiversity targets; contributing to the quality of life and the well-being of the community; and in supporting research and education.
- 14.3 The draft EN-3 also highlights that solar farms have the potential to increase the biodiversity value of a site, especially if the land was previously intensively managed. Paragraph 3.10.80 notes that “in some instances, this can result in significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains and which is encouraged’.
- 14.4 CLLP policy S14 ‘Renewable Energy’ states that proposals for renewable energy schemes, including ancillary development, will be supported where the direct, indirect, individual and cumulative impacts are, or will be made, acceptable, including in relation to biodiversity and geodiversity considerations.
- 14.5 CLLP policy S59 ‘Green and Blue Infrastructure Network’ states that the Central Lincolnshire Authorities ‘will safeguard green and blue infrastructure in Central Lincolnshire from inappropriate development and work actively with partners to maintain and improve the quantity, quality, accessibility and management of the green infrastructure network’. Continuing, the policy notes that ‘Proposals that cause loss or harm to the green and blue infrastructure network will not be supported unless the need for and benefits of the development demonstrably outweigh any adverse impacts. Where adverse impacts on green infrastructure are unavoidable, development will only be supported if suitable mitigation measures for the network are provided’.
- 14.6 Policy S60 ‘Protecting Biodiversity and Geodiversity’ states that development proposals will be considered in the context of the relevant Local Authority’s duty to promote the protection and recovery of priority species and habitats. If the proposals do cause adverse impacts, then the benefit of the scheme will need to provide benefits that clearly outweigh the harms.
- 14.7 Development will only be supported where the proposed measures for mitigation and/or compensation along with details of net gains are acceptable. All developments are required to meet the tests of:

- Protecting, managing, enhancing and extending the ecological network of habitats, species and sites of international, national and local importance.
 - Minimising impacts on biodiversity and geodiversity value.
 - Delivering measurable and proportionate net gains in biodiversity.
 - Protecting and enhancing the aquatic environment within or adjoining the site, including water quality and habitat.
- 14.8 Policy S61 ‘Biodiversity Opportunity and Delivering Measurable Net Gains’ requires development to deliver at least a 10% measurable biodiversity net gain (BNG) attributable to the development. The net gain for biodiversity should be calculated using Natural England’s Biodiversity Metric, and should be provided on-site wherever possible. Unless specifically exempted, a biodiversity gain plan should be submitted providing clear and robust evidence for biodiversity net gains and losses, and which includes details of the pre-development biodiversity value of the onsite habitat, the post-development biodiversity value of the onsite habitat following implementation of the proposed ecological enhancements/interventions and on ongoing management strategy for any BNG proposals.
- 14.9 Finally, policy S66 ‘Trees, Woodland and Hedgerows’ requires proposals to provide evidence that they have been subject to adequate consideration of the impact of the development on any existing trees and woodland. New developments will also be to retain existing hedgerows where appropriate and integrate them fully into the design having regard to their management requirements.
- 14.10 The baseline habitat within the main Energy Park site is comprised of flat, low-lying farmland in intensive arable winter wheat-production, subdivided into rectilinear field parcels by long, linear tracks, grass margins and drainage ditches. Some of the ditches support occasional shrubs and trees, reeds and emergent aquatic vegetation. There are intermittent hedgerows forming additional boundary features in places, and tree cover is limited to four small plantation woodland blocks and one line of trees within the centre of the Energy Park. The proposed underground cable grid connection runs through a similar agricultural landscape, also intensively arable, supporting a wide variety of crops, primarily wheat and oilseed rape.
- 14.11 An Extended Phase 1 survey for the Energy Park was carried out on four dates between 18-23 August 2021, with the Cable Route Corridor Extended Phase 1 survey carried out in April 2022. Following the initial surveys and assessments, a number of further surveys were conducted comprising aquatic plant surveys, arable plant surveys, bat surveys, breeding and wintering bird surveys, great crested newt surveys and further badger, water vole and otter surveys and a re-survey of habitat in the Energy Park. These were carried out between March and October 2022.
- 14.12 There are no internationally important statutory designated sites (Ramsar, SAC & SPA) within 10km of the Energy Park Site, and the nearest Site of Special Scientific Interest (SSSI) is Horbling Fen SSSI located 11.5km to the southwest of the Energy Park. In addition there are no non-statutory

designations within the Energy Park Site. There are four Local Wildlife Sites (LWS) within 5km of the Energy Park Site; South Forty Foot Drain LWS, the Great Hale Eau, Broadhurst Drain East and Old Forty Foot Drain – ranging between 1.5-4km south of the Energy Park Site. This increases to 9 LWS's within 5km of the Grid Connection Route.

- 14.13 The Lincolnshire Environmental Records Centre hold no records of protected, national priority or local priority mammal species within the Energy Park, however there are 81 records of at least eight bat species from within 5km of the Energy Park Site, and 68 bird records within 5km of the Energy Park site. As above, habitats comprise winter wheat arable production largely up to field boundaries but with 4-6m grass strips around field edges in the eastern part of the Energy Park.
- 14.14 Tree cover within the Energy Park comprises four small plantation woodland blocks containing Ash, Field maple, Sycamore, Bird cherry, Hawthorn Oak and White poplar. Walked activity transect recorded 3 bats species across the site whilst static bat surveys record up to maximum of 12 species; the vast majority being common pipistrelle. Breeding bird surveys recorded a total of 68 species, mainly common farmland birds nesting the banks of drainage ditches, woodland, Copse and farm buildings or along hedgerows. Three Schedule 1/Annex I species was found breeding in the area during the surveys - one pair of marsh harrier, three pairs of barn owl and one pair of kingfisher, and a further twelve Birds of Conservation Concern (BOCC)/Red List species were also recorded. This increased to 9 and 13 species respectively during wintering bird surveys.
- 14.15 The proposals incorporate a minimum standoff from all Black Sluice IDB maintained drainage ditches of 9m and all other ditches of 8m (totalling about 30ha) along with an area to the north of the site that will be managed specifically for biodiversity gain. These biodiversity areas will be seeded/or over seeded in the existing grass margins with nature conservation species rich seed mix to provide habitat for insects and pollinators.
- 14.16 With reference to Biodiversity Net Gains, the applicant's Metric Assessment and outline Landscape and Ecological Management Plan (LEMP) aim to deliver 424ha of grazing species grass, nearly 67ha of species rich grassland in the dedicated BNG area in the north of the site and along field boundaries, 2.15ha of wildflower mix in the community orchard and about 8.5 linear kilometers of hedgerow of variable heights. The applicant estimates that this will account for a 102% BNG in habitat units and a 230% BNG in hedgerow units; relative to the baseline.
- 14.17 The submitted Arboricultural Impact Assessment (AIA), Tree Survey, and Tree Protection Plan confirms that within the Energy Park the layout of panels and infrastructure has been designed to sit within the existing fields and network of agricultural access tracks, meaning that no existing trees or hedges will be removed. A total of 61 individual trees, 46 groups, 7 woodland areas (4 within the Energy Park) and 22 hedgerow sections were assessed across the

Energy Park and cable corridor, with root protection areas calculated, mapped and tree protection measures specified.

- 14.18 The Council's consultant ecologist, AECOM, has reviewed the applicant's assessment, BNG calculation and outline LEMP, and a copy of the feedback is attached as Appendix 1. AECOM are generally satisfied with the approach taken, the results obtained, the impact assessment conclusions, and the mitigation proposed. It is noted that in general terms, the existing habitat baseline is relatively 'low risk' and therefore that the development is capable of delivering BNG.
- 14.19 However, AECOM advise that they are not satisfied with the approach taken for the botanical surveys, specifically the timing and survey effort and in particular the suitability of surveying for occurrences of scarce arable flora.
- 14.20 AECOM also require further details of the proposed mitigation by way of badger gates in the proposed perimeter fencing, and the implications of security fencing on deer movements. In addition, AECOM note that the impact assessment of birds is rather high level and that the main 'impact pathway' (displacement due to habitat loss rather than injury/mortality) has been sufficiently considered. Whilst the future habitat baseline may be improved for foraging by some bird species, it might not outweigh the loss of nesting habitat.
- 14.21 AECOM also point to insufficient impact assessment on quail, however are content with the assessment on wintering birds provided that Natural England agrees with the findings. Certainty is also needed that the timing and extent/intensity of proposed sheep grazing would also allow for use of pasture by ground nesting birds.
- 14.22 AECOM also point to the cumulative impact assessment with other solar projects in the wider landscape/Central Lincolnshire, indicating extensive landscape scale conversion of arable farmland to grassland and other habitats, noting that the cumulative assessment provided in the ecology chapter is rather ' cursory'. AECOM highlight that the applicant's reported combined loss of 1.5% of arable farmland habitat in Lincolnshire is not trivial and that this cumulative habitat loss should be further examined in terms of the relevant 'Natural Character Area' and its specific biodiversity features of interest.
- 14.23 With reference to the BNG assessment, AECOM note that the level of detail is sufficient to understand what is being offered in broad terms, but it does not represent a full specification suitable to set terms of reference for agreement of the detailed plan later as a Requirement. Whilst the quantum of BNG to be achieved is likely to over 10%, it cannot be agreed until sufficient information has been provided to verify the applicant's BNG calculations. Amongst other things, grassland provision might have been overstated, the gains associated with 'over-sowing' of existing grassland headlands are challenged, the balance between new hedgerow creation and the gapping up of existing hedgerows is unclear, and the condition scores for the baseline and proposed

habitats are not fully provided; including the 'Strategic Significance' weighting associated with some areas of ditch which are mapped as 'green infrastructure' with cross reference to CLLP policy S59.

- 14.24 The Council's Tree Officer raises no concerns with the submitted AIA, noting that the tree/hedge protection measures are adequate and that soft landscaping details (including therefore with the community orchard) can be secured by Requirement. However, AECOM highlight that the Oak within Group G39 will need to be re-assessed for 'veteran tree' status and that stand-off distances/root protection zones might need to be adjusted.
- 14.25 The applicant's overall assessment of effects identifies generally minor adverse construction impacts for boundary habitats, woodland blocks, breeding birds and aquatic areas within the Energy Park, to be mitigated through a Construction Environmental Management Plan (CEMP). Similarly minor adverse effects are predicted for works along the cable corridor; including through the grid connection beneath the South Forty Foot Drain LWS. Temporary minor beneficial/positive effects are predicted for a number of species benefitting from seeding of watercourse boundaries, including breeding birds.
- 14.26 On the basis of the feedback from AECOM the Council highlights **negative** construction/operation effects in relation to breeding/nesting birds, and in the assessment of botanical impacts. Set in that context we do not yet agree that temporary minor beneficial/positive effects accrue for species benefitting from seeding of watercourse boundaries, including breeding birds. There are **negative** impacts associated with cumulative farmland habitat loss alongside other assessed solar projects. Impacts on retained trees and hedgerow within the Energy Park are **neutral** subject to re-assessment of G39, and whilst we agree that BNG of over 10% is likely to be secured, and would be **positive**, further details are needed through the terms of a Requirement.

15 Hydrology, Hydrogeology, Flood Risk and Drainage

- 15.1 Section 5.15 of the 2011 EN-1 focuses on water quality and resources. In the decision making process, the SoS should note that all activities that discharge to the water environment are subject to pollution control. Moreover, the SoS will 'generally need to give impacts on the water environment more weight where a project would have an adverse effect on the achievement of the environmental objectives established under the Water Framework Directive'.
- 15.2 EN-1 also states that the SoS 'should consider whether appropriate requirements should be attached to any development consent and/or planning obligations entered into to mitigate adverse effects on the water environment' (paragraph 5.15.7).
- 15.3 Paragraph 5.8.7 of the 2023 draft EN-1 notes that new energy infrastructure should only be permitted by exception in flood risk areas (for example where there are no reasonably available sites in areas at lower risk), and that it should be safe for its lifetime without increasing flood risk elsewhere and,

where possible, should reduce flood risk overall. It should also be designed and constructed to remain operational in times of flood. Paragraphs 5.8.9 and 5.8.10 confirm the requirement for the flood risk sequential and exception tests to be applied.

- 15.4 The guidance confirms that the Exception Test should only be engaged where “the Sequential Test has identified reasonably available, lower risk sites appropriate for the proposed development where, accounting for wider sustainable development objectives, application of relevant policies would provide a clear reason for refusing development in any alternative locations identified”. The examples of such ‘relevant policies’ which would provide a clear reason for refusing potential alternative sites are those relating to landscape, heritage and nature conservation designations, for example Areas of Outstanding Natural Beauty (AONBs), SSSIs and World Heritage Sites.
- 15.5 Paragraph 3.10.51 of draft EN-3 also set out that applicants for solar generating stations will need to consider several factors when considering the design and layout of sites, including “proximity to available grid capacity to accommodate the scale of generation, orientation, topography, previous land – use and ability to mitigate environmental impacts and flood risk”.
- 15.6 Paragraph 3.10.75 then notes that where a Flood Risk Assessment has been carried out this must be submitted alongside the applicant's ES and will need to consider the impact of drainage. It notes that as solar PV panels will drain to the existing ground, “the impact will not, in general, be significant”.
- 15.7 Paragraph 3.10.145 also notes that where previous management of the site has involved intensive agricultural practice, “solar sites can deliver significant ecosystem services value in the form of drainage, flood attenuation, natural wetland habitat, and water quality management”.
- 15.8 CLLP policy S12 ‘Water Efficiency and Sustainable Water Management’ sets out that in addition to the wider flood and water related policy requirements contained in policy S21, all residential development or other development comprising new buildings with outside hard surfacing, must ensure such surfacing is permeable unless technical considerations dictate otherwise.
- 15.9 Policy S14 ‘Renewable Energy’ supports proposals for renewable energy schemes, including ancillary development, where the direct, indirect, individual and cumulative impacts are or can be made acceptable, which with reference to point (i) includes flood risk, albeit there are no further references to flood risk under the ‘Additional matters for solar based energy proposals’ subheading.
- 15.10 Policy S20 ‘Resilient and Adaptable Design’ requires design proposals to be adaptable to future social, economic, technological and environmental requirements in order to make buildings both fit for purpose in the long term and to minimise future resource consumption, including that they are resilient to flood risk, from all forms of flooding.

- 15.11 Policy S21 'Flood Risk and Water Resources' requires all proposals that are likely to impact on surface or ground water to consider the requirements of the Water Framework Directive and that with specific relevance to flood risk that they will be considered against the NPPF, including application of the sequential and, if necessary, the exception test.
- 15.12 Amongst other things proposals are required to demonstrate that they are informed by and take account of the best available information from all sources of flood risk and by site specific flood risk assessments where appropriate; that the development will be 'safe' during its lifetime taking into account the impacts of climate change, that flood defence integrity is not impacted, that wider scope for flood risk reduction has been considered and that where appropriate they have incorporated Sustainable Drainage Systems (SuDS).
- 15.13 Finally Policy S59 'Green and Blue Infrastructure Network' states that proposals that cause loss or harm to the green and blue infrastructure network will not be supported unless the need for and benefits of the development demonstrably outweigh any adverse impacts.
- 15.14 Turning firstly to the mitigation of risk the applicant's Flood Risk Assessment (FRA) confirms that the majority of both the Energy Park site and the cable route, and the proposed works within the National Grid Bicker Fen Substation are shown to lie within Flood Zone 3 'high probability' associated with fluvial flooding arising primarily from the South Forty Foot Drain, the Head Dyke and the Skirth Drain. Only very limited areas on the southern fringe of the Energy Park are located within Flood Zone 2 (Medium Probability). In terms of other sources of flood risk the mapping shows that the majority of the Energy Park, and generally the entire DCO Order Limits are at a 'Very Low' risk of surface water flooding.
- 15.15 The FRA includes a flood defence breach analysis stemming from hydraulic modelling of the South Forty Foot Drain, indicating a maximum water level at the Energy Park was 1.95mAOD associated with a breach during a 1:1000 year flood event. Existing levels are as low as 0.77m Above Ordnance Datum (AOD) along the northern boundary.
- 15.16 As a result, elements of the Energy Park, such as the energy storage facility and onsite substation, will be elevated above the peak water level associated with a breach of the flood defences (minimum of 1.95mAOD) which will necessitate the localised raising of ground levels and which in turn has the potential to reduce the volume of storage available within the floodplain. To account for the variability of breach depths, the lower edge solar panel height will also be at least 1.95mAOD, meaning that the total panel height will be maximum of 3.5mAOD in the central, northern and north eastern parts of the site and 3m in the west, south and south easterly parts.
- 15.17 Between 4200m³ and 6100m³ of surface water runoff storage is proposed in the BESS/substation area and elsewhere across the site swales and ditches would be positioned along the field boundaries to provide runoff conveyance

and attenuation and a degree of treatment prior to discharge to the existing ditches/drains on site.

