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

Preliminary Environmental Information Report

Volume 1

Steeple Renewables Project

Land at Sturton le Steeple, Nottinghamshire

3. Site Description, Site Selection and Iterative Design Process

3.1 Introduction

3.1.1 This chapter of the PEIR provides a description of the Site and its surrounding context. Detailed topic specific descriptions are expanded upon in the supporting technical chapters and technical appendices. It also provides a description of the main alternatives considered, including the site selection process and the evolution of the Proposed Development design so far.

3.1.2 This chapter includes the following sections:

- Site Description- a description of the existing conditions within the Proposed Development and the surrounding areas and the key receptors that will be assessed in detail within the technical topic chapters;
- Alternatives in EIA - Overview of the legislation and policy which underpins the need to consider Alternatives in EIA, including consideration of the 'No Development' Alternative.
- Site Selection- an initial overview of the site selection process undertaken for the Proposed Development (the Point of Connection ("POC") for the Proposed Development is at the site of the former West Burton Power Station (the power station itself is currently in the process of being decommissioned); and
- Iterative Design Process- an initial overview of the iterative design process undertaken so far and a description of the main alternatives to the Proposed Development.

3.2 Site Context and Description

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

- Statutory nature conservation designations;
- Local nature designations;
- Scheduled Monuments;
- Conservation Areas;

- Waterbodies;
- Flood zones;
- Areas of vegetation; and
- Public Rights of Way ("PRoW").

3.2.2 The Site extends to 898 ha and primarily comprises multiple agricultural fields defined by hedgerow and individual trees. The Site also includes part of the existing West Burton Power Station site covering the area around the existing 400kV substation, and a number of local roads:

- Sections of Wheatley Road; Station Road; Gainsborough Road, and Wood Lane in the north-western portion of the Site; and
- Littleborough Road, and Common Lane, in the eastern portion of the Site.

3.2.3 The nearest settlement to the Site is Sturton le Steeple. There is a network of roads located both within the Site and adjacent to the boundary. The River Trent lies adjacent to the eastern boundary of the Site.

3.2.4 Within the wider surrounding area there are the following settlements including Knaith approximately 250m east on the opposite side of the River Trent, North Leverton with Habblesthorpe and Fenton located adjacent to the southern boundary, South Leverton approximately 1.1km south, Clarborough approximately 850m west, north Wheatley and South Wheatley approximately 1.3km and 1km north-west respectively and Gainsborough is located c. 5km to the north-east of the Site.

3.2.5 The Site comprises primarily agricultural land, generally relatively large, regular shaped arable fields, with some dividing hedgerows and individual trees. A small rectangular area located in the north-western portion of the Site has been excluded from the Site; this area is part of a separate development which has secured consent for solar development (under planning application 20/00117/FUL). Small woodland plantations are located within some of the fields. Individual properties are also located close to the boundaries of the Site and within the wider surrounding area.

3.2.6 There are a number of both overhead electricity transmission/distribution lines, underground fuel, and water pipelines which pass through the Site. The locations of these are shown on **Figure 3.1 Site Constraints Plan.** Within the eastern extent

of the Site are four overhead lines which run out from the existing West Burton Power Station site in a south-easterly direction.

3.2.7 **Figure 3.1 Site Constraints Plan** provides an overview of identified environmental constraints. Further detail on topic-specific environmental constraints within, and outside of, the Site are set out in further detail within the individual topic chapters of this PEIR.

Landform and Topography

3.2.8 The Site lies towards the northern extent of National Character Area ("NCA") 48: Trent and Belvoir Vales. The NCA is described as a 'gently undulating and low-lying landform in the main, with low ridges dividing shallow, broad river valleys, vales and flood plains'. Amongst the key characteristics of the NCA it notes that *"Immense coalfired power stations in the north exert a visual influence over a wide area, not just because of their structures but also the plumes that rise from them and the pylons and power lines that are linked to them".*

3.2.9 At the district level, BDC's Landscape Character Assessment[1] identifies the Site as lying across both the 'Mid Notts Farmlands' and 'Trent Washlands' character areas.

