


East Yorkshire Solar Farm

Environmental Impact Assessment Scoping Report

East Yorkshire Solar Farm Limited

September 2022



Quality information

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Revision History

<u>Revision</u>	<u>Revision date</u>	<u>Details</u>	<u>Authorized</u>	<u>Name</u>	<u>Position</u>
00	27 Jul 2022	First draft for client review	NT	Neil Titley	Technical Director
01	31 Aug 2022	Second draft	NT	Neil Titley	Technical Director
02	9 Sept 2022	Final	NT	Neil Titley	Technical Director

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1. Introduction

1.1 Background

- 1.1.1 East Yorkshire Solar Farm Limited (hereafter referred to as ‘the Applicant’), has commissioned this Environmental Impact Assessment (EIA) Scoping Report for East Yorkshire Solar Farm (hereafter referred to as the ‘Scheme’). The Scheme comprises the installation of solar photovoltaic (PV) generating panels, associated electrical equipment, cabling and on-site energy storage facilities across a proposed site which lies between Selby and East Riding of Yorkshire (hereafter referred to as the ‘Solar PV Site’) together with grid connection infrastructure (hereafter referred to as the ‘Grid Connection Corridor’). The Scheme would allow for an anticipated export of approximately 400 megawatts (MW) electrical capacity.
- 1.1.2 Due to its proposed generating capacity, the Scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and will therefore require consent via a Development Consent Order (DCO) under the Planning Act 2008 (Ref. 2).
- 1.1.3 The Solar PV Site is located approximately 1.4 kilometres (km) northwest of the market town of Howden at the closest point. It is denoted by the solid red line, and the Grid Connection Corridor is denoted by the dashed red line, on Figure 1-1 and Figure 1-2. The Solar PV Site and the Grid Connection Corridor are described in **Chapter 2 The Scheme** of this Scoping Report. Collectively, the Solar PV Site and the Grid Connection Corridor are referred to as ‘the Site’.
- 1.1.4 It is important to note that at this stage, that Figure 1-2 shows the expected maximum extent of land that would be included within the application for a DCO, which includes all land being considered for the purposes of the Scheme, and provides a ‘plan sufficient to identify the land’ for the purposes of this Scoping Report. It should be noted, this represents the likely maximum extent based on all the options for components that have been, and will be, the subject of consultation and is likely to be refined as the Scheme design progresses.
- 1.1.5 This EIA Scoping Report forms a formal request for a Scoping Opinion under Regulation 10(1) of the EIA Regulations (Ref. 1).

Purpose and Structure of Scoping Report

- 1.1.6 A Scoping Report is produced by an applicant to formally request a Scoping Opinion. Although the Scoping Opinion is sought from the Secretary of State (SoS), the process is undertaken by the Planning Inspectorate on behalf of the SoS. An EIA Scoping Report provides information to support such a request and can be used to help to inform both the Scoping Opinion and formal consultation with statutory environmental bodies by the Planning Inspectorate.

1.1.7 Regulation 10(3) of the EIA Regulations (Ref. 1) sets out the requirements for requesting a Scoping Opinion stating that the request (Scoping Report) must include:

- A plan sufficient to identify the land;
- A description of the proposed development, including its location and technical capacity;
- An explanation of the likely significant effects of the development on the environment; and
- Such other information or representations as the person making the request may wish to provide or make.

1.1.8 The purpose of this EIA Scoping Report is therefore to fulfil these requirements and also to:

- Provide a summary of the Scheme;
- Set out the proposed scope of work and methods to be applied in carrying out the EIA;
- Identify the likely significant environmental effects of the Scheme at an early stage of development to ensure they are considered and addressed throughout the design and consenting process;
- Provides a justification and rationale for scoping out certain topics from further assessment (for example where no significant impacts are predicted); and
- Set out the proposed structure and coverage of the Environmental Statement (ES) to be submitted with the DCO application.

1.1.9 This EIA Scoping Report is set out in accordance with guidance provided by the Planning Inspectorate's Advice Note 7 'Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements' (Ref. 26).

1.1.10 Table 1-1 lists the suggested requirements identified in Advice Note 7 (Ref. 26) and details where they are presented in this Scoping Report.

Table 1-1: Contents for the Scoping Report based on the Planning Inspectorate’s Advice Note 7

Suggested Scoping Reports Contents	Location in this Scoping Report
Transboundary Screening Matrix	Appendix A
The Proposed Development:	—
An explanation of the approach to addressing uncertainty where it remains in relation to elements of the Proposed Development e.g.: design parameters	Chapter 2 (The Scheme)
Referenced plans presented at an appropriate scale to convey clearly the information and all known features associated with the Proposed Development	Figure 1-1 (Scheme Location) Figure 1-2 (Site Boundary) Figure 2-1 (Environmental Constraints)
EIA Approach and Topic Areas:	—
An outline of the reasonable alternatives considered and the reasons for selecting the preferred option	Chapter 3 (Alternatives Considered)
A summary table depicting each of the aspects and matters that are requested to be scoped out allowing for quick identification of issues	Chapter 18 (Summary and Conclusions)
A detailed description of the aspects and matters proposed to be scoped out of further assessment with justification provided	Chapters 6 to 16 (Technical Topics)
Results of desktop and baseline studies where available and where relevant to the decision to scope in or out aspects or matters	Chapters 6 to 16 (Technical Topics)
Aspects and matters to be scoped in, the report should include details of the methods to be used to assess impacts and to determine significance of effect e.g.: criteria for determining sensitivity and magnitude	Chapters 6 to 16 (Technical Topics)
Any avoidance or mitigation measures proposed, how they may be secured and the anticipated residual effects	Chapters 6 to 16 (Technical Topics)
Information Sources:	—
References to any guidance and best practice to be relied upon	Chapters 6 to 16 (Technical Topics)
Evidence of agreements reached with consultation bodies (for example the statutory nature conservation bodies or local authorities)	Chapters 6 to 16 (Technical Topics)
An outline of the structure of the proposed ES	Chapter 17 (Structure of the ES)

- 1.1.11 A glossary and abbreviation list are presented at the back of this Scoping Report (**Chapters 20** and **21**).

1.2 Legislative Context and Need for Environmental Impact Assessment

- 1.2.1 The Scheme is defined as a Nationally Significant Infrastructure Project (NSIP) under Section 14(1)(a) and 15(2) of the Planning Act 2008 (Ref. 2) as an onshore generating station in England with a capacity exceeding 50 MW.
- 1.2.2 The EIA requirement for NSIP developments is transposed into law through the EIA Regulations (Ref. 1). The EIA Regulations specify which developments are required to undergo EIA, and schemes relevant to the NSIP planning process are listed under either of 'Schedule 1' or 'Schedule 2'. Those developments listed in Schedule 1 must be subject to EIA, while developments listed in 'Schedule 2' must only be subjected to EIA if they are considered 'likely to have significant effects on the environment by virtue of factors such as its nature, size or location'. The Scheme is a Schedule 2 development, listed under Schedule 2, Part 3(a) - industrial installations for the production of electricity, steam and hot water (projects not included in Schedule 1). The criteria on which the judgement on EIA being required must be made are set out in Schedule 3. Owing to its size, nature and location, the Scheme is likely to have significant effects on the environment and therefore is considered to constitute an EIA development.
- 1.2.3 Following the completion of the surveys, assessments, and consultation processes outlined in this Scoping Report, and taking account of the Scoping Opinion, an application for a DCO will be made to the SoS for determination in accordance with the Planning Act 2008 (Ref. 2). The DCO application will be accompanied by an Environmental Statement (ES), in accordance with Regulation 5(2)(a) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 ('APFP Regulations') (Ref. 3). The ES will set out the methods and findings of a comprehensive EIA undertaken in line with the EIA Regulations (Ref. 1).
- 1.2.4 The Localism Act 2011 (Ref. 4) appointed the Planning Inspectorate as the government agency responsible for operating the DCO process for NSIPs. The SoS will appoint an Examining Authority from the Planning Inspectorate, who will examine the application for the Scheme and then will make a recommendation to the SoS, who will in turn make the decision on whether to grant or to refuse the DCO.
- 1.2.5 In accordance with Section 104(2) of the Planning Act 2008 (Ref. 2), the SoS is required to have regard to the relevant National Policy Statement (NPS), amongst other matters, when deciding whether or not to grant a DCO. However, currently, none of the relevant adopted technology-specific NPS directly apply to Solar PV and battery storage. Where this is the case, Section 105 of the Planning Act 2008 (Ref. 2) applies and applications will be tested against Part 2(c) '*any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision*'.
- 1.2.6 In lieu of a technology-specific NPS, the following NPSs are still important and relevant considerations in assessing the Scheme: Overarching NPS for Energy (EN-1) (Ref. 36), NPS for Renewable Energy Infrastructure (EN-3)

(Ref. 5), and NPS for Electricity Networks Infrastructure (EN-5) (Ref. 6). These NPSs are currently being updated and revised Draft NPSs were published in September 2021 (Ref. 95, Ref. 96, Ref. 94). The Draft NPS for Renewable Energy EN-3 (2021) (Ref. 96) now includes sections 2.47 to 2.54 (inclusive) which set out policy requirements specific to solar generation. The detail of these provisions are however subject to consultation and thereafter implementation.

- 1.2.7 The timetable for adoption of the updated NPSs is not known, however it is expected that these will be finalised and shall replace the current NPSs by the time the DCO application is submitted. In this case, technology-specific policy will be in place and Section 104(2) of the Planning Act 2008 (Ref. 2) would apply.
- 1.2.8 Given the importance of these NPSs, the EIA approach takes account of these new emerging documents and any subsequent formal adoption of new NPSs for energy infrastructure will be considered where relevant during the production of the ES. A summary of the relevant considerations for each technical assessment is provided for each environmental topic (**Chapters 6 to 16** of this EIA Scoping Report).
- 1.2.9 The National Planning Policy Framework (NPPF), updated in July 2021 (Ref. 7) sets out the Government's national planning policies for England. NPPF paragraph 5 confirms that the NPPF may be a matter that is both important and relevant for the purposes of assessing DCO applications. Relevant policies of the NPPF are therefore to be considered in the EIA.
- 1.2.10 Policies in Local Plans are frequently considered important and relevant matters and can influence the content of local impact reports (which the host local authorities will produce following submission of the DCO application), and which the SoS must have regard to in its decision making in accordance with the Planning Act 2008 (Ref.2). The Scheme lies within the administrative areas of East Riding of Yorkshire Council, North Yorkshire County Council and Selby District Council. The following documents form the Development Plan for the land within which the Scheme is located:
- East Riding Local Plan Strategy 2012–2029 adopted April 2016 (Ref. 8);
 - East Riding Local Plan Allocations 2012–2029 adopted July 2016 (Ref. 9);
 - East Riding of Yorkshire and Kingston upon Hull Joint Minerals Local Plan 2016–2023 adopted November 2019 (Ref. 11);
 - East Riding of Yorkshire and Kingston upon Hull Joint Waste Plan adopted 2004 (Ref. 12);
 - Selby District Council Core Strategy 2011–2027 (2013) (Ref. 64);
 - Selby District Local Plan (2005) – Saved Policies (Ref. 65); and
 - North Yorkshire County Council, North York Moors National Park Authority, City of York Council Minerals and Waste Joint Plan (2022) (Ref. 13).
- 1.2.11 The adopted Local Plans for both East Riding and Selby are in the process of being reviewed. Consultation on East Riding's draft plan ended in August

2021 with a pre-submission plan expected to be published late in 2022 with submission to the SoS expected mid-2023. A review of East Riding/Hull Joint Waste Plan has also commenced. Selby District Council began the review of its Local Plan in 2020, with consultation on Preferred Options taking place between January and March 2021. The pre-submission plan is expected to be published during 2022 with formal submission to SoS in 2023. The emerging plans are pertinent since they will be at an advanced stage and once the DCO application is submitted to the SoS. The updated local plan for East Riding will be of particular relevance as this relates to the proposed expansion of Howden (Figure 1-1), which would grow the town to the north-west bringing it into closer proximity to the Scheme than the current 1.4 km recorded in paragraph 1.1.3.

- 1.2.12 Within the administrative areas of East Riding of Yorkshire Council and Selby District Council there are no neighbourhood plans (which form part of the Development Plan) that have been made which are of relevance or in close proximity to the Scheme. In 2017, Howden Parish Council designated its parish as a neighbourhood area with the purpose of preparing a neighbourhood plan. At the time of writing, however it has not published any draft plans for consultation.
- 1.2.13 It is also noted that as part of measures to remove the two-tier system of local government Selby District Council, the six other local and district councils within North Yorkshire, and North Yorkshire County Council will become a single Unitary Authority – North Yorkshire Council – on 1st April 2023. It is expected that over time a new Local Plan for North Yorkshire Council will be prepared, however it is anticipated that this will not be in place (either adopted or at draft review stage) within the timescale of the DCO application and that the planning policy for Selby District Council, as described above, will continue to be the relevant local planning policy for the Scheme. Should any new planning policy or guidance be issued by the Unitary Authority this will be considered within the ES.
- 1.2.14 The purpose of considering the abovementioned planning policy at the Scoping stage of the EIA is twofold:
1. To identify policy that could influence the sensitivity of receptors (and therefore the significance of effects) and any requirements for mitigation; and
 2. To identify planning policy that could influence the methodology of the EIA. For example, a planning policy may require the assessment of a particular impact or the use of a particular methodology.
- 1.2.15 A summary of national and local planning policy relevant to each technical assessment is provided for each environmental topic.

1.3 Other relevant policy

- 1.3.1 Other policies which are likely to be important and relevant matters to the SoS's decision and are considerations for the technical assessments include 'A Green Future: Our 25 Year Plan to Improve the Environment (published in 2018 and updated in 2021) (Ref 128) and the Energy White Paper: Powering our Net Zero Future (2020) (Ref 242).

- 1.3.2 The 25 Year Environment Plan first published in 2018 and last updated in October 2021 sets out the Government's 25 year plan to improve the environment within a generation. It aims to achieve 10 goals which include: achieve clean air; achieve clean and plentiful water; achieve thriving plants and wildlife; reduce risk of harm from environmental hazards like flooding and drought; use resources from nature more sustainably and efficiently; enhance beauty, heritage and engagement with the natural environment; mitigate and adapt to climate change; minimise waste; manage exposure to chemicals; and enhance biosecurity. This plan therefore highlights the Government's support for the reduction in the UK's carbon footprint; protection and enhancement of the natural environment; and ensuring land is managed with environmental gains.
- 1.3.3 The Energy White Paper published in December 2020 sets out how the UK will reach net zero emissions by 2050. It identifies the Government's aim for a fully decarbonised, reliable and low-cost power system by 2050.
- 1.3.4 The Paper explains that the Government is not targeting a particular generation mix however commits the Government to maintaining the market conditions which stimulate the cost reductions that have been seen in the renewables energy market over the last five years. It does, however, state that it is possible to determine key characteristics of the future generation mix at this stage identifying that a "*low-cost, net zero consistent system is likely to be composed predominantly of wind and solar*". It highlights that this will need to be complemented by technologies which provide power, or reduce demand, to manage intermittency. Currently this includes "*nuclear, gas with carbon capture and storage and flexibility provided by batteries, demand side response, interconnectors and short-term dispatchable generation providing peaking capacity, which can be flexed as required*".
- 1.3.5 This Paper therefore highlights the Government's commitment to solar and battery storage to achieve net zero targets and the need to provide this urgently.

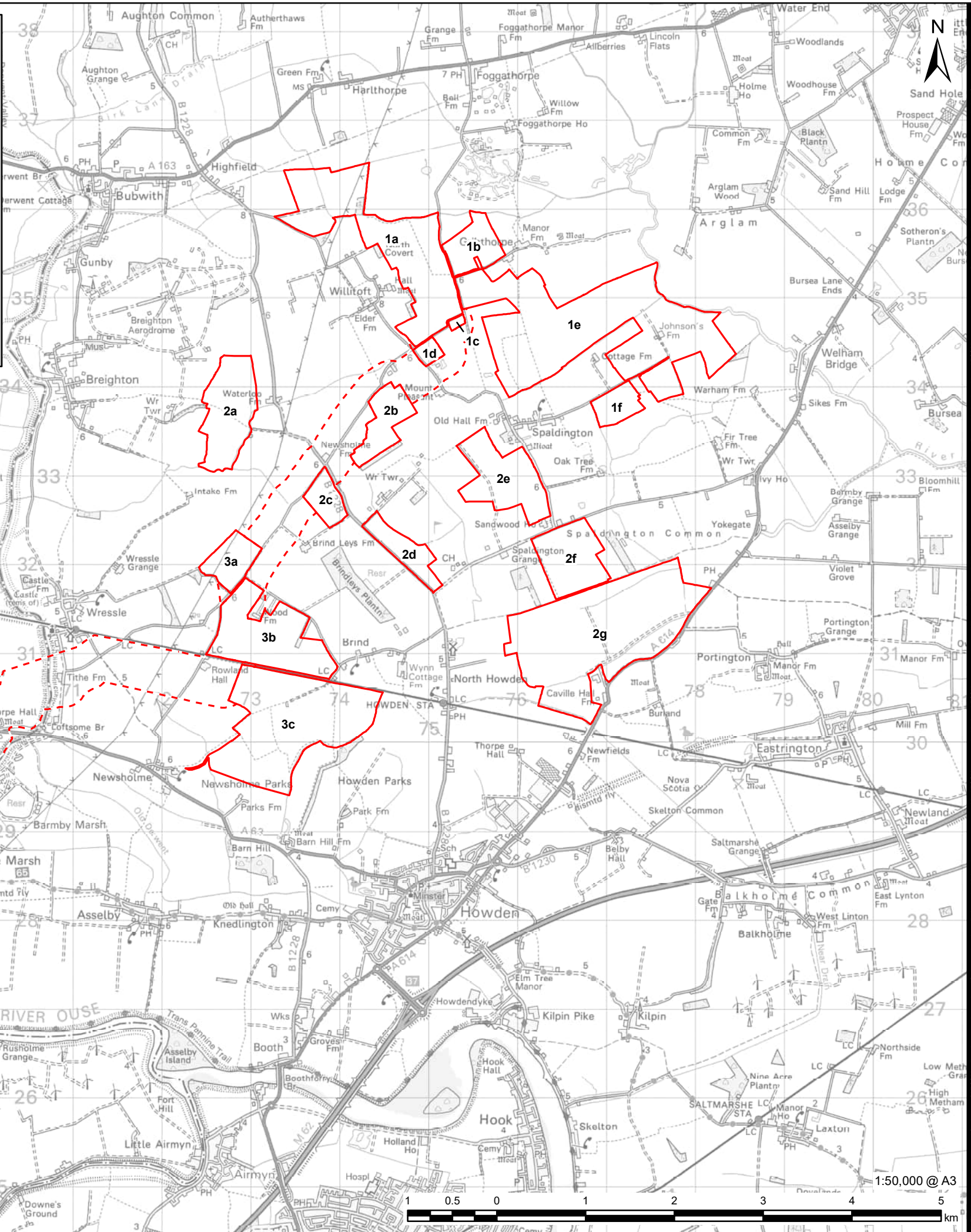
1.4 The Applicant

- 1.4.1 The Applicant (East Yorkshire Solar Farm Limited) is a wholly owned subsidiary of BOOM Power Limited who specialise in non-subsidised solar and battery storage projects. BOOM Power was founded in 2019, and the name BOOM is an acronym for Build Own Operate Maintain. This reflects the organisation's intentions to be involved in sustainable energy projects from day one right the way through to operation. The BOOM Managing Director and team have been responsible in previous roles for constructing more than 700 MWp of solar developments in the UK between 2015 and 2017 and developing more than 850 MWp of solar projects including the UK's first NSIP solar PV project Cleeve Hill which was given a development consent order in 2020. In 2021, the UK based BOOM Power partnered with the Pelion Green Future group of companies based across Australia, America and the European mainland.

1.5 IEMA Quality Mark

- 1.5.1 Regulation 14 (4) of the EIA Regulations (Ref. 1) requires that *"in order to ensure the completeness and quality of the environmental statement (a)the applicant must ensure that the environmental statement is prepared by competent experts; and(b)the environmental statement must be accompanied by a statement from the applicant outlining the relevant expertise or qualifications of such experts"*. AECOM is an Institute of Environmental Management and Assessment (IEMA) Registered Impact Assessor and also holds the IEMA EIA Quality Mark as recognition of the quality of our EIA product and continuous training of our environmental consultants. A Statement of Competence will be included within the ES, outlining the relevant expertise or qualifications of the experts who prepared the ES.





PROJECT
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East Yorkshire Solar Farm Limited

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LEGEND

- Solar PV Site
- Grid Connection Corridor

NOTES

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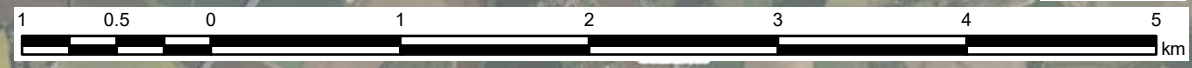
ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

FIGURE TITLE
Site Location Plan

FIGURE NUMBER
Figure 1-1

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2. The Scheme

2.1 Introduction

- 2.1.1 As stated in paragraph 1.1.1, the Scheme comprises the installation of solar photovoltaic (PV) generating panels, interconnecting cabling and on-site battery energy storage facilities across the proposed Solar PV Site together with grid connection infrastructure located within the Grid Connection Corridor.
- 2.1.2 This chapter presents a description of the Solar PV Site and the Grid Connection Corridor (Section 2.2) and the Scheme (Sections 2.3 to 2.6) in sufficient detail to inform the approach and scope of the EIA.

2.2 Site Description

Site and Surrounding Area

- 2.2.1 The Solar PV Site and the Grid Connection Corridor are located within the administrative areas of Selby District Council and East Riding of Yorkshire Council. The rationale for selecting the Solar PV Site and the Grid Connection Corridor is described in **Chapter 3 Alternatives Considered** of this Scoping Report. The maximum extent of land that is expected to be included within the DCO application for the Solar PV Site as well as the associated Grid Connection Corridor is shown on Figure 1-2.
- 2.2.2 The Solar PV Site boundary represents the current maximum extent of land being considered and will be further refined; some of this land will also be used for landscaping and habitat enhancement rather than solar PV infrastructure.
- 2.2.3 The Grid Connection Corridor shows an approximately 500 m search area for scoping purposes. The grid connection cable working right of way will be located within the Grid Connection Corridor. It will be further refined prior to statutory consultation based on the findings of the engineering, EIA and other relevant studies, and will be designed to avoid as far as possible sensitive receptors such as habitat designations, residential and commercial properties, and archaeology assets.
- 2.2.4 Underground interconnecting cables connecting Solar PV Plots to the Grid Connection Corridor will be required and are currently under design, and therefore not shown at this stage. The routes of the interconnecting cables will be designed to avoid sensitive receptors as far as possible and illustrated and assessed at statutory consultation. These will be assessed in the EIA.
- 2.2.5 The Solar PV Site comprises three groups of land Plots as shown on Figure 1-1. The total area of the Solar PV Site is approximately 1,173 hectares (ha) (this excludes the Grid Connection Corridor).
- 2.2.6 The Solar PV Site is approximately centred on National Grid Reference (NGR) SE756330 and is located approximately 1.4 km north from Howden

(Figure 1-1). National Grid Drax Station is located approximately 6.2 km southwest of the Solar PV Site.

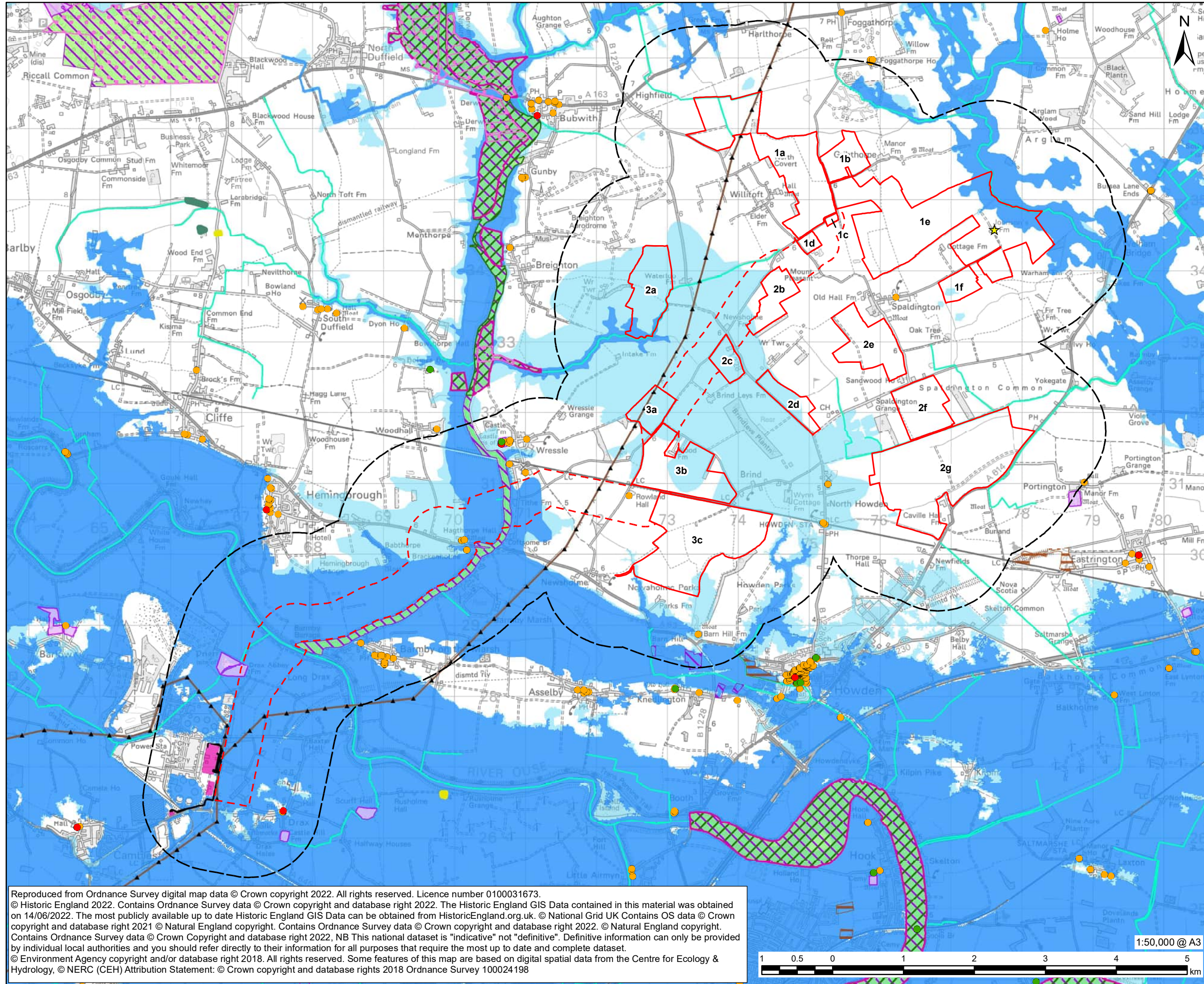
- 2.2.7 The landscape features within the Solar PV Site and the Grid Connection Corridor consist predominately of agricultural fields as can be seen on Figure 1-2. According to the Provisional Agricultural Land Classification mapping (Ref. 15) the land within the Solar PV Site is mainly Grade 4 agricultural land with some Grade 3 and Grade 2 agricultural land (see **Chapter 15 Soils and Agricultural Land** and Figure 15-1).
- 2.2.8 There are two existing agricultural buildings (barns) as well as derelict buildings adjacent to the barns located within the Solar PV Site in the northeast (Plot 1e – see Figure 2-1).
- 2.2.9 Key environmental planning constraints within and around the Solar PV Site and the Grid Connection Corridor are shown on Figure 2-1.
- 2.2.10 There are several woodlands located adjacent to the Solar PV Site and surrounding area. This includes deciduous woodland Priority Habitat.
- 2.2.11 The Solar PV Site does not contain any statutory nature conservation designations. There are three sites of Special Scientific Interest (SSSI) located within 2 km of the Solar PV Site, the closest being Barn Hill Meadows 800 m south of the Solar PV Site. The River Derwent Special Area of Conservation (SAC) and Special Protection Area (SPA) are 1.7 km west of the Solar PV Site, and the Lower Derwent Valley Ramsar Site is c 1.8 km to the west. The Grid Connection Corridor crosses and lies adjacent to The River Derwent SSSI and SAC, however it is fully expected that direct impacts to these sites would be avoided by a trenchless crossing. Thorne and Hatfield Moors SAC and SPA sites lie 8.86 km south-east of the Grid Connection Corridor. The list of statutory designated sites around the Solar PV Site is included in **Chapter 8 Ecology** Table 8-1 and shown on Figure 8-1. One non-statutory nature conservation site lies within the Solar PV Site, Tottering Lane, Gribthorpe Local Wildlife Site (LWS) is an established roadside verge running adjacent to the road which separates Plot 1a from Plots 1b and 1e (Figure 8-2). There are 10 other non-statutory sites identified within 2 km of the Solar PV Site and the Grid Connection Corridor. The list of non-statutory designated sites around the Solar PV Site is included in **Chapter 8 Ecology** Table 8-2 and shown on Figure 8-2.
- 2.2.12 Nearby recreational and residential receptors include (but are not limited to) Brighton Aerodrome, the hamlet of North Howden, the hamlet of Willitoft and the village of Spaldington.
- 2.2.13 There are no designated heritage assets within the Solar PV Site. However, there are seven scheduled monuments located within 3 km of the Solar PV Site, with the closest being Moated site at Manor Farm in Portington, 900 m south east of the Solar PV Site. There are 118 listed buildings within 3 km of the Solar PV Site with the closest being Grade II Rowland Hall approximately 150 m south of the Solar PV Site. The lists of designated assets surrounding the Solar PV Site are included in **Chapter 7 Cultural Heritage** Section 7.5.
- 2.2.14 The majority of the Solar PV Site is located within Flood Zone 1 (lowest risk of flooding). The Solar PV Site includes some areas of Flood Zone 2 (medium risk) and limited areas of Flood Zone 3 (high risk). The Grid

Connection Corridor is located mainly within Flood Zone 3 and Flood Zone 2 (Figure 9-3). This may influence the design elements of the Scheme such as locations of infrastructure or heights of equipment and panels. There are also numerous watercourses across the Solar PV Site (Figure 9-1). More detailed information on watercourses and flood risk in relation to the Solar PV Site is included in **Chapter 9 Water Environment** Section 9.5.

- 2.2.15 There is an extensive network of public rights of way (PRoW) both within the Solar PV Site and across the surrounding area (Figure 2-2). The PRoW that cross or are adjacent to the Solar PV Site boundary are detailed in **Chapter 12 Socio-Economic and Land Use**, paragraphs 12.5.13–12.5.15.
- 2.2.16 Further detail on the Solar PV Site and the surrounding areas is provided in the technical topic **Chapters 6 to 16**.

The DCO Site Boundary

- 2.2.17 At this scoping stage, the expected maximum area of land potentially required for the construction, operation and maintenance of the Scheme, which includes land required for temporary and permanent purposes, is shown on Figure 1-2. It is important to note that this may be subject to change as the Scheme design and EIA progress and additional land is incorporated for cables between land parcels. Figure 1-2 shows the envisaged current maximum extent of temporary and permanent land take. The proposed land take will be refined as the Scheme design progresses, taking into account environmental and technical factors, and consultation responses.
- 2.2.18 Together with the description of the Scheme components set out in this chapter, Figure 1-2 represents the current maximum land expected to be required for the full range of possible development options which could form part of the final Scheme. This allows for consideration of the potential environmental effects of the full range of options under consideration, to ensure that the likely significant effects of each of the component options has been scoped into the assessment.



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- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - ★ Existing Agricultural Buildings
 - Listed Building - Grade I
 - Listed Building - Grade II*
 - Listed Building - Grade II
 - River
 - Scheduled Monument
 - Ancient Woodland
 - Special Area of Conservation (SAC)
 - Special Protection Area (SPA)
 - Ramsar
 - Local Nature Reserve (LNR)
 - National Nature Reserve (NNR)
 - Site of Special Scientific Interest (SSSI)
 - Flood Zone 2
 - Flood Zone 3
 - National Grid**
 - ▲ Tower
 - Overhead Line
 - Cable
 - Substation
 - Gas Site

NOTES

ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

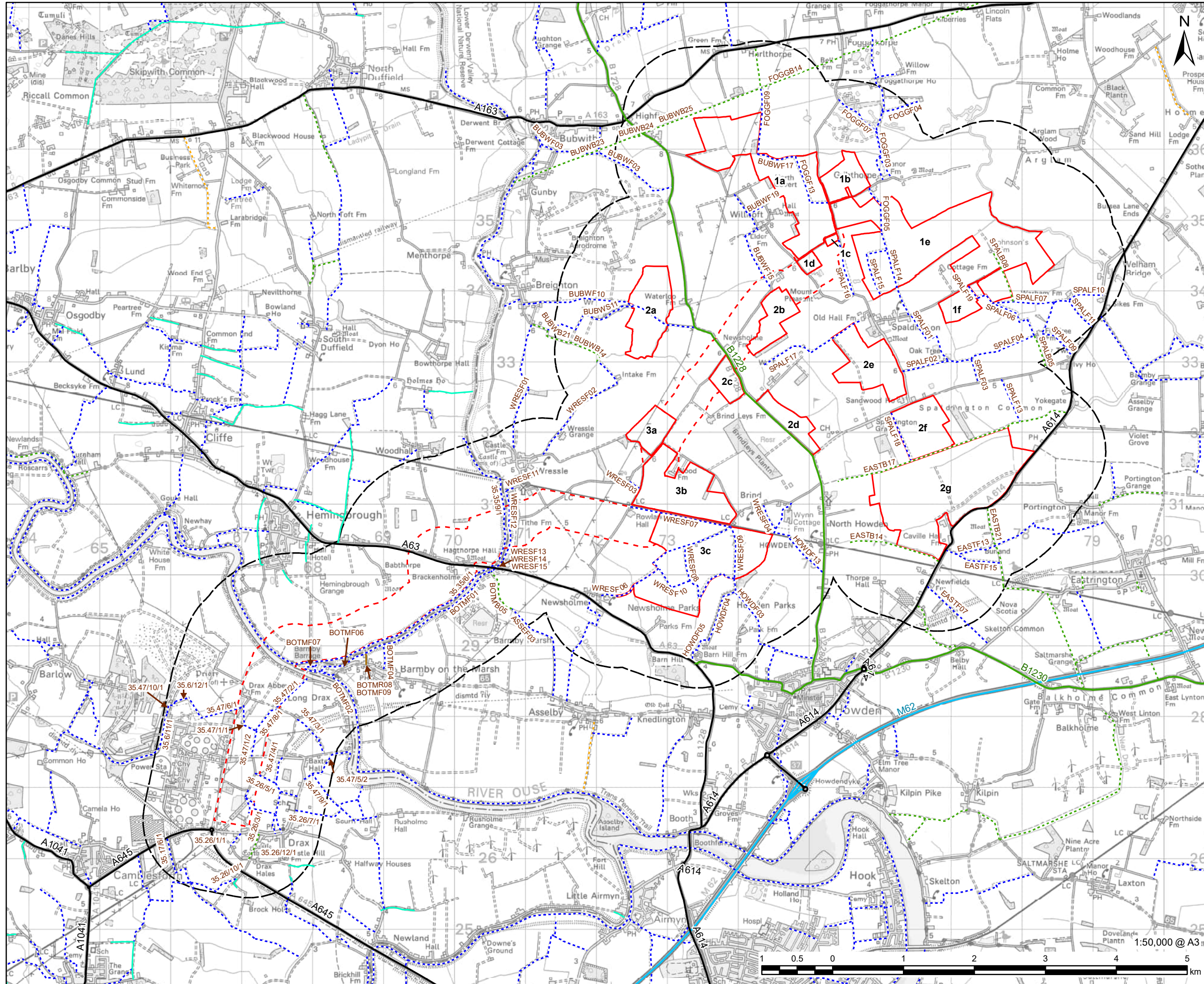
FIGURE TITLE
Environmental Constraints Plan

FIGURE NUMBER
Figure 2-1

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- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - A Road
 - B Road
 - Motorway
 - Public Rights of Way
 - Bridleway
 - Byway Open to All Traffic
 - Footpath
 - Restricted Byways
 - Unsurfaced Unclassified Road

NOTES

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ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

FIGURE TITLE
Public Rights of Way

FIGURE NUMBER
Figure 2-2

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2.3 Description of the Scheme

The Rochdale Envelope

2.3.1 The Planning Inspectorate's Advice Note 9: Using the 'Rochdale Envelope' ('Advice Note 9') (Ref. 16) provides guidance regarding the degree of flexibility that may be considered appropriate within an application for development consent under the Planning Act 2008 (Ref. 2). The advice note acknowledges that there may be aspects of the Scheme design that are not yet fixed, and therefore, it may be necessary for the EIA to assess likely worst case variations to ensure that all foreseeable significant environmental effects of the Scheme will be assessed.

2.3.2 The amount of flexibility required will depend upon the progress of the design at the stage that the detailed EIA work is undertaken. It is expected that the following aspects of the Scheme will still require design flexibility when the EIA is being carried out:

- The type of PV module mounting structure (panel orientation, fixed or tracker type);
- The arrangement of supporting infrastructure such as inverters, transformers and switchgear (decentralised or centralised options);
- The inclusion and arrangement of battery energy storage systems (decentralised or centralised options).

2.3.3 It is necessary that there will be some flexibility built into the design of the Scheme when submitting the DCO application, in order that the detailed design of the Scheme can be informed by environmental and technical considerations, post-consent work and take advantage of innovation in technology. Where such flexibility or optionality is required, this is explained in Section 2.3 below.

2.3.4 It is therefore necessary for the technical assessments to assess an 'envelope' within which the works will take place. As such, the application and EIA will be based on maximum and, if relevant, minimum parameters. To remain in accordance with the EIA Regulations, it will be essential that the parameters are as 'limited' as possible to ensure that the 'likely significant effects' are identified, rather than unrealistically amplified effects, which could be deemed to be unlikely. These parameters will be considered in detail by technical authors in the ES to ensure the realistic worst case effects of the Scheme are assessed for each potential receptor. This is of particular importance to maintain flexibility due to the rapid pace of change in solar PV and battery storage technology.

Overview of Solar PV and Battery Storage Infrastructure

2.3.5 The principal infrastructure will be as follows:

- Solar photovoltaic (PV) modules;
- PV module mounting structures;
- Inverters (either string or central type);

- Transformers (Low Voltage (LV)/Medium Voltage (MV) and MV/High Voltage (HV))
- LV, MV and HV switchgear, protection, and control equipment
- Medium voltage (33 kilovolt, kV) substations distributed throughout the Solar PV Plots;
- Onsite underground cabling;
- Interconnecting offsite underground cabling between the solar PV Plots;
- One or more battery energy storage system (expected to be formed of lithium ion batteries storing electrical energy generated by the Scheme);
- Two 132/33 kV substations;
- Operations and maintenance hub with welfare facilities;
- Fencing and security measures;
- Access tracks; and
- Landscaping and biodiversity enhancement.

2.3.6 The Scheme will also include two 132 kV export circuits connecting the 132/33 kV substations to the National Grid Drax Substation. Each circuit may comprise up to three cables, as well as Earth and fibre optic cables. A new Super Grid Transformer will be installed by National Grid in an existing spare bay of the National Grid Drax Substation to accommodate the Scheme connection.

2.3.7 During the construction phase, one or more temporary construction compound(s) will be required as well as temporary roadways to facilitate access to all land within the Solar PV Site as well as the Grid Connection Corridor. Further information on construction activities is provided in Section 2.4.

2.3.8 In areas around the PV arrays and on other land within the Solar PV Site, opportunities for landscaping, biodiversity enhancements and habitat management will be explored.

Solar PV Infrastructure

Solar PV Modules

- 2.3.9 Solar PV modules convert sunlight into electrical current (as direct current, DC). Individual panels are typically up to 2.4 m long and up to 1.3 m wide and typically consist of a series of photovoltaic cells beneath a layer of toughened glass. Other PV technologies are developing rapidly and may be available at the time of construction. The module frame is typically built from anodised aluminium.
- 2.3.10 PV panels can be monofacial and bifacial. Monofacial panels generate energy only from the top side facing the sun; this type is the most commonly installed in the UK. Bifacial panels are designed to let some sunlight through and also generate energy from the light reflected off the ground increasing the energy production compared to the monofacial type. The type of panels for the Scheme will be selected closer to the construction stage; however, this will not affect the maximum parameters that will be assessed in the EIA.
- 2.3.11 Each module could have a DC generating capacity of between 400 and 900 watts (W), or more depending on advances in technology at the time of construction (the latest technology under development is up to 900 W). The modules are fixed to a mounting structure in rows known as 'strings'. Various factors will help to inform the number and arrangement of modules in each string, and it is likely some flexibility will be required to accommodate future technology developments, as referenced in paragraph 2.3.3.

Module Mounting Structures

- 2.3.12 There are various types of PV module mounting structures. While fixed south facing mounts are the most commonly seen on the solar PV facilities in the UK, the ongoing technological advances and economic considerations make other options increasingly more feasible. The type of the mounting structures to be used for the Scheme is currently being evaluated by the Applicant. The options considered at this scoping stage are:
- Fixed south facing;
 - Fixed east-west facing; and
 - Single axis tracker.
- 2.3.13 Each string of modules will be mounted on a metal rack, known as a frame. The frames are usually supported by galvanised steel poles typically driven 1 m or up to 3 m into the ground depending on local geology, with tracker systems typically requiring deeper depth of pile between 2 m and 3 m.
- 2.3.14 Each of the currently considered mounting options is described in the paragraphs below. The dimensions presented below are indicative at this stage as the final elevations of the racks will be influenced by various design factors such as local topography, flood risk, inter-row shading and maintenance considerations. Where relevant, technical topic Chapters 6–16 consider which option would represent the reasonable worst case scenario and the potential scoping implications associated with this option.

South Facing Fixed Tilt Option

2.3.15 The configuration where the modules are arranged in rows running from east to west facing to the south at a fixed tilt is commonly seen on existing UK solar farms (see Figure 2-3). The indicative fixed south facing system parameters (subject to detailed design) are as follows:

- Fixed tilt: 15 to 35 degrees from horizontal;
- Height: up to 3.5 m;
- Clearance above ground: 0.8 m; and
- Spacing between rows: from 2 m to 12 m.



Figure 2-3: South-facing fixed tilt modules, finished array

East-West Facing Fixed Tilt Option

2.3.16 The fixed east-west facing option is similar to the south facing option in terms of to the panel mounting but the panel strings would be running in north-south direction and aligned facing east and west (see Figure 2-4). The indicative fixed east-west facing system parameters (subject to detailed design) are as follows:

- Fixed tilt: 15 to 35 degrees from horizontal;
- Height: up to 3.5 m;
- Clearance above ground: 0.8 m; and
- Spacing between rows: from 2 m to 4 m.



Figure 2-4: East-west facing fixed tilt modules, finished array

East-West Tracker Option

2.3.17 A tracking system involves attaching the PV modules to a motorised table that can move in relation to the sun. This allows for optimal power generation throughout the day. The panels are stored horizontally overnight. There are different types of tracking systems and, if chosen, the Scheme would utilise a single-axis tracking system, which tilts the solar panel around a horizontal north-south axis thus tracking the sun's movement from east to west, as illustrated in Figure 2-5. It is noted that the images show a solar PV scheme in Australia, operated by the Applicant's parent company, and are indicative as the Scheme may use two panels in landscape orientation as opposed to the one in portrait, as shown. The indicative tracker system parameters (subject to detailed design) are as follows:

- Tracking tilt range: +/-60 degrees from horizontal;
- Height at maximum tilt: up to 4.8 m;
- Clearance above ground at maximum tilt: 0.8 m; and
- Spacing between rows: from 4 m to 8 m.



Figure 2-5: East-west single axis tracker system, finished array

Supporting Infrastructure: Inverters, Transformers and Switchgear

2.3.18 The supporting infrastructure comprises inverters, transformers, and switchgear.

2.3.19 Inverters are required to convert the DC electricity collected by the PV modules into alternating current (AC), which allows the electricity generated to be exported to the National Grid. Inverters are sized to deal with the level of voltage and current, which is output from the strings of PV modules.

2.3.20 Transformers are required to step up the voltage of the electricity generated across the Solar PV Site from low voltage (0.8 kV) produced by the PV

panels to medium voltage (33 kV) to high voltage (132 kV) ready for transmission to the National Grid Drax Substation.

- 2.3.21 Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment. Switchgear is used both to protect and isolate/de-energise equipment to allow work to be done and to clear faults downstream.
- 2.3.22 The Applicant is currently exploring the configuration of these supporting infrastructure which are described in paragraphs below. As the Scheme design develops, the configuration of the supporting infrastructure will be determined based upon environmental and technical factors. A reasonable worst case scenario will be assessed in the ES.

String Inverters Option

- 2.3.23 String inverters are small enough to be mounted underneath the PV modules, as shown on Figure 2-6. One single string inverter unit could be utilised, for example, for every 10 to 12 strings. String inverters output is low voltage (0.8 kV).



Figure 2-6: Typical string inverter installed under PV modules

Central Inverters Option

- 2.3.24 Alternatively, central inverters may be used, and these could be sited at regular intervals amongst the PV modules. Centralised inverters are typically housed in containers with an approximate footprint of up to 14 m x 4 m and a height of up to 3.5 m. The Scheme would require up to 110 central inverters. Figure 2-7 shows a typical outdoor (standalone) central inverter.



Figure 2-7: Typical central inverter

Field Substations

- 2.3.25 Low voltage electricity from the inverters is fed into field substations which consist of transformers and switchgear. Low voltage electricity passes through 33/0.8 kV transformers and exits through switchgear into 33 kV cables.
- 2.3.26 Field substations are typically packaged in containers with an approximate footprint of up to 14 m x 4 m and a height of up to 3.5 m, as illustrated on Figure 2-8. Field substations will normally be mounted on concrete foundations, although other types of foundations may be used depending on the local geology.
- 2.3.27 Multiple field substations will be distributed throughout the Solar PV Site. The exact number of field substations is subject to detailed design studies; however, an indicative number for the Scheme could be approximately 90 to 110.



Figure 2-8: Example field substation

2.3.28 Transformers and switchgear may also be packaged in standalone units. Standalone transformers will have a footprint of up to 7 x 4 m and with a height of up to 3.5 m. Transformer cabins are typically externally finished in keeping with the prevailing surrounding environment, often with a green painted finish. Standalone switchgears will be housed in a cabin of up to 2.5 m by 6.5 m in plan and up to 3.5 m in height.

