Heckington Fen Solar Park

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Chapter 3: Site Description, Site Selection and Iterative Design Process

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CHAPTER 3: SITE DESCRIPTION, SITE SELECTION AND ITERATIVE DESIGN PROCESS

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3 SITE DESCRIPTION, SITE SELECTION AND ITERATIVE DESIGN PROCESS

3.1 INTRODUCTION

3.1.1 This chapter of the Environmental Statement provides a description of the Proposed Development and the surrounding context. Detailed topic specific descriptions are expanded upon in the supporting technical chapters and technical appendices. It also provides a description of the evolution of the Proposed Development design so far and the main alternatives considered.

3.1.2 This chapter includes the following sections:

- Site Description- a description of the existing conditions within the Proposed Development and the surrounding areas and the key receptors that are assessed in detail within the technical topic chapters;
- Site Selection- an overview of the site selection process undertaken for the Proposed Development; and
- Iterative Design Process- a description of the iterative design process undertaken and a description of the main alternatives to the Proposed Development and the selection of the Energy Park as the preferred option.

3.2 SITE DESCRIPTION

3.2.1 The existing constraints within the Proposed Development outlined in this chapter were identified through a desktop search of readily available data, and include the following:

- Statutory nature conservation designations;
- Local nature designations;
- Scheduled monuments;
- Conservation areas;
- Waterbodies;
- Flood zones;
- Areas of vegetation; and
- Public rights of way (PRoW).

Location of the Energy Park

3.2.2 The 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. The closest major city is Lincoln approximately 32km north-west of the Proposed Development. The village of Heckington is separated from the Energy Park site by agricultural land within the surrounding fenland landscape. The Energy Park extends to approximately 524ha hectares (ha). 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 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 it leaves the administrative boundary of North Kesteven and enters Boston Borough Council. At the point where the Cable Route Corridor leaves the Energy Park site it is referred to as the Offsite Cable Route Corridor within this ES and supporting documentation.

3.2.3 The Energy Park site comprises arable, agricultural land subdivided into rectilinear parcels by long linear drainage ditches that lie principally north-south, connected east-west by shorter ditches including Labour in Vain Drain. The ditches have an engineered profile, colonised in part by emerging aquatic plant species. The Energy Park is bounded by Head Dike to the north, a smaller watercourse to the east, agricultural land to the south and 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 Sleaford to Holbeach road.

3.2.4 The main vehicular access point is provided via access off the A17 frontage at Rectory Farm and at Elm Grange, with tracks connecting to Crab Lane toward the northwest corner of the Energy Park site, and then to Sidebar Lane. A further third access point is off the A17 towards Six Hundreds Farm. The access tracks follow ditch alignments. Six Hundreds Farm lies in the eastern third of the Energy Park site.

Location of the Offsite Cable Route Corridor

3.2.5 The Offsite Cable Route Corridor covered a much wider corridor in the Scoping Report and the PEIR, which has now been refined to a single route, bar in the most southern section near the National Grid Bicker Fen Substation where two options for the Offsite Cable Route Corridor remain.

3.2.6 The initial design options predominantly comprised of a Western Route and an Eastern Route, named in relation to their geographical positioning relative to the South Forty Foot Drain.

3.2.7 A report on the Off-Site Grid Connection options was completed by a specialist design consultant in the first stage of design work. This work supported the selection of a preferred connection design and route corridor. One of the outcomes of this report identified technical and practical benefits for the Eastern Route, with an Alternative Route identified. These two routes were known as the Eastern Route and the 50-50 Route (or Eastern Route B) and were presented in the PEIR. Eastern Route B would have seen the connection leaving the Energy Park close to the new entrance off the A17 and the existing gas main, crossing the South Forty Foot Drain and the railway before going south on the eastern side of the South Forty Foot Drain to Bicker Fen Substation. Further design reviews have enabled the Offsite Cable Route Corridor to be refined to the single route assessed within this Environmental Statement. For more detail of the Offsite Cable Route Corridor selection process please reference the Grid Route Selection Report as an appendix to the Statement of Reasons (document reference 4.1).

Offsite Cable Route Corridor – Route to Progress

3.2.8 The Offsite Cable Route Corridor leaves the Energy Park on the south eastern boundary crossing agricultural land as it travels towards National Grid Bicker Fen Substation. To reach the Substation the Offsite Cable Route Corridor crosses the Viking Link and Triton Knoll connections before heading south towards National Grid Bicker Fen Substation. Within the Offsite Cable Route Corridor crossings are required for the A17, the South Forty Foot Drain, the railway, a high-pressure gas pipe and a number of watercourses. The complex crossing points are likely to be drilled, likely by horizontal directional drills see Figure 4.15 – Typical Directional Drill Crossing Sections (document reference 6.2.4), however other methods are available such as boring, micro-tunnelling or moling. Less complex crossings could be open-cut (see Figure 4.17 – Road Crossing (document reference 6.2.4)) or dam and pumped (see Figure 4.16 – Dam and Pump Ditch Crossing (document reference 6.2.4)). The noise implications of a Directional Drill Crossings have been considered at all of the complex crossing points. This assessment is within Chapter 12: Noise of the ES. It has determined that the noise levels are acceptable at each of these complex crossing points.

3.2.9 Trenchless techniques such as boring[1], micro-tunnelling[2] or moling[3] methods will be undertaken where the EIA or design concludes the need for an alternative to open trenching. There is a potential that an alternative to open trenching will be required in up to 32 offsite locations (refer to Table 4.2b and Figure 4.2 (document reference 6.2.4)) across the Proposed Development, however this will depend on the results from the ground investigations and the final detailed design.

Bicker Fen National Grid Substation Extension

3.2.10 Working with National Grid it has been determined that the preferred location for the extension to National Grid Bicker Fen Substation is a new generator bay in the south-western corner of the Bicker Fen site.

3.2.11 The land for this new bay is to the immediate south-west of the existing substation. This area of land is currently an area of rough grassland with a section of plantation/screening wood to the south. At the time of drafting the PEIR associated with this DCO application it was believed that this section of plantation/screening would need to be removed. Further assessment has determined that this is not necessary and so would not be removed to enable the creation of this south-westly bay for the connection of Heckington Fen Energy Park.

Landform and Topography of the Energy Park

3.2.12 In terms of landform, 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. The energy park is situated on the Lincolnshire fens, a coastal plain in the east of England which comprises a large area of broad flat marshland supporting a rich biodiversity. The energy park falls within national character area 46: the fens described as an:

> **'expansive, flat, open, low-lying wetland landscape influenced by the Wash estuary, and offering extensive vistas to level horizons and huge skies throughout, provides a sense of rural remoteness and tranquillity...'**
>
> **'Overall, woodland cover is sparse, notably a few small woodland blocks, occasional avenues alongside roads, isolated field trees and shelterbelts of poplar, willow and occasionally leylandii hedges around farmsteads, and numerous orchards around Wisbech. Various alders, notably grey alder, are also used in shelterbelts and roadside avenues.'**
>
> **'Open fields, bounded by a network of drains and the distinctive hierarchy of rivers (some embanked), have a strong influence on the geometric/rectilinear landscape pattern. The structures create local enclosure and a slightly raised landform, which is mirrored in the road network that largely follows the edges of the system of large fields.'**

[1] Boring is the process of enlarging a hole that has already been drilled (or cast) by means of a single point cutting tool (or of a boring head containing several such tools), such as in boing a gun barrel or an engine cylinder.

[2] Micro-tunnelling is a digging process that uses a remotely controlled microtunnel boring machine (MTBM) combined with the pipe jack-and-bone method to directly install pipes underground in a single pass.

[3] During the moling process, a pneumatically-driven machine known as a mole forces its way through the soil along the desired path of the pipe.

> **'Settlements and isolated farmsteads are mostly located on the modestly elevated 'geological islands' and the low, sinuous roddon banks (infilled ancient watercourses within fens). Elsewhere, villages tend to be dispersed ribbon settlements along the main arterial routes through the settled fens, and scattered farms remain as relics of earlier agricultural settlements.'**

3.2.13 The Energy Park site displays these key characteristics.

Land Use, Buildings and Infrastructure of the Energy Park

3.2.14 Land use across the Energy Park site is in arable, agricultural use.

3.2.15 Agricultural land can be graded according to its inherent limitations for agricultural use. Grade 1 is excellent quality and Grade 5 is very poor quality. Grade 3 is 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 NPPF (2021).

3.2.16 An Agricultural Land Classification Assessment (ALC) (see **Appendix 16.3** - document reference 6.3.16.3) was undertaken in two stages. The first took place in November 2021 across the Energy Park and additional land to the south. This first phase involved a semi-detailed survey of 138 auger locations on a regular 200-metre grid across the Energy Park site. The auger density was lower than 1 per hectare as per Natural England guidelines. No auger measurements were taken for the Offsite Cable Route Corridor to National Grid Bicker Fen Substation as the cable will be laid via underground trenching/moling and so therefore no significant loss of, or change to, the quality of agricultural land is predicted. Following discussions with Natural England and the Planning Inspectorate a second phase of survey work within the Energy Park site was completed.

3.2.17 The second phase took a further 313 auger samples in August and September 2022. These additional samples were taken from land which was identified as Best and Most Versatile (BMV) in the semi-detailed survey and to refine the boundaries of the BMV to non-BMV land. Therefore, in total the ALC has included over 450 sampling points.

3.2.18 The Energy Park is utilising an area of over 524ha of agricultural land. The ALC results for the 524ha area proposed for the solar panel arrays within the Energy Park show 50.6% of the site is Grade 3b land and therefore considered to be poorer quality land. The remaining 49.4% of the area 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%). All bar the non-agricultural land (0.4%) is considered Best and Most Versatile (BMV).

3.2.19 Overhead lines supported on wooden poles traverse the Energy Park, running parallel to Six Hundreds Drove and the A17 in the south, and near the north-western boundary of the Energy Park. An underground gas pipeline bisects the Energy Park, extending south-north to the east of Rectory Farm.

3.2.20 There are a series of small areas in the Energy Park that are excluded from the Energy Park site boundary. These areas are a combination of farm buildings and infrastructure relating to the gas pipeline which crosses part of the Energy Park.

Landscape

3.2.21 The Energy Park is bound by Head Dike to the north, a smaller watercourse to the east, further agricultural land to the south and B1395 Sidebar Lane/agricultural land to the west. The Energy Park lies wholly within North Kesteven District Council, abutting Boston Borough Council's boundary along the eastern edge, where the remaining part of

the Proposed Development: Offsite Cable Route Corridor and extension to National Grid Bicker Fen Substation, is located. A small section of the Offsite Cable Route Corridor is within North Kesteven's boundary. The whole of the Onsite Cable Route Corridor is within the Energy Park site and is therefore within North Kesteven District Council's administrative boundary. See Figure 2.3 - Proposed Development (document reference 6.2.3) for further details.

3.2.22 Land within the Energy Park is in arable use and is subdivided into rectilinear parcels by long linear drainage ditches that lie principally north-south, connected east-west by shorter ditches including Labour in Vain Drain. The ditches have an engineered profile, colonised in part by emerging aquatic plant species. Topographically, the Proposed Development is level and low-lying at between 1m and 3m above Ordnance Datum (AOD) and is predominantly within Flood Zone 3.

