Heckington Fen Solar Park

EN010123

Statement of Need and Planning Statement

Applicant: Ecotricity (Heck Fen Solar) Limited

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STATEMENT OF NEED AND PLANNING STATEMENT

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APPENDICES:

1. INTRODUCTION

1.1 This Planning Statement ('the Statement') supports a Development Consent Order (DCO) application ('the Application') to be submitted to the Secretary of State (SoS) for the Department for Energy Security and Net Zero (DESNZ) under Section 37 of the Planning Act 2008. The Application is for the installation of a renewable led energy scheme on land at Heckington Fen to the north of the A17 known as Heckington Fen Solar Park (also referred to as the Heckington Fen Energy Park ('the Development'), the Application is being submitted by Pegasus Group on behalf of Ecotricity (Heck Fen Solar) Limited ('the Applicant').

1.2 The Site Location Plan (document ref: 6.2.2) is provided at Appendix 1.

1.3 The Application for a DCO is submitted to the SoS because the Development is classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008, being an electricity generating station with a total capacity exceeding 50 megawatts (MW), and with an export connection to the National Grid's network. This not only changes the determining authority, this being the Planning Inspectorate rather than North Kesteven District and Boston Borough Councils, but also the relevant policy documents and assessment regime under which the Application will be assessed.

1.4 The development proposal relates to the construction, operation, maintenance and decommissioning of Heckington Fen Energy Park, a renewable led energy scheme. The main elements of the development will be the installation of a ground mounted solar park and energy storage with an intended design capacity of over 50MWp (megawatts peak) covering an area of approximately 524 hectares (ha). There will also be electrical connection infrastructure and the point of connection into the electricity grid is via the existing National Grid Electricity Transmission (NGET) 400kV Bicker Fen Substation south of the A17. The Order limits extend to some 644.79 ha to cover the construction of the cable route.

1.5 The Energy Park is located within the county of Lincolnshire on an area of agricultural land approximately 3.7km east of the village of Heckington and 8.9km west of the town of Boston. The connecting cable route extends approximately 8.5km in length from the Energy Park onsite substation to the connection point at the National Grid Bicker Fen Substation.

1.6 The Energy Park lies wholly within the administrative area of North Kesteven District Council and immediately adjacent to the boundary of Boston Borough Council along the eastern edge.

1.7 The Cable Route Corridor area between the Onsite Substation and the National Grid Bicker Fen Substation straddles the boundary between North Kesteven and the borough of Boston. The Off-site Cable Route Corridor, a subsection area of the Cable Route Corridor between the Energy Park boundary and the new point of connection at National Grid Bicker Fen Substation, lies wholly within Boston Borough.

1.8 The above and below ground works at the National Grid Bicker Fen Substation lie wholly within the Boston Borough Council boundary.

1.9 **Table 1** below summarises the planning history of the land previously proposed at Heckington Fen for an onshore wind farm. The consent granted in 2013 was subject to variations in 2015 and 2018. Although no formal decision has been issued by the then Department for Business, Energy and Industrial Strategy (BEIS) on the 2015 application, they BEIS has advised that '*We do not, therefore, intend to consider the 2015 Variation application further'*. The wind farm has not progressed due to impacts on aviation radar. The 2018 variation was refused in July 2022. The wind farm has not been assessed as part of the baseline for the Environmental Statement.

Table 1 – Wind park planning history

Reference	Description of Development	Decision	Submission Date
09/0628/FUL	Installation of a 70m high wind monitoring mast for a temporary period of 18 months	Approved	15 October 2009
09/1067/S36	Application (submitted under section 36 of the Electricity Act 1989) for consent to construct and operate a wind energy electricity generating station	Application approved subject to conditions - 08 February 2013	15 December 2009
15/0416/S36	S.36C of the Electricity Act 1989 and S. 90(2ZA) of the Town and Country Planning Act 1990. Application to vary S. 36 consent and deemed permission for the Heckington Fen Wind Park, Heckington Fen, near East Heckington.	Application not being progressed – confirmed 15 November 2022	05 June 2015

Reference	Description of Development	Decision	Submission Date
18/1384/S36	S.36C of the Electricity Act 1989 and S. 90(2ZA) of the Town and Country Planning Act 1990. Application to vary S. 36 consent and deemed planning permission for the Heckington Fen Wind Park, Heckington Fen, near East Heckington to allow for the date by which development must be commenced from 5 years to 10 years.	Application refused – 28 July 2022	06 December 2018

1.10 Section 5 of this document serves as a self-contained **Statement of Need**. The issue of need is addressed here – rather than within a separate standalone document – in order to avoid duplication and to provide a seamless explanation of how the proposed development relates to planning policy and other material considerations including in respect of the urgent need to address both climate change and the UK's energy security. As the Statement of Need explains, the Government set out in 2011 as a matter of policy that it had demonstrated that there is a need for this type of infrastructure. 12 years on, the increased urgency of the situation on both fronts is apparent to all.

1.11 All the other issues relevant for the assessment of the application are set out in this Statement. However, this document should be read in conjunction with the remainder of the submission package, which includes detailed considerations of specific issues, for a comprehensive understanding of the development.

1.12 The full application package includes the following documentation:

- Covering Letter
- Application Form
- Application Guide and Application Index
- Application Plans including Works Plans, Land and Crown Land Plan, Rights of Way Plan, Statutory and Non-Statutory Nature Conservation Designations Plan, Water Bodies in a River Basin Management Plan, Statutory and Non-Statutory Historic Environment Designations Plan, Street and Access Plan, Location and Order Limits Plan, and Important Hedgerows Plan.
- Development Consent Order Pack: -
    i. Draft Development Consent Order

ii. DCO Validation Confirmation

iii. Explanatory Memorandum

- Compulsory Acquisition Information: -

iv. Statement of Reasons

v. Funding Statement

vi. Book of Reference

vii. Schedule of Negotiations with Statutory Undertakers and Landowners

- Consultation Report
- Consultation Report Technical Appendices
- Shadow HRA to Inform Appropriate Assessment
- Statement in Respect of Statutory Nuisance
- Grid Connection Statement
- Technical Guide
- Environmental Statement Non-Technical Summary
- Environmental Statement, divided into:

viii. Environmental Statement Main Written Statement - Comprises the main volume of the Environmental Statement, including 'general chapters' that describe the EIA context, provide a description of the application site and development, and set out the scope of the Environmental Statement, followed by the 'technical chapters' for each environmental theme with the associated figures concluding with a summary. These are: Landscape and Visual; Residential Amenity; Ecology and Ornithology; Hydrology Hydrogeology Flood Risk and Drainage; Cultural Heritage; Socio-Economic; Noise; Climate Change; Transport and Access; Air Quality; Land Use and Agriculture; Glint and Glare and Miscellaneous Issues.

ix. Environmental Statement Figures - Comprise the figures supporting the main report

x. Environmental Statement Technical Appendices - Comprise the technical appendices supporting the main report, these include technical studies such as:

- Flood Risk Assessment and Drainage Strategy
- Unexploded Ordnance
- Ground Investigations Report
- Arboricultural Impact Assessment
- Extended Phase 1, Arable Plants, Great Crested Newts & Water Vole
- Ornithology
- Bat Survey
- Geophysical Survey Report
- Biodiversity Net Gain Calculation

- Further documents include:
  - Outline Design Principles
  - Mitigation Schedule
  - Statement of Need and Planning Statement (this statement)
  - Design and Access Statement
  - Consents and Licenses Required Under Other Legislation
  - Statement of Common Ground
  - Outline Construction Environmental Management Plan including Outline Soil Management Plans
  - Outline Landscape and Ecological Management Plan
  - Outline Decommissioning and Restoration Plan

- Outline Construction Traffic Management Plan
- Outline Energy Storage Safety Management Plan
- Outline Supply Chain, Employment and Skills Plan
- Outline Written Scheme of Investigation – Evaluation
- Outline Written Scheme of Investigation – Mitigation

1.13 The application documentation demonstrates the diligent approach adopted by the Applicant, and their experienced consultant team in delivering a well-considered development based on identified need and sound environmental, social and sustainable development considerations.

Pre-Application Consultation

1.14 The planning application was finalised following extensive non-statutory and statutory consultation with the host local authorities, local community, and other statutory consultees. Table 2 below provides a summary of the key stages, with the details set out within the accompanying Consultation Report and Appendices (document reference: 5.1).

Table 2 – Summary of consultation

Stage or Consultation Phase	Key Dates	Description
Non-Statutory engagement and consultation	August to December 2021. First of regular (virtual) meetings with host authorities on 18 August (North Kesteven Council); 8 September (Boston Borough Council); and 13 October (Lincolnshire). (Virtual) briefings for elected members on 4 November (North Kesteven) and 11 November (Boston). (Virtual) presentation to members of the public on 4,13 and 15 November.	Non-statutory discussions with and briefings for host authorities (officers and elected members), the public, and other stakeholders through extensive informal consultations (subject to variable public health restrictions relating to Covid).
Agreeing the draft SOCC	March to June 2022	The Statement of Community Consultation (SoCC) set out the approach to the formal statutory consultation process.

Stage or Consultation Phase	Key Dates	Description
Statutory Consultation	30 June to 1 September 2022.	The Statutory Consultation sought to gather additional views and feedback on the proposal from a range of stakeholders and communities. This included issuing a consultation newsletter; press releases, formal notices, public exhibitions both online and in person, including at The Heckington Show.
Environmental Impact Assessment Scoping Request	Scoping Request submitted 17 January 2022; Scoping Opinion issued 17 February 2022.	Request to the Secretary of State, via Planning Inspectorate, for EIA Scoping Direction. Planning Inspectorate issue Screening Opinion after consultation with prescribed bodies under regulation 10(6) of the EIA Regulations 2017. Further response from Natural England received on 24 February 2022.
Post-Statutory Engagement	September 2022 to January 2023.	Informal consultation and continued engagement to keep stakeholders informed of progress and to agree Statement of Common Ground with prescribed consultees in due course.
Further (Targeted) Consultation	11 November 2022 to 18 December 2022.	Based on further assessment and feedback received during the Statutory Consultation, the Order Limits were reduced. However, a few other localised changes to the proposals required the Order Limits to cover a small number of additional areas. As these were not part of the Order Limits during Statutory Consultation, a further round of consultation was held.

Change Application

1.15 The Application was accepted for Examination on the 13th March 2023. Since the Application was submitted, as a result of ongoing discussions with National Grid Electricity Transmission (NGET), it has become clear that a Change Application request for Additional Works is needed at the National Grid Bicker Fen Substation to connect the project. The Additional Works lies outside the Order Limits submitted with the application and accordingly a larger area is needed at the National Grid Bicker Fen Substation. The Change Application seeks to incorporate the additional land of approximately 0.9ha and works required.

1.16 The Additional Works area will include:

1. a new section of NGET infrastructure at the Bicker Fen Substation comprising a busbar extension including a section breaker, a bus coupler and a feeder circuit on land to the south of Bicker Fen Substation, which is owned by NGET (hereafter referred to as "Additional Works 1 (AW1)"); and

2. a new cable sealing end ("CSE") compound on land to the west of Bicker Fen Substation which is owned by NGET (hereafter referred to as "Additional Works 2 (AW2))".

1.17 The Applicant has undertaken a targeted consultation in July-August 2023 for those relevant "EIA Consultation Bodies" and relevant local stakeholders, including Bicker Parish Council. Further details of this targeted consultation are described in the Change Consultation Report (document reference: Pre-ExA.ChangeApp.CCR.V1).

1.18 An update to relevant documents impacted by the Change Application and the Additional Works at National Grid Bicker Fen Substation has been undertaken. A full list of documents updated is found in the Guide to Application (document reference: 1.4, Rev 3).

2. THE SITE AND ENVIRONS

2.1 The site of the proposed Energy Park comprises 524 hectares of open farmland north of the A17 approximately midway between Sleaford and Boston (10.9km and 8.9km to the west and east respectively) within the district of North Kesteven. The corridor of the cable route connection to the grid would extend from the south-east of the site under the A17 to the existing National Grid Bicker Fen Substation approximately 5.5 km to the south (as the crow flies). Once the cable route leaves the Energy Park it lies within the borough of Boston, as shown on the location plan (document reference: 6.2.2).

2.2 As described below, the Energy Park and its surroundings very much reflect the characteristics of the Lincolnshire Fenlands, with a flat open landscape of small settlements and isolated farmsteads. A number of modest farm holdings and residential properties are situated on the A17 along the southern boundary of the site, limiting the Energy Park's highway frontage to three separate access points. Collectively the hamlet is known as East Heckington, with the Energy Park itself lying within the wider area described as Heckington Fen. Other farms and a small number of other dwellings are distributed across the wider area, with the nearest villages being Heckington and Swineshead, approximately 3.7km and 5km to the west and east respectively.

2.3 The site is bounded by Head Dike to the north, Holland Dike (and the North Kesteven/Boston district boundary) to the east and unnamed drainage ditch to the west. Beyond this ditch lies a wide margin of agricultural land, approximately 0.5km in width, between the proposed Energy Park and the Sidebar Lane (B1395). The extensive site is therefore contiguous and broadly regular in shape, with much of the land lying within an approximate rectangle measuring up to 4km from north to south, and up to around 2.5km from east to west.

2.4 The site comprises a series of large arable fields previously two separate agricultural landholdings; Elm Grange covers the western section and Six Hundreds Farm the eastern (owned by a single landowner). A small group of buildings (some disused) associated with Six Hundreds Farm located towards the eastern flank of the site (approximately 1.5km north of the A17) are one of the few notable features of what is otherwise a relatively empty landscape. Approximately 1.5km to the north-west of these buildings stands a solitary barn.

2.5 The only other buildings within the immediate environs of the site are the several farmsteads between its southern boundary and the A17 wider (Elm Grange itself,

the Piggery, Rectory Farm and Rakes Farm), a number of dwellings and commercial premises on the A17, two farmsteads south of the A17 (Poplars Farm and Maize Farm), and several houses on Sidebar Lane several hundred metres west of the site boundary. Planning permission for a new school was obtained at Elm Grange in 2021. At the time of writing, it is used by Build A Future East Heckington for vocational courses.

2.6 Beyond the site's boundaries other dispersed farms (including Glebe Farm to the north-east, Mill Green Farm and Sadland Farm to the north, and a number of small farms with 'The Rakes' area east of Holland Dike.

2.7 The proposed initial access to the Energy Park would be via the existing access off the A17 serving Elm Grange. This access would be used until the main access is constructed; this would be a phasing priority. The new access was approved as part of the wind park application in 2013 but has not been constructed.

2.8 The proposed 400kV cable route between the Energy Park and the existing National Grid Bicker Fen Substation approximately 5.5km to the south would run from the eastern boundary of the Energy Park and cross the Viking Link and Triton Knoll energy connections, South Forty Foot Drain, the East Midlands Railway line, a high-pressure gas pipe and a number of watercourses.

2.9 The proposed development includes an extension and works to the National Grid Bicker Fen Substation site, with works required on land to the immediate west, south-west and south of the compound. The area currently comprises rough grassland and plantation woodland (planted after 2005 in compliance with a condition attached to the planning consent for the substation (ref: B/05/0046)). The design of the required extension has not been finalised by National Grid and it is not presently known what extent of the woodland will need to be removed. Replacement tree planting has not been possible at National Grid Bicker Fen Substation due to technical constraints and limited land availability. However, the Applicant's conclusion is that mitigation is not required or feasible to the south of the Bicker Fen Substation; this is primarily due to the limited value the current trees have on screening views from any sensitive visual receptors. Therefore, as 'compensatory replacement' and/or 'enhancement' the Applicant has included an additional area of tree planting in the north of the Energy Park site, and within the hedgerow proposed on the northern boundary.

Landform and Topography

2.10 The site is situated within the Lincolnshire Fens, an expansive, flat, open, low-lying wetland landscape. The Fens lie within National Character Area (NCA) 46 and are described in the NCA profile as offering extensive vistas to level horizons, with a 'sense of rural remoteness and tranquillity' under 'huge skies'. The North Kesteven Landscape Character Assessment (2007) also classifies the site as within the 'Fens Regional Landscape Type' and the 'Fenland Landscape Character Sub-Area'.

2.11 The entire site and its surroundings for several kilometres in any direction reflect the characteristics of this highly distinctive landscape, with large open flat fields framed within and sub-divided by a network of rectilinear drainage channels and engineered river courses. The Energy Park is part of a larger landholding of over 600 hectares – with this uniform Fenland character of flat low-lying land (at only 2 -3 metres above Ordnance Datum) divided by a dense and geometric network of drainage ditches and largely devoid of tree cover, buildings or other structures.

2.12 The one notable landform feature in the immediate vicinity of the site is the Head Dike corridor, as the east-west watercourse runs between a grassed bund approximately 4 metres in height. From within the Energy Park, this provides screening when looking northwards into the open Fenland landscape beyond.

Land Use, Buildings and Infrastructure

2.13 Land use across the Energy Park is predominantly arable agriculture with improved grassland margins.

2.14 Buildings around the Energy Park include a large scale shed / grain dryer (approximately 7.5m to eaves), lower brick farm buildings, a neglected two storey dwelling, associated with Six Hundreds Farm, in the eastern part of the Energy Park, immediately south of the proposed Onsite Substation and Energy Storage System. Further farm buildings are near Elm Grange, near the south-western corner of the Energy Park. A further barn (known as the 'beef barn') is located in the north-western portion of the Energy Park.

2.15 The drainage system follows a broadly geometric pattern across the Energy Park, dividing it into rectangular parcels. Some of the larger drains are maintained by Black Sluice Internal Drainage Boards, and others by the landowner. The requirement for drainage works would be established across the Energy Park in the form of swales. In the wider landscape including the Cable Route Corridor, the regular pattern of drainage ditches continues. The Environment Agency maintained

South Forty Foot Drain runs to the south of the Energy Park and would be crossed underground with the cable connection to the National Grid Bicker Fen.

2.16 Various utilities cut through the site including overhead lines supported on wooden poles that traverse across the north-west corner and running parallel to Six Hundreds Drove and the A17 in the south. An underground gas pipeline bisects the Energy Park, extending south-north to the east of Rectory Farm. Associated gas infrastructure sits outside the Order Limits in the north-western portion of the Energy Park.

Access

2.17 Access to the main Energy Park site will be gained via the A17. The initial stages of construction (creation of construction compound and materials for the new access point) will use an existing access point adjacent to the Elm Grange Studios and the new Build-A-Future School. A new primary access point from the A17 will be built shortly after this initial construction work and be used for the remainder of the construction phase and when the development is operational. This access point benefits from an established principle of planning consent through the previously consented wind farm application.

2.18 Access will also be required for the construction of the new grid connection. The final stretch of this cable route has yet to be determined, with two routes still being considered. The western route goes through the Vicarage Drove Solar Farm, the eastern route utilises more land associated with the National Grid Bicker Fen Substation.

2.19 Access to the Bicker Fen Substation is currently achieved via a haul road from the A52. This will not change as a result of the Proposed Development. During the construction of the extension to the National Grid Bicker Fen Substation, there will be a number of HGV movements. Access for National Grid construction vehicles associated with the extension to the Substation will continue to access via the A52, in line with National Grid's existing arrangements. From the haul road, vehicles will route via Ing Drove, Cowbridge Road, Bicker Drove and Vicarage Drove.

Agricultural Land

2.20 An Agricultural Land Classification Assessment of the site was undertaken at a semi detailed level in November 2021. This has involved a 'semi-detailed' survey of 138

auger locations on a regular 200-metre grid, applying an auger density lower than 1 per hectare as per Natural England guidelines. A further 313 auger samples were taken in August and September 2022, covering most of the areas identified as Best and Most Versatile Land (BMV) in the semi-detailed survey, and to refine the boundaries of BMV to non-BMV land.

2.21 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 or below and therefore considered to be poorer quality land. The remaining 49% of the area for energy generation is a combination of Grade 3a (30.5%), Grade 2 (7.4%), and Grade 1 (11.1%) BMV. A small proportion (0.4%) of the 524ha is non-agricultural land.

2.22 The amendment to the Order Limits between that indicated within the Preliminary Environmental Information Report (PEIR) and that defined within the Environmental Statement (document reference: 6.1), led to a reduction in the amount and proportion of Best and Most Versatile land as set out below:

Table 3 – Reduction in Order Limits and impact on Best and Most Versatile Land

	PEIR		ES	
	Area (ha)	Area (% of total Site)	Area (ha)	Area (% of total Site)
Grade 1	66	11	58	11.1
Grade 2	77	13	39	7.4
Grade 3a	175	30	160	30.5
Grade 3b	263	45	265	50.6
Non-agricultural	8	1	2	0.4
	589	100	524	100

2.23 The offsite cable route to Bicker Fen will be underground without any impact on agricultural land-use or production (with the exception of short-term impacts during the construction phase and very small cable jointing bay structures at intermittent point along the route).

Biodiversity Features and Environmental Designations

2.24 The habitat of the Energy Park site primarily comprises open, arable farmland divided by a network of drains and ditches. The arable fields are principally used for wheat for compound animal feed, with a smaller portion used to make a low biscuit grade grist, although oilseed rape has also been grown in recent years.