3.2.10 As shown by **Figure 3.2 – Topographical Survey**, the Site generally slopes from west to east, towards the River Trent. Levels along the eastern boundary are at approximately 3m Above Ordnance Datum ("AOD"), rising gradually westwards towards the village of Sturton le Steeple at approximately 10m AOD, then rising more steeply to high ground at approximately 75m AOD along the western boundary. A vegetated earth bund (flood defence) runs along the eastern Site boundary with a crest level of approximately 7m AOD and a height 3-4m above adjacent land.

Soils and Agricultural Land

3.2.11 Agricultural land can be graded according to its inherent limitations for agricultural use. Grade 1 is excellent quality and Grade 5 is very poor quality. Grade 3 is divided into subgrades 3a "good" and 3b "moderate" quality land. Grades 1, 2 and 3a are

[1] Bassetlaw District Council (2009) Landscape Character Assessment [online] available at: https://www.bassetlaw.gov.uk/media/pqsnjkvk/bassetlaw-landscape-character-assessment-compressed.pdf [last accessed 30th July 2024].

defined as the 'Best and Most Versatile' ("BMV") in the Overarching National Policy Statement ("NPS") EN-1 at Paragraph 5.11.12[2].

3.2.12 A provisional Agricultural Land Classification ("ALC") assessment was undertaken during July to September 2024 across the Site. The intrusive soil survey comprised at least one hand auger boring per hectare to a depth of 1.2m below ground level (where achievable). These were undertaken to examine the soil profiles, using standard soil survey methods. Further, in order to determine the subsoil structure, at least one inspection pit was excavated for each soil type encountered.

3.2.13 The Site boundaries used to undertake the ALC assessment have altered since the survey work was undertaken (i.e., the ALC assessment used the Site boundary that was submitted at Scoping stage). Therefore, the surveyed area is larger and differs to the Site in some instances, providing a conservative ALC assessment.

3.2.14 The provisional ALC survey results for the Site are set out in **Chapter 15 'Land use and Agriculture'** of this PEIR.

Landscape

3.2.15 The Site broadly lies between the settlements of Retford and Gainsborough, occupying multiple agricultural fields within a relatively flat agricultural landscape primarily in arable use. The Site also includes part of the existing West Burton Power Station site, covering the area around the existing 400kV substation. Small woodland plantations are located within some of the fields. Two settlements or clusters of properties are located beyond the Site boundaries including Sturton le Steeple, and Fenton. Individual properties are also located close to the boundaries of the Site and within the wider surrounding area. A network of roads is located both within the Site and adjacent to the boundary, as set out in Paragraphs 3.2.3 – 3.2.4. The Sheffield – Lincoln railway line passes through the western section of the Site and the Torksey Branch railway line lies adjacent to the southwestern corner of the Site both are located outside of the Site boundary and are both minor rail lines, with the Torksey Branch currently disused, following the closure of Cottam power station. The River Trent lies adjacent to the eastern boundary of the Site. The

[2] Department for Energy Security and Net Zero (2023) Overarching National Policy Statement for Energy (EN-1) [online] available at: https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1 [last accessed 3rd December 2024].

Catchwater Drain is located in the eastern section of the Site close to the Site's boundary with the eastern side of Sturton le Steeple.

3.2.16 A series of Public Rights of Way (PRoW) are located within the Site, including a number of footpaths travelling west from Sturton le Steeple to the surrounding settlements. A footpath runs northwards through the Site, from Fenton to Sturton le Steeple, and a further footpath to the east of this also routes north through the Site. The long distance path known as the Trent Valley Way travels through the Site from east to west through the southern edge of the settlement of Sturton-le-Steeple.

3.2.17 An Arboricultural Survey has been undertaken for the Site (see **Appendix 3.1 – Arboricultural Survey Report**). No ancient Semi-Natural Woodlands ("ASNW") are located within the Site. The survey work recorded 1,045 arboricultural features within the Site. Thirty-six individual trees and six groups of trees have been recorded as high-quality (BS 5837:2012 Category A) features. The species of trees break down as twenty oak, one crab apple, four maple, six willow, one hawthorn, three ash, one lime and groups of oak, ash, lime, willow and sycamore.