3.2.23 According to the North Kesteven District Council's online mapping the vegetation within the Energy Park site boundary is not subject to any Tree Preservation Orders (TPO). A full Arboricultural Impact Assessment has been completed for the Energy Park site and the Offsite Cable Route Corridor. This information is presented as Appendix 6.3: Arboricultural Impact Assessment, Tree Survey and Tree Protection Plan (document reference 6.3.6.3).

3.2.24 There are sporadic residential (2-storey houses and bungalows) and commercial development (Elm Grange Studios, Wilson Prestige Vehicle Repairs, Mountain's Abbey Parks Farm Shop, Four Winds Service Station, and Shell Service Station) and farms (Rakes Farm, Maize Farm, Rectory Farm, Piggery, Poplars Farm and Glebe Farm) occur at East Heckington, along the A17 south of the Energy Park and Sidebar Lane to the west of the Energy Park.

3.2.25 Streetlights (approximately 10m high) flank the A17 through East Heckington.

3.2.26 The Energy Park site falls within National Character Area 46 The Fens. There are no nationally designated landscape areas within North Kesteven. The North Kesteven Landscape Character Assessment (2007) identifies that the Energy Park Site is within "The Fens Regional Landscape Type" and the "Fenland Landscape Character Sub-Area".

3.2.27 The National Grid Bicker Fen Substation, where the Offsite Cable Route from the Energy Park will connect into, falls within Boston Borough Council's administrative area. This substation area is covered within Boston Borough Council's own Landscape Character Assessment of Boston (2009). This published assessment identifies that the Bicker Fen substation falls entirely within the Landscape Type (LT) A Reclaimed Fen and more specifically its Landscape Character Area (LCA) A1 Holland Reclaimed Fen.

Public Rights of Way

3.2.28 One public right of way (PROW) footpath HECK/15/1 runs along the northern boundary, crossing a small part (c.280m) of the Energy Park; no other PROW occurs within the Energy Park – see Figure 3.6- Environmental Designation Plan (document reference 6.2.3) for location of the PROW.

3.2.29 PROW HECK/15/1 crosses the Head Dike through the presence of a footbridge. However, onsite survey and discussions with Black Sluice Internal Drainage Board (IDB) have indicated that this footbridge was removed in c.2005 and has not been re-instated. Discussions with the IDB have indicated that there are no plans to re-instate the footbridge as its presence could cause a hazard if flooding were to breach the dike. As a result, HECK/15/1 terminates in the field, before it reaches the top of the dike. The Lincolnshire County Council (LCC) PROW team have been made aware of the effective termination of the footpath due to the removal of the footbridge.

3.2.30 Through consultation the LCC PROW team have requested that this footbridge across Head Dike on HECK/15/1 is reinstated. The Applicant has informed the PROW team directly that only the southern location of the historical footings of this footbridge are within the control of the Applicant. The northern historical footings are on land within the control of the Environment Agency as well as potential unknown owners due to the lack of registered titles. The Applicant does not have control over the land needed for both sets of footings for a new footbridge nor does the absence of this footbridge limit general public access to the land within the Applicant's control. For the purpose of this DCO application, the Applicant has informed the LCC PROW team that if the LCC PROW team wish to progress discussions with the Environment Agency and the drainage board (who manage the dike over which footbridge was historically located) and reach an agreement over the re-instatement of the footbridge, the Applicant would help to facilitate the construction of the reinstated footbridge. However, the re-instatement of the footbridge is not required for any element of the DCO application; it is not therefore included within the DCO application, and any improvement works would be carried out outside of the DCO process.

3.2.31 On the western boundary where HECK/15/1 leaves the Energy Park site there should be another small footbridge to enable a crossing over a ditch. Again, the area of land required for reinstatement of this bridge is not within the applicant's control. Currently users of HECK/15/1 are using the existing route along Crab Lane to gain access on to HECK/15/1. The neighbouring landowner does not wish the footbridge to be reinstated and instead wishes access of HECK/15/1 to progress along Crab Lane. Access into the site via HECK/15/1 is needed to enable use of the new permissive footpath proposed within the Energy Park site.

3.2.32 To achieve this necessary access the applicant has prepared and issued a draft legal agreement to the neighbouring landowner and LCC which would see the creation of a permissive path for HECK/15/1 across the neighbouring land on Crab Lane, as an alternative to a replacement footbridge on HECK/15/1. Should this permissive route not come forward the necessary land is included in the Order Limits of this proposal to enable the applicant to install a footbridge in the northwest corner, therefore reinstating HECK/15/1. This land is within the applicant's control. Figure 4.1f: Proposed Permissive Path (document reference: 6.2.4).

3.2.33 The Ordnance Survey mapping does not routinely show the correct delineation of the public right of way and for the purpose of this submission, any OS mapping data used for the accompanying drawings have been updated to show the correct definitive map routing.

3.2.34 The Proposed Development on the Energy Park site does not require the closure or diversion of HECK/15/1. During construction of the Energy Park site security fencing will be installed along the boundary between the HECK/15/1 footpath and the Energy Park site to ensure that any users of the footpath do not enter the construction site. It is proposed that an additional permissive path (4.2km) will be linked to HECK/15/1 to effectively create a loop walk around the Energy Park site. This permissive path will open to the general public once construction of the Energy Park site is completed. It will remain open for the lifetime of the Energy Park (circa 40 years) but will not become an adopted PROW. The arrangement for this permissive path to operate for the lifetime of the Energy Park site is agreed within the legal agreements for the use of the Site for an Energy Park between the Applicant and the Landowner.

Biodiversity Features and Environmental Designations

3.2.35 There are no European statutory designated sites (Ramsar, Special Areas of Conservation (SAC) & Special Protection Areas (SPA)) or national sites (Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Local Nature Reserve (LNR))

within 10km of the Energy Park site, but there is one within 10km of the Offsite Cable Route Corridor and National Grid Substation at Bicker Fen.

3.2.36 The nearest SSSI to the Energy Park is Horbling Fen SSSI located 11.5km to the southwest of the Energy Park site and 14.7km from the Offsite Cable Route Corridor, designated for its geological interest. The Wash SSSI/SPA/SAC/Ramsar and NNR, is situated approximately 17km to the southeast of the Energy Park site at its nearest point and 4.9km from the Offsite Cable Route Corridor.

3.2.37 There are no non-statutory designations within the Energy Park site. The South Forty Foot Drain Local Wildlife Site (LWS) is located approximately 1km to the south of the Energy Park site. This is a man-made watercourse with bankside vegetation comprising rough neutral grassland, scrub, and trees. The Offsite Cable Route Corridor passes through this LWS. All works within this area will be below ground and undertaken using 'moling' or a similar technique. Cole's Lane Ponds LWS is located 6km southeast of the Energy Park site and 1.9km of the Offsite Cable Route Corridor, and Heckington Grassland Site of Nature Conservation Interest (SNCI) is located approximately 5km to the west of the Energy Park site and 5.5km of the Offsite Cable Route Corridor.

3.2.38 The Energy Park site comprises open, arable farmland surrounded by a network of drains and ditches. The most frequently encountered habitat at the Energy Park site consists of open arable farmland. The arable fields comprise of wheat for compound animal feed with a smaller portion used to make a low biscuit grade grist. The previous break crop of harvest 2020 was oilseed rape. The arable fields are generally cultivated right up to the field margins resulting in very few areas of botanical or ecological importance.

3.2.39 The Offsite Cable Route Corridor passes across farmland, rather than passing along highway verge. The farmland over which the Offsite Cable Route Corridor passes is all used within arable farming, although different crops are cultivated various parcels.

3.2.40 The Energy Park site includes one pond surrounded by bankside trees and scrub. There is an area of wet grassland to the west and north of the pond. There are a small number of hedgerows on the Energy Park site which are used by a variety of breeding and over-wintering birds. Field boundary hedgerows are generally species-poor although the hedgerows vary in height, length, condition and management.

3.2.41 Approximately 10.5ha of the Energy Park site is already held under agri-environmental schemes, in the form of enhanced headlands by way of buffer strips.

3.2.42 The Offsite Cable Route Corridor contains will mainly be an open and cut route that will be back filled once the cable is laid. The depth of this section will typically be 1-5m. Launch pits will are expected to be 10m x 10m x 5m deep (some 10m deep for the South Forty Foot Drain) with the total swathe for a launch pit for each Directional Drill location being up to 30m x 30m.

Cultural Heritage

3.2.43 The bedrock geology of the Energy Park comprises mudstone and siltstone of the West Walton Formation (in the south-western half) and mudstone of the Ampthill Clay Formation (in the north-eastern half)- see Figure 9.3 Bedrock Geology (document reference 6.2.9). The superficial geology comprises tidal flat deposits of clay and silt- see Figure 9.2 Superficial Geology (document reference 6.2.9).

3.2.44 The upper and midsections of the Offsite Cable Route Corridor for the Proposed Development are characterised by the same bedrock geology as the Energy Park, but the lowermost 2km sections comprises mudstone of the Oxford Clay Formation. The superficial geology is recorded as tidal flat deposits of clay and silt.

3.2.45 There are no designated archaeological remains, e.g., Scheduled Monuments, located within the Energy Park site. Known and potential non-designated built and archaeological remains located within the Energy Park site comprise:

- Upstanding post-medieval/modern buildings of Six Hundreds Farm;
- Upstanding post-medieval/modern brick boundary wall to the west of Elm Grange;
- Upstanding remains of a post-medieval/modern drainage pump close to Head Dike to the north-east;
- Buried remains of a post-medieval duck decoy to the east;
- Buried remains of former outfarms and field boundaries in various locations, some but not all of which are shown on historic maps;
- Buried remains of a possible enclosure of uncertain origin to the west of centre; and
- Buried remains of a possible enclosure and circular and linear features of uncertain origin to the east.

3.2.46 One Scheduled Monument to the west and four Grade II Listed Buildings lie within a 2km radius of the Energy Park site. Details of the locations of these assets can be seen on Figure 3.6: Environmental Designations Plan (document reference 6.2.3).

3.2.47 There are no Listed Buildings or other known heritage assets in close proximity to the Offsite Cable Route Corridor.

Hydrology

3.2.48 The majority of the Energy Park site is within Flood Zone 3, with some sections of the Energy Park falling within Flood Zone 2 and Flood Zone 1- see Figure 3.6: Environmental Designations Plan (document reference 6.2.3).

3.2.49 Source Protection Zones (SPZs) are used to protect areas of vulnerable groundwater that is used for abstraction and where water quality is of high importance (such as drinking water abstractions). SPZs are categorised into three zones, 1-3, with 1 being of highest risk of contamination, and 3 representing the lowest risk but still within the groundwater catchment.

3.2.50 There are no SPZs recorded within 2 km of the Energy Park site or Offsite Cable Route Corridor. The closest is located approximately 8.5 km to the west.

Air Quality

3.2.51 The Proposed Development is located approximately 11.3km west of its nearest Air Quality Management Area (AQMA), 'Haven Bridge AQMA' which is located in Boston Borough Council's (BBC) administrative area, and which has been declared for exceedances of the annual mean nitrogen dioxide (NO2) air quality objective (AQO).