2.25 The fields are generally cultivated right up to the field margins resulting in very limited areas or features of botanical or ecological importance, although approximately 10.5 hectares of the Energy Park site is subject to agri-environmental schemes, in the form of enhanced headlands by way of buffer strips.

2.26 There is one pond towards the centre of the site (west of Six Hundreds Farm) within a small area of bankside trees and scrub, and with an area of wet grassland to the west and north of the pond. There are also a small number of hedgerows on the site which vary in height, length, condition and management, and, although they are used by a variety of breeding and over-wintering birds, the hedges are generally species-poor.

2.27 There are no non-statutory designations within the Energy Park site, and none in close proximity. The South Forty Foot Drain Local Wildlife Site (LWS) – with its bankside vegetation comprising rough neutral grassland, scrub, and trees - is located approximately 1km to the south, with Cole's Lane Ponds LWS 6km to the south-east. The Heckington Grassland Site of Nature Conservation Interest (SNCI) is located approximately 5km to the west.

2.28 This is a therefore a typical corner of the Lincolnshire Fens, and 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. The nearest SSSI is at Horbling Fen, designated for its geological interest, some 11.5km to the south-west. The Wash, with its SSSI/SPA/SAC/Ramsar and NNR status, is approximately 17km to the south-east of the site.

Cultural Heritage

2.29 From an archaeological perspective, it is important to note that 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). The upper and midsections of the off-site cable routes for the Proposed Development are characterised by the same bedrock geology but the lowermost 2km sections comprises mudstone of the Oxford Clay Formation. The superficial geology of the entire site is recorded as tidal flat deposits of clay and silt.

2.30 There are no designated archaeological remains, such as Scheduled Monuments, located within the Energy Park site, but known and potential non-designated built and archaeological remains include:

- 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.

2.31 One Scheduled Monument and four Grade II Listed Buildings lie within a 2km radius of the Energy Park site, as detailed within the Environmental Statement (Figure 3.5) (document reference:6.1).

2.32 There is intervisibility between the Energy Park site and the Listed chapel on Claydike Bank as well as the non-Listed chapel on Sidebar Lane.

Hydrology

2.33 The majority of the Energy Park site is within Flood Zone 3, with the remainder within Flood Zone 2 and Flood Zone 1.

2.34 There are no Source Protection Zones close to the Energy Park site, with the nearest approximately 8.5 km to the west.

Ground Conditions

2.35 The British Geology Survey (BGS) geology mapping shows that the bedrock underlying the Energy Park comprises the Jurassic age West Walton Formation in the south-west half of the Energy Park and the Ampthill Clay Formation in the

north-eastern half. The north-eastern part of the Offsite cable route comprises the West Walton Formation, while in the south-west, the Oxford Clay Formation, which underlies the West Walton Formation.

2.36 The Oxford Clay Formation comprises a silicate mudstone with limestone nodules, with a typical thickness of 50–70m. The West Walton Formation, which overlies the Oxford Clays, is described by the BGS as comprising calcareous mudstones, silty mudstone and siltstones, with subordinate fine-grained sandstones and argillaceous limestones. It is estimated to be 20-40m in thickness and dips approximately 5 degrees to the east. Conformably overlying the West Walton Formation, the Ampthill Clay Formation consists of smooth or slightly silty mudstone with grey argillaceous limestone nodules and is estimated to be up to 50m in thickness. BGS borehole records (BGS Ref: TF14SE2; TF14SE4/A) located on the West Walton Formation, documented the bedrock as comprising brown-grey clay, with sporadic argillaceous limestone nodules down to 135 metres below ground level (mbgl). At depths greater than 100mbgl, the records noted the clay becoming slightly sandy with stone beds present. However, the borehole records did not distinguish the West Walton Formation from the underlying Oxford Clay Formation. Hence, the thickness of West Walton at the site is unknown. Groundwater was encountered in the West Walton Formation at 71 mbgl (Ref: TF14SE4/B). Two borehole records located on the Ampthill Formation approximately 4 km to north of the site (BGS Ref: TF15SE28; TF25SW14) described the bedrock as comprising hard, dark olive grey, laminated silty clays with shell fragments.

2.37 A ground investigation at the Energy Park site comprising 46 window sample locations and 5 cable percussion locations. These encountered topsoil overlying clays (soft-stiff, often silty, gravelly or sandy) overlying sands and/or gravels. Some of the clay layers were recorded as containing organic fragments.

2.38 Layers of peat were encountered across the majority of the Energy Park site as part of the tidal flats sequence, although peat was not recorded in all investigation locations. The thickness of peat (where present) varied from 0.05-0.55m. The depth at which peat was encountered varied from approximately 1.2 – 3.9mbgl.

Air Quality

2.39 The nearest Air Quality Management Area (AQMA) to the site lies approximately 11.3km to the east within Boston Borough. Haven Bridge AQMA has been declared

for exceedances of the annual mean nitrogen dioxide (NO_2) air quality objective (AQO).

Public Rights of Way

2.40 One public right of way (PROW) footpath HECK/15/1 runs eastwards from Sidebar Lane along the site's north-west boundary, with a relatively short stretch (approximately 280 metres) crossing the site before reaching Head Dike.

2.41 The definitive map for PROW shows that HECK/15/1 crosses the dyke by means of a footbridge. The bridge is likely to have fallen into disrepair as it is not seen on mapping after 2005. The PROW in effect terminates some several hundred metres short of its original destination, the pumping station on the Head Dike in the north-east corner of the site. Other footbridges which would facilitate the PROW are also no longer in existence.

2.42 Land to facilitate a footbridge in the north-west corner of the Energy Park is included within the Order Limits to facilitate the reinstatement of the Public Right of Way at this location, allowing the permissive path to connect to the local public right of way network. In discussions with the neighbouring landowner an equivalent permissive path is proposed along Crab Lane before heading north once inside the Energy Park to join the Public Right of Way which runs along the north-western boundary. Should the permissive path be agreed during the DCO process, the footbridge will not be required, however the land remains in the Order Limits to facilitate its reinstatement if required.

3. DEVELOPMENT PROPOSAL

3.1 The section sets out a summary of the description of the development. A full description of the development is contained with Chapter 4 of the Environmental Statement (document reference: 6.1) and Works Plans (document reference: 2.2).

3.2 The main element of the proposal is the construction, operation, maintenance and decommissioning of a ground mounted solar park and energy storage with an intended design capacity of over 50MWp (megawatts peak). Energy storage will allow the development to fully utilise the network connection capacity when the solar park is not exporting at peak capacity. The facility means that electrical energy can be stored and released back into the local electricity network at times of higher demand, thereby helping to balance demand and generation.

3.3 An operational lifespan of 40 years would be sought. The solar and energy storage elements could either be delivered and connected to the electricity network independently of each other or at the same time.

3.4 The need for flexibility in design, layout and technology is identified in a number of National Policy Statements in appreciation of current and future uncertainties. This very pertinent to solar and energy storage industries due to the rapid pace of change in technology. The proposal therefore reflects the Rochdale Envelope approach which provides a 'worst case' scenario approach to the environmental impact of a project and allows for a broad definition of the project to be framed within a number of set parameters, as described within the Outline Design Principles (document reference: 7.1).

3.5 The Applicant proposes the imposition of a pre-commencement requirement which requires the submission of a final layout plan to the Local Planning Authority for approval. The purpose of this submission would be to: -

- Clarify the construction and operational sequencing with regards to the solar and energy storage elements;
- Demonstrate compliance with the requirements included in the DCO; and
- Demonstrate that the final detailed design remains within the parameters of the design principles.

Works Packages

3.6 The Proposed Development comprises 10 work packages, as follows:

- Work No. 1: A ground mounted solar photovoltaic generating station with a gross electrical output of over 50 megawatts comprising all or any of work numbers in this Schedule or any part of any work number in this Schedule.
- Work No. 1B: electrical cables between solar stations and solar modules and connecting to the energy storage facility and onsite substation.
- Work No. 2: An energy storage facility.
- Work No. 3: Reception areas, temporary cabins, temporary construction compound, gatehouses(s) and service areas in connection with Work No.1, Work No.2, Work No.4 and Work No.8.

- Work No. 4: An onsite substation and works and connected works.
- Work No. 5: Works to lay electrical cables between the onsite substation and the National Grid Bicker Fen Substation, including optionality near to Vicarage Drove Wind Farm (through either Work No. 5A (south-westerly) or Work No.5B (south-easterly).
- Work No. 6A: Creation of a new generation bay and associated works at the existing National Grid Bicker Fen Substation.
- Work No. 6B: An extension to the existing National Grid Substation.
- Work No. 6C: Works in connection with the extension to the existing National Grid Substation.
- Work No. 7: Two temporary laydown areas in connection with Work No.5 and Work No.6.
- Work No. 8: Works to create and maintain a permanent means of access from the A17 to Work No.1, Work No.2, Work No.3 and Work No.4.
- Work No. 9A: Works to create, enhance and maintain green infrastructure and create biodiversity net gain areas.
- Work No. 9B: Works to create a permissive path, including installing up to two footbridges, fencing, boundary treatment and other means of enclosure.
- Work No. 10: works to existing streets to facilitate access to Works Nos. 1 to 9B.

3.7 These works packages are presented on Works Plan (document reference: 2.2).

3.8 The description of Works proposed within each Work Package is provide below.

Work No 1: Ground Mounted Solar Photovoltaic Generating Station with a gross electrical output of over 50 megawatts

3.9 The design principles of the solar modules are: -

- All solar photovoice modules will be located within the field enclosures Work 1 area as defined on the Works Land Use Plan (document reference 2.2).

- Total land coverage of the PV modules would be 292 hectares. Subject to the wattage output of the panel selected for construction the potential maximum range for energy generation is expected to be between 500 MWp and 600 MWp.

- The maximum top height of the solar panels fixed onto the framework would be 3.5m, and the lower edges of the panels would be approximately 1 – 1.5m above ground level.

- The solar PV panels will slope towards the south, at a fixed angle of 10, 15 or 20 degrees from horizontal

- PV modules would be blue or black (or similar) in colour

- A galvanised steel post mounting system will support the PV module frame, constructed of anodized aluminium alloy or grey/galvanised steel.

3.10 The solar PV modules would convert solar irradiance into direct current (DC) electricity. A solar PV module consists of a layer of silicon cells, an anodised aluminium frame, a glass casing, and various wiring to allow current to flow from the silicon cells. Silicon is a non-metal with conductive properties that allow it to absorb and convert sunlight into electricity. When light interacts with a silicon cell, it causes electrons to be set into motion, which initiates a flow of electric current.

3.11 The photovoltaic modules would be mounted on south facing aluminium or steel metal racks. The racks will be laid out in multiple parallel rows running east to west. The framework and arrays would be static. The distance between each string of arrays would be around 4m to maximise generation. Land between and beneath the panels would be used for biodiversity enhancements and seasonal sheep grazing.

3.12 The solar arrays would be set within perimeter fencing up to 3m. The Proposed Development assumes metal mesh as a worst case, however – as is common on solar parks – deer fencing with effective CCTV is an option. The fencing would typically follow the outer field boundaries containing the solar panels. The minimum distance between the edge of the arrays and the perimeter fence is anticipated to be 3-4m.

3.13 CCTV system mounted on poles up to 3.5m high would be positioned at intervals along the inside face edge of the perimeter fencing (between the fence and the arrays).

3.14 The mounting system will be supported at intervals by double mounted posts set approximately 3.75m apart. The posts will be driven into the ground with a small piling rig by impaction to depths approximately up to 3m and this will be guided by localised ground conditions

3.15 The insulated DC cables from the solar modules will be routed in channels fixed on the underside of the framework. The DC string cables will run along the entire underside of each row. The electrical cabling from each array will be concealed through shallow trenches linking the modules to the inverters and transformers and then to the substation. The cable trench will typically be between 0.6m to 1.2m in depth and around 0.6m wide. The cable trench may also carry earthing and communications cables and will be backfilled to the original ground level.

3.16 The inverter, transformer and associated switch gear are required to convert the DC energy produced by the arrays into AC energy, these will be located across the Work 1 area within 127 'solar stations' as shown on works land use plan. The maximum parameter of each solar station will be 13m x 4m footprint, with a height of 4m. The scale and design of the inverters and switch gear are described within the Design Principles (document reference 7.1) and the Design and Access (document reference: 7.4) documents.

Transformers are required to control the voltage of the electricity generated across the Energy Park Development site and efficiently transmit the power to the Onsite substation.

Work No 2: Energy Storage Facility

3.17 The design principles of the Energy Storage Facility are:-

- Energy storage will be located within the Work area 2 as defined on the Works Plan (document reference 2.2)
- The candidate storage capacity is between 200 - 400MW
- The compound would measure 280m x 280m within a 3m high palisade security fence
- The compound will include energy storage containers and energy storage stations (containing equipment for the storage of electrical energy, inverters, transformers, and switchgear).

- There will be a maximum of 200 energy storage containers, with a maximum length of 13m, maximum width of 4 m and a maximum height of 6 m. The maximum storage capacity of a single container would be 4 MWh.

- The energy storage containers would be green, light grey or white in colour

- There will be maximum of 100 inverter/power converters within the compound. Their scale and design are described within the Design Principles (document reference: 7.1) and the Design and Access (document reference: 7.4) documents.

3.18 The Energy Storage Facility will be an integral part of the electrical infrastructure of this Development. The facility is split into two compounds totalling 5.3 ha and located in the central-eastern part of the site, some 1.3 km from the nearest buildings along the A17 frontage. It will comprise energy storage containers, inverters and system controllers, with the details subject to final design. It is currently estimated that the storage capacity would be between 200 and 400 MW and could be based on a 2-hour system (e.g. 400 – 800MW hours).

3.19 The Energy Storage Facility compound consists of containers that can store energy and are able to release or absorb energy from the power network. Being able to absorb and release energy, the energy storage at Heckington Fen can be used to contribute towards the frequency balancing services, where the power is being generated or absorbed statically or dynamically depending on the system frequency. When there is not enough power, energy storage is discharged to balance under frequency preventing black and brown outs (when the voltage drops or dips below the usual mains supply level). Energy storage can be charged to prevent dangerous spikes across electricity infrastructure.

3.20 The maximum development footprint of the energy storage compound will be 5.3 ha and will be surfaced with clean, crush compacted stone. Under normal conditions the development would be unmanned but remotely operated and monitored. Visual checks and inspections will be undertaken during maintenance visits to the development.

3.21 The candidate equipment to be installed at the energy storage compound include:

- Security fencing – up to 3m high metal mesh fencing

- Vehicular parking within the gated compound

- 200 no. containerised energy storage units
- 100 no. transformers with HV switch gear.
- 100 no. inverters/power converters – also containing LV switchgear
- 620 no. CCTV on 3m poles

Work No. 3: Reception areas, temporary cabins, temporary construction compound, gatehouses(s) and service areas in connection with Work No.1, Work No.2, Work No.4 and Work No.8.

3.22 There will be a maximum of six temporary fenced construction compounds, with a maximum dimension of 50m x 50m and a surface of crushed aggregate. Each compound will have a maximum of one gatehouse; these will have a footprint of 5m x 5m and be 4m in height. The gatehouses will have a painted finish, most likely in green, light grey or white.

Work No. 4: Onsite Substation

3.23 The main 400kV substation will include a control building with office space, welfare facilities, and operational monitoring and maintenance equipment. The dimensions of the compound will have a maximum footprint of 185m x 110m, with the equipment within it not exceeding a height of 15m.

3.24 The function of the new substation will be to take power from the solar arrays and connect this to 400 kV network which will be brought to the site via a new underground cable.

3.25 Under normal conditions the development would be unmanned. Visual checks will be undertaken on a monthly inspection visit to the development. Whilst external lighting will be installed at the substation for emergency work during hours of darkness, the substation will not normally be lit.

3.26 The candidate equipment to be installed at the substation would include:-

- Security fencing up to 3m in height
- Car parking
- Substation Control Room – containing control and monitoring systems of the sub-station including protection and metering.

- Central Control Room – a building housing the control and monitoring facilities for the Energy Park and welfare unit with WC. The maximum parameters for the building are 20m x 10 m, with a height of 4m.
- 1 No. 11KV pad-mounted transformer (provides standby LVAC supplies in event of power failure)
- 8 no. Flood light columns at a maximum height of 6 m
- Up to 3 no. transformers; 2 operational and 1 spare.
- Gantry with voltage and current transformers
- Circuit breakers
- Earth switches
- Cess pit / septic tank

Work No 5: Work to lay electrical cables between Work No.4 and Work No.6.

3.27 The cabling will run the energy from the Onsite Substation to the Bicker Fen Substation. All the new offsite cabling will be laid underground in trenches or ducting. At certain points along the route to Bicker Fen it will be necessary to drill under obstacles such as roads, watercourses, and other utilities. There will be no new above ground power lines for the offsite cabling.

Work No 6A: Creation of a new generation bay and associated works at the existing substation

3.28 The works include an electrical bay to connect into the existing network at the extension to the existing substation (including associated outdoor air insulated switchgear (AIS) or indoor gas insulated switchgear (GIS), substation electrical apparatus, circuit breakers, disconnectors, earth switches, a control building, and underground and above ground electrical cables and electrical conductors into the extension to the existing substation. National Grid have indicated that the generator bay will be bound by the Applicant's worst case of 55m x 30m x 15m.

Work No 6B: An extension to the existing substation

3.29 An extension to the existing structures at Bicker Fen Substation is required to connect to the National Grid network. A grid connection agreement is in place. The extension is in the south-west corner of the existing substation site and will include electrical equipment for the Applicant's connection to the Transmission system. The new equipment will look similar to the units already installed at the Bicker Fen site.

3.30 The extension to the existing substation will include either an AIS or a GIS solution. The AIS solution would cover an area of approximately 14112m^{2,} and 15m in height. The GIS solution would cover an area of 75m x 75m (5625m^2) and 15m in height. The GIS solution would be partially housed inside a building. The maximum indicative dimensions of this building are 30m x 20m x 15m.

3.31 Within the extension a generator bay control room is also proposed and will contain protection and signal interfaces between the Energy Park and National Grid. The size is approximately 8m x 5m x 4m. A perimeter road is proposed within the wider design envelope which is proposed to be approximately 4.5m wide.

Work No 6C: Works in connection with the extension to the existing substation

3.32 The works include a cable sealing end compound and construction of a new circuit bay connecting into the existing substation. Underground and above ground electrical cables and electrical conductors are required to connect the existing 400kV transmission tower and a new feeder bay. The cable sealing end compound would cover an area of 9041m^2 , and 15m in height.

Work No 7: Two temporary laydown areas in connection with Work No.5 and Work No.6.

3.33 During the construction phase, two temporary laydown/construction compounds would be required.

3.34 The temporary laydown areas would comprise: -

- Temporary portacabins providing office and welfare facilities for construction operatives
- Parking area for construction and workers vehicles
- Secure compound for storage
- Temporary hardstanding

- Wheel washing facilities
- Temporary gated compound
- Storage bins for recyclables and other waste

3.35 All construction vehicles will exit through the wheel wash area in order to reduce the spread of mud and dirt onto the local highway network. Temporary roadways may be utilised to access parts of the development site and this would be guided by weather conditions at time of construction. The objective would be to use temporary matting to avoid excessive soil disturbance or compaction. The temporary laydown areas would be removed within three months after the completion of works or each phase of works if development is constructed in phases.

Work No 8: Works to create and maintain a permanent means of access from the A17 to Work No.1, Work No.2, Work No.3 and Work No.4.

3.36 The new access from the A17 will be 7m wide to accommodate two HGVs at the same time, and with a bellmouth junction up to 43 metres in width. The T-junction will have visibility splay of 2.4 x 154.48 to the west and 2.4 x 164.23 to the east.

3.37 Within the Energy Park site there will be up to 19km of internal access tracks with a width of up to 4.5m.

Works 9A: Works to create, enhance and maintain green infrastructure and create biodiversity net gain areas

3.38 Ecological and biodiversity measures are promoted across the entire order limits area. Several measures have been designed specifically for the benefit of wildlife species which are targeted for conservation both locally and nationally. The design of the green infrastructure is described within the Outline Landscape and Ecological Management Plan (document reference: 7.8). The described measures will be managed and maintained for the benefit of the respective target ecological features for the lifespan of the scheme.

Work No.9B: Works to create a permissive path, including installing up to two footbridges, fencing, boundary treatment and other means of enclosure.

3.39 The proposal to provide a permissive path linking to the existing Public Right of Way HECK/15/1 is described at paragraph 3.47 below. This will provide a 4.2km circuit for walkers.

3.40 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.

Work No.10: works to existing streets to facilitate access to Works. Nos 1 to 9B.

The proposed works to streets are shown on the Works Plan (document reference 2.2) and the Streets and Access Plan (document reference 2.7), and described in the relevant Schedule 4 and 5 of the draft DCO (document reference: 3.1)

Outline Landscape and Ecological Management Plan

3.41 The proposed Development presents an opportunity for landscape and biodiversity mitigation and enhancement. This aspect of the scheme is discussed in detail in the supporting Outline Landscape and Ecological Management Plan (document reference: 7.8).