3.2.18 To the west of the Site (bounding the River Trent), is a large area of wetland habitat, where mature willow trees including crack willow, while willow, goat willow and osier willow are located. This whole area of tree cover was recorded as a BS 5837:2012 Category A tree group with the subcategory '3' due to the conservation and ecological value of this habitat and the trees within.

3.2.19 One off-Site oak (T493) has been recorded as a 'veteran' tree; however, it could also be considered to be 'ancient' due to its exceptionally large stem diameter. This tree is located outside of the Site but the applied 30m buffer extends into the eastern-most portion of the Site.

Biodiversity Features and Environmental Designations

3.2.20 There are five Sites of Special Scientific Interest ("SSSIs"), four Special Areas of Conservation ("SACs"), one Special Protection Area ("SPA") and one Ramsar site within 30km of the Site, as set out in **Table 3.1**. All of the sites set out below are designated for biological reasons only.

Table 3.1 Statutory Designated Sites (biological only) within the vicinity of the Site

Site Name	Designation	Distance from the Site	Summary of designation
Clarborough Tunnel	SSSI	40m southwest	Notified for its unimproved calcareous grassland that have formed on the cuttings and spoil heaps associated with the operational railway.
Lea Marsh	SSSI	1.6km north	Unimproved floodplain meadow and wet pasture adjacent to the River Trent. Supports a number of scarce plant species and notable breeding wading bird species.
Chesterfield Canal	SSSI	1.9km west	Nationally uncommon aquatic plant communities.
Ashton's Meadow	SSSI	2.2km south	Unimproved, species-rich neutral grassland.
Treswell Wood	SSSI	2.5km south	Ash-oak-maple wood and ancient semi-natural woodland on heavy clay soils.
Birklands and Bilhaugh	SAC	17km north	Lowland raised bog, that supports Annex I habitat 'degraded raised bogs still capable of natural regeneration'. Is also notable for its invertebrate fauna.
Thorne and Hatfield Moors	SPA	19.5km north	Supports populations of European nightjar *Caprimulgus europaeus*,

Site Name	Designation	Distance from the Site	Summary of designation
			which is closely associated with lowland heathland and felled or recently planted conifer plantations. The site also supports small numbers (at nonqualifying levels) of other Annex I species: hen harrier *Circus cyaneus*, merlin *Falco columbarius*, short-eared owl *Asio flammeus* and hobby *Falco subbuteo*.
Hatfield Moor	SAC	19.5km north	Designated for its bog habitat and invertebrate fauna.
Humber Estuary	SAC	25.5km north	Supports various Annex I costal habitats, and Annex II species sea lamprey Petromyzon marinus, River lamprey Lampetra fluviatilis and grey seal Halichoerus grypus.
Humber Estuary	Ramsar	25.5km north	A representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. Supports internationally important assemblages of

Site Name	Designation	Distance from the Site	Summary of designation
			passage and wintering waders and waterfowl, as well as supporting aquatic and marine species.
Thorne Moor	SAC	28.5km north	Lowland raised bog, that supports Annex I habitat 'degraded raised bogs still capable of natural regeneration'. Is also notable for its invertebrate fauna.

3.2.21 There are 32 non-statutory designated sites and two areas of Ancient Semi-Natural Woodland ("ASNW") or Plantations of Semi-Woodland Sites ("PAWS") within 30km of the Site (see **Chapter 7 Ecology and Biodiversity** for further information).

3.2.22 There are four Sites of Importance for Nature Conservation ("SINCs") that are located wholly, or partially within the Site: Littleborough Lagoons; Mother Drain; Thornhill Lane Drain; and Blue Stocking Lane. There are two SINCs (West Burton Meadow and High House Road Verges) which are off-the Site but adjacent the boundary. Clarborough Tunnel SINC (which is also notified as a SSSI) is located 40m to the south of the Site. All other statutory designated sites and ASNW or PAWS are located over 130m from the Site.

3.2.23 The habitats within the Site are primarily cropland bound by managed native species hedgerows or drainage ditches. The cropland was primarily winter stubble during the January to March 2024 walkovers, with signs of being sown with cereal crops during the previous summer. The Site is typical of agricultural farmland; it has areas of pasture, grassland leys, and occasional areas sown with game cover mixes.