Battery Energy Storage Facility

- 2.3.29 The Scheme will include an associated battery energy storage system. The battery energy storage system is designed to provide peak generation and grid balancing services to the electricity grid. It will do this primarily by allowing excess electricity generated from the solar PV panels to be stored in batteries and dispatched at strategic times of the day.
- 2.3.30 There are a number of different designs for the battery energy storage system that will be explored as part of the iterative design process. Maximum parameters for the compound layouts will be defined in the DCO application in order to present and assess a worst case in the ES.
- 2.3.31 Batteries will either be in individual enclosures or housed within a larger building or buildings. The precise number of individual battery storage enclosures will depend upon the level of power capacity and duration of energy storage that the Scheme will require; investigations are ongoing to determine this. There needs to be an element of flexibility in this aspect as both the technology and business models are evolving, as is relevant policy such as the provisions on the role of storage in the draft NPS EN-1 (Ref. 95) which may affect the business case and support for the systems.
- 2.3.32 The location of the battery energy storage system, transformers, and dedicated switchgear will be determined in part by whether the battery energy storage system is AC-coupled or DC-coupled. If the system is AC-coupled they will be located together in one or more 'centralised' areas, which can be installed, operated, and maintained easily. If the systems are DC-coupled they will be spread around the Solar PV Site and located alongside the centralised inverters.
- 2.3.33 Each battery energy storage system will require a heating, ventilation and cooling (HVAC) system to ensure the efficiency of the batteries, which are integrated into the containers. This may involve a HVAC system that is external to the containerised unit located either on the top of the unit or attached to the side of the unit. If this uses air to heat and cool it will have a fan built into it that is powered by auxiliary power.
- 2.3.34 The Switchgear/Control Room operates, isolates and controls the exported power from the energy storage system. This would comprise a building of similar dimensions to the containers; either an adapted container or built from glass reinforced plastic (GRP), located within the main battery energy storage system compound.
- 2.3.35 As the Scheme design develops, the likely configuration of equipment will be determined based upon environmental and technical factors. A reasonable worst case scenario will be assessed in the ES.

Onsite and Offsite Cabling

- 2.3.36 Low and medium voltage onsite electrical cabling is required to connect the PV modules and battery energy storage system(s) to inverters and the inverters to the transformers onsite (typically via 0.6/1 kV cables). The dimension of the trenches will vary depending on the number of cables or ducts they contain but would typically be up to 0.8 m in width and 0.6 m to 0.8 m in depth.
- 2.3.37 Cabling between PV modules and the inverters will typically be required to be above ground level (along a row of racks), fixed to the mounting structure, and then underground if required (between racks and in the inverter's input). All other on-site cabling will be underground.
- 2.3.38 Medium voltage cables (normally 33 kV) are then required between the transformers/switchgears and the 132/33 kV substations. These cables will start within (onsite) and extend between (offsite) the Solar PV Plots connecting them to the 132/33 kV substations as required. These cables will be buried underground. The dimension of the trenches will vary depending on the number of cables or ducts they contain but could be typically up to 1.2 m in width and up to 1.2 m in depth.
- 2.3.39 Data cables (typically fibre optic) will also be installed, typically alongside electrical cables in order to allow for the monitoring during operation, such as the collection of solar data from pyranometers.



Figure 2-9: Example underground cable installation

Grid Connection Substations

- 2.3.40 Two 132 kV/33 kV substations will receive the electricity from the 33 kV field substations and step up the voltage to 132 kV ready to be exported to National Grid Drax Substation via 132 kV cables.

2.3.41 A typical 132 kV/33 kV substation is approximately 50 m by 25 m in plan with equipment 6 m high, securely fenced with a separate control building measuring 4 m by 4 m in plan and 4 m high.

Electricity Export Connection to National Grid

2.3.42 The Scheme will be connected to the National Grid via Drax Substation. The electricity will be exported via two 132 kV circuits. It is expected that the Scheme will export 400 MW peak, with the capability of importing 1 MW for auxiliary supplies.

2.3.43 Each circuit may comprise up to three cables. An earth cable and a fibre optic cable may also be laid alongside the 132 kV cables. The cables will be buried below ground at approximately 1.2 m depth. Underground cables are typically installed using an open trench method requiring 20–40 m working corridor, with trench widths approximately 2 m wide and 2 m deep. At certain locations, such as river, railway and road crossings, trenchless methods of cable installation may be required. Trenchless methods include horizontal directional drilling (HDD), micro-tunnelling and boring.

2.3.44 An alternative to below ground cabling still being considered is to use Over Head Lines (OHL) which will typically be 15 m in height, and mounted on steel lattice pylons, wooden or composite poles. It is anticipated that a decision on this will be made prior to DCO submission. Should the application include flexibility for both options, the worst case of the two options would be presented in each technical chapter.

Operations and Maintenance Hub

2.3.45 A permanent operations and maintenance storage area may be established onsite within the two existing agricultural buildings (barns), as well as converting a derelict building adjacent to the barns into a permanent maintenance office and staff welfare facilities (see Figure 2-1 Plot 1e for location). Figure 2-10 shows these existing structures.



Figure 2-10: Existing structures on Plot 1e

Fencing and Security

- 2.3.46 A security fence will enclose the operational areas of the Solar PV Site. PRowS that cross the Solar PV Site will be preserved with the fence installed either side of them. The fence is likely to be a 'stock deer fence' or other mesh security fencing, approximately 2.5 to 3 m in height.
- 2.3.47 Pole mounted internal facing closed circuit television (CCTV) systems are also likely to be deployed around the perimeter of the operational areas of the Solar PV Site. It is anticipated that these would be up to 5 m high. CCTV cameras would have fixed, inward-facing viewsheds and will be aligned to capture only the Scheme fence and the area inside the fence.



Figure 2-11: Metal CCTV pole and 'deer fence'

Access Tracks

- 2.3.48 Access tracks will be constructed across the Solar PV Site. These would typically be 3.5 to 5 m wide compacted stone tracks with 1:2 gradient slopes on either side (where required). An example access track within a solar PV facility during construction is shown on Figure 2-12.



Figure 2-12: Typical crushed stone access track laid on hardcore and geotextile (photo during construction phase and prior to landscaping)

Surface Water Drainage

- 2.3.49 The detailed operational drainage design will be carried out pre-construction with the objective of ensuring that drainage of the land to the present level is maintained. It will follow either the design of a new drainage system taking into account the proposed new infrastructure (access tracks, cable trenches, structure foundations) to be constructed, or, if during the construction of any of the infrastructure, there is any interruption to existing schemes of land drainage, then new sections of drainage will be constructed.
- 2.3.50 The design of new drainage systems will be based on the Flood Risk Assessment (FRA) and hydrological assessment to be undertaken. Infiltration drainage design will be in accordance with Building Research Establishment (BRE) Digest 365: Soakaway Design and Sewers for Adoption (Ref. 17) and infrastructure will be placed at least 10 m away from watercourses.

Biodiversity and Landscaping

- 2.3.51 The Scheme will involve field boundary enhancement and planting of seed mixes within the solar PV area (see Figure 2-13 as an example). Planting will also be used to provide screening. The enhancements and planting would increase biodiversity throughout the landscape and contribute to the Scheme achieving Biodiversity Net Gain (BNG) in line with the requirements of the Environment Act 2021 (Ref. 18), the National Planning Policy Framework and local planning policy. The Scheme design will aim to achieve BNG levels greater than the minimum 10% required by the Environment Act 2021 (Ref. 18) and it is noted that similar schemes developed by the Applicant's parent company have typically delivered BNG well in excess of this minimum figure.



Figure 2-13: Landscaped solar PV facility

2.4 Construction Programme and Activities

Construction Programme

- 2.4.1 Subject to being granted consent and following a final investment decision, the earliest construction could start is in Q4 2024 and construction will require an estimated 18 to 24 months, with operation therefore anticipated to commence around 2027. The ES will provide further details of the construction activities, their anticipated duration and indicative programme of each phase of construction work.

Indicative Construction Activities

- 2.4.2 The types of construction activities that are likely to be required include (not necessarily in order):
- Site preparation to include:
 - Import of construction materials, plant and equipment to site;
 - The establishment of construction compound(s);
 - Upgrading of existing site tracks/access roads and construction of new tracks;
 - The upgrade or construction of crossing points (bridges/culverts) over drainage ditches;
 - Marking out the location of the infrastructure;
 - Solar PV facility construction to include:
 - Import of components to site;
 - Erection of module mounting structures;

- Mounting of modules;
- Installation of electric cabling;
- Installation of transformer cabins;
- Installation of battery storage units;
- Construction of a substation compound;
- Cable installation:
 - The establishment of mobilisation areas and running tracks;
 - Temporary construction compounds (to be located on or near cable route, which are yet to be determined);
 - Stripping of topsoil in sections;
 - Trenching in sections;
 - Appropriate storage and capping of soil;
 - Appropriate construction drainage with pumping where necessary;
 - Sectionalised approach of duct installation;
 - Excavation and installation of jointing pits;
 - Cable joint installation;
 - Cable pulling;
 - Implementation of crossing methodologies for watercourses, infrastructure (including roads and rail), and sensitive habitats (e.g. HDD, cable bridging, etc.);
- Testing and commissioning; and
- Site reinstatement and habitat creation.

2.4.3 It is anticipated that construction activities will be carried out in a sequential manner with construction teams responsible for specific type of works moving from one Solar PV Plot to the next. In this case the works would start with fencing, followed by frame installation, then panel installation, then cabling and connection. It may be possible to generate power from some plots whilst others are being built, providing the 132/33 kV Grid Connection Substations and cabling is in place.

2.4.4 Temporary construction compounds comprising parking, storage, staff welfare and waste management will be located within the Site Boundary.

Construction Staff

2.4.5 Based on AECOM's experience of other similar sized solar projects, it is currently estimated that up to 600 staff per day will be required to work on the Scheme during peak construction period, which is likely to include construction of the 132/33 kV substations, export cable, modifications to the National Grid Drax Substation, and building of solar PV in some of the early plots. This is expected to be a worst case based on the most rapid build out programme, and there will be noticeably fewer workers outside peak activities.

Construction Traffic and Site Access

- 2.4.6 Based on the preliminary construction material and equipment requirements, it is anticipated that there could be up to a total 15 heavy goods vehicle (HGV) movements per day for a 52-week peak construction period, based on the most rapid build out. This number is indicative, excludes construction staff transportation and ancillary construction traffic, and is subject to refinement. A reasonable worst case scenario will be assessed in the ES.
- 2.4.7 Construction Site access is yet to be determined. All construction access will be confirmed as the Scheme design progresses and in consultation with the relevant authorities.
- 2.4.8 It is anticipated that the existing local roads will be utilised, subject to suitability of these roads to carry HGVs. Many of the roads around the Solar PV Site are currently accessible to farm machinery and agriculture-related HGVs. The need for road upgrades, widening and new road construction, for example for abnormal loads or to ensure visibility splays at site access/egress points, will be determined as the Scheme design develops, and will be assessed as appropriate.
- 2.4.9 A Framework Construction Traffic Management Plan (CTMP) will be developed and submitted with the application.

Construction Environmental Management

- 2.4.10 A Framework Construction Environmental Management Plan (CEMP) will accompany the DCO application, which will describe the framework of mitigation measures identified in the ES to be followed and to be carried forward to a Detailed CEMP prior to construction. The aim of the CEMP is to reduce nuisance impacts from:
- Use of land for temporary laydown areas, accommodation, etc.;
 - Construction traffic (including parking and access requirements) and changes to access and temporary road or footpath closure (if required);
 - Noise and vibration;
 - Utilities diversion;
 - Dust generation;
 - Soil removal; and
 - Waste generation.
- 2.4.11 The Detailed CEMP will be produced by the appointed construction contractor and agreed with the local planning authorities following grant of the DCO and prior to the start of construction (for example, as part of a requirement attached to the DCO) and will identify the procedures to be adhered to and managed by the Principal Contractor throughout construction.
- 2.4.12 Contracts with companies involved in the construction works will incorporate environmental control, health and safety regulations, and current guidance and will ensure that construction activities are sustainable and that all contractors involved with the construction stages are committed to agreed

best practice and meet all relevant environmental legislation including: Control of Pollution Act 1974 (COPA) (Ref. 19), Environment Act 1995 (Ref. 20), Hazardous Waste Regulations 2005 (as amended) (Ref. 21) and the Waste (England and Wales) Regulations 2011 (Ref. 22).

- 2.4.13 Records will be kept and updated regularly, ensuring that all waste transferred or disposed of has been correctly processed with evidence of signed Waste Transfer Notes (WTNs) that will be kept on-site for inspection whenever requested. Furthermore, all construction works will adhere to the Construction (Design and Management) Regulations 2015 (CDM) (Ref. 23).

Site Reinstatement and Habitat Creation

- 2.4.14 Following construction, a programme of site reinstatement and habitat creation will commence. A Framework Biodiversity and Landscape Management Plan will be submitted as part of the DCO application, and this document will set out the principles for how the land will be managed throughout the operational phase, following the completion of construction. The Framework Biodiversity and Landscape Management Plan will specify mitigation and enhancement measures that would support the BNG. A detailed Biodiversity and Landscape Management Plan will be produced following grant of the DCO and prior to the start of construction (for example, as part of a requirement attached to the DCO).

2.5 Operational and Maintenance Activities

- 2.5.1 During the operational phase, activity on the Solar PV Site will be minimal and would be restricted principally to sheep grazing, vegetation management, equipment maintenance and servicing, replacement of any components that fail, periodic fence inspection, and monitoring to ensure the continued effective operation of the Scheme.
- 2.5.2 Operational Site access will be determined as the Scheme design progresses and in consultation with the relevant authorities.
- 2.5.3 It is anticipated that there will be one to three permanent staff on-site at any one time during the operational phase. In addition, there will be up to 10 to 20 visitors per week (equating to two to four visitors per day) for deliveries and servicing of equipment.
- 2.5.4 The Applicant will explore the option of utilising the Solar PV Plots for sheep grazing during the Scheme operation, subject to confirmation of the absence any restrictive covenants that would prevent such use. Sheep grazing on solar PV facilities is successfully used in the UK and carries with it multiple benefits such as soil health improvement and biodiversity enhancement. Sheep are able to move safely between and under the PV modules, and shelter under the PV modules from sun or rain. The ES will demonstrate that this measure is secured in respect of the operation of the Scheme.



Figure 2-14: Sheep grazing on a solar PV facility

2.6 Decommissioning

- 2.6.1 The design life of the Scheme is expected to be at least 40 years, although the design life could be longer than this depending on the condition of equipment. It is expected that throughout this period faulty or damaged PV modules and other components will require replacement as part of the normal maintenance. The equipment will be reviewed at the end of the design life of the Scheme to determine whether it remains in a viable condition to continue operation after that time.
- 2.6.2 When the operational phase ends, the Solar PV Site will require decommissioning. All PV modules, mounting poles, cabling, inverters, transformers and switchgear would be removed from the Solar PV Site and recycled or disposed of in accordance with good practice and market conditions at that time. The Solar PV Site will be returned to its original use after decommissioning. The future of the 132/33 kV substations and associated control buildings would be agreed with National Grid Electricity Transmission (NGET) prior to commencement of decommissioning.
- 2.6.3 The mode of cable decommissioning for the Grid Connection Corridor and interconnecting cables will be dependent upon government policy and best practice at that time. Currently, the most environmentally acceptable option is considered to be leaving the cables in situ, as this avoids disturbance to overlying land and habitats and to neighbouring communities. Alternatively, the cables can be removed by opening up the ground at regular intervals and pulling the cable through to the extraction point, avoiding the need to open up the entire length of the cable route. The impact assessment will be based on the worst case parameters for each technical topic. As further described in paragraph 16.7.23, a Framework Decommissioning Environmental Management Plan (Framework DEMP) will be prepared as part of the EIA and will set out the general principles to be followed in the decommissioning of the Scheme. A Detailed DEMP be prepared and agreed with the relevant authorities at that time of decommissioning, in advance of

the commencement of decommissioning works, and would include timescales and transportation methods.

- 2.6.4 Decommissioning is expected to take between 12 and 24 months and could be undertaken in phases.
- 2.6.5 The effects of decommissioning are usually similar to, or of a lesser magnitude than, construction effects and will be considered in the relevant sections of the ES. The specific method of decommissioning the Scheme at the end of its operational life is uncertain at present as the engineering approaches to decommissioning will evolve over the operational life of the Scheme. Assumptions will therefore be made where appropriate.
- 2.6.6 Decommissioning would be undertaken safely and with regard to the environmental legislation at the time of decommissioning, including relevant waste legislation.

3. Alternatives Considered

- 3.1.1 Schedule 4, paragraph 2 of the EIA Regulations (Ref. 1) requires that the ES must outline the reasonable alternatives considered by the developer as part of the EIA process. These alternatives may include considerations such as development design, technology, location, size and scale, along with the environmental and social impacts associated with these. The ES must also contain an indication of the main reasons for selecting the chosen option.
- 3.1.2 For the Scheme, the alternatives analysis is likely to focus on different Scheme layouts, sizing, technologies and design parameters
- 3.1.3 A 'no development' alternative would not deliver the additional electricity generation capacity and other benefits associated with the Scheme which include, but are not limited to, landscape and habitat enhancement, a positive climate impact (through exceedance of exceeds net zero requirements) and increases in soil resource and land quality. The 'no-development' scenario will therefore not be discussed as a 'considered alternative' within the ES. This does not preclude the use of the 'no-development' also referred to as a 'do nothing' scenario in certain technical chapters of the ES where this is required to present future baseline conditions in relation to the impact assessment.
- 3.1.4 The ES will include a description of the alternatives relevant to the Scheme that have been considered, including their specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects. This will include alternative Site layouts (Solar PV site and Grid Connection Corridor), which will be considered during the design process. A full detailed appraisal of the options considered will be presented as part of the ES, discussing the rationale for the final site layout and design selection, as well as explaining the flexibility sought within the consent in this regard.
- 3.1.5 Further refinement will be undertaken as the Scheme design progresses to determine the DCO application boundaries and layout for the Site submitted with the DCO application.

4. Consultation

4.1 Context

- 4.1.1 Effective stakeholder engagement and consultation is intrinsic to the Planning Act 2008 (Ref. 2) and fundamental to the success of the Scheme.
- 4.1.2 The process of consultation is critical to the development of a comprehensive and balanced ES. The views of statutory and non-statutory consultees serve to focus the environmental studies and to identify specific issues that require further investigation. Consultation is an ongoing process, which enables mitigation measures to be incorporated into the project design thereby limiting adverse effects and enhancing environmental benefits.
- 4.1.3 The Scheme has a wide range of stakeholders (including landowners, statutory consultees, local communities and specialist interest groups) with differing interests that will require varied levels of consultation. Specific communication activities therefore need to be focussed to meet the needs of particular individuals and groups. This requires an understanding of the stakeholders and their interests in the Scheme.
- 4.1.4 Stakeholder engagement for the Scheme is based on the following principles:
- Early and ongoing engagement to inform and influence the design process;
 - Seeking feedback in the iterative design process and taking this feedback into consideration;
 - Building of long-term relationships with key stakeholders throughout the different stages of the Scheme to help better understand their views;
 - Where possible and practicable ensuring concerns are addressed; and
 - Ensuring appropriate statutory consultation is undertaken in compliance with requirements of the Planning Act 2008 (Ref. 2), EIA Regulations (Ref. 1) and associated guidance.

4.2 DCO Consultation Requirements

- 4.2.1 The DCO process has a number of statutory requirements regarding consultation. These requirements stipulate that certain stakeholder groups and the community must be consulted as part of the pre-application process, as set out in Sections 42, 47 and 48 of the Planning Act 2008 (Ref. 2) and Regulation 13 of the EIA Regulations (Ref. 1). Further requirements set out how the Scheme must be publicised, and specific documents produced, including a Statement of Community Consultation (SoCC), Preliminary Environmental Information (PEI) Report and a Consultation Report.
- 4.2.2 In accordance with Sections 42, 47 and 48 of the Planning Act 2008 (Ref. 2) the Applicant will be holding a non-statutory consultation part way through the undertaking of the EIA to inform the community of our plans and seek

their feedback. Feedback will be recorded and documented in a consultation report. Feedback from both the non-statutory consultation and the EIA process will feed into the statutory consultation.

4.3 Regulatory Engagement to Date

4.3.1 A number of meetings with statutory consultees have already taken place to provide an introduction to the proposals, including:

- East Riding of Yorkshire Council;
- Selby District Council; and
- North Yorkshire County Council.

4.3.2 Information has also been sent to the local parish councils and the MPs for Haltemprice & Howden and Selby & Ainsty.

4.4 Scoping Consultation

4.4.1 The Planning Inspectorate (on behalf of the SoS) will consult on this Scoping Report under the EIA Regulations (Ref. 1). Views from consultees will be considered and used to inform the Scoping Opinion to be issued by the Planning Inspectorate (on behalf of the SoS).

4.4.2 Under Regulation 10(6) of the EIA Regulations (Ref. 1), the SoS must undertake consultation with statutory consultation bodies, including environmental bodies (such as Natural England, the Environment Agency and Historic England) and relevant planning authorities (East Riding of Yorkshire Council, Selby District Council and North Yorkshire County Council) before adopting a Scoping Opinion.

4.5 Non-Statutory Consultation

4.5.1 A non-statutory consultation will run for four weeks between 26 September to 23 October 2022 to introduce stakeholders to the Scheme and give them an opportunity to share their views.

4.6 Public Statutory Consultation

4.6.1 In accordance with Section 47(1) of the Planning Act 2008 (Ref. 2) for an NSIP, the Applicant will prepare a Statement of Community Consultation (SoCC). This will outline how the Applicant intends to consult with the local community about the Scheme, including, in accordance with Regulation 12 of the EIA Regulations (Ref. 1), and how it intends to publicise and consult on the Preliminary Environmental Information (PEI). The Applicant is required to consult the local authorities identified pursuant to section 43 of the Planning Act 2008 on the draft SoCC and they will have a period of at least 28 days following receipt of the request to comment on a draft SoCC prior to its publication for inspection by the public.

5. Environmental Impact Assessment Methodology

5.1 Introduction

5.1.1 The ES will be based on a number of related activities, as follows:

- Establishing existing baseline conditions;
- Consultation with statutory and non-statutory consultees throughout the DCO pre-application process;
- Consideration of relevant local, regional and national planning policies, guidelines and legislation relevant to EIA;
- Consideration of technical standards for the development of significance criteria;
- Review of secondary information, previous environmental studies and publicly available information and databases;
- Desk-top studies;
- Physical surveys and monitoring;
- Computer modelling (where required); and
- Expert opinion.

5.1.2 The ES will set out the process followed during the EIA including the methods used for the collection of data and for the identification and assessment of impacts. Any assumptions made will be clearly identified.

5.1.3 The EIA process is designed to be capable of, and sensitive to, changes that occur as a result of design development, including any mitigation measures that are incorporated during the EIA. This will be particularly important for this EIA as the design and layout of the Scheme is still being refined, and the design is likely to evolve further following submission of this EIA Scoping Report. It is not, however, anticipated that the Scheme that is the subject of the EIA and DCO application will be materially different from the Scheme that is the subject of this EIA Scoping Report, as its location, scale, design and use of technology, etc., will all be within the parameters set out in **Chapter 2 The Scheme**, of this EIA Scoping Report.

5.1.4 Impacts will be considered on the basis of their magnitude, duration, and reversibility. Cumulative and combined effects will also be considered where appropriate. Significance will be evaluated on the basis of the scale of the impact and the importance or sensitivity of the receptors, in accordance with standard assessment methodologies. More information on the assessment methodology is provided in Section 5.6.

5.1.5 Where potentially significant adverse environmental effects are identified in the assessment process, measures to mitigate these effects will be put forward in the form of recommendations to be undertaken as part of the project development as far as practicable.

5.2 Determining the Baseline Conditions

- 5.2.1 In order to predict the potential environmental effects of the Scheme, it will be necessary to determine the environmental conditions that currently exist within the Site boundary and surrounding area, in the absence of the Scheme. These are known as ‘baseline conditions’.
- 5.2.2 Detailed, environmental baseline information will be collected and the methodology for the collection process will be detailed within the ES. The baseline information will be gathered from various sources, including:
- Online/digital resources;
 - Data searches, for example GroundSure, EnviroCheck, Historic Environment Record, North and East Yorkshire Ecological Data Centre;
 - Baseline site surveys; and
 - Environmental information submitted in support of other planning applications for developments in the vicinity of the Scheme.
- 5.2.3 Consideration will also be given to how the baseline conditions would evolve in the absence of the Scheme, known as the ‘future baseline’. As described in **Chapter 3 Alternatives Considered**, this involves the consideration of the ‘no development’ or ‘do nothing’ scenario and, where required, allows impact assessments to consider and compare the scale of environmental changes, such as noise levels, with and without the Scheme in place at both the construction and operational phase.

5.3 Mitigation

- 5.3.1 Regulation 14, Part (2 c) requires that the ES to provide ‘*a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment*’. These are commonly referred to as mitigation measures.
- 5.3.2 The Scheme will adopt a standard hierarchical approach to identifying mitigation requirements:
- **Avoid or Prevent:** In the first instance, mitigation should seek to avoid or prevent the adverse effect at source for example, by routing the Grid Connection Corridor or siting PV panels away from a sensitive receptor;
 - **Reduce:** If the effect is unavoidable, mitigation measures should be implemented which seek to reduce the significance of the effect for example, the use of a noise barriers to reduce construction noise at nearby noise sensitive receptors; and
 - **Offset:** If the effect can neither be avoided nor reduced, mitigation should seek to offset the effect through the implementation of compensatory mitigation, for example habitat creation to replace any habitat losses.
- 5.3.3 Mitigation measures fall into two categories: ‘embedded mitigation measures’ are built into the design of the Scheme; and ‘additional mitigation measures’ which are in addition to project design commitments.

Embedded Mitigation Measures

- 5.3.4 The Scheme will be developed through an iterative EIA and design process which involves seeking to avoid or reduce and, if possible, offset potential environmental effects. Where possible, these measures will be incorporated into the form or design of the Scheme, for example through the appropriate routing and siting of infrastructure.
- 5.3.5 Once these measures are incorporated into the design, they are termed 'embedded measures'. Embedded measures relevant to the construction phase will be described within each technical ES chapter. For the operational phase, such embedded measures will be represented primarily in the design. Embedded measures are therefore either incorporated into the design from the outset or identified through the assessment process.
- 5.3.6 The ES will also incorporate industry standard control measures, which are common practice on construction sites, into the embedded measures. These will be described in each technical chapter and included in a Framework Construction Environmental Management Plan (CEMP) which will be prepared as part of the DCO Submission. The Framework CEMP provides a framework within which the appointed Contractor (including any sub-contractors or suppliers involved in the works) will plan, implement and deliver environmental management, mitigation and monitoring requirements during the construction phase of the Scheme. The Framework CEMP will be developed in to a Detailed (or construction issue) CEMP by the appointed Contractor prior to the start of construction. It is intended that the Detailed CEMP will be a 'live' document and will be updated as and when there are changes to the project team or should additional information become available.

Additional Mitigation Measures

- 5.3.7 The ES assesses effects with embedded measures in place. Where significant adverse effects are identified after considering these embedded measures, 'additional mitigation measures' are proposed to further avoid or reduce the identified adverse environmental effects. These additional measures are presented within each of the technical chapters, where required, and may include measures beyond industry standard controls such as bespoke/ site specific measures like temporary fencing to prevent glint and glare until the vegetation planting has properly established. These measures will also be discussed within the relevant Framework environmental management plan(s).

5.4 Timescales and Assessment Years

Construction Phase Effects

- 5.4.1 For the assessment, these effects will be taken to be those for which the source begins and ends during the construction stage, and the effects do not endure beyond the completion of the construction phase. This covers sources of effects such as construction traffic, noise and vibration from construction activities, dust generation, site runoff, mud on roads, risk of fuel/oil spillage, and the visual intrusion of plant and machinery on-site. Some aspects of construction related effects will last for longer than others,

for example impacts related to the establishment of construction compounds are likely to be relatively short in duration in respect of the whole construction period, whereas the construction of energy infrastructure and landscaping activities are likely to persist throughout the entire construction period. By their nature, most construction impacts will be temporary and reversible.

Operational Phase Effects

5.4.2 For the assessment, these are the effects that, although they may start during construction, are either permanent, endure for a substantial period beyond construction, or represent an extended cumulative effect of construction or decommissioning activity. This includes the effects of the physical presence of the energy infrastructure, and its operation, use and maintenance. Timescales associated with these enduring effects are as follows (unless otherwise specified within a technical chapter):

- Short term — endures for up to 12 months after construction or decommissioning;
- Medium term — endures for 1 to 5 years;
- Long term — endures for more than 5 years;
- Reversible long-term effects — long-term effects, which endure throughout the lifetime of the Scheme but which cease once the Scheme has been decommissioned (operational effects will all fall into this category); and
- Permanent effects — effects which cannot be reversed following decommissioning (e.g., where buried archaeology is permanently removed during construction).

5.4.3 Environmental management and mitigation measures for the operational phase of the Scheme will be planned, implemented and delivered through an Operational Environmental Management Plan (OEMP) to be prepared following grant of the DCO and secured through a requirement in the DCO.

Decommissioning Period Effects

5.4.4 For the assessment, these effects will be taken to be those for which the source begins and ends during the decommissioning stage, and the effects do not endure beyond the completion of the decommissioning phase. This covers sources of effects such as traffic, noise and vibration from decommissioning activities, dust generation, site runoff, mud on roads, risk of fuel/oil spillage, and the visual intrusion of plant and machinery on-site, for example. As with construction phase effects, some aspects of decommissioning will endure for longer than others.

Assessment Years

5.4.5 In order to ensure the EIA is robust in considering the likely significant effects of the Scheme, appropriate assessment scenarios and years have been identified and are discussed below.

5.4.6 The peak construction year for the purpose of the EIA is anticipated to be during 2025. This is based on the assumption that the Scheme is built out

rapidly (over approximately 18 to 24 months), which is a worst case from a traffic generation point of view because it compresses the trip numbers into a shorter duration. This would therefore also be the worst case in terms of effects on drivers, pedestrians and cyclists, and traffic-related air quality and noise effects.

- 5.4.7 The peak construction assessment year will be reviewed as the anticipated construction programme is considered in more detail during design development. A full justification for the reasonable worst-case scenario that is assessed will be provided in the ES.
- 5.4.8 The proposed operational assessment year for the purpose of the EIA is 2027. This is expected to be the earliest that the Scheme will be fully built out and operational. However, as the Solar PV Site comprises a number of Solar PV Plots (Figure 1-2) and due to the anticipated sequential nature of the construction activities it is possible that some plots may be operational (generating power) whilst others are still being built, as further detailed in Section 2.4. Any impacts associated with overlap of phases will be explored in the ES.
- 5.4.9 A future year of 2042 will also be considered for specific topics including landscape and visual amenity, in terms of the maturation of vegetation (i.e. 15 years after the operational assessment year). This is a requirement of the Landscape Institute guidelines, which is discussed further in Sections 10.6 and 10.7.
- 5.4.10 The decommissioning assessment year for the purpose of the EIA is 2067, based on the design life of the Scheme, recognising that the operational life may extend beyond this date if the panels are still operating efficiently at that date.

5.5 Assessment of Impacts and Significance of Effects

- 5.5.1 The evaluation of the significance of an effect is important; it is the significance that determines the resources that should be deployed in avoiding or mitigating a significant adverse effect, or conversely, the actual value of a beneficial effect. The overall environmental acceptability of the Scheme is a matter for the SoS to determine, having taken into account, amongst other matters, the environmental information that is set out in the ES, including all likely beneficial and adverse environmental effects. Where it has not been possible to quantify effects, qualitative assessments will be undertaken, based on available knowledge and professional judgment. Where uncertainty exists, this will be noted in the relevant topic chapter and valid assumptions made/a worst case approach taken as appropriate.
- 5.5.2 The significance of residual effects will be determined by reference to criteria for each assessment topic. Specific effect significance criteria for each technical discipline will be developed, giving due regard to the following:
- Scale of the impact (described as high, medium, low and very low);
 - Effect duration (see Paragraph 5.4.2), and whether effects are temporary, reversible or permanent;

- Effect nature (whether direct or indirect, reversible or irreversible, beneficial or adverse);
- Whether the effect occurs in isolation, is cumulative or interacts with other effects;
- Performance against any relevant environmental quality standards;
- Sensitivity of the receptor (described as high, medium, low and very low); and
- Compatibility with environmental policies.

5.5.3 Further guidance specifically relating to the magnitude of an impact, the sensitivity of a receptor and the significance of any resultant effects is provided in the following sections.

Magnitude of Change

5.5.4 General criteria for defining the magnitude of change are set out in Table 5-1. Key factors that influence this include:

- Scale of change – The scale of change refers to the degree of change to or from the baseline environment caused by the impact being described;
- Spatial extent – The extent of an impact is the full area over which the impact occurs; and
- Duration and frequency – The duration is the period within which the impact is expected to last prior to recovery or replacement of the feature. Frequency refers to how often the impact will occur

Table 5-1: Magnitude of change criteria

Magnitude	Criteria
High	Long term and/or regional level loss; or major alteration to key elements/features of the baseline condition such that post development character/composition of the baseline will be fundamentally changed.
Medium	Medium term loss and/or local level change (greater than the Project footprint) or alteration to one or more key elements/features of the baseline conditions such that post development character/composition of the baseline condition will be materially changed.
Low	Short term, site specific and/or a minor shift away from baseline conditions. Changes arising from the alteration will be detectable but not material; the underlying character/composition of the baseline condition will be similar to the pre-development situation.
Very Low	Very little change from baseline conditions. Change is barely distinguishable, approximating to a “no change” situation.

Sensitivity of the Receptor / Resource

5.5.5 The sensitivity (or value) of a receptor or feature is characterised by the vulnerability to change, recoverability and importance of the receptor or feature (Table 5-2). Characterisation of the receptor is achieved by balancing out these three considerations to determine the receptor's sensitivity.

- Vulnerability – The vulnerability of the receptor relates to its capacity to accommodate change i.e., the tolerance/intolerance of the receptor to change;
- Recoverability – The ability of the receptor to return to the baseline state before the Project impact caused the change; and
- Importance – The importance of the receptor or feature is a measure of the value assigned to that receptor based on biodiversity and ecosystem services, social value and economic value. Importance of the receptor is also defined within a geographical context, whether it is important internationally, nationally or locally.

Table 5-2: Sensitivity criteria

Sensitivity	Description
High	<p>Receptor has little or no ability to absorb change without fundamentally altering its character. For example:</p> <p>Receptor has low/no capacity to return to baseline conditions within the Project life, e.g., low tolerance to change and low recoverability such as a physical feature formed over a geological time scale, or loss of access with no alternatives.</p> <p>The receptor is a designated feature of a protected site or is rare or unique.</p> <p>Receptor is economically valuable</p>
Medium	<p>Receptor has moderate capacity to absorb change without significantly altering its character, however some damage to the receptor will occur. For example:</p> <p>Receptor has intermediate tolerance to change.</p> <p>Medium capacity to return to baseline condition, e.g. >5 of up to 10 years.</p> <p>The receptor is valued but not protected.</p>
Low	<p>The receptor is tolerant to change without significant detriment to its character. Some minor damage to the receptor may occur. For example:</p> <p>Receptor has high tolerance to change.</p> <p>High capacity to return to baseline condition, e.g. >5 of up to 10 years.</p> <p>May affect socio-economic behaviour but is not a nuisance to users.</p> <p>The receptor is common and/or widespread.</p>

Sensitivity

Description

Very Low

The receptor is tolerant to change with no effect on its character.

The activity resulting from the Scheme does not have a detectable effect on survival or viability.

Evaluating the Significance of Effects

5.5.6 Having established the magnitude of change and the sensitivity of the receptor the significance of an effect can be assessed. The significance of residual effects will be evaluated with reference to available definitive standards, accepted criteria and legislation. For issues where definitive quality standards do not exist, significance will be based on the:

- Local, district, regional or national scale or value of the resource affected;
- Number of receptors affected;
- Sensitivity of these receptors; and
- Duration of the effect.

5.5.7 In order to provide a consistent approach to expressing the outcomes of the various studies undertaken as part of the EIA, and thereby enable comparison between effects upon different environmental topics, the following terminology will be used in the ES to define residual effects:

- **Adverse** – detrimental or negative effects to an environmental/socio-economic resource or receptor; or
- **Negligible** (also referred to as ‘neutral’ for some topics) – imperceptible effects to an environmental/socio-economic resource or receptor; or
- **Beneficial** – advantageous or positive effect to an environmental/socio-economic resource or receptor.

5.5.8 Where adverse or beneficial effects are identified, these will be assessed against the following scale:

- **Minor** – slight, very short or highly localised effect of no significant consequence;
- **Moderate** – limited effect (by extent, duration or magnitude) which is likely to be considered significant (to be confirmed in the ES technical chapter); and
- **Major** – considerable effect (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards; considered significant.

5.5.9 Each of the technical chapters provides the criteria, including sources and justifications, for quantifying the different categories of effect. Where possible, this will be based upon quantitative and accepted criteria (for example, noise assessment guidelines), together with the use of value judgment and expert interpretation to establish to what extent an effect is

environmentally significant. Table 5-3 illustrates an example of the classification of effects matrix (often referred to as a significance matrix).

Table 5-3: Example matrix to classify environmental effects

Sensitivity or value of resource/receptor	Magnitude of change			
	High	Medium	Low	Very low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very low	Minor	Negligible	Negligible	Negligible

5.5.10 Following the classification of an effect, clear statements will be made within the topic chapters as to whether that effect is significant or not significant. As a general rule, major and moderate effects are considered to be significant (as shown by the shaded cells in Table 5-3 above), whilst minor and negligible effects are considered to be not significant. However, professional judgement will be applied, including taking account of whether the effect is permanent or temporary, its duration/frequency, whether it is reversible, and/or its likelihood of occurrence. A precautionary / worst case approach will be adopted to ensure that the recorded effects are not understated. Generic definitions for the classification of effects are shown in Table 5-4.

Table 5-4: Generic effect descriptions

Effect	Generic description
Major	These effects may represent key factors in the decision making process. Potentially associated with sites and features of national importance or likely to be important considerations at a regional or district scale. Major effects may relate to resources or features which are unique and which, if lost, cannot be replaced or relocated.
Moderate	These effects, if adverse, are likely to be important at a local scale and on their own could have a material influence on decision making.
Minor	These effects may be raised as local issues and may be of relevance in the detailed design of the project, but are unlikely to be critical in the decision making process.
Negligible	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error, these effects are unlikely to influence decision making, irrespective of other effects.

5.5.11 Where mitigation measures are identified to eliminate, mitigate or reduce adverse impacts, these have either been incorporated into the design of the Scheme; translated into construction commitments; or operational or managerial standards/procedures. The ES will highlight 'residual' effects, which remain following the implementation of suitable mitigation measures,

and classify these in accordance with the effect classification terminology given above.

- 5.5.12 It should be noted that some technical disciplines may utilise different criteria when undertaking assessments due to differences in industry accepted guidelines and specifications. Where this is the case, the technical topic will discuss how the assessment methodology or classification of effects differs for the general EIA methodology as described in this section and provide justification.

Assessment of Construction and Decommissioning Effects

- 5.5.13 The identification of construction and decommissioning effects will be made on the basis of existing knowledge, techniques and equipment. A 'reasonable worst-case' scenario will be used with respect to the envisaged construction and decommissioning methods, location (proximity to sensitive receptors), phasing and timing of construction and decommissioning activities. A Framework DEMP will set out the general principles to be followed in the decommissioning of the Scheme. Where specific information relating to decommissioning is not known it is anticipated that, as the operations required for each are very similar, construction information will be used.
- 5.5.14 The assessment of construction and decommissioning effects will assume the implementation of standard good practice measures, for example the use of temporary noise barriers to reduce noise levels as appropriate and, where practicable, control of dust on haul roads, etc. The purpose of this is to focus on the scheme specific effects, rather than generic construction effects that can be easily addressed using generic best practice mitigation measures. Construction and decommissioning assumptions, including what has been assumed in terms of good practice measures, will be set out within the ES, and the Framework CEMP. The ES will identify and assess construction and decommissioning effects that are likely to remain after these mitigation measures are in place.

5.6 Cumulative Effects

- 5.6.1 In accordance with the EIA Regulations (Ref. 1), 'cumulative effects' will be considered. By definition, these are effects that result from incremental changes caused by other past, present or reasonably foreseeable actions together (i.e., cumulatively) with the Scheme. A range of public sector and industry-led guidance is available on the approach to assessing cumulative effects but at present there is no single, agreed industry standard method. As the Scheme is classified as an NSIP, the approach to the assessment of cumulative effects follows the guidance set out in the Planning Inspectorate's Advice Note 17 (Ref. 27).
- 5.6.2 For the cumulative impact assessment, two types of impact will be considered:
- The combined effect of individual impacts from the Scheme, for example where a single receptor is affected by noise and traffic disruption during

the construction of the Scheme (these will be referred to as ‘effect interactions’); and

- The combined effects of several development schemes which may, on an individual basis be insignificant but, cumulatively with the Scheme, have a new or different likely significant effect.

5.6.3 The assessment will be based on the best available data from other proposed and committed developments and associated information which is currently in the public domain or has been provided to the Scheme. The assessment will assume that publicly available information is accurate; the assessment is also reliant on collaboration with a range of statutory consultees, neighbouring authorities and other developers to identify changes in information which may be pertinent to the assessment.

5.6.4 Where there are specific limitations associated with data, these will be highlighted as the assessment progresses.

Effect Interactions

5.6.5 There is no established EIA methodology for assessing and quantifying effect interactions that lead to combined effects on sensitive receptors, however the European Commission (EC) has produced guidelines for assessing effect interactions “*which are not intended to be formal or prescriptive, but are designed to assist EIA practitioners in developing an approach which is appropriate to a project...*” (Ref. 193).

5.6.6 AECOM has reviewed these guidelines and has developed an approach which uses the defined residual effects of the Scheme to determine the potential for effect interactions that lead to combined effects. This approach was followed on both the Sunnica Energy Farm and Longfield Solar Farm projects, which are both other solar NSIPs and have been Accepted for examination.

5.6.7 The EIA will predict beneficial and adverse effects during construction, operation, and decommissioning of the Scheme, which are classified as minor, moderate or major. Several effects on one receptor or receptor group could theoretically interact or combine to produce a combined significant overall effect.

5.6.8 An exercise which tabulates the effects on receptors or receptor groups will be undertaken to determine the potential for effect interactions and therefore any combined effects. Only adverse or beneficial residual effects classified as minor, moderate, or major will be considered in relation to potential effect interactions. Residual effects, which are classified as negligible will be excluded from the assessment of the effect interactions as, by virtue of their definition (see Table 5-4), they are considered to be imperceptible effects to an environmental / socio-economic resource or receptor.

Cumulative Effects with Other Developments

5.6.9 The Planning Inspectorate's Advice Note 17 on the assessment of cumulative effects (Ref. 26) identifies a four-stage approach as follows:

Stage 1 – Establish the NSIP's Zol and identify long list of 'other development'

5.6.10 A review of other developments will be undertaken, initially encompassing a 'zone of influence' (Zol) defined by the environmental topic specialists to prepare a long list of 'other development'. At this stage, it is anticipated that the long list will be based on up to a 5 km area of search which aligns with the Study Area for landscape and visual amenity and the likely maximum range of any potential significant effects.

5.6.11 The long list of 'other development' to be included in the assessment of cumulative effects will be reviewed and developed in consultation with the local planning authorities, statutory consultees and other relevant organisations.

5.6.12 Development will be included in the initial long-list based on the following criteria:

- Development currently under construction;
- Approved applications which have not yet been implemented (covering the past five years and taking account of those that received planning consent over three years ago and are still valid but have not yet been completed);
- Submitted applications not yet determined;
- Refused applications, subject to appeal procedures not yet determined;
- On the National Infrastructure Planning Programme of Projects;
- Development identified in the relevant Development Plan (and emerging Development Plans); and
- Development identified in other plans and programmes which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

5.6.13 Criteria will be developed and applied to filter development which may be excluded from the initial long list, having regard to the size and spatial influence of each development. These criteria will be documented and set out within the ES.

Stage 2 – Identify shortlist of 'other development' for Cumulative Effects Assessment

5.6.14 At Stage 2, to ensure a proportionate approach to the assessment, a detailed review of the long-list of other developments will be undertaken. Any developments of a nature or scale without the potential to result in cumulative impacts will be excluded, following discussion with the local planning authorities and consideration of the likely Zone of Influence (Zol) for each environmental topic. The justification for including or excluding developments from the long-list will be provided in a matrix, modelled on the example given within Matrix 1 (Appendix 1) of the Planning Inspectorate's

Advice Note 17 (Ref. 27). For example, this will include whether the 'other developments' are within the ZOI and whether there is likely to be overlap in the timing of the construction phases.

Stage 3 – Information gathering

5.6.15 Information relating to other developments will be collected from the appropriate source (which may include the local planning authorities, the Planning Inspectorate or directly from the applicant/developer) and will include, but not be limited to:

- Proposed design and location information;
- Proposed programme of demolition, construction, operation and/or decommissioning; and
- Environmental assessments that set out baseline data and effects arising from 'other development'.

Stage 4 – Assessment

5.6.16 The assessment will include a list of those developments considered to have the potential to generate a cumulative effect together with the Scheme, and this will be documented in a matrix, in line with Matrix 2 (Appendix 2) of the Planning Inspectorate's Advice Note 17 (Ref. 27) which includes the following:

- A brief description of the development;
- An assessment of the cumulative effect with the Scheme;
- Proposed mitigation applicable to the Scheme including any apportionment; and
- The likely residual cumulative effect.

5.6.17 The criteria for determining the significance of any cumulative effect will be based upon:

- The duration of effect, i.e. will it be temporary or permanent;
- The extent of effect, e.g. the geographical area of an effect;
- The type of effect, e.g. whether additive or synergistic;
- The frequency of the effect;
- The 'value' and resilience of the receptor affected; and
- The likely success of mitigation.

5.6.18 In reporting the overall significance of cumulative effects, it is appropriate to also acknowledge the relative contributions different projects make to a cumulative effect, and carefully consider whether the cumulative effect is significant. For example, where a large-scale project is predicted to result in significant effects in its own right and a smaller proposed development would not have significant effects, the cumulative assessment should only conclude that there is a significant cumulative effect if the effect of both projects together is of greater significance than the larger project in isolation. Consequently, care will be taken not to simply propagate such effects as

being cumulative, but rather to focus on the nature and scale to which genuine cumulative effects might result.

5.7 Proposed Topics to be Included in the ES

5.7.1 The following chapters of this EIA Scoping Report present a discussion of the likely or potential significant environmental effects associated with the Scheme that it is proposed will be considered as part of the EIA. The methodology and assessment criteria that will be used to assess the identified effects are also outlined. These topics comprise:

- Climate Change (Chapter 6);
- Cultural Heritage (Chapter 7);
- Ecology (Chapter 8);
- Water Environment (Chapter 9);
- Landscape and Visual Amenity (Chapter 10);
- Noise and Vibration (Chapter 11);
- Socio-Economics and Land Use (Chapter 12);
- Transport and Access (Chapter 13);
- Human Health (Chapter 14);
- Soils and Agricultural Land (Chapter 15) and
- Other Environmental Topics (Chapter 16).