Operational Lifespan

3.42 An operational lifespan of 40 years is sought.

3.43 During the operational phase, the activities on site would amount to servicing and maintenance of plant and equipment associated with the solar arrays, energy storage compound, substation and vegetation management.

Statutory Undertakers

3.44 The provision of easements for the existing services that traverse the site, such as National Grid Gas and Black Sluice Internal Drainage Board (BSIDB) are incorporated into the layout design. No arrays will be erected within the agreed easements and thus unrestricted access will be available to the statutory undertakers at all times.

Renewable Energy and Carbon Displacement

3.45 Based on the candidate design, the solar park could generate clean renewable energy for the equivalent of over 100,000 homes a year and prevent around 75,000 tonnes of harmful emissions entering the atmosphere every year[1]. The proposal would provide a clean, renewable and sustainable form of electricity. It would make a valuable contribution to the generation of electricity at a local level. The scheme would add to the Council's progress in meeting its renewable energy target. It would also assist in meeting national targets.

Routing

3.46 Access to the Energy Park during the construction and operational phases is proposed from the A17 at the site's southern frontage, approximately 900 metres northwest of the junction with Six Hundreds Drove. Whilst the proposed access is under construction, a temporary construction access will be provided via an existing junction with the A17, approximately 600 metres southeast of B1395 Sidebar Lane junction.

3.47 Access for the construction of the cable route is proposed in three locations. Access from the north of the South Forty Foot drain is proposed via an existing junction with the A17 located approximately 430 metres north of the junction with the A1121; and access to the south of the drain is proposed via the Triton Knoll access with the A17. Localised access is also proposed via Royalty Lane and Timms Drove. However, the Triton Knoll access will predominantly form the southern access.

3.48 The details of the proposed arrangements for the routing of construction traffic is set out within the Outline Construction Management Plan (document reference: 7.7).

Public Rights of Way

3.49 The Proposed Development on the Energy Park site does not require the closure or diversion of HECK/15/1. It is proposed that an additional permissive path (4.2km)

[1] Calculated using the 400MW AC (as a conservative approach) and an 11% capacity factor averaged over five years. The annual domestic needs of some 133,000 typical UK households per annum could be powered based on Ofgem Typical Domestic Consumption Values. Using electricity consumptions figures by BEIS the number of homes powered could be nearly 104,000. The estimated CO2 savings consider the current grid mix which comprises all fuels, including nuclear and renewables. The 2021 figure is 198 tonnes of CO2 per GWh of electricity supplied meaning the proposed solar park could result in a yearly saving of 76,369 tonnes of CO2. Full details on the calculations above are included at Appendix 1 of the Consultation Report (document reference 5.1.1).

will be linked to HECK/15/1 to effectively create a looped walk around the Energy Park Site.

3.50 This permissive path will open to the general public once construction of the Energy Park site is completed. It will not become an adopted PROW but will remain open for the lifetime of the Energy Park (circa 40 years) under the legal agreement between the Applicant and the Landowner. Prior to construction, design and maintenance details will be submitted to the local planning authority for approval.

3.51 The background to this element of the proposal, including in respect of restored footbridge links over water courses in set out in detail within the Design and Access Statement (document reference: 7.4).

Decommissioning

3.52 Following a 40-year generation period, the development (save for the National Grid extension) would then enter a decommissioning stage. Within six months of cessation a decommission strategy – detailing how plant and machinery would be removed from the site - would be submitted to the relevant planning authority for approval.

3.53 It is expected that the Applicant's works at Bicker Fen Substation would also be decommissioned. However, in some circumstances, National Grid may request that they remain. An assumption for their removal is contained within this DCO.

4. PLANNING POLICY CONTEXT

4.1 By virtue of its potential generating capacity, which stands at over 50MW, this project constitutes a Nationally Significant Infrastructure Project (NSIP). The developer must apply to the Planning Inspectorate for a Development Consent Order (DCO). The process for applying for a Development Consent Order is set out in the Planning Act 2008 (the 'Act').

4.2 The Act introduced a new system for consulting on, examining and determining NSIPs as defined by Section 14 of the Act. The main legislative and procedural requirements relating to NSIPs are set out within the following:

- The Act;
- The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (the APFP Regulations); and
- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the 2009 EIA Regulations) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regulations).

Relevant Policy

4.3 National Policy Statements (NPSs) form the overarching policy documents when determining an application for NSIPs and provide the basis for determination of decisions. Policies in the National Planning Policy Framework (NPPF) and the extant Development Plans for North Kesteven District and Boston Borough Council, as set out later, do constitute material considerations relevant to the decision-making body, but do not supersede policy set out in the NPSs.

4.4 The application must primarily therefore demonstrate accordance with the relevant NPSs. In the case of renewable energy projects the following NPSs must be taken into account:-

- National Policy Statement for Energy (EN-1);
- National Policy Statement for Renewable Energy Infrastructure (EN-3); and,
- National Policy Statement for Electricity Networks (EN-5)

National Policy Statement for Energy (EN-1)

4.5 The National Policy Statement for Energy (EN-1) (July 2011) sets out the national policy for energy infrastructure, which encompasses renewable energy schemes generating more than 50MW. EN-1 is part of a suite of national policy statements issued by the Secretary of State for Energy and Climate Change and ratified by Parliament.

4.6 It has effect in combination with the relevant technology-specific NPS, the National Policy for Renewable Energy Infrastructure (EN-3), and together they provide the primary basis for decisions made by the Examining Authority.

4.7 EN-1 is divided into five parts. Part 1 sets out the background to the policy document. Paragraph 1.71 identifies how all energy NPSs have been subject to an Appraisal of Sustainability (AoS), as required by the Planning Act 2008. The key points from the AoS for EN-1, as set out at paragraph 1.7.2, are:

- '**The energy NPSs should speed up the transition to a low carbon economy and thus help realise UK climate change commitments sooner than continuation under the current planning system.'**

- **'The energy NPSs are likely to contribute positively towards improving the vitality and competitiveness of the UK energy market by providing greater clarity for developers which should improve the UK's security of supply and, less directly, have positive effects for the health and well-being in the medium to longer term. This is to be achieved through helping to secure affordable supplies of energy and minimising fuel poverty.'**

4.8 Part 2 of EN-1 sets out the Government policy on energy and energy development infrastructure. It confirms the following;

- The Government is committed to meeting its legally binding target to see greenhouse gas emissions be at least 80% by 2050, compared to 1990 levels;

- the need to affect a transition to a low carbon economy so as to reduce greenhouse gas emissions; and

- the importance of maintaining secure and reliable energy supplies as older fossil fuel generating plant close as the UK moves towards a low carbon economy.

4.9 The Government's wider objectives for energy infrastructure includes contributing to sustainable development and ensuring that energy infrastructure is safe. Paragraph 2.2.27 states:

> **'Sustainable development is relevant not just in terms of addressing climate change, but because the way energy infrastructure is deployed affects the well-being of society and the economy.'**

4.10 Part 3 of EN-1 defines and sets out the need that exists for nationally significant energy infrastructure. This is discussed in the Statement of Need section below.

4.11 Part 4 of EN-1 sets out certain strategic principles to be applied in respect of nationally significant energy infrastructure schemes including the presumption in favour of development.

4.12 Paragraph 4.1.2 states how the determining authority should start with the presumption in favour of granting consent to applications for energy NSIPs. That presumption applies unless any more specific and relevant polices set out in the relevant NPSs clearly indicate that consent should be refused.

4.13 The presumption is also subject to the provisions of the Planning Act 2008.

4.14 Paragraph 4.1.4 of EN-1 states how in considering any proposed development, and in particular when weighing its adverse impacts against its benefits, the determining authority should take into account:

- **'Its potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits; and**
- **Its potential adverse impacts, including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.'**

4.15 Development consent obligations that are agreed with the local authority are considered through paragraph 4.1.8, which states that the determining authority may take these into account provided that they are relevant to planning, necessary

to make the proposed development acceptable in planning terms, directly related to the proposed development, fairly and reasonably related in scale and kind to the proposed development, and reasonable in all other respects.

4.16 Part 4.4 deal with alternatives. Paragraph 4.4.1 states:

> **'From a policy perspective this NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option.'**

4.17 That said, paragraph 4.4.2 identified how applicants are obliged to include in their ES, as a matter of fact, information about the main alternatives they have studied and this should include an indication of the main reasons for the applicant's choice, taking into account the environmental, social and economic effects.

4.18 Paragraph 4.4.3 goes on to state that where there is a policy or legal requirement to consider alternatives, the applicant should describe the alternatives considered in compliance with these requirements.

4.19 On the issue of design for energy infrastructure, paragraph 4.5.1 of the EN-1 identifies how (inter alia):

> **'Applying 'good design' to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area.'**

4.20 Paragraph 4.9.1 of the EN-1 recognises that:

> **'The connection of a proposed electricity generation plant to the electricity network is an important consideration for applicants wanting to construct or extend generation plant.'**

It goes on to state how:

> **'In the market system, it is for the applicant to ensure that there will be necessary infrastructure and capacity within**

an existing or planned transmission or distribution network to accommodate the electricity generated.'

4.21 Part 5 of the EN-1 sets out the generic impacts that may or may not be pertinent to specific projects, these are listed as: -

Table 5.1 EN-1 Generic Impacts

Topic	Commentary
Land use	With regards to agricultural land classification, para 5.10.8 states how applicants should seek to minimise impacts on the best and most versatile agricultural land except where this would be inconsistent with other sustainability considerations. Paragraph 5.10.15 identifies how the determining authority should ensure that applicants provide justification when locating sites on best and most versatile agricultural land. With regards to mitigation, EN-1 states that there may be little that can be done to mitigate the direct effects of an energy project on the existing use of the proposed site.
Landscape and Visual	Paragraph 5.9.8 sets out that for nationally significant energy infrastructure, projects need to be designed carefully, having regard to siting, operational and other relevant constraints the aim should be to minimize harm to the landscape, providing reasonable mitigation where possible and appropriate.
Biodiversity and geological conservation	As a general principle, development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives; where significant harm cannot be avoided, then appropriate compensation measures should be sought.
Historic Environment	Paragraph 5.8.8 states that as part of the ES the applicant should provide a description of the significance of the heritage assets assessed by the proposed development and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage asset and no more than is sufficient to understand the potential impact of the proposal on the significance of the heritage asset. Paragraph 5.8.12 goes on to state that in considering the impact of the proposed development on any heritage asset, the determining authority should take into account the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between conservation of that significance and proposals for development.
Dust, odour, artificial lighting	Paragraph 5.6.3 of EN-1 recognises that for energy NSIP, some impacts on amenity for local communities is likely to be unavoidable. The aim should be to keep impacts to a minimum, and at a level that is acceptable.

Flood Risk	Applications for energy projects of 1 hectare of greater in flood zone 1 should be accompanied by a flood risk assessment. The surface water drainage arrangements for any project should be such that the volumes and peak flow rate of surface water leaving the site are no greater than the rate prior to the proposed project, unless specific off-site arrangements are made and results in the same net effect.
Air Quality and Emission	Paragraph 5.2.6 states '*Where the project is likely to have adverse effects on air quality the applicant should undertake an assessment of the impacts of the proposed project as part of the Environmental Statement'*. The ES should describe: any significant air emissions, their mitigation and any residual effects distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project; the predicted absolute emission levels of the proposed project, after mitigation methods have been applied; existing air quality levels and the relative change in air quality from existing levels; and any potential eutrophication impacts.
Socio Economic	Paragraph 5.12.3 states '*Where the project is likely to have socio-economic impacts at local or regional levels, the applicant should undertake and include in their application an assessment of these impacts as part of the ES'.* The effects should consider: the creation of jobs and training opportunities; the provision of additional local services and improvements to local infrastructure, including the provision of educational and visitor facilities; effects on tourism; the impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure. This could change the local population dynamics and could alter the demand for services and facilities in the settlements nearest to the construction work (including community facilities and physical infrastructure such as energy, water, transport and waste). There could also be effects on social cohesion depending on how populations and service provision change as a result of the development; and cumulative effects – if development consent were to be granted to for a number of projects within a region and these were developed in a similar timeframe, there could be some short-term negative effects, for example a potential shortage of construction workers to meet the needs of other industries and major projects within the region.
Traffic and Transport	With regards to decision taking, EN-1 recognises that a new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the Planning Inspectorate should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the IPC (now PINS) should consider requirements to mitigate adverse impacts on transport networks arising from the development.

Water Quality	Where the project is likely to have effects on the water environment, the Applicant should undertake an assessment of the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the water environment as part of the ES or equivalent.

National Policy Statement for Renewable Energy Infrastructure (EN-3)

4.22 EN-3 contains policies specifically relating to specific renewable energy infrastructure and it is designed to be read in conjunction with EN-1. The document focuses on schemes relating to onshore wind, offshore wind and energy from biomass. Paragraph 1.8.2 states that the NPS does not cover any other types of onshore renewable energy generation that were technically viable over 50MW when the document was published in July 2011. The emergence of large-scale ground mounted solar projects therefore followed the publication of this document.

National Policy Statement for Electricity Networks (EN-5)

4.23 The National Policy Statement on Electricity Networks Infrastructure (EN-5) was adopted in July 2011. Whilst EN-5 principally covers above ground electricity lines of 132 kV, paragraph 1.8.2 confirms that EN-5 will also be relevant if the electricity network constitutes an associated development for which consent is sought, such as a generating station.

4.24 Part 2 of EN-5 sets out a number of assessment and technology specific matters. Paragraph 2.2.2 points out that the location of electricity networks will often be determined by the particular generating station and the existing electricity network. Part 2 deals with generic impacts concerning biodiversity and geological conservation, landscape and visual, noise and vibration, and electric and magnetic field effects.

4.25 In line with EN-5, the new Onsite Substation and the extension to the Bicker Fen Substation has been assessed as part of the Proposed Development and the findings of its effects on the environment are set out in the ES.

Draft National Planning Statements

4.26 In late 2021 a consultation was undertaken with regards to reviewing and updating the energy NPSs. The updated documents would ensure that decisions on major energy infrastructure reflect the current legislative framework and strategic policy approach and that the planning policy framework can support the infrastructure

required for the transition to Net Zero. The NPSs were reissued in an updated draft form in March 2023 by the Department for Energy Security and Net Zero.

4.27 The 2023 draft revised NPS EN-1 explains that the Government's objective is to ensure the UK's supply of energy always remains secure, reliable, affordable and consistent with meeting our target to cut greenhouse gas emissions to net zero by 2050, including through delivery of our carbon budgets and Nationally Determined Contribution. It states that 'this will require a step change in the decarbonisation of our energy system.' (paragraph 2.3.3).

4.28 With fossil fuels still accounting for around 76% of the UK's energy supply in 2020, the document states that the country 'will need to dramatically increase the volume of energy supplied from low carbon sources and reduce the amount provided by fossil fuels' (paragraph 2.3.5). With an 'urgent' need for new large-scale energy infrastructure (paragraph 3.1.1) and with wind and solar as the lowest cost ways of generating electricity, the draft NPS concludes that 'a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar" (paragraph 3.3.20).

4.29 A revised draft version of NPS EN-3 was also published in March 2023. This emphasises the Government's commitment to sustained growth in solar capacity to ensure that the UK is 'on a pathway' that allows it to meet net zero emissions. The document affirms that:

> **'Solar farms are one of the most established renewable electricity technologies in the UK and the cheapest form of electricity generation**. (paragraph 3.10.4)
>
> **Solar farms can be built quickly and, coupled with consistent reductions in the cost of materials and improvements in the efficiency of panels, large-scale solar is now viable in some cases to deploy subsidy-free.'** (paragraph 3.10.5)

4.30 On the issue of best and most versatile agricultural land, the Draft NPS for Renewable Energy (EN-3) states that 'land type should not be a predominating factor in determining the suitability of the site location' (paragraph 2.48.13). The document states also that 'whilst the development of ground mounted solar arrays is not prohibited on sites of agricultural land classified 1, 2 and 3a, or sites designated for their natural beauty, or recognised for ecological or archaeological

importance, the impacts of such are expected to be considered.' (paragraph 3.10.15).

4.31 The Draft NPS recognises that 'where previous management of the site has involved intensive agricultural practice, solar sites can deliver significant ecosystem services value in the form of drainage, flood attenuation, natural wetland habitat, and water quality management.' (paragraph 3.10.145). The Draft NPS continues: 'The Secretary of State must consider the worst-case effects in its consideration of the application and consent.' (paragraph 3.10.146).

4.32 The Draft Overarching Energy NPS (EN-1) states that: 'Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5). (paragraph 5.11.12) Applicants should also identify any effects and seek to minimise impacts on soil health and protect and improve soil quality taking into account any mitigation measures proposed.' (paragraph 5.11.13).

4.33 The Draft NPS confirms that the Secretary of State should ensure that applicants do not site their scheme on the best and most versatile agricultural land without justification. It states that 'where schemes are to be sited on best and most versatile land the Secretary of State should take into account the economic and other benefits of that land.' (paragraph 5.11.34).

4.34 The 2023 revised Draft NPS-EN5 states that whilst good design is desirable, 'the Secretary of State should bear in mind that electricity networks infrastructure must in the first instance be safe and secure, and that the functional design constraints of safety and security may limit an applicant's ability to influence the aesthetic appearance of that infrastructure.' (paragraph 2.4.3)

4.35 In regard to climate change, the Draft NPS EN-5 states under Part 2.3: Climate change adaption and resilience that 'as climate change is likely to increase risks to the resilience of some of this infrastructure, from flooding for example, or in situations where it is located near the coast or an estuary or is underground, applicants should in particular set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how it has been designed to be resilient to:

- flooding, particularly for substations that are vital to the network; and especially in light of changes to groundwater levels resulting from climate change;

- the effects of wind and storms on overhead lines;
- higher average temperatures leading to increased transmission losses;
- earth movement or subsidence caused by flooding or drought (for underground cables); and
- coastal erosion – for the landfall of offshore transmission cables and their associated substations in the inshore and coastal locations respectively.

Section 4.9 of EN-1 advises that the resilience of the project to the effects of climate change must be assessed in the Environmental Statement (ES) accompanying an application. For example, future increased risk of flooding would be covered in any flood risk assessment (see Sections 5.8 in EN-1)' (paragraph 2.3.2- 2.3.3).

4.36 In regard to electric and magnetic fields (EMFs), the Draft NPS EN-5 states as part of Pararagraph 2.9 (Application Assessment) that 'all overhead power lines produce EMFs. These tend to be highest directly under a line and decrease to the sides at increasing distance. Although putting cables underground eliminates the electric field, they still produce magnetic fields, which are highest directly above the cable. EMFs can have both direct and indirect effects on human health' (paragraph 2.9.46).

4.37 'For protecting against indirect effects, the ICNIRP 1998 guidelines give an electric field reference of 5kV m-1 for the general public and keeping electric fields below this level would reduce the occurrence of adverse indirect effects for most individuals to acceptable levels. When this level is exceeded, there is a suite of measures that may be called upon in particular situations, including provision of information, earthing and screening, alongside limiting the field. In some situations, there may be no reasonable way of eliminating indirect effects. The levels of EMFs produced by power lines in normal operation are usually considerably lower than the ICNIRP 1998 reference levels. For electricity substations, the EMFs close to the sites tend to be dictated by the overhead lines and cables entering the installation, not the equipment within the site' (paragraph 2.9.50-2.9.51).

4.38 In regard to sulphur hexafluoride, the Draft NPS EN-5 states 'Applicants should at the design phase of the process consider carefully whether the proposed development could be reconceived to avoid the use of SF6-reliant assets. Where the development cannot be so conceived, the applicant must provide evidence of their reasoning on this point. Such evidence will include, for instance, an explanation of the alternatives considered, and a case why these alternatives are

technically infeasible or require bespoke components that are grossly disproportionate in terms of cost. In particular, an accounting of the cost differential between the SF6-reliant asset and the appropriate SF6-free alternative should be provided. Where applicants, having followed the above procedure, do propose to put new SF6-reliant assets onto the electricity system, they should design a plan for the monitoring and control of fugitive SF6 emissions consistent with the Fluorinated gas (F-gas) Regulation and its successors' (paragraph 2.9.62-2.9.64).

National Planning Policy Framework 2021

4.39 The revised version of the NPPF published in July 2021 retains the over-arching presumption in favour of sustainable development remains. Material for this application is how Government has placed a greater emphasis on the delivery of infrastructure, including energy and how this is integral towards fulfilling the economic arm of achieving sustainable development including energy.

4.40 The Framework does not contain specific policies for nationally significant infrastructure projects. These are determined in accordance with the decision-making framework in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as set out above.