3.2.24 Several small blocks of woodland are present, and a traditional orchard is present in the north of the Site

3.2.25 There are areas of permanent grassland, typically forming arable field margins and the banks of drains, and also several parcels of modified and neutral grassland. Blue Stocking Lane SINC is located partially within the Western Biodiversity Mitigation Area and is designated in part for species-rich grassland along a bridleway.

3.2.26 Several small ponds are present at the Site. There is one larger waterbody present in the eastern biodiversity mitigation area which is designated as a SINC (Littleborough Lagoons). There is a network of watercourses within the Site, including drains and wet ditches, some of which are designated as SINCs (Mother Drain and Thornhill Lane Drain).

3.2.27 An area of land in the east of the Site is subject to occasional flooding and may be floodplain wetland mosaic and Coastal Floodplain Grazing Marsh ("CFGM"), but is currently mapped as its constituent sub-habitats (lakes, ponds, ditches, willow scrub, modified grassland, other neutral grassland, ruderal vegetation).

Cultural Heritage

3.2.28 There are no designated heritage assets within the Site. The Scheduled Monument 'Segelocum Roman Town' was formerly within the Site at scoping stage; however, the design evolution of the Proposed Development has resulted in the exclusion of this asset from the Site.

3.2.29 Within 3km of the Site, the following designated heritage assets are located (as shown on **Figure 9.2 'Designated Heritage Assets within Study Area'**):

- Nine Grade I Listed Buildings;
- Eight Grade II* Listed Buildings;
- Six Scheduled Monuments;
- Two Conservation Areas; and
- 123 Grade II Listed Buildings.

Noise and Vibration

3.2.30 The noise climate on and in the vicinity of the Site is expected to be typical of a relatively rural area, consisting of sound generated by vehicle movements along the local and more distant wider road network, birds and wildlife, farm machinery, localised human activities and overhead aircraft movements with some industrial sound emanating from the former power station site to the north of the Site.

3.2.31 Existing sources of vibration are expected to emanate from traffic movements in the area, in particular Heavy Good Vehicle ("HGV") movements. Some existing vibration may also result from the very occasional tremor and as a result of the decommissioning works that are currently taking place at the West Burton Power Plant.

Air Quality

3.2.32 The Site is not located within an Air Quality Management Area ("AQMA") and is approximately 18.6 km north-west from the nearest AQMA, named 'Lincoln NO_2 AQMA', which is located in City of Lincoln Council's (CoLC's) administrative area. This AQMA has been declared for exceedances of the annual mean nitrogen dioxide (NO2) Air Quality Objective ("AQO").

Hydrology

3.2.33 OS mapping and the Environment Agency's ("EA") web-based mapping indicates that the nearest EA Main River is the River Trent which runs along the eastern Site boundary. It flows in a northerly direction, eventually discharging into the Humber Estuary at Blacktoft Sands approximately 38km north of the Site. A large flood storage area is located on the River Trent approximately 3km north (downstream) of the Site, to the west of Gainsborough.

3.2.34 OS mapping also identifies a number of Ordinary Watercourses crossing the Site, as shown in **Figure 8.1a 'Watercourses (East)' and Figure 8.1b 'Watercourses (West)'**. The EA categorise these watercourses as primary, secondary and tertiary rivers. Two primary rivers are shown within the Site. The first is the Catchwater Drain which flows from south to north through the eastern part of the Site, discharging to the River Trent approximately 1km to the northeast of the Site. The second is the Mother Drain which flows from south to north just within the southeastern Site boundary, also discharging into the River Trent to the northeast of the Site. A significant number of unnamed secondary and tertiary watercourses pass through the Site, generally flowing from west to east, and discharging into the Catchwater Drain or the Mother Drain. Many of these were noted as dry during the site visit, which was undertaken on a dry sunny day.

3.2.35 The Ordinary Watercourses in the eastern half of the Site, including and to the east of the Catchwater Drain, are managed by the Trent Valley Internal Drainage Board ("IDB"). Those Ordinary Watercourses that do not fall under the IDB's jurisdiction

are the responsibility of Nottinghamshire County Council, the Lead Local Flood Authority ("LLFA"). The River Trent (Main River) falls within the EA's control.