3.2.52 The location and extent of the Proposed Development is shown on Figure 1.1-DCO Order Limits.

3.3 SITE SELECTION

3.3.1 The information in this following section indicated the key environmental elements that were considered when determining if the Energy Park site was potentially suitable for an Energy Park. These environmental constraints are examined in more detail through the site design and EIA process. The detail of these assessments can be seen in the later chapters of this Environmental Statement.

National Grid Point of Connection

3.3.2 One of the biggest constraints which has to be considered when developing a renewable energy scheme is securing a viable point of connection to the electricity network. Securing grid connection for a scheme of this size needs to be to the 400kV network, which remains constrained in terms of availability and a reasonable timescale for connection. It is therefore a reasonable and necessary constraint to take into account. Increasingly, electrical connections are being forced back to substations and Bulk Supply Points as the amount of renewable generation connected within the electrical lines has grown. For storage schemes the situation is more complex as the connecting substation must have sufficient export and import capacity. It is also National Grid policy not to connect new sites into transmission lines when a substation node is nearby.

3.3.3 The electricity generated by the Proposed Development is to be imported and exported via interface cables from the Onsite Substation to the Bicker Fen National Grid Substation. The Offsite Cable Route Corridor will be directed across open countryside and require crossings of the railway, watercourses, various utilities, and roads.

3.3.4 A 400MW export and 250MW import connection through the Bicker Fen Substation has been accepted with National Grid. Whilst these numbers are limits on export and import, the installed capacity of solar panels and energy storage may be in excess of these limits to maximise the energy yield.

3.3.5 Bicker Fen Substation is approximately 5.5km south of the Energy Park as the crow flies. A 400kV underground cable will be installed to connect the Energy Park to the Bicker Fen National Grid Substation. The total length of the underground cable run within the Offsite Cable Route Corridor will be approximately 8.5km.

3.3.6 A single circuit connection from the Energy Park site to the National Grid Bicker Fen substation is proposed, requiring approximately a 25m swathe. An area wider than this 25m swathe is being considered to ensure flexibility within the design including micro siting to allow for ground conditions or other environmental constraints.

3.3.7 Joint bays are required along the route to enable cable lengths, which are limited by cable drum size and transportation, to be connected together. These will be placed at 400-500m intervals as determined by the cable design with up to 20 anticipated along the length of the route.

3.3.8 The design may require earthing link boxes in order to transpose the cable earthing along the route. For maintenance reasons, it is preferable that these link boxes are installed above ground, but they can be installed below ground if necessary. These link boxes will be installed at each jointing bay and be up to 2m x 2m.

3.3.9 The Offsite Cable Route Corridor will need to cross a range of existing infrastructure such as the Triton Knoll cable route, Viking Link interconnector cable, the railway line, the A17, the South Forty Foot Drain, a high-pressure gas pipe and a number of watercourses.

3.3.10 Open cut trenching will be primarily utilised for crossings. Trenchless techniques, such as boring, micro-tunnelling or moling methods will be undertaken where the EIA determines that mitigation for an environmental impact is required or design constraints concludes the need for an alternative to open trenching.

3.3.11 Within the Energy Park site there are 46no. locations where it is anticipated that an open cut trench will not be used. (see Figure 4.6- Indicative Drill (or similar technologies) Locations (document reference 6.2.4). These are required at points where underground cabling for the onsite systems need to cross known utilities. As can be seen

from Figure 4.6 all of these indicative drill locations are at locations where crossings over a drainage board ditch, drainage ditch which in the future, may come into the ownership of the drainage board or the gas pipeline are needed.

3.3.12 An extension to the Bicker Fen National Grid Substation will be required, including the provision of a new generator bay in the south-western corner.

Solar Irradiation Levels and Shading

3.3.13 An important consideration is selecting a site of suitable shape, orientation and size that can accommodate the Proposed Development. Large open fields without vegetated boundaries reduce the impact that small fields can have on the layout design. Typically, buffers are left around field edges to vegetation due to shading, tree root protection zones and other constraints such as ditches which have an impact on the installed capacity of an array. So significantly less capacity can be sited within a group of smaller fields compared to fewer larger fields.

Proximity to Sensitive Human Receptors

3.3.14 The nearest residential properties to the Energy Park site boundary are along the A17 and the B1395 Sidebar Lane to the south and west of the Energy Park site respectively. The design of the Energy Park site to date means considerable buffers have been made to ensure that no properties are in close proximity to solar panels, energy storage or electrical equipment. A majority of the properties are over 150m from the development.

3.3.15 On the southwestern boundary of the Energy Park site is a facility called 'Build-A-Future East Heckington' which offers educational and vocational courses to children with learning difficulties. This facility hopes to be considered as a school by the Education Department by the time any construction takes place for the Proposed Development.

3.3.16 Consultation with this facility has been ongoing throughout the design process of the Energy Park site. The design of the Energy Park has considered the future students' possible needs by creating a new access point for the majority of the access traffic to the east away from the facility, though to the location of the Community Orchard and Permissive Path which be accessible to those students.[4]

Topography

3.3.17 A topographical survey has been undertaken over the whole of the Energy Park site in 2021. This data has been used to design the Energy Park site. As would be expected on historically drained fen land the site is fairly flat with a gradient change of only 1-3m over the whole extent of the Energy Park site. The Proposed Development ranges from 1-4m above ordnance datum (AOD) in height across its whole extent.

Development Access during Construction

3.3.18 Access to the main Energy Park site will be via the A17. There is an existing access point which will be used for the initial stages of construction (creation of construction compound and materials for the new access point). This existing access point is on land adjacent to the new educational and vocational facility of 'Build-A-Future East Heckington'.

[4] The facility would be responsible for health and safety assessments and staffing needs for students entering these facilities and ensuring the students are safe walking over rough ground etc when using the permissive path and within the Community Orchard.

3.3.19 It is intended that a new priority access point will be built shortly after the construction of the Energy Park site begins. This new priority access point will be used for the remainder of the construction phase and for the operational phase of the Energy Park site. The new access point is also off the A17 and already has the principle of planning consent established, which was achieved through the previously consented wind farm application.

3.3.20 Access will also be required for the construction of the new Offsite Cable Route Corridor. These access points and any improvements needed for this are included within the Order Limits.

3.3.21 As noted earlier in this chapter, an extension will be required to the Bicker Fen substation. During the construction phase there will be a small number of traffic movements of HGV's which will contain the larger substation elements. Various routes have been considered for moving this kit to the substation as well as consideration of the comments from the informal and formal public consultation stages. The comments from the informal and formal public consultation showed that residents of Bicker were concerned about the increase in traffic volumes moving through their village during the construction phase.

3.3.22 As a result, alternative routes have been considered which would take access off the A17 and the A52. The access route off the A52 would utilise the access track which has been constructed for the Triton Knoll substation. Legal discussions are ongoing to obtain access voluntarily/by agreement for use of this route, but at the time of this Environmental Statement being drafted agreement has not been reached to confirm access via the A52. The Applicant has included this access track, together with the potential for compulsory rights of acquisition, within its Order Limits and DCO.

Flood Risk

3.3.23 The majority of the Energy Park site is within Flood Zone 3, with some sections of the Energy Park site falling within Flood Zone 2 and 1. The Energy Park site is located on the Lincolnshire Fens, a coastal plain in the east of England which comprises a large broad flat marshland supporting a rich biodiversity. Topography on the Energy Park site is only a few metres above sea level and slopes very gently towards the north-east. The lowest point is at 0.77m AOD in the northern part adjacent to Head Dike, whilst the highest point is 3.3m AOD at the southern border.

3.3.24 Within NPS EN-1 (2011)[5] Section 5.7 policy states that a Flood Risk Assessment (FRA) needs to accompany a proposed development within Flood Zone 2 or 3. Such an FRA accompanies the DCO Application at document reference 6.3.9.1. There is also a requirement within paragraph 5.8.13 of the NPS that requires that a sequential test for a development within Flood Zone 2 should be carried out and accompany DCO application.

3.3.25 The current drafting of draft NPS EN-1 is contradicting Annex 3 of the NPPF[6] which states that solar farms are considered essential infrastructure. Due to this classification as "essential infrastructure" a solar farm development within Flood Zone 2 or 3 which progresses within the Local Planning Authority system rather than a DCO scheme, does not need to be accompanied by a sequential test to show its suitability for development in this location.

[5] Overarching National Policy Statement for Energy, EN-1 (September 2011)

[6] National Planning Policy Framework, July 2021, https://www.gov.uk/government/publications/national-planning-policy-framework--2

3.3.26 To comply with NPS EN-1 a sequential test to determine the suitability of the Proposed Development for this development has been submitted as part of the DCO application within the Flood Risk Assessment (FRA) (document reference 6.3.9.1).

Cultural Heritage

Archaeology

3.3.27 From an initial review of Lincolnshire Historic Environment Record (HER) data, which was procured in August 2021 for a 2km radius measured from the boundaries of the main Energy Park site, it is noted that much evidence for prehistoric and Roman settlement and activity is recorded *c.*0.5-1.5km to the west of the Energy Park site (e.g. HER refs. MLI60731, MLI90708, MLI84683) and that indications of Roman salt-working were identified in the centre of the Energy Park site by a geophysical survey carried out for a previous proposal for wind turbines here (HER refs. MLI87647, MLI87891, MLI87892). As part of the baseline assessment for the Energy Park a geophysical survey was undertaken. This was followed up with trial trenching. The Offsite Cable Route Corridor has been subject to geophysical survey work. Trenching of the Offsite Cable Route Corridor is programmed in for 2023.

Built Heritage (Setting)

3.3.28 One Scheduled Monument and four Grade II Listed Buildings lie within a 2km radius of the Energy Park site. From an initial review, it is considered that the following designated heritage assets may be sensitive to the development proposals: Scheduled Monument of 'Settlement site 650yds (600m) E of Holme House' (NHLE ref. 1004927) located c.525m west of the Energy Park site; and the Grade II Listed Building of St John the Baptist (NHLE ref. 1360489) located c.1km north-east of the Energy Park site.

3.3.29 It is acknowledged that other designated heritage assets within and/or outlying a 2km radius of the Energy Park site may also be sensitive, especially given the flat and low-lying landscape character allowing for long-ranging views towards/from assets and so these will be considered within the assessment.

3.3.30 The setting of built heritage assets around the Offsite Cable Route Corridor is also considered in the Heritage Assessment of the Environmental Statement. There are only 2no Grade II Listed Buildings within 2km of the Cable Route Corridor. Both of these Listed Buildings are within Swineshead and are located to the east of the Offsite Cable Route Corridor.

3.3.31 The main assessment area is 5km from the Proposed Development. Where there are any heritage assets just outside this 5km assessment area, professional judgement was used to determine if they needed to be included within the assessment.

Site Walkover Survey

3.3.32 The Heritage consultant completed a site walkover survey in April 2022. This walkover survey has identified the following additional items, which were not known through the desk-based assessment for heritage assets.