4.41 Paragraph 8 of the Framework identifies how the planning system has three overarching objectives towards achieving sustainable development. The revised NPPF stated how these objectives are interdependent and need to be pursued in mutually supportive ways so that opportunities can be taken to secure net gains across each of the different objectives. Paragraph 8(a) *'an economic objective'* has been strengthened and the NPPF now makes it clearer how 'identifying and coordinating provision of infrastructure' is integral towards fulfilling the economic arm of achieving sustainable development. The three overarching objectives are:

> 'a) **an economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
>
> b) **a social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and

by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

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

4.42 Paragraph 10 states 'So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development.'

4.43 Section 14 of the NPPF relates to meeting the challenge of climate change, flooding and coastal change, and Section 15 to conservation and enhancement of the natural environment. It highlights that new development should be prevented from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. It identifies also how decisions should provide net gains for biodiversity.

4.44 On 22 December 2022 the Department for Levelling Up, Housing and Communities published a consultation on the Government's proposed approach to updating the NPPF. The consultation runs until 2 March 2023 and at the time of writing it is premature to anticipate the outcome of the review. Nonetheless, it is noted at footnote 67 of the indicative revised draft of the NPPF that 'the availability of agricultural land used for food production should be considered alongside the other policies in this Framework, when deciding what sites are most appropriate for development.'

The Development Plan

4.45 The legal requirement under s38 (6) of the Planning and Compulsory Purchase Act 2004 to determine applications for development consent in accordance with the Development Plan documents does not apply to applications under the 2008 Act. However, NPS EN-1 paragraph 4.1.5 provides that the policies contained within the Development Plan documents and other Local Development Framework documents may be considered important and relevant in planning decision making, but national policy will prevail where there is a conflict with the Development Plan for the purpose of the Secretary of State's planning decision making. The Development

Plan is therefore a material consideration for the Secretary of State and has accordingly been considered as part of the policy.

4.46 In relation to this proposal, the scheme sits within two local authority areas, North Kesteven and Boston, each of which is subject to its own Development Plan regime.

North Kesteven

4.47 The relevant Development Plan comprises the Central Lincolnshire Local Plan, adopted by the Central Lincolnshire Joint Strategic Planning Committee (CLJSPC) on 13 April 2023, and replacing the Local Plan adopted in 2017.

Central Lincolnshire Local Plan

4.48 The most relevant policies within the Local Plan are set out below.

4.49 Policy S1 - Spatial Strategy and Settlement Hierarchy advises that the spatial strategy will focus on delivering sustainable growth for Central Lincolnshire that meets the needs for homes and jobs, regenerates places and communities, and supports necessary improvements to facilities, services and infrastructure. Renewable energy generation is one of the listed land uses that are acceptable in principle within the countryside.

4.50 Policy S5 - Development in the Countryside sets out the basis on which proposals for non-residential developments will be supported in rural locations, provided that:

> **'a. The rural location of the enterprise is justifiable to maintain or enhance the rural economy or the location is justified by means of proximity to existing established businesses or natural features;**
>
> **b. The location of the enterprise is suitable in terms of accessibility;**
>
> **c. The location of the enterprise would not result in conflict with neighbouring uses; and**
>
> **d. The development is of a size and scale commensurate with the proposed use and with the rural character of the location.'**

4.51 Part F of Policy S5 – Agricultural Diversification - states that:

> **'Proposals involving farm-based diversification to non-agricultural activities or operations will be permitted, provided that the proposal will**

support farm enterprises and providing that the development is: a. In an appropriate location for the proposed use; b. Of a scale appropriate to its location; and c. Of a scale appropriate to the business need.'

4.52 Policy S14 – Renewable Energy states that the Central Lincolnshire Joint Strategic Planning Committee is 'committed to supporting the transition to a net zero carbon future and will seek to maximise appropriately located renewable energy generated in Central Lincolnshire'.

'Proposals for renewable energy schemes, including ancillary development, will be supported where the direct, indirect, individual and cumulative impacts on the following considerations are, or will be made, acceptable. To determine whether it is acceptable, the following tests will have to be met: i. The impacts are acceptable having considered the scale, siting and design, and the consequent impacts on landscape character; visual amenity; biodiversity; geodiversity; flood risk; townscape; heritage assets, their settings and the historic landscape; and highway safety and rail safety; and ii. The impacts are acceptable on aviation and defence navigation system/communications; and iii. The impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic.'

4.53 The Policy also states that:

'**Proposals for ground based photovoltaics and associated infrastructure, including commercial large scale proposals, will be under a presumption in favour unless:**

● there is clear and demonstrable significant harm arising; or

● the proposal is (following a site specific soil assessment) to take place on Best and Most Versatile (BMV) agricultural land and does not meet the requirements of Policy S67; or

● the land is allocated for another purpose in this Local Plan or other statutory based document (such as a nature recovery strategy or a Local Transport Plan), and the proposal is not compatible with such other allocation.

Proposals for ground based photovoltaics should be accompanied by evidence demonstrating how opportunities for delivering biodiversity net gain will be maximised in the scheme taking account of soil, natural features, existing habitats, and planting proposals accompanying the scheme to create new habitats linking into the nature recovery strategy.'

4.54 Policy S21 - Flood Risk and Water Resources states that 'All development proposals will be considered against the NPPF, including application of the sequential and, if necessary, the exception test. Through appropriate consultation and option appraisal, development proposals should demonstrate':

'a. that they are informed by and take account of the best available information from all sources of flood risk and by site specific flood risk assessments where appropriate;

b. that the development does not place itself or existing land or buildings at increased risk of flooding;

c. that the development will be safe during its lifetime taking into account the impacts of climate change and will be resilient to flood risk from all forms of flooding such that in the event of a flood the development could be quickly brought back into use without significant refurbishment;

d) that the development does not affect the integrity of existing flood defences and any necessary flood mitigation measures have been agreed with the relevant bodies where adoption, ongoing maintenance and management of any mitigation measures have been considered and any necessary agreements are in place;

e. how proposals have taken a positive approach to reducing overall flood risk and have considered the potential to contribute towards solutions for the wider area; and

f. that they have incorporated Sustainable Drainage Systems (SuDS)/Integrated Water Management into the proposals unless they can be shown to be impractical.'

4.55 Policy 57 – The Historic Environment states that development proposals should protect, conserve and seek opportunities to enhance the historic environment of Central Lincolnshire.

4.56 Policy S59 - Green and Blue Infrastructure Network states that:

'Development proposals should ensure that existing and new green and blue infrastructure is considered and integrated into the scheme design from the outset. Where new green infrastructure is proposed, the design and layout should take opportunities to: a) incorporate a range of types and sizes of green and blue spaces, green routes and environmental features that are appropriate to the development and the wider green and blue infrastructure network to maximise the delivery of multi-functionality; b) deliver biodiversity net gain and support ecosystem services; c) respond to landscape/townscape and historic character; d) support climate change adaptation and resilience including through use of appropriate habitats and species: and e) encourage healthy and active lifestyles.'

4.57 Policy S59 also that:

'Development proposals must protect the linear features of the green and blue infrastructure network that provide connectivity between green infrastructure assets, including public rights of way, bridleways, cycleways and waterways, and take opportunities to improve and expand such features.'

4.58 Policy S60 – Protecting Biodiversity and Geodiversity states:

'All development should: a) protect, manage, enhance and extend the ecological network of habitats, species and sites of international, national and local importance (statutory and non-statutory), including sites that meet the criteria for selection as a Local Site; b) minimise impacts on biodiversity and features of geodiversity value; 25 https://www.biodiversityinplanning.org/wildlife-assessment-check/ Central Lincolnshire Local Plan – Adopted April 2023 Return to policy list page 137 c) deliver measurable and proportionate net gains in biodiversity in accordance with Policy S61; and d) protect and enhance the aquatic environment within or adjoining the site, including water quality and habitat.'

4.59 Policy S60 also addresses the issue of mitigation:

'Development should avoid adverse impact on existing biodiversity and geodiversity features as a first principle, in line with the mitigation hierarchy. Where adverse impacts are unavoidable they must be adequately and proportionately mitigated. If full mitigation cannot be provided, compensation will be required as a last resort where there is no alternative.

Development will only be supported where the proposed measures for mitigation and/or compensation along with details of net gain are acceptable to the Local Planning Authority in terms of design and location, and are secured for the lifetime of the development with appropriate funding mechanisms that are capable of being secured by condition and/or legal agreement.

If significant harm to biodiversity resulting from development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, the planning permission will be refused.'

4.60 Policy S61 – Biodiversity Opportunity and Delivering Measurable Net Gains states:

'Following application of the mitigation hierarchy, all development proposals should ensure opportunities are taken to retain, protect and enhance biodiversity and geodiversity features proportionate to their scale, through site layout, design of new buildings and proposals for existing buildings with consideration to the construction phase and ongoing site management.

Development proposals should create new habitats, and links between habitats, in line with Central Lincolnshire Biodiversity Opportunity and Green Infrastructure Mapping evidence, the biodiversity opportunity area principles set out in Appendix 4 to this Plan and the Local Nature Recovery Strategy (once completed), to maintain and enhance a network of wildlife sites and corridors, to minimise habitat fragmentation and provide opportunities for species to respond and adapt to climate change.

Proposals for major and large scale development should seek to deliver wider environmental net gains where feasible.'

4.61 Policy S53 - Design and Amenity states that:

'All development, including extensions and alterations to existing buildings, must achieve high quality sustainable design that contributes positively to local character, landscape and townscape, and supports diversity, equality and access for all.'

Boston Borough Council

South East Lincolnshire Local Plan 2011-2036

4.62 The Joint Strategic Planning Committee - a partnership of Boston Borough, South Holland District and Lincolnshire County Councils working together to plan the future of South Holland District and Boston Borough - adopted the South East Lincolnshire Local Plan 2011-2036. Relevant policies include:

4.63 Policy 31 – Climate Change and Renewable and Low Carbon Energy states that:

'With the exception of Wind Energy the development of renewable energy facilities, associated infrastructure and the integration of decentralised technologies on existing or proposed structures will be permitted provided, individually, or cumulatively, there would be no significant harm to: 1. visual amenity, landscape character or quality, or skyscape considerations; 2. residential amenity in respect of: noise, fumes, odour, vibration, shadow flicker, sunlight reflection, broadcast interference, traffic; 3. highway safety (including public rights of way); 4. agricultural land take; 5. aviation and radar safety; 6. heritage assets including their setting; and 7. the natural environment. Provision should be made for post-construction monitoring and the removal of the facility and reinstatement of the site if the development ceases to be operational.'

4.64 Policy 28 - The Natural Environment seeks to protect Nationally or locally-designated sites and protected or priority habitats and species:

'Development proposals that would directly or indirectly adversely affect these assets will not be permitted unless: i. there are no alternative sites that would cause less or no harm; and ii. the benefits of the development at the proposed site, clearly outweigh the adverse impacts on the features of the site and the wider network of natural habitats; and iii. suitable prevention, mitigation and compensation measures are provided.'

4.65 The Policy also seeks to address gaps in the ecological network: a. by ensuring that all development proposals shall provide an overall net gain in biodiversity.

4.66 The Plan advises that that South East Lincolnshire's progress in relation to the Government target for 30% of electricity used from renewable sources, 15% of all energy used from renewable sources and the 34% cut in greenhouse gases by 2020 and 80% by 2050 is contained within the 'South East Lincolnshire's Carbon Challenge'. (paragraph 7.5.7).

4.67 The Plan advises also that South East Lincolnshire is within The Fens National Character Area:

'Planning proposals shall assess their implications against the information contained in the:- Landscape Character Assessment of Boston Borough or the Strategic Landscape Capacity Study for South Holland, as well as the Lincolnshire Historic Landscape Characterisation Project, the Lincolnshire Historic Environment Record (HER), the Boston Town and Rural Historic Environment Baseline Studies and the Conservation Area appraisals to protect landscape character and quality, skyscape and visual amenity.'

4.68 Policy 29 – The Historic Environment states that to respect the historical legacy, varied character and appearance of South East Lincolnshire's historic environment:

'Development proposals will conserve and enhance the character and appearance of designated and non-designated heritage assets, such as important known archaeology or that found during development, historic buildings, conservation areas, scheduled monuments, street patterns, streetscapes, landscapes, parks (including Registered Parks and Gardens), river frontages, structures and their settings through high-quality sensitive design.'

4.69 In relation to development proposals, Policy 29 states that where a development proposal would affect the significance of a heritage asset (whether designated or non-designated), including any contribution made to its setting, it should be:

'... informed by proportionate historic environment assessments and

evaluations (such as heritage impact assessments, desk-based appraisals, field evaluation and historic building reports) that: 1. identify all heritage assets likely to be affected by the proposal; South East Lincolnshire Local Plan 2011-36 2. explain the nature and degree of any effect on elements that contribute to their significance and demonstrating how, in order of preference, any harm will be avoided, minimised or mitigated; 3. provide a clear explanation and justification for the proposal in order for the harm to be weighed against public benefits; and 4. demonstrate that all reasonable efforts have been made to sustain the existing use, find new uses, or mitigate the extent of the harm to the significance of the asset; and whether the works proposed are the minimum required to secure the long term use of the asset.'

Other Relevant Material Considerations

4.70 There are numerous other material considerations that are considered relevant to the Development and many of these are acknowledged within the various chapters of the ES, notably Chapter 5 (document reference: 6.1).

4.71 Rather than set all of this in the main body of this Statement, a simple list of sources is provided with any key policy or other legislative drivers summarised in Section 5. This is not a definitive list of material considerations and is not intended to provide a review of all documents assessed throughout the full ES. Other material planning considerations include: -

- National Planning Practice Guidance Suite, including;
    i. Renewable and Low Carbon Energy (last updated 18 June 2015)
    ii. Practical Guidance on Climate Change (last updated 27 March 2015)
- Climate change Act 2008
- UK Renewable Energy Strategy (2009)
- Energy Security Strategy (2012)
- Energy Act 2013
- UK Government Solar Strategy (2014)

- Written Ministerial Statement on Solar Energy: protecting the local and global environment made on 25 March 2015.
- Clean Growth Strategy (BEIS) 2017
- Climate Change Act (2050 target amendment) Order 2019
- UK Parliament's declaration of an Environmental and Climate Change Emergency (2019)
- Energy White Paper: Powering our Net Zero Future (2020)
- 'Achieving Net Zero' (National Audit Office) 2020
- UK Government's press release of acceleration of carbon reduction to 2035, dated April 2021
- 'Net Zero Strategy: Build Back Greener', published by the UK Government in October 2021
- British Energy Security Strategy, published by the UK Government in April 2022.

'Powering Up Britain', published by the UK Government in March 2023.

5. STATEMENT OF NEED

Introduction

5.1 As set out in the Introduction, this section deals exclusively with the issue of need, in lieu of a standalone 'Needs' document, in the interests of brevity and a consistent, coherent justification for the development.

5.2 This section deals with the issue of *need* as an essential consideration to be given substantial weight in the determination of the application (NPS-EN1 para. 3.1.4). As previously mentioned in section 4 of this document, solar generation is not specifically referred to in the NPSs EN-1 and EN-3 as at the time when the policy was drafted solar was not proven at scale.

5.3 EN-1 is clear that there is a need for renewable energy infrastructure and that the scale of requirements and the urgency ensures that there must be no upper limits on capacity. Decision makers must give substantial weight to the contribution NSIP projects will make towards satisfying this need. Key to unlocking this in the ability

to provide power when it is most required, that is at night and in the winter months. The energy storage element of the scheme, while not a renewable energy itself, enables the transition to low carbon energy production by storing energy and realising it into the system when it is most required. Further, this project is being brought forward without public subsidies and relies solely on private sector investment.

5.4 Therefore, it is considered that there is a demonstrable and overarching policy drive from both planning and other legislative documents to deliver renewable energy on the scale and size proposed by this Development. The urgency by which this needs to be delivered should be given great weight in the decision-making process and any adverse impacts of the development must be considered against this comprehensive and pressing need to deliver energy capacity in the form of renewable sources.

5.5 S.104 of the Planning Act 2008 makes clear that where an NPS exists relating to the development type applied for, the SoS must have regard to it. The Proposed Development is a solar park, and as such does not fall within the scope of those existing NPSs. However, both EN-1 and EN-3 are still relevant as they relate to renewable energy development, and thus the SoS must have regard to it.

5.6 Where the Proposed Development does not fall within the scope of those existing NPSs, this statement has been prepared on the basis that the current NPSs are important and relevant to the determination of this application, pursuant to section 105 of the Planning Act 2008.

5.7 The case for need is built upon the contribution of the Proposed Development to the three important national policy aims of:

- Decarbonisation (Net Zero and the importance of developing at-scale zero-carbon generation assets);
- Security of supply (geographically and technologically diverse supplies); and
- Affordability.

5.8 This Statement of Need extends the case made in the NPSs for low carbon generation and reflects emerging government policy that solar is a key part of the government's strategy for low-cost decarbonisation of the energy sector.

5.9 The conclusion reached is that a significant capacity of low-carbon solar generation is urgently needed in the UK, and that the Proposed Development will be an essential near-term step in meeting that urgent need and the government objectives of delivering sustainable development to enable decarbonisation. By doing so, the Proposed Development will contribute to addressing the climate change emergency that affects both human life and the environment, by ensuring a secure, low-carbon and low-cost energy supply. The Proposed Development's contribution to addressing the need for renewable energy should be afforded significant weight when the Secretary of State considers matters which are important and relevant in this decision-making process.

The United Kingdom Has a Legal Commitment to Decarbonise

5.10 The commitment to decarbonise extends across the United Kingdom of Great Britain and Northern Ireland. Northern Ireland is interconnected with the mainland power system through interconnectors but operates under a different electricity market framework. Therefore, hereinafter Great Britain (GB) is referred to in relation to electricity generation and transmission, and the UK, to refer to the nation which has legally committed itself to Net Zero carbon emissions by 2050.

5.11 The NPSs were established due to obligations made in the Climate Change Act 2008 ("CCA 2008").Through the CCA 2008 the government made the UK the first country in the world to set legally binding carbon budgets, aiming to cut emissions (versus 1990 baselines) by 34% by 2020 and at least 80% by 2050, "through investment in energy efficiency and clean energy technologies such as renewables, nuclear and carbon capture and storage" (Five Point Plan[2]).

5.12 Much of the further legislation and policy measures stem from the CCA 2008, such as the UK Low Carbon Transition Plan (2009)[3] and UK Clean Growth Strategy (2017)[4]. A statutory body, the Committee on Climate Change (CCC), was also created by CCA 2008, to advise the United Kingdom and devolved governments and Parliaments on tackling and preparing for climate change, and to advise on

[2] HM Government. The UK Low Carbon Transition Plan. HMSO, 2009. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228752/9780108508394.pdf

[3] HM Government. The UK Low Carbon Transition Plan. HMSO, 2009. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228752/9780108508394.pdf

[4] BEIS. The Clean Growth Strategy. HMG, 2017 (Corrected 2018). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf

setting carbon budgets. The CCC reports regularly to the Parliaments and Assemblies on the progress made in reducing greenhouse gas emissions. The UK government has set five-yearly carbon budgets which currently run until 2037, the process for setting the sixth carbon budget having concluded in April 2021. The UK has met its first and second carbon budgets and is currently on track to outperform the third (2018 to 2022)[5].

5.13 The progress that the UK has made towards achieving its carbon reduction obligations is largely attributable to the GB power generation sector. Overall carbon intensity from GB power generation has fallen significantly in recent years, with (virtually) carbon-free generation (wind, solar, hydro, bioenergy, and nuclear) accounting for around 62% of electricity generation in 2020[6].

5.14 However, there is now a more pressing need for greater capacities of low-carbon generation in the UK. In October 2018, following the adoption by the UN Framework Convention on Climate Change of the Paris Agreement, the Intergovernmental Panel on Climate Change (IPCC) published a Special Report on the impacts of global warming of 1.5°C above pre-industrial levels. This report concluded that human-induced warming had already reached approximately 1ºC above pre- industrial levels, and that without a significant and rapid decline in emissions across all sectors, global warming would not be likely to be contained, and therefore more urgent international action is required. The ambition of the CCA 2008 has been extended and carbon emissions reduction targets have tightened.

Enhancements on UK Government Policy on Climate Change: Net Zero

5.15 Responding to this, in May 2019, the CCC published Net Zero: The UK's contribution to stopping global warming[7]. This report recommended that government extend the ambition of CCA 2008 past the delivery of net UK greenhouse gas savings by 80% from 1990 levels, by 2050. Specifically, the CCC recommendation identified a need for low-carbon infrastructure development which is consistent with the need case set out in NPS EN-1, but points to an increased urgency for action. In June 2019, the government announced the laying of a statutory instrument in Parliament, which amended CCA 2008, in order to implement the CCC's

[5] Climate Change Committee. The Sixth Carbon Budget: The UK's path to Net Zero. 2020. https://www.theccc.org.uk/publication/sixth-carbon-budget/#downloads
[6] National Grid. Future Energy Scenarios. National Grid, 2021. https://www.nationalgrideso.com/news/introducing-our-2021-future-energy-scenarios
[7] Climate Change Committee. Net Zero – The UK's contribution to stopping global warming. 2019. https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf

recommendation into law[8]. The UK thus became the first major economy to pass laws to end its contribution to global warming by 2050.