5.7.2 **Chapter 16 Other Environmental Topics** provides a summary of environmental topics which have been considered during the preparation of this Scoping Report, and for which standalone chapters are not anticipated to be required in the ES. For these topics it is considered, from previous experience, that the demonstration of no likely significant effects being expected can be quickly established without the need for detailed information on legislation and policy, methodology and baseline conditions being provided. Therefore, technical appendices will be provided for these topics with a short summary provided in a single chapter within the ES.

5.7.3 This methodology has been used for previous NSIP solar projects and ensures that a proportionate approach to assessment can be undertaken. For clarity, these topics are not scoped out of the EIA. They are scoped in, and an impact assessment will be undertaken but the format of presentation within the ES will be different to the topics listed above. These topics comprise:

- Air Quality (Section 16.2);
- Glint and Glare (Section 16.3);
- Ground Conditions (Section 16.3.12);
- Major Accidents or Disasters (Section 16.5);

- Telecommunications, Television Reception and Utilities (Section 16.6); and
- Materials and Waste (Section 16.7).

5.7.4 **Chapters 6 to 16** of this Scoping Report provide an outline of the proposed scope of works for the topics identified above, including details of consultations undertaken to date in relation to the definition of the scope for that topic.

5.8 Proposed Topics Scoped Out of the ES

5.8.1 Based upon the work presented in this EIA Scoping Report, each of **Chapters 6 to 16** sets out the elements to be scoped out for that topic. **Chapter 16** also describes the elements to be scoped out for each of the topics discussed. This information is summarised in Table 18-1 and Table 18-2.

5.9 Topic Chapter Structure

5.9.1 Each of chapters 6 to 15 of this EIA Scoping report is set out as follows

- Introduction to the topic;
- Description of the Study Area for the topic;
- Planning Policy Context and Guidance in relation to the topic;
- Consultation;
- Baseline Conditions;
- Potential Effects and Mitigation;
- Assessment Methodology; and
- Assumptions, Limitations and Uncertainties.
- Summary of elements scoped in and scoped out.

5.9.2 For Chapter 16, a general discussion of each topic is provided, including elements listed above where relevant, but the text is not confined to the structure above.

6. Climate Change

6.1 Introduction

6.1.1 To align with the requirements of the EIA Regulations (Ref. 1) and IEMA Guidance for assessing climate mitigation (Ref. 27) and adaptation (Ref. 29) in EIAs, consideration has been given within this chapter to three aspects of climate change assessment:

- **Lifecycle greenhouse gas (GHG) impact assessment** — Impact of GHG emissions arising from the Scheme on the climate over its lifetime;
- **In-combination climate change impact (ICCI) assessment** — Combined impact of the Scheme and future climate change on the receiving environment¹; and
- **Climate change resilience review (CCR)** — The resilience of the Scheme to future climate change impacts.

6.2 Study Area

Lifecycle GHG Impact Assessment

6.2.1 The Study Area for the GHG impact assessment covers all direct GHG emissions arising from activities undertaken on the Site during the construction, operation and maintenance, and decommissioning of the Scheme. It also includes indirect emissions embedded within the construction materials arising as a result of the energy used for their production, as well as emissions arising from the transportation of materials, waste and construction workers.

6.2.2 The Study Area also includes activities that may be avoided or displaced as a result of the Scheme such as other grid electricity production activities.

6.2.3 The environmental impact associated with GHG emissions is a national and global issue. Consequently, the potential significance of the proposed Scheme's lifecycle GHG emissions will be assessed by comparing the estimated GHG emissions from the Scheme against the reduction targets defined in the Climate Change Act 2008 (2050 Target Amendment) Order 2019 (Ref. 30) and associated five year, legally binding carbon budgets.

In-Combination Climate Change Impact Assessment

6.2.4 The Study Area for the in-combination climate change impact assessment will be defined in each environmental assessment within the ES, and includes all environmental receptors identified within the assessments undertaken by the environmental disciplines.

¹ In line with IEMA guidance, this is the combined effect of the impacts of the Scheme and potential climate change impacts on the receiving environment are referred to as 'in-combination impacts' and 'in-combination effects'

Climate Change Resilience Review

- 6.2.5 The Study Area for the climate change resilience review is the land within the Site boundary, i.e. it covers the construction, operation and decommissioning of all assets and infrastructure which constitute the Scheme.

6.3 Legislation, Planning Policy Context and Guidance

- 6.3.1 Legislation, planning policy and guidance relating to climate change, and pertinent to the Scheme, comprises:

International Legislation

- United Nations Framework Convention on Climate Change Paris Agreement (UNFCCC, 2016) (Ref. 36). The Paris Agreement is an agreement within the UNFCCC requiring all signatories to strengthen their climate change mitigation efforts to keep global warming to below 2°C this century and to pursue efforts to limit global warming to 1.5°C.
- UK Nationally Determined Contribution to the UNFCCC (Ref. 37). In 2020, the UK communicated its new Nationally Determined Contribution to the UNFCCC. Within this, the UK has committed to reducing GHG emissions by at least 68% by 2030 compared to 1990 levels.

National Legislation

- The Climate Change Act (2008) (Ref. 30) and Climate Change Act (2050 Target Amendment Order 2019) (Ref. 31). The Climate Change Act 2008 set a legally binding target for the UK to reduce its GHG emissions from 1990 levels by at least 80% by 2050. This target is supported by a system of legally binding five-year 'carbon budgets' and an independent body to monitor progress, the Climate Change Committee (CCC). The UK carbon budgets restrict the amount of GHG emissions the UK can legally emit in a defined five-year period. The Act was amended in 2019 to revise the existing 80% reduction target and legislate for Net Zero emissions by 2050 (through the Climate Change Act 2008 (2050 Target Amendment) Order 2019).
- The Carbon Budgets Order 2009 (Ref. 32). This sets the carbon budget totals for the First (2008-2012), Second (2013-2017) and Third (2018-2022) Carbon Budget periods.
- Carbon Budget Order 2011 (Ref. 33). This Order sets the carbon budget total for the Fourth (2023-2027) Carbon Budget period.
- Carbon Budget Order 2016 (Ref. 34). This Order sets the carbon budget total for the Fifth (2028-2032) Carbon Budget period.
- The Carbon Budget Order 2021 (Ref. 35). This sets the carbon budget total for the Sixth (2033-2037) Carbon Budget period.

National Planning Policy

- National Planning Statement for Energy (NPS EN-1) (Ref. 36), with particular reference to paragraphs 2.2.6, 2.2.9 and 4.8.2 in relation to climate impacts and adaptation; paragraphs 4.1.3 to 4.1.4 in relation to adverse effects and benefits; paragraphs 4.2.1, 4.2.3, 4.2.4, 4.2.8 to

4.2.10 and 5.1.2 in relation to European Union (EU) Directive and ES requirements; paragraphs 4.5.3 and 4.8.1 to 4.8.12 in relation to adaptation measures in response to climate projections; and paragraphs 5.7.1 to 5.7.2 in relation to climate projections, flood risk and the importance of relevant mitigation. The draft overarching National Policy Statement for Energy (EN-1) (Ref. 95) includes guidance for the appraisal of sustainability in paragraph 1.7.4, climate change adaptation in paragraphs 4.9.1 to 4.9.14, net zero in paragraphs 2.2.1 to 2.2.5 and generic impacts on the climate in Part 5.3.

- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (Ref. 6) – paragraph 2.4.1 regarding NPS EN-1 and the importance of climate change resilience, and paragraph 2.4.2 in relation to ES requirements regarding climate change resilience. The draft overarching National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref. 94) includes considerations for climate change adaptation and resilience in paragraphs 2.6.1 and 2.6.2.
- National Planning Policy Framework (NPPF) (Ref. 7) – paragraphs 8, 20 and 149 in relation to adaptation, mitigation and climate change resilience; paragraphs 148 and 157 in relation to flood risk and damage to property and people; paragraphs 150 and 153 in relation to reduction of CO₂ emissions through design and reduced energy consumption; and paragraphs 155 to 165 in relation to climate projections, associated flood risk and adaptation.

International Guidance

- The World Business Council for Sustainable Development and World Resources Institute GHG Protocol guidelines (Ref. 45), these set out internationally accepted GHG accounting and reporting standards.

National Guidance

- Planning Practice Guidance, Climate Change (Ref. 39). This guidance describes how to identify suitable mitigation and climate adaptation measures to incorporate into the planning process, stating that: “Effective spatial planning is an important part of a successful response to climate change as it can influence the emission of greenhouse gases... Planning can also help increase resilience to climate change impact through the location, mix and design of development.”
- Net Zero Strategy (2021) (Ref. 40). This strategy sets out policies and proposals for decarbonising all sectors of the UK economy to meet a net zero target by 2050. One of the key policies is for the UK to be entirely powered by clean energy sources (predominantly solar and wind), by 2035.
- IEMA (2022) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (Ref. 27).
- IEMA (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (Ref. 29).

Local Planning Policy

- East Riding Environmental Policy Summary (Ref. 40) - particularly in relation to reducing and managing local causes of climate change through appropriate mitigation, and adapting council services for resilience to the predicted images of climate change.
- Yorkshire and Humber Climate Commission, as part of the Economic and Social Research Council (ESRC) funded place-based climate action network (PCAN) (Ref. 42) – particularly in relation to progress, review and stock-take on the main issues and challenge/activities in the region, to feed into local and combined authorities and the Yorkshire and Humber Leaders Board.
- Yorkshire and Humber Climate Action Plan (Ref. 43) – particularly in relation to climate resilience, net zero and specific actions for the Yorkshire and Humber Climate Commission.

6.3.2 The national planning policies identify the requirement for consideration of climate change resilience. Climate projections should be analysed, and appropriate climate change adaptation measures considered throughout the design process. Specific climate change risks identified within these policies include flooding, drought, coastal change, rising temperatures and associated damage to property and people.

6.3.3 Local planning policies identify the need to consider and, where appropriate, mitigate GHG emissions associated with new development. New development should aim for reduced or zero-carbon development by incorporating renewable or low-carbon energy sources and maximising energy efficiency where practicable, and should build in resilience to projected climate change impacts. Relevant policies include:

- Adopted East Riding Local Plan (2016) – Policy S2 (Addressing climate change), ENV1 (Integrating high quality design) and EC5 (Supporting the energy sector) (Ref. 8).
- Selby District Core Strategy (2013) – Policy SP15 (Sustainable Development and Climate Change) (Ref. 64).

6.4 Consultation

6.4.1 To date there has been no formal consultation on the scope of the Climate Change chapter. Consultation will be undertaken with statutory parties including the Environment Agency and the relevant Local Planning Authorities on climate change targets, aims, commitments, other projects, plans and policy that affect climate and baseline data, as well as any known future developments in close proximity to the Scheme.

6.5 Baseline Conditions

GHG Impact Assessment

6.5.1 The receptor for the GHG impact assessment is the global climate. The current land use within the Site consists predominately of arable land, managed hedgerows and trees. Trees are present individually in some areas as well as rows of trees and small woodland areas. The abundance of

vegetation within the Site suggests a relatively high carbon sink potential. Current land use within the Site has relatively low levels of associated GHG emissions as the land use is largely agricultural. Baseline agricultural GHG emissions are dependent on soil and vegetation types present, and fuel use for the operation of vehicles and machinery.

- 6.5.2 For the GHG assessment, the baseline is a 'no-development' scenario whereby the Scheme is not implemented. The baseline comprises existing carbon stock and sources of GHG emissions within the boundary of the existing activities on-site, as well as the emissions that may be avoided as a result of the Scheme, i.e., existing emissions from the generation of grid electricity if the Scheme does not go ahead. A full assessment of the baseline 'no-development' scenario will be undertaken within the ES.

In-Combination Climate Change Impact Assessment

- 6.5.3 The receptors for In-Combination Climate Change Impacts (ICCI) are receptors within the surrounding environment that will be impacted by the Scheme in combination with future climatic conditions. Baseline conditions for the ICCI are determined using the climate change projections data.
- 6.5.4 An initial review of UK Climate Projections 2018 (UKCP18) data (Ref. 44) for the 25 km grid square within which the Scheme is located suggests that by the 2050 s time period (2040–2069), the Region could experience an increase of around 2.2°C in summer mean air temperature at 1.5 m, and an increase of 1.6°C in winter mean air temperature at 1.5 m, compared to a 1981–2010 baseline period. For the same time period, summer mean precipitation could decrease by around 17%, whilst in winter it could increase by 8%.

Climate Change Resilience Review

- 6.5.5 The receptor for Climate Change Resilience (CCR) is the Scheme itself, including its construction and operation. The CCR will provide a description of how the Scheme will be designed to be more resilient to the climate change impacts identified during the review of the UKCP18 data (Ref. 44). A more detailed assessment of climate change projections will be conducted for the land within the Site as part of the ES.

6.6 Potential Effects and Mitigation

GHG Impact Assessment

- 6.6.1 For the purposes of this assessment, it has been considered that any increase in GHG emissions compared to the baseline has the potential to have an impact, due to the high sensitivity of the receptor (global climate) to increases in GHG emissions. This is in line with the IEMA guidance (Ref. 27), which states that all GHG emissions have the potential to be significant. The application of the standard EIA significance criteria is not considered to be appropriate for climate change mitigation assessments. GHG impacts will be put into context in terms of their impact on the UK's five-year carbon budgets, which set legally binding targets for GHG emissions. GHG impacts will also be put into context for the sub-sectoral budgets for energy

generation. Table 6-1 provides the lifecycle stages, related activities and primary emission sources to be considered for the GHG assessment.

Table 6-1: Potential sources of GHG emissions

Lifecycle stage	Activity	Primary emission sources
Product stage	Raw material extraction and manufacturing of products required to build the equipment for the Scheme. Due to the complexity of the equipment, this stage is expected to make a significant contribution to overall GHG emissions. Transportation of materials for manufacturing.	Embodied GHG emissions from energy use in extraction of materials and manufacture of components and equipment. Emissions of GHG from transportation of products and materials.
Construction process stage	On-site construction activity including emissions from construction compounds. Transportation of construction materials (where these are not included in product-stage. Travel of construction workers.	Consumption of energy (electricity; other fuels) from plant, vehicles, generators and worker travel. Fuel consumption from transportation of materials to site, where these are not included in product-stage embodied emissions. Due to the nature of the equipment, this could require shipment of certain aspects over significant distances.
	Disposal of waste materials generated by the construction process. Land use change. Water use.	GHG emissions from transportation and disposal of waste. GHG emissions from net loss of carbon sink. Provision of clean water, and treatment of wastewater.
Operation and maintenance stage	Operation and maintenance of the Scheme.	GHG emissions from energy consumption. These operational emissions are expected to be negligible in the context of the overall GHG impact. Leakage of potent GHGs, such as SF ₆ , during operation. GHG emissions from material use and waste generation resulting from ongoing site maintenance. Emissions from routine maintenance are expected to be negligible, but the periodic replacement of components has

Lifecycle stage	Activity	Primary emission sources
		the potential to have significant impacts given the complexity of the equipment involved.
Decommissioning stage	On-site decommissioning activity. Transportation and disposal of waste materials. Worker travel.	Consumption of energy (electricity and other fuels) from plant, vehicles and generators on site. Emissions from the disposal and transportation of waste. This has the potential to be significant give the complexity of the equipment. GHG emissions from transportation of workers to site.

6.6.2 GHG emissions from the Scheme will be put into context by comparing them with other likely alternative sources of electricity generation. The assessment will therefore measure any savings in emissions due to the generation of the electricity via solar PV as compared to other electricity generation methods such as natural gas.

6.6.3 Carbon sequestration as a result of the additional carbon capture by vegetation and soils as a result of land use change from arable to permanent grassland will also be discussed.

6.6.4 As discussed in paragraph 5.3.6 a Framework CEMP will be prepared as part of the DCO submission to set out the requirements for environmental management, mitigation and monitoring during the construction phase of the Scheme. This document will be developed into a Detailed (or construction issue) CEMP prior to the start of construction and implemented.

6.6.5 The final selection of any mitigation measures, if required, will be detailed as part of the lifecycle GHG impact assessment in the ES. This may include GHG emission mitigation measures concerning construction, operation and decommissioning of the Scheme.

In-Combination Climate Change Impact Assessment

6.6.6 In-combination Climate Impact Assessment identifies how the resilience of various receptors in the surrounding environment is affected by a combination of future climate conditions and the Scheme. The climate parameters relevant to the Scheme are detailed in Table 6-2 below together with the rationale for scoping. On the basis of the information presented in Table 6-2, an in-combination climate change impact assessment is proposed to be scoped out.

Table 6-2: Climate parameters for the in-combination climate change impact assessment of the Scheme

Parameter	Scoped in/ out	Rationale for scoping conclusion
Temperature change	Out	While impacts are expected as a result of projected temperature increases, these temperature increases in combination with the Scheme are not expected to have a significant impact upon receptors identified by other environmental disciplines. Similarly, it is not expected that projected temperature increases would have impacts on the panels themselves as Solar PV schemes operate all over the world in climates which are already much warmer than the predicted climate of the UK.
Sea level rise	Out	The Scheme is not located in an area that is susceptible to sea level rise.
Precipitation change ²	Out	Climate change may lead to an increase in substantial precipitation events that could lead to flash flooding or changes to groundwater levels. However, no significant impacts on surface water or groundwater levels are expected as a result of precipitation changes, in combination with the Scheme, as the flow of precipitation to ground will not be significantly hindered and the conversion of agricultural land to grassland should increase infiltration and reduce runoff rates. The Scheme, in combination with projected changes in precipitation, is also not expected to have a significant impact upon receptors identified by other environmental disciplines.
Wind	Out	The Scheme, in combination with projected changes in wind patterns, is not expected to have a significant impact upon receptors identified by other environmental disciplines.

² Frequency and magnitude of precipitation events and droughts

Climate Change Resilience Review

6.6.7 Climate parameters relevant to the climate change review are detailed in Table 6-3 below.

Table 6-3: Parameters scoped into the climate change resilience review

Parameter	Scoped in/ out	Rationale for scoping conclusion
Extreme weather events	In	The Scheme may be vulnerable to extreme weather events such as storm damage to structures and assets.
Temperature	In	Extremes in temperatures may result in heat stress of materials and structures.
Precipitation	In	The Scheme may be vulnerable to changes in precipitation, for example, land subsidence and damage to structures and drainage systems during periods of heavy rainfall.
Wind	In	The Scheme may be vulnerable to changing wind patterns, for example, high winds and falling trees could damage structures and assets
Sea level rise	Out	The Scheme is not located in an area that is susceptible to sea level rise.

6.6.8 The climate change resilience review will qualitatively assess the Scheme's resilience to climate change. This will be completed in liaison with the project design team and the other EIA technical disciplines by considering the climate projections for the geographical location and timeframe of the Scheme.

6.6.9 A statement will be provided within the ES to describe how the Scheme will be adapted to improve its resilience to future climate conditions.

6.7 Assessment Methodology

GHG Impact Assessment

6.7.1 The GHG assessment will follow a project lifecycle approach to calculate estimated GHG emissions arising from the construction, operation and decommissioning of the Scheme and to identify GHG 'hot spots' (i.e., emissions sources likely to generate the largest amount of GHG emissions). This will enable the identification of priority areas for mitigation in line with the principles set out in IEMA guidance (Ref. 27).

6.7.2 In line with the World Business Council for Sustainable Development and World Resources Institute GHG Protocol guidelines (Ref. 45), the GHG

assessment will be reported as tonnes of carbon dioxide equivalent (tCO₂e) and will consider the seven Kyoto Protocol gases:

- Carbon dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Sulphur hexafluoride (SF₆);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Nitrogen trifluoride (NF₃).

6.7.3 Expected GHG emissions arising from the construction activities, embodied carbon in materials and operational emissions of the Scheme, as well as baseline emissions, will be quantified using a calculation-based methodology as per the following equation, and aligned with the GHG Protocol (Ref. 45):

$$\text{Activity data} \times \text{GHG emissions factor} = \text{GHG emissions}$$

6.7.4 Department for Environment, Food and Rural Affairs (Defra) 2021 emissions factors (Ref. 46) and embodied carbon data from the University of Bath Inventory of Carbon and Energy (ICE) (Ref. 47) are among those that will be used as the primary data sources for calculating GHG emissions.

6.7.5 The sensitivity of the receptor (global climate) to increases in GHG emissions is always defined as high as any additional GHG impacts could compromise the UK's ability to reduce its GHG emissions and therefore meet its future 5-year carbon budgets. Also, the extreme importance of limiting global warming to below 2°C this century is broadly asserted by the International Paris Agreement (Ref. 48) and the climate science community.

6.7.6 When evaluating significance of the GHG emissions, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible (Ref. 27). The crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050.

6.7.7 The following significance criteria in Table 6-4 will be used to determine the Scheme's whole life GHG emissions and how these align with the UK's net zero compatible trajectory. Major or moderate adverse effects and beneficial effects are considered to be significant. Minor adverse and negligible effects are not considered to be significant.

Table 6-4: Significance criteria

Level of significance	Description
Major adverse	The Scheme's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
Moderate adverse	The Scheme's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Minor adverse	The Scheme's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
Negligible	The Scheme's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Beneficial	The Scheme's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

6.7.8 The UK carbon budgets (Ref. 32 to Ref. 31) are currently only available to 2037 (6th carbon budget). Where further carbon budgets are not available (7th, 8th and 9th Carbon Budget periods), these will be projected based on data published by the Climate Change Committee (CCC). Totals for these periods have not been approved or ratified and are not legally binding, but indicative figures can provide valuable context at this stage.

Climate Change Resilience Review

6.7.9 The Scheme's resilience to climate change will be considered qualitatively. This will be completed in liaison with the project design team and the other ES technical specialists by considering the climate projections for the geographical location and timeframe of the Scheme.

6.7.10 In line with standard methodology, the significance of climate resilience will not be assessed, rather a statement will be provided to describe how the Scheme has been designed to be as resilient as is reasonably practicable to future climate change.

6.8 Assumptions, Limitations and Uncertainties

6.8.1 Where detailed information is not available regarding energy use, types and quantities of materials used, or the embodied carbon of key features of the assets, precautionary assumptions will be made based on industry approximations and professional best practice.

6.8.2 All assumptions and limitations, including any exclusions, together with assumptions for choices and criteria leading to exclusion of input and output data will be documented as part of the assessment.

6.9 Summary of Elements Scoped in and Scoped Out

6.9.1 A summary of the elements scoped into and out of the assessment of climate change are presented in Table 6-5:

Table 6-5: Elements scoped in and out of the assessment of climate change

Element	Scoped in / Scoped Out
GHG Impact Assessment	Scoped in and will cover all aspects of the Scheme's development from raw products and manufacture of materials, through to construction, operation and decommissioning.
In-combination Climate Impact Assessment	Scoped out as changes in temperature, sea level, precipitation and wind patterns are not predicted to have a significant impact upon receptors identified by other environmental disciplines.
Climate Change Resilience Review	Scoped in. This will consider the vulnerability of the Scheme to extreme weather events and changes in temperature, precipitation and wind patterns. Assessment of changes in sea level has been scoped out as the Scheme is not located in an area that is susceptible to sea level rise.

7. Cultural Heritage

7.1 Introduction

- 7.1.1 This chapter sets out the approach to the assessment of the Scheme's impacts on cultural heritage (comprising built heritage, archaeology, and the historic landscape). The purpose of the assessment will be to identify and characterise any relevant cultural heritage resources, and to consider the nature and scale of potential impacts and effects arising from the Scheme.
- 7.1.2 This chapter is supported by Figure 7-1: Location of Designated Heritage Assets and Figure 7-2: Location of Non-designated Heritage Assets included at the end of this chapter.

7.2 Study Area

- 7.2.1 The Study Area for buried components of the Scheme, comprising the onsite and interconnecting underground cabling, will be 1 km from the Site boundary. Once operational, these components of the Scheme would not be visible and would not change the setting of heritage assets. As such, a 1 km Study Area is assessed to be proportionate to the level of likely impact. The Study Area will provide data relating to heritage assets in proximity to the Scheme whose setting may change temporarily during construction, but would not experience any long-term effects of the Scheme.
- 7.2.2 Wider Study Areas are proposed around those parts of the Site that would house above-ground components of the Scheme. This is because these components have the potential to result in long-term change to the settings of heritage assets, some of which may be located at distance from the Scheme. As such, the wider Study Area will allow consideration of those heritage assets whose setting may extend into the Site boundary; it is influenced by the heritage value of the asset, the prevailing topography and the predicted visibility of the Scheme.
- 7.2.3 The Study Area for non-designated assets will extend to a distance of 1 km from the Site boundary, and the Study Area for designated assets will extend to 3 km from the boundary of the Solar PV Site and 1 km from the Grid Connection Corridor. This will allow for cultural heritage assets to be set within their wider context and allow for the assessment of archaeological potential within the Site boundary, and assessment of the setting of heritage assets within the Site and the surrounding landscape.
- 7.2.4 A flexible approach will be taken to the identification of assets of the highest value (i.e., World Heritage Sites, scheduled monuments, Grade I and II* listed buildings and Registered Parks and Gardens and Conservation Areas containing a number of assets of the highest value), where there may be an impact through change to setting up to 5 km beyond the Site boundary. High value assets up to this distance may be considered, where identified as necessary by the EIA technical discipline team or through consultation. This will be guided by the Scheme's Zone of Theoretical Visibility (ZTV) (to be prepared as part of Landscape and Visual Amenity chapter of the PEI

Report) but will also consider physical and historical connectivity and relationships with other monuments and the wider landscape. Preliminary ZTV is shown in Figure 10-1 and will be updated for the PEI Report.

7.3 Planning Policy Context and Guidance

7.3.1 Legislation, planning policy and guidance relating to cultural heritage and pertinent to the Scheme comprises:

Legislation

- Infrastructure Planning (Decisions) Regulations 2010 (Ref. 51);
- Planning (Listed Buildings and Conservation Areas) Act 1990 (Ref. 52); and
- Ancient Monuments and Archaeological Areas Act 1979 (Ref. 53) (amended by the National Heritage Act 1983 (Ref. 54) and 2002 (Ref. 55)).

National Planning Policy

- NPS EN-1 (Ref. 36) with particular reference to Section 5.8 in relation to the significance, impact and recording of the historic environment;
- NPS EN-5 (Ref. 6) with particular reference to Paragraph 2.8.9 in relation to the archaeological consequences of electricity line installation;
- Draft NPS EN-1 (Ref. 95) with reference to Section 5.9 Historic Environment;
- Draft NPS EN-5 (Ref. 94) with reference to Paragraph 2.2.5 and the desirability of preserving sites, buildings and objects of architectural, historic or archaeological interest, and also Paragraph 2.11.14 which highlights the potential impacts to archaeological sites from underground cables; and
- NPPF (Ref. 7) with particular reference to Section 16: Conserving and Enhancing the Historic Environment.

National Guidance

7.3.2 The following guidance is of relevance for cultural heritage:

- Planning Practice Guidance, Section 16: Conserving and enhancing the historic environment (Ref. 56);
- Historic Environment Good Practice Advice in Planning Note 2. Managing Significance in Decision Taking in the Historic Environment. Historic England (Ref. 57);
- Historic Environment Good Practice Advice in Planning Note 3. The Setting of Heritage Assets. Historic England (2nd edition, 2017) (Ref. 58);
- Historic Environment Statement of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12. Historic England (2019) (Ref. 59);

- Commercial Renewable Energy Development and the Historic Environment. Historic England Advice Note 15 (2021) (Ref. 60);
- Chartered Institute for Archaeologists (ClfA) Standard and Guidance for Historic Environment Desk-Based Assessment (Ref. 61);
- ClfA Code of Conduct (Ref. 62); and
- Institute of Environmental Management and Assessment (IEMA), the Institute of Historic Building Conservation (IHBC) and the Chartered Institute for Archaeologists (ClfA), Principles of Cultural Heritage Impact Assessment in the UK (Ref. 63).

Local Planning Policy

7.3.3 The Scheme falls within the administrative boundaries of the East Riding of Yorkshire Council and Selby District Council. The following local policies are of relevance to the historic environment:

- East Riding Local Plan 2012–2029 Strategy Document, Adopted 2016 (Ref. 8)
 - Policy ENV2 – Promoting a high-quality landscape;
 - Policy ENV3 – Valuing our heritage;
- Selby District Core Strategy Local Plan, Adopted 2013 (Ref. 64)
 - Policy SP18 – Protecting and Enhancing the Environment;
- Selby District Local Plan 2005 (saved policies) (Ref. 65)
 - ENV25 – Developments affecting Conservation Areas;
 - ENV27 – Developments affecting the setting of Scheduled Monuments or other nationally important sites; and
 - ENV28 – Development affecting archaeology.

7.4 Consultation

7.4.1 Consultation will be carried out with the Archaeology Officers and Conservation Officers for East Riding of Yorkshire and North Yorkshire County Councils to ensure, as far as practicable, that cultural heritage issues are identified and potential impacts to cultural heritage assets are included in the assessment. Consultation will also be carried out with Historic England if potential impacts to designated heritage assets, or non-designated assets of high value, are anticipated

7.4.2 The scope of archaeological geophysical survey has been set out in a Written Scheme of Investigation which was agreed with the Archaeology Officer for North Yorkshire County Council on 10 August 2022 and the Archaeology Officer for East Riding of Yorkshire County Council on 12 August 2022. The geophysical survey is scheduled to commence in September 2022.

7.5 Baseline Conditions

7.5.1 To assist with the Scoping assessment, data has been considered from the National Heritage List (Ref. 66), the Humber Historic Environment Record

(HER), and the North Yorkshire HER to gain an understanding of the designated and non-designated heritage assets within the Study Areas. All heritage assets identified within the Study Areas are illustrated on Figure 7-1 and Figure 7-2. They are referred to in the text by a unique identity code in brackets (e.g., MHU13354 or 1008685).

Designated Assets

- 7.5.2 There are no designated assets within the Site.
- 7.5.3 There are five designated assets within the Grid Connection Corridor, comprising one scheduled monument (1016857) and four Grade II listed buildings, as follows:
- Derwent View Grade II listed building (1168001);
 - Stables to Hagthorpe Hall Grade II listed building (1148459);
 - Hagthorpe Hall Grade II listed building (1148458); and
 - Rowland Hall Grade II listed building (1083172).
- 7.5.4 Within the 3 km Study Area from the Site there are 126 assets comprising seven scheduled monuments, 118 listed buildings and one conservation area, namely Howden.
- 7.5.5 The scheduled monuments comprise the following assets:
- Wressle Castle (1005210);
 - Howden Church, ruined portions (1005226);
 - Bishop's Manor House (1005227);
 - Moated Grange at Monk Farm (1008675);
 - Moated Site at Chapelgarth, 450 m north-east of Manor Farm (1015303);
 - Moated Site at Manor Farm, Portington (1015304); and
 - Scruff Hall Moated Site (1017485).
- 7.5.6 The majority of the listed buildings are listed at Grade II, however there are five Grade I listed buildings, and six Grade II* listed buildings, as follows:
- Church of St Peter and St. Paul Grade I listed building (1148397);
 - Church of St. Peter and St. Paul and Chapter House Grade I listed building (1160491);
 - Church of St. Michael Grade I listed building (1031835);
 - Ruins of Wressle Castle Grade I listed building (1083170);
 - Church of All Saints Grade I listed building (1310699);
 - Knedlington Old Hall Grade II* listed building (1083235);
 - The Langley Archway Grade II* listed building (1083182);
 - The Bishop's Manor Grade II* listed building (1083181);
 - Howden Hall Grade II* listed building (1160523);

- The Bakehouse at Wressle Castle approximately 30 Metres North of Ruins of Wressle Castle Grade II* listed building (1160652); and
- Holmes House Grade II* listed building (1148486).

7.5.7 Within the wider 5 km Study Area for assets of the highest value there are eight assets comprising four scheduled monuments, two Grade I listed buildings, and two Grade II* listed buildings. There are also two conservation areas: Hemmingbrough and Airmyn, however they do not contain multiple assets of the highest value and therefore do not meet the criteria for inclusion within the assessment of assets of the highest value. The assets of the highest value therefore comprise the following:

- Hall Garths Moated Site, immediately south of the St. Mary's Church scheduled monument (1017823);
- Moated Site at Newlands Farm scheduled monument (1015925);
- Motte and Bailey Castle, Fish Pond and Moated Site north and east of Aughton Church scheduled monument (1007973);
- Site of Ellerton Priory scheduled monument (1005225);
- Church of All Saints Grade I listed building (1346742);
- Church of St. Mary the Virgin Grade I listed building (1148462);
- Church of St. Mary Grade II* listed building (1160360); and
- Holme Hall Grade II* listed building (1083338).

7.5.8 Within the 1 km Study Area from the Grid Connection Corridor, and outside the 3 km Study Area from the Solar PV Site, there are fourteen assets comprising two scheduled monuments and twelve listed buildings. The majority of the listed buildings are listed at Grade II, however there is one Grade I listed building, namely, The Church of St. Peter and St. Paul (1148397) in Drax Village.

7.5.9 There are no World Heritage Sites, Registered Battlefields, Registered Parks and Gardens, or Protected Wrecks within the Site or any of the Study Areas.

7.5.10 The designated assets within the Study Areas reflect the rural landscape in which the Site is located and its development from the medieval period onwards. Medieval secular sites are represented by a number of castles and moated sites, whilst the majority of the listed churches in the area have medieval origins, representing the religious aspect of medieval settlement and religious practice. Designated assets from the post-medieval period include 18th century country homes, and 18th and 19th century buildings within the area's rural settlements, such as houses, cottages, schools, public houses, war memorials and telephone kiosks. The agricultural economy is represented by a number of 18th and 19th century farmhouses and farm buildings, some integrated within the settlements and some isolated in the surrounding farming landscape. Infrastructure is also represented by railway assets such as Howden Station and signal box (1346759 and 1233349). There are notable concentrations of assets in the area's settlements, including the conservation area, as well as clusters of assets at, for example Wressle Castle (1005210, 1083170, 1160652, 1083171, 1346762 and 1160659) and Foggathorpe House (1160198, 1310676 and 1310676).

7.5.11 Whilst there are no designated assets within the Site, the dispersed nature of the Site, occupying a number of land plots, results in some designated assets effectively being located within the development area due to being surrounded by parts of the Site on more than one side. These assets have the potential to be impacted by the Scheme due to change to their settings. An initial list of such assets includes the following:

- Rowland Hall Grade II listed building (1083172);
- Howden Station and Signal Box Grade II listed buildings (1346759 and 1233349);
- Windpump at Brickyard Farm Grade II listed building (1160639); and
- Home Farmhouse Grade II listed building (1083169).

Non-designated Assets

7.5.12 Non-designated heritage assets are identified by their HER unique identification number and are illustrated on Figure 7-2.

7.5.13 There are 337 non-designated heritage assets recorded in the 1 km Study Area, with 52 of this number located wholly or partially within the Site. Some of this number represent historic landscape features and include duplicate entries for the same heritage asset.

7.5.14 The non-designated assets within the Site represent multi-period features, and include:

- A findspot of Roman coins (MHU22193) and a possible Roman settlement (MHU10775);
- The sites of former buildings including, Owlet Hall (MHU11630); Brindcommon Farm (MHU14558); The Outgang (MHU14537); former poor houses (MHU11609); a smithy workshop (MHU14525); an unnamed building (MHU13588), and a moated site (MHU7689) north-east of Cavill Hall;
- Transportation features including a section of the Hull to Selby Railway (MHU8829), and the site of a bridge and ferry at Loftsome (MHU9029);
- Historic landscape features and potential archaeological sites including the site of a deer park and pale at Newsholme Parks (MHU9207); medieval field systems (MHU10216) and linear earthworks (MHU11423), and the site of a mound, which may represent an early prehistoric funerary monument (MHU2897).

7.5.15 Former ridge and furrow, identified from aerial photograph assessment and indicative of medieval and post-medieval farming practices, is prevalent within the Site and the 1 km Study Area. There are six entries on the Humber HER that relate to ridge and furrow within the Site, comprising MHU22505; MHU22511; MHU22522; MHU22500; MHU22497 and MHU22498. Also within the Site are cropmarks of rectilinear enclosures (MHU22316) which may be indicative of late prehistoric / Roman settlement and land management, as well as medieval and post-medieval assets relating to the site of Caville Hall and moated site (MHU3182) and former field boundaries (MHU2301).

7.6 Potential Effects and Mitigation

- 7.6.1 There are a number of designated and non-designated heritage assets within the Study Areas which may be affected by the Scheme. Such effects could consist of:
- Physical effects on a heritage asset; and
 - Effects upon the significance of a heritage asset due to changes to its setting.
- 7.6.2 There is potential for previously unrecorded archaeological deposits to survive within the Site boundary. These remains could potentially be affected during excavation works required during construction including, but not limited to, power control infrastructure and on-site cabling, the laying of the required connector cables and the establishment of a construction compounds and access tracks. The construction of the solar module mounting structures are direct piled into the ground and therefore do not require excavation, but they still have the potential to impact archaeological remains.
- 7.6.3 There is also the potential for effects on designated and non-designated heritage assets within the Site and Study Areas through change to their setting during construction and/or operation of the Scheme. An initial list of such assets, based on their proximity to the Scheme, includes, but is not limited to:
- Rowland Hall Grade II listed building (1083172);
 - Howden Station and Signal Box Grade II listed buildings (1346759 and 1233349);
 - Windpump at Brickyard Farm Grade II listed building (1160639);
 - Home Farmhouse Grade II listed building (1083169);
 - Derwent View Grade II listed building (1168001);
 - Hagthorpe Hall and Stables Grade II listed buildings (1148458 and 1148459);
 - Barnhill Hall Grade II listed building (1083166);
 - Foggathorpe House and its associated dovecot and farm ranges Grade II listed buildings (1160198, 1310676 and 1310676);
 - Wressle Castle scheduled monument (1005210) and Grade I, II* and II listed buildings (1083170, 1160652 and 1083171) and the Grade II listed assets at Wressle Farm (1346762 and 1160659); and
 - Minster Church of St Peter and St Paul scheduled monument and Grade I listed building (1005226 and 1160491) in Howden Conservation Area.
- 7.6.4 Given the potential for effects on the historic environment, all aspects of cultural heritage, comprising archaeology, built heritage and historic landscape, are scoped into the EIA and no matters are scoped out (Table 7-3).

7.7 Assessment Methodology

- 7.7.1 The assessment of potential effects as a result of the Scheme on cultural heritage will be undertaken using the methodology set out below.
- 7.7.2 The value of a heritage asset (its heritage significance) is guided by its designated status but is derived also from its heritage interest which may be archaeological, architectural, artistic or historic (NPPF Annex 2, Glossary) (Ref. 7). Each identified heritage asset can be assigned a value in accordance with the criteria set out in Table 7-1. Using professional judgement and the results of consultation carried out as part of the assessment, heritage assets are also assessed on an individual basis and regional variations and individual qualities are taken into account where applicable to assign the value.

Table 7-1: Criteria for assessing the value of heritage assets

Asset value	Description
High	World Heritage Sites Scheduled Monuments Grade I and II* listed buildings Registered battlefields Grade I and II* registered parks and gardens Conservation areas of demonstrable high value Non-designated heritage assets (archaeological sites, historic buildings, monuments, parks, gardens or landscapes) that can be shown to have demonstrable national or international importance Well preserved historic landscape character areas, exhibiting considerable coherence, time-depth or other critical factor(s)
Medium	Grade II listed buildings Conservation areas Grade II registered parks and gardens Conservation areas Non-designated heritage assets (archaeological sites, historic buildings, monuments, park, gardens or landscapes) that can be shown to have demonstrable regional importance Averagely preserved historic landscape character areas, exhibiting reasonable coherence, time-depth or other critical factor(s) Historic townscapes with historic integrity in that the assets that constitute their make-up are clearly legible
Low	Locally listed buildings Non-designated heritage assets (archaeological sites, historic buildings, monuments, park, gardens or landscapes) that can be shown to have demonstrable local importance Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade

Asset value Description

	Historic landscape character areas whose value is limited by poor preservation and/ or poor survival of contextual associations
Very Low	Assets identified on national or regional databases, but which have no archaeological, architectural, artistic or historic value Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade Landscape with no or little significant historical merit

7.7.3 Having identified the value of the heritage asset, the next stage in the assessment will be to identify the level and degree of impact to an asset arising from the Scheme. Impacts may arise during construction or operation and can be temporary, reversible, or permanent. Impacts can occur to the physical fabric of the asset or affect its setting. The contribution of the setting to the significance of any affected assets will be subject to assessment.

7.7.4 The level and degree of impact (impact rating) will be assigned with reference to a four-point scale as set out in Table 7-2. The assessment of the level and degree of impact will be made in consideration of any scheme design mitigation (embedded mitigation). If no impact is identified, no impact rating will be given and no resulting effect reported.

Table 7-2: Factors influencing the assessment of magnitude of impacts

Magnitude of Impact	Description of impact
High	Changes such that the significance of the asset is totally altered or destroyed Comprehensive change to, or total loss of, elements of setting that would result in harm to the asset and our ability to understand and appreciate its significance
Medium	Change such that the significance of the asset is significantly altered or modified Changes such that the setting of the asset is noticeably different, affecting significance and resulting in changes in our ability to understand and appreciate the significance of the asset
Low	Changes such that the significance of the asset is slightly affected Changes to the setting that have a slight impact on significance resulting in changes in our ability to understand and appreciate the significance of the asset
Very Low	Changes to the asset that hardly affect significance. Changes to the setting of an asset that have little effect on significance and no real change in our ability to understand and appreciate the significance of the asset

- 7.7.5 An assessment to classify the effect, having taken into consideration any embedded mitigation, is determined using the matrix in **Chapter 5 Environmental Impact Assessment Methodology**.
- 7.7.6 Major and moderate effects will be considered significant. Within the NPPF Section 16 Paragraphs 199–204 (Ref. 7) and NPS EN-1, Section 5.8 Paragraphs 5.8.14–5.8.15 (Ref. 36), impacts affecting the value of heritage assets are considered in terms of harm, and there is a requirement to determine whether the level of harm amounts to ‘substantial harm’ or ‘less than substantial harm’. There is no direct correlation between the classification of effect as reported in the ES and the level of harm caused to heritage significance in accordance with the NPPF. A major (significant) effect on a heritage asset would, however, more often be the basis by which to determine that the level of harm to the significance of the asset would be substantial. A moderate (significant) effect is unlikely to meet the test of substantial harm and would therefore more often be the basis by which to determine that the level of harm to the significance of the asset would be less than substantial. A minor+ or negligible (not significant) effect would still amount to a less than substantial harm. However, a neutral effect is classified as no harm.
- 7.7.7 Pursuant to NPS EN-1, Paragraph 5.8.15 (Ref. 36), any harmful impact to the significance of a designated heritage asset should be weighed against the public benefit of the Scheme, whilst Regulation 3 of the Infrastructure Planning (Decisions) Regulations 2010 (Ref. 51) requires the Secretary of State to have regard to the desirability of preserving a listed building or its setting. In all cases, the determination of the level of harm to the significance of the asset arising from development impact is one of professional judgement and will be undertaken adopting a precautionary approach.
- 7.7.8 This baseline assessment will be undertaken in accordance with guidance set out by the ClfA and Historic England, in particular the Standard and Guidance for Historic Environment Desk-Based Assessment (Ref. 61) and the Code of Conduct (Ref. 62).
- 7.7.9 Principles of Cultural Heritage Impact Assessment in the UK (Ref. 63) is a guide to good practice in cultural heritage impact assessment published jointly by the IEMA, the IHBC and the ClfA. The document provides guidance on understanding cultural heritage assets and evaluating the consequences of change and will be considered when undertaking the assessment.

Desk-based Assessment

- 7.7.10 A cultural heritage Desk-Based Assessment (DBA) will be prepared in accordance with industry standards and best practice guidelines (Ref. 61), and with reference to any statutory consultation responses received as part of the Scoping Opinion. The DBA will inform the cultural heritage chapter of the ES and will form an appendix to the ES. The DBA, alongside the results of the agreed geophysical survey, will confirm whether additional surveys are required (refer also to Paragraph 7.7.14) to better determine the nature, extent and origin of archaeological remains within the construction footprint of the Scheme.

Desk-based sources

7.7.11 Sources of information that will be consulted include:

- National Heritage List for England (NHLE) database (Ref. 66);
- Formal searches of the Humber Historic Environment Record (HER) and North Yorkshire HER. Including the Historic Landscape Characterisation (HLC) data for both areas;
- Various online resources including the British Geological Survey (BGS) Geology of Britain Viewer (Ref. 67) and the local planning portal for the Local Plan and other planning information;
- Published and unpublished literature (including a detailed review of reports for previous fieldwork carried out within the proximity to the Site boundary);
- Existing geotechnical data;
- Available 1 m and 2 m spatial resolution LiDAR data published by the Environment Agency;
- Documentary, cartographic and other resources as deposited within the local Archives and Local Studies Library and the National Archives at Kew; and
- Local Planning Authority Plans, Guidance and Lists.

Surveys

Walkover survey

7.7.12 A walkover survey will be undertaken including a survey of known archaeological and built heritage assets within the Site boundary and the immediate vicinity to record their survival, extent, condition, setting and significance.

7.7.13 A site visit will also be undertaken to the Study Areas to assess the setting of assets which could potentially be affected by the Scheme. This visit will establish the key features of the asset's setting, alongside any intervisibility with the Site.

Additional survey

7.7.14 The desk-based research will also be supported by a programme of archaeological evaluation surveys. As described in section 7.4 the scope of geophysical survey has been agreed with the Archaeology Officers for East Riding of Yorkshire Council and North Yorkshire County Council and will be undertaken within areas of the Site boundary that are suitable for survey and where land access can be obtained by way of landowner agreement.

7.7.15 Further archaeological evaluation may be undertaken as part of the assessment process, the scope of which will be informed by the DBA, the outcomes of the geophysical survey, and through consultation with the Archaeology Officers for East Riding of Yorkshire Council and North Yorkshire County Council. These additional surveys (if required) may include, but not be limited to:

- Hand auger survey and/ or monitoring of geotechnical ground investigations to establish the geoarchaeological baseline conditions and to assess the potential for deposits containing palaeoenvironmental data to be present; and
- Archaeological trial trench evaluation to confirm the results of the geophysical survey, characterise the nature, extent and preservation level of archaeological remains in order to understand their heritage value, and to inform a suitable mitigation response.

7.8 Assumptions, Limitations and Uncertainties

7.8.1 It is assumed that there will be access to all required land to undertake the walkover survey and any additional surveys that may be required to support the ES. In the event that access is not available, professional judgement will be used, based on available research and data, to assess the archaeological potential of the area.