Geology

3.2.36 Based on published geological records for the area (British Geological Survey ("BGS") online mapping), the eastern part of the Site between the Catchwater Drain and the River Trent is underlain by Alluvium (clay, silt, sand and gravel) and River Terrace Deposits. A small, isolated area of Till is located in the northeast of the Site. The western part of the Site has no mapped superficial deposits. The bedrock geology for the whole Site is recorded as Mercia Mudstone Group (mudstone, siltstone and sandstone).

Hydrogeology

3.2.37 Hydrogeological information was obtained from the online Magic Maps service. These maps indicate that the Alluvium and River Terrace Deposits are classified as a Secondary A superficial aquifer. The pocket of Till deposits is classified as a Secondary (Undifferentiated) aquifer. The bedrock geology is classified as a Secondary B aquifer.

3.2.38 Defra's MAGIC maps confirm that the Site is not located within 1km of a groundwater Source Protection Zone or within 1km of a Drinking Water Safeguard Zone (surface water or groundwater). However, the eastern part of the Site (land lying east of the Catchwater Drain) falls within a Drinking Water Protected Area. These are defined as locations where raw water is abstracted for human consumption providing, on average, more than 10 cubic metres per day, or serving more than 50 persons, or is intended for such future use.

3.2.39 MAGIC maps show there are no SSSIs, SACs, SPAs or Ramsar sites within the Site boundary. The Clarborough Tunnel SSSI is located adjacent to the western Site boundary. It is an area of calcareous grassland designated due to its biological interest. No other statutory designations for nature conservation and ecology are identified within 1km of the Site.

3.2.40 The latest EA published Flood Zone map included as **Figure 8.2a 'EA Flood Zones (East)' and Figure 8.2b 'EA Flood Zones (West)'** of this PEIR shows that the western c.50% of the Site lies within Flood Zone 1, representing a less than 1 in 1000 annual probability of fluvial or tidal flooding. A central band of the Site (affecting approximately 5% of the Site) lies within Flood Zone 2, representing a 1 in 100 to 1

in 1000 annual probability of fluvial flooding or a 1 in 200 to 1 in 1000 annual probability of tidal flooding. The eastern part of the Site (approximately 45% of the Site) falls within Flood Zone 3 with a greater than 1 in 100 annual probability of fluvial flooding or a greater than 1 in 200 annual probability of tidal flooding. The flood risk in this area is primarily fluvial but there is a degree of tidal influence on the River Trent. Flood defences are present along the River Trent.

3.2.41 The EA has provided outputs from its latest flood model undertaken by Jacobs in 2023. These show a significant reduction in flood extents when the flood defences are taken into account. Further information can be found in Chapter 8 'Hydrology, Hydrogeology, Flood Risk and Drainage' of this PEIR.

Geology and Ground Conditions

3.2.42 A Phase 1 Geoenvironmental Desk Study has been undertaken for the Site (see **Appendix 2.2 – Phase 1 Geoenvironmental Desk Study**). No geological faults are present on the Site, nor is the Site affected by coal mining, brine, or other mineral extraction.

3.2.43 The western portion of the Site is underlain by weathered bedrock comprising mudstones with beds of dolomitic siltstone and possible gypsum beds of Mercia Mudstone of early Triassic Age. Anticipated ground conditions in this part of the Site are a thin cover of topsoil/subsoil (<0.5m) over weathered mudstone bedrock and locally more resilient dolomitic siltstone beds.

3.2.44 The eastern portion of the Site is underlain by variable thicknesses of superficial deposits including alluvium, river terrace deposits and Glacial Till. Anticipated ground conditions are a thin cover of topsoil/subsoil (<0.5m) over silty sands, sandy clays and sands and gravels to depths of between 4.5m and 16m based on a limited number of boreholes. Bedrock comprises Mudstones of the Mercia Mudstone Group.

3.2.45 With regard to the potential for sources of contamination, no significant contaminative processes have operated on the majority of the Site. Potential Asbestos Containing Materials (ACMs), such as cement / asbestos roofing is suspected on some farm buildings. However, at this stage, no significant sources of contamination are anticipated and no development is proposed in proximity to the farm buildings.