5.16 In 2019 the CCC reported to Parliament that although having met its first and second carbon budgets and being on track to outperform its third (2018 – 2022), the UK is not yet on track to meet its fourth (2023 – 2027) or fifth (2028 – 2032) carbon budgets[9]. The CCCs recommendations for a sixth carbon budget, running from 2033-2037, which were accepted by government in April 2021 and were enshrined in law in June 2021, included measures which, when delivered, will result in a 78% reduction in UK territorial emissions between 1990 and 2035, in effect, bringing forward the UK's previous 80% target by nearly 15 years[10].

5.17 On announcing the adoption of the CCC's recommendations for the sixth Carbon Budget in April 2021, the UK set the world's most ambitious national climate change target into law. The Proposed Development presents a significant opportunity to take a further step forward in the UK's fight against climate change, and in the transition to a diverse supply mix of clean generation.

5.18 Consistent with the NPSs and the CCC's recommendations, the UK's pathway to a successful 2050 carbon budget must involve wider transitions outside of the GB power generation sector: decarbonisation of transport, industry, agriculture and the home, and utilisation of alternate energy vectors to enable the decarbonisation of traditionally hard-to- reach sectors remains required to reduce non-power sector emissions. The decarbonisation progress must occur not only within the electricity generation sector, but also in other sectors which use energy, including low- carbon heating systems in the built environment, and the electrification of transport, with most sectors needing to reduce emissions to close to zero by 2050 for the Net Zero target to be achieved. The CCC anticipate a future of "extensive electrification, particularly of transport and heating, supported by a major expansion of renewable and other low-carbon power generation". Government's Industrial Decarbonisation Strategy (March 2021) confirms that decarbonising UK industry is a core part of the ambitious plan for the green industrial revolution, built on the expectation that emissions will need to reduce by at least two-thirds by 2035 and by at least 90%

[8] The Climate Change Act 2008 (2050 Target Amendment) Order 2019 - https://www.legislation.gov.uk/ukdsi/2019/9780111187654
[9] Climate Change Committee. Reducing UK emissions – Progress Report to Parliament. HMSO, 2020. https://www.theccc.org.uk/publication/reducing-uk-emissions-2020-progress-report-to-parliament/
[10] BEIS. UK enshrines new target in law to slash emissions by 78%. www.gov.uk, 2021. https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035

by 2050[11]. Continuing as we are, simply put, is not enough. The increased electrification of primary energy use will double down on the requirement to reduce carbon emissions from electricity generation even further than that which has already been achieved. Therefore, to deliver carbon savings, it is vitally important to ensure that GB can meet an increased demand for electricity in a secure way, with a significantly lower carbon intensity even than current levels. The decarbonisation of GB's electricity generation assets is therefore of vital importance in meeting the UK's legal obligations on carbon emissions.

5.19 The Energy Systems Catapult (ESC) is an independent, not-for-profit centre of excellence that bridges the gap between industry, government, academia, and research. The ESC was set up to accelerate the transformation of the UK's energy system and ensure UK businesses and consumers capture the opportunities of clean growth. ESC's 2022 analysis[12] anticipates that the decarbonisation of other sectors will require at least double today's electricity demand by 2050, all of which must come from zero-carbon sources. This leads to the conclusion that, for the UK to achieve Net Zero, all available low-carbon resource and infrastructure developments must be brought forward at pace: the power generation sector must both increase in capacity and reduce in carbon intensity on an unprecedented scale.

5.20 In September 2022, Government announced the commissioning of an independent review of their approach to delivering the Net-Zero target, to ensure that it is pro-business and pro-growth.

5.21 The Skidmore review[13] produced a report which included a set of recommendations submitted to the Department for Business, Energy and Industrial Strategy ("BEIS") in December 2022. The review calls for the 'full scale deployment of solar', encouraging an expansion of both rooftop and ground mounted solar, to hit an expanded target of 70GWby 2035 – increased from the Government's previous commitment of 50GW by 2035. The review highlighted that this mobilisation of solar would increase the UK's energy independence, an area that has been amplified since the Russian invasion of Ukraine. The industry has urged the

[11] BEIS. Industrial decarbonisation strategy. 2021. https://www.gov.uk/government/publications/industrial-decarbonisation-strategy
[12] Energy Systems Catapult. Innovating to Net Zero. 2020. https://es.catapult.org.uk/report/innovating-to-net-zero/
[13] BEIS Mission Zero: Independent Review of Net Zero – final report. 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1128689/mission-zero-independent-review.pdf

Government to implement the recommendations so that the UK can accelerate progress towards net zero.

International Obligations to Decarbonise

5.22 Government policy on climate change does not stop at our national boarders, indeed since 2010, government has included within its policy actions "driving ambitious action on climate change at home and abroad".

5.23 On announcing the adoption of the CCC's recommendations for the sixth carbon budget in April 2021, the UK set the world's most ambitious national climate change target into law. An address by the then Prime Minister at the opening session of the US Leaders" Summit on Climate, hosted by US President Joe Biden and held on Earth Day (22nd April 2021), urged countries to raise ambition on tackling climate change and join the UK in setting stretching targets for reducing emissions by 2030 to align with Net Zero. The Proposed Development presents a significant opportunity to take a further step forward in the UK's ambitious fight against climate change, and in the transition to a diverse supply mix of clean generation.

5.24 The 26th UN Climate Change Conference of the Parties (COP26) was held in Glasgow on 31st October to 13th November 2021. COP26 brought parties together to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change. As the first COP since the first Nationally Determined Contributions (NDCs) had been published since Paris, the run up to COP26 in Glasgow was a critical moment in the world's mission to keep the hope of limiting global temperature rises to 1.5°C alive[14]. International pledges could be reviewed and amalgamated and a view of global commitments made towards limiting carbon emissions and adapting to climate change could be created for the first time.

5.25 Of greatest relevance to this Statement of Need, specifically because collective progress to date to reduce emissions has not been sufficient, are the outcomes agreed at COP26 relating to mitigation: setting out the steps and commitments that Parties will take to accelerate efforts to reduce emissions "to keep 1.5 degrees in reach". Key achievements at COP26 under the theme of mitigation include[15]:

[14] UN Climate Change Conference. COP26 Negotiations Explained. 2021. https://ukcop26.org/wp-content/uploads/2021/11/COP26-Negotiations-Explained.pdf
[15] UN Climate Change Conference COP26. COP26: The Glasgow Climate Pact. 2021. https://unfccc.int/sites/default/files/resource/cma2021_10_add1_adv.pdf

- Over 90% of world GDP and around 90% of global emissions are now covered by net zero commitments and 153 countries have put forward new or updated emissions NDCs, which collectively cover around 80% of the world's greenhouse gas emissions. Net Zero is a global endeavour and the world is getting on board;

- The importance of action now to address the urgency of climate change and drive emissions down before 2030 was cemented in an agreement from all parties to revisit and strengthen their current emissions targets to 2030, in 2022;

- The role of clean electricity in delivering climate action, and the importance of driving down emissions from fossil fuel generators as well as increase capacity of renewable generators, was acknowledged in the negotiated agreement by 190 countries at COP26 to "phase down coal power". Further commitments to cease international coal finance and direct public support of unabated fossil fuel energy, by the end of 2021 and 2022 respectively, will free funds to be redirected for deployment in renewable energy; and

- Accounting for over 10% of global greenhouse gas emissions, and around half the world's consumption of oil, road transport is a critical sector to decarbonise with pace. Agreement was reached by countries, cities, companies, investors and vehicle manufacturers to target all new car and van sales to be zero emission by 2040 globally and 2035 in leading market, and ultimately to phase our fossil fuelled vehicles. Electrification of transport is inevitable, underway and accelerating. Low carbon electricity supply must keep growing to provide the energy to enable the rapid displacement of oil.

5.26 Following COP26, the 27th UN Climate Change Conference of the Parties (COP27) was held in Sharm el-Sheikh in Egypt on 6th to 20th November 2022. The key focus and outcome of COP27 was the issue of an Implementation Plan[16] for the aims of COP26.

5.27 The Proposed Development presents an opportunity for the UK to underpin its delivery on the COP26 mitigation pledges and COP27 Implementation Plan:

- The UK has published its NDC, which is a reduction in economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990

[16] UN Climate Change Conference. COP27. Sharm el-Sheikh Implementation Plan. https://unfccc.int/sites/default/files/resource/cp2022_L19_adv.pdf

levels and represents a greater reduction in emissions than that required by Carbon Budget 5 (2028 – 2032). This Proposed Development is a critical measure in support of achieving the UK's NDC, by providing new low-carbon electricity generation facilities to power heat, transport and industrial demand and save emissions;

- Early action to decarbonise is important in the climate fight. As such, the Proposed Development will generate low-carbon power in the critical 2020s and therefore before the current emissions targets date of 2030.;

- The Proposed Development will generate low carbon power for transmission across GB, meaning that less power will need to be generated in GB from fossil fuelled power stations, or imported from other countries, potentially associated with carbon emissions due to the electricity mix of imported power which will at times still include fossil fuel fired power stations; and

- The UK is leading the way globally in electrifying vehicles and the Proposed Development will be an essential source of low-carbon power to keep GB consumers and businesses moving in new electric vehicles while at the same time, saving carbon emissions.

Progress on Low Carbon Transition Plan

5.28 In 2011, approximately 75% of GB's electricity came from carbon-based fuels; and contributed over a third of UK greenhouse gas emissions. Carbon emissions from electricity have reduced since then, but mainly through measures other than those which were anticipated as part of the Low Carbon Transition Plan[17]. This shows the trend in reductions in carbon emissions in the UK, including from GB power generation, since 1990. Power sector reductions have been achieved through many initiatives and circumstances, including:

- Electricity volumes generated from coal and gas fired plants have reduced. The Large Combustible Plant Directive (aiming to improve air quality but also having significant carbon reduction benefits) required the clean up or time-limited operation of coal-fired power generation prior to 2016. Between 2012 and 2015, at least 11.5GW of coal plant was decommissioned because of the Directive. Further, in late 2017, government announced a

[17] HM Government. The UK Low Carbon Transition Plan. HMSO, 2009. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228752/9780108508394.pdf

commitment to a programme that will phase coal out of all electricity generation by 2025, brought forward to 2024 following BEIS's December 2020 consultation[18]. National carbon pricing ensures that coal assets have unfavourable marginal costs and are therefore dispatched only when necessary. In June 2020, GB ended a record run of not generating any electricity from coal for 1,630 consecutive hours – the longest period since the 1880s, and less than 4TWh was generated from coal during 2020, down from 20TWh in 2017 and 75TWh in 2015. In 2019, many asset operators announced the closure of their coal generation assets. Just one coal station (Ratcliffe, 2.0GW) remained commercially operational beyond September 2021 with operational life at four other units (two at West Burton A and two at Drax, with a combined generation capacity of 2.2GW) extended to respond to system stress events only since 1st October 2021 until their closure (following a request from BEIS to address a specific electricity supply concern in winter 2022, these units are currently scheduled to close in March 2023). Ratcliffe is currently signalling that it will close all of its units by 2024.

- GB's second-generation nuclear fleet (9GW) operated significantly past its original decommissioning dates. Nuclear provided 16% of electricity demand in 2020 with low carbon emissions[19], however the decommissioning of existing plants commenced in 2021 and as of September 2022, the UK is operating just five nuclear stations (5.9GW). Advances in new nuclear plants to replace the existing fleet have been slower than was originally envisioned.

- Low carbon variable generation, predominantly wind and solar, has been deployed to GB grid more quickly and more widely than was originally projected.

5.29 The GB electricity market is complex with long-term price uncertainty. Within it, multiple players are developing assets in response to market signals rather than because of a centrally coordinated asset development program and therefore are favouring technologies which have short development timescales, generate Net

[18] HM Government. Energy White Paper: Powering our Net Zero Future. 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf

[19] National Grid. Future Energy Scenarios. National Grid, 2021. https://www.nationalgrideso.com/news/introducing-our-2021-future-energy-scenarios

Zero consistent carbon-free electricity and have low development and operational costs – such as solar power.

5.30 Conventional (thermal, dispatchable) plants in GB have closed, but new dispatchable low-carbon plants have not yet opened. By contrast, Renewable Energy Sources (RES, including solar PV, onshore wind and offshore wind) have been deployed because of the subsidy frameworks available to them, and are continuing to be deployed because of their cost-competitiveness in relation to other, more traditional methods of electricity generation[20].

5.31 NGESO's Future Energy Scenarios (FES) 2020[21], 2021[22] and 2022[23] describe three pathways involving radical change across many industry sectors, which will deliver the required 100% reductions in carbon emissions by 2050 and one scenario which will not. The Net Zero commitment underpins the urgency for new low carbon generation infrastructure to be built and commissioned, and government support for developments such as the Proposed Development is crucial.

5.32 The timescales for building out new, large-scale generation schemes are generally long. Many schemes being developed today may not generate their first MWh of carbon-free electricity until the next decade. For example, Hinkley Point C, from granting of Nuclear Site Licence in 2012, is currently estimated to enter commercial operation in 2027. Similarly, the construction of Sizewell C nuclear power station is also expected to commence before 2024 and be fully constructed between nine and twelve years.

5.33 Solar generation assets generally have shorter development durations than these assets. The need for decarbonisation grows stronger each year because every year during which no action is taken, more carbon is released into the atmosphere and the global warming effect accelerates. Early action will have a correspondingly more beneficial impact on our ability to meet the 2050 targets than will later action.

5.34 The Proposed Development is a viable proposal, with a strong likelihood of near-term deliverability, which will achieve significant carbon reduction benefits through

[20] UK Government. Renewable Energy Planning Database. July 2022. https://www.data.gov.uk/dataset/a5b0ed13-c960-49ce-b1f6-3a6bbe0db1b7/renewable-energy-planning-database-repd
[21] National Grid. Future Energy Scenarios. National Grid, 2020. https://www.nationalgrideso.com/document/189866/download
[22] National Grid. Future Energy Scenarios. National Grid, 2021. https://www.nationalgrideso.com/news/introducing-our-2021-future-energy-scenarios
[23] National Grid ESO, Future Energy Scenarios 2022, National Grid. 2022. https://www.nationalgrideso.com/document/263951/download

the deployment of a proven, low-cost technology in a very suitable location. As such, the Proposed Development possesses exactly those attributes identified as being required both in the near-term and in the future in order to continue to make material gains in carbon reduction.

5.35 Solar power is the most viable option for accelerating decarbonisation and achieving Net Zero in 2050. Despite recent commitments from government to providing continued support for both technologies, neither nuclear power nor carbon capture and storage are likely to play a significant role in furthering decarbonisation before the 2030s due to the delivery risk and timing constraints associated with their development.

5.36 Wave / Tidal power has been proposed at several locations in the UK, although wave technology development has experienced both cost and operational challenges. Early predictions on future rollout of wave / tidal power showed varying levels of ambition, ranging from 0.5GW to 4.5GW by 2030. Tidal power remains complicated to consent, and expensive to deliver, a position made clear by governments' rejection of public funding for the Swansea Bay Tidal Lagoon in June 2018.

5.37 Nuclear currently provides the largest capacity of dispatchable low-carbon power generation in GB and therefore is an incredibly important operational generation technology in the context of decarbonisation. Nuclear has historically met approximately 20% of GB demand and because the existing nuclear fleet has been able to continue operating beyond its original closure dates, nuclear has until recently continued to generate approximately a one-fifth share of demand. However, existing nuclear is close to the end of its life. At the date of submission of this report, three Advanced Gas-cooled Reactors ("AGRs") Dungeness B (1GW), Hunterston B (1GW) and Hinkley Point B (1GW) stations have closed and firm closure dates have been set for all but 1.2GW of nuclear capacity in the UK. Although new nuclear developments are progressing, such as Hinkley Point C and Sizewell C, they are not being built at such a rate and scale as to continue to contribute one-fifth of the GB demand through the 2020s and into the 2030s. Without a significant and immediate commitment from the government to initiate further nuclear projects, nuclear capacity will remain lower than current levels until approximately 2035, thus reducing its contribution towards achieving Net Zero.

5.38 In contrast, Solar power generation has global momentum and large-scale schemes are already being developed in GB. With this context, the attractiveness of solar, a

proven technology which will deliver significant benefits to consumers through decarbonisation, security of supply and affordability this decade, becomes clear. The IPCC has stressed the importance of urgent action to decarbonise electricity generation, and the CCC have reported that the UK needs to commission more low-carbon generation, and more quickly, to meet its Net Zero obligations. The prompt development and deployment of proven technologies, such as solar, is a lower-risk pathway for delivering low-carbon generation both now and for the longer term, and this is consistent with the approach described by government in draft NPS EN-1 which articulates the prudence of planning infrastructure development on a conservative basis, including for scenarios in which the future use of hydrogen is limited[24].

5.39 Solar has undergone significant technological advances in scale and efficiency, and the UK has many areas of high solar irradiation. It is therefore for GB to make best use of this natural, renewable energy resource in order to meet its legal carbon emission reduction obligations.

5.40 Solar generation is needed in the UK to keep us on course in our fight against climate change precisely because it is a fundable and deliverable technology. The Proposed Development should therefore be recognised for the critical contribution it will make to the UK's journey to Net Zero and consenting the Proposed Development such that it will be able to be developed as planned, will bring the UK closer to its required track through the critical 2020s to meet its legally binding carbon emissions reduction targets. The delivery timing associated with current forward nuclear and CCUS projections strengthen this conclusion.

Building a Green Recovery

5.41 The Government has consistently shown its commitment through the 2020 COVID-19 pandemic, to build back greener in order to tackle climate change and stimulate economic recovery. Although the fight against climate change requires urgent action, it also requires sustained action over a long timeframe, and government have begun a strategy of "build back stronger" through "fairer, faster, greener" investment[25]. Long-term energy infrastructure assets are well placed as a focus for

[24] BEIS. Draft Revised Overarching National Policy Statement for Energy (EN-1). 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015233/en-1-draft-for-consultation.pdf

[25] HM Treasury. National Infrastructure Strategy. Fairer, faster, greener. 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938049/NIS_final_web_single_page.pdf

the long-sighted investments which will support a green recovery from the difficult first years of the current decade. The Energy White Paper[26] puts in place a strategy for the wider energy system that:

- Transforms energy, building a cleaner, greener future for our country, our people and our planet; and
- Supports a green recovery, growing our economy, supporting thousands of green jobs across the country in new green industries and leveraging new green export opportunities.

5.42 Environmental and public health are linked, as proven by research that has uncovered a correlation between air pollution levels and risk of death. The recent COVID-19 pandemic highlighted this as research found that high levels of fine particulate pollution (generated largely from fuel combustion from cars, refineries, and power plants) was linked with risk of death from COVID-19[27]. This link having been established, the inter-generational aspect of global warming, used by some to delay making decarbonisation decisions now because of the potential costs of action, which today's economies would have to bear but from which future economies would benefit, would lose its edge. By reducing fine particulate pollution now through providing the electricity generation to decarbonise the industrial and transportations sectors, almost immediate positive health effects can be brought to today's citizens: a direct cost / benefit relationship which supports the need to decarbonise with urgency. The Environment Act 2021 establishes a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation by 31 October 2022. Replacing polluting industry with clean air industry, will help keep people alive both now, and in the future.

5.43 Carbon emissions were driven down through the 2020 reduction in economic activity as a result of COVID-19 and many environmental indicators improved during the lockdown periods. The restart of economic activity led to a requirement for more positive action to hold ground and sustain environmental performance. The development of green infrastructure, like solar generation assets which produce low-carbon power and enable biodiversity opportunities, presents an

[26] HM Government. Energy White Paper: Powering our Net Zero Future. 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf

[27] Harvard T.H. Chan School of Public Health. Air pollution linked with higher covid- 19 death rates. 2020. https://www.hsph.harvard.edu/news/hsph-in-the-news/air-pollution-linked-with-higher-covid-19-death-rates/

excellent opportunity to deliver economic and environmental benefits, and therefore supports public health, all as part of the same project.

5.44 In June 2020, the then Prime Minister tasked the UK to "build better and build greener but also build faster", saying that "the UK would lead in markets and technologies such as Net Zero planes and long-term solutions to global warming such as solar, wind, nuclear, hydrogen and carbon capture and storage". By July 2020, government had committed £350m to "supercharging green recovery". BEIS' Net Zero Strategy: Build Back Greener[28] describes the economic opportunities associated with developing a green economy, including delivering new jobs, supporting the "levelling-up" agenda, and putting the UK at the forefront of growing global markets in green technologies. The Net Zero Strategy states that green development – including development of large-scale solar generation in the UK – provides opportunities to reform the UK's skills system; support workers to transition to green jobs; and provide opportunities for all, including through provision of the high-quality education and training to support future green careers. Other economic benefits of green development are also described in the Net Zero Strategy.

Demand for Electricity is Growing

5.45 The future characteristics of GB's electricity demands are described through a set of possible scenarios developed (through industry consultation) on an annual basis by GB's Electricity System Operator and statutory undertaker, National Grid Electricity System Operator ("NGESO"). This annual publication is called Future Energy Scenarios[29] ("FES"), see for the most recent publication. In completing their work NGESO look at a number of inputs including legislation, policy, technology and commercial drivers. Consumer behaviour is also considered.