- There are the remains of an historic drainage pump, of a similar standard to that of the Listed example on Claydike Bank at the north-east boundary of the Energy Park site;

- In the centre of the Energy Park site are some dilapidated barns and an un-inhabited[7] dwelling for Six Hundreds Farm, these may be considered non-designated heritage assets;
- There are designated views across the Energy Park site from the non-Listed Mill Green Farmhouse which is located a short distance to the north of the Energy Park site;
- There is intervisibility, across the Energy Park site, of the non-Listed chapel on the Sidebar Lane and the Listed chapel on Claydike Bank; and
- The records for the area stated that there was a Listed Building, Sutton House, near Swineshead Bridge. This information is incorrect as Sutton House is not in the defined location. This inaccuracy was alerted to Historic England, and they have updated their records.

Biodiversity Features

3.3.33 There are no non-statutory designations within the Energy Park site. Cole's Lane Ponds LWS is located 6km southeast of the Energy Park site. The Coles Lane Ponds site consists of two ponds surrounded by bankside trees and scrub. There is an area of wet grassland to the west and north of the smaller pond. The South Forty Foot Drain LWS is located approximately 1km to the south of the Energy Park site and is crossed by the Offsite Cable Route Corridor. This LWS is a man-made watercourse with bankside vegetation comprising rough neutral grassland, scrub, and trees. The South Forty Foot Drain site is a good corridor linking the centre of Boston with the River Witham. Heckington Grassland Site of Nature Conservation Interest (SNCI) is located approximately 5km to the east of the Energy Park site and 5.5km east of the Offsite Cable Route Corridor. This SNCI consists of grassland bordered by hedgerows and is used by a variety of breeding and over-wintering birds. Old Wood South Kyme SNCI is located approximately 5km to the north of the Energy Park site, and is an area of woodland with Ash coppice, scrub, Elm, and tall herbs.

Agricultural Land Classification

3.3.34 An Agricultural Land Classification survey (see Appendix 16.3-document reference 6.3.16.3) has taken place on the Energy Park site. No land classification survey has taken place on the land included with the Offsite Cable Route Corridor. This has not been undertaken for the Offsite Cable Route Corridor as the final exact location of the Grid Cable within this Corridor has not been determined.

3.3.35 Discussions have taken place with Natural England regarding the classification of the land being used for the Offsite Cable Route Corridor. All of the cable will be laid underground, and the construction of this route is expected to take considerably less than a 12-month period. Therefore, any impact to the harvest from land within the Offsite Cable Route Corridor would be short-term. The majority of the cable laid for the Offsite Cable Route will be laid in open trenches and then back filled. Natural England requested through consultation that an Outline Soil Management Plan be created as part of this planning application. This can be seen as an appendix to the Outline Construction and Environmental Management Plan (document reference 7.7).

3.3.36 At key locations along the Offsite Cable Route Corridor there will be above ground/ground level infrastructure in the form of earthing link boxes. It is estimated that there will be a need for approximately 15 of these boxes along the Offsite Grid Route Corridor. These are expected to be at ground level but can be below ground if demanded by the landowner. Each earthing link box is 2m x 2m. The locations of these infrastructure points are not yet fixed, but will be located, wherever possible, as close to

[7] This dwelling has not been inhabited for the last 30 years.

field edges as possible to ensure that the agricultural potential of a field is not compromised. The earthing link boxes are associated with the joint bays which are used as access points for maintaining the underground cabling as required. These are installed every 400-500m along the Offsite Cable Route Corridor. The jointing bays are 20m x 3m x -2m as they would all be buried underground. At this time their exact locations are not known and will be determined in the final design. In areas where it is not possible to place these along field boundaries or where a constraint on agricultural use would result, these link boxes may be installed below ground.

Commercial Agreement with Landowner

3.3.37 Ecotricity has had a relationship with the Landowner of the Energy Park site for a number of years due to the wind park proposal, which was approved in 2013. This has not become operational due to the development timescales of a technical radar solution which formed a 'Grampian Condition' on the wind park planning consent.

3.3.38 The Applicant has an Option to Lease in place on the Energy Park site, which will progress to a Lease once construction of the Energy Park commences.

3.3.39 The land within the Offsite Cable Route Corridor is owned by a series of landowners, none of which are the same Landowner as the Energy Park site. Heads of Terms will continue to be negotiated and then progress to Options being in place. The Option will detail the Easement rights being sought.

3.4 ITERATIVE DESIGN PROCESS

3.4.1 The layout of the Proposed Development has evolved iteratively taking into consideration environmental effects, the planning and environmental policy objectives and scheme functionality as well as feedback from stakeholders and non-statutory public consultation (informal, formal and further targeted) between October 2021 and December 2022.

Main Design Iterations

3.4.2 The main design iterations can be broken down into the three main phases. These being:

- Design presented at non-statutory consultation (Oct – Dec 2021)
- Design presented within the Scoping Request (Jan 2022);
- Design presented within the PEIR and with statutory consultation (Jun – Sep 2022);
- Design suggested in response to consultation and following continued engagement with local authorities to reduce the impacts on best and most versatile land (September 2022): and
- Design presented within this Environmental Statement (February 2023).

3.4.3 At each of these key stages the design which has been presented and assessments have taken on board design considerations based on legal requirements, land ownership, accessibility of the potential development, and environmental design constraints. Consideration has also been given to comments from statutory and non-statutory consultees as well as the general public.

3.4.4 The designs presented at each of these five stages are considered below in alternative design process.

Alternatives

Legislation, Policy and Advice Notes

3.4.5 The Infrastructure Planning (Environmental Impact Assessment) Regulations 20178, as amended (hereafter referred to as the "EIA Regulations"), note in Schedule 4, Paragraph 2 the following for inclusion in an Environmental Statement (ES):

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

3.4.6 National Policy Statement (NPS) EN-1 paragraph 4.4.1 states that;

> **"as in any planning case, the relevance or otherwise to the decision-making process the of the existence (or alleged existence) of alternatives to a proposed development is in the first instance a matter of law, detailed guidance on which falls outside the scope of this NPS".**

3.4.7 The NPS confirms that from a policy perspective there is no general requirement to consider alternatives or to establish whether a development represents the best option. This is further supported by paragraph 4.2.11 of the Draft NPS EN-1. However, in paragraph 4.4.2 of NPS EN-1 it is noted:

> **"a. applicants are obliged to include in the ES, as a matter of fact, information about the main alternatives they have studied. This should include an indication of the main reasons for the applicant's choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility;**
>
> **b. in some circumstances there are specific legislative requirements, notably under the Habitats Directive, for IPC[9] to consider alternatives. These should be identified in the ES by the applicant; and**
>
> **c. in some circumstances, the relevant energy NPSs may impose a policy requirement to consider alternatives (as this NPS does in Sections 5.3, 5,7 and 5.9)"**

3.4.8 As can be seen there are specific legislative requirements and policy circumstances which require the consideration of alternatives. These include the requirement under the Habitats Directive[10] and also in relation to avoiding significant harm to biodiversity and geological conservation interests; flood risk; and development within national designated landscapes set out in sections 5.3, 5.7 and 5.9 of the NPS EN-1.

[8] HMSO (2017) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

[9] The former Infrastructure Planning Commission (IPC), which was abolished in 2011. The Planning Inspectorate (PINS) are now the agency responsible for operating planning process for NSIPs, with the SoS as the decision maker.

[10] Conservation of Habitats and Species Regulations, 2017

3.4.9 NPS EN-3 and NPS EN-5 are not considered to include any additional policy on alternatives to that cited above.

3.4.10 The Planning Inspectorate's Advice Note 7 sets out that PINS considers that a good ES is one that, among other things:

> **"explains the reasonable alternatives considered and the reasons for the chosen option taking into account the effects of the Proposed Development on the environment."**

3.4.11 The main alternatives to the Proposed Development which the Applicant has considered comprise:

- The 'No Development' Alternative;
- Alternative Designs/layouts;
- Alternative Sites;
- Alternative Offsite Cable Route Corridors; and
- Alternative Technologies.

Stakeholder Engagement

3.4.12 The Applicant has carried out statutory, and non-statutory consultation as described in the Consultation Report (document reference 5.1), submitted as part of this DCO application. Table 3.1 summarises the matters raised in relation to alternatives at the statutory consultation stage.

Table 3.1 – Matters raised in relation to the alternatives at statutory consultation stage.

Consultee	Main Matter Raised	How this has been addressed
Lincolnshire County Council (LCC)	The alternative layouts within the PEIR does not discuss possible alterative scales of the development to reduce the impact on BMV land. Failure to do this is, in LCC view, failing to consider reasonable alternatives in accordance with Regulation 14(2) of the Infrastructure Planning (EIA) Regulations 2017. In LCC view reasonable alternatives could include reducing the extent of BNG areas, as the BNG is estimated at over 200%.	Alternative design has now considered the removal of the high-grade agricultural land to the south and west of Energy Park site. This land has been removed from the BNG calculations and the Energy Park boundary and will be retained as agricultural land. This reduced scheme is the design being progressed and assessed in this ES- see Figure 2.1 Indicative Site Layout (document reference 6.2.2).
North Kesteven District Council (NKDC)	Disagree that alternative sites should only be 1 landowner or located in Flood Zone 1. Accept in principle that as landowners are not legally signed up to the alternative sites a similar timescale for delivery of an operational site might not be achievable.	'Back Check and Review process undertaken for this ES (paragraph 3.133) which has expanded the search area to 15km around the current National Grid Bicker Fen substation after further discussions with NKDC and LCC. The Applicant has also

Consultee	Main Matter Raised	How this has been addressed
		agreed to consider land parcels with multiple landowners and within flood zones 2 and 3 within the Back Check and Review process - see Figure 3.4- Site Search Exercise (document reference 6.2.3).
North Kesteven District Council (NKDC)	None of the main design iterations in Table 3.1 [of the PEIR], or the associated paragraphs, discuss alternative layouts and an alternative scale of development which demonstrates how impacts on BMV land have been mitigated through layout or whether/how an alternative scheme of reduced overall scale (i.e., reduced MW output) including a reduction in the overall 'developed' area reduces BMV impacts. This includes reducing the extent of the BNG areas/habitat enhancement zones which broadly correspond with Grade 1 and 2 agricultural lands	Alternative design has now considered the removal of the high-grade agricultural land to the south and west of Energy Park site. This land has been removed from the BNG calculations and the Energy Park boundary and will be retained as agricultural land. This reduced scheme is the design being progressed and assessed in this ES- see Figure 2.1- Indicative Site Layout (document reference 6.2.2).

The 'No Development' Alternative

3.4.13 The 'No Development' Alternative refers to the option of leaving the Proposed Development site in its current use and physical state.

3.4.14 Without development it is anticipated that the Energy Park site would continue to be in primarily agricultural use. The ongoing agricultural process on the Energy Park site may change over the next 40 years depending on a number of factors, including the global market for products and chemical costs. Over the past few years, the crops grown on the Energy Park site have been predominantly sold to mainland Europe for animal feed and non-food usage.

3.4.15 The 'No Development' alterative would result in the loss of opportunity for providing much needed renewable energy generation within the UK. In the British Energy Security Strategy[11], published in April 2022, there is the target of increasing the quantity of solar generation within the UK by 5 times by 2035. At the time of publication of the Strategy there was 14GW of solar operating within the UK, a five-fold increase on the 14GW would mean 70GW of installed capacity by 2035. Such a target will be challenging and so all opportunities and possible locations for solar farms need to be considered.