3.3 Alternatives in EIA

Legislation, Policy and Advice Notes

3.3.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017[3] (hereafter referred to as the "EIA Regulations"), note in Schedule 4, Paragraph 2 the following for inclusion in an Environmental Statement ("ES"):

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

3.3.2 National Policy Statement ("NPS") EN-1 at Paragraph 4.3.9 states that:

"As in any planning case, the relevance or otherwise to the decision making process of the existence (or alleged existence) of alternatives to the proposed development is, in the first instance, a matter of law. This NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option from a policy perspective…".

3.3.3 The NPS confirms that from a policy perspective there is no general requirement to consider alternatives or to establish whether a development represents the best option.

3.3.4 As can be seen there are specific legislative requirements and policy circumstances which require the consideration of alternatives. These include the requirement under the Habitats Directive[4] and also in relation to avoiding significant harm to biodiversity and geological conservation interests; flood risk; and development within national designated landscapes set out in respective sections 5.4, 5.8 and 5.10 of NPS EN-1.

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

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

[3] HMSO (2017) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
[4] Conservation of Habitats and Species Regulations, 2017

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

3.3.7 The main alternatives to the Proposed Development that the Applicant has considered so far are:

- The 'No Development' Alternative, discussed at Section 3.4;
- Alternative Sites through the Site Selection process, discussed at Section 3.5; and
- Alternative Designs / Layouts, discussed at Section 3.6.

3.4 The 'No Development' Alternative

3.4.1 The 'No Development' Alternative refers to the option of leaving the Site in its current use and physical state.

3.4.2 Without development, it is anticipated that the Site would continue to be primarily in agricultural use. The agricultural processes on the Site may change over the next 40 years, depending on a number of factors, including the global market for products and chemical costs.

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

3.4.4 No further assessment has been undertaken for the 'no development' scenario because this option is not considered a reasonable alternative to the Proposed Development as it would not deliver the additional electricity generation and electricity storage proposed. As set out in NPS EN-1 at Paragraph 4.2.1, the Government has fully committed to fully decarbonising the power system by 2035, underpinning its 2050 net zero contributions. The Government has therefore concluded that there is a Critical National Priority (CNP) for the provision of

nationally significant low carbon infrastructure (Paragraph 4.2.4 of NPS EN-1). The Proposed Development if consented would contribute to this need.

3.4.5 NPS EN-1 notes however at Paragraph 4.2.7 that the CNP policy does not create an additional or cumulative need case or weighting to that which is already outlined for each type of energy infrastructure. The policy applies following the normal consideration of the need case, the impacts of the project, and the application of the mitigation hierarchy.

3.4.6 Not assessing the no development alternative is supported by NPS EN-1 at Paragraph 4.3.27 which states that:

"Alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.".

3.5 Site Selection

3.5.1 This section sets out the key technical and environmental elements that were considered when determining a suitable site to accommodate the Proposed Development.

3.5.2 There is no standard methodology for the selection of sites for renewable energy generation projects, however, assessing the environmental impacts of an NSIP requires consideration of how a site was selected for development and how any alternatives to the development were reviewed. National policy on NSIPs also requires an explanation of alternatives considered when a proposal involves development of a site in a flood zone. These are both processes that continue through the life of an application culminating in a final body of assessment material upon which a recommendation is made by the Examining Authority and a decision is made by the Secretary of State.

3.5.3 The Environmental Statement will demonstrate how a wide range of factors, including flood risk were considered by the Applicant in identifying a site for development and then how through an iterative design process the application proposal has been formulated and assessment made of the likely impacts and how those impacts, including on site flood risk, can be minimised and mitigated.

3.5.4 . The process that has been followed to date is set out below.

Stage 1 – Identify an Appropriate Area of Search

3.5.5 One of the biggest constraints to be considered when developing a renewable energy scheme is securing a viable point of connection to the electricity network.

3.5.6 Following correspondence with National Grid, the Applicant was notified of grid capacity at an existing substation at the West Burton Power Station site. This capacity was available due to the closure of the coal fired elements of the site. Due to the immediate availability of this Point of Connection (POC), the Applicant did not consider any further alternative grid connection points. Furthermore, any other grid connections may not be available until into the 2030s or beyond. The Applicant therefore made a grid connection application to National Grid for connection at West Burton Power Station and an offer was made for 600MW.