5.46 The key observation drawn from FES 2022, is that in all lower-carbon futures, the electricity sector will not operate in isolation from other energy sectors. As previously mentioned above, the UK's energy demand is set to drastically increase with the rapid decarbonisation across all areas of demand – including residential, transport, industrial and commercial trying to decarbonise. Deep electrification of

[28] BEIS, Net-Zero Strategy: Build Back Greener, BEIS 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

[29] National Grid ESO, Future Energy Scenarios 2022, National Grid. 2022. https://www.nationalgrideso.com/document/263951/download

all of those areas is required in order to meet Net Zero, and NGESO concluded in 2022 that the need for urgent electrification has increased year-on-year.

5.47 Surface transport is currently the largest source of UK greenhouse gas emissions (surface transport accounted for 22.6% of 2021 emissions)[30]. Emissions rebounded by 10% in 2021 as lockdown restrictions were lifted. A rapid shift to low emission vehicles will give a significant boost to the decarbonisation of our economy. Growth in the use of electric vehicles ("EVs") is expected to create significant new demands on the supply of electricity. The UK government has proposed a ban on the sale of all new petrol and diesel vehicles to be effective from 2030, bringing further forwards a prior indication of 2035[31]. The then Prime Minister's November 2020 announcement, confirmed alongside a ban on sales of new hybrid vehicles by 2035 within the Energy White Paper brought emerging government policy more into line with the CCC's latest recommendation: that the date for phasing out petrol and diesel cars and vans (including hybrids) should be brought forwards to no later than 2032, with EVs supported by detailed policy arrangements to be able to fill the light transport gap this would create. Innovation is bringing affordable and highly desirable low emission private road vehicles to market, with almost every major brand now sporting a fully electric model, and EV costs are reducing. In September 2020, market frontrunners TESLA unveiled a new EV battery design which "will enable the company to produce a $25,000 electric car in the next three years"[32]. The government regards EVs as a critical new technology, vital in the fight against climate change. The commitments listed above are evidence that there is strong political support for the rapid development and rollout of EVs, and with that will come additional electricity demand. EVs are predicted to play a major part in the future GB electricity mix because of their energy demand requirements (moving from fossil fuels to clean electricity) and potentially also their electricity storage capabilities. The ESC scenarios also foresee the decarbonisation of transport as a major influence on future electricity needs, anticipating approximately 35 to 40 million battery EVs on the roads by 2050 and only small numbers of PHEV or hybrid vehicles remaining operational.

[30] Committee on Climate Change. Progress in reducing emissions. 2022 Report to Parliament, CCC. 2022. https://www.theccc.org.uk/publication/2022-progress-report-to-parliament/
[31] HM Government. The Ten Point Plan for a Green Industrial Revolution. 2020. https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution
[32] Robert Walton. Tesla unveils new EV battery design, but Musk downplays vehicle- to-grid application. Utility Dive, 2020. https://www.utilitydive.com/news/tesla-unveils-new-ev-battery-design-but-musk-downplays-vehicle-to-grid-app/585723/

5.48 Reducing dependency on natural gas and thereby reducing carbon footprint further, requires gas to be substituted from home and industrial / commercial heating, cooking and water heating. The long-term need to diversify to low-or zero-carbon home and industrial / commercial heating, cooking and hot water will increase demands for electricity on the NETS. Gas will be either directly substituted through electrification, or indirectly using electricity to produce hydrogen or by other renewable technologies. Coupled with governmental plans for new homes in England, Wales and Scotland, electrification of home and space heating will increase GB's demand for electricity. For every household that is supplied with electricity, an average additional burden of approximately 3.8MWh per year could be placed on the grid[33]. Estimates have put the number of new homes needed in England at up to 345,000 per year, accounting for new household formation and a backlog of existing need for suitable housing. Projections therefore imply a potential additional increase in electricity demand in Great Britain of at least 41TWh per year by 2050. The then Prime Minister announced in November 2020 his intention to bring forwards, to 2025, the date by which new homes will need to be warmed without using gas heating. Even if GB is currently able to meet its current electricity needs and renewable generation targets now, it will be very difficult, if not impossible, to do so into the medium and long term, without the deployment of significant capacities of new low- or zero-carbon generation.

Implications for Future Electricity Supply Needs

5.49 To enable the Net Zero transition, the power generation sector must both increase in capacity and reduce in carbon intensity on an unprecedented scale.

5.50 From their analysis and FES scenarios, NGESO conclude that installed electrical generation capacity in GB needs to increase from today's ~107GW to between 156 and 209GW to meet anticipated demand in 2030, this being a 55 to 109GW increase on existing generation capacity following the decommissioning of all but 1.2GW of existing nuclear generation and the closure of all remaining coal generation (5GW) before that date. The most striking insight from the 2022 FES is that by 2030, over 70% of installed generation capacity must be low carbon generation in order to meet Net Zero targets, pointing to a significant growth in low carbon generation in the coming decade. Interconnectors are expected to contribute 7% – 9% of capacity and these will rely on our national neighbours to follow similar

[33] BEIS. Sub-national Electricity and Gas Consumption Statistics. 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1079141/subnational_electricity_and_gas_consumption_summary_report_2020.pdf

decarbonisation plans to the UK for their supply to be low-carbon. Only 9% – 17% of GB operational capacity in 2030 will be carbon-intensive generation, down from 38% in 2022[34]. In every FES scenario, a pathway to Net Zero includes a significant future increase in solar capacity beyond that which is installed or in development today.

5.51 In 2021, GB sourced 42% of its electricity from renewables, of which approximately 9.4% was from solar[35]. In both 2019 and 2020, Denmark sourced 50% of its electricity needs from renewable generation, demonstrating that high proportions of renewable generation can be accommodated within national electricity systems, and GB can learn how to do this from other nations which are further ahead in this regard[36].

5.52 The UK requires swift and continued deep decarbonisation actions in order for it to meet its 2050 climate targets. As one of the leading low-carbon generation technologies in GB, and one which is viable on an unsubsidised basis, it is critical that solar generation is permitted to continue to grow to move the country towards meeting its Net Zero commitments.

Decarbonisation can Maintain or Enhance Security of Supply

5.53 Decarbonisation is just one of the three pillars of GB energy policy. Low carbon generation of all forms, solar, wind and nuclear included, brings with it new challenges. Current and future energy policy and related actions must also ensure that security of supply is maintained, and that electricity is affordable for all.

5.54 "Security of supply" means keeping the lights on and has two main components.

- Ensuring that there is enough electricity generation capacity available and operational to meet demand (adequacy); and
- Ensuring that the quality of electricity supplied to customers falls within a narrow "quality" band during all reasonably foreseeable operational circumstances and is resilient during rare excursions from this band.

[34] Table ES.E.01. National Grid ESO, Future Energy Scenarios 2022, National Grid. 2022. https://www.nationalgrideso.com/document/263951/download
[35] Analysis of Grid data. National Grid ESO, Future Energy Scenarios 2022, National Grid. 2022. https://www.nationalgrideso.com/document/263951/download
[36] Kate Ng. Denmark sets record by sourcing nearly half its power from wind energy. The Independent, 2020. https://www.independent.co.uk/news/world/europe/denmark-power-wind-energy-climate-turbines-sea-a9269076.html

5.55 The Proposed Development will connect into the National Electricity Transmission System ("NETS") at Bicker Fen Substation, an existing National Grid substation near the village of Bicker. The substation is situated in NGESO's East England boundary area; and is connected to the surrounding NETS as illustrated in Figure 1. It is located between boundaries B8 to the north and B16 to the south. These boundaries define areas within which NGESO characterise power flow interaction between regions of the network.

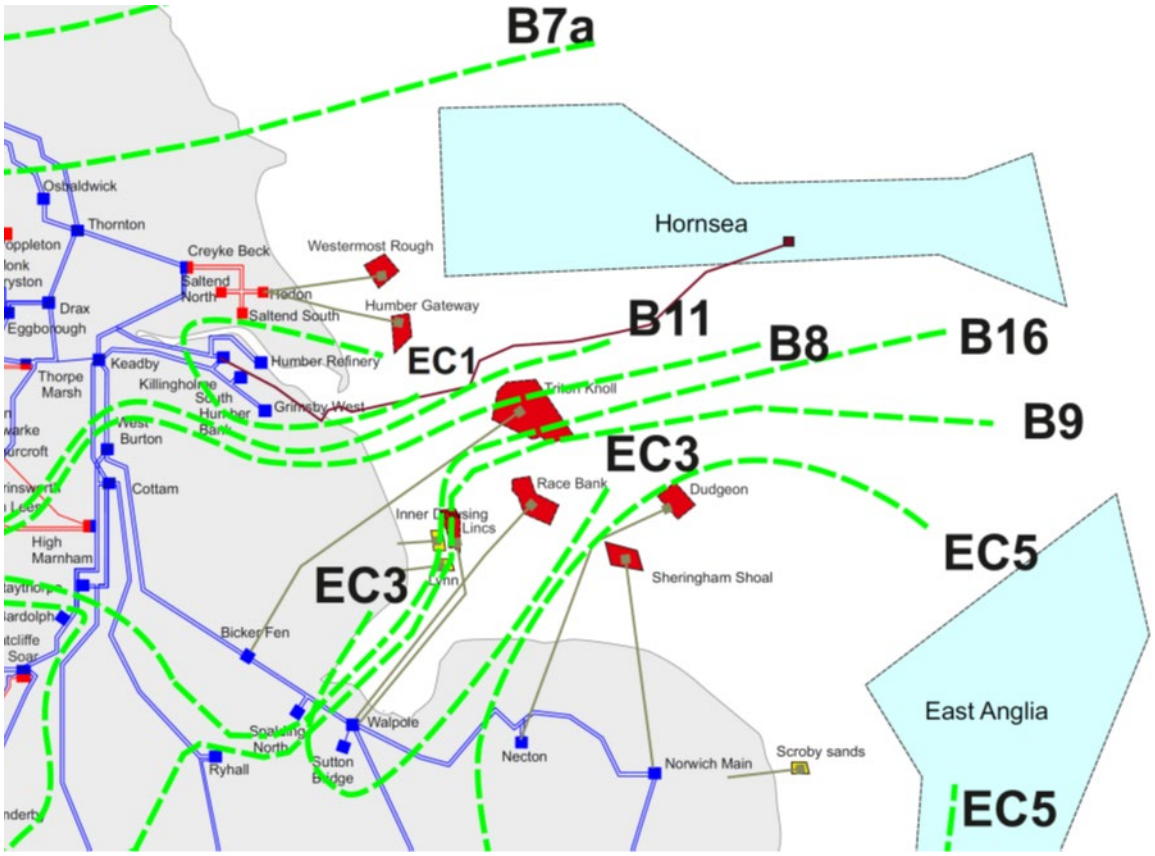


Figure 1

5.56 The National Grid develop three key documents that are used to both descript the existing network and inform the future network. These are:

- Electricity Ten Year Statement (ETYS) – an suite of documents that outline the technical details of the network and the operability challenges.
- Future Energy Scenarios (FES) – a series of viable scenarios which may impact the development of the transmission system in different ways

- Network Options Assessment – A schedule of strategic reinforcement scheme which support the anticipated development of the network.

5.57 The latest issue of the ETYS (November 2021), highlights the following relevant points in regard to renewable energy generation and the east of England area:

- Up to a 12GW increase in transmission-connected low-carbon and renewable generation in East Anglia from 2020 to 2030 is expected. Future offshore wind connecting along the east coast and new interconnectors in the region are expected to increase the transfer requirements including during low-wind periods.

- Figure 2 shows the general pattern of power flow directions expected to occur most of the time in the years to come up to 2031, i.e. power will generally flow from north to south. The arrows in the diagram illustrate power flow directions and are approximately scaled relative to the winter peak flows.

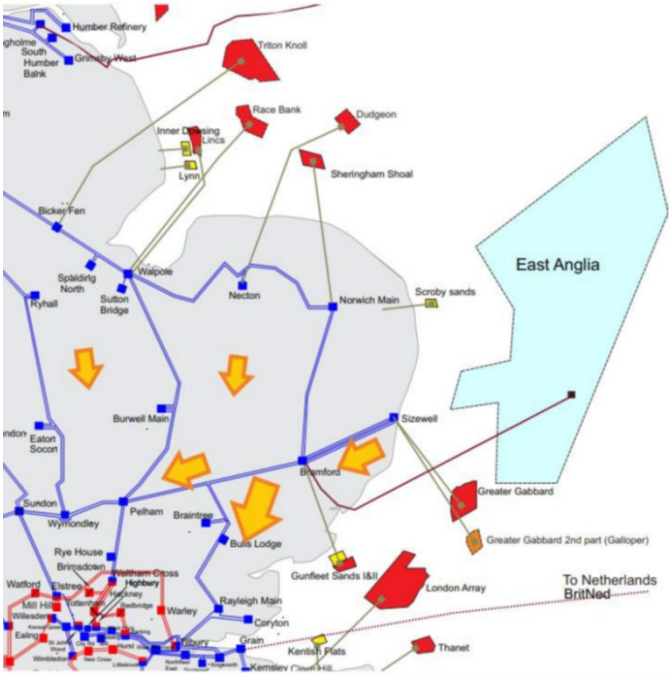


Figure 2

5.58 The ETYS uses outputs from the FES to understand future power flows and where reinforcement will be required. On reflection of the FES, the ETYS highlights:

- Generation of between 8-18GW could be expected to connect within the east of England by 2030.

- Peak gross demand in the East of England region is expected to be remain steady or potentially rise by up to 1GW.

- All scenarios show that, in the years to come, large amounts of low-carbon generation, predominantly wind, can be expected to connect. The total generation in all the scenarios will exceed the local demand; thus the East of England will be a power exporting region.

- In a highly decentralised scenario like 'Leading the Way', local generation capacity connected at the distribution level in this eastern region could reach over 7GW by 2040. Of that capacity, typical embedded generation output on average might be around 2GW. This will vary depending on factors like wind speeds, and how other local generators decide to participate in the market.

5.59 The FES itself highlights the following keys points:

- Decarbonising sectors like transport, and potentially heat, will require significant electrification and electricity ultimately overtakes fossil fuels in all scenarios to become the biggest supplier of energy to end users. This means the power sector must first be fully decarbonised.

- Driven by the need to ensure this electricity is carbon free, affordable, and sustainable, renewables emerge as the dominant source of electricity generation for Britain between now and 2050. BY 2050, it will meet between 70% and 84% of annual electricity demand.

- A range of flexible technology is needed to integrate this generation output from weather dependent renewables, ensure supply is reliable and minimise curtailment. Our scenarios demonstrate the importance of utilising low carbon technologies and fuels, especially hydrogen and Carbon Capture Usage and Storage, alongside electricity storage, interconnection, and demand side flexibility, to deliver a balanced whole energy system.

- Across all scenarios, strategic investment is required now to develop this whole energy system and deliver clean, secure, affordable, and fair energy for all consumers.

- As the energy system changes, the flexibility challenges it faces will also change. Increasingly peak demand will not be the only driver of system stress – it will be driven as much by peaks and troughs of electricity supply

as by peak demand. Electrification of other sectors will also increase the scale of electricity flexibility needed. Large amounts of flexibility with duration of a few hours will be needed to match supply and demand within day. This includes up to 35 GW of electricity storage with an average discharge duration of less than 4 hours by 2050. Flexibility from unabated natural gas will significantly reduce as the energy system decarbonises, so new ways will need to be found to deliver the services historically provided by unabated gas.

- High levels of wind capacity can, on windy days, lead to high levels of curtailment, peaking at over 80 TWh under System Transformation in the mid-2030's. To avoid curtailment, flexible solutions such as energy storage, interconnectors, Demand Side Response (DSR) or electrolysis could be used to maximise the use of renewable electricity.

5.60 In order to meet net zero, more renewable generation is required to connect and export onto the National Grid. This is required both to de-carbon energy generation and support transition of other sectors such as transport and heat. Overall, this leads to a significant increase in demand for low carbon and renewable generation. Given the intermittence of many renewable sources, both a mix of technologies and an element of storage capacity is required to provide reliable and secure generation to the gird. By installing a PV and Energy Storage Park at Bicker the technology mix is ensured, particularly when considering there is a connection of an offshore windfarm and European interconnector at the same location.

5.61 The proposed development will be in a position to maximise the benefit of the numerous renewable energy sources connecting in the area and have a ability to support NGESO in balancing renewable intermittency. Given the general trend for power to flow from North to South, with the majority of UK demand located in the south, the location of the Bicker Fen connection in England means there are less network assets required to supply demand, and hence a more efficient location for renewable generation compared with a more northernly project.

5.62 The size of the development is commensurate with a transmission connection and will provide NGESO with a flexible asset that can be used in the support of frequency, voltage stability and thermal limits due to the fast-acting capability of the inverter technology employed and flexibility of the energy storage.

Solar is Economically Efficient in GB

5.63 The third pillar of GB's energy strategy is economic efficiency.

5.64 Generators in the GB power market schedule themselves to generate in response to whether a market price signal for a specific period is above or below their marginal cost of generation. Days are subdivided into 48 half-hour periods ("Settlement Periods") and power is traded ahead of delivery for these periods, or continuous groups thereof, from just 90 minutes ahead, up to months or even seasons ahead. Solar generation typically has low or zero marginal costs and therefore solar assets generate as much power as they are able to, when they are available (i.e. whenever the sun is shining) and whenever power prices are positive. The nature of solar irradiation is variable, but forecastable, and as such they also tend to trade on the near-term power markets, therefore much of the impact of sunny (or overcast) weather on power price is felt in the few days close to delivery. Thermal and hydro plants have higher marginal costs (relating to the cost of the fuel they are converting into that additional MWh), therefore will only generate when the market is providing a higher price signal. They may also trade power, fuel and carbon costs further ahead in order to lock in a gross margin. All generators produce active power (MWs), and to balance the electricity system, the total national active power generated must meet the total national system load at all times. If solar farms are generating electricity during a settlement period, then less electricity is required from plants with more expensive marginal costs, therefore the price of electricity for that settlement period reduces.

5.65 As demand increases, more expensive supply must be scheduled into the market. If, for example, at a mid- level of demand £45/MW becomes the price of power, if demand falls less plant is required to run to meet demand, therefore the marginal cost of the most expensive asset required to run to meet demand is lower. Therefore, the price of power reduces. Conversely, as demand increases, assets with higher marginal costs of production are required to run; therefore, the price of power increases.

5.66 The price of power also varies for each half hour settlement period, as generating assets become available or unavailable due to outages, breakdowns or, critically, more or less wind or sunshine is expected or experienced. Therefore, as more electricity is generated by solar farms higher levels of demand, the marginal cost of production to meet demand over these periods will therefore be lower and as a result, the traded price of power will be lower. By running this type of analysis over every settlement period over the future trading horizon, it is possible to derive a view of the price of power for the next week, month, quarter or season. The

conclusions are the same though: increasing the capacity of renewable assets in GB reduces the traded price of power. This demonstrates that solar power reduces the market price of electricity in GB, but the effect is not limited to GB. A 2018 paper by Energy Institute of Haas, Setting with the sun, describes a quantitative analysis of the impact of deep solar penetration in California, an historically conventional generation market. The paper concludes that renewable investment has had a significant impact on power prices, and appears to be responsible for the majority of price declines over the last five years in California[37].

5.67 The cost of solar generation is an important enabler of its development. Solar panels and electrical infrastructure have become larger and more efficient, meaning that more electricity can be generated from the same area of land as was previously possible. As a consequence, solar is now a leading low-cost generation technology.

5.68 An important measure of the lifetime cost of solar generation, is its Levelised Cost of Energy ("LCOE"). LCOE is a measure of the lifetime unit cost of generation from an asset and is calculated using a discounting methodology, including capital and operating costs as well as anticipated in-life capital and operating expenditure, for example the re-powering of sites to manage anticipated degradation. Crucially this allows all forms of generation to be compared with each other on a consistent basis. Recent analysis illustrates that utility scale solar PV is already more economically attractive than almost all other existing forms of generation, and is matched only by wind and the marginal operating cost of fully depreciated gas combined cycle, coal and nuclear facilities.

5.69 Solar costs are driven by capital infrastructure, development and integration costs, and lifetime O&M including minimising or addressing the anticipated degradation of solar panels and inverters. Technological advances have increased the efficiencies of solar panels, and extended their useable lifetimes. At the same time, economies of scale through the global supply chain have reduced the cost of panels. Development costs have also reduced as efficiencies in the build process have been captured through prior experience.

5.70 The BEIS "2020 Cost of Generation" update[38] concurs with the fact that UK-specific estimates of levelised cost of energy from solar have reduced significantly since

[37] Bushnell, J., and Novan, K. Setting With The Sun: The Impacts Of Renewable Energy On Wholesale Power Markets. Energy Institute at Haas, 2018. https://haas.berkeley.edu/wp-content/uploads/WP292.pdf
[38] BEIS. Electricity generation costs. 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/911817/electricity-generation-cost-report-2020.pdf

2013; that they are predicted to fall further in the decades ahead; and that solar, already being highly competitive against current conventional and renewable generation costs, is predicted to retain a cost advantage for the decades ahead.