- 15.18 Turning to the application of the flood risk sequential and exception tests, both North Kesteven and Lincolnshire County Council have extensive pre-application discussions with the applicant to discuss and agree the general approach to, and parameters for, the sequential test requirement. Very clearly both adopted and draft planning policy and guidance steers new development into the lowest areas of risk, with the draft EN-3 setting a particularly high bar in terms of ruling out potentially sequential preferable alternative sites only if there is a clear reason for refusing development in any alternative locations identified (paragraph 5.8.10 of the 2023 draft Overarching National Policy Statement for Energy (EN-1)).
- 15.19 The applicant's sequential assessment considers 13 'Back Check and Review sites' also considered in Chapter 3 of the ES ('Site Description, Site Selection, and Iterative Design Process (document reference 6.1.3)'). Of these, 5 sites are wholly or partly within NKDC, with the others located wholly or partly within Boston Borough, South Kesteven and South Holland Districts.
- 15.20 A sequential assessment search area based on a 15km radius from the Bicker Fen Substation has been agreed with the applicant, and the applicant has pointed to paragraph 4.2.2 of the draft EN-1 which states that "The Secretary of State should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security, climate change, and other environmental benefits) in the same timescale (NKDC emphasis) as the proposed development".
- 15.21 The applicant has secured a Grid Connection for the development connecting into Bicker Fen substation, however at the Council's request the applicant also initially considered the National Grid substation at Spalding. National Grid have advised the applicant that the BFSS connection would be available from 2027 whereas connection into the existing Spalding substation would not be achievable until 2030 or later. The applicant therefore rules out alternative sites of development connecting into Spalding as it would not be achievable within a reasonably similar timescale as a development connecting into Bicker Fen.
- 15.22 The criteria for assessing the 13 alternative 'Back Check and Review sites' included that:
- the site/s would be of a similar or larger size and scale to Heckington Fen Energy Park site
 - The Site could be within Flood Zone 1, 2 or 3 as this would be in line with the Energy Park site;
 - Agricultural Land grading from publicly available mapping will consider all land grades;
 - Landownership of the Site will be considered with a preference towards a single landowner like the Energy Park site, however following a strong

preference from the councils sites with multiple landowners will be considered; and

- Avoidance of land with environmental designations such as SSSI, AONB etc

15.23 With the exception of 'back check' sites 2 and 3 at Kirton Drove and South of the Kyme Eau, the other 11 sites are all at lower risk of flooding and are therefore sequentially preferred. However, taking into account other sustainability criteria a number of the alternative 13 sites have higher proportions of BMV agricultural land, heritage assets either within the sites or close to them or landscape and visual impact considerations – amongst other factors. The applicant scores the application site as '7' taking into account sustainability assessment scoring, with other sites ranging between 12 and 17 (the higher the number being least preferred).

15.24 In their overall analysis, the applicant places significant onus on more complex and time consuming legal matters and the need to resolve Heads of Terms (HOTs) and/or an Option Agreement if other land options were taken forward. The applicant points to single landowner legal agreement already being place at the Heckington Fen site and furthermore a faster grid connection opportunity (2027 at BFSS as opposed to 2030 as Spalding). The applicant points to the site being 'immediately available'.

15.25 The applicant then moves to consideration of the 'exception test' noting the 'headline' sustainability consideration of providing green energy for an equivalent of over 100,000 homes a year and prevention of around 75,000 tonnes annually of CO2 emissions, along with;

- the estimated £400 million of direct capital investment,
- temporary effects of an estimated £175 million of gross value added over the 30-month construction programme,
- 5 direct additional jobs in the North Kesteven economy, £627,000 of annual gross added value and total business rates of £29.3 million over the project lifespan, and
- 66.73ha of species rich grassland and 2.15ha of traditional orchard managed specifically for nature conservation.

15.26 With the above mitigation measures, the applicant assigns a 'negligible' and not significant impact on the floodplain/flood storage/flood routeing during construction and operation. The proposals have been subject to extensive pre-application discussion including with the Environment Agency in relation to flood defence breach modelling. Officers are minded to agree that impacts are '**neutral**' and that taken in isolation the other sustainability criteria noted in the exception test would in outweigh flood risk considerations.

15.27 However there is a large reliance in the sequential test approach to being able to bring forward earlier renewable energy delivery relative to a connection into Spalding substation, and also more straightforward option/legal agreements relative to multi-landowner alternative sites. The Examining Authority should therefore carefully consider the submitted evidence against paragraph 4.2.2 of

the 2023 draft EN-1 mindful that if these factors are not wholly accepted by them then impacts might stray into the adverse ('**negative**') category.

16 Cultural Heritage

- 16.1 Section 5.8 of the 2011 EN-1 states that the IPC (now ExA) should consider the impact of a proposed development on any heritage assets and that they should take into account the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between conservation of that significance and proposals for development.
- 16.2 In terms of archaeological assets, paragraph 5.8.22 states that where there is a high probability that a development site may include as yet undiscovered heritage assets with archaeological interest, then Requirements should be considered to ensure that appropriate procedures are in place for the identification and treatment of such assets discovered during construction.
- 16.3 The 2023 draft EN-1 seeks consistency with the current National Planning Policy Framework (adopted July 2021) and expands the definition of heritage significance to acknowledge the contribution that can be made by setting, and alters the wording of paragraphs 5.8.4 and 5.8.5 regarding non-designated archaeological heritage assets of demonstrably equivalent significance to Scheduled Monuments.
- 16.4 The draft also recommends that the applicant prepares proposals that enhance heritage significance and mitigate heritage harm, and considers whether the development effects will be direct, indirect, temporary or permanent. It further identifies a need to weigh any identified less than substantial harm to the significance of a designated heritage asset against the public benefits of the proposal.
- 16.5 CLLP policy S47 'the Historic Environment' requires development proposals to protect, conserve and seek opportunities to enhance the historic environment of Central Lincolnshire including through protecting the significance of heritage assets (including where relevant their setting), and taking into account the desirability of sustaining and enhancing non-designated heritage assets and their setting.
- 16.6 Continuing, the policy states that where a development proposal would result in less than substantial harm to a designated heritage asset, permission will only be granted where the public benefits, including, where appropriate, securing its optimum viable use, outweigh the harm. Finally, development affecting archaeological remains (whether known or potential, designated or undesignated) should take every practical and reasonable step to protect and, where possible, enhance their significance.

Above ground heritage assets

- 16.7 A search area of a minimum 5km-radius from the proposed development site was applied by way of initially scoping heritage assets whose setting or significance might be impacted by the development. There are 2 North Kesteven Conservation Areas located within the study area - Heckington Conservation Area c.4.4km west of the Energy Park site and Helpringham Conservation Area c.4.9km to the west.
- 16.8 In addition there are 123 Listed Buildings located within the 5km radius of the site, the majority being Grade II. The closest higher grade Listed Buildings are the Grade I Listed Church of St Andrew at Heckington, c.4.5km west of the Energy Park, the Grade I Listed Heckington Mill at Heckington, c.4.5km west-south-west of the Energy Park, and the Grade I Listed Church of St John the Baptist at Great Hale, c.4.5km south-west of the Energy Park.
- 16.9 There are no Registered Parks and Gardens, Registered Battlefields, or World Heritage Sites located within a 5km radius of the Site, however there are 11 Scheduled Monuments located within a 5km radius of the site – including in closest range the settlement site ‘east of Holme House’ (c.860m west of the Energy Park), and the remains of medieval monastery, moated manor house, fishponds, and post-medieval garden at South Kyme, c.3.5km north-west of the Energy Park.
- 16.10 The applicant has identified that there are no key views either towards the Conservation Areas at Heckington or Helpringham from the site, or towards the site from the Conservation Areas. The applicant concludes that the site does not contribute through setting to the significance of any Conservation Area.
- 16.11 In addition, screened ‘Zone of Theoretical Visibility’ (ZTV) modelling carried out by the applicant has indicated that the proposed development would not be visible from any of the Listed Buildings at Heckington, Great Hale and South Kyme within North Kesteven. With specific reference to impacts on the setting of the closest churches (as a collective) within the District, St Andrew’s at Asgarby is more than 7km west, and those within the 5km study area are situated within settlement cores and so enclosed by other built form. The applicant notes that neither the Church of St Andrew at Heckington, nor the Church of St John the Baptist at Great Hale are visible from the section of the A17 to the south of the Energy Park due to the screening provided by vegetation and buildings at East Heckington and further afield.
- 16.12 The applicant has therefore screened that the only heritage assets potentially sensitive to the construction and/or operation of the development are the Scheduled Monument of ‘east of Holme House’, the Grade I Listed Building of Kyme Tower at South Kyme and Mill Green Farmhouse (identified by the applicant has a non-designated heritage asset).
- 16.13 The Council’s primary interest is the applicant’s ‘group’ assessment of the Grade II Listed Manor at South Kyme, the nearby Grade I Listed Kyme Tower

and Church (Grade II*, all of which are located within the Scheduled Monument of the monastery, moated manor house and gardens. The applicant's focus is then specifically on Kyme Tower, which forms part of the group and where it can also be seen at long range from the western part of the Energy Park and from the A17.

- 16.14 The applicant notes there may be visibility of the Energy Park from the stairwell, upper floors and parapet of Kyme Tower, which was designed to be seen from and see across the landscape for defence – thus the range of intervisibility and the character of the landscape may contribute to its significance. However, the applicant points to there being no evidence that the Tower was positioned or orientated to ensure its prominence specifically in views from or across the Energy Park, and notes the significant subsequent change in the current landscape character relative to the period of use during the 14th to 17th centuries. The suggestion is that the intervisibility of Kyme Tower and parts of the Energy Park is therefore largely incidental rather than 'planned'. The applicant's overall assessment is that there is no harm to the significance of Kyme Tower stemming from the development.
- 16.15 In terms of non-designated heritage assets (NDHA), the applicant has considered Mill Green Farmhouse, to the north of the site, and the Primitive Methodist Chapel on Sidebar Lane; both of which are on the Historic Environment Record (HER). The Chapel is around 500m west of the Energy Park, and it is accepted that it was not designed or sited to afford views across the Energy Park landscape. No harm to its character accrues. The applicant concludes that development will result in only minor harm to the significance of Mill Green Farmhouse, including as a result of the change to the open agricultural landscape to its south, which features in designed views from the farmhouse and contributes to an understanding of the origins of the farmstead.

Archaeology

- 16.16 The main Energy Park site has been subject to extensive pre-determination assessment, comprising full geophysical survey of the entire site. A total of 962 trial trenches were excavated and recorded across the Energy Park site, of which 194 contained archaeological features and deposits, indicating that archaeological remains are present across the site, albeit sporadically. The concentrations are located in fields G9, SH1 and SH14. The earliest archaeological activity is evidenced by a small assemblage of Mesolithic/Neolithic flints, recovered from the northern area of the site, with Romano-British activity across the central and southern portions of the site and comprised enclosures, possible settlement, and evidence of salt processing.
- 16.17 There is also evidence of post-medieval activities including hunting pursuits (a duck decoy and possible coverts/wooded compartments) placed along the field boundaries and possibly representing a 'designed' landscape.

- 16.18 Despite the effect of ploughing and modern field drainage, the archaeological deposits were relatively well preserved and the overall analysis is that the main Energy Park site largely conforms to the regional landscape of early saltmarsh with limited prehistoric activity, and more pronounced Roman–British activity, especially associated with salt production, followed by land drainage/reclamation in the eighteenth century.
- 16.19 The applicant’s assessment notes there to be potential for further analysis to better characterise and understand the archaeological remains of Romano-British date within Fields G9, G23, SH1, G3, G4, G21 and SH14. The post-medieval draining of the site and its subsequent agricultural history is well represented both archaeologically and through historical sources and there is limited scope to develop this further. However, none of these known and potential heritage assets are considered to be of the highest level of significance requiring ‘preservation in situ’.
- 16.20 The Council’s archaeological consultant, the Heritage Trust of Lincolnshire (HTL) has provided detailed feedback (attached as Appendix 2), and notes that the evaluation of the Energy Park provides an appropriate level of baseline information to inform the archaeological mitigation strategy.
- 16.21 However, reference is made to six areas for archaeological strip, map and record excavation which does not correspond with information contained elsewhere in the ES documents. The ES chapter does not describe any mitigation or control mechanisms in respect of other archaeological priority zones, and there is an apparent disjoint between the results of the Energy Park evaluation, which identified areas of archaeological potential which may require mitigation, the ‘six areas’ of archaeological mitigation (strip, map and record) described in the cultural heritage Chapter and the areas described Outline Written Scheme of Investigation (WSI) for Archaeological Mitigation. This means that the areas proposed for mitigation (and the appropriate measures) is unclear.
- 16.22 In terms of the cable corridor, owing to cropping and accessibility constraints, only geophysical survey has been carried out, and HTL confirm that a trial trench evaluation is required in order to inform the archaeological mitigation strategy. An Outline WSI for the cable corridor has been provided for a programme of archaeological trial trenching, informed by the applicant’s desk-based assessment and geophysical survey.
- 16.23 The purpose of the trenching programme is to examine the cropmarks and geophysical anomalies identified together with areas where other techniques have not identified potential archaeological features. Trial trenching commenced in July 2023 and therefore the results are not yet available to inform the applicant’s assessment. This matter is therefore unresolved at the point of this Local Impact Report, and HTL conclude that the assessment of significant effects on any buried archaeological remains along the cable route is limited by the absence of this information.

- 16.24 The applicant's overall analysis is that construction impacts to the known buried remains of Mesolithic or Neolithic pits and Roman salterns range from local to regional significance and comprise 'minor harm' which cannot be fully mitigated and will result in loss through construction activities.
- 16.25 Whilst there is nothing to suggest that the outstanding cable route trial trench works will reveal remains of more than local or regional significance, Officers agree that 'minor harm' accrues and that it is not yet possible to assign categorically impact significance to the cable route works. There is therefore a **negative** construction impact upon the archaeological resource in relation to both the Energy Park and cable route works, with the degree of harm as yet unquantified in the latter.
- 16.26 Furthermore, whilst the Council's Conservation Officer does not challenge the overall impact assessment on the Scheduled Monument of 'east of Holme House', nor the two NDHAs (Mill Green Farmhouse and the Primitive Chapel), he does not agree that there is 'no harm' to the significance of Kyme Tower. Instead the Conservation Officers notes that it was 'designed to be both conspicuous in the landscape, and offering a 360 degree defensive view is the function of the tower is to offer views, so no views of the tower, or away from the tower, should be classed as "incidental"'. This is further exemplified by views of numerous church towers and spires located outside the study area, which are still clearly visible from the application site. Officers therefore assign a **negative** impact on the significance of Kyme Tower.

17 Socio-Economics

- 17.1 Paragraph 5.12.6 of the 2011 EN-1 states that the decision maker 'should have regard to the potential socio-economic impacts of new energy infrastructure identified by the applicant and from any other sources that the IPC considers to be both relevant and important to its decision'. The NPS goes on to say the decision maker 'should consider whether mitigation measures are necessary to mitigate any adverse socio-economic impacts of the development'.
- 17.2 The 2023 draft EN-1 makes reference to an extended list of potential impacts to consider as relevant, including (at paragraph 5.13.4) creation of jobs and training opportunities, contribution to low-carbon industries, provision of additional local services and improvements to local infrastructure, any indirect beneficial impacts for the region, effects on tourism, impact of a changing influx of workers, and cumulative effects.
- 17.3 Furthermore, the draft EN-1 also makes reference to the need to consider development of accommodation strategies, if appropriate, to address any potential impacts during the construction and decommissioning phases. In addition, it also refers to the potential for the SoS to require the approval of an employment and skills plan detailing arrangements to promote local employment and skills development opportunities, and additionally consideration of solar and potential for associated socio-economic effects is referenced in respect of the potential for socio-economic benefits of the site

infrastructure being retained after the operational life of solar photovoltaic generation.