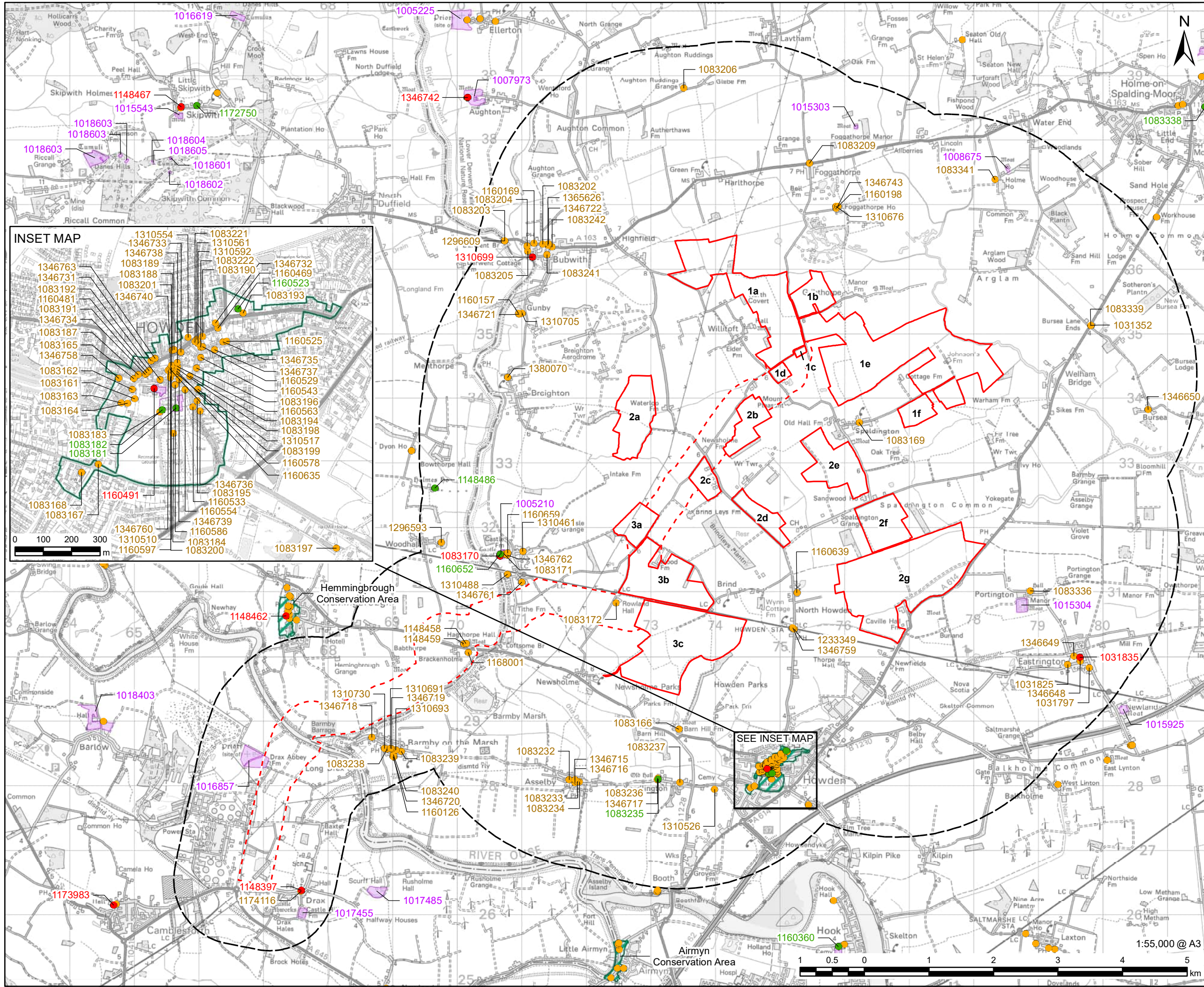
7.8.2 It is assumed that the data provided by external sources is accurate.

7.9 Summary of Elements Scoped In and Scoped Out

7.9.1 A summary of the elements scoped into and out of the cultural heritage assessment are presented in Table 7-3.

Table 7-3: Elements scoped in and out of the assessment of cultural heritage

Element	Scoped in / Scoped Out
Built heritage,	Scoped in. An assessment of impact on built heritage assets including impacts arising from changes to their setting.
Archaeology	Scoped in. An assessment of impact on archaeological assets including impacts arising from changes to their setting.
Historic landscape	Scoped in. An assessment of impact on the historic landscape, including impacts arising from changes to their setting.



NOTES

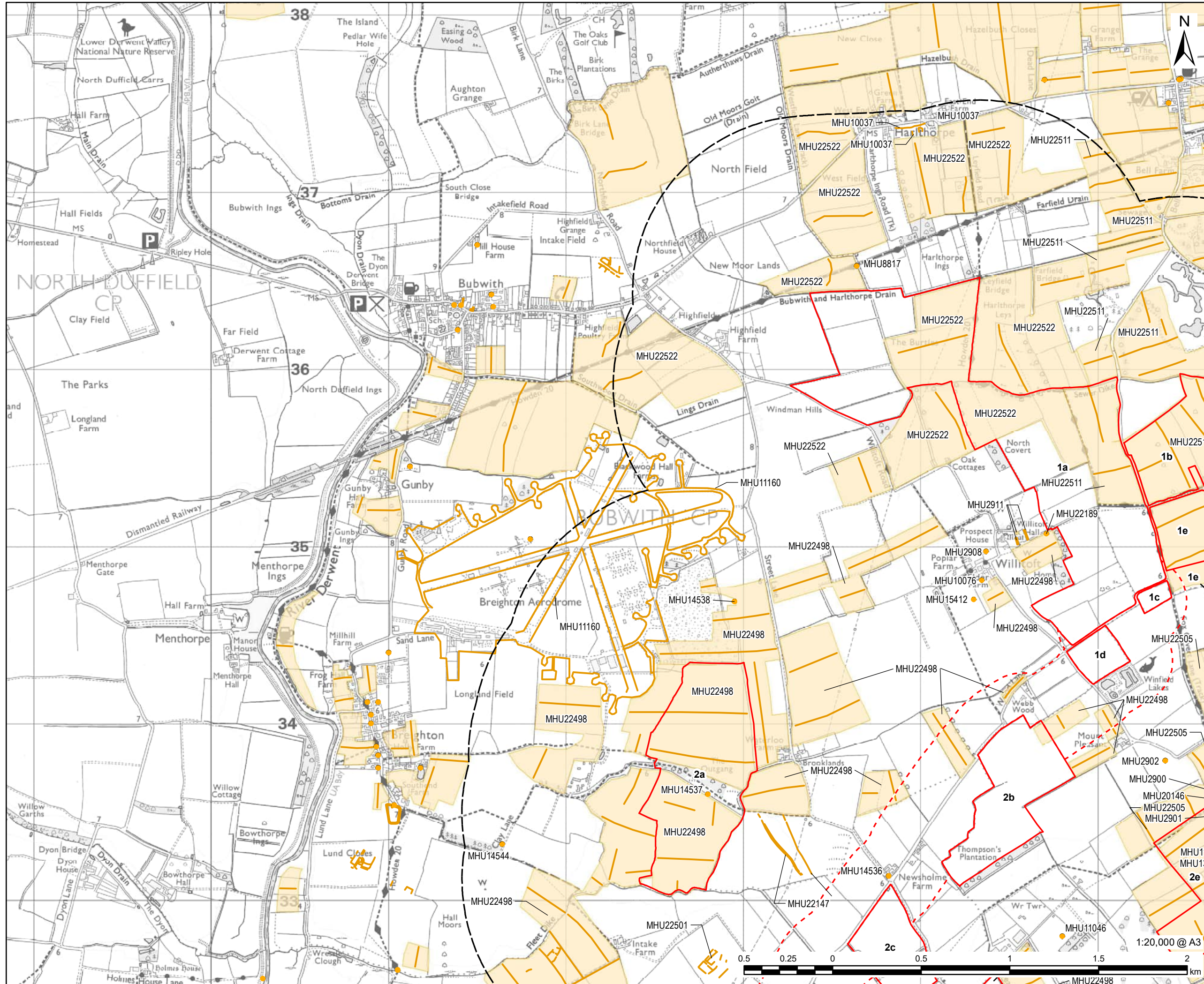
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ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

FIGURE TITLE
Designated Heritage Assets

FIGURE NUMBER
Figure 7-1

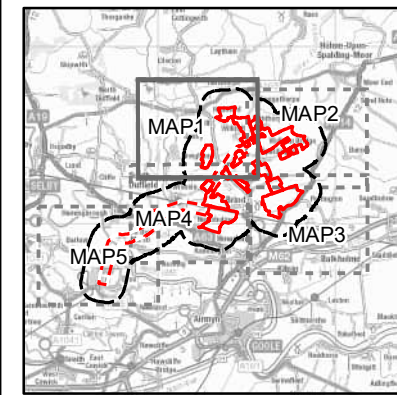


PROJECT
East Yorkshire Solar Farm

CLIENT
East Yorkshire Solar Farm Limited

CONSULTANT
AECOM Limited
Midpoint, Alencon Link
Basingstoke, Hampshire
RG21 7PP
www.aecom.com

- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - Monument Feature**
 - Point
 - Line
 - Polygon



NOTES

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ISSUE PURPOSE
EIA SCOPING REPORT

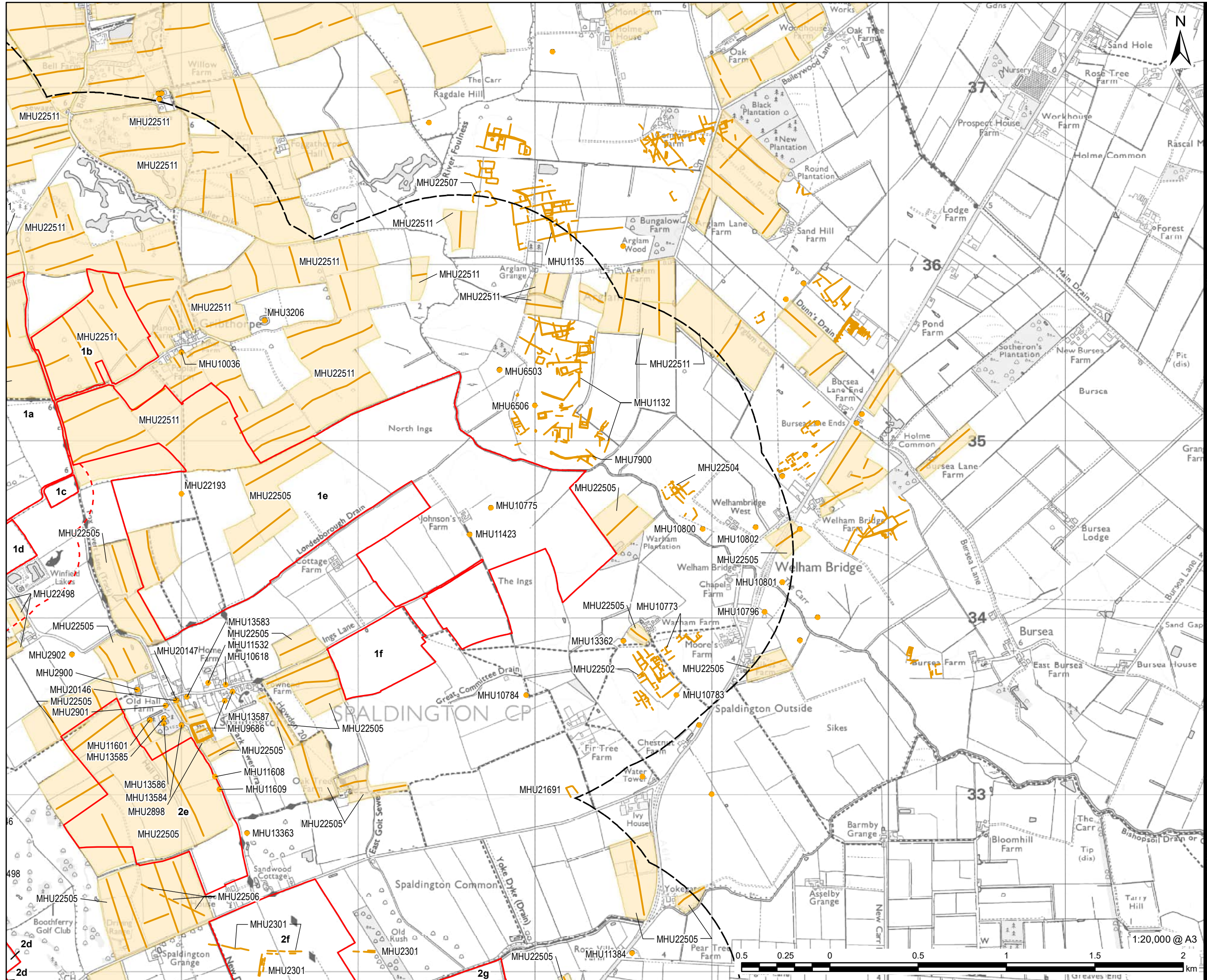
PROJECT NUMBER
60683115

FIGURE TITLE
Non-Designated Heritage Assets
Sheet 1 of 5

FIGURE NUMBER
Figure 7-2



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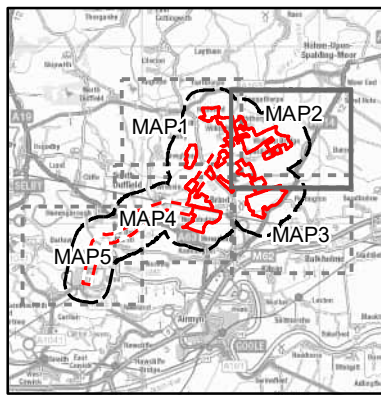


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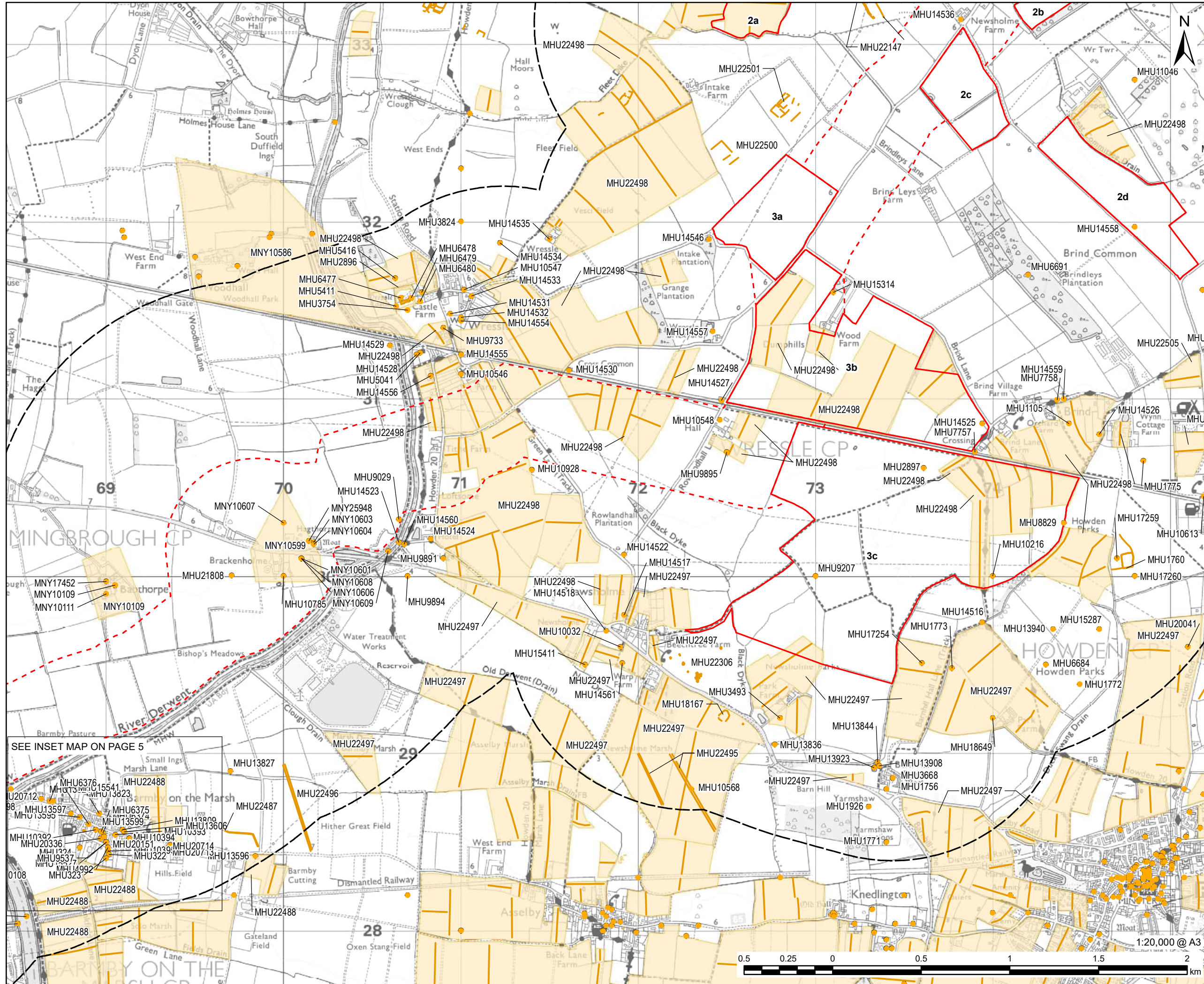
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ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

FIGURE TITLE
Non-Designated Heritage Assets
Sheet 2 of 5

FIGURE NUMBER
Figure 7-2

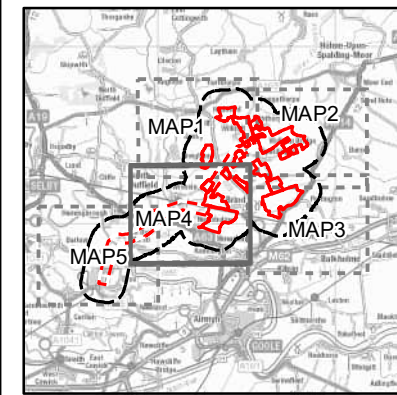


PROJECT
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East Yorkshire Solar Farm Limited

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www.aecom.com

- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - Point
 - Line
 - Polygon
- Monument Feature**
- Point
 - Line
 - Polygon



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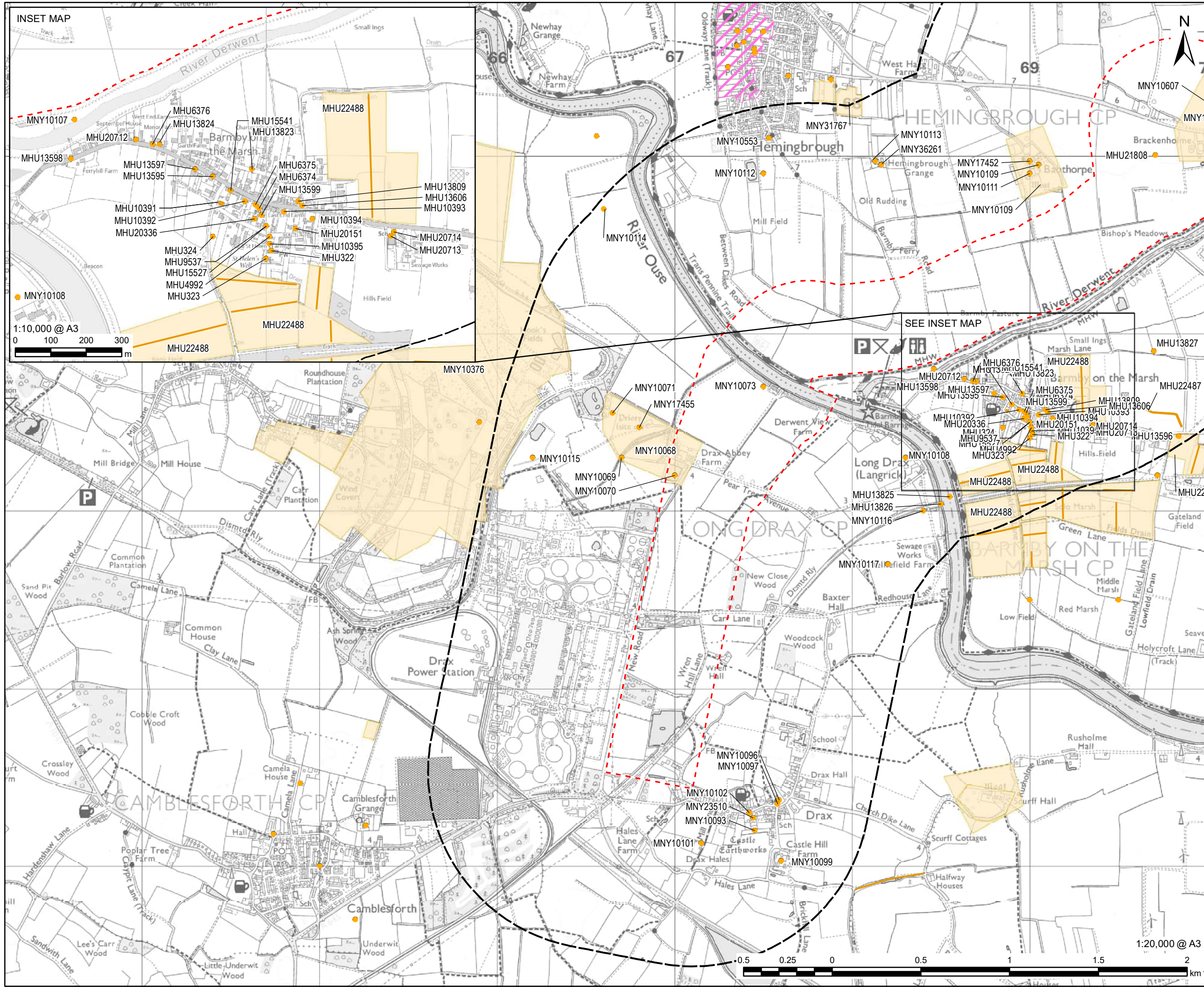
PROJECT NUMBER
60683115

FIGURE TITLE
Non-Designated Heritage Assets
Sheet 4 of 5

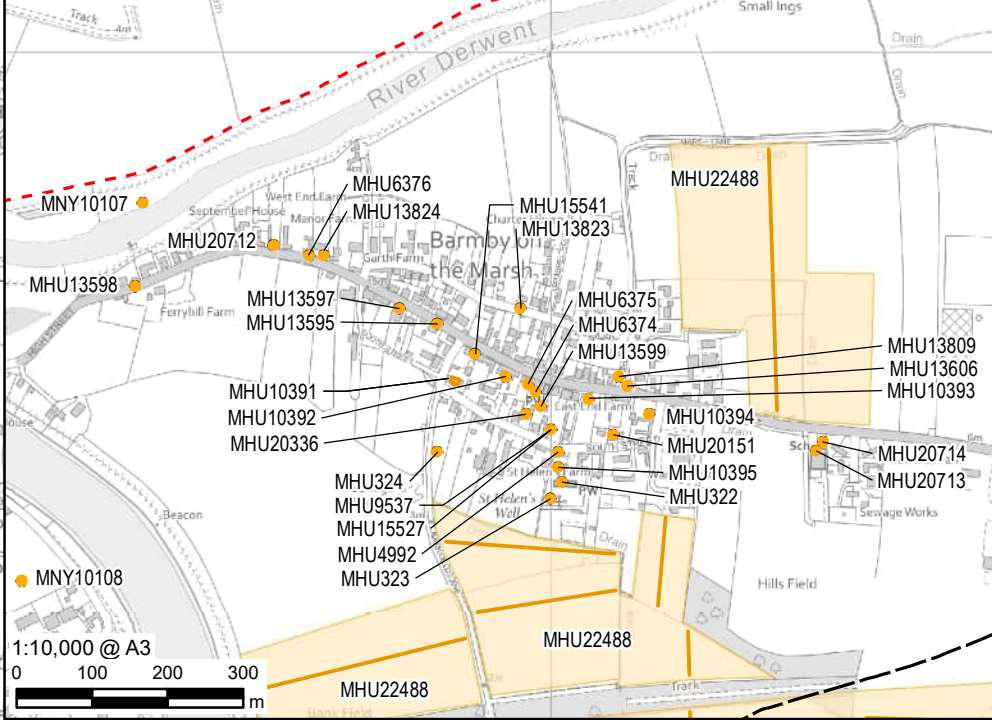
FIGURE NUMBER
Figure 7-2

SEE INSET MAP ON PAGE 5





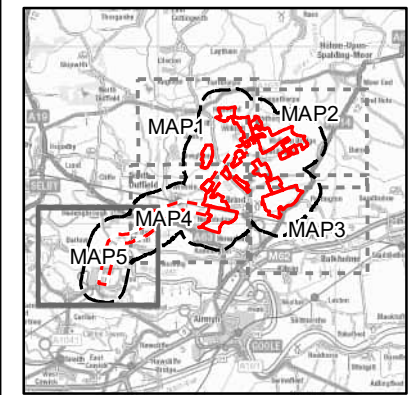
INSET MAP



1:10,000 @ A3
 0 100 200 300 m



- LEGEND**
- Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - Conservation Area
 - Monument Feature
 - Point
 - Line
 - Polygon



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1:20,000 @ A3
 0.5 0.25 0 0.5 1 1.5 2 km

8. Ecology

8.1 Introduction

- 8.1.1 This chapter of the Scoping Report presents an initial baseline for ecology and biodiversity relevant to the Scheme), identifies the need for additional surveys to ensure there is appropriate information to accurately characterise the baseline, and sets out the Study Area. In addition, the chapter provides an overview of the proposed assessment methodology for the environmental assessment and identifies the potential effects provisionally identified.
- 8.1.2 Where appropriate, reference is made to the initial findings of the appraisals conducted to date. Ecological surveys commenced in April 2022 and will continue in 2023 to gather detailed baseline ecological information. The requirement and extent of these surveys have been informed by desk study data and a Phase 1 habitat survey (of accessible land within the Solar PV Site), together with AECOM's professional judgement and local knowledge of the geographical area and range of important ecological features it supports. This local knowledge comes from a wealth of past experience of working within the local area.
- 8.1.3 The Ecology chapter in the ES will identify and evaluate relevant ecological features i.e., receptors (including nature conservation designations, priority habitats and protected/notable species) within the Study Area. It will consider the effects that the Scheme is likely to have on their conservation status, inter-relationships, and contribution to local, regional and (if appropriate) national biodiversity.
- 8.1.4 Avoidance, reduction, mitigation and, if necessary, compensation measures that may be required to enable the Scheme to proceed will be identified, in compliance with relevant nature conservation legislation and planning policy. The works for the Scheme will be planned accordingly, to demonstrate that due consideration has been given to ecological features, including recommendations for biodiversity enhancements, where appropriate.

8.2 Study Area

- 8.2.1 The assessment will consider all the activities being conducted to facilitate the construction, operational and decommissioning phases of the Scheme, and the designated sites, habitats or species present that may be affected by those activities. The study and survey areas proposed are considered sufficient to reflect the potential effects of the Scheme.
- 8.2.2 The assessment will consider features up to 10 km (for example International designated Sites and their associated qualifying features). The 10 km distance is made from professional judgement and experience of other similar scaled projects and should be sufficient in which to assess all possible effects on ecology and biodiversity.
- 8.2.3 The desk study will seek to address potential effects upon statutory European or International nature conservation Sites, including their qualifying features, particularly those such as mobile species (e.g., birds)

and/or designated habitats which may be affected by the Scheme (e.g., river catchments). A check will be made for statutory national nature conservation designated sites within 5 km, and non-statutory nature conservation designated sites and records for protected and notable habitats and species within a more focussed area of 2 km of the Scheme (comprising the Solar PV Site and associated 500 m Grid Connection Corridor). The Study Areas are based on published guidance (Ref. 76) and professional judgement and should capture all statutory national and non-statutory designated sites which could be affected.

Desk Study

8.2.4 A desk study search was undertaken from the Site boundary (comprising the Solar PV Site and associated 500 m Grid Connection Corridor) in July 2022 and included:

- Sites of international nature conservation value (e.g., Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites (as well as proposed or potential sites) within 10 km (see Figure 8-1);
- Other statutory designated sites within 5 km (e.g., Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNRs), Local Nature Reserves (LNRs), within 5 km (see Figure 8-1);
- Non statutory sites designated for nature conservation (e.g., Local Wildlife Sites (LWS)), ancient woodland and other notable habitats within 2 km (see Figure 8-2); and
- Records of protected and notable species up to 2 km.

8.2.5 Sources used to inform the desk study included:

- The Natural England website (www.naturalengland.org.uk) for information on statutory designated sites of nature conservation interest and to confirm reasons for designation and their condition;
- The 'Multi-Agency Geographic Information for the Countryside' (MAGIC) website (www.magic.gov.uk) for information on the location of designated sites relevant to the Project Priority Habitats, ancient woodland and any other relevant information e.g. European Protected Species Mitigation (EPSM) licence records;
- Joint Nature Conservation Committee website (<http://jncc.defra.gov.uk>) for information regarding any European designations within the desk Study Area;
- North and East Yorkshire Ecological Data Centre (NEYEDC) for non-statutory designated site information, priority habitats data and protected species records; and
- Woodland Trust Ancient Tree Inventory (<https://ati.woodlandtrust.org.uk/>) for notable/veteran and ancient trees located within and adjacent to the Site.

Field Surveys

- 8.2.6 The field survey area includes all land within the extent of the Solar PV Site and Grid Connection Corridor (subject to land access) plus at least a 50 m buffer (to check for species with disturbance buffer zones such as badger). Some species have specific geographical considerations and may dictate wider survey areas, for example ponds suitable to support great crested newt within 250 m of the Project may need to be considered, and watercourses may need to be checked for otter and water vole up to 250 m along the watercourse from any potential crossing point. These distances are based on widely accepted survey guidance applicable to different ecological species.

8.3 Planning Policy Context and Guidance

- 8.3.1 Legislation, planning policy and guidance relating to protected nature conservation sites, significant habitats and protected and/or notable species pertinent to the Scheme is outlined below.

Legislation

- 8.3.2 The applicable legislation includes:
- Regulation (EU) 1143/2014 on the introduction and spread of invasive alien species (IAS) (Ref. 77) as enacted in England by the Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) (Ref. 78) and the Invasive Non-native Species (Amendment etc.) (EU Exit) Regulations 2019 (Ref. 79);
 - The Environment Act 2021 (Ref. 18);
 - The Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref. 80);
 - The Countryside and Rights of Way Act 2000 (Ref. 81);
 - The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref. 82);
 - The Natural Environment and Rural Communities (NERC) Act 2006 (Ref. 83);
 - The Protection of Badgers Act 1992 (Ref. 84);
 - The Hedgerows Regulations 1997 (Ref. 85);
 - Animal Welfare Act 2006 (Ref. 86);
 - Salmon and Freshwater Fisheries Act 1975 (Ref. 87);
 - Eels (England and Wales) Regulations 2009 (Ref. 88); and
 - The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref. 89).
- 8.3.3 The above legislation will be considered when identifying potential constraints to the Scheme, design options and mitigation. Compliance with the above legislation may require obtaining relevant protected species licences prior to the implementation of the Scheme.

National Planning Policy

- 8.3.4 The Ecology and Biodiversity chapter will take account of relevant NPS. The following NPSs are considered important and relevant to the Scheme:
- 8.3.5 Overarching National Policy Statement for Energy (EN-1) (2011) (Ref. 36), with particular reference to paragraphs 4.2.2 and 4.2.3, which provide national policy on what an ES for a Nationally Significant Infrastructure Project (NSIP) project should contain; paragraph 4.3.1 which states what the SoS must, under the Conservation of Habitats and Species Regulations 2017 consider when granting a DCO; and Part 5 section 5.3 which sets out guidance on generic impacts relating to biodiversity for the applicant's assessment and decision-making on the application. The Draft Overarching National Policy Statement for Energy (EN-1) (Ref. 95) (2021) includes guidance for BNG in paragraphs 4.5.1 to 4.5.3 and generic impacts on biodiversity in Part 5.4.
- 8.3.6 Part 2.7 of the National Policy Statement for Electricity Networks Infrastructure (EN-5) (2011) (Ref. 6) sets out generic impacts concerning biodiversity, although these are more relevant to considerations for birds, their feeding and hunting grounds, migration corridors and breeding grounds, and potential implications on the above in light of the development proposals. This is also the same of Part 2.50.1 to 2.50.12 of the Draft National Policy Statement for Renewable Energy EN-3 (2021) (Ref. 96). However, paragraph 2.8.9 of EN-5 (2011) details biodiversity considerations when choosing an underground electricity line. This includes the environmental consequences as underground cables can disturb sensitive habitats.
- 8.3.7 The National Planning Policy Framework (NPPF) (Ref. 7), with particular reference to Section 15 and paragraphs 174, 175, 179, 180-182 and 185, which state that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity. The NPPF is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution. The NPPF also specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this is to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.

Local Planning Policy

- 8.3.8 Local planning policies that are relevant to the Scheme and ecology and biodiversity are:
- East Riding Local Plan 2012–2029 Strategy Document (adopted April 2016) (Ref. 98), with particular reference to Policy ENV4 – Conserving

and enhancing biodiversity and geodiversity; and Policy ENV5 – Strengthening green infrastructure;

- Selby District Local Plan (Ref. 99) saved local policies, with particular reference to Policies ENV9 (Site of Importance for Nature Conservation), ENV11 (Ancient Woodland), ENV12 (Rivers and Stream Corridors) and ENV 13 (Development Affecting Ponds); and
- Selby District Core Strategy Local Plan Policy (October 2013) (Ref. 100), with particular reference to SP18- Protecting and Enhancing the Environment.

8.3.9 The Selby District Local Plan (SDLP) was formally adopted on 8th February 2005. The Core Strategy and 'Saved' SDLP policies make up the Local Plan for the District and should be read alongside each other.

Other Guidance

8.3.10 Other guidance documents relevant to the assessment of the impacts of the Scheme on ecology and biodiversity include:

- The 25-year Environment Plan (Ref. 101);
- Natural England and Department for Environment, Food and Rural Affairs (DEFRA) Standing Advice (protected species) (Ref. 102);
- UK Post 2010 Biodiversity Framework (Ref. 103);
- East Riding of Yorkshire Biodiversity Action Plan (BAP) Strategy (Ref. 104);
- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for ecological impact assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester (Ref. 75) and
- Biodiversity Net Gain: Good Practice Principles for Development (Ref. 96)

8.3.11 For further details on any of the above policies and legislation, please refer to the source document.

8.4 Consultation

8.4.1 Consultation will be carried out as necessary with Natural England, local council biodiversity officers, the Environment Agency and other interested parties such as Yorkshire Wildlife Trust. This is to make sure a robust approach is adopted to scope and methodology of surveys necessary to inform the assessment.

8.4.2 We will seek agreement on the potential Zol as defined by the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidance (Ref. 75), as well as agree the valued features to be considered as part of the assessment, and any proposed mitigation measures. The Study Area varies according to the spatial characteristics of each species or habitat potentially impacted. The Zol representing the areas within which effects

could occur from the Scheme and associated activities also varies with receptor and will be identified and detailed in the assessment.

8.5 Baseline Conditions

8.5.1 The known or predicted ecological baseline conditions are summarised in the following sections.

Statutory Sites

8.5.2 Statutory sites that are designated for nature conservation were identified through a review of the Multi-Agency Geographic Information for the Countryside (MAGIC) (Ref. 69) website. There are 10 international designated sites within 10 km (SACs, SPAs and Ramsar sites) and 11 other statutory designated sites (SSSIs, NNRs, LNRs) within 5 km of the Study Area. These sites are shown on Figure 8-1 and summarised below in Table 8-1.

Table 8-1: Statutorily designated sites within the 10 km (international) and 5 km (national) Study Areas

Site Name	Description	Approximate Distance (km) and direction from closest point of the Site
River Derwent SAC	<p>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:</p> <ul style="list-style-type: none"> Water courses of plain to montane levels with the (<i>Ranunculion fluitantis</i>) and (<i>Callitricho-Batrachion</i>) vegetation. <p>Annex II species that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> River lamprey (<i>Lampetra fluviatilis</i>). The Derwent is one example of river lamprey populations which inhabit the many rivers flowing into the Humber estuary in eastern England. Only the lower reaches of the Derwent are designated, reflecting the spawning distribution of the species in the Derwent system. <p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> Sea lamprey (<i>Petromyzon marinus</i>); 	Grid Connection Corridor crosses this SAC

Site Name	Description	Approximate Distance (km) and direction from closest point of the Site
	<ul style="list-style-type: none"> • Bullhead (<i>Cottus gobio</i>); and • Otter (<i>Lutra lutra</i>). 	
River Derwent SSSI	The Yorkshire Derwent is considered to represent one of the best British examples of the classic river profile. This lowland section, stretching from Ryemouth to the confluence with the Ouse, supports diverse communities of aquatic flora and fauna, many elements of which are nationally significant.	Grid Connection Corridor crosses this SSSI
Barn Hill Meadows SSSI	The site comprises of seven fields lying in the flood plain of the Old Derwent. The site is important for its herb-rich, unimproved, neutral grassland. The fields have been traditionally managed for hay. Boundary hedgerows and ditches form an integral part of the site.	0.75 km south-west of the Solar PV Site
Howden Marsh LNR	The site is an old fenland marsh much of which has never been drained. It is particularly rich in water beetles and supports water vole (<i>Arvicola amphibius</i>).	1.00 km south-east of the Solar PV Site
Eastrington Ponds LNR	The site is a former brickworks and railway line with borrow pits from the construction of the railway. The large pond supports birds such as ducks, geese and great crested grebe (<i>Podiceps cristatus</i>), as well as invertebrates such as water beetles, pond skaters, dragonflies and damselflies. Daubenton's (<i>Myotis daubentonii</i>) bats fly over the water to hunt and water vole is present. The meadow areas support small mammals, including harvest mouse (<i>Micromys minutus</i>).	1.07 km south-east of the Solar PV Site
Lower Derwent Valley SAC	Annex I habitats that are a primary reason for selection of this site: <ul style="list-style-type: none"> • Lowland hay meadows. 	1.35 km north-west of the Solar PV Site

Site Name	Description	Approximate Distance (km) and direction from closest point of the Site
	<p>Annex I habitats present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> Alluvial forests with alder (<i>Alnus glutinosa</i>) and ash (<i>Fraxinus excelsior</i>) (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>). <p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> Otter. 	
Lower Derwent Valley Ramsar	<p>The site is one of the most important examples of traditionally managed species-rich alluvial flood meadow habitat remaining in the UK.</p> <p>The site supports a rich assemblage of wetland invertebrates and internationally and nationally important numbers of birds.</p>	1.35 km north-west of the Solar PV Site
Lower Derwent Valley SPA	<p>Regularly supports nationally important winter numbers of Bewick's swan (<i>Cygnus columbianus bewickii</i>), golden plover (<i>Pluvialis apricaria</i>) and ruff (<i>Philomachus pugnax</i>).</p> <p>Regularly supports a nationally important number of breeding shoveler (<i>Anas clypeata</i>).</p> <p>Nationally important numbers of the following migratory species; shoveler, pochard (<i>Aythya farina</i>), whimbrel (<i>Numenius phaeopus</i>) and ruff.</p>	1.35 km north-west of the Solar PV Site
Lower Derwent Valley NNR	<p>The site is comprised of a series of flood meadows, pastures and woodlands. The reserve supports a rich diversity of plant species and populations of breeding and wintering birds.</p>	1.63 km west of the Solar PV Site
Brighton Meadows SSSI	<p>The site supports nationally and internationally important alluvial flood meadow plant community and its outstanding assemblage of breeding</p>	1.35 km north-west of the Solar PV Site

Site Name	Description	Approximate Distance (km) and direction from closest point of the Site
	birds associated with lowland damp grasslands.	
Derwent Ings SSSI	The site consists of a series of neutral alluvial flood meadows, fen and swamp communities and freshwater habitats lying adjacent to the River Derwent between Sutton upon-Derwent and Menthorpe. The site is important as a habitat for a wide range of breeding wetland bird species and important wintering bird populations. The freshwater dyke system of the Ings support a rich diversity of plant species including two nationally scarce species, greater water-parsnip <i>Sium latifolium</i> and flat-stalked pondweed <i>Potamogeton freisii</i> . The site also is also important for invertebrates.	2.2 km west of the Solar PV Site
Eskamhorn Meadows SSSI	A nationally important site for species-rich neutral grassland, comprising of five floristically diverse fields.	2.14 km south-east of the Grid Connection Corridor
Humber Estuary SAC	<p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Estuaries; and • Mudflats and sandflats not covered by seawater at low tide. <p>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time; • Coastal lagoons; • Salicornia and other annuals colonizing mud and sand; • Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>); • Embryonic shifting dunes; 	3.25 km south-east of the Solar PV Site

Site Name	Description	Approximate Distance (km) and direction from closest point of the Site
	<ul style="list-style-type: none"> • "Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")" • "Fixed coastal dunes with herbaceous vegetation ("grey dunes"); • Dunes with <i>Hippopha rhamnoides</i>. <p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> • Sea lamprey; • River lamprey; and • Grey seal (<i>Halichoerus grypus</i>). 	
Humber Estuary SPA	The site comprises extensive wetland and coastal habitats. The estuary supports important numbers of waterbirds (especially geese, ducks and waders) during the migration periods and in winter. In summer, it supports important breeding populations of bittern (<i>Botaurus stellaris</i>), marsh harrier (<i>Circus aeruginosus</i>), avocet (<i>Recurvirostra avosetta</i>) and little tern (<i>Sterna albifrons</i>).	3.25 km south of the Solar PV Site
Humber Estuary Ramsar	The site is 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. The site supports a breeding colony of grey seals and bird species/populations occurring at levels of international importance.	3.25 km south of the Solar PV Site
Humber Estuary SSSI	The site contains nationally important habitats; the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh)	3.25 km south of the Solar PV Site

Site Name	Description	Approximate Distance (km) and direction from closest point of the Site
	<p>and the associated saline lagoons, sand dunes and standing waters.</p> <p>The estuary supports nationally important numbers of wintering waterfowl, passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals, river lamprey and sea lamprey, a vascular plant assemblage and an invertebrate assemblage.</p>	
Barlow Common LNR	<p>The site has a mosaic of woodland, wetland, reedbeds and four large ponds. Two ponds attract wildfowl and migrating waders including shelduck (<i>Tadorna tadorna</i>), greenshank (<i>Tringa nebularia</i>) and sandpiper (<i>Actitis hypoleucos</i>). The woodland also supports birds. The colonised tip supports a rich flora and diversity of invertebrates. Water vole (and other small mammals) have been recorded at the site.</p>	3.56 km north-west of the Grid Connection Corridor
Mayfield & Broom Park, LNR	<p>The site supports an orchid population</p>	4.64 km south east of the Solar PV Site
Skipwith Common SAC	<p>Annex I habitats that are a primary reason for selection of this site are:</p> <ul style="list-style-type: none"> • Northern Atlantic wet heaths with cross-leaved heath (<i>Erica tetralix</i>); and • European dry heaths. 	6.47 km north-west of the Solar PV Site
Thorne and Hatfield Moors SPA	<p>The site is used regularly by 1% or more of the Great Britain population of Nightjar (<i>Caprimulgus europaeus</i>). The site also supports small numbers (at non-qualifying levels) of other Annex 1 species. Hen harrier (<i>Circus cyaneus</i>), merlin (<i>Falco columbarius</i>) and short-eared owl (<i>Asio flammeus</i>) hunt over the site in winter and at least one pair of hobbies (<i>Falco subbuteo</i>) feed over the</p>	8.86 km south-east of the Grid Connection Corridor

Site Name	Description	Approximate Distance (km) and direction from closest point of the Site
	site in summer. Also notable are nightingales (<i>Luscinia megarhynchos</i>) breeding at one of their most northerly regular sites in Britain.	
Thorne Moor SAC	The Annex I habitat that is a primary reason for selection of this site is degraded raised bogs still capable of natural regeneration.	8.86 km south-east of the Grid Connection Corridor

Non-statutory Sites

8.5.3 There are eleven non-statutory sites designated for nature conservation identified within the Study Area. These sites have been designated as Local Wildlife Sites (LWS), Sites of Nature Conservation Interest (SINC) and Candidate LWS for their biodiversity value at a local level and are known to have supporting value to a wide variety of protected and ecologically important species and, or habitats. These sites are shown on Figure 8-2 and summarised in Table 8-2. The data provided by NEYEDC also identified three 'deleted SINCS' and nineteen 'deleted LWS' within the Study Area. These sites are not included in Table 8-2 and are not shown on Figure 8-2 due to their deleted status.

Table 8-2: Non-statutory designated sites within 2 km of the Scheme

Site Name	Features	Approximate Distance (km) and direction from closest point of the Site
Tottering Lane, Gribthorpe Local Wildlife Site (LWS)	Good quality established semi-natural verge.	Within the Solar PV Site
Wressle Verge LWS	Good quality established semi-natural verge.	Adjacent to the Solar PV Site
Bubwith - Holme-on-Spalding-Moor Disused Railway Line LWS	Good quality established semi-natural verge.	50 m north-west of the Solar PV Site
North Howden Fish Ponds LWS	Nutrient rich standing water, noted for its water-violet (<i>Hottonia palustris</i>).	440 m west of the Solar PV Site
Barnhill Candidate LWS	Semi-improved grassland.	640 m south-east of the Solar PV Site

Site Name	Features	Approximate Distance (km) and direction from closest point of the Site
Yarmshaw Plantation LWS	Good quality mixed fen site.	720 m south-west of the Solar PV Site
Howden Marsh LWS	Good quality rich-fen and nutrient-rich standing water site.	1.01 km south-east of the Solar PV Site
Eastrington Ponds LWS	The site is a mosaic of habitats, including wetland and woodland.	1.07 km south-east of the Solar PV Site
Ponds on W Bank of R Derwent near Woodall Farm SINC	Old, established semi-natural neutral / calcareous grassland. Nutrient-rich standing water.	815 m north-west of the Grid Connection Corridor
Brockholes SINC	Nutrient rich standing water.	705 m south-east of the Grid Connection Corridor
Hagg Lane Green SINC	Nutrient rich standing water.	1.70 km north-west of the Grid Connection Corridor

Habitats

- 8.5.4 There are no areas of ancient woodland within the 2 km Study Area.
- 8.5.5 Priority habitats under Section 41 of the NERC Act 2006 (Ref. 83) present or likely to be present (where determination by further survey is required) on land within the Site boundary include: hedgerows, rivers, standing water/ponds and priority deciduous woodland. The MAGIC website (Ref. 69) also indicates the presence of coastal and floodplain grazing marsh adjacent to, and possibly just within the Scheme (Figure 8-2), mudflats along the River Derwent (where the Grid Connection Corridor crosses) and the presence of traditional orchards and priority lowland fen habitat within the 500 m Grid Connection Corridor. These habitats have potential to support a range of protected and notable species.
- 8.5.6 Additional priority habitats identified during the desk study within the 2 km Study Area, outside of the Site boundary include: lowland meadows, reedbeds, good quality semi-improved grassland and areas recorded as 'no main habitat but additional habitats present'.
- 8.5.7 An initial review of the Woodland Trust Ancient Tree Inventory (<https://ati.woodlandtrust.org.uk/tree-search/>) indicates that there are notable and veteran trees located along or close by the Solar PV Site boundary (e.g., Plot 3b).