3.4.16 No further assessment has been undertaken for the 'no development' scenario because this option is not considered a reasonable alternative to the Proposed

[11] British Energy Security Strategy, April 2022 https://www.gov.uk/government/publications/british-energy-security-strategy

Development as it would not deliver the additional electricity generation and electricity storage proposed. NPS EN-1 at paragraph 4.4.3 states:

> **"..alternative proposals which mean the necessary development could not proceed can be excluded on the grounds that they are not important and relevant to the IPC's** (now Secretary of State) **decision."**

Alternative Technologies

Onshore Wind

3.4.17 This technology has been considered for the Proposed Development and assessed at length. A planning application was approved for a 66MW wind farm. This has not been constructed and become operational due to difficulty in satisfying the Grampian condition. The consent had a requirement to put in place a technical mitigation solution for the MOD radar system. The development process for this technical solution is still progressing, and to date a suitable solution for the MOD has not been found.

3.4.18 In July 2022 BEIS decided to refuse consent for the 2018 Section 36C variation application made under the Electricity Generations Stations (Variation of Consents) England and Wales) Regulations 2013. However, if the Proposed Development 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.

Ground Mounted Solar

3.4.19 The technology considered and assessed in this Environmental Statement is a fixed panel design. However, the early design iterations (through to the PEIR) considered two technology options on the Energy Park site – that of fixed panel and tracking panel systems.

3.4.20 The fixed panel system is the technology which has been mainly used within the UK and the global market to date.

3.4.21 Both technology options have solar panels mounted on the metal frames which are piled into the soil. The fixed panel system has the solar panels orientated in a southerly direction to capture the maximum amount of daylight.

3.4.22 The tracker system is orientated in a north-south direction, with the panels moving or tracking the daylight on an east-west trajectory.

3.4.23 The tracker system was eventually determined to not be suitable for the Energy Park site due to the engineering limitation and designing the Site to a 1 in 1,000 year flood event +20% allowance for climate change. This design requirement has been set by the Environment Agency due to the fact that the Energy Park site is located in Flood Zone 2 and 3 land. There is a wish for the Energy Park site to be able to continue to generate electricity in a flood event of such severity. To do this all surfaces of the solar panels must remain above the flood water level.

3.4.24 From an engineering perspective it was confirmed by manufacturers that the pole the tracking system was mounted upon was typically around 1.5m in height. At this panel height when the solar panel tracked through its daily 60 degrees, its lower edge would be submerged within the flood water, thus making the system shutdown and not operational in a 1 in 1,000 year + 20% flood event.

3.4.25 This technical constraint to the viability of a tracker solar panel system on this Energy Park site was the reason why this alternative solar panel technology has not been progressed in this ES assessment.

Agrivoltaics

3.4.26 This is a system of combining ground mounted solar panels with agricultural cropping in the land under and between the panel rows. The panels are spaced further apart to allow more sunlight to reach the ground and raised higher in the air so that crops can be grown underneath.

3.4.27 Such a system was considered for the high-grade land on the Energy Park (Grade 1 and 2) for a soft fruit crop system. For the crop to be harvested and sold it would need to be processed and packed on the Energy Park site. This packing process would require large economic investment in onsite supporting infrastructure, potentially including new barns for processing and packing.

3.4.28 When the level of financial investment needed to ensure the harvest reaches a market is considered against the potential yields from this agrivoltaic system on this land it was determined to not be economically feasible to operate such a system. It should be referenced at this point that just because land has BMV status does not make it suitable for all arable crops. The water levels, structure and composition of the soil on the Energy Park site are not suitable for the profitable growing of soft fruits. This remains the case, even when combined with the generation of energy from solar panels.

Other technologies

3.4.29 Tidal power, offshore wind and hydroelectric storage are all not possible on this Energy Park site due to its location within the UK.

3.4.30 Nuclear power was not considered as an alternative because of the high cost of generating electricity from this power source as well as the proximity of residential properties to the boundaries of the Energy Park site.

Alternative Sites

3.4.31 As stated earlier within this chapter, the Applicant has had a relationship the with the Landowner for a number of years due to the planning approval for the onshore wind park. As this has not progressed, the land was considered for other forms of renewable energy development.

3.4.32 The need to consider alternative sites also needs to be considered in relation to the alternatives section of policy within NPS EN-1. This policy text states that any alternative must have a:

> **"14(2)(d) realistic prospect of delivering the same infrastructure capacity (including energy security and climate change benefits) in the same timescale as the proposed development."**

3.4.33 For any alternative site the Applicant would have had to find the land and complete the necessary legal negotiations to place an alternative site under Heads of Terms or an Option. Following advice from land agents experienced in negotiating Heads of Terms for renewable energy schemes, it is expected that to secure a site of a similar size and capacity to the Proposed Development would have taken at least 12 months (at the very minimum).

3.4.34 In addition to this any renewable energy project of this scale needs to secure connection onto the 400kV network. This Point of Connection (POC) remains a key constraint for all energy projects within the UK. The Applicant has a confirmed grid connection offer for a renewable energy scheme for 2027 at National Grid Bicker Fen Substation. As explained in paragraph 3.58 above, having an existing Option in place for c.500ha of developable land (i.e., for the Energy Park Site) has enabled a programme time-saving of at least 12-months when compared to any alternative site in proximity to the same Grid connection. When project timescales are considered for necessary seasonal pre-submission survey and assessment work through to the time for preparation of the Application, the Examination process (including DCO Hearings), and the period for the Secretary of State decision together with time for then procuring and awarding supply contracts and ordering of components, an additional 12-months (minimum) to find an alternative site at the start of the process would result in the 2027 connection window being missed.

3.4.35 Therefore, any alternative sites would fail to comply with the alternatives policy in NPS EN-1 of having a realistic prospect of being delivered within the same timescale as the Heckington Fen Energy Park assessed within this Environmental Statement.

3.4.36 Notwithstanding this, in order to respond to consultation comments from Lincolnshire County Council, North Kesteven District Council, and Boston Borough Council, a 'Back Check and Review' exercise has been undertaken to ensure that the Energy Park site is not significantly worse, nor does it create significantly worse environmental effects when compared to another site within an agreed search area of the current grid connection. This is outlined further within Section 3.4.40 below.

National Grid 400kV Substations in Lincolnshire

3.4.37 Within Lincolnshire there are 2no. 400kV substations – one at Bicker Fen (which the Applicant has a 2027 connection date offer for) and one at Spalding. National Grid's online database indicates that there is no capacity for a development of a similar scale to the one proposed at Heckington Fen at Spalding Substation until after 2030.

3.4.38 Due to a connection into the Spalding substation not being possible until 2030 or later any site within a connection distance of this substation would fail the NPS EN-1 alternative policy test of not having a reasonable prospect of being able to be delivered within a same timescale as the Proposed Development. Therefore, the focus of the 'Back Check and Review' process was sites around the Bicker Fen Substation.

3.4.39 At the time of writing, new connections of this type would not be able to connect at Bicker Fen until early to mid-2030s according to National Grid's online connection tool. Moving the connection point for Heckington Fen Solar Park (e.g. to a new site) would require a full re-assessment by National Grid and likely result in a fundamental change to the connection, including a high risk of delay and additional reinforcement costs.

Back Check and Review – Assessment Constraints

3.4.40 The key variables for this 'Back Check and Review' process were discussed at length with Lincolnshire County Council, North Kesteven District Council and Boston Borough Council after the PEIR was issued. The key variables for the site search area are as follows:

- Site located within 15km of the Bicker Fen Substation. This distance has been agreed with LCC and NKDC and would be the maximum distance a development of this scale could economically accommodate. The northern boundary of the Energy Park site is approximately 9km from the National Grid Bicker Fen Substation;

- Site 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. It is acknowledged that such a designation is not a reason for refusal of a planning application, but when considered against the Heckington Fen Site (which has none of these designations) it is reasonable to assume that development on such a site would be more complex and therefore increase unlikelihood of connection in 2027 – resulting in a failure against policy NPS EN-1.

3.4.41 The key differences between the variables used in the 'Back Check and Review' exercise from the PEIR and this ES is that the search area has increased to 15km rather than the 9km used before and that the criteria for the land to be within a single ownership boundary is no longer applied. The Energy Park considered within this ES is all with one landowner. These differences were applied at the requests of the three relevant host Planning Authorities noted above.

3.4.42 It should be noted that the more landowners involved in a Proposed Development the more complex and time consuming the legal matters can take to resolve to achieve Heads of Terms (HOTs) and/or an Option Agreement on the land. Minimising the complexity of the legal process to retain a site into HOTs and/or an Option is a key item to offer any realistic opportunity to achieve a consented site in time for the agreed 2027 connection to Bicker Fen Substation.

3.4.43 The extent of this 15km search area and the sites that were identified are shown on Figure 3.4: Site Search Exercise (document reference 6.2.3).

3.4.44 When all these constraints were applied there were 13no. Back Check and Review sites identified. This is compared to the single other site that was identified in the PEIR. All of the 13 Back Check and Review sites that were identified in this ES have multiple landowners.

3.4.45 The single site that was identified in the PEIR was a parcel of land located to the west of Swaton and is an area of land owned by The Crown Estate.

3.4.46 The site at Swaton does have a single landowner, but there would have been a considerable delay in reaching a legal agreement for development on the land when compared to the existing legal agreement in place with the landowner on the Energy Park site. In view of ownership by The Crown Estate, there may also have needed to be a tendering/public procurement process to find the most appropriate bidder. The delivery programme for new energy schemes is important when considered against the increase in solar generation capacity outlined in the British Energy Security Strategy, 2022 by 2035 of 70GW by 2035 and EN-1.

3.4.47 Since the PEIR was issued, it has become public knowledge that the site at Swaton is being considered for a new above ground reservoir and included within this DCO application as part of the cumulative shortlist – see Chapter 2: EIA Methodology and Consultation (document reference 6.1.2). Although this is still in the early stages, the

assessment of the Swaton site for its suitability for a reservoir would be progressed before any consideration as a solar park with associated infrastructure.

3.4.48 Therefore, it is no longer a reasonable alternative as its development would be delayed far beyond the 2027 timeframe achievable for connection into the National Grid system offered by the Proposed Development.

3.4.49 Below is a summary of the main considerations of the 13 Back Check and Review sites the post PEIR 'Back Check and Review' process identified.

Site 1 - (Figure 3.4a: Back Check and Review Site Option 1 ("Site 1")

3.4.50 Site 1 is made up of land owned by 6no. different landowners, including the Church Commission and Lincolnshire County Council. In addition to these 6 different landowners there are a further 4no. fields whose ownership is not known at this current time. The whole of Site 1 is 487ha. The whole of Site 1 is Grade 2 agricultural land, which is considered to be best and most versatile (BMV). The Energy Park site has 39ha of Grade 2 land within it and 58ha of Grade 1 land. Therefore, in total the Energy Park site has 97ha of Grade 1 or Grade 2 land which is considerably less than the 487ha within Site 1. It should be noted that all ALC grading in this 'back check and review' process is from DEFRA data sets and not from onsite survey work.