- 17.4 CLLP Policy S10 'Supporting a Circular Economy' recognises the high energy and material use consumed on a daily basis, and, consequently, is fully supportive of the principles of a circular economy. As such, proposals will be supported, in principle, which demonstrate their compatibility with, or the furthering of, a strong circular economy in the local area.
- 17.5 Policy S20 'Resilient and Adaptable Design' requires design proposals to be adaptable to future social, economic, technological and environmental requirements in order to make buildings both fit for purpose in the long term and to minimise future resource consumption.
- 17.6 Policy S28 'Spatial Strategy for Employment' requires employment related proposals to be consistent with meeting the overall spatial strategy for employment. The strategy is to strengthen the Central Lincolnshire economy offering a wide range of employment opportunities focused mainly in and around the Lincoln urban area and the towns of Gainsborough and Sleaford, with proportionate employment provision further down the Settlement Hierarchy.
- 17.7 The preface to the CLLP 'employment' policies notes at paragraph 5.1.2 that Central Lincolnshire is located within the Greater Lincolnshire Local Enterprise Partnership (GLLEP) area and represents roughly 30% of the GLLEP area's population, employment and business base. Greater Lincolnshire has an economy of £20.7bn with an ambition to grow the Gross Value Added (GVA) by £3.2bn by 2030, and boasts a mix of traditional manufacturing, a comprehensive agri-food sector, energy and services, and is strong in health and care and the visitor economy.
- 17.8 The applicant's assessment includes both the ES chapter dealing with socio-economic effects but also an 'Outline Supply Chain, Employment and Skills Plan'. The 'baseline' position described by the applicant notes that the Energy Park site is placed within the top 50% most deprived output areas in England. Looking at the individual domains of deprivation, North Kesteven has its highest level of deprivation for the barriers to housing and services domain where it has a rank of 5,238, placing it in the top 20% most deprived LSOAs for this indicator.
- 17.9 North Kesteven saw job numbers increase by around 4,000 between 2015 and 2021 (10.3% change), and where the construction sector, which is likely to see some increased employment opportunities during the construction phase, supports around 3,000 jobs in North Kesteven (7% of total employment in the District).
- 17.10 The applicant estimates that the total cost of the proposed development is in the region of £400million, and that there will be a maximum of up to 400 construction workers forecast to be on site during peak times during the construction period.

- 17.11 In total, the proposed development could support 932 temporary jobs, both direct jobs on-site and indirect/induced roles in the wider economy, during the 30-month construction period. The Gross Value Added (GVA) economic impact (to the District) associated with the construction phase is estimated at £175million over the 30-month build timeframe; an uplift of 74% in terms of construction GVA within the District.
- 17.12 The applicant estimates that an upper proportion of about 200 (out of 400 in total) construction workers will however be sourced from outside the District, and will therefore require serviced/hotel accommodation throughout some or all of the construction period. Accounting for these demands, an estimated occupancy rate of serviced accommodation in North Kesteven would be 78% in the months of July and August, although the applicant does not quantify approximate GVA associated with this. In addition it is assumed that the applicants available bed-space/occupancy rate calculations are District-wide.
- 17.13 Most workers will want to stay as local as possible to the development site (Sleaford area) and which could then impose additional strains on local accommodation provision which in turn could impact on local tourism-generated accommodation demands. It would be beneficial to have more information as to how up to 200 construction workers can be accommodated locally without causing capacity issues.
- 17.14 In terms of operational impacts, the applicant estimates that up to 5 FTE jobs supported on-site, including jobs in general operation and maintenance. It is likely that jobs such as security will be outsourced. As well as the 5 'direct' jobs on-site, the applicant estimates that the operational phase will support an estimated 7 jobs in the wider economy.
- 17.15 In terms of socio-economic impacts on the existing farming operations, there are currently 7 FTE agricultural jobs on site, giving a GVA generated by the existing agricultural employment of £201,409 per annum. This would rise to around £627,028 per annum with the 'substitution' of operation and maintenance type roles; or £13.9million over the operational lifetime. Business rate generation over the intended 40-year lifespan of the scheme, could total around £29.3million, and £52.5million in GVA is expected to be generated by the 18-month decommissioning phase - resulting in an uplift of 22% in (construction-related) GVA in North Kesteven. Cumulative construction and operational phase impacts with other NSIP/TCPA solar farms has also been assessed.
- 17.16 However, whilst Table 11.5 of the ES states that no agricultural jobs will be lost as a result of the development, there is no further detail (for example whether these jobs will be subsumed into farming enterprises elsewhere in the District).
- 17.17 'Mitigation' in the case of socio-economic impacts relates to the applicant's commitment to produce a detailed Employment and Skills plan in order to maximise the local benefits. An Outline Supply Chain, Employment and Skills

Plan has been submitted, and the detail would be secured by DCO requirement. At this stage the applicant envisages that measures will include;

- Local employment opportunities in landscaping, fencing, security, plant hire and operators, and materials including aggregate and concrete.
- Opportunities for apprenticeships, traineeships and back to work opportunities.
- Partnering with local schools, sixth form colleges, other further education colleges, universities, Jobcentre Plus and PeoplePlus to develop local skills and raise awareness of renewable technologies, in particular solar and energy storage.

17.18 The applicant has also committed to use all reasonable endeavours to provide opportunities for local jobseekers, apprentices and graduates with the relevant skills and experience. The Council's Economic Development team support these initiatives subject to the additional recommendation of hosting local recruitment and contracting opportunity fairs. The team also highlight the potential to enhance both resident and visitor engagement through providing a visitor or interpretation facility; even if simply in a small modular unit.

17.19 The Council's position is therefore that construction and decommissioning impacts (GVA and jobs created/supported) would be **positive**, construction and decommissioning impacts in relation to accommodation demands (potential impacts on tourism bedspace capacity) would be **negative**, operational impacts (GVA generated) would be **positive**, and that operational impacts related to job creation would be **neutral** (subject to confirming displacement of existing agricultural roles).

18 Noise and Vibration

18.1 Paragraph 5.11.8 of the 2011 EN-1 states that developments should demonstrate good design through selection of the quietest cost-effective plant available; optimisation of plant layout to minimise noise emissions; and, where possible, the use of landscaping, bunds or noise barriers to reduce noise transmission.

18.2 The NPS also states that the decision maker should not grant development consent unless it is satisfied that the proposals will avoid significant adverse impacts on health and quality of life from noise, mitigate and minimise other adverse impacts on health and quality of life from noise and where possible, contribute to improvements to health and quality of life through the effective management and control of noise.

18.3 Moreover the decision maker should consider if mitigation methods needed for construction and operational noise over and above any which may form part of the project application. The mitigation methods may include consideration of layout to ensure adequate distance between source and noise-sensitive receptors; incorporating good design to minimise noise transmission through screening by natural barriers, or other buildings and

administrative controls such as restricting activities allowed on the site including specifying acceptable noise limits.

- 18.4 The 2023 draft EN-3 includes construction (including traffic and transport noise and vibration) as a specific factor to consider. The accompanying text does not however identify specific effects related to noise (aside from the volume of traffic potentially associated with construction activities).
- 18.5 CLLP policy S14 'Renewable Energy' supports the principle of new renewable energy schemes, including ancillary development, subject to the direct, indirect, individual and cumulative impacts on (inter alia) the amenities of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic being satisfactorily addressed.
- 18.6 Policy S53 'Design and Amenity' requires all development, including extensions and alterations to existing buildings, to achieve high quality sustainable design that contributes positively to local character, landscape and townscape, and supports diversity, equality and access for all. Under the 'Uses' sub-heading of the policy, this includes a requirement for development to 'not result in adverse noise and vibration taking into account surrounding uses nor result in adverse impacts upon air quality from odour, fumes, smoke, dust and other sources'.
- 18.7 In addition, the value of retaining trees and hedgerows in terms of reduce noise impacts from development is recognised in paragraph 11.7.2; the preface to CLLP policy S66 'Trees and Hedgerows'.
- 18.8 In terms of construction noise, the applicant's assessment identifies that residential and educational properties will have the highest sensitivity to noise and vibration and whilst there are a limited number of commercial receptors in proximity to the Energy Park these are of lower sensitivity. Noise impacts on public rights of way have been discounted as they would not be expected to be occupied by any individual for a long enough period of time for a significant noise effect to occur.
- 18.9 The 'Build-A-Future East Heckington' school based at Elm Grange will accommodate young people with Autistic Spectrum Disorder (ASD) or learning difficulties, and the applicant recognises that sudden noise events of sufficient amplitude and character has the potential to disturb some people with autism. The 'baseline' position assumes that the design of the school already accounts for management of A17 traffic noise, and the applicant's assessment then considers impacts on Elm Grange specifically; consistent with scoping opinion requirements.
- 18.10 The assessment of operational and construction noise effects considers the closest noise-sensitive receptors to the Energy Park, which are located within approximately 150m to 1200m. Noise-sensitive receptors located within 500m of the Cable Route Corridor between the Energy Park and the National Grid Bicker Fen Substation were also considered.

- 18.11 The applicant's assessment methodology includes reference to the British Standards Institute (BSI, 2014), BS 5228:2009-A1:2014, Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (BS 5228-1) and Part 2: Vibration (BS 5228-2), and BS 4142 2014-A1 2019: 'Methods for rating and assessing industrial and commercial sound'.
- 18.12 The general approach to noise assessment has adopted a conservative and 'worst-case' scenario in terms of layout arrangement and component/technology assumptions, for example using a centralised inverter (as opposed to string inverters underneath the panels) which is likely to result in the highest potential noise levels. The noise modelling also does not account for the effects of noise screening/baffling from the PV panels themselves, and although some of the plant and equipment in the BESS and substation area may be located in enclosures or containers, the sound reduction effects of these has been neglected for the purpose of assessment at this stage.
- 18.13 The 2022 noise survey demonstrated that in the day-time, background levels of 33 to 40 dB LA90 could be typically experienced at properties neighbouring the Energy Park site, with higher noise levels of 44 to 50 dB LA90 for locations closer to the A17. During evening periods, background noise levels decrease to around 31 dB LA90, and for locations closer to the A17, background levels of between 37 and 45 dB LA90 were typical.
- 18.14 In terms of construction noise impacts, the areas where the solar panel arrays would be constructed are at least approximately 150m or more from the sensitive residential receptor properties identified around the Energy Park (Sidebar Lane and Boston Road/A17). Construction activities in these areas, including setting up temporary site compounds, earthworks and installation of solar panels (including piling of support structures), would generate noise levels of around 55 to 64 dB LAeq. Vibration effects to those closest receptors are noted as temporary and negligible.
- 18.15 Construction of the Energy Park's main access track from the A17 would occur approximately only 50m from Rectory Cottages, Boston Road, and which would correspond to noise levels of up to 65 dB LAeq, for a period of 1-2 months. The applicant predicts a 'temporary minor' effect on the Elm Grange school associated with the use of the temporary construction access (estimated 2 month use period) but also highlights elevated existing background noise from the A17. Predicted noise levels of 50 - 56 dB LAeq are estimated when piling works occur within 600m of the school which the applicant notes might have a temporary minor effect on any ASD pupils with increased noise sensitivity, and which will be managed by mitigation measures including liaising with the school ahead of piling works so that the risk of distress can be managed.
- 18.16 In terms of operational noise the main potential sources are the inverters associated with the BESS, but also the transformers and associated cooling equipment. A 'whole site approach' has been adopted with all plant and equipment operating simultaneously at 'full duty', which is likely to be

precautionary. In particular, cooling fans are modelled to operate on a worse case at night which is unlikely to occur due to lower temperatures. Nevertheless a 'tonal character' penalty of +4 dB has been applied.

- 18.17 With the Council EHO's agreement, the applicant has assessed noise at 7 representative locations; Elm Grange Farm, Derwent Cottage, Ashleigh House, Catlins Farm, Glebe Farm, Mill Green Farm and Maryland Bank. None of the daytime operational noise levels exceed the 'absolute level' of 35 dB, which is considered 'low'. Levels range from -6 to +3db above background levels across the 7 assessment locations and are lower or similar to existing typical background noise levels during quiet periods of the day.
- 18.18 Night-time operational noise levels range from -1 to +10db above background across the assessment locations and which again are below the 'absolute level' of 35 dB, or in the case of Ashleigh House only exceed background by +3db. The applicant suggests that with cooling fans unlikely to be operational at night, in practice a 7 to 10 dB reduction can be assumed. The predicted operational noise levels at Build-A-Future (Elm Grange school) would be no more than 34 dB; being more than 5 dB below the typical background noise levels.
- 18.19 Mitigation measures for construction and operational noise include the submission of a detailed Construction and Environmental Management Plan (CEMP) governing matters such as working hours, notification of works, temporary noise barriers around trenchless compounds where horizontal drilling is proposed and details of the design, location, type and associated maintenance of attenuation measures and screens for proposed noise-generating equipment. As above, the modelling and outputs already presented do not account for these, nor for any further attenuation of noise from the central BESS/substation by intervening placement of panels.
- 18.20 The Council's Environmental Health Officer raises no objection to the methodologies applied and the outputs as presented, and supports the general approach of securing further mitigation by way of Requirement/s.
- 18.21 Officers therefore conclude that construction and decommissioning impacts on certain residential receptors (including Elm Grange school and Rectory Cottages, Boston Road) would be **negative**, albeit temporary and that operational noise impacts (accounting for the worse case scenarios adopted/exclusion of mitigation measures) are mainly **neutral**.

19 Climate Change

- 19.1 Section 4.8 of the 2011 EN-1 addresses climate change adaptation in energy infrastructure development. It notes that the IPC (now ExA) should take the effects of climate change into account when developing and consenting infrastructure, referring also to the potential long-term impact of climate change.

- 19.2 New energy infrastructure will typically be a long-term investment and will need to remain operational over many decades, in the face of a changing climate. Consequently, applicants must consider the impacts of climate change when planning the location, design, build, operation and, where appropriate, decommissioning of new energy infrastructure (paragraph 4.8.5).
- 19.3 The IPC (now ExA) should be satisfied that applicants for new energy infrastructure have considered the potential impacts of climate change using the latest UK Climate Projections available at the time the ES was prepared to ensure they have identified appropriate mitigation or adaptation measures. This should cover the estimated lifetime of the new infrastructure (paragraph 4.8.6).
- 19.4 EN-1 notes the energy NPSs should speed up the transition to a low carbon economy and thus help to realise UK climate change commitments sooner than continuation under the current planning system.
- 19.5 Paragraph 2.2.5 notes the UK economy is reliant on fossil fuels, and they are likely to play a significant role for some time to come. Most of our power stations are fuelled by coal and gas. The majority of homes have gas central heating, and on our roads, in the air and on the sea, our transport is almost wholly dependent on oil.
- 19.6 Paragraph 2.2.6 identifies that the UK needs to wean itself off such a high carbon energy mix: to reduce greenhouse gas emissions, and to improve the security, availability, and affordability of energy through diversification. EN-1 also notes that storage has a key role to play in achieving net zero and providing flexibility to the energy system.
- 19.7 Section 4.9 of the 2023 draft EN-1 focuses on climate change adaptation and reiterates the need to minimise the most dangerous impacts of climate change.
- 19.8 The 2023 draft EN-3 (paragraphs 3.10.56 and 3.10.140), requires the applicant to 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.
- 19.9 CLLP Policy S11 'Embodied Carbon' requires schemes to reduce the development's embodied carbon content, through the careful choice, use and sourcing of materials. Policy S11 also requires applicants to demonstrate that they have considered options and opportunities for the use of lower embodied carbon materials; and which gains weight from 1 January 2025, with a further requirement to take opportunities to minimise embodied carbon.
- 19.10 Policy S14 'Renewable Energy' sets out the position that renewable energy schemes will be supported where the direct, indirect, individual and cumulative impacts on the following considerations are, or will be made, acceptable. The criteria-based sections of the policy, including under the sub-

heading of 'Additional matters for solar based energy proposals' are considered elsewhere in this LIR.