Species

8.5.8 The desk study identified records of protected or notable species of flora and fauna within the 2 km Study Area. These include:

- Five amphibian species; great crested newt (*Triturus cristatus*), palmate newt (*Lissotriton helveticus*), smooth newt (*Lissotriton vulgaris*), common frog (*Rana temporaria*), common toad (*Bufo bufo*).
- One reptile species; grass snake (*Natrix Helvetica*).
- Eighty-two bird species, including (but not limited to) skylark (*Alauda arvensis*), lapwing (*Vanellus vanellus*), swift (*Apus apus*), hen harrier, western marsh harrier (*Circus aeruginosus*), golden plover, yellowhammer (*Emberiza citronella*), barn owl (*Tyto alba*), lesser redpoll (*Acanthis cabaret*), sparrowhawk (*Accipiter nisus*), peregrine (*Falco peregrinus*), kingfisher (*Alcedo atthis*), brambling (*Fringilla montifringilla*), European herring gull (*Larus argentatus*), linnet (*Linaria cannabina*) and red kite (*Milvus milvus*).
- Five protected and notable mammal species; water vole, otter, badger (*Meles meles*), brown hare (*Lepus europaeus*) and polecat (*Mustela putorius*).
- At least six bat species; natterer's (*Myotis nattereri*), noctule (*Nyctalus noctule*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) brown long-eared (*Plecotus auratus*) and unidentified *Myotis* species.
- Four notable terrestrial invertebrates; *Ceraclea senilis* (a caddis fly), small heath butterfly (*Coenonympha pamphilus*), *Pelenomus comari* (a beetle) and *Isochnus foliorum* (a beetle).
- One marine mammal; common porpoise (*Phocoena phocoena*), the record being associated with the river Ouse.
- One notable mollusc; depressed river mussel (*Pseudanodonta complanata*)
- Seven notable plant species; greater water parsnip (*Sium latifolium*), bluebell (*Hyacinthoides non-scripta*), yellow vetchling (*Lathyrus aphaca*) wild strawberry (*Fragaria vesca*), ragged-robin (*Silene flos-cuculi*), field scabious (*Knautia arvensis*) and chamomile (*Chamaemelum nobile*).
- Non-native plant species, listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended); Nuttall's waterweed (*Elodea nuttallii*), giant hogweed (*Heracleum mantegazzianum*), rhododendron (*Rhododendron ponticum*) and Indian balsam (*Impatiens glandulifera*).

8.5.9 Several of these species are offered full or part protection under the Wildlife and Countryside Act 1981. Several species recorded within the Study Area are also listed on the UK Biodiversity Action Plan (UKBAP); on Section 41 of the NERC Act 2006 as being of priority conservation concern and listed as a priority habitat or species in East Riding of Yorkshire. Full details of these species and their legal status and conservation value will be provided in the Ecology and Biodiversity chapter.

8.5.10 The non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) however are considered to continue to pose a conservation threat to native biodiversity and habitats, as such it is illegal to plant or to otherwise encourage or cause these plants to grow in the wild.

8.6 Potential Effects and Mitigation

8.6.1 Compliance with planning policy in the NPPF (Ref. 7) requires that the Scheme considers and engages a mitigation hierarchy, requiring the highest level to be applied, where possible. The mitigation hierarchy is also fundamental to BNG. There are four sequential steps that must be taken throughout the lifecycle of a project where there is potential for impacts on relevant ecological receptors:

- Avoidance – actions taken to avoid causing impacts to the environment prior to beginning development (for example, moving the development to a different location);
- Minimisation – measures taken to reduce the duration, intensity, extent and/or likelihood of the unavoidable environmental impacts caused by development (for example, adapting the development design to minimise impacts);
- Restoration or rehabilitation – actions taken to repair environmental degradation or damage following unavoidable impacts caused by development; and
- Offsets – measures taken to compensate for any adverse environmental impacts caused by development which cannot be avoided, minimised and/or restored (e.g., including habitat creation to offset losses).

8.6.2 Schedule 15 of the Environment Act 2021 (Ref. 18) makes provision for BNG in relation to development consent for NSIP. Although the requirement for a minimum 10% gain in biodiversity for NSIPs will not become mandatory until 2025, the Scheme will aspire to achieve at least this level of Net Gain in biodiversity (as set out in the incoming legislation). However it is noted that similar schemes developed by the Applicant's parent company have typically delivered BNG well in excess of this minimum figure. CIEEM's Biodiversity Net Gain: Good Practice Principles for Development (Ref. 97) defines BNG as "*development that leaves biodiversity in a better state than before*" and involves "*an approach where developers work with local governments, wildlife groups, landowners and other stakeholders in order to support their priorities for nature conservation*". BNG is achieved when measurable improvements for biodiversity are delivered in association with a development through the creation of new habitats or enhancement and management of existing habitats. Although BNG allows for these measures to be provided on-site, off-site or in combination, as set out in **Chapter 2 The Scheme**, the Scheme will deliver BNG on-site through the implementation of measures such as field boundary enhancements and planting seed mixes within the Solar PV Site.

8.6.3 A BNG assessment will be undertaken (using Defra Metric 3.1 or the most up to date metric at the time) to identify opportunities for contributing to BNG. These opportunities will be identified and set out within the ES, in line with

the requirements of the Environment Act (Ref. 18), the NPPF (Ref. 7), CIEEM's good practice guidance (Ref. 97) and local planning policy, as set out in Section 8.3. The Framework Biodiversity and Landscape Management Plan to be submitted with the DCO will specify mitigation and enhancement measures that would support the BNG.

Construction and Decommissioning

8.6.4 There is the potential for the following construction and decommissioning impacts on important ecological features:

- Habitat loss: direct loss, fragmentation and severance of terrestrial habitats through land take, with potential to affect various species;
- Direct disturbance of, and harm to, animals, including the displacement of species from the proximity of the Scheme;
- Spread of invasive species either from or onto the land, or within the Site; and
- Indirect impacts, such as watercourse pollution, sedimentation and dust deposition, lighting of sensitive habitats and increased human disturbance.

Operation and Maintenance

8.6.5 The operation of the Scheme may result in significant effects on important ecological features and these effects may include:

- Disturbance or displacement of species during operational maintenance; and
- Management and maintenance of on-site and adjacent habitats.

8.6.6 Whilst it is considered unlikely, the potential for the solar PV panels (during operation) to attract congregations of birds, which may lead to displacement of populations and increase the risk of collision, will also be considered.

8.7 Assessment Methodology

Value of ecological resources and receptors

8.7.1 To support focussed Ecological Impact Assessment (EclA), there is a need to determine the scale at which the relevant ecological features identified through the desk studies and field surveys undertaken for the Scheme are of value. A hierarchical geographical approach will be used to assign nature conservation resource importance (or value) based upon those within the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Ref. 75) (hereafter referred to as the CIEEM guidelines) and professional judgement.

8.7.2 It is not necessary in the assessment to address all habitats and species with potential to occur in the Study Area and instead the focus should be on those that are 'relevant' i.e., ecological features considered important and potentially affected by the proposed Scheme. In its guidance, CIEEM makes clear that there is no need to "carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and

will remain viable and sustainable". This does not mean that efforts should not be made to safeguard wider biodiversity, and requirements for this will be considered. National policy documents emphasise the need to achieve net gains for nature and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.

8.7.3 The frames of reference used for the assessment, based on Section 4.7 in the CIEEM guidelines will be:

- International (generally this is within a European context, reflecting the general availability of good data to allow cross-comparison);
- National (Great Britain, but considering the potential for certain ecological features to be more notable (of higher value) in England, with context relative to Great Britain as a whole);
- Regional (Yorkshire and the Humber);
- County (East Riding of Yorkshire);
- District (Selby); and
- Local (has value at the 'Site' level).

8.7.4 Species populations are valued on the basis of their size, recognised status (such as through published lists of species of conservation concern or designation of Biodiversity Action Plan (BAP) status), and legal protection.

8.7.5 In assigning values to species populations, it is important to consider the status of the species in terms of any legal protection. However, it is also important to consider other factors such as its distribution, rarity, population trends and the size of the population which would be affected. For example, whilst the great crested newt is protected under European law, and therefore conservation of the species is of significance at an international level, this does not mean that every population of great crested newt is internationally important. It is important to consider the particular population in its context. Therefore, in assigning values to species, the geographic scale at which they are important will be considered. The assessments of value rely on the professional opinion and judgment of experienced ecologists.

8.7.6 Plant communities will be assessed both in terms of their intrinsic value, and as habitat for protected species whose habitat is also specifically protected, and for species of nature conservation concern which are particularly associated with them.

8.7.7 Due regard will also be paid to the legal protection afforded to species during the development of mitigation and compensation measures to be implemented as part of the Scheme. For European protected species, there is a requirement that the Scheme should not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

8.7.8 Assessing the value of features requires consideration of both existing and future predicted baseline conditions. Therefore, the description and valuation of ecological features will take account of any likely changes, such as trends

in the population size or distribution of species, likely changes to the extent of habitats and the effects of other schemes or land use changes.

Approach

- 8.7.9 The approach used for the EclA will be undertaken in accordance with best practice guidance as published in the CIEEM guidelines (Ref. 76) and summarised below.
- 8.7.10 The principal steps involved in the EclA can be summarised as follows:
- Ecological features that are both present and might be affected by the Scheme are identified (both those likely to be present at the time works begin and those predicted to be present at a set time in the future) through a combination of targeted desk-based study and field survey work to determine the relevant baseline conditions;
 - The importance of the identified ecological features evaluated, placing their relative biodiversity and nature conservation value into geographic context. This is then used to define the relevant ecological features that need to be considered further within the assessment process;
 - The changes or perturbations predicted to result as a consequence of the Scheme (i.e., the potential impacts), and which could potentially affect relevant ecological features are identified and their nature described. Established good-practice, legislative requirements or other incorporated design measures to minimise or avoid impacts are also described and are taken into account;
 - The likely effects (beneficial or adverse) on relevant ecological features are then assessed, and where possible quantified;
 - Measures to avoid or reduce any predicted significant effects, if possible, are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines). If necessary, measures to compensate for effects on features of nature conservation importance are also included;
 - Any residual effects of the Scheme are reported; and scope for ecological enhancement is considered.
- 8.7.11 The ecological surveys to be conducted between 2022 and 2023 (as described below) will confirm or identify the presence or probable absence of any species and habitats and will be undertaken in the appropriate season for each species group.
- 8.7.12 The 'Zone of Influence' for the Scheme is the area over which ecological features may be affected by changes as a result of the Scheme and associated activities. The Zone of Influence will be different for each ecological receptor identified, dependent on each receptor's sensitivity to change and will be determined using the maximum extents for Study Areas of each identified receptor. Where necessary, these will be appropriately revised as the Scheme evolves.
- 8.7.13 The ES will include consideration of options to avoid, reduce, mitigate, or, if necessary, compensate for any identified potential significant adverse effects to the point where any residual effects are not considered to be significant. In

addition, opportunities will be sought for the enhancement of biodiversity at both on and off-site locations as associated with the Scheme.

8.7.14 In line with Section 1.21 in the CIEEM guidelines (Ref. 76), the terminology used within the EclA will draw a clear distinction between the terms ‘impact’ and ‘effect’. For the purposes of this EclA these terms are defined as follows:

- **Impact** – Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow; and
- **Effect** – Outcome to an ecological feature from an impact. For example, the effects on commuting bats from loss of a hedgerow.

8.7.15 When describing potential impacts (and where relevant the resultant effects) consideration will be given to the following characteristics likely to influence this (Sections 5.11 to 5.18 in the CIEEM guidelines, Ref. 76):

- **Positive / Negative** – i.e., is the change likely to be in accordance with nature conservation objectives and policy:
 - **Positive** – a change that improves the quality of the environment, or halts or slows an existing decline in quality e.g., increasing the extent of a habitat of conservation value; or
 - **Negative** – a change that reduces the quality of the environment, e.g., destruction of habitat.
- **Extent** – the spatial or geographical area or distance over which the impact/effect may occur under a suitably representative range of conditions;
- **Magnitude** – the ‘size’, ‘amount’ or ‘intensity’ and ‘volume’ of an impact - this is described on a quantitative basis where possible;
- **Duration** – the time over which an impact is expected to last prior to recovery or replacement of the resource or feature. Consideration will be given to how this duration relates to relevant ecological characteristics such as a species’ lifecycle. However, it is not always appropriate to report the duration of impacts in these terms. The duration of an effect may be longer than the duration of an activity or impact;
- **Frequency and Timing** – i.e., consideration of the point at which the impact occurs in relation to critical life-stages or seasons; and
- **Reversibility** – i.e., is the impact temporary or permanent. A temporary impact is one from which recovery is possible or for which effective mitigation is both possible and enforceable. A permanent effect is one from which recovery is either not possible or cannot be achieved within a reasonable timescale (in the context of the feature being assessed).

8.7.16 Cumulative effects will be assessed and are those occurring from several sources (also known as interrelationships) and/or the combined effects of other developments in the area.

8.7.17 For each ecological feature only those characteristics relevant to understanding the ecological effect and determining the significance will be described. The determination of the significance of effects has been made

based on the predicted effect on the structure and function, or conservation status, of relevant ecological features, as follows:

- Not significant – no effect on structure and function, or conservation status; and
- Significant – structure and function, or conservation status is affected.

8.7.18 Sections 5.24 to 5.28 in the CIEEM guidelines (Ref. 76) states that effects should be determined as being significant when:

“an effect either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national/local nature conservation policy) or more wide ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local. A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project”.

“In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)”.

8.7.19 Using this information and judgment, it is determined whether the effects will be significant or not on the integrity (of site/ecosystems) or conservation status (of habitats/species) of each ecological feature and the impact significance is determined at the appropriate geographical scale.

8.7.20 There are a number of approaches for determining the significance of effects on ecological features. Whilst the CIEEM guidelines recommend the avoidance of the use of the matrix approach for categorisation (major, moderate and minor), in order to provide consistency of terminology, the CIEEM assessment will be translated into the classification of effects scale, as outlined in Table 8-3.

Table 8-3: Relating CIEEM assessment terms to those used in other EIA chapters

Effect classification terminology used in other EIA chapters	Equivalent CIEEM assessment
Major beneficial (positive)	1) Permanent addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Moderate beneficial (positive)	1) Temporary addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Minor beneficial (positive)	1) Permanent addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Negligible beneficial (positive)	1) Temporary addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Negligible adverse (negative)	1) Temporary/reversible damage to a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Minor adverse (negative)	1) Permanent/irreversible damage to a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Moderate adverse (negative)	1) Temporary/reversible damage to a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.

Effect classification terminology used in other EIA chapters

Equivalent CIEEM assessment

Major adverse (negative)	1) Permanent/irreversible damage to a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.
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Habitats Regulations Assessment

- 8.7.21 As part of the assessment of a development, it is necessary to consider whether the Scheme is likely to have a significant effect on areas that have been internationally designated for nature conservation purposes (i.e., European sites). European sites are protected under the Conservation of Habitats and Species Regulations 2017 (as amended; relevant to England and Wales) (Ref. 82). The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 (“the Withdrawal Act”). However, the most recent amendments to the Habitats Regulations – the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref. 90) – make it clear that the need for Habitats Regulations Assessment (HRA) continues to apply, including through the creation of a national site network within the UK comprising the protected sites already designated under the EUs Natura 2000 ecological network, establishing management objectives of the national site network, imposing a duty for appropriate authorities to manage and adopt the network objectives, and arranging for reporting on the implementation of the Regulations given the UK no longer reports these to the EU.
- 8.7.22 Although the UK has departed the EU, the HRA will nonetheless take account of relevant EU case law (for instance, the *Holohan* (Ref. 91) and *People over Wind* (Ref. 92) cases) as a precaution.
- 8.7.23 Whilst the HRA decisions must be taken by the competent authority (the SoS, informed by the recommendations of the appointed Examining Authority), the information needed to undertake the necessary assessments must be provided by the Applicant. The information needed for the competent authority to establish whether there are any Likely Significant Effects (LSEs) from the Scheme and to assist in carrying out its Appropriate Assessment, will be provided in the HRA Report.
- 8.7.24 Stage 1 of the HRA process (Test of Likely Significant Effects) will consider the potential pathways of effect between the Scheme and the European designated sites within 10 km of the Site boundary (on the basis that it is unlikely that a Scheme such as this will affect sites further afield), and whether there is potential to have a significant adverse effect on the integrity of the European designated sites, either alone or in combination with other plans or projects. Potential pathways of effect currently include noise, light and visual disturbance during construction, pollution (via hydrological links to the designated sites) and dust emissions and loss / disturbance of functionally linked land used by qualifying bird species. Information used to

support the HRA process will include desk study data and appropriate field surveys. Stage 1 will result in the preparation of a HRA Screening Report.

- 8.7.25 Where there is potential for the Scheme to have a likely significant effect upon the qualifying features of the European designated sites, the pathway will be taken forward to Stage 2 – Appropriate Assessment. At Appropriate Assessment, the measures that will be implemented to either avoid the impact in the first place, or to mitigate the ecological effect to such an extent that it is no longer significant, will be set out.
- 8.7.26 If required, a shadow HRA will be prepared in line with Planning Inspectorate Advice Note 10 (Habitats Regulations Assessment) (Ref. 93) including completion of the necessary matrices. The HRA process will be in line with the EIA process. There would be a "Test of Likely Significant Effects Report" at the Preliminary Environmental Information (PEI) Report stage, and this will be updated as necessary for DCO application including a report to inform Appropriate Assessment, if required.

Planned Surveys

- 8.7.27 Habitats within the Solar PV Site and along the Grid Connection Corridor will be confirmed by undertaking an extended Phase 1 habitat survey (following the established Joint Nature Conservation Committee (JNCC) methodology) (Ref. 105). The survey will also include a condition assessment, undertaken with reference to UKHab classifications to inform the BNG assessment (refer to Section 8.6.2 for further information). Habitat condition assessments will be conducted within the appropriate seasonal period to make sure the condition can be effectively determined, using the most recent Defra's Biodiversity Metric 3.1. The baseline information gathered from this, and other surveys, will be used to develop an appropriate strategy in line with the policies identified in Section 8.2.6 above.
- 8.7.28 It is anticipated that some of the habitats within the Solar PV Site and along the Grid Connection Corridor will have suitability to support protected or notable species including great crested newt (GCN), breeding birds, roosting, foraging and commuting bats, otter and water vole, and reptiles. The scope of the planned (and ongoing) ecology surveys are set out in Table 8-4.
- 8.7.29 The current survey scope and requirements may change, and additional surveys may be required following consultation with local authorities and Natural England, and development of the Scheme. This may include additional bat survey work, reptile surveys and terrestrial invertebrate surveys, if suitable habitat features cannot be avoided.
- 8.7.30 The surveys undertaken will inform any European Protected Species (EPS) mitigation licences (where required). As part of the DCO application for the Scheme these will be prepared in draft for advisory comment from Natural England.

Table 8-4: Scope of proposed development ecology surveys

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
Habitats: Phase 1 Habitat Survey and Habitat Assessment Condition to inform Biodiversity Net Gain Assessment	Phase 1 Habitat Survey in accordance with the published method (Ref. 105). The Phase 1 habitat survey will be supplemented by UK Habitat Classification and condition assessment in accordance with Defra’s Biodiversity Metric 3.1 (or the most up-to-date version of the metric at the time) Technical Supplement. Assessment of possible presence of protected, priority or otherwise notable species and, where relevant, the likely importance of habitat features for such species. Record of Invasive Non-Native Species (INNS) of plants. Incidental records of protected or priority species or their field signs.	Optimal time – April to October but can be carried out at any time of year.	The Solar PV Site and up to 150 m Grid Connection Corridor (it is expected that a 150 m wide survey corridor will be identified from preliminary desktop and feasibility studies soon after Scoping stage, and will be based on a more precise cable corridor plus 50m badger buffers, being further extended where deemed appropriate).	The information will form the basis of the calculation of potential permanent and temporary habitat effects within the Ecological Impact Assessment (EclA). Habitat condition assessments are required to support a Biodiversity Net Gain (BNG) assessment for the Scheme.
Hedgerows	Hedgerows that are identified as potentially Important and crossed by the Scheme will be surveyed in accordance with the methodology as outlined in Defra (2007) Hedgerow Survey Handbook: A	Optimal time – May to September inclusive.	Areas to be identified following Phase 1 Habitat Survey	Dedicated hedgerow surveys considered to only be warranted where potentially Important hedgerows are directly impacted by the Scheme. The information collated will also be used to inform the condition and

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
	<p>standard procedure for local surveys in the UK (Ref. 106).</p>			<p>distinctiveness assessment within the BNG calculation. Hedgerows which are species-poor as determined by the Phase 1 habitat surveys will not be subject to detailed hedgerow surveys, as temporary effects on low value habitats can be appropriately assessed and mitigated without the requirement for additional baseline data.</p>
Breeding Birds	<p>The bird surveys will follow the Common Bird Census (CBC) methodology (Ref. 107; Ref. 108) amended for three visits rather than ten. Bird territories within the Site Boundary will be determined using standard territory mapping techniques to identify and isolate areas within which birds displayed consistent breeding behaviours (following Ref. 109). Birds observed only flying over the Site Boundary will also be recorded, but will be discounted from territory analysis.</p>	<p>March to July inclusive.</p>	<p>Three survey visits will be completed on the Solar PV Site supplemented by additional survey visits on land parcels of interest (i.e., potential to support Schedule 1 birds). Surveys will be completed at four locations along the Grid Connection Corridor where the potential for development impacts are identified.</p>	<p>To confirm the assemblage of bird species within the Solar PV Site and along the Grid Connection Corridor and to inform any mitigation required. The surveys will identify if qualifying species associated with the Lower Derwent Valley SPA and Humber Estuary SPA are using the land within the Site.</p>

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
Wintering and Passage Birds	Wintering bird surveys will be completed with reference to Ref. 108 and Ref. 109, comprising walked transects within the Solar PV Site and vantage point surveys at areas of interest along the Grid Connection Corridor to confirm the assemblage of wintering and passage bird species present during October 2022 to March 2023, with potential additional point count surveys in August and September 2022.	October to March inclusive plus potential point counts for passage birds in August and September	Six monthly surveys between October and March using a general walkover survey methodology within the Solar PV Site. Initial walkover survey of the Grid Connection Corridor and up to a maximum of three vantage point surveys at specific locations of interest, surveyed each month between October and March, plus potential point counts for passage birds in August and September.	To confirm the assemblage of wintering and passage bird species within the Solar PV Site and along the Grid Connection Corridor, and to inform any mitigation required. The surveys will identify if qualifying species associated with the Lower Derwent Valley SPA and Humber Estuary SPA are using the land within the Site and whether the Scheme could impact any areas of functionally linked land.
Great Crested Newt Habitat Assessment	Habitat Suitability Index (HSI) of ponds in accordance with Oldham et al., 2000 (Ref. 110).	Optimal time- May to September	Within and up to 50 m from the Site – where accessible	Data will be used to inform a District Level Licence (DLL) Application, which may result in GCN being scoped out of the detailed assessment in the ES.
Great Crested Newt Presence/Likely Absence	Environmental DNA (eDNA) surveys (using approved great crested newt eDNA kit suppliers), will be undertaken in accordance with the protocols as set out by Biggs <i>et al.</i> (Ref. 111) on suitable waterbodies.	April 15 th to June 30 th	One survey visit to each waterbody Number of waterbodies and locations to be confirmed following the HSI survey.	Based upon the avoidance of loss or direct effects upon great crested newt breeding waterbodies, the Solar PV Site being dominated by arable land (of low suitability for amphibians) and prominently temporary nature of the proposed Grid

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
				<p>Connection Corridor construction works, it is proposed that there is an appropriately robust and precedented approach to mitigation and legal compliance based on presence/ absence baseline data only. These data will be sufficient to support an application under a DLL Scheme, which may result in GCN being scoped out of the detailed assessment in the ES.</p>
<p>Bats – Preliminary Roost Features (PRF) assessment</p>	<p>Permanent impacts on trees will be avoided where possible. Trees to be impacted or subject to disturbance will be subject to a PRF assessment survey in accordance with The Bat Conservation Trust guidance (Ref. 112). Should a structure or building be impacted this will also be subject to PRF assessment in accordance with The Bat Conservation Trust guidance (Ref. 103)..</p>	<p>Any time of year.</p>	<p>As per the Phase 1 Habitat Survey results</p>	<p>Information collated on the location of trees structures or buildings that are suitable for roosting bats will inform design and offset buffers to avoid direct effects upon potential roost sites (and avoidance of trees and woodland with higher ecological value irrespective of bats which should be avoided). Furthermore, the PRF assessment information will form the basis of the scope for roost surveys (as detailed below).</p>

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
Bats – Foraging/ Commuting	<p>The Solar PV Site is predominantly open arable land, of low value for foraging/commuting bats. Permanent impacts on trees/woodland and hedgerows will be avoided as far as possible. Activity surveys will be completed where the Scheme has the potential to affect foraging and commuting bats (i.e., loss of woodland habitat or severance of linear features such as hedgerows, especially where linked to potentially higher value of habitat), to provide baseline survey data of use of the site by bats. The survey methodology will be based upon published guidance (Ref. 112) and will be tailored as necessary to suit the Site. An appropriate level of survey effort comprising walked transects and periods of remote static detector deployment across the activity season will be undertaken.</p>	<p>If required: April/May to September inclusive subject to suitable weather conditions.</p>	<p>Transect routes, to cover the most suitable areas of affected habitats within the Solar PV Site.</p>	<p>To determine appropriate mitigation.</p> <p>It is not considered warranted that detailed bat activity surveys will be required along the Grid Connection Corridor given the temporary nature of habitat affected, the low value habitats, that no changes in lighting are anticipated, and the avoidance of the removal of mature trees or other structures which may support roosting bats. This is in line with published guidance (Ref. 112) which state that surveys should be proportionate. Where linear habitat features e.g., watercourses/ hedgerows are affected by the Scheme, but which may provide commuting routes or a foraging resource for bats, appropriate robust and precedented mitigation measures can be secured via adoption of construction methods that seek to avoid these features and reduce the</p>

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
Bats – Roosting	<p>Wherever possible the Scheme will be designed to avoid trees with potential roost features (PRF) that have potential to support a bat roost. However, where this is not possible, trees will be subject to climbing and assessment of the identified PRF features where safe to do so, to confirm if the tree could be used as a roost and/ or if there are signs of bats.</p> <p>Where tree climbing confirms that the PRF does have potential to support a roost and /or where it is not possible to safely climb a tree, bat emergence/ re-entry surveys will be undertaken at dusk and dawn in accordance with standard survey guidance (Ref. 112). Bat emergence/ re-entry surveys will also be undertaken on any buildings with bat roost suitability that will be impacted by the Scheme.</p>	<p>If required: between April/May and September.</p>	<p>Features with bat roost suitability identified during the PRF assessments.</p>	<p>temporary effects to a level that would not be significant.</p> <p>To determine appropriate mitigation, and licensing requirements, if necessary, where trees/buildings with confirmed/ potential bat roosts cannot be entirely avoided.</p>

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
Badger	<p>Presence/absence survey for setts and field signs in combination with Phase 1 habitat survey.</p> <p>The survey will focus on habitat suitable to support setts.</p> <p>Incidental records obtained through desk study data in combination with the completion of other surveys will also supplement the baseline assessment.</p>	<p>Any time of year – and will be combined with the Phase 1 Habitat Survey.</p>	<p>Up to 50 m from the footprint of the Site.</p>	<p>To determine appropriate mitigation either through avoidance of impacts on setts, or Natural England licensing for sett closures where direct impacts cannot be avoided.</p> <p>Pre-construction surveys for badger in areas where records of badger activity are identified will be committed to via the EclA and embedded with mechanisms such as the Construction Environmental Management Plan (CEMP) or equivalent.</p>
Otter and Water Vole	<p>The Scheme will be designed to avoid effects upon watercourses as far as possible. A 10 m buffer will be implemented to avoid disturbance of riparian habitats where possible. It is assumed that Main watercourses (such the River Derwent and River Ouse) will be crossed through non-open cut techniques.</p> <p>Presence/absence surveys will be required, looking for field signs along watercourses and ditches, where open cut crossing</p>	<p>Otter - April to September inclusive.</p> <p>Water Vole – One or two surveys as required, one in the first half of the breeding season (April to June) and one in the second half of the breeding</p>	<p>Up to 500 m length of the watercourse – 250 m up and down stream of crossing point.</p> <p>Access will be required to both banks and up to 10 m from the bank edge. Survey area may be extended to search for otter holts at greater distances from watercourses, where suitable habitat is present.</p>	<p>To determine appropriate mitigation either through avoidance of impacts on water vole/ otter habitat, or Natural England licensing where direct impacts cannot be avoided.</p>

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
	<p>techniques are required, or appropriately sized stand-off buffers cannot be applied.</p> <p>A search for otter holts will be extended to up to 250 m from watercourses, where required.</p> <p>Surveys will be undertaken in accordance with standard guidance (Ref. 113, Ref. 114, Ref. 115).</p>	<p>season (July to September).</p>		
Reptiles	<p>The Solar PV Site is predominantly open arable land, of low value for reptiles. Permanent impacts on trees/woodland and hedgerows will be avoided as far as possible.</p> <p>Where habitats appear suitable for reptile populations (as identified during the Phase 1 habitat survey) and are to be permanently affected by the Scheme, presence/absence surveys will be undertaken following guidance provided by in Froglife Advice Sheet 10: Reptile Surveys (Ref. 116). Survey involves laying refugia (carpet tiles/roof felts) and leaving them <i>in situ</i> for up to one to three months. They will be checked seven times</p>	<p>If required: Optimal – April to middle of June and September.</p>	<p>Limited to areas where permanent loss of suitable habitat cannot be avoided - subject to the findings of the Phase 1 Habitat Survey.</p>	<p>Presence/ absence reptile surveys will only be considered warranted to be completed where areas of moderate/ high value reptile habitat could not be avoided by the Scheme. These data will inform the EclA and mitigation strategy.</p> <p>Temporary construction effects upon small areas of suitable reptile habitat will be able to be mitigated through appropriate pre-construction measures where habitats/features of interest for reptiles are identified e.g., supervised vegetation clearance at an appropriate time of year.</p>

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
	and then removed after the last survey.			
Terrestrial Invertebrates	Terrestrial invertebrate surveys are not anticipated to be required due to the limited suitability of the habitats to be affected.	Not anticipated to be required	Not anticipated to be required	Due to the predominantly arable nature of the Solar PV Site, it should be possible to avoid areas of likely high habitat suitability for terrestrial invertebrates; therefore, it is not proposed at this stage to undertake detailed terrestrial invertebrate surveys. However, this will be reviewed as part of the extended Phase 1 Habitat survey scope. Potential effects on likely invertebrate species may still be included within the assessment, based on desk study and habitat types.
Aquatic Ecology	A habitat condition assessment (Modular River Physical) survey of watercourses and drain/ ditches crossed by the Scheme will be undertaken, where non-open cut techniques are not possible.	Any time of year	Focused on watercourse crossing points.	It is assumed that Main watercourses (such the River Derwent and River Ouse) will be crossed through non-open cut techniques; however, habitat condition assessments will be undertaken to inform BNG calculations. Specific aquatic flora and fauna surveys are not proposed on the

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
				basis that the majority of the construction impacts on drains/ ditches crossed by open-cut techniques will be temporary and reversible, and that potential impacts (e.g., increase in suspended sediment) can be adequately addressed through standard mitigation techniques to be committed to in the CEMP.

8.8 Assumptions, Limitations and Uncertainties

- 8.8.1 The following paragraphs state the assumptions and limitations that have been noted during the scoping.
- 8.8.2 Baseline ecological surveys commenced in April 2022 and will continue through 2023 to determine the baseline ecological conditions. The surveys may highlight new important ecological features with potential to be significantly affected which have not been identified (or considered not to be significant) at this stage of the assessment. These would be discussed on a case-by-case basis with the local authorities and Natural England as appropriate.
- 8.8.3 An assumption has been made that the following habitats will be retained as part of the Scheme: woodlands, ponds, watercourses (assuming watercourses are not lost as a whole and small crossings of minor watercourses could be required but main rivers would be crossed using trenchless techniques) and the majority of hedgerows (assuming hedgerows are not lost as a whole, but could require either a temporary or permanent gap through occasionally, which would be minimised to smallest necessary).
- 8.8.4 It is currently assumed that should there be the requirement for the potential mitigation of ecological features and recommended enhancement measures, suitable on-site areas will be made available to deliver the required outcomes.
- 8.8.5 An assumption has been made that any compound and material storage areas will be contained within the Site boundary.
- 8.8.6 Arboricultural surveys may be undertaken to inform the detailed design stage of the Scheme.

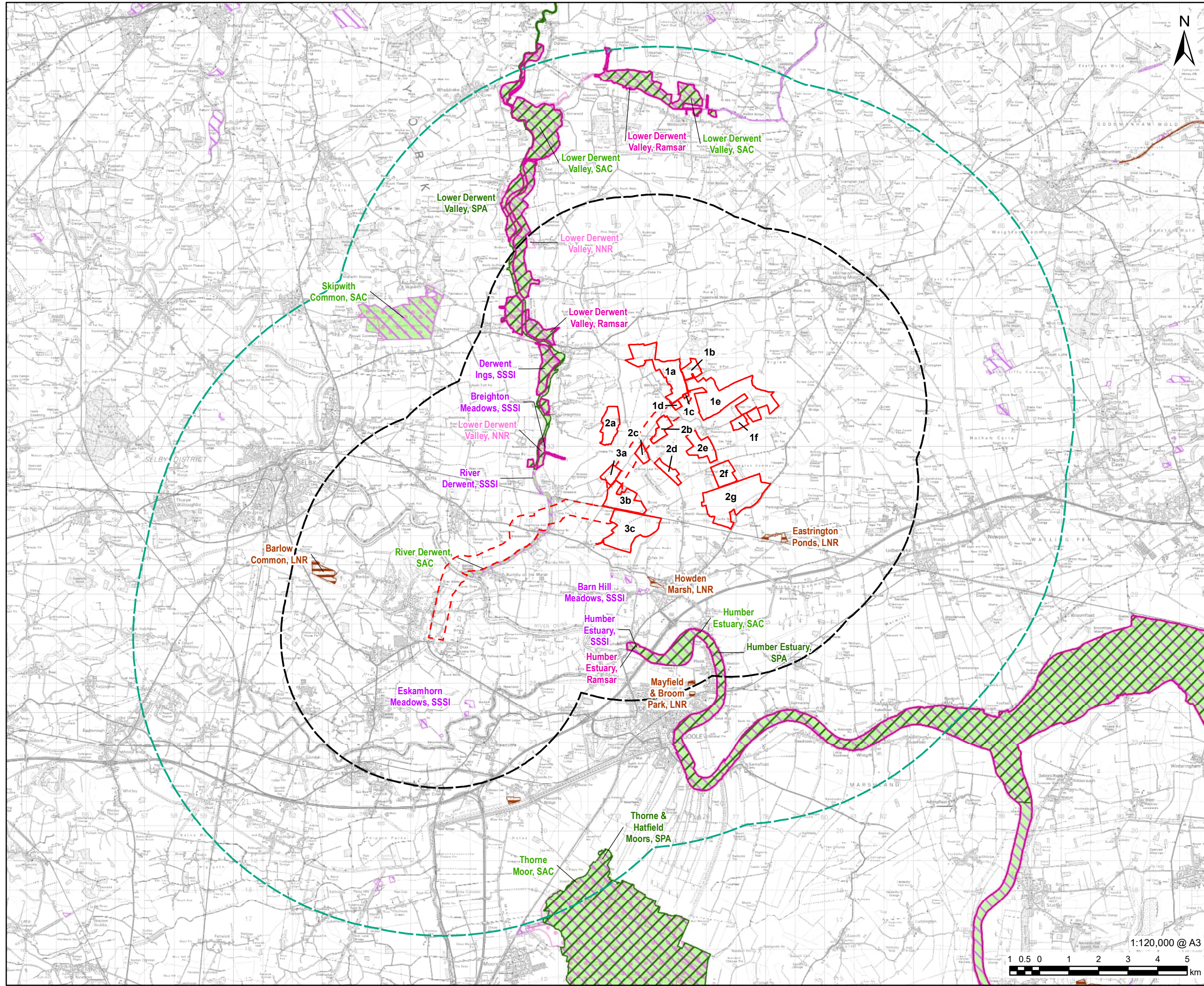
8.9 Summary of Elements Scoped In and Scoped Out

- 8.9.1 A summary of the elements scoped into and out of the ecological assessment are presented in Table 8-5.

Table 8-5: Elements scoped in and out of the ecology assessment

Element	Scoped in / Scoped Out
Statutory Designated Sites (without mobile qualifying criteria) located greater than 2 km from the site	Scoped Out
Statutory Designated Sites (within 2 km of the site)	Scoped In
Statutory Designated Sites (with mobile qualifying criteria) located up to 10 km from the site	Scoped In
Non Statutory Designated Sites (within 2 km of the site)	Scoped In

Element	Scoped in / Scoped Out
Impacts to Priority Habitats or otherwise of biodiversity importance/value	Scoped In
Impacts to common and widespread habitats of low sensitivity and/or conservation interest	Scoped Out
Breeding Birds	Scoped In
Wintering Birds	Scoped In
Bats (roosting)	Scoped In
Bats (foraging/commuting)	Scoped In
Otter and water vole	Scoped In
Badger	Scoped In
Great crested newts	Scoped In but as likely to be using a DLL it would be scoped out of the detailed impact assessment in the ES as the effects would be not significant at the population level. This would be assessed by Natural England using their risk zone modelling as part of the DLL which would inform the findings in the ES.
Other Amphibians	Scoped In
Reptiles	Scoped In
Other mammals (including only brown hare, hedgehog, polecat)	Scoped In
Aquatic Invertebrates/Fish	Scoped In
Terrestrial Invertebrates	Scoped In



LEGEND

	Solar PV Site
	Grid Connection Corridor
	10km International Nature Conservation Sites Study Area
	5km Other Nature Conservation Sites Study Area
	Special Area of Conservation (SAC)
	Special Protection Area (SPA)
	Ramsar
	Site of Special Scientific Interest (SSSI)
	Local Nature Reserve (LNR)
	National Nature Reserve (NNR)

NOTES
Note: Only the SAC, SPA and Ramsar sites are labelled beyond 5km.

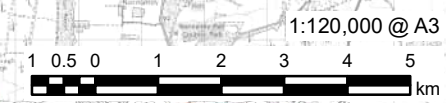
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Definitive information can only be provided by individual local authorities and you should refer directly to their information for all purposes that require the most up to date and complete dataset.

ISSUE PURPOSE
EIA SCOPING REPORT

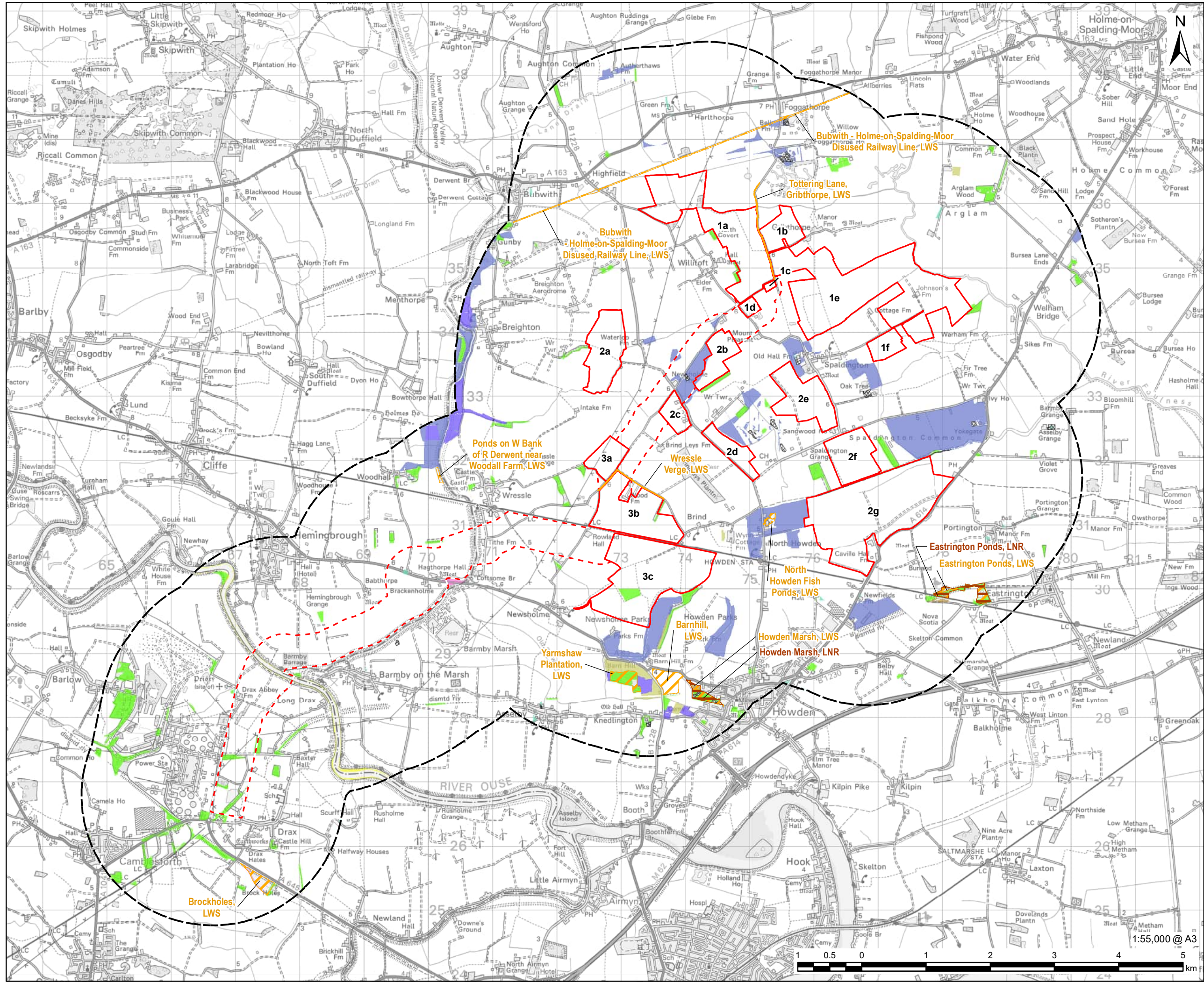
PROJECT NUMBER
60683115

FIGURE TITLE
International Sites Designated for Nature Conservation within 10km and other Statutory Designated Sites within 5km

FIGURE NUMBER
Figure 8-1



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NOTES

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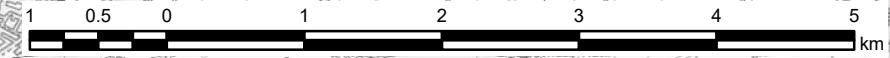
ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

FIGURE TITLE
Non Statutory Sites Designated for Nature Conservation within 2km

FIGURE NUMBER
Figure 8-2

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9. Flood Risk, Drainage and Surface Water

9.1 Introduction

- 9.1.1 This chapter relates to the potential effects of the Scheme on the water environment, which includes surface water bodies (e.g., rivers, streams, ditches, and canals) and groundwater bodies. Impacts considered cover water quality, water resources, physical changes to hydromorphology and the function of water environment systems, flood risk and drainage. Isolated ponds as receptors are included within **Chapter 8 Ecology**.
- 9.1.2 Where designated ecological sites are sensitive to changes in hydrology or water quality (i.e., they are 'water dependent') an assessment of the risks to them is considered in this water environment Scoping chapter. However, potential impacts from contaminated land on any controlled water (surface or groundwater) is not considered in this chapter. For this, please refer to **Chapter 16 Other Environmental Topics**.
- 9.1.3 This Scoping chapter also considers the scope for mitigation, and how it is proposed to assess the significance of any identified potential effects.

9.2 Study Area

- 9.2.1 A Study Area of approximately 1 km from the Site boundary has been considered in order to identify water bodies that could reasonably be affected by the Scheme. However, the baseline assessment has also considered a wider Study Area of up approximately 2 km downstream of the Site boundary along watercourses as water quality and flood risk impacts may propagate downstream, and thus it is important to consider all attributes of the waterbody that may be impacted.

9.3 Legislation and Planning Policy Context and Guidance

- 9.3.1 A summary of the legislation, planning policy and guidance relevant to the assessment of impacts of the Scheme on the water environment is presented in this section.

Legislation

- 9.3.2 The main legislation relevant to the Scheme includes:
- Environment Act 2021 (Ref. 18);
 - Water Act 2014 (Ref. 117);
 - Floods and Water Management Act 2010 (Ref. 118);
 - Marine and Coastal Access Act 2009 (Ref. 119);
 - Land Drainage Act 1991 (as amended) (Ref. 120);
 - Water Resources Act 1991 (as amended) (Ref. 121)
 - Salmon and Freshwater Fisheries Act 1975 (as amended) (Ref. 87);

- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref. 89);
- Environmental Damage (Prevention and Remediation) Regulations 2015 (Ref. 122);
- Environmental Permitting (England and Wales) Regulations 2016 (Ref. 123);
- Building Regulations 2010 (Ref. 124);
- Groundwater (England and Wales) Regulations 2009 (Ref. 125);
- Flood Risk Regulations 2009 (Ref. 126);
- Eels (England and Wales) Regulation 2009 (Ref. 88); and
- Control of Pollution (Oil Storage) (England) Regulations 2001 (Ref. 127).

National Planning Policy

9.3.3 The following planning policies have been taken into account as part of identifying the assessment methodology, receptor selection, importance and sensitivity, potential significant environmental effects, and scope for mitigation either embedded in the design or additional:

- National Policy Statement (NPS) EN-1 (Ref. 36) with particular reference to section 5.15 Water Quality and Resources, paragraph 5.15.5 and paragraph 5.15.6. The Secretary of State needs to satisfy itself that a proposal has regard to the River Basin Management Plans and meets the requirement of the Water Framework Directive (including Article 4.7 [of the Directive as transposed in England]). Also, particular reference to Section 5.7 Flood Risk, paragraphs 5.7.8 to 5.7.24. Also, the pollution control and other regulatory regimes in paragraph 4.10.3, 4.10.6 and 4.10.7. These highlight the need for whether the development is an acceptable use of the land, the need for early contact with relevant regulators for permitting, and the development should have relevant pollution control in place, and there are no cumulative effects from pollutants.
- The draft EN-1 (Ref. 95) contains revisions relating to surface water and flood risk. Paragraph 5.16.3 states that where possible, applicants are encouraged to manage surface water during construction by treating surface water runoff from exposed topsoil prior to discharging. Similarly, there are some changes in the flood risk section (section 5.7 in the current policy at 5.8 in the revised draft), to include additional text on the 'minimum requirements' for flood risk assessments.
- NPS EN-3 (Ref. 5) – this document highlights the importance of considering potential impacts on water quality, water resources and flood risk, taking into account climate change.
- The draft EN-3 (Ref. 96) includes a specific section on solar developments. Of particular note is section 2.50.7 which contains the requirement that where access tracks are needed, permeable tracks should be used, and localised Sustainable Drainage Systems (SuDS) should be used to control runoff. Culverting existing watercourses/ drainage ditches should be avoided. When this is unavoidable, it should

be demonstrated that no reasonable alternatives exist and where necessary it will only be for the construction period. In addition, the same draft NPS also provides, in terms of decision-making, that water management is a critical component of site design for ground mount solar plants.