3.5.7 The POC therefore formed the centre point of the Area of Search which was used when identifying a suitable site.

3.5.8 In order to minimise potential environmental impacts associated with cable routes, and to minimise the potential for any transmission losses that may occur along longer lengths of cabling, it is preferable to locate a renewable energy development as close as reasonably practicable to the POC.

3.5.9 However, it is also important that when selecting a site, due consideration is given to minimising potential environmental effects that may arise from locating the development in that location.

3.5.10 It was therefore deemed appropriate that the Area of Search around the POC should be at 15km, to ensure that every opportunity had been given to finding a site that was both technically feasible and minimised any potential environmental effects. Beyond 15km, it was considered that the technical restrictions and associated environment effects of providing cable routing back to the POC would outweigh any potential benefits that a potential site may have.

Stage 2 – Consideration of Environmental Constraints

3.5.11 Stage 2 of the site selection process involved a consideration of potential environmental constraints within the 15km Area of Search. A summary of the factors considered is set out in **Table 3.2** below.

Table 3.2 – Consideration of Environmental Constraints

Topic	Discussion
Agricultural Land Classification	Planning policy seeks to minimise any impacts on the best and most versatile agricultural land (defined as grades 1, 2 and 3a). The preference is therefore for development to be located on land that is grade 3b, 4 or 5 and where possible to utilise previously developed, brownfield land. Solar energy development is comprised mostly of temporary structures which do not lead to any permanent loss of agricultural land. However, it was acknowledged that some land take would be required for ancillary elements of the solar development (e.g. access tracks), plus the footprint associated with the Substation and BESS. An initial search was therefore undertaken of potential brownfield land within the Area of Search, which identified that there were no sites or combinations of sites, that had the necessary footprint to accommodate the Proposed Development. Thereafter, all areas of land which is grades 4 and 5 were mapped. This again identified that there were no sites or combinations of sites, that had the necessary footprint to accommodate the Proposed Development. The next stage was then to map grade 1, 2 and 3 land. There is no published data which distinguishes between grade 3a and grade 3b land. Grade 3 land, which covered the majority of the Area of Search, was therefore deemed preferable to any grade 1 and 2 land for the purpose of site selection.
Ecology	Any designated international and national ecological and geological sites were mapped. This identified several Sites of Special Scientific Interest (SSSIs) which were avoided in the site selection process. Local and regional designations of ecological significance such as a County Wildlife Sites, Local Nature Reserves and Local Wildlife Sites were also considered. Sites which included such areas were not immediately discounted, if there was deemed sufficient scope for the extent of the development within the Site to be appropriately offset from the areas. This was the case with the Site.
Flood Risk	The UK is divided into three separate flood risk categories from 1 to 3, with zone 1 being the lowest risk and zone 3 being the highest risk.

Topic	Discussion
	Having a solar energy development in a higher flood risk zone is not a major technical constraint, as solar panels are water resistant but some of the associated infrastructure is not compatible, nor is BESS development. The flood risk zones within the 15km Area of Search were mapped and it was considered that any potential site, must have sufficient area of flood zone 1 to accommodate the more vulnerable infrastructure including the substation and BESS.
Access	Appropriate highway infrastructure is an important consideration as there needs to be appropriate provision to allow for vehicles to access the site during the construction process. Sites which did not have appropriate proximity to the highway network were also discounted.
Cultural Heritage	Scheduled Monuments, Listed Buildings and Conservation Areas were mapped within the Area of Search. Sites which included such assets were not immediately discounted if there was deemed sufficient scope for the extent of the development within the site to be appropriately offset from the assets. This was the case with the Site, which originally included the Scheduled Monument 'Segelocum Roman Town', before the red line boundary was revised to remove this asset following feedback during the EIA Scoping stage.
Landscape and Visual	A search was initially undertaken for any National Parks and Areas of Outstanding Natural Beauty (AONBs), which are now known as National Landscapes, but no such landscapes are located within the Area of Search. Any local landscape designations were then identified, the only one of which comprised of the West Lindsey Area of Great Landscape Value. This was not treated as a hard constrain when seeking to find a site, but it was deemed preferable to avoid the area where possible.