- 19.11 The supporting text to policy S14, at paragraph 3.3.4 sets out that in Central Lincolnshire, 'the aim of the Joint Committee that prepared this Plan is to maximise appropriately located renewable energy generated in Central Lincolnshire, as confirmed in Policy S14 below. The Policy sets no floor or cap on the scale of renewable energy targeted to be generated, preferring, instead, an approach which supports all appropriate proposals that meet the policy requirements set out.'
- 19.12 In addition, and with particular relevance to the BESS, paragraph 3.3.19 sets out that 'in order to support a move to a zero carbon Central Lincolnshire there is a need to move away from fossil fuels (gas, petrol, diesel, oil) towards low carbon alternatives and this transition needs to take place with increasing momentum in order to stay within identified carbon saving targets'. Continuing, it sets out that 'Energy storage including battery storage, consideration of existing and new electricity substations and energy strategies for large developments are required to help support the future energy infrastructure needs for Central Lincolnshire'.
- 19.13 Policy S16 'Wider Energy Infrastructure' notes that the Joint Committee is 'committed to supporting the transition to net zero carbon future and, in doing so, recognises and supports, in principle, the need for significant investment in new and upgraded energy infrastructure'. The policy offers support for proposals which are necessary for, or form part of, the transition to a net zero carbon sub-region, including energy storage facilities and upgraded or new electricity facilities (such as transmission facilities, sub-stations or other electricity infrastructure).
- 19.14 However, the policy caveats that any such proposals should take all reasonable opportunities to mitigate any harm arising, not only in terms of the appropriate locations for such facilities, but also design solutions (cross referring to CLLP Policy S53) which minimises harm arising.
- 19.15 As set out above, the 'golden thread' running through the NKDC Climate Emergency Strategy (CES), the Climate Emergency Action Plan (CEAP) 22/23, its Environment Policy, the NK Plan 22-25 and its Community Strategy is the Council's vision for a sustainable transition to net zero by 2030 for both North Kesteven District Council (NKDC) and the District of North Kesteven, supported by mitigation measures to reduce emissions and adaptation measures to improve resilience to the effects of climate change.
- 19.16 This includes a commitment to seek to deliver a 95% reduction in carbon emissions from energy compared to 2005 levels, and supporting a 'just transition' to net zero to create a sustainable future for North Kesteven in alignment with the Council's Community Strategy 2030 vision to create a District of Flourishing Communities.

- 19.17 The applicant's assessment includes a detailed methodologies for identifying effects related to the construction, operation and decommissioning phases. Greenhouse Gas (GHG) emissions sources considered during the construction phase include the embodied carbon of products and equipment, the transportation of these materials to the Order limits boundary, as well as the emissions associated with construction worker transport to the Proposed Development.
- 19.18 A likely worst-case country of origin of China has been assumed as a conservative estimate for products and equipment, with distances estimated from ports with a proximity to relevant manufacturing facilities in Shanghai. The applicant has adopted corresponding HGV and sea freight distances of 350km and 21,900km respectively for transportation of materials.
- 19.19 The applicant identifies that the greatest GHG effect during the construction phase is as a result of the embodied carbon contained within the construction materials which accounts for 96.3% of the total construction phase GHG emissions; which are expected to equate to 269,000 tCO₂e (tonnes of carbon dioxide equivalent) across the 30 month period.
- 19.20 The greatest GHG emissions during the operational phase are estimated to result from maintenance activities, associated with embodied carbon content of replacement parts and equipment, which account for 93.1% of the total emissions - 292,000 tCO₂e over the 40-year design life.
- 19.21 In terms of operational effects, the applicant estimates that over the 40 year operational lifetime, the proposed development is estimated to produce a cumulative energy generation of 14,000,000 MWh. Around 1,910,000 tCO₂e would be emitted to generate the equivalent amount of electricity over the operational lifetime of the proposed development from the projected grid energy mix comprised of a range of fossil and renewable sources; even accounting for the increased future decarbonisation of the electricity grid.
- 19.22 Based on the difference between the operational GHG emissions of the proposed development, (292,000 tCO₂e) and the estimated emissions that would result from sourcing the equivalent energy supply from the grid (1,910,000 tCO₂e) the applicant estimates that the development would result in 'avoided' GHG emissions of 1,620,000 tCO₂e, or 1,350,000 tCO₂e over the total lifecycle of the development accounting for construction and decommissioning (3,080 tCO₂e) GHG emissions.
- 19.23 However, with reference to decommissioning, Table 13.10 'Summary of Decommissioning GHG Emissions' of the Environmental Statement only subdivides the relative GHG emissions under the headings of 'Transportation of materials & waste' and 'Worker transportation'. The applicant has since confirmed that the data does not account for GHG emissions associated with the recycling or disposal of components and panels at specialist disposal facilities; essentially the assumption is that all material is produced for the first time use in the development, and then recycled post-development.

- 19.24 The applicant highlights the ‘high recyclability’ of the materials to mitigate the impacts of the initial embodied carbon, and that there is a strong argument that at the point decommissioning, recycling technologies and efficiencies are likely to have significantly improved, and any remaining decommissioning-related GHG emissions associated with energy generation, transportation, operation of plant and waste disposal throughout the supply chain are anticipated to be much lower as a result of grid decarbonisation, machinery and vehicle electrification.
- 19.25 Paragraph 13.3.43 of the ES notes that ‘to reduce the lifetime impact associated with the embodied carbon of all products and equipment, recycling of reclaimed materials would be strongly encouraged upon end of life decommissioning. However, this assumption has not been applied to the calculation methodologies to be consistent with the conservative approach to impact assessment.’
- 19.26 The applicant has also contextualised the individual and cumulative benefits of the proposed development alongside 12 other NSIP and TCPA 1990 solar energy proposals in Central Lincolnshire and South Kesteven/Rutland, relative to the UK’s national targets for newly installed energy generation capacity in order to meet the national UK Net Zero Strategy. They find that the Heckington proposals would contribute 0.4% towards the projected UK renewable energy capacity in its own right.
- 19.27 The applicant’s assessment concludes that there are no ‘significant’ adverse effects predicted with respect to GHG emissions during the construction and decommissioning phases, with a ‘significant beneficial effect’ predicted during the operational phase both for the proposed development in isolation and cumulatively with 12 other NSIP and TCPA 1990.
- 19.28 Officers, including the Council’s Climate Change Manager, agree that the applicant’s approach and assumptions for capturing and calculating emissions utilise recognisable methodology and are therefore acceptable, and that the approach has recognised the requirements for whole life emissions calculations (relative) to cover pre-construction, construction phase, life time (including operational and maintenance) and decommissioning.
- 19.29 The Council’s position is therefore that, adopting a ‘whole life’ approach to GHG emissions, there are no negative and neutral impacts and that significant **positive** impacts would accrue. The Council does however wish to draw the ExA attention to the point relating to predicted decommissioning GHG emissions associated with the recycling or disposal of components and panels at specialist disposal facilities and which the applicant confirms focusses solely on the transport of materials and waste rather than processing activities per se.

20 Transport, Access, Public Rights of Way and Recreation

- 20.1 Paragraph 5.13.6 of the 2011 EN-1 sets out the that the SoS should consider the substantial impacts of traffic and therefore should ensure ‘that the

applicant has sought to mitigate these impacts, including during the construction phase of the development. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the IPC should consider requirements to mitigate adverse impacts on transport networks arising from the development'. Moreover, applicants may be willing to enter planning obligations to fund infrastructure and otherwise mitigating adverse impacts.

- 20.2 With regards to mitigation, EN-1 states that the SoS may attach requirements to a consent where there is likely to be substantial HGV traffic that control numbers of HGV movements to and from the site in a specified period during its construction and possibly on the routing of such movements, make sufficient provision for HGV parking including to avoid prolonged queuing on approach roads and ensuring satisfactory arrangements for reasonably foreseeable abnormal disruption (paragraph 5.13.11).
- 20.3 Section 3.10 of the 2023 draft EN-3 makes a number of recommendations in relation to accessibility and public rights of way, noting at 3.10.30 that the suitability of the access routes to the proposed site for both the construction and operation of the solar farm must be considered, with the former likely to raise more issues. With reference to public rights of way, the draft advises that applicants should keep, as far as is practicable and safe, all public rights of way that cross the proposed development site open during construction and protect users accordingly. They are also encouraged to design the layout and appearance of the site to ensure continued recreational use of public rights of way, where possible during construction, and in particular during operation, and to provide enhancements to public rights of way and the adoption of new public rights of way through the site.
- 20.4 CLLP Policy S47 'Accessibility and Transport' requires development to contribute towards an efficient and safe transport network and that proposals should demonstrate, where appropriate, that they have had regard to the need to minimise additional travel demand through the use of measures such as travel planning, safe and convenient public transport, walking and cycling links and integration with existing infrastructure. The Policy also sets out that any development that has severe transport implications will not be granted planning permission unless deliverable mitigation measures have been identified, and arrangements secured for their implementation, which will make the development acceptable in transport terms.
- 20.5 The proposed access to the Energy Park during the construction and operational phases is proposed from the A17 to the south of the Energy Park site, approximately 900m northwest of the junction with Six Hundreds Drove via a new junction. An access in this location was previously granted planning consent as part of the previous wind energy scheme referred to in the planning history section above.
- 20.6 Whilst the proposed (permanent) access is under construction, a temporary construction access will be provided via an existing junction with the A17, approximately 600m southeast of B1395 Sidebar Lane junction, at Elm

Grange. The applicant has demonstrated the required visibility splays of 2.4 x 215 metres in both directions for both temporary and permanent site accesses. The temporary construction access will only be in place until such a time that the permanent access is completed. This is estimated to be a period of around two months after commencement of development.

- 20.7 Access for the construction of the Off-site Cable Route Corridor is proposed in two locations; one to the north and one to the south of the South Forty Foot Drain. Access from the north of the drain is proposed via an existing junction with the A17 located approximately 430 metres north of the junction with the A1121; and access to the south of the South Forty Foot Drain is proposed via the Triton Knoll access with the A17. Localised access is also proposed via Royalty Lane. These proposed access points are located within Boston Borough and utilise the existing junctions and accesses used previously for the construction of the Triton Knoll cable link.
- 20.8 The applicant's assessment considers baseline and predicted traffic flows throughout the estimated 30-month construction period at three 'link' locations along the A17, located between the temporary and permanent access points. The 'baseline' two-way daily traffic flows through these links are between 20,373 and 21,249 vehicle movements (all types). Of this, between 3,485 and 4,350 are attributable to HGV traffic.
- 20.9 The applicant has estimated that through the course of the construction period a total of 11,082 (12,190 allowing a 10% contingency) HGV construction vehicles will be required to access the main Energy Park site, of which the largest concentrations are for 'materials' (4,195 vehicles), 'solar park components – modules' (1500) and 'cable' (1200). An allowance of 107 vehicles has also been made for escorted abnormal load deliveries within this overall figure.
- 20.10 Assuming a 30-month construction period (total) and a six day working week (720 days total) the applicant estimates that this equates to around 17 HGV deliveries per day on average (or up to 34 two-way movements per day). Accounting for a predicted maximum peak of 400 construction workers (average figure of 150) on the main energy park site at any one time, the applicant estimates a total of 92 two-way movements per day on average during the busiest construction periods (including the allowance of 34 HGV trips). Set against the recorded baseline flows on the assessed A17 links, the applicant concludes a 'negligible' impact on the capacity and operation of the A17.
- 20.11 Vehicle movements associated with the construction of the cable route and BFSS extension are not expected to exceed around 13 daily vehicle movements (of that, less than one per day on average associated with the BFSS works). The applicant assigns a negligible impact relative to the baseline flows.
- 20.12 Operational vehicle movements are not expected to exceed five visits per day to the Energy Park site for equipment maintenance, tending of sheep and

maintenance of Biodiversity Net Gain Areas (including the community orchard); again assessed as a 'negligible' impact. Decommissioning is expected to generate the same number of movements as construction; potentially less mindful that cables will be left in situ. A 'negligible' effect is also assigned.

20.13 Notwithstanding the overall findings, mitigation is proposed by way of;

- Providing a "left in – left out" arrangement at the permanent A17 Energy Park site access.
- Provision of warning signage and associated traffic management at the temporary A17 (Elm Grange) site access
- Provision of contractor's compounds within the site for HGVs to park and manoeuvre, off the local highway network.
- Control of HGV arrivals/departures by the site manager ensuring that vehicles are held within a compound as required with no waiting on the public highway
- Provision of wheel washing facilities
- Agreement of hours of site operation and the routing of construction traffic to protect local residential areas (especially from HGVs) where possible.

20.14 The applicant proposes to address the above holistically via a Construction Traffic Management Plan (CTMP) via a Requirement, of which a draft has been submitted with the DCO application.

20.15 The applicant has also considered cumulative transport impacts associated with 15 other projects (primarily solar-related; both NSIP and TCPA 1990) agreed with the host authorities at pre-application stage. The applicant concludes that the separation distance to the Heckington Fen site, allied with the temporary nature of the construction phase and the insignificant changes in trip movements, it is not considered necessary to assess the cumulative transport and access impacts.

20.16 Officers are also mindful that some of these sites are operational and therefore are likely to have very limited operational/maintenance-related vehicle movements, and others (for example, known/registered NSIPs) are unlikely to have the same construction period timescales mindful of their current stage and status in the acceptance/examination process.

20.17 With reference to impacts on Public Rights of Way (PROW), there is only a single PROW (HECK 15/1) which runs across the north-west of the Energy Park, and along the Head Dike which forms the northern site boundary. The route is about 2.7m in length and is truncated at both ends; i.e. it is not part of longer connected network (such as the Spires and Steeples route) and as such is likely be used only for localised recreation. The PROW is not required to be closed or diverted, and would be fenced during construction and also by permanent security fencing during operation except where it passes through a habitat enhancement area adjacent to Head Dyke in the north western corner. Some localised footbridge improvements across drains are also proposed.

- 20.18 The proposals also include a new permissive path to provide a circular ‘loop’ walk through the western part of the site about 4.2km in length linking to the community orchard (in close proximity to the Elm Grange/education facility), the PROW and the habitat enhancement area adjacent to Head Dyke. The applicant advises that the permissive path will open to the general public once construction of the Energy Park site is completed and remain open for the 40-year project lifetime under legal agreement between the Applicant and the Landowner.
- 20.19 The new community orchard would extend to 2.15ha in size and is indicatively noted as comprising 92 fruit trees. It is envisaged that the community orchard would not offer any additional areas of car parking in order to limit vehicular movement, disturbance to the adjacent school and residents at Elm Grange, and avoid any additional congestion along the A17. The main function of the proposed orchard is to create a new amenity space for the local community including for use by the Elm Grange school.
- 20.20 Officers therefore conclude that there are **positive** impacts associated with the provision of a new temporary permissive footpath and **positive** impacts arising from the proposed community orchard, the locations of which have been designed to offer linkages from and to the PROW network. There are **neutral** impacts upon the PROW itself. Traffic and transport impacts during construction, operation and decommissioning (subject to agreement of a CTMP via Requirement) would be **neutral**.

21 Air Quality

- 21.1 Paragraph 5.2.9 of the 2011 EN-1 states that the decision maker ‘should generally give air quality considerations substantial weight where a project would lead to a deterioration in air quality in an area or leads to a new area where air quality breaches any national air quality limits’. In all cases the IPC must take account of any relevant statutory air quality limits.
- 21.2 The UK Air Quality Strategy (AQS) identifies nine ambient air pollutants that have the potential to cause harm to human health and two for the protection of vegetation and ecosystems. The AQS defines objectives for these pollutants that aim to reduce the impacts of these pollutants to negligible levels. The objectives are not mandatory but rather targets that local authorities should try to achieve.
- 21.3 CLLP Policy S14 ‘Renewable Energy’ states that whilst renewable energy scheme will be supported, this is subject to an assessment as to whether the impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters including dust and air quality.
- 21.4 CLLP Policy S53 ‘Design and Amenity’ requires that all development will not result in adverse noise and vibration taking into account surrounding uses nor result in adverse impacts upon air quality from odour, fumes, smoke, dust and other sources.