- NPS EN-5 (Ref. 6), with particular reference to Section 2.4: Climate Change Adaptation.
- National Planning Policy Framework (NPPF) (Ref. 7). Whilst the NPPF does not contain specific policies for nationally significant infrastructure projects, national policy statements form part of the overall framework of national planning policy. Within the NPPF, particular reference is given to paragraphs 8 (a and b), 20(b), 149, 155-165 in relation to flood risk and paragraphs 8(c), 20(d), 149, and 174 (e) regarding water quality.

9.3.4 Consideration will also be given to UK Government's 25 Year Environment Plan (Ref. 128), the UK Government's Future Water Strategy (2011) (Ref. 129), Non-statutory technical standards for SuDS (Ref. 130), Building Regulations 2010 Approved Document H: Drainage and Waste Disposal (Ref. 124), BRE Digest 365: Soakaway Design and Sewers for Adoption (7th Edition, 2012) (Ref. 17).

9.3.5 At a regional level, water management is coordinated through 10 River Basin Management Plans (RBMPs). Each RBMP is prepared by the Environment Agency for six-year cycles and set out how organisations, stakeholders and communities will work together to improve the water environment. The most recent plans were published in 2015 (the second cycle) and will remain in place until after 2021 when cycle 3 plans would be published. However, these have been delayed and the Environment Agency earlier this year carried out a public consultation. The waterbodies within the Study Area fall under the Humber RBMP (Ref. 131).

National Guidance

9.3.6 The National Planning Policy Guidance (NPPG) (Ref. 68) provides guidance for local planning authorities on assessing the significance of water environment effects of proposed developments.

9.3.7 The NPPF (Ref. 7) and the Flood Risk and Coastal Change NPPG (Ref. 68) recommends that Local Plans should be supported by a Strategic Flood Risk Assessment and should develop policies to manage flood risk from all sources taking account of advice from the Environment Agency and other relevant flood risk management bodies, such as Lead Local Flood Authorities (LLFAs) and Internal Drainage Boards.

9.3.8 As of 17 December 2015 all Pollution Prevention Guidance (PPG) Documents published by the UK environment agencies were withdrawn. Although they provide useful advice on the management of construction to avoid, minimise and reduce environmental impacts, they should not be relied upon to provide accurate details of the current legal and regulatory requirements and processes. They are referred to, alongside other guidance and in the context of the Scheme and site-specific mitigation measures. Construction should be carried out in accordance with guidance contained

within the Environment Agency PPG, including General Guide to the Prevention of Pollution (Ref. 132).

Local Planning Policy

9.3.9 The following local planning policies are of relevance to the water environment:

East Riding of Yorkshire Council

9.3.10 Policy ENV6 of the Adopted East Riding Local Plan (Ref. 8):

- ENV6 Parts B-D relate to flood risk and sets out the planning policies that applications for planning permission will be tested against;
- ENV6 Part H relates to the management of groundwater pollution; and
- Policy A4 Goole & Humberhead levels sub area, Part C Environment, paragraph 4 highlights the need to ensure the integrity of the Sherwood Sandstone Aquifer. It also states the need to proactively manage the risk of flooding posed from the River Derwent and Ouse, as well as having regard to the risk of surface water flooding.

Selby District Council

9.3.11 Selby District Council are in the process of developing a new Local Plan. While this is developed there are a number of policies from the adopted Selby Core Strategy Local Plan (2013) (Ref. 64) and saved policies from the Selby District Local Plan (2005) (Ref. 65) that are relevant:

- Saved Policy ENV2 protects against environmental pollution and ensures appropriate consideration of contaminated land;
- Saved Policy ENV6 states that proposal for the development of renewable energy will be permitted provided that the scheme does not adversely affect the landscape including watercourses;
- EMP10 Additional industrial development at Drax and Eggborough Power Station supports additional development linked to energy production at Drax, provided that it would not create environmental problems, including water pollution; and
- Adopted Selby Core Strategy Policies SP15 ensures that development in areas of flood risk is avoided through application of the sequential and exception tests and ensures that where development must be located within areas of flood risk, that it can be made safe without increasing flood risk elsewhere. It also supports sustainable flood management measures, supports developments incorporating water-efficient design including SuDS and groundwater recharge, and seeks to protect, enhance and create habitats.

Relevant Strategic Flood Risk Assessments

9.3.12 A Strategic Flood Risk Assessment (SFRA) is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future, taking account of the impacts of climate change, and to assess the impact that land use changes and development in the area will have on flood risk.

9.3.13 The following SFRA are available for the Study Area, which are located in both the East Riding of Yorkshire, and North Yorkshire County Council. These will be reviewed in full:

- North Yorkshire County Council, City of York, and North York Moors National Park (October 2016) SFRA (Ref. 133);
- East Riding of Yorkshire Councils (September 2020, updated July 2021) SFRA: Level 2 Goole (Ref. 134)
- Selby District Council Level 1 (October 2020) SFRA (Ref. 144) and Level 2 (January 2021) SFRA (Ref. 145).

9.4 Consultation

9.4.1 Consultation will be carried out as necessary with Natural England, local council biodiversity officers, the Environment Agency and other interested parties such as Yorkshire Wildlife Trust. This is to make sure a robust approach is adopted to scope and methodology of surveys necessary to inform the assessment.

9.4.2 We will seek agreement on the potential Zol as defined by the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidance (Ref. 75), as well as agree the valued features to be considered as part of the assessment, and any proposed mitigation measures. The Study Area varies according to the spatial characteristics of each species or habitat potentially impacted. The Zol representing the areas within which effects could occur from the Scheme and associated activities also varies with receptor and will be identified and detailed in the assessment.

9.5 Baseline Conditions

9.5.1 Baseline information has been reviewed in the context of the Scheme in order to identify the potential for significant effects based on a source-pathway-receptor model and where relevant, consideration has been given to the scope for mitigation.

9.5.2 The water environment baseline conditions have been determined by a desk study of available information, and various other online data sources including:

- Online Ordnance Survey (OS) maps viewed to identify any surface water bodies within 1 km of the Scheme (Ref. 135);
- Online aerial photography (Ref. 136);
- Part 1: Humber river basin district river basin management plan (Ref. 131);
- Environment Agency Catchment Data Explorer website (Ref. 137)
- National Soil Resources Institute Soilscales website (Ref. 138)
- Multi Agency Geographical Information for the Countryside (MAGIC) map website; (Ref. 69)
- BGS Geindex website (Ref. 71)

- Met Office website (Ref. 139)
- BGS Borehole and Geology Mapping (Ref. 140); and
- Environment Agency Online Interactive Maps (Ref. 141):
 - Flood map for planning (rivers and sea);
 - Risk of flooding from surface water;
 - Risk of flooding from reservoirs; and
 - Flood warning areas and risk.

9.5.3 Where relevant, water bodies and their attributes have been presented in a series of figures that support this chapter. Figure 9-1 presents the surface water environment, Figure 9-2 the groundwater environment, and Figure 9-3 shows Environment Agency Flood Zones (including the location of flood defences and areas benefitting from flood defences) and Figure 9-4 shows Surface Water Flood Risk.

9.5.4 Further review of existing geological plans, hydrogeological data and site investigation data will be carried out at the Preliminary Environmental Information (PEI) stage to provide a preliminary assessment of local ground and groundwater conditions. Summarised data will be recorded and provided within the FRA and will be used to inform the Surface Water Drainage Strategy. The FRA will form a technical appendix to the Environmental Statement (ES).

9.5.5 In addition, further information and data will be obtained from the Environment Agency and local councils and will be presented in the next stages of the assessment (i.e., the PEI Report). This will include water quality, resources (pollution incidents, licenced and unlicenced (private) water abstractions, and water activity permits (i.e., consented discharges), hydrogeology (e.g. groundwater levels), Water Framework Directive (WFD) data and flooding data.

9.5.6 It is also proposed to undertake general walkover and hydromorphological surveys of the site at PEI stage, and the purpose and scope of these are discussed in more detail in the Section 9.6.9.

Topography, land use, climate and geology

Solar PV Site

9.5.7 The topography of the area is relatively flat, with existing ground levels under 10 m Above Ordnance Datum (AOD) according to online Ordnance Survey mapping (Ref. 135). There are flood plains associated with:

- The River Ouse, a tidally influenced Main River shortly before its discharge into the north Humber Estuary;
- The River Derwent (Main River) that forms a confluence with the River Ouse at Barmby on the Marsh; and
- The River Foulness, an Ordinary Watercourse located to the northeast of the Study Area.

9.5.8 In addition, there are numerous other Ordinary Watercourses within the Study Area that fall under the jurisdiction of Lead Local Flood Authorities

(LLFA) or Internal Drainage Boards (IDBs). These watercourses drain surface water from the surrounding agricultural areas.

- 9.5.9 The area is currently used mainly for agriculture, with a mosaic of agricultural fields. The industrial development at Drax is located to the southwest of the Study Area, and there are several small villages, hamlets, and farms throughout the Study Area.
- 9.5.10 Based on the Meteorological Office website (Ref. 139), the nearest weather station is located in Leaconfield Sar (TA01254360) Leaconfield, approximately 28 km northeast from Spaldington. Using data from this weather station, for the period 1991-2020, it is estimated that the Study Area experiences approximately 661 mm of rainfall per year, with it raining more than 1 mm on approximately 124 days per year, which are both low in the UK context. This is relevant to the whole Study Area.
- 9.5.11 The bedrock and superficial geology for the area is identified by the BGS GeoIndex online mapping (Ref. 140). Parts of the Solar PV Site are located on Sherwood Sandstone Group, with a north-south geological boundary in the area of Brind. To the east of this line the bedrock geology is the Mercia Mudstone Group. Overlying the bedrock geology there are several superficial strata. There are alluvial deposits in the area of the floodplains for the River Ouse and River Derwent. Outside of the alluvial deposits of the river valleys there is the Brighton Sand Formation (sand) overlying the Hemingbrough Glaciolacustrine Formation, comprising laminated clays, silts and sands. These lie either directly on bedrock, or over basal glaciofluvial deposits.

Grid Connection Corridor

- 9.5.12 The climate and land use for the Grid Connection Corridor are the same as for the Solar PV Site above.
- 9.5.13 The Grid Connection Corridor from the area of Drax northwards to the Wressle area is wholly located on Sherwood Sandstone Group. Overlying the bedrock geology are the same range of superficial deposits as those of the Solar PV Site. In addition, there are warp deposits (clay, silt) between the River Ouse and Drax Abbey.

Flood Risk From All Sources

9.5.14 The flood risk from all sources for the Scheme is summarised in Table 9-1 Grid Connection Corridor and Table 9-2 Solar PV Site below.

Table 9-1: Grid Connection Corridor – flood risk from all sources

Flood Risk Source	Comments
Tidal/Fluvial	<p>Main Rivers:</p> <p>To the south of the Study Area the Grid Connection Corridor is predominantly located within the Flood Zone 3 extents associated with the tidal River Ouse and the River Derwent. In general, this section of the route is located in areas that benefit from flood defences.</p> <p>Both 132/33 kV substations are located in Flood Zone 1.</p> <p>Ordinary Watercourses:</p> <p>From Rowland Hill in the south to Mount Pleasant in the north the Grid Connection Corridor is located in an area of Flood Zone 2 associated with the Wressle Clough/ Fleet Dike. Flooding from this watercourse is exacerbated by high water levels in the River Derwent.</p>
Surface Water	<p>There are isolated areas at low, medium and high risk of flooding however these areas are likely associated with areas of low topography where surface water sits and pools rather than draining away or show areas at risk of flooding from smaller ordinary watercourses and/or local land drains.</p>
Groundwater	<p>The Study Area is predominantly located in an area shown not to be at risk of groundwater flooding. There are areas to the south, near North Howden, and to the north and east of the Study Area, towards Spaldington and along the River Foulness, that are located in areas shown to be slightly more susceptible to groundwater flooding, although the risk remains low (less than 25% susceptible to groundwater flooding).</p>
Sewers	<p>The Grid Connection Corridor is located in a predominantly rural location, however where the route crosses a highway or in proximity to a settlement there is potential for flooding from sewer sources.</p>
Reservoirs	<p>The Grid Connection Corridor to the south of the Study Area is located in an area at risk of flooding should failure of a reservoir occur when river levels are high.</p> <p>In general, the Grid Connection Corridor located to the east of the B1128 is located outside the area at risk of reservoir flooding.</p>

Table 9-2: Solar PV Sites – flood risk from all sources

Flood Risk Sources	Comments
Tidal/ Fluvial	<p>The following plots are located entirely within Flood Zone 1: Plots 1a-1d, Plot 1f, and Plot 2e-2g.</p> <p>The following plots are located entirely within Flood Zone 2: Plot 2c-2d, and Plot 3a.</p> <p>The following plots are located partially within Flood Zone 2 in the areas noted below. The remaining site area is located in Flood Zone 1: Plot 2a-2b, and Plot 3b.</p> <p>Flood Zone 3: Plot 1e: The northern section of the plot is located within Flood Zone 3 associated with the River Foulness.</p>
Surface Water	<p>The risk of surface water flooding within the Study Area is generally very low to low. There are isolated areas at low, medium and high risk of flooding however these areas are likely associated with areas of low topography where surface water sits and pools rather than draining away or show areas at risk of flooding from smaller ordinary watercourses and/or local land drains.</p>
Groundwater	<p>The Study Area is predominantly located in an area shown not to be at risk of groundwater flooding. There are areas to the south, near North Howden, and to the north and east of the Study Area, towards Spaldington and along the River Foulness, that are located in areas shown to be slightly more susceptible to groundwater flooding, although the risk remains low (less than 25% susceptible to groundwater flooding).</p>
Sewers	<p>The Solar PV Site located in predominantly rural areas, however where a plot is located adjacent to a highway/settlement there is potential for flooding from sewer sources.</p>
Reservoirs	<p>At risk: The following plots are located in an area at risk of flooding should a reservoir failure occur when river levels are high: Plot 1e, Plots 2a, 2c, 2d, 2f and 2g, Plots 3a-3c.</p> <p>Not located in an area at risk of flooding: Plots 1a-1d, Plot 1f, Plot 2b and Plot 2e.</p>

Surface Water Bodies

9.5.15 The Scheme is located within the Humber River Basin District. It extends across three Management Catchments, the Wharf and Ouse Lower, Derwent Humber, and Hull and East Riding Management Catchments (Ref. 137). All watercourses in the Study Area ultimately drain to the River Humber (Humber Upper WFD waterbody within the Humber TraC Management Catchment) although it is not in the Study Area itself.

- 9.5.16 The River Great Ouse flows eastwards through the southern part of the Study Area, with the River Derwent (Humber) flowing into the River Great Ouse just northwest of the Drax area. The four surface WFD waterbodies, within the three management catchments in the Study Area are:
- Wharfe and Ouse Lower / Ouse from R Wharfe to Upper Humber Water Body (GB104027064270);
 - Derwent Humber / Derwent from Elvington Beck to River Ouse Water Body (GB104027068311);
 - Fleet Dike catch (tributary of Ouse) Water Body (GB104027063630);
 - Hull and East Riding / Foulness from Black Beck to Market Weighton Canal Water Body (GB104026066690).
- 9.5.17 These catchments and named WFD surface water bodies are shown on Figure 9-1.
- 9.5.18 There are a number of smaller waterbodies within the Study Area, around Plots 3b and 3c, which do not fall within a named surface waterbody catchment, but which are mapped within the Foulness Operational Catchment on the Environment Agency's Catchment Data Explorer website (Ref. 137). Mapping indicates that numerous of these would drain to the Humber Upper WFD waterbody.
- 9.5.19 The Humber River Basin District (RBD) has a large catchment, from Birmingham in the south to the North Yorkshire National Park in the north. Within the Study Area, the mature River Ouse (Ouse from R Wharfe to Upper Humber WFD waterbody, WFD ID: GB104027064270) within the RBD meanders eastwards into the Humber estuary. This WFD waterbody length is 34.2 km, draining a catchment of 87.8 km². The nearest gauging station on the River Ouse is located over 90 km upstream at Skelton, North Yorkshire (Station 27009, Ouse at Skelton, Ref. 72). The annual mean flow is 51.7 m³/sec, with a flow that is exceeded 95% of the time (Q95) of 7.814 m³/sec. Whilst this gauging station is located a long way upstream, it demonstrates the size and scale of the River Ouse. However, within the Study Area it should be noted that the river is tidal. The National Tidal Limit for the River Ouse is some 14 miles plus upstream from the confluence with the River Derwent at Naburn Lock.
- 9.5.20 The Ouse from River Wharfe to Upper Humber WFD waterbody is at moderate ecological potential and has a chemical status of failing (cycle 2 WFD classifications 2019). It is classified as a heavily modified waterbody. It is not achieving good status due to phosphate being at moderate status, and there being failures for mercury and its compounds, Perfluorooctane sulphonate (PFOS) and Polybrominated diphenyl ethers (PBDE). There is also failure due to the detection of para-DDT (an organochlorine pesticide). The objective is for good status by 2027. The Environment Agency has identified the reasons for not achieving good status as resulting from sewage discharges (continuous), poor nutrient management from the agricultural and rural land management sectors, and the water column being contaminated by bed sediments (Ref. 142).
- 9.5.21 The Derwent Lower Yorkshire Operational Catchment drains an area north westwards to Pocklington, and north of Market Weighton. Within the Study

Area there are two Derwent Lower Yorkshire waterbodies. The Derwent from Elvington Beck to River Ouse Water body (WFD ID: GB104027068311), and Fleet Dike catchment (tributary of Ouse) Water Body (WFD ID: GB104027063630).

- 9.5.22 The Derwent from Elvington Beck to River Ouse has a reach length of 24.3 km, and drains an area of 64.3 km². The nearest gauging station on the River Derwent at Stamford Bridge (Station 27015, Ref. 72). This is located approximately 22 km upstream from the Brighton area. The annual mean flow is 16.46 m³/sec, with a flow that is exceeded 95% of the time (Q95) of 5.399 m³/sec. Whilst this gauging station is located a long way upstream, it demonstrates the size and scale of the River Derwent. In the area of the Scheme both the mean flow, and the Q95 will be considerably larger than that provided at Stamford Bridge.
- 9.5.23 The River Derwent is not tidal and has not been tidal since the 1970's due to the Barmby on the March barrage which prevents tidal increases in the River Ouse propagating upstream into the River Derwent.
- 9.5.24 The Derwent from Elvington Beck to River Ouse waterbody (WFD ID: GB104027068311) is at moderate ecological potential and has a chemical status of fail and is classified as being heavily modified (cycle 2 classifications 2019). The objective is for good status by 2027. It is not achieving good status due to there being failures for mercury and its compounds, PBDE, and supporting elements (Surface water) hydromorphological element being rated as moderate or less. The Environment Agency have identified the PBDE, mercury and its compounds and the mitigation measures assessment as being responsible for not achieving good status, but have not assigned these to an activity or sector. (Ref. 137).
- 9.5.25 Fleet Dike (GB104027063630) drains into the River Derwent north of the town of Wressle, its catchment area extending eastwards from Wressle/Brighton eastwards towards Spaldington. It is designated as an artificial waterbody. The reach of this waterbody is 5.2 km, with a catchment area of 13.0 km². There are no gauging stations on Fleet Dike. A calculation of Q95 flow will be undertaken using HR Wallingford LowFlows Software at PEI stage. It is currently at moderate ecological potential, with a failure for chemical status (cycle 2 classifications, 2019). The water body is not at a good ecological status due to a failure for invertebrates, and only moderate classification for ammonia, dissolved oxygen and temperature. There are failures for mercury and its compounds and PBDE. The objective is for good potential by 2027. The Environment Agency has identified poor nutrient management from the agricultural and rural land management sectors affecting invertebrates, ammonia, phosphate and dissolved oxygen levels as reasons for not achieving good status. Recreational land use with private sewage treatment is also noted as a potential reason. (Ref. 142).
- 9.5.26 The Foulness from Black Beck to Market Weighton Canal WFD waterbody (GB104026066690) drains the Spaldington and Market Weighton area. The waterbody is not designated artificial or heavily modified and includes a meandering more natural morphology in the west of the catchment and the Market Weighton Canal in the east of the catchment. The waterbody is at moderate ecological status and has a chemical status of fail, with an overall

objective of good status by 2027. The waterbody is at moderate ecological status due to macrophytes and phyto-benthos combined being at moderate status, dissolved oxygen being of poor status, and failures for mercury and its compounds, and PBDE. The Environment Agency has identified septic tank discharges (diffuse source), poor nutrient management from the agricultural and rural land management sectors as reasons for not achieving good status (Ref. 137).

- 9.5.27 The overall Foulness Operational Catchment drains directly into the Humber Estuary approximately 34 km east from the River Derwent/Ouse confluence. The waterbody length in this catchment is 44.2 km, with a catchment area of 201.7 km². There are two gauging stations in this catchment, one on the Foulness at Holme Farm House (Station 26012, NRFA) and one located on Market Weighton Canal at Wholsea Grange (Station 26011, Ref. 72).
- 9.5.28 Holme Farm House gauging station has an annual mean flow is 1.178 m³/sec, with a flow that is exceeded 95% of the time (Q95) of 0.041 m³/sec. The Market Weighton Canal at Wholsea Grange an annual mean flow is 0.316 m³/sec, with a flow that is exceeded 95% of the time (Q95) of 0.003 m³/sec.
- 9.5.29 The Humber Upper transitional waterbody (WFD ID: GB530402609203) is also considered here as several of the plots include small watercourses that would drain to the Humber Upper directly, without flowing to any of the above-mentioned watercourses in the interim. The Humber Upper is designated from Boothferry Bridge at its western extent and extends to the confluence of the River Ouse and River Trent at Alkborough. The waterbody is designated as heavily modified and has a surface area of 12.5 km². It is at moderate ecological potential and fail chemical status (cycle 2 classifications 2019). The objective for the waterbody is Moderate by 2015, meaning that there should be no deterioration from its current status, but it would be disproportionately expensive and technically infeasible to achieve good status.
- 9.5.30 The moderate status for Humber Upper is due to a moderate angiosperms classification, and a moderate mitigation measures assessment. The watercourse has a status of fail for both priority hazardous substances and priority substances. Reasons for not achieving good status identified by the Environment Agency for this waterbody include poor nutrient management, continuous sewage discharge, physical modifications and surface water abstractions.

Hydromorphology

- 9.5.31 The River Ouse within the Study Area falls within the Ouse from River Wharfe to Upper Humber WFD water body, which is classified as heavily modified for its hydromorphological designation. The River Ouse is expected to be tidal through the Study Area, as indicated by the lock at Barmby tidal barrage where the River Derwent confluences with the River Ouse. Geology mapping (Ref. 140) shows a wide corridor of alluvium through which the River Ouse flows and indicates the extent to which the river may have previously meandered across the floodplain. Soils within the area local to the river are loamy and clayey soils of coastal flats, that have naturally high groundwater, and would support brackish coastal flood meadows (Ref. 138).

However, the River Ouse and its surrounding catchment area within the Study Area have been extensively modified in the past; OS mapping shows that embankments are present along both banks of the river, which would have also likely been dredged and canalised in the past, and drainage channels are common across the floodplain. As such, much of the habitat associated to the river has been lost and arable farming, which dominates local land use, extends right to the banks of the river. Historic mapping (Ref. 146) shows very little change in the river locally since the early 1900 s, meaning it is likely that much of the modification to the river and floodplain occurred prior to this date.

- 9.5.32 The lower reaches of the River Derwent, which is classified as the Derwent from Elvington Beck to River Ouse WFD water body, falls within the Study Area. The WFD water body is also classified as heavily modified in terms of hydromorphology, and one of the reasons for not achieving good potential for the water body is physical modification, though no further details are provided. The River Derwent and its surrounding floodplain have been extensively modified in the past. The river would have previously meandered through the corridor of alluvium across the floodplain, but appears to have been straightened, and embankments have been developed on both banks. Historic mapping from around the start of the 1900 s shows the watercourse with the same planform and embankments as today through the Study Area, indicating that the significant modifications date back to earlier than this time (Ref. 146). Soils within the floodplain are loamy and clayey with high groundwater; towards the downstream extent of the Derwent around the River Ouse floodplain they would support brackish coastal flood meadows, further upstream wet flood meadows would be expected, with wet carr woodlands around old river meanders. Such habitats have been significantly modified through extensive drainage of the floodplain and embankments along the river.
- 9.5.33 Fleet Dike, classified as Fleet Dike catch (tributary of Ouse) WFD water body, drains into the River Derwent in the Study Area. The hydromorphological designation for the WFD water body is artificial, and the water body flows through lacustrine superficial deposits (Ref. 138), indicating that a lake previously occupied the area. The water body would have been excavated through these deposits, meaning the watercourse likely has low energy, with sediment characteristic of the lacustrine environment including silts, sands, and some coarser material that would have been delivered by streams flowing into the lake. It is likely that Fleet Dike is dredged or was dredged in the past, and embankments, either formal or comprised of excavated material from the channel, are likely to be present, to maintain the drainage of the land. As a result, floodplain connectivity is likely to be minimal, and floodplain habitats would have mostly been lost as the land is used for arable farming.
- 9.5.34 The River Foulness runs along the north-eastern extent of the Study Area and is classified as the Foulness from Black Beck to Market Weighton Canal Water Body, which is not designated as artificial or heavily modified. The WFD water body is at moderate ecological status, and the reasons for it not achieving good status include poor nutrient management from agriculture, point source pollution from industry, and diffuse source pollution from septic tanks. Alluvium deposits across the floodplain suggest that the River

Foulness would have previously meandered across this area, and whilst the River Foulness does have some sinuosity presently, historic mapping for the area (Ref. 138) shows that even around the early 1900s the river would have had a much more sinuous course with a series of smaller meanders, some of which are visible in aerial imagery of the area today. The course of the river has not been changed greatly, but it has been straightened locally to lose these meanders and length of river. It is likely that at the same time as the straightening, the river may have been widened and deepened, with the aim to maximise the efficiency at which flows move downstream and reduce flooding of the floodplain. As a result, the character of the watercourse today is likely to be more uniform than its more natural state, and the extent to which typical processes such as erosion and deposition can take place is reduced. As a result, the development and maintenance of characteristic gravel features such as riffles and point bars is constrained; no such features are visible on aerial imagery, which results in a much lower diversity of in-channel habitat.

- 9.5.35 A number of smaller water bodies are present within the Study Area, and whilst they do not have individual WFD classifications, they will be considered at further phases of the assessment through the WFD water body catchment that they fall within. The water bodies are likely to be largely artificial in nature and would have been developed, or modified, to aid land drainage. As a result, they are likely to be relatively low energy and uniform in nature, with little floodplain connectivity. However individually, they may contribute to the provision of aquatic habitat within the area, even if it is not the unaltered habitat of the area.

Water Quality

- 9.5.36 Water quality data for the River Ouse at Long Drax, and River Derwent at Loftsome Bridge and Fleet Dike at Wressle Clough has been interrogated from the Environment Agency's Water Quality Archive website (Ref. 72).
- 9.5.37 The water quality within the Ouse at Long Drax is slightly alkaline in nature with an average pH of 7.91, but falls within the WFD high classification based on the most recent 20 samples considered here. A 10th percentile dissolved oxygen saturation of 63.66 mg/l is within the good WFD classification (with 70% being high). There has been no monitoring of Biochemical Oxygen Demand (BOD) in the last few years data. Ammonia levels are moderate which suggest sewage / nutrient pollution from farmland.
- 9.5.38 Water quality within the River Derwent at Loftsome Bridge is slightly alkaline in nature with an average pH of 7.91, but falls within the WFD high classification based on the latest 20 samples considered here. A 10th percentile dissolved oxygen saturation of 83.45 mg/l is within the high WFD classification (with 70% being high). There has been no monitoring of BOD in the last few years data. Ammonia levels are moderate which suggest sewage / nutrient pollution from farmland.
- 9.5.39 Water quality within Fleet Dyke at Wressle Clough is slightly alkaline in nature with an average of 7.6, but falls within the WFD high classification based on the latest 20 samples. A 10th percentile dissolved oxygen saturation of 44.1 mg/l is within the bad WFD classification (with under 45% being bad). There has been no monitoring of BOD in the last few years data.

Ammonia levels are moderate which suggest sewage / nutrient pollution from farmland.

- 9.5.40 Nitrate and orthophosphate values are somewhat elevated for all monitored sites and indicates probable pressure from the surrounding agricultural land uses through use of fertilisers and other products which may runoff to the watercourses.

Nutrient Neutrality

- 9.5.41 East Riding of Yorkshire Council is an LPA affected by nutrient pollution (nutrient enrichment from elevated nitrogen and phosphorus levels) whereby reduced water quality is leading to adverse nutrient impacts on some designated habitats sites. However, within the county this only occurs in relation to the Hornsea Mere SPA site and there is no hydrologic connectivity between this designated site and the Scheme (different catchments). Watercourses from the Site drain to the Humber Estuary and whilst the Humber Estuary is also a designated site (SPA, SAC, Ramsar) it is not currently listed by in the latest advice note from Natural England issued in March 2022 (Ref. 223) as a site requiring nutrient neutrality assessment.
- 9.5.42 Additionally, it is noted that as the Scheme will remove the use of pesticides and fertilisers on land within the Solar PV Site it will reduce the runoff of nutrients into the surrounding watercourses. Welfare facilities for construction staff will be temporary and will not discharge into the mains network, whilst any permanent welfare facilities for example at substations would be small scale.
- 9.5.43 It is concluded therefore that in line with Natural England advice (Ref. 223), nutrient neutrality assessment can be scoped out of the assessment.

Water Resources

- 9.5.44 Within the Study Area there is a Drinking Water Protected Area, which contains land to the east and west of the River Derwent (Water body ID104027068311). Drinking Water Protected Areas (Surface Water) are where raw water is abstracted from rivers and reservoirs and additional measures are required to protect the raw water supply to reduce the need for additional purification treatment (Ref. 148).
- 9.5.45 Large sections of the Site are contained within a drinking water safeguard zone for surface water (designation SWSGZ6008 Humber Elvington & Loftsome Bridge). Drinking Water Safeguard Zones are established around public water supplies where additional pollution control measures are needed. Here water supplies are at risk from the pesticide metaldehyde (Ref. 148).
- 9.5.46 The Site does not lie within the Lowmoor Drain (tributary of Derwent) Nitrate Vulnerable Zone (NVZ) (Number S282), however parts of the wider Study Area to the west of the River Derwent are designated as being at risk from agricultural nitrate pollution. The designations are made in accordance with the Nitrate Pollution Prevention Regulations 2015 (Ref. 70).

9.5.47 Information on pollution incidents, licences and unlicensed water abstractions, and water activity permits (i.e., discharges) will be obtained from the Environment Agency and presented in the PEI Report and ES.

Internal Drainage Boards

9.5.48 The Study Area is located within three Internal Drainage Board (IDB) areas. These are the Selby Area IDB in the area of Drax and to the south of the River Ouse, the Ouse and Derwent IDB to the north of the River Ouse and west of the River Derwent, and the Ouse & Humber IDB to the north of the River Ouse and east of the River Derwent. These areas are shown on Figure 9-1.

Aquatic ecology and nature conservation sites

9.5.49 Statutory sites that as designated for nature conservation were identified through a review of the Multi-Agency Geographic Information for the Countryside (MAGIC) (Ref. 69). The following are located within the Study Area, or within a few kilometres downstream (considered in order of nearest to the Scheme):

- River Derwent Special Area for Conservation (SAC) – Designated for the Annex I habitats, and presence of Annex II species such as River Lamprey, Sea Lamprey, Bullhead and Otter. The River Derwent is crossed by the Grid Connection Corridor;
- River Derwent Site of Special Scientific Interest (SSSI) – Designated due to it being considered one of the best British examples of the classic river profile. It supports diverse communities of aquatic flora and fauna, many elements of which are nationally significant. The River Derwent is crossed by the Grid Connection Corridor;
- Barn Hill Meadows SSSI – The site is located approximately 0.75 km south-east of the Site and comprises of seven fields lying in the flood plain of the Old Derwent. The site is important for its herb-rich, unimproved, neutral grassland. The fields have been traditionally managed for hay. Boundary hedgerows and ditches form an integral part of the site. These are located within the Humber Estuary TraC catchment. They are potentially downstream from the Site, but it is not known what hydrological links are present at this stage;
- Howden Marsh Local Nature Reserve (LNR) – The site is located approximately 1 km southeast of the Site (Plot 3c), and is an old fenland marsh much of which has never been drained. It is particularly rich in water beetles and supports water vole. There is potential connectivity between the Site and the LNR via Duck Swang Drain;
- Humber Estuary SAC / SPA / Ramsar / SSSI – These designations are located just over 3 km to the south of Plot 3c as the crow flies within the confines of the Humber Upper waterbody, and downstream from the Scheme. The Humber Estuary SAC contains Annex I habitats and Annex II species. The Humber Estuary SPA is an extensive wetland and coastal habitat system. The estuary supports important numbers of waterbirds. The SSSI is designated as being 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. Full details of ecological designations are provided within **Chapter 8 Ecology**.

Groundwater

- 9.5.50 There is an approximately north-south geological boundary with Sherwood Sandstone Group Principal Aquifer to the west, and Mercia Mudstone Secondary B aquifer to the east (Ref. 69).
- 9.5.51 Superficial deposits overlie the bedrock. The alluvial deposits are designated as a Secondary A aquifer, whilst the Brighton Sand Formation is designated as a Secondary (undifferentiated) aquifer. Other superficial deposits are designated as unproductive and cover a large part of the Site.
- 9.5.52 Principal aquifers comprise layers that have high permeability, meaning they usually provide a high level of water storage and transmission. They may support water supply and/or river baseflow on a strategic scale.
- 9.5.53 Secondary A aquifers comprise permeable layers that can support local water supplies and may form an important source of baseflow to rivers.
- 9.5.54 Secondary B aquifers comprise predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
- 9.5.55 Secondary undifferentiated aquifer has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
- 9.5.56 The bedrock aquifers under the Site are contained within the Humber (WFD groundwater) Management Catchment. The area is underlain by three groundwater water bodies (see also Figure 9-2):
- Wharfe and Ouse Lower Sherwood Sandstone (WFD ID: GB40401 G702400);
 - Derwent Sherwood Sandstone (WFD ID: GB40401 G700600); and
 - East Riding Mercia Mudstone (WFD ID: GB40402 G990200).
- 9.5.57 The Wharfe and Ouse Lower Sherwood Sandstone (WFD ID: GB40401 G702400) covers the area of Drax to the River Ouse and includes Barmby on the Marsh. This has an overall classification of poor, with quantitative elements being good and the chemical element being poor. The limiting element within the chemical status is the chemical drinking water protected area, designated as poor when the other parameters are all good. The reasons for not achieving good status and reasons for deterioration are all 'unknown (pending investigation)'. The water body has an objective of Good by 2021, which it has not met.
- 9.5.58 The Derwent Sherwood Sandstone (WFD ID: GB40401 G700600) is located to the west of a north-south boundary with the East Riding Mudstone. The boundary is shown on Figure 9-2, and trends approximately north-south from

Howden. Plots 1a, 2a-d, 3a and 3c are all located on the Derwent Sherwood Sandstone.

- 9.5.59 The Derwent Sherwood Sandstone WFD groundwater body has an overall classification of poor, with quantitative elements being good and the chemical element being poor. The limiting element within the chemical status is the general chemical test being designated as poor when the other parameters are all good. The reasons for not achieving good status and reasons for deterioration is listed as natural mineralisation, with no sector being responsible and are all 'unknown (pending investigation)'. The water body has an objective of 'good' by 2021, which it has not been met.
- 9.5.60 East Riding Mercia Mudstone (WFD ID: GB40402 G990200) has an overall classification of poor, with quantitative elements also being poor. The limiting elements on quantitative are the '*quantitative dependent surface water body status*'. Within the chemical classification, the limiting element is the 'chemical Groundwater Dependant Terrestrial Ecosystem (GWDTEs) test', which is poor, the other elements being good. Plots 1a-f and 2e-g are located on this WFD groundwater body. The water body has an objective of good by 2027.
- 9.5.61 On the BGS Geindex Website there are borehole scans available (Ref. 140). Boreholes formed in the area between Drax and the River Ouse for the M62 motorway indicate shallow groundwater, with a strike being noted at 0.65 m below ground level (bgl) within a 3 m borehole sandy silty clay deposits (BGS ID 16096197, BGS Ref SE62 NE212 – Ref. 73). Another borehole in this area noted similar geology, with a sand layer at 1.25 m where water was struck (BGS ID 16096322, BGS Ref SE62 NE229 – Ref. 74).
- 9.5.62 There are fewer boreholes within the area of the proposed Site. One borehole in the Spaldington Golf Centre was formed to 45 m depth. This noted clay and thin sand bands to 19 m, overlying sand and gravels, then Sandstone from 21.3 m bgl to base at 45 m depth. The record includes pumping information, with no details of water strikes (BGS ID 19458641, BGS Ref SE73 SE19 – Ref. 143). The pumping record show a rate of 5 m³ per hour was achieved.
- 9.5.63 From this information, it is likely that there will be areas of high groundwater levels in the superficial deposits in the areas where sands are encountered. Due to the thickness of overlying superficial deposits and the shallow depth of Scheme infrastructure, it is unlikely that groundwater in the bedrock aquifers will be encountered by the Scheme. However, at this stage it is not known as to the depth of excavations.
- 9.5.64 Source Protection Zones (SPZ) are areas defined to protect the abstraction from a protected groundwater source. There is an area of SPZ Zone 3, total catchment, in the area of Drax in the southwest of the Study Area. Also, there is a small area of SPZ Zone 1 and 2 close to the River Derwent south of the village of Brackenholme in the area marked as 'Water Works'. These relate to abstraction in the Sherwood Sandstone Principal aquifer (Ref. 69).
- 9.5.65 There is a drinking water safeguard zone (Groundwater) in the Study Area (Ref. 148), located approximately 400 m south of the southern extent of the

Grid Connection Corridor. This is named as Carlton Mill Lane (Safeguard Zone ID GWSGZ0029). The pressure named for this safeguard zone is nitrate.

9.6 Potential Effects and Mitigation

Construction and Decommissioning

- 9.6.1 A number of activities which will be undertaken at both during construction and decommissioning phases are likely to generate impacts which have the potential to affect the water environment, if unmitigated.
- 9.6.2 The greatest risk of adverse impacts during construction and decommissioning are in the following four WFD catchments: River Great Ouse, River Derwent, Fleet Dike and Foulness, which may be directly affected by the Scheme.
- 9.6.3 During construction the following adverse impacts may occur:
- Pollution of surface water or groundwater (and any designated ecology sites that are water dependent) due to deposition or spillage of soils, sediments, oils, fuels, or other construction chemicals, or through uncontrolled site run-off including dewatering of excavations or piling;
 - Temporary impacts on the hydromorphology of watercourses from open-cut watercourse crossings or temporary vehicle access crossings as may be required;
 - Temporary changes in flood risk from changes in surface water runoff (e.g., disruption of stream flows during any potential culvert construction works), and exacerbation of localised flooding, due to deposition of silt, sediment in drains, ditches; and changes; and
 - Potential impacts on groundwater resources and local water supplies (licenced and unlicenced abstractions) and potentially the baseflow to watercourses from temporary dewatering of excavations or changes in hydrology.
- 9.6.4 The Scheme includes the construction of a Grid Connection Corridor to join the Solar PV Site to National Grid Drax Substation.
- 9.6.5 This will necessitate the crossing of watercourses and drainage ditches in the area. The construction of cable routes crossing watercourses has the potential to result in modifications to WFD waterbodies. Some of these may be temporary such as to provide field access across watercourses or for an open-cut excavation of the channel for the installation of the new cables.
- 9.6.6 There will be crossings of more significant waterbodies by non-intrusive trenchless techniques (e.g., HDD) at a suitable depth beneath the bed level to avoid the risk of future exposure by scour of the bed (typically cables will be at least 1.5 m below the bed of a watercourse). It is also possible that watercourse crossings (or modifications to existing crossings) are required as part of works to above ground installations. For any other crossings it is likely that an open cut method would be used. Crossings of other drainage features would be risk assessed on a case-by-case basis.

9.6.7 During decommissioning, potential impacts would be similar to the construction phase although it is anticipated that the power cables may be left in situ beneath watercourses and there would be less excavation works required close to watercourses. There may also be some additional wastewater in pipework of above ground installations that would need to be removed, tested, and potentially treated as waste rather than discharged to a watercourse or to ground.

Operation and Maintenance

9.6.8 During the operational phase, the following impacts may occur:

- Impacts on water quality in watercourses and groundwater from run-off and the potential for accidental spillages from new permanent hardstanding and maintenance activities, assuming surface water run-off does ultimately drain to a surface watercourse rather than simply to ground;
- Potential for impact on groundwater or surface water from firewater runoff in the event of a fire in the battery storage areas;
- Potential impacts on hydrology as a result of the Scheme. This may also have a subsequent effect on aquatic habitats and water-dependent nature conservation sites;
- Potential for permanent physical impacts to watercourses if crossings are required for access and depending on the design of the structure used;
- Potential impacts on the rate and volumes of surface water run-off entering local watercourses and increasing the risk of flooding;
- Potential for impact of foul drainage / water supply in the area due to the offices / maintenance facilities required as part of the Scheme;
- The current arable fields are treated with fertiliser and pesticides. During the life of the project the use of such chemicals will be ceased which will lead to beneficial impacts on the water environment; and
- Potential impacts on groundwater resources and local water supplies
- The conversion of the land from intensive farmland to solar PV grassland has the potential to enhance infiltration rates onsite.

9.6.9 Due to the potential for impacts and effects on water receptors and resources by the Scheme, a full Water Environment Impact Assessment will be included in the Environmental Statement (ES). This will also be supported by a Surface Water Drainage Strategy, an FRA and a Water Framework Directive Assessment (WFD). The scope for these assessments and how the significance of effects will be determined is described in the following section.

9.7 Assessment Methodology

Water Quality and Resource Assessment

9.7.1 Relevant data will be requested and obtained from the Environment Agency. A Site Walkover Survey will be undertaken during the PEI stage of the

assessment, which would be undertaken by a hydromorphologist and a water resources specialist. This will be to observe surface waterbodies in the Study Area and to make observations about their current condition and character, the presence of existing risks and any potential pathways for construction, operation and decommissioning impacts as a result of the Scheme. Further site surveys may be required as the Scheme develops. However, no water quality sampling is proposed.

- 9.7.2 A qualitative assessment of potential effects on surface water quality from construction, operation and decommissioning of the Scheme will be undertaken. This will consider the risk to surface water bodies resulting from construction, decommissioning works or future operation activity using a source-pathway-receptor approach. Where there is a risk of pollution, mitigation measures will be described with reference to best practice guidance (e.g., Guidance on Pollution Prevention Notes and Construction Industry Research and Information Association guidance).
- 9.7.3 The appropriateness of the surface water drainage measures in terms of providing adequate treatment of diffuse pollutants will be assessed with reference to the Simple Index Assessment method described in the SuDS Manual (Ref. 149). The Simple Index Approach follows three steps:
- Step 1 – Determine suitable pollution hazard indices for the land use(s);
 - Step 2 – Select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index (for three key types of pollutants - total suspended solids, heavy metals and hydrocarbons). Only 50% efficiency should be applied to second, third etc. treatment train components; and
 - Step 3 – If the discharge is to a water body protected for drinking water, consider a more precautionary approach.
- 9.7.4 The SuDS Manual (Ref. 149) only provides a limited number of land use types and so those selected will be the most suitable for the components of the Scheme, based on professional judgement. Where more than one pollution hazard category applies to a component of the Scheme, the worst pollution hazard will be selected.
- 9.7.5 As part of the groundwater assessment a groundwater risk analysis would be undertaken of each location where there be a watercourse crossing. This would compare the likely depth of excavation with available estimates of groundwater level at each site.

Hydromorphology and Water Framework Directive Assessment

- 9.7.6 Due to the potential impacts upon WFD designated water bodies, initially a Screening and Scoping WFD Assessment will be undertaken in keeping with Planning Inspectorate (PINS) Advice Note 18: The Water Framework Directive (Ref. 75) The assessment would be extended in order to determine the potential for any non-compliance of the Scheme with WFD objectives for affected water bodies, using readily available information and site observations. This will include a qualitative examination of the potential construction, operation and decommissioning phase impacts of the Scheme

on relevant WFD hydromorphological, biological and physio-chemical parameters. Depending on the outcomes of the preliminary assessment, more detailed investigations may be required, which will be determined in consultation with the Environment Agency.

- 9.7.7 Through future phases of assessment, it will be agreed with the Environment Agency whether the principles of the WFD will need to be applied to waterbodies within Plots 2g, 3b and 3c that are within the Foulness Operation Catchment, but which appear to drain directly to the Humber Upper WFD water body. If required, an appropriate level of survey and assessment will be undertaken to establish their baseline condition, in the absence of WFD data.

Surface Water Drainage Strategy

- 9.7.8 The design of drainage systems aims to ensure that there will be no significant increases in flood risk downstream, during storms up to and including the 1 in 100 (1%) annual probability design flood, with an allowance for climate change.
- 9.7.9 A Surface Water Drainage Strategy will be prepared to ensure the risk of surface water flooding is not increased as a result of the Scheme, and any increased land take for foundations and any access roads.
- 9.7.10 Careful consideration of the SuDS features, in-keeping with local planning policy and through liaison with the LLFA, the three IDBs and Environment Agency, will be undertaken to ensure that the Surface Water Drainage Strategy adequately attenuates and treats runoff from the Scheme, whilst minimising flood risk to the site and surrounding areas. In accordance with planning policies of both East Riding of Yorkshire Council (ENV 6 B-D) and Selby District Council (CP15) and general good practice, mitigation will be provided by restricting surface water discharge rates and providing on-site attenuation to ensure there will be no increase in flood risk elsewhere.

Flood Risk Assessment

- 9.7.11 An FRA will be prepared for the Scheme, and be a technical appendix to the ES, to review the current and future flood risk to the Study Area from all sources (including surface water, groundwater, tidal and fluvial sources), in-keeping with the NPPF guidance, to inform the Scheme design and set out any proposed mitigation requirements that are to be addressed within the Surface Water Drainage Strategy.
- 9.7.12 The NPPF includes solar farms as 'essential infrastructure', as categorised in Annex 3: flood risk vulnerability classification.
- 9.7.13 Cable routes are not generally considered in flood risk terms, other than temporary works during installation. However, the approach to the Sequential and Exception Tests for the Grid Construction Corridor will be clarified with the Environment Agency and the LLFA as required.
- 9.7.14 The majority of the Solar PV Site is located in Flood Zone 1 and development in this Zone is considered acceptable without the need for additional flood risk mitigation. Where development is to take place within areas at risk of flooding (Flood Zones 2 and 3), there may be a requirement

for the construction of flood compensation or mitigation measures to ensure no detrimental effect to flooding potential within or from the affected watercourse in the catchment once the Scheme is operational. The conclusions of this will be referred to within the flood risk, drainage and surface water assessment presented in the ES. As the Scheme is classified as essential infrastructure and parts of the Solar PV Site are located in Flood Zone 3 a/b an Exception Test is required to be undertaken as part of the FRA. For the Exception Test to be passed allowing development in Flood Zone 3 the FRA will be required to demonstrate that the development will be safe for its lifetime, this requirement will influence positioning of infrastructure within the Solar PV Site and heights of panels.