3.4.51 Site 1 is wedge shaped with Castle Dyke (owned by Witham Forth Drainage Board) running through the centre of the Site. The eastern boundary is a series of agricultural field boundaries and Leagate Road. The southern boundary is the B1184 (Gipsey Drove/Armtree Road). The B1182 (Main Road) form the majority of the western boundary.

3.4.52 The majority of Site 1 sits within Flood Zone 3 and a few parcels of flood Zone 2 with only the northern section in Flood Zone 1. There is a cluster of 3No. Grade II Listed Buildings just outside of the southern boundary of the Site in the village of Langrick. No PROW cross Site 1. There is currently an open boundary between the Site 1 and the western boundary of the B1182. Users of this road and properties bordering the B1182 would have clear open views of any development on the majority of Site 1 without considerable new planting, which would take approximately 5 years to establish to a high suitable for screening of views. The northern boundary is mixture of open view boundaries and thicker planting near the sections of residential properties which are along this road. The B1184 has the village of Gipsey Bridge at the eastern end and Langrick at the western end. There are two strips of residential properties between these two villages which all back onto land included within Site 1. In areas where there are no properties the views are open across the fields of Site 1.

3.4.53 Immediately on the western boundary is a 'Moy Farm' chicken farm which consists of 16 chicken sheds. There are a further two developments (one on the east and one on the western boundary) which are made up of a number of sheds. From aerial imagery these appear to also be chicken sheds.

3.4.54 Generally, Site 1 is closer to residential properties and the views into the site are far more open and expansive than the Energy Park site of Heckington Fen. For development to take place on this land it would be expected that the visibility of the site would have to be mitigated either through large quantities of new boundary planting and/or setting the solar panels back from the residential properties. Both options would be costly in the design and reduce the area of the Site for potential energy generation.

Site 2 - (Figure 3.4b: Back Check and Review Site Option 2 ("Site 2"))

3.4.55 Site 2 is made up of land owned by 3no. known landowners. The remaining 18no. fields within the site are fields whose ownership is unknown at this current time. The whole of the Site is 490ha. The whole of Site 2 is Grade 2 agricultural land, which is considered to be best and most versatile (BMV). The Energy Park site has 39ha of Grade 2 land within it and 58ha of Grade 1 land. Therefore, in total the Energy Park site has 97ha of Grade 1 or Grade 2 land which is considerably less than the 490ha within Site 2.

3.4.56 The site is surrounded by further agricultural land on all sides. The western boundary is Kirton Drove and the eastern boundary is Sutterton Drove. Site 2 is located close to Site 3 with there being only a few fields separating them at their closet point. Site 2 is to the northeast of Site 3.

3.4.57 The whole of Site 2 is Flood Zone 3. The eastern boundary of Sutterton Drove is a single lane carriageway with a cluster of residential properties around Amber Hill. This is similar to Kirton Drove, both of which also have open, expansive views over the site as there is minimal hedgerow planting along the boundaries of the fields. Vegetation planting is limited to the areas where dwellings are located. Appletree Holiday Park, at Hubbert's Bridge is located approximately 1km away to the southwest of the Site. This holiday park is a modern Park Homes development with onsite facilities including 9-hole golf course, hotel, restaurant and children's play facilities. This Holiday Park is open through the year. There is also a plant nursery business next to the Holiday Park. From aerial images it is different to determine the possible intervisibility between Site 2 and the Holiday Park, however it is likely that all traffic associated with the development of Site 2 would use the A1121, as this is nearest public highway, which also passes by the Holiday Park.

3.4.58 Generally, Site 2 is closer to residential properties and holiday business' than the Energy Park site of Heckington Fen. The boundaries of the site are also more open and expansive with more opportunities for views into the Site than the Heckington Fen site. For development to take place on this land it would be expected that the visibility of the site would have to be mitigated either through large quantities of new boundary planting and/or setting the solar panels back from the residential properties. Both options would be costly in the design and reduce the area of the Site for potential energy generation.

Site 3 - (Figure 3.4c: Back Check and Review Site Option 3 ("Site 3"))

3.4.59 Site 3 is made up of land owned by 5no. different landowners with a further 8 parcels of fields whose landownership is not known at this time. This site is surrounded by other agricultural fields. The western boundary is made up of Maryland Bank and Claydike Bank, with the western boundary being a section of the B1395 and then agricultural fields. To the northeast is the small town of South Kyme with the northern boundary being the watercourse of the Kyme Eau. The area of Site 3 is 1,252ha. The Energy Park site at Heckington Fen is 524ha so Site 3 offers the potential to be considerably larger than the Proposed Development.

3.4.60 The whole of Site 3 is Grade 2 agricultural land, which is considered to be best and most versatile (BMV). The Energy Park site has 39ha of Grade 2 land within it and 58ha of Grade 1 land. Therefore, in total the Energy Park site has 97ha of Grade 1 or Grade 2 land which is considerably less than the 1,252ha within Site 3.

3.4.61 Site 3 sits to the north of the Energy Park site. It is separated from the Energy Park site by the Head Dike and a single series of agricultural fields.

3.4.62 The Site is located 12 km away from Bicker Fen Substation (at its furthest point) which is further than the Energy Park site. It is reasonable to assume that the Offsite Cable

Route Corridor for Site 3 would pass through the Energy Park site and would in turn need to cross under the Head Dike.

3.4.63 The vast majority of Site 3 is within Flood Zone 3, with a small parcel on the north-western boundary being Flood Zone 2 and 1. There is one PROW which terminates in the centre of Site 3 with a further 4No. Either running along the boundary or terminating at the boundary of the site. The western boundary is a single track carriageway road with various existing agricultural access points present along it. Views are again open and expansive from this road, bar at the points where there are existing properties and some short stretches of sparse tree planting. Along this western boundary are a series of grade II listed buildings which are all residential properties.

3.4.64 South Kyme Golf Club sits on the northern boundary of the Site, separated by the Kyme Eau. Users of the B1395 would have clear visibility of large areas of Site 3 as they travelled along the road. The Energy Park site at Heckington Fen has limited views from the local road network. If Site 3 was to achieve a similar level of visibility from the road network, considerable levels of new screening planting would be required along the B1395.

3.4.65 When considering Site 3 against the Energy Park at Heckington Fen design mitigations would have to be offered either through set back of the development from residential properties and listed buildings or extensive vegetation screening to limit the visibility of Site 3 to a similar level as Heckington Fen Energy Park. It is likely that these design mitigations would reduce the area of Site 3 considerably.

Site 4 - (Figure 3.4d: Back Check and Review Site Option 4 ("Site 4"))

3.4.66 Site 4 is a large parcel of land of which only 1no. of the landowners are known. The remaining 13no. parcels of land within this site have unknown landownership at this time. The site has an area of 637ha. This site is a mix of Grade 2 and 3a agricultural land. 93% of the site is Grade 2 with the remaining 7% being Grade 3. The area of Grade 3 land is located in the southwest corner of the site. Therefore, Site 4 would utilise approximately 591ha of Grade 2 land, far more than the 97ha of Grade 1 and 2 land from the Energy Park site.

3.4.67 Site 4 sits even further north than Site 3 and therefore further away from the Bicker Fen Substation. Wood Lane (B1359) – which runs out of the South Kyme forms part of the southern boundary and western boundary of the Site. Vacherie Lane forms part of the northern boundary with the remaining boundaries comprising of further agricultural fields.

3.4.68 A large swathe of the Site is Flood Zone 3, with a few parcels of Flood Zone 2. To the east of the Site is a section of Flood Zone 1. This coincides with land closer to North and South Kyme. There are a few Grade II listed buildings in North Kyme. South Kyme has a large Scheduled Monument (SM) within it as well as a Grade I, Grade II* and several Grade II listed buildings. The SI is approximately 260m from the nearest boundary of Site 4. A section of designated Ancient Woodland, called Old Wood, sits adjacent to the southern boundary of Site 4. The road, B1935, separates this ancient woodland from Site 4. The South Kyme Golf Club sits along part of the southern boundary of the site and the village of South Kyme is approximately 650m from Site 4. The village of North Kyme wraps around the northern corner of Site 4. No PROW run through the site, but one does follow the eastern boundary of the site.

3.4.69 When comparing Site 4 to the Heckington Fen Energy Park Site, it has a higher number of residents closer to the boundaries of the site, due to the proximity of the two villages and the setting of the SM and Listed Buildings would also need to be considered

in any development that was progressed. Design may mitigate these constraints, but such constraints are not present on the Proposed Development.

Site 5 - (Figure 3.4e: Back Check and Review Site Option 5 ("Site 5"))

3.4.70 Site 5 sits to the south of Site 4 and west of Site 3 and north of Site 6. Wood Lane (B1359) forms its northern boundary and Site 6 forms its southern boundary. There are 4no. known landowners for this site with a further 5no. parcels of land whose ownership is unknown at this time. South Kyme sits on the eastern boundary of this site. Cow Drove forms the majority of the eastern boundary of Site 5. This site is 667ha in size. Site 5 is a mix of Grade 2 and Grade 3 agricultural land. 9% of the site is Grade 2 with the remaining 91% being Grade 3. Therefore, 60ha of Site 5 is Grade 1 or 2, compared to the Energy Park site which has 97ha. The area of the site which is Grade 2 is located to the south of South Kyme.

3.4.71 Approximately half of this site is Flood Zone 3 with the remainder being Flood Zone 1. The Flood Zone 1 sections are located to the north between North and South Kyme and to the southwest of Site 5. As with Site 4 South Kyme contains a SM and a series of Listed Buildings, including a Grade 1. This SM is a monument (ML160815) and is the remains of a medieval monastery, moated manor house, fishpond and post-medieval garden. The north-eastern corner of Site 5 abuts the SM boundary. The setting and any possible archaeological remains linked to the SM would have to be investigated and considered in any design of this site.

3.4.72 As with Site 4 the ancient woodland, called Old Wood, sits on the boundary of the site. It ecological potential should be considered and ensured to be protected with the construction of, and operation of a solar farm and energy storage system.

3.4.73 Site 5 is crossed by 2 PROW's they run from South Kyme across the land in a NE direction. There is a further PROW which follows the northern boundary of the Site. Any design would have to consider the visibility of the solar farm from these PROW. Users of a PROW are considered to be highly sensitive to changes of use, when assessment within the EIA process is undertaken.

3.4.74 Wood Lane (northern boundary) already offers an established hedgerow along the majority of the road. This would assist in screening the site from users of the local road.

3.4.75 The hamlet of Howell sits on the SW corner of the site. This hamlet also has 4No. Listed Buildings (2No. Grade II* and 2 Grade II). However, from aerial images, it can be seen that this section of field boundary already has tall, well established boundary hedges which continues on through Howell.

3.4.76 Site 5 has far more environmental constraints than the Heckington Fen Energy Park site. All of these environmental constraints would need to be considered when developing any design for the site, which could in turn extend the pre-planning phase of progressing an energy park on this site.