- 21.5 The applicant's assessment identifies that the impacts of vehicle emissions (nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5})) associated with the construction of the proposed development (including the cable route corridor) has the potential to effect existing sensitive receptors located at the roadside of the proposed construction traffic routes, which will mainly run along the A17 for the anticipated 30 months of construction. Air quality effects during the operational phase have been scoped out of the assessment as agreed in the Scoping Opinion.
- 21.6 The assessment also considers exhaust emissions of oxides of nitrogen (NO_x), PM₁₀ and PM_{2.5} from Non-Road Mobile Machinery (NRMM) (plant and equipment) associated with construction activities.
- 21.7 There is a network of air quality diffusion tubes located in the wider surrounding area including on the B1394 in Heckington village, which monitor annual mean NO₂ concentrations. There have been no exceedances of the annual mean NO₂ objective (40 µg/m³) during the most representative monitoring year (2019) at the Heckington diffusion tube, which returned a figure of 17.3 µg/m³ or 43% of the annual mean objective. The annual average background concentrations (µg/m³) predicted across the energy park and cable route (to the year 2027) are up to 7.6 (NO₂), 16 (PM₁₀) and 8.7 (PM_{2.5}); i.e significantly below the maximum objective level.
- 21.8 The applicants assessment, taking account of the anticipated construction period of 30 months and maximum daily vehicle movements on any one road 'link' (89 light and 29 heavy duty vehicles) and use of plant and equipment is below the screening criteria for detailed assessment. Allied with the annual average background concentrations, and the suggested additional mitigation of dust emissions and NRMM emissions during the construction phase as set out in the Outline Construction Environmental Management Plan, the applicant concludes that there will be no likely significant effects to air quality at existing sensitive receptors, with the overall impact 'negligible'.
- 21.9 The Council's position is that there are no positive construction, operation and decommissioning impacts in relation to air quality and that overall the construction and operational impacts are **neutral**.

22 Land Use and Agriculture

- 22.1 Paragraph 5.10.8 of the 2011 EN-1 outlines that applicants should 'seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations'.
- 22.2 Paragraph 5.10.15 of the 2011 EN-1 states that the decision maker should ensure that 'applicants do not site their scheme on the best and most versatile agricultural land without justification. It should give little weight to the loss of poorer quality agricultural land (in grades 3b, 4 and 5), except in areas (such

as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy’.

- 22.3 The 2023 draft EN-1 states similar advice to applicants and the SoS that they should seek to minimise impacts on BMV (paragraphs 5.11.12 and 5.11.34 refer, with the latter reiterating that ‘The Secretary of State should ensure that applicants do not site their scheme on the best and most versatile agricultural land without justification’). Where it is sited on BMV, it should duly justify as to why other land cannot be used. The SoS should also ‘take into account the economic and other benefits of that land’.
- 22.4 Under the heading of ‘Solar Photovoltaic Generation’, paragraph 3.10.14 of the 2023 draft EN-3 states that ‘While land type should not be a predominating factor in determining the suitability of the site location applicants should, where possible, utilise previously developed land, brownfield land, contaminated land and industrial land. 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)’.
- 22.5 Paragraph 3.10.15 notes that ‘Whilst the development of ground mounted solar arrays is not prohibited on agricultural land classified 1, 2 and 3a, or sites designated for their natural beauty, or recognised for ecological or archaeological importance, the impacts of such are expected to be considered and are discussed under paragraphs 2.10.66 – 2.10.83 and 2.10.98 – 2.10.110’.
- 22.6 Paragraph 3.10.16 acknowledges that it is likely that applicants’ developments may use some agricultural land, however that ‘Applicants should explain their choice of site, noting the preference for development to be on brownfield and non-agricultural land’.
- 22.7 Paragraph 3.10.17 Where sited on agricultural land, consideration may be given as to whether the proposal allows for continued agricultural use and/or can be co-located with other functions (for example, onshore wind generation, or storage) to maximise the efficiency of land use.
- 22.8 Paragraph 3.10.136 of draft National Policy Statement for Renewable Energy Infrastructure (EN-3) reiterates that the SoS should take into account ‘the economic and other benefits of the best and most versatile agricultural land’ and that ‘The Secretary of State should ensure that the applicant has put forward appropriate mitigation measures to minimise impacts on soils or soil resources’.
- 22.9 Under the sub-heading of ‘Additional matters for solar based energy proposals’, CLLP policy S14 ‘Renewable Energy’ states that proposals for ground based photovoltaics and associated infrastructure, including commercial large scale proposals, will be under a presumption in favour (of approval) unless, amongst other things, ‘the proposal is (following a site

specific soil assessment) to take place on Best and Most Versatile (BMV) agricultural land and does not meet the requirements of Policy S67'.

- 22.10 CLLP policy S67 'Best and Most Versatile Agricultural Land' states that significant development resulting in the loss of the best and most versatile agricultural land will only be supported if:
- The need is clearly established;
 - The benefits outweigh the need to protect such land, when taking into account the economic and other benefits of the best and most versatile agricultural land;
 - The impacts of the proposal upon ongoing agricultural operations have been minimised through the use of appropriate design solutions; and
 - Once the development has ceased its useful life then the land should be returned to its former use'.
- 22.11 Agricultural Land Classification (ALC) auger sampling has been carried out across the Energy Park site in two stages, both in consultation with Natural England and NKDC's agricultural consultant, Landscape. Initially a semi-detailed ALC was carried out, involving sampling on a regular 200 metre by 200 metre grid, comprising of 138 auger samples. A further 313 auger samples were taken in August and September 2022 – a total of 451 auger samples across the main Energy Park site. Soil augering of the cable route has not been carried out as it has been agreed that the cable route involves temporary disturbance of the soils to enable a trench to be dug and the cabling to be inserted and then backfilled.
- 22.12 The soil auger sampling has identified that 49.0% of the site, an area of 257 ha, is within the Best and Most Versatile (BMV, grades 1, 2 and 3a) category, 50.6% of the site is subgrade 3b (non-BMV) 0.4% was non-agricultural. The specific gradation breakdown is 58ha (11.1% overall site area) of Grade 1 land, 39ha (7.4%) of Grade 2 land and 160ha (30.5%) of Grade 3a land. Very broadly those concentrations of BMV land are along the eastern site boundary and west/south-west/centre-west and north of the site.
- 22.13 The existing fields are large and rectilinear and the assessments found that some of the agricultural fields are a complex mix of ALC grades; namely in places the disposition of the various ALC grades (and concentrations of BMV land) does not align with field boundaries.
- 22.14 Consistent with EIA scoping requirements, the applicant then considers the relative amounts/proportions of ALC across North Kesteven District and Lincolnshire; albeit using published mapping as part of a 'desktop' exercise. The applicant's assessment notes that across Lincolnshire the estimated proportion of BMV as a proportion of all ALC grades is 71.2% (14.6% of agricultural land is Grade 1, 36% is Grade 2 and 20.6% is Grade 3a).
- 22.15 Across North Kesteven District the proportion of BMV is slightly lower (67%) than the Lincolnshire average, and where the composition is 1.4% of all District agricultural land falling within Grade 1, 44.9% being Grade 2 and

20.7% as Grade 3a. Therefore in the case of BMV proportions within the main Energy Park site boundary at Heckington, there are higher than District-average proportions of Grade 1 and 3(a) land and lower proportions of Grade 2 land.

- 22.16 The applicant's 'Working Indicative Site Layout Rev H' developed during the pre-application stages and subject to statutory consultation included additional land of around 62ha in size to the south and west of the Energy Park, which is now outside of (removed from) the Order Limits. This excluded land, initially intended to form part of the development-related BNG delivery, was augered and confirmed to be Grade 1 and 2 (BMV) land. Therefore, the applicant has already adopted a 'design mitigation' through the evolution of the scheme by excluding 62ha of Grade 1 and Grade 2 land from the Order Limits.
- 22.17 A large strand of the applicants remaining approach to 'mitigating' (in the overall planning balance and assessment of impacts) the impacts on BMV agricultural land is through highlighting that the effects are temporary (40-year operational timeframe) and largely reversible through appropriate soil management measures during construction and decommissioning. Additional mitigation measures through sheep grazing between panels is also proposed; discussed below.
- 22.18 The applicant highlights that the only 'permanent' loss of agricultural land through 'sealing over' and which is not therefore readily mitigated through soil restoration measures at decommissioning stage is primarily associated with the formation of access tracks and the BESS/substation (totalling just over 20ha). Of this area the amount of Grade 1 and 2 land permanently sealed over is just over 1.0 ha and the amount of Subgrade 3a land sealed over is 1.8 ha. The applicant points to impact assessment guidance that only the permanent sealing of land or ALC downgrading of more than 20 hectares should be a 'major adverse' magnitude of impact.
- 22.19 The applicant has also undertaken a cumulative agricultural land impact assessment considering the effects of 16 (primarily) solar schemes (NSIP and TCPA scale) across the District and Lincolnshire. The timings of the report mean that it has not however accounted for the three other solar NSIP schemes in the District (Springwell, Beacon Fen and Fosse Green).
- 22.20 The cumulative assessment notes that if all of the assessed schemes (with the three exceptions) were to gain planning consent alongside Heckington Fen, and all of the land was used for solar development the total use of agricultural land would be of the order of 5,950 ha, of which about 4,200ha would be BMV land of varying grades. Excluding the 3 other NKDC NSIP schemes this would amount to 1% of Lincolnshire's agricultural land being used for solar farms; about 1.2% of its commercially farmed area.
- 22.21 The applicant has also submitted a Farming Report which sets out practical difficulties and constraints, including that parts of the Energy Park have a significant blackgrass problem and that the site's division by deep ditches means that there are existing physical barriers between fields and single

bridge entry points such that, regardless of the proposed development, there are practical limitations to wider scale farming.

- 22.22 The applicant has also estimated that the 360-tonne annual reduction in the county's winter wheat yield associated with the removal of land from agricultural production is only an approximate 0.02% reduction. In addition, the applicant points to the nature of the soils, waterlogging and a deterioration of the drainage system which has generally precluded spring/summer use and has directed the focus onto winter cropping. With reference to the potential to delete additional areas of BMV land from the scheme and to enable a continuance of arable farming in those areas (amongst surrounding panelled areas), the report highlights that for practical and economic reasons the land has to be 'block cropped' and farmed in such a way as to reflect the quality of the majority of the land.
- 22.23 Aside from the reference to only relatively limited areas being permanently 'sealed over' (and that ALC grading will not be permanently degraded elsewhere within the Energy Park) a large part of the applicant's case for mitigation of impacts is the use of the land between the panels for sheep grazing. The applicant points to sheep grazing being common around and under solar panels, manages grass, provides an income, provides for continuance of agricultural use and improves nutrient value. The submitted details suggest that sheep farming labour is comparable to cereals production and that the overall sheep enterprise could be made up of 4 ewes per hectare; approximately 2,000 breeding ewes across the Energy Park site, and with a typical rearing percentage of 1.65% lambs per ewe, this would equate to 3,300 lambs being produced per year across the site. The applicant states that this would be a considerable new farming enterprise in its own right running alongside clean energy generation.
- 22.24 The applicant points to other mitigation already embedded into the design, including reducing the extent and spread of panels to avoid fields that are mostly of ALC Grades 1 and 2 quality. The applicant also points to an alternative design consideration involving the removal of additional (BMV) land to the south and west, however they deemed that this was 'not appropriate or commercially attractive when considering the wider planning balance and reductions in energy generation'. An outline Soil Management Plan has been submitted, to be secured in detail by a Requirement, which sets out a series of measures to minimise issues such as soil compaction during the installation process, the avoidance of working wet or waterlogged soils and associated mitigation.
- 22.25 The Council's agricultural consultant, Landscape, has provided the attached review of the impacts on agricultural land (Appendix 3). Landscape have been engaged by the Council through the pre-application stage and find that the applicant's spatial approach to augering and soil analysis is acceptable relative to the size of the site. As also noted below, Landscape consider that the scheme amendment to reduce the DCO order limits and therefore retain additional high grade BMV land is positive. However, Landscape comment that in real terms the difference between grade 3a and 3b land is quite small

in this instance and that there is a degree of subjectivity about the difference, though the overall findings are not in dispute.

- 22.26 Landscape also query some of the applicant's suggestions in terms of the degree to which existing site drainage/irrigation conditions and the extent of blackgrass impacts the ability to farm the existing site to its fullest extent. Landscape highlight that there are methodologies to limit and manage blackgrass, and that evidence of irrigation constraints are more anecdotal than based in concrete evidence. Furthermore, Landscape note that whilst sheep grazing between panels on the site is perfectly possible, the area is not known for such activity, and concerns are expressed about the likelihood of this occurring. Landscape's overall conclusion is that through the combination of the scale of the project and the amount of BMV land taken up by the development, the impact is significant at both District and County level.
- 22.27 The applicant's overall analysis is that construction and operational effects, when assessed at a national level, are slight to moderate adverse in relation to the permanent sealing over of land and soil quality impacts during construction. There are negligible/slight beneficial effects on agricultural businesses during operation. 'Very large adverse' impacts are concluded at a national scale associated with cumulative operation of other (primarily PA2008) solar farms in Lincolnshire/Rutland.
- 22.28 The Council notes that there is a clear tension with CLLP policies S14 and S67 and both the adopted and emerging NPS which needs to be factored into the planning balance. Whilst paragraph 3.10.14 of the 2023 draft National Policy Statement for Renewable Energy Infrastructure (EN-3) confirms that land type is not a determining factor, it does reiterate that only where the proposed use of any agricultural land over and above despoiled and brownfield 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)'.
- 22.29 The Council acknowledges that the applicant has modified their scheme through the pre-application stage, resulting in the removal of areas of Grade 1 and 2 land from the Order Limits. Of itself this was a positive step. We also accept that the applicant is entitled to decide, unilaterally, that removal of additional areas of BMV land would be commercially unattractive. However, it remains the case that nearly half of the Energy Park site is classed as BMV land and where Landscape point to there being very limited margin for professional interpretation (noting the subjectivity of overall assessment), before this proportion flips into an overall 'majority' by area.
- 22.30 The applicant has not proven that the need to develop BMV land has been clearly established (CLLP policy S67, first bullet point), nor in relation to point 3 that the impacts of the proposal upon ongoing agricultural operations have been minimised through the use of appropriate design solutions. The proposals for sheep grazing are developed only to high level, with the applicant stating only that a contract with a grazier is in place but with no further detail provided. None of the draft Requirements in Schedule 2 of the

draft DCO expressly deal with grazing management, even though there is seemingly a heavy reliance on reversion to sheep grazing to demonstrate continuance of an agricultural use and to mitigate adverse effects. In the context of that lack of information there is also a disproportionate focus on impacts associated with sealing over/permanent loss of BMV associated with the substation/BESS works relative to other/panelled areas.

- 22.31 The Council's position is therefore that construction, operational and decommissioning impacts holistically across land use and agricultural matters are **negative**.

23 Glint and Glare

- 23.1 Neither the 2011 EN-1 or EN-3 contain specific guidance on glint and glare. Paragraph 3.10.93 of the 2023 draft EN-3 states that 'solar panels may reflect the sun's rays at certain angles, causing glint and glare. Glint is defined as a momentary flash of light that may be produced as a direct reflection of the sun in the solar panel. Glare is a continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the panel. The effect occurs when the solar panel is stationed between or at an angle of the sun and the receptor'.
- 23.2 Policy S53: Design and Amenity, sub-section 8 (d) sets out that development proposals 'should not result in harm to people's amenity either within the proposed development or neighbouring it through overlooking, overshadowing, loss of light or increase in artificial light or glare'.
- 23.3 The applicant's assessment considers the impact of glint and glare from solar panels based on panel angles of 10, 15 and 20 degrees and taking into account impacts on the railway (specifically train drivers/safe train operation), to road users – including the A17, B1395 Sidebar Lane and A1121 and finally to residential properties in the vicinity of the site. Aviation effects on aircrafts operating in the surrounding area (including RAF bases) have been scoped out of the assessment due to the distance to airfields and the lack of potential effects.
- 23.4 The assessment considers both green and yellow glint; green glint being low intensity with limited after image, and yellow glint with a higher intensity and possible after image. The software and modelling exercise initially adopted a worst case scenario of 365 days sunny weather with no filtering of panel views, fog, cloud or other climatic interference; incidences of glint impact rely on there being a direct line of sight between the panel/s and the viewer with no intervening screening or filtering.
- 23.5 Accounting for a weather adjustment, users of the A17 (the most impacted road receptor) are predicted to experience a maximum of 1,982 annual minutes of glint assessed as 'moderate to major' (significant) before mitigation reducing to 'negligible to none' (not significant) after mitigation assuming a 10 degree panel angle. Mitigation comprises additional perimeter screen planting

around the south and southwestern areas of the Energy Park adjacent to the A17 to reduce visibility.