5.71 The costs of solar are reducing as new projects are being developed, and the technology is now becoming more economically attractive over a growing geography. Factors such as technological design (greater efficiency over longer lifetimes, i.e. slower degradation), development and construction risk mitigation, efficient grid connection, efficient financing and shorter development timelines have already pushed prices down — and will continue to shape prices in emerging markets. Consequentially, utility-scale project costs are falling more quickly than forecast; the global solar market is growing; and the GB solar market is growing.

5.72 This Statement of Need builds upon the case for need established in the NPSs for the urgent development of low carbon electricity generation, setting out the need for a rapid increase in low carbon electricity generation capacity in GB to meet decarbonisation obligations, and the critical role that large-scale solar schemes will play in meeting that need. No upper limits, targets or thresholds for electricity generation capacity are set out in the NSPs, and details of future generation capacities are included previously. Estimates from NGESO, NIC and ESC of the capacities of new solar generation needed in order to meet Net Zero include 44 to 76GW of additional solar capacity by 2050, with approximately one quarter of this needed in the next ten years. To meet those projections, a very high proportion of (if not all) solar projects of any scale which come forward for consent will need to be approved. Falling short on solar development at any stage in the next decades will risk causing the UK falling behind on decarbonisation and will increase the magnitude of the task (and therefore the intolerable risk of failure) of meeting its 2050 legal commitments to achieve Net Zero.

5.73 The case has also been made for the socially economic benefits of as-low-as-possible electricity generation costs. Assuming that the reader has accepted the need for solar generation in GB, this section illustrates the benefit in reduced carbon emissions pre-2030, and the lifetime economic benefit to the consumer, of optimising the installed generation capacity at the Scheme, versus developing the same total capacity but across multiple locations and over a phased timeframe (necessary, due to the concurrent management of multiple projects through development and consent).

5.74 Solar schemes incur fixed costs, for example project development, site infrastructure and grid connection costs. Project development timeframes are also generally fixed, although smaller schemes are assumed to be deliverable (from construction start to commercial operation) in one year, while larger schemes may take two years. Other costs vary according to the amount of capacity installed, including the capital costs of solar panels and balance of plant equipment, land rent, and other aspects.

5.75 The Proposed Development presents an opportunity to develop and install large-scale solar generation in a highly beneficial location, and this analysis demonstrates that it is consistent with government policy to develop the scheme at the largest scale possible subject to the planning balance and potential techno-economical constraints.

5.76 The conclusion on economic efficiency is that Solar power reduces the market price of electricity by displacing more expensive forms of generation from the cost stack. This delivers benefits for electricity consumers. Due to technological advances, power generated by solar plants is already at or below grid parity cost in GB. Solar power is economically attractive in GB against many other forms of conventional and renewable generation. Size remains important, and maximising the generating capacity of schemes improves their economic efficiency, so bringing power to market at the lowest cost possible. Larger solar schemes deliver more quickly and at a lower unit cost than multiple independent schemes which make up the same total capacity, bringing forward carbon reduction and economic benefits in line with government policy. The Proposed Development proposes a substantial infrastructure asset, which if consented will deliver large amounts of cheap, low-carbon electricity both during and beyond the critical 2020s timeframe. Maximising the capacity of generation in the resource-rich, accessible and technically deliverable proposed location, represents a significant and economically rational step forwards in the fight against the global climate emergency.

Need for Development at Heckington Fen

5.77 The Proposed Development is a substantial infrastructure asset, capable of delivering large amounts of low-carbon electricity to local and national networks. The Proposed Development is of critical importance on the path to Net Zero, with

NGESO scenarios predicting the need for 25 – 40GW of operational solar capacity in GB by 2030[39].

5.78 The Proposed Development's NETS connection means that the Heck Fen Energy Park would play its part in helping NGESO manage the national electricity system. This includes participating in mandatory balancing markets (to help balance supply and demand on a minute-by-minute basis and provide essential ancillary services) as well as providing visibility to the power market of its expected generation. This means that the low marginal cost solar power produced can be forecast and priced into future contracts for power delivery by all market participants. This would allow all consumers to benefit from the market price reducing effect of low-marginal cost solar generation, and maximising the capacity of generation in the proposed area to the benefit of consumers.

Conclusion

5.79 This statement shows that solar generation is economically and technically viable, and is economically and technically preferential, to the GB electricity consumer.

5.80 Decarbonisation is both a UK legal requirement and globally significant. Urgent actions are required in the UK and abroad in order to achieve Net Zero, keep decarbonisation on track, and to limit global warming.

5.81 The need for the Proposed Development as a large-scale solar generator are as follows:

- Large-scale solar generation is essential to support the urgent decarbonisation of the GB electricity sector. Solar power is important not only to reduce power-related carbon emissions, but also to build a future generation portfolio which is capable of supporting the electrification and therefore decarbonisation of transport, heat and industrial demand.

- As part of a diverse generation mix, solar generation contributes to improve the stability of capacity utilisations among renewable generators. When developed alongside other renewable technologies, large-scale solar will smooth out seasonal variations in total GB renewable generation, more closely matching anticipated seasonal levels of demand.

[39] National Grid ESO, Future Energy Scenarios 2022, National Grid. 2022. https://www.nationalgrideso.com/document/263951/download

- Alternative low-carbon generation such as tidal, nuclear or conventional carbon remain important contributors to achieving the 2050 Net Zero obligation, however their contributions in the important 2020s will be very low.

- Large-scale solar generation can and will play an important role in the resilience of the GB electricity system from an adequacy and system operation perspective.

- Large-scale solar generation also supports security of supply by helping reduce the national dependency on imported hydrocarbons, whilst keeping cost comparatively low against that of other conventional and low-carbon generation, both in GB and abroad. As solar generation assets are becoming larger and more affordable, the development of assets such as the Proposed Development will provide decarbonisation and commercial benefits to consumers.

5.82 These general benefits of solar generation in GB also apply specifically to the Heckington Fen Solar Project:

- The Proposed Development is a substantial infrastructure asset, capable of delivering large amounts of low-carbon electricity to local and national networks. Alongside other solar schemes, the Proposed Development is of critical importance on the path to Net Zero, as highlighted by this statement with NGESO scenarios predicting the need for 25 – 40GW of operational solar capacity in GB by 2030.

- The Proposed Development's NETS connection means that it will be required to play its part in helping NGESO manage the national electricity system.

- The Proposed Development will maximise the capacity of generation in the proposed area, and this will benefit all GB consumers, and the solar industry generally.

5.83 The Proposed Development will further deliver power ahead of other potential technologies (such as nuclear which have longer time frames before they become operable) which will support only decarbonisation in future years if they are brought forwards.

5.84 In summary: the substantial and well-timed contributions offered by the Proposed Development to UK decarbonisation and security of supply, while helping lower

costs for consumers throughout its operational life, will be crucial on the path to Net Zero. Without the Proposed Development, a significant and vital opportunity to develop a large-scale low-carbon generation scheme will have been passed over, increasing materially the risk that future Carbon Budgets and Net Zero 2050 will not be achieved.

5.85 The Proposed Development is a leading GB large-scale solar scheme, providing a critical stepping-stone towards the future of efficient decarbonisation through the deployment of large-scale, technologically and geographically diverse low-carbon generation schemes. This Proposed Development addresses all important aspects of existing and emerging government policy.

6. PLANNING APPRAISAL

6.0 This section of the Statement contains a detailed analysis of the Application against the relevant national planning policy and other material considerations (including the NPPF and Local Plans). These considerations have been derived from an understanding of the process for Nationally Significant Infrastructure Projects (NSIPs) and the key policy documents set out in the previous section, and various assessments and surveys of the site and its surrounds that form part of the Application.

6.1 This appraisal begins by assessing the principle of the Application in policy terms to understand the need for the development and how alternatives have been considered, as required and understood by various key policies. The relevant planning issues are then considered in accordance with the generic issues as set out in Part 5 of EN-1. Therefore, this section is broken down into the following issues which are considered pertinent to aid the decision-making process.

- **Principle of Development**
  - ***Sustainable development, and Alternatives***
- **Land Use and Agricultural Land**
- **Landscape and Visual**
  - ***Landscape character, and Visual amenity***
- **Biodiversity and Geological Conservation**
- **Historic Environment**
  - ***Physical effects, and Non-physical effects***
- **Dust, Odour, Artificial Lighting**
- **Flood Risk**
- **Air Quality and Emission**
- **Traffic and Transport**; and
- **Water Quality**

5.4 Each of these issues is examined in turn.

Principle of Development

Sustainable development

6.2 EN-1 states that 'Sustainable development is relevant not just in terms of addressing climate change, but because the way energy infrastructure is deployed affects the well-being of society and the economy.' (paragraph 2.2.7)

6.3 Paragraph 8 of the Framework advises that in order to achieve sustainable development, economic, social and environmental gains should be pursued in mutually supportive ways through the planning system.

Economic Gains

6.4 The development will provide the host community with employment and business opportunities for component suppliers / installers and those involved in grid connection, transport and logistics. Where possible, local businesses will be contracted for relevant parts of the scope of works over the period of construction (labour and materials such as hardcore, etc), operation and maintenance. There will be additional induced impacts during the construction period with any incoming construction workers (engineers, project managers, etc) spending their wages at a local level (restaurants, retail stores, etc) and using local accommodation.

6.5 Chapter 11 of the ES (document reference: 6.1) provides an assessment of the Socio-Economic impact of the scheme.

6.6 In respect of the construction phase, the assessment indicates that the Proposed Development will have the following temporary effects:

- 436 peak on-site construction jobs generated, over the 30-month construction programme, with an estimated peak of 109
- £182.9 million of gross value added over the 30-month construction programme.
- £
- Increase (of up to 218 construction workers) in demand on Serviced and Non-Serviced Accommodation in North Kesteven.

6.7 In respect of the operational phase, the assessment suggests that the Proposed Development will have the following permanent effects:

- 5 direct additional jobs in the North Kesteven and Boston economy.
- £627,000 of gross value added per annum or £29.3 million over the 40-year period of the project (present value).
- Business rates £1.3million per annum and £29.3million over the 40-year project lifespan (present value).

6.8 In respect of the decommissioning phase, the assessment suggests that the Proposed Development will have the following temporary effects:

- 200 peak on-site construction-sector jobs over the 18-month decommissioning programme.
- £52.5million of gross value added over the 18-month decommissioning programme.
- Increase (up to 100 construction workers) in demand on Serviced and Non-Serviced Accommodation in North Kesteven.

6.9 Overall, there are beneficial effects in terms of employment, economic contribution, and business rates in all relevant phases of development. Effects relating to accommodation demands in the construction and decommissioning phases are adverse but not significant.

Social Gains

6.10 The energy production would help to meet the national and local need for energy and therefore the development would fulfil an important social role.

Environmental Gains

6.11 Environmental gains would be secured through carbon reduction and local biodiversity enhancements. The Proposed Development would help support the transition to a low carbon future and produce a significant amount of renewable energy. The proposed solar farm is an example of a development which presents considerable opportunity for landscape and biodiversity mitigation and enhancement.

6.12 Overall, the development would positively contribute towards the achievement of sustainable development. It would improve biodiversity; provide renewable energy infrastructure that would contribute towards building a strong, responsive carbon

zero economy; and social gains would be delivered by fostering a well-designed scheme which is safe for the environment.

Alternatives

6.13 Environmental Impact Assessment legislation mandates the Applicant to consider alternatives. With regards to renewable energy, the principal means of considering alternatives is through the site selection process, in identifying a site which is both technically feasible and which minimises potential environmental impacts. Alternative energy generating technologies are also a material consideration together with a 'no development' approach. The consideration of these alternatives is set out in detail in Chapter 3 of the Environmental Statement (document reference: 6.1.3)

6.14 In terms of site selection, one of the biggest constraints which to be considered when developing renewable led energy scheme is gaining a viable point of access to the utilities network. For energy storage schemes the situation is more complex as the connecting substation must have sufficient export and import capacity. The Applicant has accepted the grid offer from National Grid and secured the 400 MW export capacity required for a project of this size. A 250 MW import connection is also secured.

6.15 Security of connection is one of issues addressed within the Sequential and Exception Test Report appended in full to the submitted Flood Risk Assessment (FRA) Report. This work has been undertaken to comply with NPS EN-1 which states that the Infrastructure Planning Commission (now, for the purposes of this application, the Secretary of State) should not consent development in Flood Zone 2 in England unless it is satisfied that the Sequential Test requirements have been met and that it should not consent development in Flood Zone 3 unless it is satisfied that the Sequential and Exception Tests requirements have been met. (EN-1 para. 5.7.12)

6.16 This proposal is therefore subject to both tests, and the broad methodology for the Sequential Test (along with the related 'alternative sites' assessment within the Environmental Statement) has been discussed with North Kesteven District Council and Lincolnshire County Council.

6.17 Sites selected were required to meet the following criteria:

- A location within a Search Area based on a 15km radius from the Bicker Fen Substation;

- A geographical extent similar in scale to Heckington Fen (circa 550 hectares);
- A potential suitability for large-scale ground mounted solar development (excluding sites that are allocated or safeguarded within the Development Plan); and
- A potential status as being 'reasonably available' for such development.

6.18 NPS EN-1 states that any alternative site must also have a 'realistic prospect of delivering the same infrastructure capacity….in the same timescale as the proposed development.' Whilst National Grid has confirmed with Ecotricity a connection date of 2027 with regards to the Bicker Fen substation, the company has also indicated that there is no capacity for a development of a similar scale at Spalding substation until after 2030[40]. On this basis, the sequential test is restricted to a 15km radius search area around the Bicker Fen substation.

6.19 The Environmental Statement sets out in detail the identification and assessment of 13 'alternative sites' within Chapter 3 – Site Description, Site Selection, and Iterative Design Process (document reference: 6.1.3) as part of a comparative 'Back Check and Review' process. This criteria-based approach aligns with the Environment Agency's guidance on the sequential test which states that sites should be compared in relation to flood risk; Local Plan status; capacity; and constraints to delivery including availability, policy restrictions, physical problems or limitations, potential impacts of the development, and future environmental conditions that would be experienced by the inhabitants of the development.

6.20 To meet the EN-1 policy in respect of a realistic prospect of delivery in the same timescales as Heckington Fen, consideration has been given to whether the 13 sites can be considered as 'reasonably available' (as defined at paragraph 162 of the NPPF). Heckington Fen is considered available as the Applicant has a legal agreement with the landowner.

6.21 The Sequential and Exception Test Report, complementing the detailed 'alternative site' assessment within the Environmental Statement, demonstrated that there are no reasonably available alternative sites appropriate for the proposed development located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), it is necessary to provide evidence to demonstrate how

[40] Based on information from National Grid's Connect Now, available at: https://customer.nationalgridet.com/s/login/?startURL=%2Fs%2F&ec=302

both elements of the Exception Test will be satisfied. The Test Report and this document provide significant evidence to demonstrate that Heckington Fen Energy Park would provide wider sustainability benefits to the community that outweigh the flood risk.

Land Use and Agricultural Land

6.22 The findings of the Agricultural Land Classification (ALC) assessment is set out in Section 2, and reference is made to the reduction in the scale and proportion of Best and Most Versatile (BMV) land to be used within the Energy Park. Although 49% of the area for energy development is BMV, the reality is that as Grade 3a land is interspersed with the areas of Grade 3b, they are not farmed separately. In other words, the site is currently farmed to reflect the lower Grade 3b quality of land, further detail is available the Savills Report (document reference 6.3.16.1).

6.23 There would be no permanent loss of any agricultural land; the proposal is temporary in nature with an operational lifespan of up to 40 years. Following cessation of the Proposed Development, and as part of the contractual obligations with the landowner, all equipment will be removed from site.

6.24 Agricultural use would be maintained via grazing of sheep. The introduction of an alternative use for 40 years will add significantly to the organic matter levels in the soil. There will be an expected increased productivity from arable cropping uses following the removal of the panels. Whilst there is limited research data available at the present time, there are indications that soil health and, to a lesser degree, soil structure will be enhanced by a 40-year period of permanent grassland cover.

Landscape and Visual

6.25 The Application submission is supported by a Landscape and Visual Impact Assessment (LVIA) to consider the potential landscape and visual effects of the Proposed Development. This forms Chapter 6 of the Environmental Statement (document reference: 6.1.6). The LVIA discusses the relevant planning policy context for landscape and visual issues in detail, and this commentary is not replicated here.

6.26 The LVIA acknowledges that significant effects on landscape character and visual amenity are an inherent consequence of a new development of this type and scale. However, in this case, the potential adverse effects have been determined to be limited by the existing vegetation that characterises the close to medium range

landscape, distance, and large scale of the landscape, which collectively diminish the perception of scale and mass of the Proposed Development. The proposed mitigation planting has the potential to considerably reduce the identified significant effects, which would be geographically highly limited, both in character and visual terms. The Proposed Development is not located within any national statutory protected landscape designations, or within any regional or local non-statutory landscape designations.

6.27 Effects on landscape character arise either through the introduction of new elements that physically alter the existing pattern, or through the visibility of the Proposed Development that changes the way in which landscape character is perceived. The published assessments by Natural England and the North Kesteven Landscape Character Assessment, prepared by David Tyldesley and Associates for North Kesteven District Council (September 2007) constitute the baseline landscape character within the local area and the basis for the landscape character assessment. The Off-site Cable Route Corridor and National Grid Bicker Fen Substation Extension Works fall within the landscape described in Boston Borough Council's Landscape Character Assessment of Boston (2009).

6.28 The LVIA's assessment on views considers the indirect effects of the Proposed Development on the appreciation of the local landscape as experienced by key visual receptors associated with settlements, transport routes and PRoWs. During the operational stage, the built elements of the Proposed Development including the solar modules, Onsite Substation and Energy Storage System, extension to the existing National Grid Bicker Fen Substation at Bicker Fen (and the Additional Works areas south and west of the Substation – AW and AW2 as part of the Change Application), and ancillary features such as inverters / transformer stations would be visible in the long term. The on-site and offsite Cable Route Corridor would be underground and would not be visible during the operational stage.

6.29 The cumulative assessment within the Environmental Statement covers the potential cumulative effects on landscape character receptors and views. Cumulative effects on the landscape elements will be generally avoided, given that the extent of the Order Limits does not overlap with any of the identified cumulative schemes, except for the Vicarage Drove Solar Farm (application reference B/21/0443).

6.30 The LVIA also details the how the evolving design of the Proposed Development has sought to mitigate the impact on landscape and visual receptors through

embedded mitigation and additional measures set out within the outline Construction Management Plan (document reference: 7.7), the outline Landscape and Ecology Management Plan (document reference: 7.8) and the outline Demolition and Restoration Plan (document reference: 7.9). These measures have ben designed to ensure that any disturbance or effects upon the visual receptors during the construction, operation and decommissioning of the Proposed Development are avoided and/or reduced as far as is practically possible.

6.31 The LVIA also describes the proposed landscape enhancements, notably the community orchard in the south-west corner of the Energy Park site, and the access benefits arising from the proposed permissive footpath.

Biodiversity and Geological Conservation

6.32 Chapter 8 of the Environmental Statement identifies and describe all potential impact effects on ecology, ornithology and nature conservation value during construction, operation and decommissioning and describes mitigation and enhancement measures. The chapter provides an assessment of the potential direct and indirect effects on nature conservation designations, important habitats and protected species. It considers avoidance design measures, mitigation, management activities to minimise any potential effects and potential enhancements.

6.33 The Energy Park and associated Off-Site Grid Connection will be situated within an intensively farmed landscape of low nature conservation value. The substation extension is within the National Grid land boundary, alongside the existing Bicker Fen Substation. The large fields associated with the remainder of the Proposed Development are divided by wet ditches and Internal Drainage Board managed watercourses. There are limited number of 'gappy' species poor hedgerows on the Energy Park Site, and a small number trees mainly restricted to plantation woodlands and small number of isolated trees.

6.34 There are no non-statutory designations within the Energy Park site, and none in close proximity. The South Forty Foot Drain Local Wildlife Site (LWS) – with its bankside vegetation comprising rough neutral grassland, scrub, and trees - is located approximately 1km to the south, with Cole's Lane Ponds LWS 6km to the south-east. The Heckington Grassland Site of Nature Conservation Interest (SNCI) is located approximately 5km to the west.

6.35 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. The nearest SSSI is at Horbling Fen, designated for its geological interest, some 11.5km to the south-west. The Wash, with its SSSI/SPA/SAC/Ramsar and NNR status, is approximately 17km to the southeast of the Energy Park.

6.36 The careful design of the Proposed Development would ensure that the most ecologically valuable habitats within the survey area are retained, and a number of mitigation measures would be introduced to reduce or eliminate potential adverse effects from both the construction and operational phases. The preparation and implementation of a Construction Environmental Management Plan (CEMP) will minimise construction related effects.

6.37 The initial design and construction methods will ensure negative effects are minimised from the outset. The design of the Energy Park includes a 9m stand off from all IDB watercourses and 8m from all other drains which will ensure protection of water vole (should they re-colonise the Energy Park Site) and minimise the risk of silt run-off during construction. Directional drilling under the South Forty Foot Drain will ensure no negative effects on the Local Wildlife Site.