Site 6 - (Figure 3.4e: Back Check and Review Site Option 6 ("Site 6"))

3.4.77 The northern half of this Site is owned by 3no. landowners, with the southern half made up of many small parcels. Only 3no. of these small parcels have known landowners, the remaining 18no have no known landownership at this time. The total area of Site 6 is 759ha. Site 6 is made up of a mixture of Grade 2 and Grade 3 agricultural land. Within the site 65% is Grade 2 and 35% is Grade 3. This equates to approximately 493ha of the site being Grade 2 compared to the Energy Park site which has 97ha of Grade 1 and 2 land within its boundary.

3.4.78 Littleworth Drove forms the southern boundary of Site 6 with the A17 forming the boundary of the southwest corner. Site 5 forms the northern boundary of the Site which if further agricultural landholdings. Sidebar Lane forms the eastern boundary of this site and Heckington Road the western boundary. The Energy Park has its north-western boundary close to Site 6. It is separated by a group of fields and then the PROW HECK/15/1.

3.4.79 Site 6 is a combination of Flood Risk 1, Flood Risk 2 and 3 land. The eastern section is all Flood Risk 2/3, with this area narrowing and becoming a central channel of Flood Risk 3 as it travels west through the site. Two PROW cross the site. The first runs through much of the site from east to west and the second bisects the centre of the site north to south. A further third PROW runs outside of the site but passes close to the SW corner as it joins with the A17. The PROW network that crosses Site 6 would need to be considered within the design and could require considerable set back or removal of fields from being developed to ensure that users of the PROW do not feel surrounded by panels when they used these footpath routes.

3.4.80 Littleworth Drove forms the southern boundary of the site and Heckington Road the western boundary. Both have tall, established hedgerows and trees along the majority of their lengths, which would offer screening of any development on the site.

3.4.81 The SM of Holme House is located approximately 530 from the site southern boundary. Without archaeological assessment work on Site 6 it is not possible to determine if there is a link between the SM and Site 6 which could affect its setting. This assessment work has been completed for the Energy Park site, which has determined that there is no link and so the setting of the SM is not affected by the Proposed Development.

3.4.82 Site 6 sits to the west of the Energy Park site. For this site to be a viable alternative to the Energy Park site it would need to connect into Bicker Fen Substation. This would require a cable being run south to this substation. The design process of the offsite Grid Corridor for the Energy Park looked at running the cable to the west which would be a similar route that would be needed for Site 6. There were some minor environmental constraints which restricted this route, but the main reason for a western offsite Grid Corridor not being progressed as part of the Heckington Fen application was Lands issues (I.e. a series of landowners along that route not wanting a grid cable for renewable energy laid over their land). A record of these communications can be found in the Book of Reference (Document ref 4.4), if required. Therefore, any off-site grid connection would have to travel east over the land associated with the Energy Park before going south to obtain connection to Bicker Fen Substation.

Site 7 - (Figure 3.4g: Back Check and Review Site Option 7 ("Site 7"))

3.4.83 Site 7 has a single known landowner, which is The Crown Estate. There are a further 4no. landowners on this site whose details are not known at this time. Site 7 is 619ha in area. The whole of this Site is Grade 2 agricultural land which is considered to be best and most versatile.

3.4.84 Helpringham Fen lies to the northeast of this site. The A52 (Bridge End Causeway) forms part of the southern boundary with North Drove forming the remaining southern boundary. The B1934 forms the western boundary and South Drove forms the northern boundary. South Forty Foot Drain forms the eastern boundary. Any grid cable route would need to cross this drain, however, this is also required for the Energy Park site and can be achieved through a directional drill.

3.4.85 This site has two Scheduled Monuments (SM) on its northern boundary. The first sits to the south of Helpringham (I009232) and is a free-standing cross. The second is located further down the northern boundary. There is also a series of 5No. PROW either

through or on the boundary of the site. Two of them run through the western end of the site and two more through the eastern side of the site. The final PROW follows the full extent of the northern and western boundary of the site.

3.4.86 The road along the northern boundary is a single-track carriageway. It has open views along the full extent of the boundary which look over the site. Views from the A52 are also possible, with the section of road having a low-level hedge with sporadic trees. North Drove has hedging along the majority of the site boundary, which has already grown to a height that would offer good in leaf screening of the site.

3.4.87 Any design would have to mitigate for the SM's on the boundary and the network of PROW which cross the site. With the majority landowner also being The Crown Estate, the timeframe associated with gaining any legal agreement for development on the site would be protracted. Which in turn could effect the possibility of delivery of an operational development by 2027.

Site 8 - (Figure 3.4h: Back Check and Review Site Option 8 ("Site 8"))

3.4.88 Site 8 is an area of land 584ha in size which 100% of the site being Grade 2 agricultural land. It is made up of multiple landowners. The largest landowner in this site is The Crown Estate through the Duchy of Lancaster. Lincolnshire County Council also own a section of the Site to the south. There are 7no. parcels of land within the Site whose ownership is not known at this time.

3.4.89 Bridge End Causeway (A52) forms the northern boundary. The western boundary of the Site is Site 9 which is further agricultural land. The southern boundary is North Drove and the western boundary is the South Forty Foot Drain. Site 7 sits on the northwest corner of the site. They are separated by the South Forty Foot Drain.

3.4.90 Bar two small pockets of the site, which are Flood Risk 1, the whole of the site is Flood Risk 3. There are 4No. Grade II Listed Buildings on the northern boundary of the site with more listed buildings within the town for Donnington. Donnington is approximately 230m from the eastern boundary. Donnington has a Conservation Area within its central area which contains a series of Grade I, II* and II Listed Buildings. There are 2No. PROW which cross the site, one of which bisects the site north to south.

3.4.91 There is a scattering of residential properties along the eastern and southern boundaries which would need to be considered in any residential amenity assessment. Views from the roads around the site offer some sections with vegetation screening and others with open views across the site. As stated for Site 7 the majority of the landownership under the control of the Crown Estate and Lincolnshire County Council gaining any legal agreement to development land could take a considerable length of time.

Site 9 - (Figure 3.4i: Back Check and Review Site Option 9 ("Site 9"))

3.4.92 Site 9 is owned by two landowners the majority landowner is The Crown Estate. The eastern boundary of Site 9 is Site 8 which is further agricultural land. They are separated by the South Forty Foot Drain. The Site sits within Swaton Fen. The northern boundary is Horbling Fen Drove. The western boundary of the Site lies close to Billingborough and Horbling. The area of Site 9 is 708ha and 100% of this site is Grade 2 agricultural land.

3.4.93 The majority of the site is Grade 3 flood risk, which a section of the western end of the site being grade 2 flood risk. There are small pockets where due to the topography of the land the site becomes Grade 1 flood risk. There is a Site of Special Scientific Interest (SSSI) located on the northern boundary of the site. There is also a Scheduled Monument

on the northern boundary and there are a series of Grade II listed buildings within Billingborough and Horbling.

3.4.94 There are 3No. PROW which cross Site 9. The first runs east to west through the centre of the Site and travels the full length of the site from Billingborough to the South Forty Foot drain. The second PROW spurs from this central PROW and runs in a northern direction out of the site. The third PROW crosses the southwestern corner of the site. There is a fourth PROW which runs along the eastern boundary and follows the South Forty Foot Drain. The visual implications for any users of these PROW would have to be considered when crossing a solar farm of this scale, especially the 1st PROW as this runs the full extent of the site. Design mitigation could be to only have panels on one side of the PROW which, due to the location of the PROW, would reduce the potential capacity of the site by half.

3.4.95 The southern boundary of the site is Billingborough Drove, this is a single carriageway road which has clear open views of the site from its full length along the site. The northern boundary is Horbling Fen Drove which is also a single carriageway road. The views into the site from this road are more limited and there are areas of established trees planting within hedgerows. Glimpsed views over the site are visible form this road.

Site 10 - (Figure 3.4j: Back Check and Review Site Option 10 ("Site 10"))

3.4.96 Site 10 has 3no landowners, with the Crown Estate and the Church forming the majority of landowners within the Site. There is a parcel within the centre of the Site whose ownership is not known at this time. The site is 620ha is area and 100% of it is grade 2 agricultural land. This is far more Grade 2 land that the Energy Park site which has a total of 97ha of Grade 1 and Grade 2. As the majority of the land ownership under the control of the Crown Estate and the Church, gaining any legal agreement to development land could take a considerable length of time.

3.4.97 The northern boundary of this Site is Neslam Road with the western boundary being the B1177 which becomes the High Street of the village of Pointon. This village sits next to the western boundary of this site. The hamlet of Sempringham sits on the northern boundary of the Site.

3.4.98 This site is a mix of Grade 1,2 and 3 flood risk areas, with flood risk 3 still making up the majority of the site. There is one PROW which doglegs through the centre of the site. A further 2No. PROW are on the boundaries of the site – one to the east along South Forty Foot Drain and one to the west running through Pointon. There are a series of 3No. SM's near to the site boundary, the closest two being located near Poplar Farm to the east and just off Neslam Road to the north. Views from Nelsam road are very well screened from the west with tall thick trees lined hedgerows. The views of the site become more open as you travel east along Neslam Road as the hedgerows decrease in height and number. Travellers along the B1177 would have limited views into the site as the hedges are quite tall as well as the speed limit along this road being the National Speed Limit, with vehicles having to slow to 30mph when they enter Pointon.

Site 11 - (Figure 3.4k: Back Check and Review Site Option 11 ("Site 11"))

3.4.99 Site 11 sits to the south of Site 10. Millthorpe Drove forms the northern boundary and Millthorpe Road forms the western boundary. The small village of Dowsby sits on the southwestern boundary corner and the hamlet of Millthorpe sits on the north-western corner. Fen Road (B1397) forms the southern boundary. It shares this boundary with Parcel 12.

3.4.100 There are 3no known landowners within this Site, with the remaining area of land owned by landowners whose details are not known at this time. Site 11 has an area of 577ha of which all of it is Grade 2 agricultural land, which is considered best and most

versatile. This 577 ha of Grade 2 compares with the 97ha of Grade 1 and 2 land within the Energy Park site.

3.4.101 Approximately 60% of this site is Flood Zone 3 with the remaining area being made up of Flood Zones 2 and 1. There is a network of PROW's which traverse the western end of the site, with a further single PROW following the eastern boundary as this follows the South Forty Foot drain. There is a single Grade II listed building located to the south of the hamlet of Millthorpe on the western site boundary. This is for Chestnuts Farmhouse (1062756). Due to the agricultural nature of the asset, its setting may not be affected by the presence of a solar farm, but this would only be determined through detailed assessment.

3.4.102 The southern road of the B1397 allows two lanes of traffic and is a national speed limit road. However, it has very open views over the southern section of Site 11. These views are more limited from the B1177 as there is low level planting along the majority of this road length. Millthorpe Drove forms the northern boundary of the site and views from this road are open and expansive over the site. The road is a single carriageway track.

3.4.103 Design of any solar farm on this site would have to consider the network of PROW in the west and the open views of the site from both the north and the south. Without considerable changes to the planting along the boundaries of the site there would be a significant alteration in the views receptors in this area would experience.

Site 12 - (Figure 3.4l: Back Check and Review Site Option 12 ("Site 12"))

3.4.104 Site 12 shares its northern boundary with Site 11. It has the small village of Dowsby on its north-western corner and then the B1177 forms the remainder of the western boundary. Long Drove forms the southern boundary, and the Forty Foot Drain forms the eastern boundary. This site has an area of 570ha and the whole of the site is Grade 2 agricultural land.