- 23.6 Accounting for a weather adjustment, the highest impacted rail user would experience 1,194 annual minutes of glint however the modelling position is approximately 1.3km from the Energy Park at its closest point, and has significant intervening screening. Effects are categorised as 'negligible' on this basis.
- 23.7 Finally the most impacted residential properties are observation points OP6, OP35 and OP36 – which will experience a weather-adjusted duration of up to 835 minutes of glint per year (OP36 - Holme House, Littleworth Drove and assuming a 10 degree panel angle). This equates to about 0.28% of annual daylight hours potentially affected by glint effects at receptor OP36, however effects are expected to occur early in the morning between about 05.30am and 06.30am.
- 23.8 Effects on OP36 are assessed as 'minor to moderate' prior to mitigation and 'negligible to none' after mitigation. Suggested mitigation comprises screen planting around the western perimeter of the Energy Park.
- 23.9 The Council's view is that there are no positive construction, operation and decommissioning impacts, however before mitigation there are **negative** glint impacts during construction and operation in particular on users of the A17 and in particular at OP36 Holme House, Littleworth Drove.

24 Miscellaneous Issues (Accidents and Disasters, Waste, Electric, Magnetic, Electro-Magnetic Fields and Telecommunication Infrastructure and Television Reception)

- 24.1 Paragraph 1(8) of Schedule 4 to the EIA Regulations requires consideration to be given to the risks of major accidents and disasters, but does not include a definition of these terms. The 2011 EN-1 states at section 4.13 that whilst access to energy is clearly beneficial to society as a whole, the production, distribution, and use of energy may have negative impacts on some people's health.
- 24.2 Paragraph 5.15.4 of the draft EN-3 states that all large infrastructure projects are likely to generate some hazardous and non-hazardous waste and that the Environment Agency's permitting regime incorporates operational waste management requirements for certain activities.
- 24.3 Paragraph 5.15.9 of the draft EN-3 requires an applicant to provide a report setting out the development will incorporate sustainable management of waste and use of resources including how re-use and recycling will be maximised.
- 24.4 Paragraph 3.2.24 of the CLLP, relating to Policy S10 'Supporting a Circular Economy', states that the policy aims to support development proposals which will contribute to the delivery of circular economy principles, including

reducing material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life, along with the incorporating of sustainable waste management onsite.

- 24.5 Part (7) of CLLP policy S53 'Design and Amenity' requires development to avoid adverse impacts associated with noise, dust and air quality, and part (9) requires schemes to minimise the need for resources both in construction and operation of buildings and be easily adaptable to avoid unnecessary waste production. One of the 15 objectives of the CLLP as set out in paragraph 1.5.2, under the heading of 'Waste' is 'To minimise the amount of waste generated across all sectors and increase the re-use, recycling and recovery rates of waste materials'.
- 24.6 The applicant has prepared an Unexploded Ordnance (UXO) Assessment which identifies the Energy Park Site as 'low risk', and the Cable Route Corridor as 'low risk', bar a central section of the Cable Route Corridor as 'medium risk'.
- 24.7 The risk of a battery fire in the BESS/substation is rated as 'low' and where the battery storage is itself containerised, thus reducing the risk of damage to the energy storage which may cause fires. An Outline Energy Storage Safety Management Plan has been submitted.
- 24.8 The applicant highlights that when operational the majority of the development will comprise solar PV modules which are inert, and that the onsite substation (transformers; switchgear and busbars), will be designed and installed to relevant standards and good practice and be subject to routine maintenance.
- 24.9 The BESS area incorporates a control room, tanks for containment of water/other fire suppressants (maximum of 2,500,000l of water in 10 cylindrical steel panel tanks) and a lagoon (if required) to capture water run-off during a fire incident. The applicant intends to prepare a 'Site Emergency Response Plan', including details of the hazards associated with lithium-ion (li-ion) batteries. The battery containers will incorporate fire detection systems and suppression systems, and will be spaced 5m apart to reduce any fire spread.
- 24.10 The applicant has prepared a smoke plume assessment which models hydrogen fluoride emissions (owing to high toxicity levels compared to other releases from battery fires). The direction of the plume will depend on the wind direction, and the dispersion would also depend on wind speed and turbulence. The Council's Environmental Health Officer (EHO) has reviewed the assessment and notes a maximum modelled concentration anywhere within the modelling domain of approximately 4 µg/m³, being significantly below the assessment percentile concentration level of 25 µg/m³ and that there is a less than 1% risk of an exceedance of those levels occurring. This represents a low risk of adverse effects on human health from hydrogen fluoride emissions associated with a battery fire. The EHO also supports the applicant's design approach to fire fighting/control.

- 24.11 The applicant's approach to waste management associated with construction includes maximising the use of prefabricated and standardised components in the standard product sizes, fabricated in a factory-controlled environment, to minimise wastage on site. Segregation of construction waste on site to maximise potential for reuse/recycling is also identified, and soils will be stored and reused. A detailed Construction Environmental Management Plan is to be secured by Requirement. Waste generation by staff during operation will be minimal.
- 24.12 The applicant also estimates waste production associated with the renewal and replacement of components, noting a typical solar panel annual replacement rate of 0.2% per year, 4.4% for solar inverters, 3.1% for energy storage inverters and 0.1% for cable. The applicant notes that the aluminium in solar panels can be recycled, and that the remaining glass and silicon mix can be ground up into other building materials and industrial applications, at a typical 96% reuse rate.
- 24.13 With reference to electric, magnetic and electro-magnetic fields (EMF) impacts, the applicant highlights National Grid guidance which states that 132kv underground cables, whether directly buried or in a tunnel, produce no external electric field. The applicant's assessment therefore focusses on the underground export cable between the on-site 400kV substation and the existing National Grid Bicker Fen Substation which will be via an underground 400kV cable system.
- 24.14 The underground 400 kV cable system will be located predominately on private land that is not publicly accessible (although will be located in part crossing roads and railway underground). The applicant's assessment shows that applying the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for electromagnetic field exposure levels of 500 μ T (occupational exposure) and 100 μ T (public exposure), the 'typical' to 'maximum' levels directly above buried cables varies from 24 μ T to 96 μ T; reducing significantly with distance to 0.2 μ T to 0.9 μ T at 20m.
- 24.15 The nearest residential receptor is located approximately 80m from the likely route of the underground cable, and the applicant therefore concludes no EMF impacts; including on potentially heightened sensitivity special educational needs pupils at the Build-A-Future Elm Grange school.
- 24.16 Finally, the applicant advises that telecommunications and television providers are unlikely to be affected by Electromagnetic Interference (EMI) unless transmitters are near electrical infrastructure associated with the solar PV array, in particular inverters. There are no buried telecommunications infrastructure beneath the Energy Park, and no phone masts present with the DCO Order limits - the nearest telecomms mast being about 350m west of the western boundary on Sidebar Lane. Television signals are exclusively digital.
- 24.17 Across the assessment categories, and with the provisions of DCO Requirements (for example to secure a CEMP, Site Emergency Response Plan and Energy Storage Safety Management Plan) and embedded design

mitigation the applicant estimates that effects are either very low, nil, and in all cases not significant. Whilst the renewal and replacement of components over the 40-year operational lifetime will generate additional waste above background levels for the existing site, the attrition rate is estimated to be low across all components and recycling/reuse rates high (96% for solar panels). Therefore on balance the Council considers the impacts associated with matters relating to accidents and disasters, waste, electric/magnetic and Electro-Magnetic fields, telecommunication infrastructure and television reception to be **neutral**.

25 Cumulative Effects

- 25.1 The Document Reference: 6.3.2.3 'Appendix 2.3: Cumulative Sites Long List and Shortlist' sets out the applicant's approach to identifying potential cumulative impacts alongside other NSIP (PA2008) and Town and Country Planning applications, primarily in relation to solar projects but also with due consideration of residential and wind energy projects including associated transmission systems (Triton Knoll and Viking Link). These cumulative sites, search areas and the general parameters for consideration have been agreed with the Council through initial EIA Scoping and pre-application discussions.
- 25.2 The 'long list' of sites with potential cumulative (construction, operation, decommissioning) impacts alongside Heckington Fen comprises 33 sites across Lincolnshire and Rutland, which are then divided into tier 1, 2, 3 and 'unregistered' categories to align with the guidance set out in 'Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects'. Tier 1 projects include those under construction, permitted/approved under the PA2008/TCPA 1990 but not yet under construction, and tier 3 projects are those allocated in plans or PA2008 projects on the Planning Inspectorate's 'Programme of Projects' but where a scoping report has not been submitted.
- 25.3 Applying that tiered approach, there are twelve tier 1 and 2 projects identified, including in tier 1 four TPCA 1990 scale solar farms in NKDC and Boston Borough (closest being 4.5km from the Heckington site), and in six in tier 2 (including 5 NSIP solar farms, 4 of which located in West Lindsey and one on South Kesteven). Notable though is that the cumulative effects assessments information was collated prior to finalisation of the ES chapters, as required, and was up to date as of end of December 2022.
- 25.4 In this context whilst the proposed Springwell NSIP solar park (situated in North Kesteven) is noted as an 'unregistered' project as at the December 2022 report finalisation date (as is the Lincolnshire Reservoir NSIP, also in North Kesteven), neither the Beacon Fen or Fosse Green solar parks are noted given that they were announced in March and May 2023 respectively, and have both subsequently been subject to EIA Scoping decisions issued by the Planning Inspectorate.
- 25.5 There is no 'fault' as such in the applicant's DCO submission, this reflecting the timings of those submissions. However, mindful that those projects have

since advanced to a greater or lesser degree the Council wishes to draw the ExA attention in particular to potential cumulative effects of the Heckington Fen development with the four other NKDC NSIP projects, alongside the 6 other PA2008 solar projects noted in tiers 1 and 2 of the applicants assessment.

- 25.6 Unless specified under the chapter-specific headings above, the Council's assessment of the potential for cumulative effects is restricted to the broad subject headings below, but cognisant that in some cases technical studies for those projects have yet to be completed, hence these are deemed 'potential' at this stage. For the other tiered projects – in particular the approved/operational or screened TCPA 1990 solar projects nearby in the District and in Boston Borough - the Council is satisfied that separation distances and the scale of development reduce or negate the likelihood of any adverse cumulative effects (typically in relation to landscape and visual, construction access and noise impacts).
- 25.7 Cumulative effects in association with the Triton Knoll and Viking Link projects, primarily located in Boston Borough, will potentially be associated with the proposed 400kV cable route between the Energy Park and the existing National Grid Bicker Fen Substation which crosses the Viking Link and Triton Knoll energy connections, and might give rise to effects in relation to construction/access and cultural heritage (archaeology) in particular.

Table 25.1 Summary of Potential Cumulative Effects alongside Proposed Development (PA2008 schemes)

Project	Land Use and Agriculture	Landscape/Visual Impact	Cultural Heritage	Socio Economics	Transport
Springwell Solar Park	Negative	Neutral	Neutral	Positive	Neutral
Beacon Fen Solar Park	Negative	Negative	Negative	Positive	Negative
Fosse Green Solar Park	Negative	Neutral	Neutral	Positive	Neutral
Temple Oaks Solar Park	Negative	Neutral	Neutral	Positive	Neutral
West Burton Solar Park	Negative	Neutral	Neutral	Positive	Neutral
Cottam Solar Park	Negative	Neutral	Neutral	Positive	Neutral
Tillbridge Solar Park	Negative	Neutral	Neutral	Positive	Neutral
Gate Burton Solar Park	Negative	Neutral	Neutral	Positive	Neutral

Lincolnshire Reservoir	Negative	Neutral	Neutral	Positive	Neutral
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26 Summary and Conclusion

- 26.1 The Heckington Fen Energy Park will have several impacts on North Kesteven District Council. This report has highlighted the positive, neutral and negative impacts of the scheme that have been identified in the Environmental Statement (ES), within the context of its knowledge and understanding of the area.
- 26.2 It provides a summary of those impacts, an identification of relevant policies, plans and guidance applicable to this project and where relevant the degree to which the project aligns with those documents. The LIR also considers the cumulative effects of other proposed schemes (primarily NSIP-scale solar projects) in the North Kesteven but also those in the surrounding parts of Lincolnshire/Rutland.
- 26.3 It is noted that the delivery of renewable energy of this nature is in accordance with the strategic policies of the Central Lincolnshire Local Plan (2023); most notably CLLP policies S14 'renewable energy' and S16 'wider energy infrastructure'. Underpinning the Plan is the overarching vision and strategy, and a series of policies, to address the challenges relating to climate change to ensure that the District and Central Lincolnshire is fit for a zero-carbon future, contributes to the transition to a net-zero carbon society, and is responsive to a changing climate.
- 26.4 This 'golden thread' also runs through the NKDC Climate Emergency Strategy (CES), the Climate Emergency Action Plan (CEAP) 22/23, its Environment Policy, the NK Plan 22-25 and its Community Strategy. Together these also comprise the Council's vision and strategy for a sustainable transition to net zero by 2030, supported by mitigation measures to reduce emissions and adaptation measures to improve resilience to the effects of climate change.
- 26.5 The Council therefore supports the principle of the development however notes that (not unexpectedly for a project of this scale and nature) there are negative impacts identified for the majority of the ES topics – the exceptions being the 'Climate Change', 'Transport', 'Air Quality' and 'Miscellaneous Issues' chapters. This creates a degree of tension, of varying degrees, with the adopted and draft NPSs and policies contained in the 2023 CLLP. The Council does not 'weight' those negative impacts on a sliding scale and we reserve the right to make further Written Representations submissions in relation to all matters set out in this LIR, however the four topic areas and associated impacts of greatest concern are in relation to;
- Impacts on Best and Most Versatile (BMV) agricultural land
 - Landscape and Visual Impact
 - Cultural Heritage impacts (above ground and archaeology); and
 - Ecology, Ornithology and BNG impacts

- 26.6 Nevertheless there is a particular tension in relation to BMV impacts given that very nearly half of the energy park site by area comprises land in Grades 1, 2 and 3a. The NPSs direct that previously developed land, brownfield land, contaminated land, industrial land and non-BMV land should be developed as a preference, and where policies S14 and S67 of the CLLP seek to protect the best and most versatile agricultural land so as to preserve opportunities for food production and the continuance of the agricultural economy. In the Council's view proposed mitigations (including contractual arrangements for sheep grazing) are, unfortunately, poorly developed at this stage.
- 26.7 Table 26.1 below provides a tabulated form of all the impacts by topic, also taking account of any cumulative impacts related with that topic.
- 26.8 The Council requests that the Secretary of State for Energy Security and Net Zero has regard to this Local Impact Report when making his decision.

Table 26.1
High Level Summary of Positive, Negative and Neutral Impacts

ES Chapter	Positive	Neutral	Negative	CLLP Policy
Landscape and Visual Amenity			X	S14, S53
Residential Visual Amenity			X	S14, S53
Ecology, Ornithology and Arboriculture	X	X	X	S14, S59, S60, S61, S66
Hydrology, Hydrogeology, Flood Risk and Drainage		X	X	S12, S14, S20, S21
Cultural Heritage			X	S14, S53, S57
Socio Economics	X	X	X	S10, S20, S28
Noise and Vibration		X	X	S14, S53
Climate Change	X			S11, S14, S16
Transport	X	X		S14, S47, S53
Air Quality		X		S14, S53
Land Use and Agriculture			X	S14, S67
Glint and Glare			X	S14, S53, S84
Miscellaneous Issues		X		S10, S53
Cumulative Effects (see Table 25.1)	X		X	Various

List of Appendices

Appendix 1 – AECOM Ecology (Ecology, Ornithology and BNG)

Appendix 2 – Heritage Trust of Lincolnshire (Cultural Heritage – archaeology)

Appendix 3 – Landscape (Land Use and Agriculture)



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23rd June 2023

Our Reference 60468641 Heckingham Fen DCO

Dear Nick

Heckington Fen Solar Park DCO – Ecology Review

I am satisfied that the DCO application addresses most of the comments raised at PEI stage and is generally consistent with expectations set out in the relevant good practice guidance. The main exception to this relates the level information provided to support the BNG assessment.

I am generally satisfied with the approach taken, the results obtained, the impact assessment conclusions, and the mitigation proposed. I agree that, in general terms, the existing baseline is relatively low risk and that the proposed development is capable of delivering BNG. However, further detail is required in some cases for purposes of transparency at decision-making, and to ensure clarity on what is proposed and that it is robust and securable.

My comments focus predominantly on the Main Site as the part of the scheme located within the District, and also as the location of the permanent land take and the land to be managed for biodiversity.