6.38 The design also includes the creation of 68.8ha of species rich grasslands, 0.4ha of mixed woodland and 2.15ha of traditional orchard managed specifically for nature conservation, within the Energy Park Site. These high-quality grasslands will be managed to maximise their value for ground nesting farmland birds, bees, butterfly and other invertebrates. These grasslands will also provide extensive foraging habitat for Brown Hare and Badger. A number of bat roost boxes of different designs will be placed at appropriate locations around the Energy Park.

6.39 Beneath the solar panels some 440ha of intensive arable farmland will be converted to sheep pasture. The conversion of the land from intensive arable to grass pasture will reduce the runoff of agri-chemicals and topsoil into in the Wash SPA/SAC/SSSI via the drainage network. There will be an overall significant residual, locally beneficial effect on biodiversity of area. The Biodiversity Net Gain calculation estimates a net gain of over 100%.

6.40 The creation and management of these habitats will be secured through a Landscape and Ecological Management Plan. This includes conservation

management of grassland to increase its species richness and ensure land is available for use by ground nesting birds.

6.41 The proposed ecological enhancements would provide a positive, permanent contribution to biodiversity on the site. By adopting avoidance, mitigation and enhancement measures, the Development will be in accordance with relevant local and national planning policy.

Historical Environment

6.42 The application proposal is supported by a Heritage Assessment prepared by Pegasus Group and various Archaeological surveys including a Geophysical Survey by ASWAS, Headland Archaeology, Magnitude Surveys, and SUMO Geophysics, with trial trenching by Wessex Archaeology.

6.43 The assessment has included a review of a comprehensive range of available sources, in accordance with key industry guidance, in order to identify known and potential heritage assets located within the application site and its environs which may be affected by the proposals. The potential effects of the proposals on the significance of identified heritage assets, including any potential physical effects upon buried archaeological remains, and potential non-physical effects resulting from the anticipated changes to the settings of heritage assets, have been assessed.

6.44 The closest designated heritage assets to the Application site comprise the Scheduled Monument and four Grade II Listed Buildings lie within a 2km radius of the Energy Park site, as detailed within the Environmental Statement (Figure 3.5). There is intervisibility between the Energy Park site and the Listed chapel on Calydike Bank as well as the non-Listed chapel on Sidebar Lane.

6.45 The Application has the potential to affect known archaeological remains associated with possible prehistoric and medieval archaeological remains, as well as archaeological remains of uncertain date. The excavation of cable trenches and building foundation and the inserting/removing any mounting system structures have the potential to truncate or totally remove the archaeological remains within their footprint. Appropriate mitigation measures regarding archaeological remains are therefore detailed within the Construction Environmental Management Plan.

6.46 The various heritage assessments have established that the development would not lead to harm to any designated heritage assets located in the vicinity of the Site. No further mitigation with regard to these assets is required.

6.47 Overall, for the scale and nature of the proposed development very few impacts are expected from the Application. Suitable measures are in place to ensure that archaeological remains are protected, and the Development will have limited impacts on designated assets outside of the site.

Dust, Odour, Artificial Lighting

6.48 In relation to dust, both the Air Quality Assessment and Ecological Survey have assessed the likely impacts on human and other sensitive receptors, and provided suitable mitigation strategies to avoid any unacceptable impacts. The nature of the development means that lighting and odour emissions are very limited and would not be considered likely to cause any nuisance to the amenity of any local communities.

6.49 The lighting associated with the construction and decommissioning phases would be limited where practical, subject to the timing of the construction activities and time of the year, and is considered to be short term effect. There is no permanent lighting proposed as part of the Proposed Development except for the localised emergency security lighting in proximity to the substations and control buildings. Such lighting would be triggered by movement only and so would not be active for all hours of darkness. CCTV to be installed along the security fencing associated with the Onsite Substation and Energy Storage System would utilise infrared technology.

Flood Risk

6.50 The Application is supported by Flood Risk Assessment prepared by JBA Consulting Limited. The site is predominantly within Flood Zone 3. The site is currently used for arable farming which causes compaction, reduces absorption of rainwater by the soil and increases soil runoff, particularly after harvesting. It should also be noted that the use of pesticides and fertilisers in arable farming affects the quality of water entering the environment from the site.

6.51 The Proposed Development therefore brings significant benefit to the management of surface water, a reduction in runoff leaving the site and incorporates improvements in water quality entering the environment. The Proposed

Development does not increase the risk of flooding elsewhere. A management programme is included which ensures the soil and watercourse conditions will remain favourable for the lifetime of the development.

6.52 The proposal meets the requirements of national and local policy regarding flood risk.

Air Quality and Emissions

6.53 The submitted Air Quality and Carbon Assessment concludes that it is not expected that there will be any significant residual effects on air quality taking account of any significant emissions from any road traffic generated by the scheme. Existing air quality levels will remain relatively unchanged.

Traffic and Transport

6.54 The Transport and Access ES chapter assesses the potential effects relating to transport and access. It considers the potential effects on vehicular traffic flows, accidents and safety, severance, driver delay, hazardous and dangerous loads and dust and dirt. The impact of the construction phase traffic is considered to be of Negligible significance, and therefore in EIA terms is Not Significant.

6.55 The Application is supported by a Transport Statement and Outline Construction Traffic Management Plan (OCTMP) (document reference: 7.10). During the operational phase of the Proposed Development it would be excepted that there would only be limited vehicle movements associated with maintenance and security of the site, and the focus of any likely transport impacts is primarily in relation to the 30-month construction period. The OCTMP concludes that the proposed package of mitigation will ensure that the Proposed Development is acceptable in highway terms (and that there will be No adverse Significant effects in relation to EIA).

6.56 The OCTMP describes the arrangements that are proposed for the period of construction activities at the site and sets out the following:

i. Site access arrangements.

ii. Routing for construction traffic.

iii. Vehicle numbers, size and frequency.

iv. Details relating to the proposed cable route; and

v. Proposed mitigation, including condition surveys.

6.57 A Construction Traffic Management Plan (CTMP) will be implemented during the construction phase of the Development. The aim of the CTMP is to minimise the effect of the construction phase on the highway network. No additional mitigation is required during the operational phase due to the low transport impact of site maintenance.

6.58 Overall, it is not considered that the Development will give rise to any substantial impacts on the surrounding transport infrastructure and CTMP will mitigate any these impacts in so far as possible, in accordance with the requirements of EN-1 and local planning policy.

Water Quality

6.59 A Phase 1 Ground Conditions Desktop Study has been prepared to support the Application and the Flood Risk Assessment carried out by JBA Consulting Limited. The desk top study has indicated that the current site has a prolonged history of agricultural usage.

6.60 The site is marked by soils which, by the nature of their high permeability, readily transmit a wide range of pollutants because of the rapid drainage and low attenuation potential. An improvement in water quality entering the environment can be expected due to the cessation of the use of pesticides and other fertilisers. The desk top study concludes that the likelihood of solar array construction creating an adverse or worsening impact on the contaminant exposure model given above is therefore considered low. There is very limited risk of any new controlled water pollutant linkage being created due to the very shallow depth of construction activity, and the non-polluting nature of the development.

6.61 Again, the assessment sets out that across the majority of the site it is not considered likely that any runoff or enhance erosion will occur, in view of the granular soils, described as being well-drained or free-draining.

6.62 Overall, the development would not have any adverse impacts on water quality, water resources and physical characteristics of the water environment.

7. PLANNING BALANCE AND CONCLUSION

Generation of renewable energy; contribution to a low carbon economy; consistency with the Government's policies in meeting the challenge of climate change

7.1 The proposal is for the installation of ground mounted solar arrays to provide over 400MWp, equating to the annual energy consumption of approximately 100,000 households and with an anticipated CO_2 displacement following one year of generation is circa 75,000 tonnes. This should carry considerable weight in the planning balance, as should the co-location of energy storage.

7.2 In the recent Cleve Hill Solar Park DCO Decision the Secretary of State for Business, Energy and Industrial Strategy and the Examination Authority agreed that substantial weight should be attributed to the contribution that the solar PV element would make towards the identified need for additional renewable energy generation, consistent with local and national policies on sustainable development. The Secretary of State also agreed with the Examination Authority that the proposed co-located battery energy storage system to be a factor of significant additional weight. The same must apply to the Proposed Development.

7.3 This approach to the planning balance has also been evidenced recently in a number of Town and Country Planning Act S.78 appeals, including within the following examples:

- a recent (2022) appeal decision in respect of a proposed 49.9MW development north of Halloughton in Nottinghamshire (ref: APP/B3030/W/21/3279533). At paragraph 74 the Inspector refers to the *'imperative to tackle climate change'*, along with the *'very significant benefits clearly and decisively'* outweighing *'the limited harm'*.

- A subsequent 2022 appeal was allowed (along with costs) for a 49.9MW scheme at Langford near Cullompton in Devon (ref: APP/Y1138/W/22/3293104), following recovery by the Secretary of State. At para 67 of the Inspector's report, it was noted that '*The scheme is a renewable energy project with carbon savings – especially important in the light of the energy security crisis. There is a presumption that such schemes should be allowed where impacts can be made acceptable. This matter is of substantial weight, as was found in the decision at Halloughton.'* Within the decision letter it was noted that '*The*

Secretary of State affords the production of electricity significant weight in favour of the proposal' (paragraph 21).

- A third 2022 appeal decision relating to a solar farm at Bishop's Itchington near Stratford-Upon-Avon in Warwickshire (ref: APP/J3720/W/22/3292579) is also relevant. The Inspector agreed with the Appellant that *'the provision of clean renewable energy which contributes to security of supply attracts substantial positive weigh*t' (paragraph 33).

7.4 The Energy Storage facility also has an important role in the planning balance. In the Cleve Hill DCO decision the Secretary of State agreed with the Examining Authority that *'the proposed battery energy storage system to be factor of significant additional weigh*t'.

7.5 The development is clearly in accordance with the Government's policies on meeting the challenge of climate change. National Policy Statement for Energy (EN-1) sets out the starting point for decision making, this being the presumption in favour as set out in Paragraph 4.1.2. The presumption means that the determining authority should grant permission for development unless specific and relevant policies indicate that the consent should be refused.

7.6 The NPPF identifies the need to support the transition to a low carbon future in a changing climate, and to encourage the use of renewable resources. The development does both of those things. Planning is also acknowledged to play a key role in secure reductions in greenhouse gas emissions and in supporting the delivery of renewable and low carbon energy; again the application proposal contributes towards this aim. The NPPF says that applications for renewable energy should be approved if the impacts are acceptable. Here, while there are visual setting impacts, these are not unacceptable. Accordingly, in this case the NPPF favours approval.

7.7 The Planning Policy Guidance explains the importance of increasing energy from renewable technologies 'will help to make sure the UK has a secure energy supply, reduce greenhouse gas emissions to slow down climate change and stimulate investment in new jobs and businesses'. The development proposals contribute to meeting those objectives.

Ecology

7.8 Environmental gains would be secured through carbon reduction and local biodiversity enhancements. The proposed development would help support the transition to a low carbon future and produce a significant amount of renewable energy. The introduction of seasonal sheep grazing together with appropriate management to facilitate the development of a diverse grassland beneath the arrays would benefit a range of native wildlife for a 40 year period. The proposal would therefore deliver on the environmental arm of sustainable development.

7.9 The wider environmental benefits and sustainability credentials of increased production of energy from renewable sources represents a significant case in favour of the development proposals. The cessation of intensive agricultural practices within the development site in the development boundary, will in turn allow the introduction of ecological enhancement that will benefit a range of native wildlife for 40 years and beyond. Ecological enhancements along with a positive and sympathetic land management regime would bring substantial biodiversity net gain of over 100%, as set out within the submitted Environmental Statement. This degree of ecological enhancement should be given significant positive weight.

7.10 These net gain figures far are exceed those considered within the Halloughton appeal, and it is useful to note that the Inspector stated that 'Whilst BNG will be a requirement of the Environment Act 2021, the minimum requirement is currently set at 10%. Thus, even acknowledging that the assessment starts from a low base in terms of the ecological value of the site, a gain of some 73%, is substantial and a benefit that attracts significant weight' (paragraph 59).

7.11 Similarly, in the Langford decision, the Secretary of State 'notes that the Inspector considers that the acknowledged benefit of the additional planting, which would remain after the end of the limited period, should be afforded significant weight and that the unchallenged Biodiversity Net Gain (BNG) is a further substantial benefit. The Secretary of State considers that the additional planting proposed would contribute to the overall BNG and therefore collectively affords the additional planting and BNG significant weight.'

Landscape

7.12 It is acknowledged that there will be a change in the landscape character of the area. However, the Landscape and Ecological Management Plan ensures that the proposal is in line with relevant policy in EN-1 in that it has regard to siting,

operational and other relevant constraints and minimises harm to the landscape, providing reasonable mitigation where possible and appropriate.

7.13 The selected site is appropriate in that it can accommodate the proposed solar park without significantly affecting the landscape character of the wider countryside or any amenities of residents in the vicinity. The temporary and reversible nature of the development, together with the measures that are to be taken to enhance and encourage the ecological diversity of the site, will ensure that in the long term the site can not only be restored to its current use, but will also have been improved.

7.14 It is important to appreciate that some effect on landscape character and visual amenity is an inherent consequence of a new development of this type and scale. The submitted LVIA concludes that whilst certain elements of the Proposed Development would, inevitably, be more visible, for a scheme of its scale the residual landscape and visual effects are considered to be highly limited. Those effects which have been identified as being significant should therefore be balanced against the benefits of the Proposed Development.

Sustainable Development - Economic and Social Benefits

7.15 National Policy advises that in order to achieve sustainable development, economic, social and environmental gains should be pursued in mutually supportive ways through the planning system.

7.16 The socio-economic information in the previous section outlines the number of jobs and the gross value added to the local economy alongside the scale of the capital investment. A total of £278.6 million can be expected to be added to the North Kesteven economy over the life-time of the development. Around 600 peak on-site jobs generated between the construction and decommissioning phases, and an additional 5 permanent jobs will be created in the North Kesteven economy.

7.17 The development would therefore deliver an important economic benefit which should be given moderate positive weight in the decision. This is in accordance with the Langford decision in which concluded that 'weighing in favour of the proposal is…the economic benefits which are afforded moderate weight.'

7.18 Social gain would be provided through the generation of electricity, reducing reliance upon overseas energy sources and meeting energy needs in the coming decades. Beyond the energy inflation-fuelled 'Cost of Living Crisis' of 2022 and 2023, the UK has concerns over long-term energy supply, and the provision of

energy infrastructure required to support domestic, commercial and industrial demand. In this sense, the development would fulfil an important role in sustaining a fundamental societal need.

7.19 The PPG on Renewable and Low Carbon Energy advises that the aim should be to seek 'positive local benefit from renewable energy development' and that 'local planning authorities may wish to establish policies which give positive weight to renewable and low carbon energy initiatives which have clear evidence of local community involvement and leadership'. In the foreword to the UK Solar PV Strategy Part 1 Greg Barker MP said "local communities must be willing partners in solar expansion; not just consulted but respected and wherever possible, financial partners in local projects".

7.20 The application proposal through its iterative process of consultation and design, seeks to respond as fully as possible to needs of the local community; an important material consideration in support of the application proposals.

Community Support

7.21 There is demonstrable local support, as demonstrated by: -

- The fact that the majority of responses by local people to the planning application itself have been supportive with very few objections, as set out in the Consultation Report (document reference 5.1).
- Positive interactions with the neighbouring Build-A-Future East Heckington, including a site visit to see the archaeological works taking place in Autumn 2022.
- The fact that the local authorities and many of the statutory consultees have actively engaged with the proposal, and in due course are expected to reach *provisional* agreement with regards to a Statements of Common Ground.

7.22 Overall, the proposals are entirely suitable to the site and its surrounds; consistent with Planning Policy and all relevant material planning considerations; and will achieve a high-quality design as envisaged by planning policy.

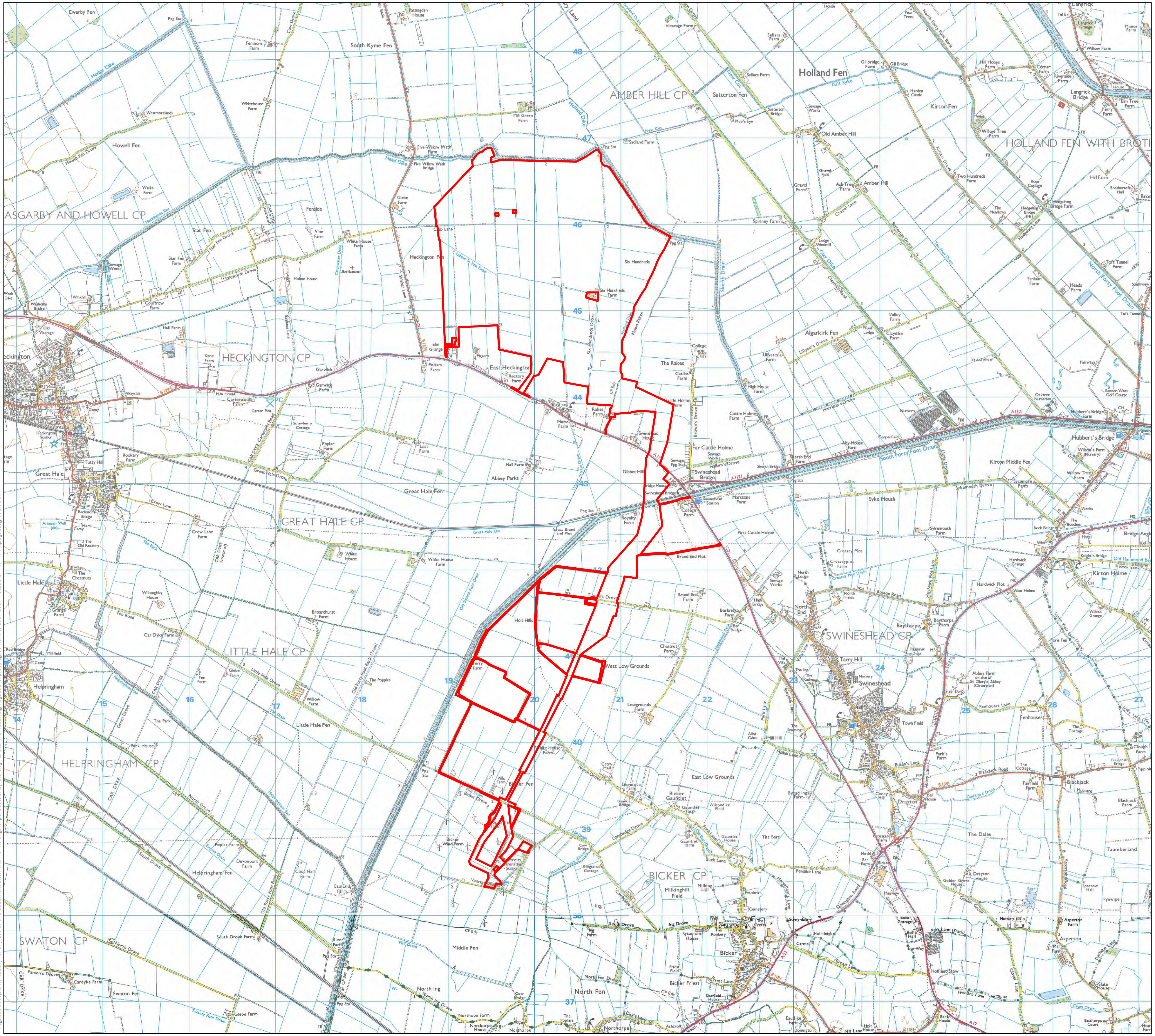
7.23 For all the reasons outlined in this Planning Statement, it is considered that the application proposals are entirely consistent with the relevant planning policies and consent should be granted.

Conclusion

7.24 EN-1 is clear that there is a need for renewable energy infrastructure and that the scale of requirements and the urgency ensures that there must be no upper limits on capacity. Decision makers must give substantial weight to the contribution NSIP projects will make towards satisfying this need. Key to unlocking this in the ability to provide power when it is most required, that is at night and in the winter months. The energy storage element of the scheme, while not a renewable energy itself, enables the transition to low carbon energy production by storing energy and realising it into the system when it is most required. Further, this project is being brought forward without public subsidies and relies solely on private sector investment.

7.25 It is considered that there is a demonstrable and overarching policy drive from both planning and other legislative documents to deliver renewable energy on the scale and size proposed by this Development. The urgency by which this needs to be delivered should be given great weight in the decision-making process and any adverse impacts of the development must be considered against this comprehensive and pressing need to deliver energy capacity in the form of renewable sources.

Appendix 1: Site Location Plan



KEY

Order Limits

NOTES:
Change of submission

DCO Document Reference: 6.2.1
APFP Regulation: 5(2)(a)

FIGURE 1.1 ORDER LIMITS

DATE	SCALE	SHEET	REVISION
14/06/2023	1:45,000@A3	-	H

DRAWING NUMBER
P20-2370_01

0 1.5 km

ecotricity

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