Assessment of Effect Significance

- 9.7.15 The impact assessment will be based on a source-pathway-receptor model. For an impact on the water environment to exist the following is required:
- An impact source (such as the release of polluting chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms, or the loss or damage to all or part of a water body);
 - A receptor that is sensitive to that impact (i.e., water bodies and the services they support); and
 - A pathway by which the two are linked.
- 9.7.16 Once an impact has been identified and assessed, the effect category will be determined with reference to the criteria set out within the Design Manual for Roads and Bridges LA113 (Ref. 147).
- 9.7.17 This can be applied to all development types and represents the most robust and nationally accepted criteria for the determination of potential effects on the water environment.
- 9.7.18 The criteria will be adapted where required to take account of hydromorphological impacts and the full range of flood risks. Impacts and effects will be categorised as adverse / beneficial, direct / indirect, temporary / permanent and short term or long term, as per the methodology described in **Chapter 5 EIA Methodology** of this Scoping Report. After embedded mitigation measures, any additional mitigation measures are taken into account, and residual effects are those effects which are still predicted to potentially take place. Effects that are moderate or greater will be considered significant.

9.8 Assumptions, Limitations and Uncertainties

- 9.8.1 The assessment of potential effects is currently based on the description of the Scheme set out in **Chapter 2 The Scheme** of this Scoping Report.
- 9.8.2 The final routes for Grid Connection Corridor, and the cable route construction methodologies and mitigation, have not yet been determined. This is of particular importance when considering impacts associated with the watercourse crossings, the quality of surface water runoff, impacts to hydromorphology and channel hydraulics. It is assumed that the protection of water environment receptors would be taken into account within the

- iterative design process, including the choice of crossing methodology and use of best practice methodologies for construction.
- 9.8.3 Receptors considered in this assessment will include existing infrastructure assets, residential buildings, commercial buildings, agricultural land, and property potentially affected by the Scheme.
- 9.8.4 Details on construction methodologies are not yet available, however the Applicant has confirmed that Solar PV panels will be off set from watercourses by a minimum of 10 m measured from the centre line of the channel (as bank top is a variable feature). The purpose of this buffer reduces the risk of any pollutants entering the watercourse directly during construction or direct physical impacts, whilst also providing space for mitigation measures (e.g., fabric silt fences) should they be required as identified at the PEI and ES stages.
- 9.8.5 The locations of private water supplies and abstractions have not yet been obtained, and so these are not included as receptors at this time. Water activity permits (i.e., permitted discharges) are also not yet known and have not been considered in the current baseline. These receptors will be considered at the PEI stage.
- 9.8.6 Requirements for hydraulic modelling of watercourses will be discussed with the Environment Agency / LLFA; any modelling required will be undertaken as part of the ES to inform the FRA and Surface Water Drainage Strategy.
- 9.8.7 Visual surveys will be undertaken of accessible water/drainage features to inform the Surface Water Drainage Strategy. However, it may not be possible to survey all significant locations (such as crossing locations) or structures due to access constraints. Where this is the case, we will attempt to survey close to the area of interest and use data from that as a proxy. In addition, some watercourses may be small, ephemeral and flow only intermittently, and these may not be identified in the field. It is not proposed to carry out any water quality sampling and testing, but EA data will be used to ascertain baseline water quality in the Study Area.
- 9.8.8 Other than the site walkover survey, the FRA and Surface Water Drainage Strategy will be based on desktop surveys and best available site layout proposals in line with best practice., LIDAR data will be used to inform the FRA and the Surface Water Drainage Strategy.
- 9.8.9 Temporary works will not be assessed unless they are of a potentially significant scale and have the potential to adversely affect flood risk or impact the quality or form of water bodies. The temporary works where such risks are considered significant (for example, excavations for the cable routes), will be identified and assessed within the FRA, Screening and Scoping WFD Assessment and impact assessment.
- 9.8.10 As part of the full environmental impact assessment, the risk from surface water drainage to surface or groundwater bodies will be assessed according to the Simple Index Approach presented in the C753 The SuDS Manual (Ref. 149). Given the very low risk the need for treatment measures is expected to be minimal. Given the availability of space it is not anticipated that there would be any issues providing any treatment of diffuse pollutants, should the Simple Index Approach assessment identify such a need.

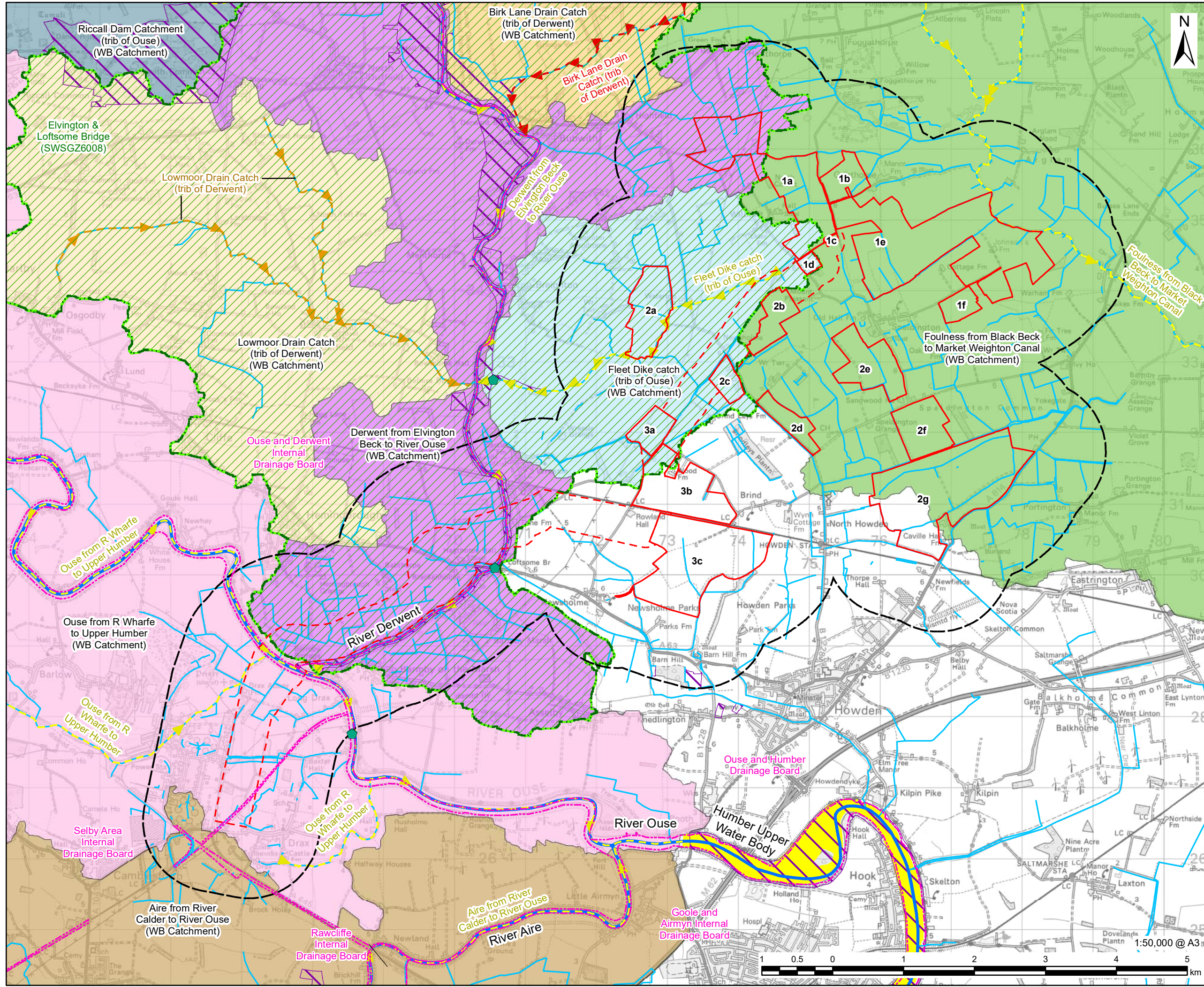
9.8.11 At the time of writing, it is not confirmed how any wastewater generated from the Scheme will be managed. Options may include connecting to the nearest available public sewer or a self-contained independent non-mains domestic storage and / or treatment system. The alternative where this is not possible, would be for a self-contained foul drainage system to a septic tank or similar. These tanks would be regularly emptied under contract with a registered recycling and waste management contractor. During the iterative design and EIA process the differing options will be considered and assessed, and the ES will consider the chosen option(s) adopting a precautionary worst case approach. Wastewater generation would be disposed according to environmental legislation – either with online or offline solutions.

9.9 Summary of Elements Scoped In and Scoped Out

9.9.1 A summary of the elements scoped into and out of the flood risk, drainage and surface water assessment are presented in Table 9-3.

Table 9-3: Elements scoped in and out of the assessment of flood risk, drainage and surface water

Element	Scoped in / Scoped Out
Surface water	Scoped in: potential for impacts due to construction and operation of the Scheme
Groundwater	Scoped in: potential for impacts due to construction and operation of the Scheme
Hydromorphology	Scoped in: potential for impacts due to watercourse crossings by access bridges, and Grid Connection Corridor crossings.
Flood Risk	Scoped in: potential for impacts on the flood risk potential within the Scheme area, and downstream on watercourses surface runoff waters.
Nutrient Neutrality Assessment	Scoped out: no hydrologic continuity between the Site and the designated sites identified by Natural England as requiring assessment.



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LEGEND

- Solar PV Site
- Grid Connection Corridor
- 1km Buffer of Solar PV Site & Grid Connection Corridor
- Environment Agency Water Quality Monitoring Site
- Internal Drainage District
- Main River
- Ordinary Watercourse
- Site of Special Scientific Interest (SSSI)
- Drinking Water Safeguard Zone for Surface Water
- Water Framework Directive Surface Waterbody Moderate Ecological Status
- Water Framework Directive Surface Waterbody Poor Ecological Status
- Water Framework Directive Surface Waterbody Bad Ecological Status
- Water Framework Directive Transitional Waterbody Moderate Ecological Status
- Water Framework Directive River Waterbody Catchment
- Aire from River Calder to River Ouse
- Birk Lane Drain Catch (trib of Derwent)
- Derwent from Elvington Beck to River Ouse
- Fleet Dike catch (trib of Ouse)
- Foulness from Black Beck to Market Weighton Canal
- Lowmoor Drain Catch (trib of Derwent)
- Ouse from R Wharfe to Upper Humber
- Riccall Dam Catchment (trib of Ouse)

NOTES

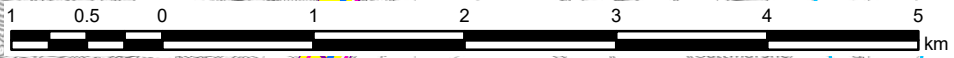
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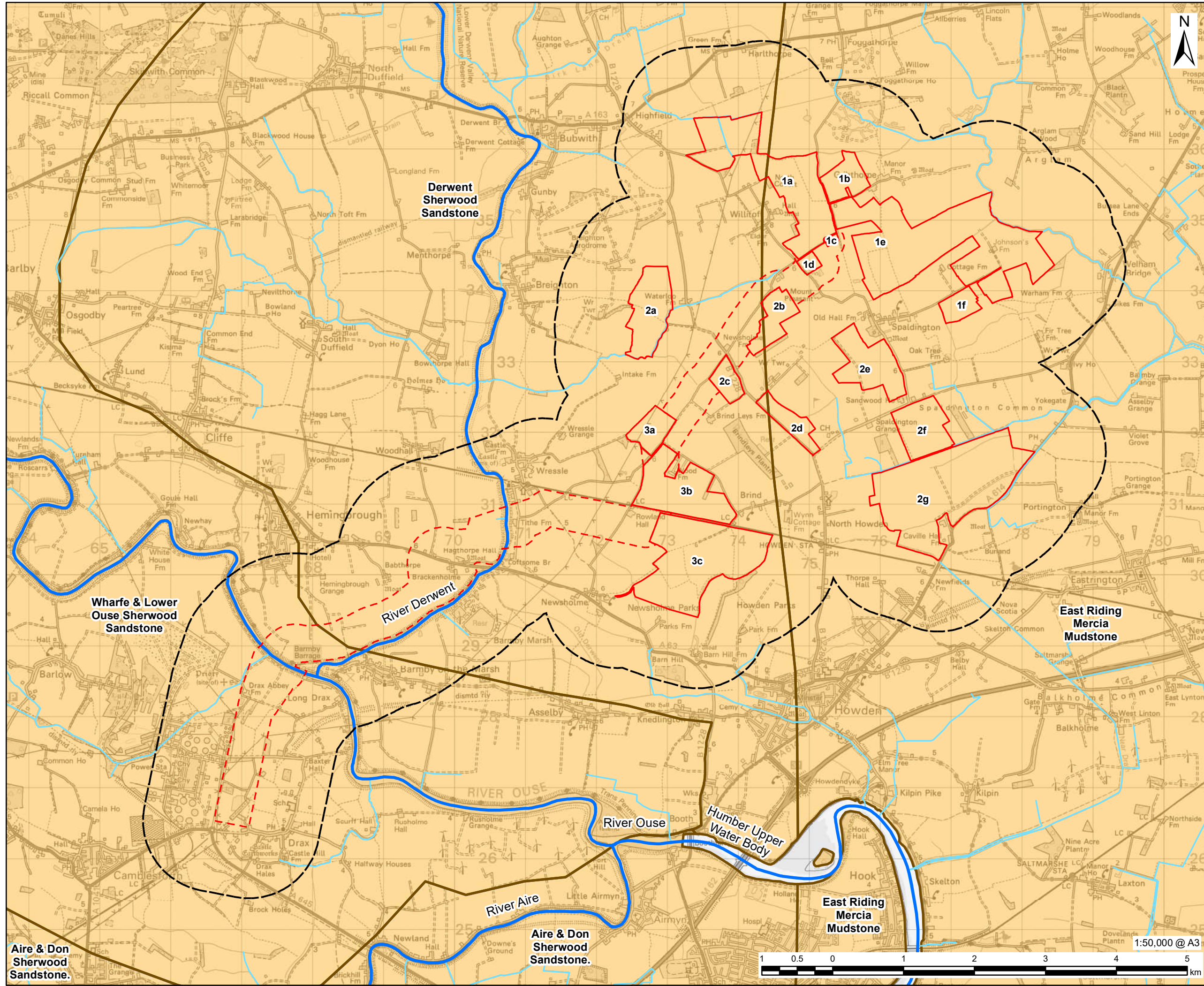
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60683115

FIGURE TITLE
Surface Waterbodies and their Attributes

FIGURE NUMBER
Figure 9-1



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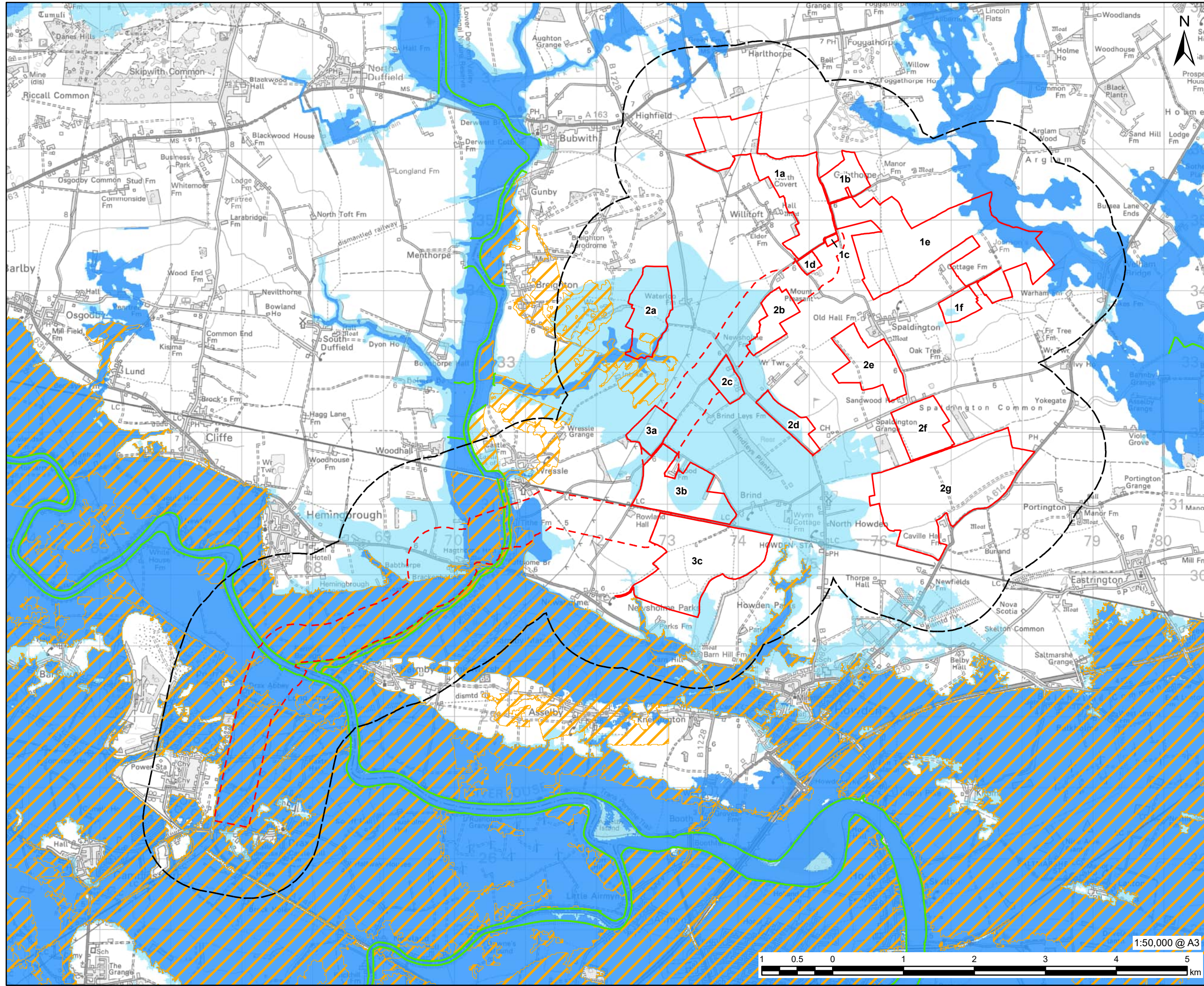
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- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - Main River
 - Ordinary Watercourse
 - Water Framework Directive Ground Waterbody Status
 - Poor Overall Condition

NOTES
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PROJECT NUMBER
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FIGURE TITLE
Groundwater Bodies and their Attributes

FIGURE NUMBER
Figure 9-2



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- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - Flood Defence
 - Areas Benefitting from Flood Defences
 - Flood Zone 2
 - Flood Zone 3

NOTES

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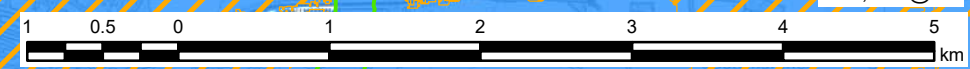
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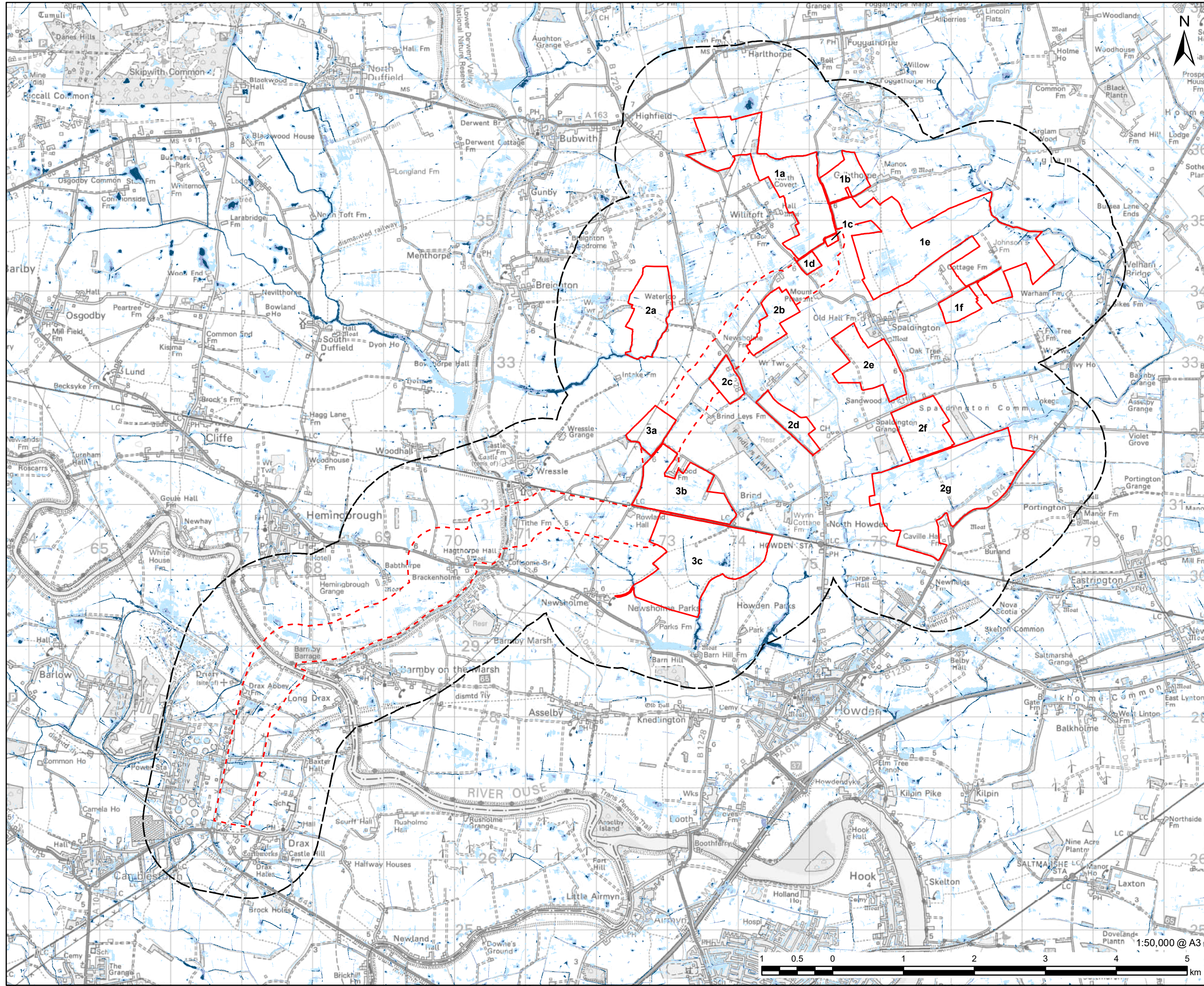
FIGURE TITLE
Flood Risk Map (Fluvial and Tidal Sources)

FIGURE NUMBER
Figure 9-3

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- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - 3.33% Annual Exceedance Probability
 - 1% Annual Exceedance Probability
 - 0.1% Annual Exceedance Probability

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ISSUE PURPOSE
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FIGURE TITLE
Surface Water Flooding

FIGURE NUMBER
Figure 9-4



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10. Landscape and Visual Amenity

10.1 Introduction

- 10.1.1 This chapter sets out the relevant landscape and visual matters which will be addressed within the ES, including the landscape and visual impact assessment (LVIA) methodology.
- 10.1.2 Landscape effects relate to changes to the landscape as a resource, including physical changes to the fabric or individual elements of the landscape, its aesthetic or perceptual qualities, and landscape character.
- 10.1.3 Visual effects relate to changes to existing views of identified visual receptors ('people'), from the loss or addition of features within their view due to the Scheme. For example, this may be residents or users of Public Rights of Way (PRoW).
- 10.1.4 The LVIA will be undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment, Third Edition, 2013 (GLVIA3) (Ref. 150) and with reference to other environmental topics, including Ecology, Heritage, Arboriculture and Glint and Glare Assessments.

10.2 Study Area

- 10.2.1 In accordance with GLVIA3 (Ref. 150), the purpose of the landscape Study Area is to identify the area which the Scheme may influence in a significant manner. The visual Study Area is concerned with the area across which the Scheme may be visible and the individuals or groups of people who may be significantly affected by changes in the composition of their views.
- 10.2.2 The LVIA Study Area will be informed by desk-based review of landform, landcover context surrounding the Scheme and supported by computer generated Zones of Theoretical Visibility (ZTV) (refer to Figure 10-1). These will be verified in the field.
- 10.2.3 As the design of the Scheme evolves, the Study Area to be used for the LVIA may need to be refined to ensure all works, including temporary areas required for construction and permanent infrastructure are included. The maximum parameters of these, in terms of height and location, will be determined as the Scheme design develops, taking into account environmental and technical factors. A reasonable worst case will be assessed and presented in the ES.
- 10.2.4 Based on the desk-based review, ZTV and professional judgement a preliminary LVIA Study Area extends up to 5 km from the Solar PV Site boundary to cover:
- Howden, approximately 1.5 km to the south east of the Plot 3c and approximately 2 km to the south west of Plot 2g;
 - Howden Railway Station, less than 1 km to the east of the Plot 3c and less than 1 km to the west of the Plot 2g;

- Eastrington, less than 1.5 km to the south east of the Plot 2g;
- Arglam, approximately 1 km to the north east of the Plot 1e;
- Spaldington, less than 0.5 km from the Plots 1e, 1 f and 2e;
- Hemingbrough, approximately 1.5 km to the west of the Grid Connection Corridor; and
- Bubwith, approximately 1.5 km to the west of the Plot 1a and approximately 2 km to the north west of the Plot 2a.

10.2.5 The preliminary LVIA Study Area for the cable corridor based on the desk-based review, ZTV and professional judgement, covers 1 km from the Grid Connection Corridor.

10.2.6 The extent of the LVIA Study Area will be reviewed throughout the iterative design process and via fieldwork in winter when the deciduous vegetation is not in leaf. The extent of LVIA Study Area will also be consulted upon with the Local Planning Authorities and the justification for its final extent will be set out in the ES.

10.3 Legislation, Planning Policy Context and Guidance

10.3.1 The following planning policies are relevant to the landscape and visual matters.

Legislation

10.3.2 There is no applicable legislation specific to the assessment.

National Planning Policy

10.3.3 National Policy Statement (NPS) EN-1 (Ref. 36) – section 1.7, which identifies new energy infrastructure is likely to have some negative effects on landscape and visual amenity;

- paragraphs 4.1 to 4.5.3, which outline the requirements of high-quality design include the aesthetic, functionality, fitness for purpose and sustainability;
- paragraphs 5.9.5 to 5.9.8, which set out the requirements for a landscape and visual impact assessment;
- paragraph 5.9.14 which sets out the importance of landscape character assessments in LVIAs;
- paragraphs 5.9.15 to 5.9.18, which set out that schemes are likely to be visible and have visual effects; and
- paragraph 5.9.21 to 5.9.23 outlines methods for minimising adverse effects, including “siting of infrastructure, colours and materials, landscaping schemes and building design.”

10.3.4 NPS EN-5 (Ref. 6) - paragraph 2.2.5 in relation to location and landscape considerations and paragraph 2.8.4 in relation to landscape and visual assessment.

10.3.5 The Draft NPS EN-1 (Ref. 95) and Draft NPS EN-3 (Ref. 96) set out the overarching policy and requirements for renewable energy specific to solar generation. As described in **Chapter 1 Introduction**, the details of these provisions are subject to consultation and thereafter implementation, however it is expected that these will be adopted by the time the DCO application is submitted. These are emerging policies and will therefore be considered where relevant during the production of the ES.

10.3.6 National Planning Policy Framework (NPPF) (Ref. 7)

- Paragraph 98 in respect of protecting and enhancing public rights of way (PRoW);
- Paragraph 127 which requires development to be sympathetic to local character and setting;
- Paragraph 170 in relation to conservation and enhancing the natural environment; and
- Paragraph 180 in relation to siting development that is appropriate for its location taking account of effects and mitigation.

National Guidance

10.3.7 Planning Practice Guidance (PPG), Natural Environment (Landscape) (Ref. 151) sets out the benefits of landscape character assessments and the importance of considering Green Infrastructure in the early stages of schemes.

10.3.8 PPG, Renewable and Low Carbon Energy (Ref. 152) sets out that planning has an important role in the delivery of new renewable and low carbon energy infrastructure. The PPG identifies several LVIA considerations, including visual impact, mitigation through screening and glint and glare.

Local Planning Policy

10.3.9 The proposals will have regard to and be informed by the following adopted policies:

10.3.10 Adopted East Riding Local Plan (2016) (Ref. 8):

- Policy A4: Goole and Humberhead Levels sub area – C. Environment;
- Policy S4: Supporting development in Villages and the Countryside);
- Policy S8: Connecting people and places;
- Policy EC5: Supporting the Energy Sector;
- Policy ENV1: Integrating high quality design;
- Policy ENV2: Protecting high quality landscape;
- Policy ENV3: Valuing our heritage;
- Policy ENV4: Conserving and enhancing biodiversity and geodiversity;
- Policy ENV5 (Strengthening green infrastructure).

10.3.11 Saved Policies from the Adopted Selby District Local Plan (2005) (Ref. 65):

- ENV1: Control of Development;
- ENV15: Conservation and Enhancement of Locally Important Landscape Areas;
- EMP10: Additional Industrial Development at Drax and Eggborough Power Stations;
- T8: Public Rights of Way.

10.3.12 Adopted Selby Core Strategy (2013) (Ref. 64):

- Policy SP15: Sustainable Development and Climate Change;
- Policy SP17: Low Carbon and Renewable Energy;
- SP18: Protecting and Enhancing the Environment;
- SP19: Design Quality.

10.3.13 This policy context provides a framework to ensure that proposed developments have regard to landscape character and distinctiveness through the use of design tools to ensure that key views and settings are respected and that schemes are assimilated into the landscape through having regard to existing character and amenity considerations.

10.4 Consultation

10.4.1 Agreement will be sought on viewpoints through consultation with East Riding of Yorkshire Council and Selby District Council and verified views and photomontages will be prepared from a select number of the agreed viewpoints.

10.5 Baseline Conditions

10.5.1 This section provides an overview of the landscape and visual features and characteristics across the preliminary LVIA Study Area.

Landscape Context

10.5.2 The Study Area consists of arable and pastoral farmland of small to large irregular sized fields to the central, eastern and northern areas. To the south-west field sizes are small and regular sized. The landscape features consist of hedgerows, individual trees and small to medium sized woodland blocks. Hedgerows, where present are generally tall and dense or form lines of linear trees. Within parts of the Study Area hedgerows have been removed to amalgamate fields or are gappy and low growing.

10.5.3 The topography is generally flat across much of the Study Area ranging from between 4 m Above Ordnance Datum (AOD) to 6 m AOD. The topography in the north-east of the Study Area rises to approximately 24 m AOD to the south of Gribthorpe before it falls to around 4 m AOD.

10.5.4 A number of small settlements are present in the Study Area including the town of Howden in the south-west and the villages of, Wressle and Brighton in the west; Spaldington to the east; and Newsholme, Asselby and Barmby on the Marsh to the south. The hamlets of Willitofte and Gribthorpe are

located to the north; Welham Bridge to the east; and North Howden and Brind to the south. Other settlement includes isolated properties and farmsteads.

- 10.5.5 Public rights of way (PRoW) cross parts of the Study Area, linking settlements (refer to Figure 2-2). The Long Distance Route (LDR) Trans Pennine Trail follows the north bank of the River Ouse in the south of the Study Area. The Howden 20 LDR is a circular route which follows part of the Trans Pennine Route to the south, runs through Howden and Spaldington to the east, to the south of Bubwith to the north and the River Derwent, Wressle and Asselby to the east.
- 10.5.6 The Hull to Selby railway line is located in the centre of the Study Area running east to west.

Landscape Character and Relevant Designations

- 10.5.7 There are no statutory landscape designations, i.e. National Parks or Areas of Outstanding Natural Beauty (AONB), located within the Study Area.
- 10.5.8 The locally designated Important Landscape Area of the River Derwent Corridor within East Riding of Yorkshire Council and the Derwent Valley Candidate Locally Important Landscape Area within Selby District Council are located to the west of the Study Area. The centre of Howden is designated a Conservation Area.

Published Landscape Character Assessments and Related Studies

- 10.5.9 The Study Area and Site boundary are covered by several published character assessments and related studies, which form part of the evidence base for Selby District Council and East Riding of Yorkshire Council. These documents will be reviewed as part of the iterative design process.
- 10.5.10 The following section provides an overview of these publications.

National Landscape Character Assessments

- 10.5.11 At the national level, the Site boundary is covered by Natural England's National Character Area 39: Humberhead Levels (NCA 39) (Ref. 153), which is characterised as:

“a flat, low-lying and large scale agricultural landscape bounded to the west by the low ridge of the Southern Magnesian Limestone and to the east by the Yorkshire Wolds (north of the Humber) and the Northern Lincolnshire Edge with Coversands (south of the Humber).”

- 10.5.12 Statements of Environmental Opportunity for NCA 39 include safeguard, manage and expand wet pastures and water courses to contribute to landscape character and to manage the agricultural landscape, historic field patterns to retain its distinctive character. Green infrastructure should be accommodated to retain long views and make a positive contribution to biodiversity.

Regional and District Assessments and Studies

10.5.13 Regional and District Assessments and Studies include:

- The North Yorkshire and York Landscape Character Assessment (Ref. 154);
- The Selby Landscape Character Assessment (Ref. 155);
- The East Riding of Yorkshire Council Landscape Character Assessment (Ref. 156); and
- East Riding of Yorkshire Council Lower Derwent Valley Supplementary Planning Document (Ref. 157).

Extent of Visibility

10.5.14 As a result of the relatively flat land cover across the Site and Study Area, theoretical visibility is likely to be widespread. In reality the presence of tall hedges as field boundaries and the scattered small to medium sized woodland blocks that are present within the Study Area, prevent medium to long distance views and in general restrict longer distance views from local roads and the edges of settlement.

10.5.15 Longer distance views from the eastern part of the Study Area are available to the east as a result of the undulating topography and limited woodland cover along the River Foulness.

10.5.16 From the desk-based review and summer initial site visit (July 2022) the visibility of the land within the Site boundary varies, due to the landform, woodland, field boundaries and roadside vegetation across the surrounding landscape.

Key Visual Receptors

10.5.17 A range of visual receptors and receptor groups can be expected to be affected by the Scheme, including:

- Residents of settlements;
- Residents within properties scattered throughout the open countryside;
- Users of nearby long distance routes and PRow that are scattered throughout the landscape and run along the boundaries and traverse across the Solar PV Site; and
- People travelling through the landscape by car, bicycle, bus or train including several minor roads that run through and past the Solar PV Site.

10.5.18 Fieldwork will be undertaken to review the visibility of the Site boundary and the visual receptors in winter when much of the screening vegetation will be without leaf or have died back for the winter allowing more open views (i.e., the worst-case) and summer months. The fieldwork will be informed by the generation of Zones of Theoretical Visibility (ZTV), which will model the key structures in relation to the existing landform alone (i.e., bare-earth) and with the addition of existing vegetation and buildings (i.e. with existing visual screening).

10.5.19 The findings of the fieldwork will be presented to the Local Planning Authorities (LPA) to seek agreement on the viewpoint locations and the Study Area for the assessment.

10.5.20 Photography will also be captured during winter and summer months to provide representative views towards the Site boundary from the identified receptors. This photography will be undertaken in accordance with the methodology for Type 1 photographs as set out in the Landscape Institute's Technical Guidance Note 06/19 Visual Representation of Development Proposals (Ref. 158).

10.6 Potential Effects and Mitigation

10.6.1 The Scheme has the potential to result in temporary significant adverse landscape effects during the construction phase, due to alterations to surface landform and vegetation, the presence of construction machinery and associated reductions in tranquillity. These aspects of the construction phase also have the potential to result in significant adverse visual effects, due to changes to the composition of views, in comparison to views of fields and general farming activity.

10.6.2 The Scheme has the potential to result in significant adverse landscape effects during operation (assessed at year 1 and year 15) due to the change in land use resulting from the presence and massing of the solar panels and associated structures, although the Scheme is reversible. The Scheme has the potential to result in beneficial landscape and visual effects in the longer term from changes to land cover and new planting across the Site boundary. The proposed structures also have the potential to result in significant adverse visual effects due to the changes in the composition of views, in comparison to fields and general farming activity.

10.6.3 The decommissioning phase has the potential to result in significant adverse landscape and visual effects, like the construction phase, due to the presence of machinery and general activity to remove the panels and associated structures.

10.6.4 The LVIA will inform the iterative design process of the Scheme and the mitigation measures, specifically with regards to the siting, layout of the solar panels and associated structures; and choice of and colour tones for the associated structures to reduce their visibility and perceived scale and mass within the landscape.

10.6.5 The LVIA will also inform the iterative design process via identifying opportunities for new Green Infrastructure (e.g., planting and permissive recreational routes).

10.6.6 The relevant landscape and visual mitigation will be set out in the LVIA.

10.7 LVIA Methodology

10.7.1 The LVIA will be undertaken in accordance with the following:

- GLVIA3 (Ref. 150);
- The Landscape Institute's Technical Guidance Note 02/21: Assessing Landscape Value Outside National Designations, 2021 (Ref. 159); and
- The Landscape Institute's Technical Guidance Note 06/19: Visual Representation of Development Proposals, 2019 (Ref. 158).

10.7.2 These publications form a standard reference for undertaking LVIA for renewable energy schemes in the UK.

10.8 Assumptions, Limitations and Uncertainties

10.8.1 All fieldwork will be undertaken from publicly accessible locations.

Professional judgement will be used to assess residents' views, aided by aerial photography and fieldwork observations.

10.8.2 Short term durations are considered to be under one year; medium term durations are considered to be between one and five years, and long-term durations are considered to be more than five years.

10.8.3 For the construction phase assessment, the assumptions are that, as a worst case, construction activity will be undertaken across the Site at the same time; although as discussed in **Chapter 2 The Scheme**, works will likely be undertaken sequentially, and construction in some plots is likely to be complete whilst others are on-going. PRow which cross the Site boundary will be kept open or temporarily closed for short periods of time only, and therefore recreational receptors along these routes will not be assessed for the construction phase.

10.8.4 For the year 1 and year 15 operation assessments, the assumptions are the Scheme will be operational across all of the Site (although in reality a sequential build-out may mean that at year 1 some plots are still under construction while others are operational).

10.8.5 For the decommissioning assessment, the assumptions are the Scheme is no longer operational, and the solar panels and associated structures and equipment are being removed in a manner similar to the construction phase, requiring machinery and localised excavation. It is currently expected that the proposed Green Infrastructure would remain (although the Applicant cannot control what the landowners do to the Green Infrastructure after completion of the decommissioning and once the land is handed back; any changes at this point would not be part of the Scheme).

10.8.6 Uncertainties at this stage are the layout, siting and heights of the solar panels, sub-stations and associated structures. The LVIA Study Area, landscape and visual receptors will be reviewed accordingly in relation to the heights of these features, informed by ZTVs.

10.8.7 A lighting assessment is scoped out of the assessment, as any lighting during the construction phase would be directional and temporary, and designed to minimise potential for light spillage beyond the Site, particularly

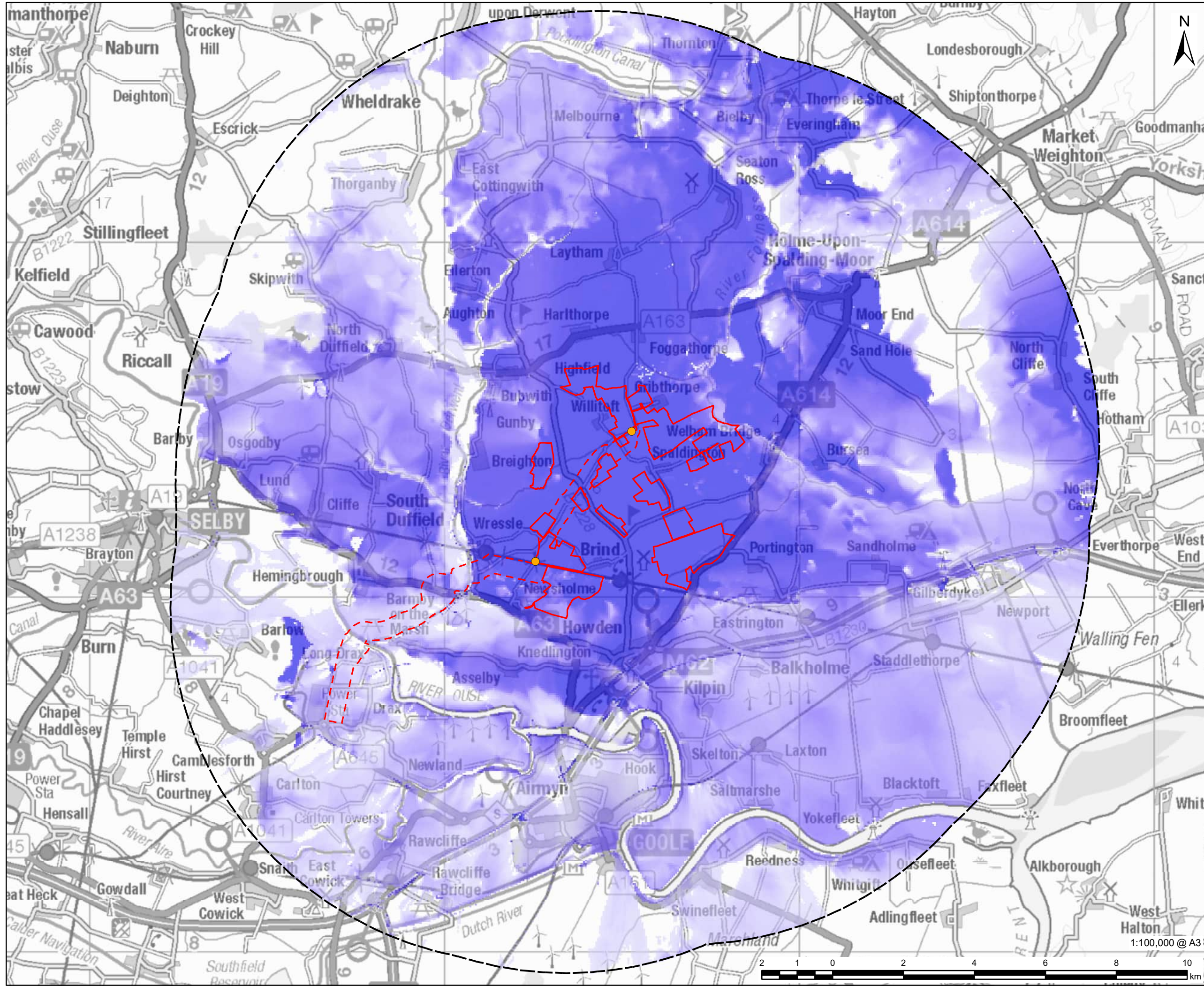
towards houses, live traffic and ecological habitats in so far as it is reasonably practicable. During operation any lighting will be directed at infrastructure and only triggered by motion detection.

10.9 Summary of Elements Scoped In and Scoped Out

10.9.1 A summary of the elements scoped into and out of the assessment of landscape and visual amenity are presented in Table 10-1.

Table 10-1: Elements scoped in and out of the assessment of landscape and visual amenity

Element	Scoped in / Scoped Out
Assessment of landscape and visual effects	Scoped in
Lighting Assessment	Scoped out. Lighting during the construction phase would be temporary and directed away from homes, live traffic and habitats as far as is reasonably practicable. Lighting during operation will also be on temporarily (triggered by motion detection and directed at the Scheme infrastructure).

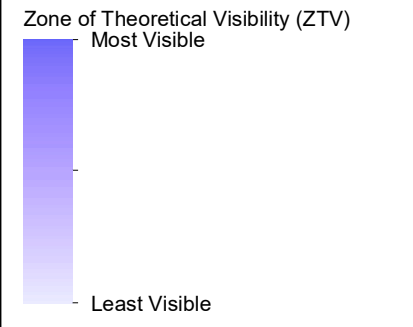


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East Yorkshire Solar Farm

CLIENT
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- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 10km Buffer of Solar PV Site & 1km Buffer of Grid Connection Corridor
 - Proposed Substation Location



NOTES

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Bare earth ZTV created using Ordnance Survey Terrain 50 digital terrain model and was produced using the viewshed tool in ArcGIS. Observer height was modelled at 1.6m, solar PV height at 4.8m and substation height at 6m above existing ground level.

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60683115

FIGURE TITLE
Landscape and Visual - Zone of Theoretical Visibility Panels at Height 4.8m

FIGURE NUMBER
Figure 10-1

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11. Noise and Vibration

11.1 Introduction

11.1.1 This chapter sets out the scope and methodology for the noise and vibration assessment of the Scheme.

11.1.2 Note that the scope of this chapter considers noise and vibration effects on human receptors and excludes assessment of noise and vibration on ecological or heritage receptors. In-combination effects on local ecological or heritage receptors due to the introduction of the Scheme will be considered in **Chapter 7 Cultural Heritage** and **Chapter 8 Ecology**.

11.2 Study Area

11.2.1 The Study Area for construction and operational noise effects will include receptors within 500 m of the Solar PV Site and within 300 m of the Cable Route Corridor. These distances have been selected based on previous experience that operational noise sources associated with solar operations are likely to be negligible at distances greater than 500 m and that construction noise predictions (based on guidance in BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 1: Noise' (Ref 14-9)) are generally reliable up to 300 m. Operational noise effects from the Cable Route Corridor are anticipated to be none or minimal, depending on the final installation choice; therefore the 300 m Study Area is considered to allow for a robust assessment. Study Area

11.2.2 At this stage the nearest sensitive receptors (predominantly residential properties) are identified in Table 11-1 and their locations relative to the Site boundary shown in Figure 11-1.

11.2.3 These receptors have been determined by desktop study; a finalised list of assessment receptors will be selected through the Scoping process and consultation with key stakeholders including Environmental Health Officers of East Riding of Yorkshire Council and Selby District Council.