Impact Assessment

The Arboricultural Report identifies a tree requiring further assessment as a potential veteran (Tree Group 39). Was this assessment made and what was the conclusion? Veteran trees are subject to specific Standing Advice, and this has implications for stand-off distances/root protection zones.

I am not satisfied with the approach taken for the botanical surveys, as described in Appendix 8.6. Having substantive professional experience of scarce arable plant survey, including work in June 2023 within the District, I do not think the approach taken is adequate in terms of timing and survey effort. Further explanation is needed on the reasoning for the approach taken, and the suitability of surveying for occurrences of scarce arable flora using NVC survey methods. Such species are not uniformly distributed across the available habitat.

Such limited quadrat sampling will have investigated very small areas of the affected arable fields, and the chance of a notable species coinciding with a quadrat is very uncertain. This is also not an approach consistent with the cited Plantlife scarce arable flora assessment approach, which instead would typically involve surveys of larger areas (fields or the full margin of a field). Given the proposed extent of arable habitat loss I would have expected more substantive coverage of the affected arable fields. The timing of the surveys for early May is also a month earlier than I would consider suitable for searching for scarce arable flora. Not all species are likely to have germinated at this time, and certain scarce species (e.g. fumitories) are not likely to have been distinguishable if present.

As an experienced macrophyte surveyor, I have similar reservations about the timing and use of quadrats for ditch survey. However, in this case, the limited impact on ditches indicates that the existing data is sufficient.

The badger report (Appendix 8.7) identifies that this species is a relevant constraint. A survey was completed that identified setts but no attempt was made to map badger pathways to inform understanding of patterns of site use. Similarly, whilst two badger clans occupy the site, no attempt has been made to define the territorial boundaries between the two clans. This is an important consideration given security fencing will constrain badger movement and therefore could result in inter-clan conflict. I accept that the applicant will provide badger gates in fencing (Figure 4.23), but the details of what is proposed is incomplete and the required mitigation is not captured in the Mitigation Schedule. It is not clear to me how the number and configuration of badger gate provision can be specified without an understanding of how each of the two clans utilise the site.

The badger report identifies that roe deer use the site. Given the security fencing will also exclude deer, further information is needed on the implications of this for deer. This is primarily a welfare consideration given the fencing will obstruct access to habitat and might enclose deer within areas of insufficient habitat.

The impact assessment of birds is rather high level. As noted above, there is a need to consider the implications of current Standing Advice when reaching a planning decision. I am not certain that the main impact pathway (displacement due to habitat loss rather than injury/mortality) has been sufficiently considered. I accept the point that the future baseline may be improved for foraging by some bird species, but this may not outweigh the loss of nesting habitat. Similarly, more detail is needed to evidence that the academic studies cited are directly comparable to this site and the proposed development (including comparable grazing regimes, that can be shown to be certain and securable). The proposed mitigation does not address this. A more focussed assessment of birds dependent on arable fields as breeding habitat, many of which are of conservation concern, would be helpful during examination.

I am not satisfied with the survey approach for quail, a Schedule 1 bird species. The bird report (Appendix 8.10) states there was "*intensive searching*" for this species. I do not agree with this statement given the identified survey timings and effort are not consistent with good practice survey methods¹. In particular, the survey did not cover the period at dusk specified for surveys for this species.

I am content with the assessment of wintering birds provided that Natural England agrees with the findings of the HRA report.

I agree that some of the proposed habitat interventions may result in a neutral impact on birds, although at present there is not enough clarity to provide certainty on this. Examples would be:

- Certainty that the timing and extent/intensity of sheep grazing would allow for use of pasture by ground nesting birds. How will this be secured?
- Details of the arable management regimes for skylark (as indicated in paragraph 8.5.131). At present a commitment is being made, but what is being offered is unclear. It is also unclear how it will be secured. I am not certain that use of arable fields already occupied by skylarks will provide sufficient habitat to compensate the habitat loss from the proposed development.

Cumulative Assessment

Document 2.9 identifies a number of similar solar projects in the wider landscape, indicating extensive landscape scale conversion of arable farmland to grassland and other habitats. This will have consequences for species dependent on arable farmland e.g. certain birds.

Given this, the cumulative assessment provided in the ecology chapter is rather cursory and more thought needs to be given to the cumulative impact on dependent species. The reported combined loss of 1.5% of arable farmland habitat in Lincolnshire is not trivial. I also consider that this habitat loss should be examined in terms of the relevant Natural Character Area and its specific biodiversity features of interest.

¹ <https://www.rbbp.org.uk/wp-content/uploads/2020/10/Quail-Gilbert-et-al.pdf>

Landscaping and Biodiversity Enhancement

The landscaping strategy (Documents 6.2.6 and 7.8) cannot be agreed until a complete BNG assessment. This was requested at PEI stage and is otherwise a requirement of the good practice guidance accompanying Metric 3.1. Comparable local guidance has also been published with the Central Lincolnshire Local Plan. All good practice requirements need to be met, and any divergences or use of professional judgement fully explained.

The level of detail is sufficient to understand what is being offered in broad terms, but it does not represent a full specification suitable to set terms of reference for agreement of the detailed plan later as a Requirement. The quantum of BNG that can be achieved (while likely to be over 10%) cannot be agreed until sufficient information has been provided to verify the applicant's BNG calculations.

In terms of the proposed landscaping, more clarity is needed as follows:

- Details are not provided on the proposed grassland seed mixtures, or how it is intended to create the habitat. It is not clear that this is enhancement rather than habitat creation for BNG assessment purposes. I do not agree that over-sowing of existing grassland headlands alone is likely to be sufficient to establish species rich grassland.
- The plan shows grassland provision where there are existing farm tracks e.g. at the southwest corner. Therefore the extent of grassland provision is likely over-stated.
- The balance between new hedgerow creation and the gapping up of existing hedgerows (which is likely to be enhancement) is unclear. This could have relevance to the calculated BNG.

I would query whether more tree planting could be offered e.g. in hedgerows (over-shading considerations acknowledged)? The Arboricultural Report indicates decline in ash from dieback disease, so it would be beneficial to secure replacement trees of suitable species. I would query why the proposed hedgerow creation is specified in the BNG calculations as 'native hedgerow' rather than 'species-rich native hedgerow'?

I welcome the inclusion of monitoring proposals however these are insufficient at present to permit evidence based conclusions on the success in delivering commitments, and the need for remedial work where targets are not being met. NVC survey is not a suitable method for monitoring, although quadrat sampling may be a suitable means to gather structured data on the establishment of seed mixtures. Data will need to be gathered to measure success in achieving BNG with reference to the published Site Condition Assessment criteria. In summary, more precise monitoring criteria and targets need to be defined.

In terms of the BNG calculations, I identify the following matters to be addressed or clarified:

- River units – the conversion of ditch to culvert (whilst small scale) needs to be accounted for in the metric. At present, no net loss is concluded but this is not certain without accounting for culverts. BNG has not been demonstrated for river units.
- No information has been provided to substantiate the condition scores entered for the baseline and proposed habitats. This is a requirement of good practice.
- In relation to the baseline habitat "arable field margins" - it needs to be confirmed that use of this habitat (which has no condition weighting) conforms with the standard UKHab definition. If not, it should be treated as grassland and a condition weighting should be applied. This will have an influence on the quantum of BNG concluded.
- I am surprised by the number of woods reported as poor condition, in my experience most established woodlands score as moderate. Evidence is needed to clarify how the condition has been derived.
- Much of the proposed habitat enhancement would appear to represent habitat creation, given this involves changes in broad habitat type. Reference should be made to paragraph 4.64 of the Metric 3.1 User Guide, and further explanation or amendment provided as appropriate.
- The Strategic Significance weighting does not appear to have been applied to all relevant baseline and proposed habitats. The Local Plan identifies the following habitats of importance: all

priority habitats (Policy S60 Part Two), woodlands, trees and hedgerows (S66). Reference should also be given to the Local Plan Interactive Policies Map which identifies a number of ditches and field boundaries as green infrastructure.

- The tall herb habitat category has been used. This is incorrect as it only applies to upland ledge communities. Ruderal tall herbs should only be recorded as a discrete habitat where they occur as a pure habitat, rather than (as example) over grassland.
- I am not satisfied that a sufficiently precautionary delay has been applied to reflect when new habitats will be created. Clarification is needed that it is realistic to create new habitats in the same year as construction. Conversely and beneficially - potentially some habitats, e.g. hedgerows and the orchard, could be delivered in advance. Although this would rely on alignment with the relevant planting seasons so I accept that a precautionary approach may need to be taken.

Yours sincerely

David Broughton BSc MSc MPhil CEnv MCIEEM
Associate Ecologist
AECOM Limited

Heckington Fen Solar Park Environmental Statement – Culture Heritage comments (archaeology)

'Development Consent Order Application 'for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to, and extension at, Bicker Fen Substation and all associated infrastructure works.'

Cultural Heritage (Chapter 10 (document 6.1.10) and appendices)

Cultural Heritage is addressed in Chapter 10 of the Environmental Statement (ES). The chapter describes *the assessment of likely significant effects of the Proposed Development upon cultural heritage receptors arising from the construction, operation and decommissioning of the Proposed Development. ... informed by heritage setting assessments, archaeological desk-based assessment, geophysical survey and trial trench evaluation of the Energy Park; and heritage setting assessments, archaeological desk-based assessment and geophysical survey of the Cable Route Corridor for the grid connection.*

The Cultural Heritage chapter is supported by:

- Heritage Desk Based Assessment (Appendix 10.1).
- Geophysical Survey Results for the Energy Park (Appendix 10.2) and
- Archaeological Evaluation of the Energy Park (Appendix 10.3)
- Geophysical Survey Report of the Cable Route Corridor (Appendix 10.4)
- Outline Written Scheme of Investigation for Evaluation on the Cable Route Corridor (document 7.13)
- Outline Written Scheme of Investigation for Archaeological Mitigation (document 7.14)

and associated figures (6.2.10)

-Figure 10.1 Designated Heritage Assets

-Figure 10.2 Energy Park Geophysical Survey Interpretation

-Figure 10.3 Cable Route Geophysical Survey Interpretation

-Figure 10.4 Energy Park Archaeological Mitigation Areas.

Baseline evidence

The desk-based assessment report includes an appropriate assessment of a comprehensive suite of resources including LIDAR imagery and aerial photographs and describes the designated and non-heritage assets within the recommended search areas.

A programme of archaeological field evaluation including geophysical survey and trial trenching (Appendices 10.2 and 10.3) has been carried out within the Energy Park in accordance with agreed written schemes of investigation (WSIs). The archaeological trial trenching has identified the presence of archaeological remains at locations across the site with concentrations of features and finds within the central and southern portions of the Energy Park including evidence of Romano-British activity, such as enclosures, possible settlement and evidence of salt processing. Evidence of post-medieval remains largely associated with farming and land management included a duck decoy.

The Evaluation report describes the results of the field investigations and provides assessments of the cultural material recovered. In some instances the assessment of the finds and environmental remains includes recommendations for further analysis material and/or recommendations to be carried forward to any further archaeological mitigation work.

The evaluation of the Energy Park provides an appropriate level of baseline information to inform the archaeological mitigation strategy.

The Evaluation report highlights the areas of archaeological interest and includes a map of 'archaeological priority areas' for the Energy Park (Appendix 10.3, Figures 80-84).

The Cable Route Corridor (route options) for the grid connection has been subject of geophysical survey (Appendix 10.4). As noted in the comments made previously, a trial trench evaluation of the cable route corridor would be required in order to inform the archaeological mitigation strategy. Therefore, in order to complete the baseline conditions and assessment of likely effects of the Proposed Development, a programme of archaeological trial trenching is required along the cable route corridor. An Outline Written Scheme of Investigation for Evaluation of the Cable Route Corridor (document 7.13) has been submitted, for a programme of archaeological trial trenching, informed by the foregoing desk-based assessment and geophysical survey. The programme of trenching is designed to examine the cropmarks and geophysical anomalies identified together with areas where other techniques have not identified potential archaeological features.

Once available, the results of the trial trenching on the cable route corridor should be integrated with the foregoing assessments and surveys to complete the baseline evidence required to inform the archaeological mitigation strategy.

Likely significant effects

The Cultural Heritage Chapter draws on and summarises the results of the foregoing assessments and surveys (baseline conditions) to assess the likely significant effects of the Proposed Development on the cultural heritage receptors from construction, operation and decommissioning.

The Chapter summarises the results of the trial trench evaluation of the Energy Park which identified more Romano-British archaeological remains than had been indicated by the geophysical surveys. It describes some evidence of Mesolithic / Neolithic activity (G15) and concentrations of the Romano-British remains (which include ditches, gullies and enclosures with evidence of industrial activity and salt processing) were revealed across the site concentrated in the central and southern sections of the Energy Park (Fields G3, G4, G9, G23, SH1 and SH14). Post-medieval remains have been identified, largely characterised by features associated with agricultural practices and occupation, but include the remains of a duck decoy pond (Field SH12).

An appropriate level of baseline information (including trial trenching) is available for an assessment of likely effects for archaeology within the Energy Park. However, the trial trenching for the cable route corridor has yet to be carried out and therefore the assessment of significant effects on any buried archaeological remains along the cable route is limited by the absence of this information.

The direct effects of the development can impact archaeological remains in a number of ways including removal, truncation, compression/compaction or effects from changes in water levels as a result of construction activities (including ground clearance, landscaping / planting, plant movements, piling, excavations for foundations, cable and service trenches and directional drilling). Similar direct effects may occur during the decommissioning phase of the development.

Mitigation

The Chapter describes mitigation by design for the retention of upstanding building remains and it is noted (10.6.1) that avoidance of these assets will be incorporated in a detailed Construction Environmental Management Plan (*based on and incorporating the requirements of the Outline CEMP (document reference 7.7), as required by the Outline CEMP itself*).

'Additional Mitigation' measures for the Energy Park *are defined for archaeological strip map sample excavation pre-commencement (Figure 10.4 (document reference 6.2.10)). The excavations*

will fully record selected Roman features identified by the trial trench evaluation, and will determine the need for any further mitigation (e.g. archaeological monitoring of groundworks, and/or design changes) prior to and/or during construction of the Proposed Development. No further mitigation measures are described in this section.

The Chapter summarises the archaeological remains identified within the Energy Park (10.4.23) in the discussion of significance. In the mitigation section reference is made to six areas for archaeological strip, map and record excavation (illustrated as Figure 10.4). This does not correspond with information contained elsewhere in the ES documentation. The Chapter does not describe any mitigation or control mechanisms in respect of other archaeological priority zones as described in the Energy Park Evaluation report or assets identified in the assessment of significance section.

There is an apparent disjoint between the results of the Energy Park Evaluation, which identified areas of archaeological potential which may require mitigation, the 'six areas' of archaeological mitigation (strip, map and record) described in the cultural heritage Chapter and the areas described Outline Written Scheme of Investigation for Archaeological Mitigation (document 7.14). This means that the areas proposed for mitigation (and the appropriate measures) is unclear.

The Energy Park Archaeological Mitigation Areas plan (Figure 10.4) highlights six areas for strip, map and record excavation. However, only five areas are highlighted in the supporting Outline Written Scheme of Investigation for Archaeological Mitigation.

Five of the highlighted areas for strip map and record are as described in the Outline Mitigation document (as R1 to R5 inclusive) which further notes that provision is made for additional mitigation if required. The sixth mitigation area on Figure 10.4 (R6 in the Outline Mitigation document) is also shown as an area for strip map and record (Figure 10.4), however this is an area for 'design mitigation', where it appears that an ecological buffer has been extended to include the area of archaeological interest (as shown on Figure 5 of Appendix 10.4). This area, and any other areas highlighted for preservation in situ, should be described in the Chapter text and the Outline Mitigation document along with any relevant control measures.

In the Chapter the mitigation summary does not mention the post-medieval duck decoy (SH12), an area previously identified for 'mitigation through control measures', as referenced in the Energy Park Evaluation report. The measures to minimise the disturbance to archaeological deposits in this area were understood to comprise no removal of topsoil or landscaping (Appendix 10.3, Figure 82). The mitigation measures in respect of the duck decoy should be described and illustrated to ensure that no unintentional or inadvertent truncation occurs in this area.