3.4.105 This site is an area of 570ha with 2no. main landowners, one of which is The Crown Estate. There are a further 9no parcels of land whose ownership is not known at this time.

3.4.106 There is a large SM located on the southern boundary of the site. There is a small cluster of Listed Buildings (5No. in total) located within the village of Dowsby. These listed buildings are a mixture of Grade II* and Grade II buildings.

3.4.107 There is one PROW which enters the site from the north and runs in a southernly direction until the centre of the site. There are a further three PROW which run close the site boundaries – one along the South Forty Foot drain and two just off the northwest area of the site. The majority of the site is flood zone 3, with the flood risk decreasing as you travel west across the site, with areas becoming flood risk 2 and then flood risk 1.

3.4.108 Views from the B1177 along the western boundary are very clear and open into the site as there is little existing screening of views into the site. Views from Long Drove on the southern boundary will have some screening as there is an established hedge which runs the full length of the site. Long Drove is a single lane country road and so traffic flows are not expected to be high.

3.4.109 When designing a site, the land within Flood Zone 1 should be utilised for development before the Flood Zone 2 and 3 to be in line with government Policy. An exemption test will need to be achieved to move development away from the flood zone 1 areas. Based on initial visual assessments the flood zone area in the west of the site should be avoided as there are a higher number of receptors which could be affected by

this development over the eastern section of the site. Design mitigations through planting could be used if the exemption test cannot be passed, but this would be costly and the Energy Park site has not required such design mitigations to make it satisfactory for local receptors. In addition to this with the whole of the site being Grade 2 agricultural land, a development of this site would lose far more high-grade land (grade 1 and 2) compared to the Energy Park site.

Site 13 - (Figure 3.4m: Back Check and Review Site Option 13 ("Site 13"))

3.4.110 This site is 613ha in size and is made up wholly of Grade 2 agricultural land. The majority of the site has unknown ownership at this time. Only 2no. small parcels of land are within a single known landowner. Hacomby Drove forms the southern boundary with Dunsby Drove forming the northern boundary and South Forty Foot drain being the eastern boundary. This site is located to the south of site 12 and further agricultural landforms the wider landscape around this site.

3.4.111 Much of the site is flood zone 3 with small sections of flood zone 2 and then in the west a section of flood zone 1. There are no PROW that cross the site. The is one PROW to the eastern boundary as this is the South Forty Foot Drain. There are a further threes PROW on the western edge of the site, each of these emanate from Dunsby. There is a large SM to the north of the site. This SM sits between Site 12 and Site 13 and is a medieval village (1018395). Based on the designation nature of the SM, there is a reasonable likelihood that archaeological remains will from this SM could be within the site. This will only be determined through on-site investigation. There are further listed buildings located within the villages of Dunsby and Haconby, most of which are Grade II and Grade II* but there is one Grade I within Haconby. This Grade I asset is the Church of St. Andrew (194325).

3.4.112 Hanconby Drove forms the southern boundary of the site. This is a single lane track, with clear, open visibility over the full extent of the site. The northern boundary of the site is Dunsby Drove which is a single lane track. The views from the road are open and clear over a large extent of the site. There are few small areas where the views are screened by existing trees, but these are small stretches along the road. Views from the east and west are also achievable due to the presence of PROW along these boundaries.

3.4.113 Site 13 is far more visible from boundaries than the Energy Park site and with an agricultural land classification (ALC) of Grade 2 over its whole extent, progressing its development would impact a far greater area of high-grade agricultural land than the Energy Park site. As the whole of the site is Grade 2 there is no opportunity for amending the design of the site to limit the utilisation of Grade 2 land.

'Back Check and Review' Summary

3.4.114 Appendix 3.1 (Document Reference: 6.3.3.1) offers a summary of the 'back check and review' process of these 13No. Sites.

3.4.115 Accordingly, the Energy Park site was chosen as a suitable site for the following main reasons:

- Agreement with the landowner (including signed Option Agreements in place);
- A neatly contained Energy Park Site (which is not sporadic in nature) with a single landowner;
- Orientation of land and its open nature, makes the Energy Park site suitable for efficient energy generation;
- No ecological designations or statutory protected areas on or within close proximity to the Energy Park site;

- No landscape designations in or in close proximity to the Energy Park site;
- Visibility into the Energy Park site from the wider landscape is limited, due to the wider low-lying nature of the landscape, existing bunding on some perimeters of the Energy Park site and limited PROWs in the immediate area;
- Grid connection is economically achievable for a development of this generation capacity;
- Access into the Energy Park site is directly off the A17, rather than minor roads which could lead to increased local traffic congestion during construction;
- Less area of BMV land of categories Grade 1 and 2 to used within the site when compared to the sites identified in the 'back check and review' process.
- Limited residential properties are next to the Energy Park site. For those in proximity to the Energy Park site, the possible environmental impacts to these properties can be mitigated through design.

Alternative Designs/Layouts

3.4.116 The purpose of the section is to describe the alternative layouts considered for the Proposed Development at the key design stages, so far. Table 3.2 summaries the main design layout iterations considered.

Table 3.2 Main Design Iterations for the Energy Park Site

Stage	Proposed Layout	Consultation which influenced the proposed layout at the Stage	Design evolution
Non-Statutory Consultation Layout (Oct - Dec 2021)	Figure 3.1- Working Indicative Site Layout (Revision A) (document reference 6.2.3) First Indicative Layout design showing the red line boundary, watercourse offsets, habitat enhancement zone and the solar panel area	Landowner discussions, initial discussions with Lincolnshire County Council, North Kesteven District Council, Boston Borough Council and utility operators on Site.	Areas closest to properties were set aside for Biodiversity Net Gain areas. Areas outside the Option area for the Energy Park site are excluded from the red line / Order Limits boundary.
Scoping Request Layout (January 2022)	Figure 3.2- Working Indicative Site Layout (Revision E) (document reference 6.2.3)	Scoping Opinion comments Consultee comments Discussions with the local community via online presentations and Q&A sessions to understand their main concerns about the proposed development Interested parties from the online presentations and non-statutory consultation	The north-eastern boundary of the solar park was amended to ensure the small section in Boston Borough Council was removed to avoid complications from a discharging authority perspective. The approved wind park access is considered to be the main site entrance. Set back from pipeline, drainage ditches and overhead lines. A permissive path and community orchard were added. The location of the main 400kV onsite substation and energy storage area were altered and increased in size as development of the technical plans determined that these areas needed to be increased in size for an optimal efficient design. Existing access to the Energy Park site was added into the design to aid initial stages of construction.

Stage	Proposed Layout	Consultation which influenced the proposed layout at the Stage	Design evolution
PEIR and Statutory Consultation Layout (June 2022)	Figure 3.3- Indicative Site Layout (Revision H) (document reference 6.2.3)	A design workshop with the technical authors Ongoing design work with third parties	A reduction in the size of the main substation area following confirmation that a single circuit rather than a double circuit 400kV export would be progressed. A series of 132kV substation locations added through the Energy Park site to enable efficient use of cabling. The permissive path has been lengthened and a loop walk with the existing PRoW created. The access tracks have been amended to avoid the introduction of additional culverts so far as possible. The fencing has been considered to avoid crossing Internal Drainage Board watercourses. The construction compound locations and areas for additional substation and energy storage have been considered across the Energy Park site. The ALC percentages over this site layout resulted in 49% of the site being BMV land (Grade 1,2 and 3a)
Proposed Layout Alteration following consultation with NKDC and LCC (Internal only)	Figure 3.7 - Indicative Site Layout (Revision J) (document reference 6.2.3)	NKDC and LCC raised concerns during the ongoing consultation with them, regarding the proposed development having high grade agricultural land within it. They raised the suggestion of removal of land from both the south and the west to remove the majority of Grade 1 & 2 land from the Site and reduce the area of Grade 3a.	This design would offer a reduction in the size of the Energy Park by approximately 110ha with this land also being removed from the Order Limits. The agricultural grade of the land removed from the Energy Park site was predominantly Grade 1 and Grade 2. The area of this reduced site is 475ha. The Applicant considered this proposal and determined that removal of approximately 49ha of land from the western section of the Site, which would be used for solar panels, was not appropriate or commercially attractive when considering the wider planning balance and reductions in energy generation. The western section of land (49ha) is a mix of Grade 2 and 3a, and would be used to house solar panels, ancillary

Stage	Proposed Layout	Consultation which influenced the proposed layout at the Stage	Design evolution
			equipment and ongoing sheep grazing for the operational life of the Site. After which the solar panels will be removed. This area of land is not being removed from agricultural for the lifetime of the Proposed Development, nor is its BMV value being decreased by the operation of the solar farm. Instead, its agricultural land use is being altered from intensive arable to a lower intensity arable grazing. The removal of this western section of land from the Order Limits could have resulted in the proposed Permissive Path not being possible as the southern section of the path would no longer be within the Order Limits. Removal of the southern parcels of land would reduce the area of land being offered for potential Biodiversity Net Gain. The removal of approximately 62ha from the southern section of the Energy Park site due to its higher land grade and that it was not needed to achieve the 10% BNG policy requirements was considered acceptable by the Applicant. It was therefore determined that Indicative Site Layout (Rev J) could not be progressed in its totality.
Environmental Statement Layout (Feb 2023)	Figure 2.1 – Indicative Site Layout (Revision I) (document reference 6.2.2)	Ongoing design work with electrical engineers and solar farm designers Responses from Formal Public Consultation A design workshop with our technical authors Consideration of Rev J and the comments from NKDC	A reduction in the size of the Energy Park so that 62ha from the south and southwest are removed from the Order Limits. The agricultural grade of the land removed from the Energy Park site was Grade 1 and Grade 2. Removal of these parcels of land has reduced the area of land being offered for potential Biodiversity Net Gain. The main Onsite Substation 400kV moved to the central area of the site.

Stage	Proposed Layout	Consultation which influenced the proposed layout at the Stage	Design evolution
			Energy Storage compound moved northward to a central area with the Onsite Substation. All 132kV substations have been removed from the design of the site. Removal of the 5no. 132kV and energy storage zones from the Site. Up to 10 tanks and a lagoon have been added to the Substation and Energy Storage Area. These have been added as a mitigation for the potential risk of fire within the energy storage compound. These features will only be built if deemed necessary when the final energy storage technology is known. Areas needed for construction and operational compound has been reduced. Further internal access tracks have been added to the design. Indicative 132kV overhead Onsite Cable Route has been removed as this new cable will now be buried underground on the Energy Park site. Minor refinements in the location of the security fencing around the site. Indicative inverters and transformer locations have been added to the design. Maximum panel height is now split into 2 different heights (3m max and 3.5m max). The two zones are needed as the detailed flood modelling has shown that to ensure flood waters do not touch the leading edge of the panels in the north-eastern section of the site, they have to be raised by 0.5m slightly higher off the ground. This increase is leading edge height results in the top edge also being higher.

Stage	Proposed Layout	Consultation which influenced the proposed layout at the Stage	Design evolution
			The maximum height of the solar panels has reduced from 4.5m to 3.5m.