Stage 3– Consideration of Consented or Proposed Developments

3.5.12 It was recognised that across the Area of Search there were already various other renewable energy projects at various stages of development. These were mapped and their locations discounted in the site selection process, along with other areas of existing built development.

Stage 4 – Consideration of Land Size, Shape and Topography

3.5.13 It was important to ensure that any potential site comprised of a suitable shape, orientation and size that could appropriately accommodate the Proposed Development. Large open fields reduce the impact that smaller fields can have on the layout design as typically, buffers are left around field edges to offset from vegetation, tree root protection zones and other constraints such as ditches. So significantly less capacity can be sited within a group of smaller fields compared to fewer larger fields.

3.5.14 A site should also be either level or have a gentle sloping topography. The preference is for a site with a southerly aspect to maximise solar gain; however, sites with other primary aspects are still technically viable.

Stage 5 – Discussion with Potential Landowners within the Search Area

3.5.15 It is also advantageous to find a site which has a single landowner, where possible, to minimise the complexity which can arise when dealing with multiple landowners as part of the same project. For a project of this nature, an area of at least 150 acres under single landownership was deemed preferable when looking for a suitable site. In addition, it was considered that any such sites of 150 acres would need to be within 5km of one another (due to the Applicant's experience with developing similar projects) and preferably there would be a minimum of 3 such parcels near to each other for them to reasonably form a potential site option.

3.5.16 It was considered important for any site to be progressed with the support of a willing landowner, to avoid the use of compulsory purchase. As the closest potential site to the POC, which had been identified through the stages set out above, the landowner of the Proposed Development Site was approached first and they confirmed that they would be willing to take on the Proposed Development. No other sites were therefore taken forward at this stage due to the Site having the least environmental impacts associated with the cable route.

Summary

3.5.17 A thorough site selection process was undertaken before it was decided to proceed with the Proposed Development Site. The Area of Search was centred on the available grid capacity at the existing substation at the West Burton Power Station site and extended to 15km to allow the best opportunity for an appropriate location to be identified.

3.5.18 The chosen location benefits in particular from its very close proximity to the POC, its single land ownership with a willing landowner and its generally large, open flat fields. It is outside of the highest quality grade 1 and 2 agricultural land and it allows sufficient space for key infrastructure to be located outside the areas of highest flood risk. It is therefore considered that the Site represents the most appropriate location to take advantage of the availably capacity POC at West Burton Power Station

3.6 Iterative Design Process

3.6.1 The parameters identified for the Proposed Development have begun to evolve iteratively, taking into consideration the emerging preliminary findings in relation to likely environmental effects, the planning and environmental policy objectives and technical functionality of the Proposed Development, as well as feedback from stakeholders and non-statutory public consultation undertaken in 2023. This iterative process will continue between now and the production of the ES, as the parameters evolve into a fully detailed layout proposal.

Main Design Iterations

3.6.2 Since the non-statutory public consultation and the Scoping Request was made, the following design iterations to the scheme parameters have taken place:

- The northern extent of the eastern ecological mitigation area has been removed as it was established that its baseline condition was already so high that no further enhancement was considered necessary. The southern extent of the eastern ecological mitigation area has extended to the south and west as a result;
- The Scheduled Monument ‘Segelocum Roman Town’ has been excluded from the Site;
- The area for the Substation, BESS and associated infrastructure has reduced in size (resulting in more of the Site being used for solar panels and associated infrastructure maximising energy generation and renewable energy benefits);
- The area in proximity to the settlement of North Leverton with Habblesthorpe that was provisionally intended to include solar panels and associated development has reduced, and a reserve access corridor has now been included in this area;

- An area of biodiversity mitigation and cable infrastructure has been introduced to the approximate centre of the Site (to the north of the settlement of North Leverton with Habblesthorpe);
- Provisional Construction compound areas have been identified;
- Provisional Construction access points have been identified; and
- Provisional Operational (maintenance) access points have been identified

3.6.3 A full description of the design iteration process that will take place as the Proposed Development evolves from the current parameters to a detailed layout will be set out within the Environmental Statement.