It is further noted that Figure 10.4 does not illustrate other areas of archaeological interest identified for possible mitigation. In the Outline Mitigation document the 'red' zone areas (R1 to R5) and their immediate buffer zones were identified and in addition further 'amber' zones were also highlighted. The detail of the mitigation measures for these wider 'amber' areas is not defined in the document (for example A3 in Field G21).

In addition further areas of archaeological interest were identified in the Energy Park Evaluation report but any mitigation measures required are not described in the Chapter or the Outline Mitigation document (although some of these areas are depicted on Figure 2 in the latter document). These include:

- Archaeological features dated as Romano-British where identified in two locations in the southwest part of the site (In Fields G3 and G4);

- Trenches showing evidence of nearby salt making activity at the western side of the site, north part of Field G4.
- Archaeological features identified in Field G21 (in proximity to Roman features highlighted in G23).
- Undated feature (two trenches) in Field SH13.
- Roman and post-medieval features identified in the southwestern part of the site, Fields SH14 and SH15.

It is recommended, for avoidance of doubt, that a clear statement is provided that sets out areas of archaeological potential (trenches / field numbers), likely significance of effects and the hierarchy of archaeological mitigation as applicable or if no mitigation is required.

In addition to the areas highlighted for specific archaeological intervention, the mitigation strategy should include archaeological zones where mitigation is by design or subject to control measures. The identification of all potential 'hazard' areas will then inform any future proposed amendments, for example, to the design / layout of the Park infrastructure or location of compounds that may have a greater impact on the identified remains. This will enable the implementation of any appropriate or further mitigation measures (whether by design (preservation in situ) or through a programme of archaeological investigation and recording).

A full mitigation strategy should be incorporated in the text and figures and captured in the Mitigation Written Scheme.

Cable Route Corridor

The Cable Route Corridor has yet to be fully evaluated and therefore the mitigation for this part of the Proposed Development cannot be defined until the results of the trial trenching are available. It is noted that the proposed cable route corridor in places lies near or intersects with recent archaeological investigations including the areas of the cable routes associated with other schemes connecting to the substation at Bicker Fen.

The results of the proposed archaeological evaluation (trial trenching) of the Cable Route Corridor are required to complete the assessment of likely effects on the archaeological resource and should be incorporated in the Mitigation Written Scheme.

Opportunities for enhancement

The inclusion of community outreach and public engagement is welcomed and addresses previous comments. The engagement with a local school already undertaken is noted together with the potential for further learning opportunities and outreach (10.6.4 – 10.6.6).

Mitigation strategy

An Outline Written Scheme of Investigation for Mitigation (document 7.14) has been submitted in support of the application. Currently this document primarily addresses the archaeological methodologies for mitigation by means of archaeological investigation: strip, map and record and archaeological monitoring and recording ('watching brief') as currently understood for the Energy Park (a written scheme of investigation). However, mitigation measures (the strategy) for other areas are not described here and, nor are they fully described in the Cultural Heritage Chapter.

The mitigation strategy should fully describe the full range of archaeological mitigation and any control measures and should include the mitigation requirements for the Cable Route Corridor once the full baseline is available. This document will require updating before any individual written schemes can be developed.

The archaeological mitigation strategy should be agreed with the relevant archaeological advisors.

The finalised Mitigation strategy document setting out the archaeological areas and mitigation measures should inform other site wide requirements where applicable (such as the Mitigation Schedule, Construction Environmental Management Plan).

Schedule 2 requirements (section 12 Archaeology)

The Draft Development Consent Order (document 3.1) includes requirements for written schemes of archaeological investigation to be submitted to and approved by the relevant authority prior to the commencement for works on the cable route and the remainder of the development.

In summary, a suitable level of archaeological assessment has been carried out within the Energy Park to enable the production of a robust mitigation strategy. The full detail of the mitigation measures for the Energy Park will need to be incorporated in the Mitigation document.

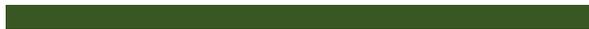
In addition, the trial trench evaluation on the Cable Route Corridor is yet to be carried out (in accordance with the Written Scheme of Investigation for Evaluation on the Cable Route Corridor provided). Once this has been undertaken an assessment of the significance of the impacts on the heritage assets can be made. The results of this stage of the evaluation for the cable route will inform the mitigation strategy required and the Mitigation documents should be updated accordingly.

Comment provided by
Heritage Lincolnshire
July 2023



Review of Soil and ALC for Heckington Fen Solar Project (LIR)

On behalf of North Kesteven
Council



Summary of Scoping Advice/Input

Cumulative Impact

At Scoping level, we argued for a county-level alternative assessment area should be applied which as a minimum should consider scope for connection into the National Grid at the locations proposed by the registered NSIP solar projects named above, and with specific consideration of agricultural land impacts.

Spatial Approach

The augering of the site should be undertaken in line with TIN 049, one auger point per hectare and with occasional soil pits particularly where soil types vary.

The sampling across the Energy Park site has been carried out in two stages, in consultation with Natural England and NKDC. Initially a semi-detailed ALC was carried out, involving sampling on a regular 200 metre by 200 metre grid. Some 138 auger samples were taken across the northern part of the Energy Park site, plus two soil pits were excavated to assess stoniness and better describe soil profiles.

A further 313 auger samples were taken in August and September 2022, covering most of the areas identified as BMV in the semi-detailed survey, and to refine the boundaries of BMV to non-BMV land (450 total)

In total 451 auger samples have been carried out over 589 ha

Estimated BMV amounts

The revised programme of soil sampling and pit digging should help complete the picture, assuming it is undertaken in the manner set out in the MAFF 1988 guidelines. Kernon Countryside have contacted me and copied me into their proposed plan. It is expected that 5-10 days of soil augering will be undertaken on site to determine the grades in accordance with national guidance.

Ecological Effect

There is some conflict between maintaining the land in agricultural production and improving biodiversity. Whilst not incompatible, site-based issues, such as soil type(s) and local agricultural practices may create future problems. The biodiversity areas particularly target the highest grades on agricultural land and any future restriction that might prevent its return to cultivation should be a consideration in the planning process and in the conditioning of any consent.

Sheep Farming

Whilst it is perfectly possible to graze the areas under and between the panels, it is unlikely to be very cost effective for a grazer. The difficulties of rounding up sheep and handling them, together with finding sick or wounded animals makes the graziers workload harder and more complex.

As such the economics of moving sheep to and from the site will be marginal.

Soil structure can be significantly damaged during the construction phase of the process. There is a lot of trafficking of vehicles on the land to erect the panels and if this work is undertaken when soils are wet, there can be significant damage. Much of this damage can be remedied post construction but not all and it is possible that long term drainage issues occur on the site due to the construction.

District ALC

For a project of this scale there is an impact the project will tie up the land for up to 40 years, there will be some impact. The loss of such a large area of land would normally be considered as significant at District level, even though the use is 'temporary'. Any permanent loss of land due either to construction or through biodiversity designation may affect this assessment.

Cable Route

A soil management plan should be considered for the cable route in order to minimise the impact on soil structure, land drainage and ultimately soil quality. Guidance is available in published documents.

Additional Information for Local Impact Report

Changes That Have Occurred to Scheme

The DCO red line

This has been amended to remove high grade BMV around site perimeters between pre-app and submission stage. This is a positive amendment.

ALC Detail Main site

The sampling across the Energy Park site has been carried out in two stages, in consultation with Natural England and NKDC. Initially a semi-detailed ALC was carried out, involving sampling on a regular 200 metre by 200 metre grid. Some 138 auger samples were taken across the northern part of the Energy Park site, plus two soil pits were excavated to assess stoniness and better describe soil profiles.

A further 313 auger samples were taken in August and September 2022, covering most of the areas identified as BMV in the semi-detailed survey, and to refine the boundaries of BMV to non-BMV land

In total 451 auger samples have been carried out over 589 ha, this is probably sufficient to establish the amounts of BMV.

BMV Land 'Take'

The overall ALC findings are found in tables in the ES chapter (Appendix 1 below). The Energy Park now does not include any fields which are wholly Grade 1 or 2. However approximately 50% of the site is BMV.

The amount of BMV land to be lost 'permanently' (due to tracks, substation, fixed structures etc) is considered small, amounting to around 3 hectares of BMV. Other BMV land is considered as temporarily used under the panels, although 40 years is a long period.

The total area of BMV land still amounts to around 50% (257 hectares) of the site – mostly Grade 3a, with the remaining non BMV being Grade 3b - moderate quality. The area of BMV has been reduced since the original DCO red line. The difference between Grade 3a and 3b however is quite small in this instance and there is a degree of subjectivity about the difference, though I do not dispute the findings.

Nevertheless, the whole area is productive farmland, which will be removed from arable farming for 40 years and at best, a lower intensity grass-based system will replace it. The loss of arable production is I consider locally significant and in view of other projects in the wider District and County potentially cumulatively significant.

Whilst the scheme includes measures to remove the panels at the end of the project, this will remain and uncertainty as very few largescale solar farms have been decommissioned in the UK to compare.

Spatial Approach and Methodology for Assessment of Significance

The report follows the recent guidelines found in the IEMA Soils and EIA document. It argues that the impact on actual loss of BMV land is therefore small. This is only correct if it is accepted that the temporary loss of the 257 hectares of BMV is not included in this assessment. I recognise that Natural England consider the use as temporary, however local policies may take a different view.

Farming and The Savills Report

The Savills report highlights a whole range of limitations to the soil, drainage and cropping of the land which, it argues downgrades the importance of the land to farming. The reasoning includes factors such as a drainage system that is reaching the end of its useful life, but is uneconomic to replace or improve. Problems with crop choices and the limitations of the soil in consequence are forcing the farm to follow a largely block cropping programme which it argues has limitations and that the land is farmed to the 'worst quality soil' as it is not possible to farm the better quality land separately.

Whilst I recognise that some of the farming issues highlighted are real, they do not in themselves dictate or affect ALC grade. The land drainage issue is however an important point and if the land is not, or cannot be drained then this can affect the land quality.

a) Drainage

I suspect that the drainage issue is the main reason for the overall downgrading of land at the site from its pre-supposed Grade 1 status, but it is difficult to assess the quality of the overall farm drainage. Savills argue that the drainage system is inadequate or dilapidated but other than the farm managers anecdotal comments offer no concrete evidence of failure of the system.

It is unlikely that the land cannot be drained and more likely that the economics of drainage are not as lucrative as the economics of solar panels. At the end of the 40-year life the drainage issue will still be apparent and could have deteriorated further in the meantime, unless the scheme is maintained and repaired during the life of the project. This I consider is unlikely as the incentive will be further reduced. As such I consider that if drainage is already a problem (which has almost certainly impacted on the ALC grading) then in 40 years' time the land is likely to be of poorer quality overall.

On a practical note, once panels are installed it is not possible to use mole draining machinery to improve or maintain drains as the panels present as obstructions to the passage of agricultural vehicles. Likewise other measures such as subsoiling can only occur between the panels.

Some of the remarks such as those regarding irrigation are counter intuitive. On the one hand the land does not benefit from irrigation, and this leads to downgrading of some of the land due to droughtiness. However Savills argue that the lack of irrigation prevents the land from being used to its fullest extent for cropping. This is likely if the drainage issue is as bad as stated.

b) Pattern Effect of Land Grade

I consider that the comments regarding the patchiness (or Pattern Effect) of grades of land across individual fields and the site in general as unlikely to be as restrictive as suggested. Savills already acknowledge that there is no irrigation and therefore higher value crops are less likely to be grown. Most arable/combinable crops grow perfectly well on Grade 3b land, the general soil limitations in this case would be to encourage autumn sowing of crops rather than spring sown variants.

Generally, land of higher Grades particularly Grade 1 and 2 are utilised for growing complex and more difficult crops that require soil flexibility, such as early planting and late harvesting of horticultural crops. Arable cropping generally does require such flexibility and soils that are good to moderate perform better than higher grade land in such circumstances.

c) Cropping

The area farmed in this block extends to 589 ha. In 2021 the block of land produced 4,342 tonnes of feed wheat, mostly for compound animal feed (although 1,421 tonnes went for low-grade biscuit grist, which is more valuable). The 2020 oilseed rape crop went to a German processor for non-food industrial use. The farm (including land within the Energy Park site) has a significant blackgrass problem, but there are well established agricultural and cropping techniques for the management and control of this pernicious weed. Whilst it can be a problem on individual farms there are methodologies to limit and manage the problem.

d) Sheep Farming

Savills concede that this area is known for its broad acre cropping. As previously highlighted whilst sheep grazing on the site is perfectly possible, the area is not known for such activity, and I have expressed my reservations about the likelihood of this occurring. There may well be intermittent grazing and cutting regimes to manage the grassland.

Once outside the regular agricultural land use, it is unlikely that the land will benefit from any government subsidies or schemes for the management of agricultural land, as even with temporary consent it will be classified as non-agricultural.

Cumulative Impact at District and County Level

The scale of the project and the amount of BMV land, I consider makes the impact significant at both District and County level. The information argues that the area of Heckington Fen amounts to only 1% of the farmed area of Lincolnshire. However, the radius for Cumulative effect is only 11km and this is a much smaller area of Lincolnshire than the total county or the District. There are a several other large solar schemes across the wider area that contribute to this impact.

Across Lincolnshire the estimated proportion of BMV is 71.2%; across North Kesteven the proportion of BMV at 67% is slightly lower than the Lincolnshire average, but this still covers two thirds of agricultural land, and is well above the national average.

Table 16.4: Area and Proportion of Lincolnshire and North Kesteven

ALC Grade (pre 1988)	Lincolnshire		NKDC	
	Area (ha)	%	Area (ha)	%
1 ¹	82,600	14.6	1,260	1.4
2 ²	203,600	36.0	39,830	44.9
3a ³	116,700	20.6	18,340	20.7
3b	155,900	27.5	28,220	31.8
4	7,400	1.3	1,130	1.2
5	0	0	0	0
Total	566,200	100.0	88,780	100

¹ 75,757 x 1.09

² 186,752 x 1.09

³ 296,243 x 0.394

Construction Methodology Decommissioning and Land Use

This document sets out the 'how' of erection of solar panels. All the photographs show conditions in fine weather and clean conditions and the report suggests that the machine to install the posts or legs is smaller than regular farm machinery, neglecting to mention that the panels are often delivered using agricultural forklift type machines and with considerable weight of a stack of panels.

The reality often is that contractors are under immense pressure to complete works in accordance with a work programme and will inevitably undertake works in substandard conditions in order to complete their contractual obligations.

Suitable soil management and restoration clauses would be needed in order to secure the land's quality at the end of the term. Whilst many of the damaging operations can be remedied using agricultural equipment, the layout of the panels and buried cables will often prohibit this during the life of the solar farm and as such remedies can only be completed at the end of the term when all infrastructure has been removed. If the soil is in substandard condition during the operation of the solar farm, carbon sequestration is reduced and infiltration of water can also be reduced, leading to localised standing water and the reduction in soil quality.

There is a programme for decommissioning and re-instatement of the land. Whilst this is detailed and can be conditioned as part of a consent, even possibly with S106, it remains to be seen whether it will be effective in leading to the land being returned to productive agriculture.

Cable route

It has been agreed that the cable route involves temporary disturbance of the soils to enable a trench to be dug and the cabling to be inserted. This will not involve the sealing or downgrading of the land quality. A walk-over soil survey of the cable route has been carried out, and a Outline Soil Management Plan (oSMP) (appendix within document reference: 7.7) created, but the ALC of that temporary works area has not been recorded.

The route of the offsite Grid Connection Route Corridor has been surveyed. The cable route will be underground and laid either through open trenching or through directional drilling where open trenching is not possible.

As each section of cable is laid it will be back filled and farming would be able to re-commence on this land. As for the above ground infrastructure the offsite Grid Connection Route Corridor will be located close to field boundaries (ecology permitting) for much of the route to minimise the construction impact on the agricultural activities on the land.

A trench for the cabling would be approximately up to 1m wide by 1.2m deep and would stretch for approximately 5.5km offsite. Where directional drilling is required, this could be up to 10m in depth.

Table 16.2 ALC Results for the Proposed Panel Areas

ALC	Area (Ha)	Area (% of total Site)
Grade 1	58	11.1
Grade 2	39	7.4
Grade 3a	160	30.5
Grade 3b	265	50.6
Grade 4	0	0
Grade 5	0	0
Non-agricultural	2	0.4
Urban	0	0
Total	524	100