Table 11-1: Sensitive receptor locations

ID	Name	Approximate Co-ordinates (Latitude – Longitude)	Solar PV Site Receptor	Grid Corridor Receptor
R1	Oak Cottages, Willitoft	53°48'36.94"N, 0°52'33.15"W	✓	
R2	Willitoft Hall, Willitoft	53°48'24.07"N, 0°52'15.75"W	✓	
R3	Gribthorpe Properties	53°48'38.52"N, 0°50'51.39"W	✓	

ID	Name	Approximate Co-ordinates (Latitude – Longitude)	Solar PV Site Receptor	Grid Corridor Receptor
R4	The Long Barn / The Fold Yard / Four Beeches Farm Gribthorpe	53°48'35.62"N, 0°50'54.41"W	✓	
R5	Sandy Field Farm, Selby	53°47'38.50"N, 0°54'25.86"W	✓	
R6	Fine Country Lodges / The Dadpad / Waterloo Farm, Willitoft	53°47'44.66"N, 0°53'20.84"W	✓	
R7	Webbwood House / The Grange, Willitoft	53°47'56.23"N, 0°52'8.81"W	✓	✓
R8	Crossroad Cottages, Willitoft	53°48'3.15"N, 0°51'56.22"W	✓	✓
R9	Lake View House, Willitoft	53°47'55.70"N, 0°51'39.24"W	✓	✓
R10	Mount Pleasant Farm	53°47'45.22"N, 0°51'36.63"W	✓	
R11	The Old Hall, Spaldington	53°47'35.69"N, 0°51'5.52"W	✓	
R12	Spaldington Properties	53°47'34.64"N, 0°50'49.25"W	✓	
R13	Cottage Farm, Spaldington	53°47'57.11"N, 0°50'2.86"W	✓	
R14	Warham Farm, Spaldington	53°47'45.57"N, 0°48'27.39"W	✓	
R15	Intake Farm, Wressle	53°47'10.53"N, 0°54'13.90"W	✓	
R16	Newsholme House, Willitoft	53°47'22.52"N, 0°52'51.18"W	✓	✓
R17	Rose Dale / Drome Villa, Willitoft	53°47'26.92"N, 0°52'41.15"W	✓	✓
R18	Brind Leys Farm, Spaldington	53°46'50.89"N, 0°53'0.94"W	✓	
R19	Oak Tree Fram, Spaldington	53°47'15.46"N, 0°50'1.80"W	✓	
R20	Spaldington Grange, Spaldington	53°46'46.78"N, 0°51'1.14"W	✓	
R21	Sandwood Cottage, Spaldington	53°46'58.37"N, 0°50'26.64"W	✓	

ID	Name	Approximate Co-ordinates (Latitude – Longitude)	Solar PV Site Receptor	Grid Corridor Receptor
R22	Sandwood Villa, Spaldington	53°46'59.67"N, 0°50'18.83"W	✓	
R23	Old Rush Farm, Spaldington	53°46'58.75"N, 0°49'58.01"W	✓	
R24	Wressle Brickyard Farm, Newsholme	53°46'24.30"N, 0°54'8.01"W	✓	✓
R25	Gardeners Cottage / Wood Farm, Brind	53°46'26.17"N, 0°53'33.79"W	✓	
R26	Damson Cottage/ Rowland Hall, Newsholme	53°46'10.58"N, 0°54'7.23"W	✓	✓
R27	8/9 Brind Lane, Brind	53°46'3.63"N, 0°52'47.38"W	✓	
R28	The Old Parlour / Mill End Farm / Pond View Barn / Brind Lane Farm, Brind	53°46'7.32"N, 0°52'40.57"W	✓	
R29	The Straw Bale Cabin / Village Farm / Orchard Farm, Brind	53°46'11.10"N, 0°52'30.16"W	✓	
R30	Brind Chapel, Brind	53°46'12.65"N, 0°52'21.96"W	✓	
R31	Deer Crossing, Goole	53°46'8.95"N, 0°51'17.09"W	✓	
R32	Maalkedo House / Poplar Farm, Spaldington	53°46'35.38"N, 0°48'54.18"W	✓	
R33	High Grove House, Spaldington	53°46'38.21"N, 0°48'48.68"W	✓	
R34	Avalon / Stonycroft / Beech Tree Farm, Newsholme	53°45'30.24"N, 0°54'25.56"W	✓	
R35	Parks Farm, Newsholme	53°45'19.17"N, 0°53'45.85"W	✓	
R36	Barnhill Farm, Brind	53°45'4.75"N, 0°53'15.43"W	✓	
R37	Drax Abbey Farm, Long Drax	53°44'50.80"N 0°59'7.75"W		✓
R38	Derwent View Farm, Long Drax	53°44'56.28"N 0°58'20.50"W		✓
R39	1-2 Tidal Barrage, Barmby-on- the-Marsh	53°44'59.35"N 0°58'3.14"W		✓

ID	Name	Approximate Co-ordinates (Latitude – Longitude)	Solar PV Site Receptor	Grid Corridor Receptor
R40	High Street properties, Barmby-on-the-Marsh	53°45'1.80"N 0°57'45.20"W		✓
R41	Derwent House, Barmby-on-the-Marsh	53°45'5.63"N 0°57'32.57"W		✓
R42	Brackenholme Cottages, Brackenholme	53°45'49.42"N 0°56'38.80"W		✓
R43	Brackenholme Hall/ Demense, Brackenholme	53°45'43.89"N 0°56'26.15"W		✓
R44	Hagthorpe Hall/ Hagthorpe House, Brackenholme	53°45'48.59"N 0°56'18.11"W		✓
R45	Loftsome Bridge Coaching House, Wressle	53°45'49.60"N 0°55'38.92"W		✓
R46	Tithe Farm, Wressle	53°46'3.62"N 0°55'35.08"W		✓
R47	Station Road properties, Wressle	53°46'14.14"N 0°55'35.49"W		✓
R48	Cross Common Crossing, Wressle	53°46'18.83"N 0°54'53.90"W		✓

11.2.4 As discussed in section 11.1.2, the assessment of noise effects on ecological or built heritage receptors is outside the scope of this chapter. Where this needs to be considered it will be addressed in Chapter 8 Ecology of the ES.

11.3 Legislation, Planning Policy Context and Guidance

11.3.1 Legislation, planning policy and guidance relating to noise and pertinent to the Scheme comprises:

Legislation

- Control of Pollution Act 1974 (Ref. 19); and
- Environmental Protection Act 1990 (Ref. 160).

National Planning Policy

- The Overarching National Policy Statement (NPS) for Energy (EN-1) (Ref. 36). Reference will be made to Section 5.11 and Paragraphs 5.11.4 to 5.11.10, in relation to the assessment of noise.
- The NPS for Electricity Networks Infrastructure (EN-5) (Ref. 6), taken together with NPS EN-1, provides the primary basis for decisions taken by the SoS on applications it receives for the categories of nationally significant electricity networks infrastructure included within it. Reference

will be made to Section 2.9 (Noise and Vibration). Paragraphs 2.9.2 to 2.9.7 consider noise from overhead lines (should this alternative to below ground cabling for parts of the Grid Connection Corridor be taken forward) and Paragraph 2.9.7 relates to noise from substation equipment.

- Draft versions of NPS EN-1 (Ref. 95) and EN-3 (Ref. 96) and EN-5 (Ref. 94) were published for consultation by the Department for Business, Energy & Industrial Strategy from September to November 2021. Paragraph 5.12.4 of the draft NPS EN-1 includes a requirement to assess likely noise impacts on health and well-being and the use of best available techniques to mitigate noise. Section 2.54 of the draft EN-3 includes the consideration of transport noise and vibration associated with solar photovoltaic generation schemes.
- The NPPF (Ref. 7) contains the government's planning policies relating to noise in Paragraph 174 and 185.
- The Noise Policy Statement for England (NPSE) (2010) (Ref. 161) sets out the long-term vision of the government's noise policy.

National Guidance

- Planning Practice Guidance: Noise (Ref. 162) provides guidelines that are designed to assist with the implementation of the noise requirements set out in the NPPF.

Local Planning Policy

- Adopted East Riding Local Plan (2016 - Policy EC5 (Supporting the energy sector) (Ref. 8).
- Adopted Selby Core Strategy (2013) - Policy SP17 (Low-Carbon and Renewable Energy (Ref. 64).
- Saved Policy from the Adopted Selby District Local Plan (2005) - Policy EMP10 (Additional industrial development at Drax and Eggborough power stations) (Ref. 65).

11.3.2 These policies seek to ensure that hat potential noise generated from new energy developments is acceptable and that impacts are mitigated.

11.4 Consultation

- 11.4.1 Consultation with the Environmental Health Officers at East Riding of Yorkshire Council and Selby District Council will be carried out to agree the scope and methodology of baseline noise level surveys, ensuring that they are representative of surrounding noise sensitive receptors.

11.5 Baseline Conditions

11.5.1 The land use in the Site is primarily agricultural. There are individual and clusters of residential properties located adjacent to the Site boundary.

11.5.2 The main sources of sound in the area are considered to be:

- Traffic on the local road network and the A614, which is the only main road in the area and located to the southeast of the Site.
- Train movements on the section of track between Howden station and Wressle station pass through the centre of the Site,
- Light aircraft associated with Brighton Aerodrome.
- Industrial associated activities from businesses located on the old Brighton Aerodrome runway and the Spaldington airfield site.

11.6 Potential Effects and Mitigation

Construction and decommissioning noise and vibration (temporary effects)

11.6.1 Potential noise and vibration effects during the construction and decommissioning phases are likely to include works activities associated with site preparation, plant installation, substation construction, cable laying, and construction-related vehicle movements within the Site boundary and along access routes.

11.6.2 Measures to control noise as defined in Annex B of British Standard (BS) 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 1: Noise' (Ref. 163) and measures to control vibration as defined in Section 8 of BS 5228:2009+A1:2014 'Part 2: Vibration' (Ref. 164) will be adopted where reasonably practicable.

11.6.3 These measures represent 'Best Practicable Means' (BPM) (as defined by section 72 of the Control of Pollution Act 1974) (Ref. 19) to manage noise and vibration emissions from construction activities. Examples of BPM that may be implemented during construction works are presented below:

- Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use;
- Appropriate routing of construction traffic on public roads and along access tracks;
- Drop heights of materials will be minimised;
- Plant and vehicles will be sequentially started up rather than all together;
- Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas; and
- Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications.

11.6.4 Embedded measures relevant to the construction phase will be described within a Framework CEMP, which will be developed in to a detailed (or construction issue) CEMP prior to the start of construction and implemented (see paragraph 5.3.6).

Operational noise (reversible long-term effects)

- 11.6.5 The potential noise effects during operation of the Scheme are likely to include noise from solar farm plant (e.g., inverters, transformers, switchgears and the motors for the tracking panels, should this option be taken forward) and associated battery storage plant (e.g., cooling units, transformers), the on-site substation (e.g., transformers), and any associated vehicle movements.
- 11.6.6 Plant items such as solar PV modules, PV module mounting structures, and cabling (both onsite and via the cable route) will not produce any operational noise emissions.
- 11.6.7 No plant that would generate perceptible levels of vibration are part of the Scheme and, as such, there will be no associated operational vibration effects. It is proposed that operational vibration is scoped out of any further assessment.
- 11.6.8 At this stage no specific noise mitigation measures have been included for operational plant. However, based on the proposed plant installations it is assumed that plant will be designed to have no tonal, impulsive or intermittent features.
- 11.6.9 As the plant design is progressed, the specification of plant and machinery with low noise emission and properly attenuated supply and extract terminations will help to minimise noise emissions. The use of enclosures, local screening, mufflers, and silencers will also be used as appropriate.

11.7 Assessment Methodology

- 11.7.1 The criteria presented in **Chapter 5 Environmental Impact Assessment Methodology** of this Scoping Report will be followed in assigning categories to construction and operational phase noise and vibration impacts and determining if the effects are significant.
- 11.7.2 Baseline noise monitoring will be carried out to establish the noise environment around the Site and representative of surrounding noise sensitive receptors. Monitoring will be undertaken at selected locations representative of noise-sensitive receptors around the Site. The monitoring procedures will follow guidance from BS 7445-1:2003 'Description and environment of environmental noise – Part 1: Guide to quantities and procedures' (Ref. 165) and BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (Ref. 166). A combination of long-term unattended and short-term attended measurements will be used. A weather station will also be installed for the duration of the noise surveys so any periods of adverse weather conditions could be identified and omitted from noise data.
- 11.7.3 Baseline noise surveys will be carried out post-Scoping, and the scope and methodology will be sought to be agreed in consultation with the local planning authorities, where possible, prior to commencement of surveys.
- 11.7.4 Noise and vibration levels associated with construction and decommissioning works will be assessed (at chosen sensitive receptors, intended to be agreed with the Environmental Health Officers at the local

planning authorities) using the data and procedures given in BS 5228:2009+A1:2014 Part 1: Noise (Ref. 163) and Part 2: Vibration (Ref. 164).

- 11.7.5 The temporary changes in road traffic noise levels along the local road network due to construction traffic will be assessed based on guidance from the IEMA Guidelines for environmental noise impact assessment (2014) (Ref. 167).
- 11.7.6 The impact of the proposed operational plant such as noise from the inverters, tracker panels (if this option is taken through to the ES) and battery energy storage system will be assessed following guidance from BS 4142:2014 (Ref. 166), as referenced in the East Riding of Yorkshire Local Plan. The assessment will be based on available information on the operating conditions and the levels of noise generated by the plant.

11.8 Assumptions, Limitations and Uncertainties

- 11.8.1 Noise and vibration effects during the decommissioning phase of the Scheme will be similar to or less than noise and vibration effects during the construction phase. The noise assessment presented for the construction phase will therefore be considered representative (or an overestimate) of the decommissioning phase. As such a separate assessment for noise from the decommissioning phase is not proposed.
- 11.8.2 Predictions of sound levels have an associated degree of uncertainty. Modelling and measurement processes have been carried out in such a way to reduce such uncertainty; however, it is unavoidable that some degree of prediction uncertainty remains so a precautionary approach will be adopted in sound predictions.
- 11.8.3 Construction works noise levels will be predicted following guidance from BS 5228-1:2009+A1:2014 (Ref. 163) which provides a realistic estimate of sound propagation from construction plant. The predictions will use representative noise levels, sourced from industry standard guidance documents such as BS 5228-1:2009+A1:2014 (Ref. 163), for typical items of plant that are used in such developments.
- 11.8.4 Construction phase vibration will be assessed based on historic vibration measurement data from relevant guidance documents including BS 52282:2009+A1:2014 (Ref. 164) and Transport Research Laboratory (TRL) Report 429 (Ref. 168). No predictions of ground-borne vibration propagation are proposed.
- 11.8.5 Predictions of operational plant and activities sound pressure levels will be undertaken following guidance from International Organisation for Standardisation (ISO) 9613 'Attenuation of sound during propagation outdoors' (Ref. 169), which are based on an assumption of moderate downwind propagation, and hence could be considered as a worst-case calculation. However, the standard also indicates an estimated accuracy of ± 3 dB(A) in predicted levels.
- 11.8.6 Any measurement of existing ambient or background sound levels will be subject to a degree of uncertainty. Environmental sound levels vary between days, weeks, and throughout the year due to variations in source levels and

conditions, meteorological effects on sound propagation and other factors. Hence, any measurement survey can only provide a sample of the ambient levels and a small degree of uncertainty will always remain in the values taken from such a measurement survey.

11.8.7 Every effort will be made to ensure that measurements are undertaken in such a way as to provide a representative sample of conditions, such as avoiding periods of adverse weather conditions, and school holiday periods (which are often considered to result in atypical sound levels). Consequently, the level of uncertainty in measurements has been reduced as far as reasonably practicable.

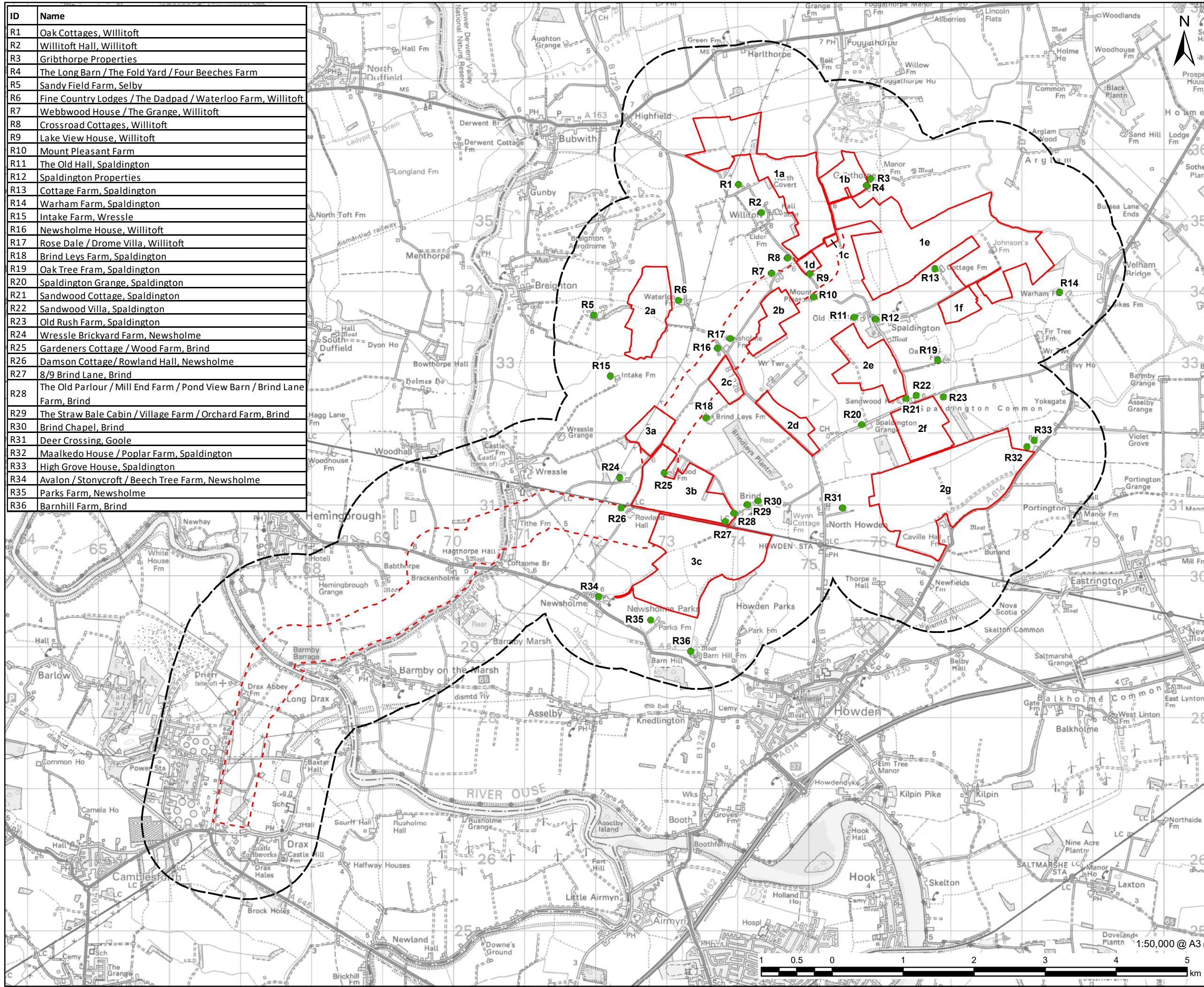
11.9 Summary of Elements Scoped In and Scoped Out

11.9.1 A summary of the elements scoped into and out of the assessment of noise and vibration are presented in Table 11-2.

Table 11-2: Elements scoped in and out of the assessment of noise and vibration

Element	Scoped in / Scoped Out
Noise and vibration levels associated with construction and decommissioning works	Scoped in – temporary noise and vibration emissions from construction and decommissioning works may adversely impact on sensitive receptors.
Construction traffic noise	Scoped in – temporary noise from construction traffic movements may adversely affect receptors near public roads that are part of construction traffic routes.
Operational noise	Scoped in – permanent noise emissions from solar farm infrastructure may adversely affect nearby sensitive receptors.
Vibration from the operation of the Scheme	Scoped out. No plant that would generate perceptible levels of vibration are part of the Scheme and, as such, there will be no associated operational vibration effects. It is proposed that operational ground-borne vibration is scoped out of any further assessment.
Separate assessment for noise from the decommissioning phase	Scoped out. The noise assessment presented for the construction phase will therefore be considered representative (or an overestimate) of the decommissioning phase.

ID	Name
R1	Oak Cottages, Willitof
R2	Willitof Hall, Willitof
R3	Gribthorpe Properties
R4	The Long Barn / The Fold Yard / Four Beeches Farm
R5	Sandy Field Farm, Selby
R6	Fine Country Lodges / The Dadpad / Waterloo Farm, Willitof
R7	Webbwood House / The Grange, Willitof
R8	Crossroad Cottages, Willitof
R9	Lake View House, Willitof
R10	Mount Pleasant Farm
R11	The Old Hall, Spaldington
R12	Spaldington Properties
R13	Cottage Farm, Spaldington
R14	Warham Farm, Spaldington
R15	Intake Farm, Wressle
R16	Newsholme House, Willitof
R17	Rose Dale / Drome Villa, Willitof
R18	Brind Leys Farm, Spaldington
R19	Oak Tree Fram, Spaldington
R20	Spaldington Grange, Spaldington
R21	Sandwood Cottage, Spaldington
R22	Sandwood Villa, Spaldington
R23	Old Rush Farm, Spaldington
R24	Wressle Brickyard Farm, Newsholme
R25	Gardeners Cottage / Wood Farm, Brind
R26	Damson Cottage / Rowland Hall, Newsholme
R27	8/9 Brind Lane, Brind
R28	The Old Parlour / Mill End Farm / Pond View Barn / Brind Lane Farm, Brind
R29	The Straw Bale Cabin / Village Farm / Orchard Farm, Brind
R30	Brind Chapel, Brind
R31	Deer Crossing, Goole
R32	Maalkedo House / Poplar Farm, Spaldington
R33	High Grove House, Spaldington
R34	Avalon / Stonycroft / Beech Tree Farm, Newsholme
R35	Parks Farm, Newsholme
R36	Barnhill Farm, Brind



PROJECT
East Yorkshire Solar Farm

CLIENT
East Yorkshire Solar Farm Limited

CONSULTANT
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Midpoint, Alencon Link
Basingstoke, Hampshire
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LEGEND

- Solar PV Site
- Grid Connection Corridor
- 1km Buffer of Solar PV Site & Grid Connection Corridor
- Noise Receptor

NOTES
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ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

FIGURE TITLE
Noise Receptors

FIGURE NUMBER
Figure 11-1

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12. Socio-Economics and Land Use

12.1 Introduction

12.1.1 This chapter sets out the scope and methodology for the socio-economics and land use assessment of the Scheme.

12.2 Study Area

12.2.1 The potential temporary and permanent economic and employment impacts arising from the Scheme will be considered relative to a principal economic area, defined based on consideration of local authority boundaries and a typical travel time from the Site.

12.2.2 The impact on potentially sensitive socio-economic receptors, and existing and future land use receptors (recreational facilities (including PRow), and community facilities) will consider those within the Site boundary, including the Solar PV Site and the Grid Connection Corridor, as well as adjacent impact areas as determined by the nature of impact and type of the receptor being assessed. These will be set out in the ES.

12.2.3 Impacts to agricultural land are considered separately in **Chapter 15 Soils and Agricultural Land**.

12.3 Legislation, Planning Policy Context and Guidance

12.3.1 There is no applicable legislation specific to the assessment of socio-economics and land use. Planning policy and guidance relating to socio-economics and land-use and pertinent to the scheme comprises:

National Planning Policy

- NPS EN-1 (Ref. 36)), with particular reference to: paragraph 4.1.4 in relation to the potential adverse effects and benefits associated with the Scheme; paragraph 4.2.1 in relation to EU directive requirements; paragraph 4.2.2 in relation to socio-economics; and paragraph 5.12.2 in relation to socio-economics;
- The Draft NPS EN-1 (Ref. 95), with reference to: paragraph 4.1.1 in relation to potential adverse effects and benefits associated with the Scheme; paragraph 4.2.2 in relation to socio-economics; and section 5.13 in relation to socio-economic impacts.
- There is no relevant policy contained within NPS EN-3 (Ref. 5), however paragraph 2.49.11 of the Draft EN-3 (Ref. 96) references the socio-economic benefits of retaining site infrastructure after the operational life of the solar farm.
- NPPF (Ref. 7), with particular reference to: Section 6, Building a strong, competitive economy (particularly paragraphs 81-83); Section 12, Achieving well-designed places (paragraphs 127-128); and, Section 17, Facilitating the sustainable use of minerals;

- National Economic Development Policy (Ref. 170), with particular reference to the Government's Industrial Strategy White Paper ambitions to increase productivity and drive growth. Clean Growth in particular is highlighted as a method through which to lead the world in the development, manufacture and use of low carbon technologies; and
- Planning Practice Guidance (Ref. 171), with particular reference to guidance on planning and the economy and the potential future needs of the population in terms of economic development, jobs and employment opportunities.

Regional and Local Planning Policy

- Yorkshire and the Humber Climate Action Plan (2021) (Ref. 172), with particular reference to Proposed Actions 32 (support the greatly accelerated decarbonisation of energy supply), and 33 (promote significant expansions in community energy and distributed renewables);
- Adopted East Riding Local Plan (2016) (Ref. 8), with particular reference to Policy S2 (Addressing Climate Change), Policy EC1 (Supporting the Growth and Diversification of the East Riding Economy) and Policy EC5 (Supporting the Renewable and Low Carbon Energy Sector); East Riding of Yorkshire Council and Kingston upon Hull Joint Minerals Local Plan 2016-2033 (2019) (Ref. 11); with particular reference to Policy EC6: Protecting mineral resources; and North Yorkshire County Council Minerals and Waste Joint Plan (Ref. 13) with particular reference to Policies S01 and S03 which relate to safeguarding surface and deep mineral resources, and
- Adopted Selby District Core Strategy (2013) (Ref. 64), with particular reference to Policy SP1 (Presumption in Favour of Sustainable Development), Policy SP15 (Sustainable Development and Climate Change) and Policy SP17 (Low-Carbon and Renewable Energy).

12.4 Consultation

- 12.4.1 Consultation will be undertaken with the Minerals and Waste Officers for the East Riding of Yorkshire and North Yorkshire to confirm that as minerals will be accessible following decommissioning, the Scheme satisfies the requirements of the East Riding and Kingston upon Hull Mineral Safeguarding policy, and the North Yorkshire County Council, North York Moors National Park Authority, City of York Council Minerals and Waste Joint Plan (Ref. 13); and that mineral safeguarding can be scoped out of further assessment.
- 12.4.2 No further consultation will be undertaken specifically to inform the assessment of socio-economic impacts, however the information gathered during the non-statutory and statutory consultation events will be used as appropriate to help inform the scope of the assessment.

12.5 Baseline Conditions

- 12.5.1 The potential impacts arising from the Scheme are assessed relative to the baseline conditions and benchmarked against regional and national

standards where appropriate. The key indicators and measures of the areas will be established for:

- Population and deprivation;
- An overview of the local economies;
- The local labour markets; and
- Land use.

12.5.2 A high-level summary of baseline conditions has been presented in the following paragraphs, based upon review of the following datasets:

- 2011 Census Data (Ref. 174);
- Office for National Statistics (ONS) Mid-Year Population Estimates (2020) (Ref. 175);
- English Indices of Deprivation (2019) (Ref. 176);
- ONS (2019); UK Business Register and Employment Survey (Ref. 177);
- ONS (2017); Gross Value Added (Income Approach) (2016) (Ref. 178); and
- ONS (2021); Annual Population Survey (January 2020 to December 2020) (Ref. 179).

12.5.3 The Site is located within the areas administered by East Riding of Yorkshire Council and Selby District Council. This section will establish the baseline conditions within both local authorities.

12.5.4 The population of East Riding of Yorkshire has grown from 335,673 in 2011 to 342,201 in 2020, representing a growth rate of 2.25%. In Selby the population has grown from 83,547 in 2011 to 91,697 in 2020, representing a higher population growth rate of 9.75%.

12.5.5 East Riding of Yorkshire is ranked 202 most deprived out of England's 317 Local Authority areas. In East Riding, 13 of the Lower Layer Super Output Areas (LSOAs) are within the top 10% most deprived LSOAs in England. Selby is the 246th most deprived of England's 317 Local Authority areas, with 1 LSOA within the top 10% most deprived boroughs in England.

12.5.6 Gross Value Added (GVA) per head is lower in East Riding of Yorkshire (£18,993) than in Yorkshire and the Humber (£21,748) and England (£27,949). The sectors which contribute the most towards GVA in East Riding are the manufacturing, distribution and public administration sectors.

12.5.7 GVA per head in North Yorkshire County Council (which includes Selby) is slightly higher than in East Riding of Yorkshire and Yorkshire and the Humber. However, at £22,915, it is still below the GVA per head for England (£27,949). The Manufacturing, Distribution, Real Estate and Public Administration sectors contribute the most towards GVA in North Yorkshire.

12.5.8 In 2020, the Annual Population Survey showed that 39.6% of working-age residents in East Riding of Yorkshire have a degree-level qualification or equivalent (National Vocational Qualification [NVQ] Level 4+), higher than the rate in the Yorkshire and The Humber region (38.0%), but lower than that

in Selby (44.4%) and England (43.1%). In East Riding of Yorkshire 7.5% of the population hold no qualifications, compared with 10.1% in Selby, 7.8% in Yorkshire and The Humber, and 6.4% in England.

- 12.5.9 The broad industrial groups that employ the most people in East Riding of Yorkshire are the manufacturing sector (14.6% of total employment) and health sector (12.3%). The manufacturing sector is also predominant in Selby, contributing of 20.1% of employment, although the transport and storage sector (10.5%) and business administration and support services sector (10.5%) make up the next largest sectors. Manufacturing in both local authorities represent a much larger proportion of employment than in either the Yorkshire and The Humber region (11.0%) or England (7.6%).
- 12.5.10 The mining, quarrying and utilities broad industrial group (which includes employment from the generation of energy) is higher in both East Riding of Yorkshire (1.7%) and Selby (5.3%) than in Yorkshire and The Humber (1.2%) and England (1.1%).
- 12.5.11 In 2020, the number of people of employment age (16–64) was 196,469 in East Riding of Yorkshire and 55,997 in Selby. The economic activity rate was 79.9% in East Riding, above England and Selby's rates (both 78.7%) and Yorkshire and The Humber (77.4%).
- 12.5.12 Within the Site boundary and immediately adjacent area, the area is mostly used for agricultural purposes, characterised by large-scale regular arable fields across several land-holdings.
- 12.5.13 In terms of recreational routes, there are 10 PRoW within the Solar PV Site boundary (refer to Figure 2-2): FOGGF13 through Plot 1a, GOGGF05, SPALF14, SPALF15 and SPALB08 (bridleway) through Plot 1e, BUBWF10 through Plot 2a, WRES706, WRESF08, WWRESF10 and WRESF09 through Plot 3c.
- 12.5.14 Footpaths FOGGF09 and BUBWF17 run along the Site boundary around Plot 1a, FOGGF05, SPALB08 (bridleway) and SPALF19 around Plot 1e, SPALF17 around Plot 2e, EASTB17 (bridleway) around Plot 2f and 2g, EASTB14 around Plot 2g and WRESF06 and WRESF08 around Plot 3c.
- 12.5.15 The Site will be connected to the existing National Grid Drax Substation via a Grid Connection Corridor that runs through the wards of Howdenshire (East Riding of Yorkshire), Derwent (Selby) and Camblesforth and Carlton (Selby). The PRoW which have potential to be impacted by the Grid Connection Corridor include footpaths WRESF12, 35.35/9/1, 35.35/6/1 and 35.47/1.

12.6 Potential Effects and Mitigation

- 12.6.1 The Scheme may generate a range of socio-economic effects, some of which may be temporary, whilst others will be permanent. For the purposes

of this ES, due consideration will be given to the Scheme in terms of the following:

- Temporary employment during the construction and decommissioning phases of the Scheme;
- Gross Value Added during the construction and decommissioning phases of the Scheme;
- Creation of long-term employment opportunities once the Scheme is operational, including consideration of any existing employment uses on-site;
- Creation of training and apprenticeship opportunities during construction, operation and decommissioning of the Scheme;
- Impacts on local services and facilities, including impacts resulting from construction phase workers and associated accommodation requirements, and the provision of educational and visitor facilities;
- Any indirect impacts for the region hosting the Scheme, in particular in relation to the use of local support services and supply chains, and contribution to the Scheme of low-carbon industries at the local, regional and national level;
- The change of land use within the Site boundary, as well as changes to accessibility and amenity for receptors beyond the Site boundary, including recreational facilities and routes, open space, community facilities, businesses, residential properties, visitor attractions and development land.

12.6.2 Where appropriate, evaluation of job creation associated with the Scheme will include information related to the sustainability of the jobs created, including the extent to which they will help develop the skills needed for the UK's transition to Net Zero.

12.6.3 The Site is located within East Riding of Yorkshire's Minerals Safeguarded Area EC6 (Ref. 11) and an area of safeguarded surface mineral resource in North Yorkshire (Ref. 13 and Ref. 222). However, mineral deposits within Minerals Safeguarding Areas will not be permanently sterilised by the Scheme and can be extracted, if required, after its decommissioning. It is considered that this satisfies the requirements of the East Riding and Kingston upon Hull, and North Yorkshire Mineral Safeguarding policies, and therefore it is proposed to scope out the effects on these areas. Consultation will be undertaken with the East Riding of Yorkshire and North Yorkshire Minerals and Waste Officers to confirm this approach.

12.6.4 Mitigation measures will be included in the design (embedded mitigation measures) where practicable to help avoid, prevent or reduce effects on the environment.

12.6.5 Additionally, embedded measures would be implemented during construction to ensure accessibility to recreational routes and PRoWs in the Study Area is maintained. Currently, no potential impacts to the accessibility of community facilities, healthcare facilities, private assets or development land within the Study Area have been identified, but accessibility to these would also be maintained if identified. This would be achieved through the use of best

practice measures, regard to phasing of works and if necessary, providing diversions for users. Severance of communities and access will also be reduced, where practicable, through careful siting of construction compounds and lay down areas, and careful planning of construction activities through consultation with landowners. Where temporary disruption to PRowS or other recreational routes during construction is unavoidable, suitable diversions would be agreed with the relevant LPA(s) and implemented where temporary closures are required.

- 12.6.6 Direct impacts to land use would be managed through negotiations with stakeholders including landowners and owners of businesses to mitigate impact.

12.7 Assessment Methodology

Baseline

- 12.7.1 Relevant policy will be reviewed at the local, regional and national levels to identify the key issues of relevance to the Scheme. This will include Local Plans, and any relevant Supplementary Planning Guidance (SPG), NPS and NPPF measures.
- 12.7.2 A baseline assessment will be undertaken using a range of sources to provide a description of the socio-economic conditions within the local area at a local authority level, including employment and the economy. This will be done using established statistical sources, as presented in Section 12.5.

Assessment of Effects (including significance)

- 12.7.3 An assessment of effects will be undertaken to consider the impact of the Scheme on the baseline socio-economic conditions. The methodology will entail:
- Assessment of the likely scale, permanence and significance of effects associated with socio-economic receptors; and
 - An assessment of the potential cumulative effects with other schemes within the surrounding area.
- 12.7.4 The assessment of potential socio-economic effects will use policy thresholds and expert judgement to assess the scale and nature of the effects of the Scheme against baseline conditions. For socio-economics, there is no accepted definition of what constitutes a significant (or not significant) socio-economic effect. It is, however, recognised that effects are categorised according to the scale (or magnitude) of impact and the sensitivity (or value) of the affected resource or receptor.
- 12.7.5 As such, the socio-economic effects will be assessed on the basis of:
- Sensitivity of resources / receptors: specific values in terms of sensitivity are not attributed to socio-economic resources/receptors due to their diverse nature and scale, however the assessment takes account of the qualitative (rather than quantitative) 'sensitivity' of each receptor, and in

particular, their ability to respond to change based on recent rates of change and turnover (if appropriate);

- Magnitude of impact: this entails consideration of the size of the effect on people or business within the context of the area in which the effects will be experienced; and
- Scope for adjustment or mitigation: the socio-economic study is concerned in part with economies. These adjust themselves continually in response to changes in supply and demand, and the scope for the changes brought about by the Scheme to be accommodated by market adjustment will therefore be a criterion in assessing effect significance.

12.7.6 The assessment aims to be objective and quantify effects as far as possible. However, some effects can only be evaluated on a qualitative basis. Effects are defined as follows:

- Beneficial classifications of effect indicate an advantageous or beneficial effect on an area, which may be minor, moderate, or major;
- Negligible classifications of effect indicate imperceptible effects on an area;
- Adverse classifications of effect indicate a disadvantageous or adverse effect on an area, which may be minor, moderate or major; and
- No effect classifications indicate that there are no effects on an area.

12.7.7 Based on consideration of the above, where an effect is assessed as being beneficial or adverse, the scale of the effect has been assigned using the below criteria:

- Minor: a small number of receptors are beneficially or adversely affected. The effect will make a small measurable positive or negative difference on receptors at the relevant area(s) of effect;
- Moderate: a noticeable number of receptors are beneficially or adversely affected. The effect will make a measurable positive or negative difference on receptors at the relevant area(s) of effect; and
- Major: all or a large number of receptors are beneficially or adversely affected. The effect will make a measurable positive or negative difference on receptors at the relevant area(s) of effect.

12.7.8 Those effects which are found to be moderate or major are considered to be 'significant' and those which are minor or negligible are 'not significant'.

12.7.9 Duration of effect is also considered, with more weight given to reversible long-term or permanent changes than to temporary ones. Temporary effects are considered to be those associated with the construction works. Long-term reversible effects are generally those associated with the completed and operational development. For the purposes of this assessment, short-term effects are considered to be of one year or less, medium-term effects of one to four years and long-term effects of five or more years.

12.7.10 Consideration of employment and GVA effects will reflect the temporary and permanent impact on a principal economic area defined based on consideration of local authority boundaries and a typical travel time from the

Site. Homes and Communities guidance on “Additionality” will be applied to assess direct, indirect and induced impacts (Ref. 182).

12.7.11 The Grid Connection Corridor may have impacts on socio-economic receptors and land use during the construction and decommissioning phases of the Scheme. 132 kV cables will be required to export the electricity produced by the Scheme to the National Grid Drax Substation. It is likely that cables will be installed below ground, however as discussed in Section 2.3 the use of OHL is still being considered at this stage. If the cables are installed below ground, this would require trenching, typically of minimum 1.2 m depth, which would be covered after a short period of time. If cables are installed overhead, part closure along the route may be required for health and safety purposes during installation of the line, which would be mounted on wooden poles. For both options, this would be a relatively short duration and could be implemented in phases to limit disruption to the public.

12.8 Assumptions, Limitations and Uncertainties

12.8.1 Information on current land use from landowners on the Site will be required to determine existing employment generated within the existing Site. In the absence of this information, good practice guidance and professional judgement will be applied.

12.9 Summary of Elements Scoped In and Scoped Out

12.9.1 A summary of the elements scoped into and out of the assessment of socio-economic impacts are presented in Table 12-1.

Table 12-1: Elements scoped in and out of the socio-economic assessment

Element	Scoped in / Scoped Out
Employment, economic growth and training – Construction, operation and decommissioning	Scoped in. There is potential for the creation of jobs as well as training and apprenticeship opportunities, including for local residents.
Recreation, open space (including PRoW), community facilities and local services – construction, operation and decommissioning	Scoped in. There may be effects on the accessibility of recreational routes (including PRoWs), open space, community facilities and local services both within and beyond the Site boundary.
Private assets - Construction, operation and decommissioning	Scoped in. There is potential for the accessibility and amenity of receptors within and beyond the Site boundary, including businesses, residential properties, visitor attractions and development land, to be impacted.
Minerals Safeguarding	Scoped out, subject to consultation with East Yorkshire of Riding Council and North Yorkshire County Council. The mineral deposits will not be permanently sterilised by the Scheme and can be extracted, if required, after its decommissioning.

13. Transport and Access

13.1 Introduction

13.1.1 This section outlines the anticipated traffic and transport scope of assessment for the Scheme.

13.1.2 The objectives of the chapter are to:

- Describe the baseline environment in relation to traffic and transportation;
- Outline the methods and assessment to be undertaken for inclusion within the ES; and
- Identify any potential effects on users of the local transport network that may arise as a result of the Scheme and any potential mitigation measures.

13.1.3 This chapter should be read in conjunction with **Chapter 11 Air Quality**, **Chapter 11 Noise and Vibration**, **Chapter 12 Socio-Economics and Land Use**, **Chapter 14 Human Health** and **Chapter 16 Other Environmental Topics**.

13.2 Study Area

13.2.1 Due to the nature of the Scheme and the number of individual Solar PV Plots involved, consideration will need to be given to a number of locations within the surrounding highway network which could potentially be impacted. Key roads likely to require consideration include:

- A63
- A614
- A163
- A645
- B1228 Street Lane / Wood lane
- Wood Lane
- Tottering Lane
- Ings Lane
- Willitoft Road
- Spaldington Lane
- Brind Lane
- Rowlandhall Lane
- Bell Lane
- New Road

13.2.2 The extent of the Study Area for assessment in terms of highway impact will be subject to discussion, and agreement will be sought with National Highways, and East Riding of Yorkshire Council, Selby District Council and North Yorkshire County Council as highway authorities for the Strategic Road Network (SRN) and Local Road Network (LRN) respectively. At this stage, it is not considered that junction capacity analysis will be required. This will be discussed and agreed with National Highways and East Riding of Yorkshire Council, Selby District Council and North Yorkshire County Council.

13.3 Legislation, Planning Policy Context and Guidance

13.3.1 There is no applicable legislation specific to the assessment of transport and access. The following planning policy and guidance relating to transport and pertinent to the Scheme have been reviewed.

National Planning Policy

- National Planning Statement (NPS) for Energy (EN-1) (Ref. 36), section 5.13, with particular reference to paragraphs 5.13.3, 5.13.4 and 5.13.5, which state that if a project is likely to have significant transport implications, a Transport Assessment, Travel Plan and, if necessary, additional transport infrastructure should be provided to mitigate the impacts of the proposed development.
- Draft version of NPS EN-1 (Ref. 95) with particular reference to paragraphs 5.14.3, 5.14.4 and 5.14.5 which reiterate the measures in the current version adding that potential disruption to services and infrastructure (such as road, rail and airports) should be considered.
- There is no applicable policy on transport and access in the current NPS EN-3 (Ref. 5) however the Draft EN-3 (Ref. 96) sets out specific considerations which apply to solar farms in section 2.54, with particular reference to paragraphs 2.54.3 to 2.54.8. These consider the need for the most appropriate routes to be selected, the assessment of route suitability and the requirement for modifications to roads or bridges to be assessed, and the assessment of the impact of additional vehicles on the road network, including the cumulative effects of the solar farm with other developments (including abnormal load movements).
- National Planning Policy Framework (NPPF) (Ref. 40), with particular reference to paragraph 110 which states the application should promote sustainable transport modes where possible given the type and location of development; consider safe and suitable site access, reflect current guidance in terms of the design on parking and other transport elements, and ensure that any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree. Paragraph 11 states development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe. Paragraph 113 states a development that generates a significant amount of movement should be supported by a Transport

Statement (TS) or Transport Assessment (TA) and should provide a Travel Plan.

National Guidance

- Overarching principles on Travel Plans, Transport Assessments and Statements (DfT, 2014) (Ref. 183).

Local Planning Policy

- East Riding of Yorkshire Council's Local Transport Plan (Ref. 184), Including Appendix A – Network Management Plan which sets out how East Riding of Yorkshire Council will ensure HGV drivers are directed along the most appropriate routes. A freight map for the area has been developed. Abnormal Loads are also considered in Paragraph 3.8.5 of the Plan.
- Adopted East Riding Local Plan (2016) (Ref. 9), with particular reference to Policy EC4: Enhancing sustainable transport which covers transport assessment and freight movement. Policy EC4 sets out how new development should facilitate the use of non-car modes of transport and that developments generating significant freight along the East-West Multi-Modal Transport Corridor should capitalise on the opportunities of transporting freight by means other than road.
- Adopted Selby Core Strategy (2013) (Ref. 64) with reference to Policy SP15 (Sustainable Development and Climate Change through consideration of sustainable travel options through Travel Plans and Transport Assessments and the provision of cycle lanes and cycling facilities, safe pedestrian routes and improved public transport facilities.
- Saved Selby District Local Plan (2005) (Ref. 65) Policy EMP10 in relation to additional industrial development at Drax and Eggborough power stations, which provides a framework for the consideration of new development with respect to highway safety.

13.3.2 The policies set out above relate to how traffic and transport related impacts should be dealt with, in terms of identifying the level of impact, as well as mitigation, which might be necessary. Therefore, in accordance with the policies and guidance set out above, a Transport Assessment will be prepared (scope and approach to be confirmed with National Highways and East Riding of Yorkshire Council), which identifies the impact of the Scheme and what mitigation is required.

Industry Guidance

13.3.3 The IEMA Guidelines for the Environmental Assessment of Road Traffic (1993) (Ref. 185) provides guidance on examining the environmental impacts of developments in terms of traffic and transportation. This guidance has been used to outline the scope of the assessment.

13.4 Consultation

13.4.1 National Highways and other local authority Highways teams (East Riding of Yorkshire Council, North Yorkshire County Council and Selby District

Council) will be consulted with regard to traffic and transport to determine, and seek agreement on, the scope and approach.

13.4.2 This will include the extent of the Study Area for assessment in terms of highway impact and the scoping of potential junction capacity analysis.

13.5 Baseline Conditions

13.5.1 The Solar PV Site is located across of number of Solar PV Plots in the East Riding of Yorkshire, whilst the Grid Connection Corridor is located in the East Riding of Yorkshire and Selby. The traffic and transport Study Area will include the anticipated construction routes serving the Scheme, As a minimum, it is anticipated that the links mentioned in Section 13.1.3 will likely be used by construction vehicles to access the Scheme.

13.5.2 Baseline conditions for the land associated with the Scheme will be described in detail in the ES.

Sources of Baseline Information and Consultation

13.5.3 To inform the assessment of the Scheme, information from a number of sources will be collected. The sources which will be used are set out below:

- Automatic Traffic Counts (ATCs) will be undertaken at a number of locations in the vicinity of the Scheme to determine the baseline traffic conditions of the surrounding highway network. Average Annual Daily Traffic (AADT) flows will be derived from the ATC data to enable the baseline traffic flows to be established at the required design years. The extent of the traffic data and scope for any traffic surveys that may be required will be agreed with East Riding of Yorkshire Council, North Yorkshire County Council and Selby District Council Highways.
- Personal Injury Accident (PIA) data for the most recent five-year period, obtained, from the highway authorities, will provide information on each collision including severity as well as factors which attributed to the collision.
- Local travel information will be gathered from various sources including local bus operators and East Riding of Yorkshire Council, North Yorkshire County Council and Selby District Council
- OS / Architectural Base Mapping will be used to ascertain an accurate geographical representation of the areas in the vicinity of the Scheme; and
- Travel mode share data from the 2011 Census.

13.5.4 To determine the impact of the Scheme, a number of scenarios will be assessed using the information collated above. The scenarios considered appropriate for assessment are:

- Baseline (2022);
- Peak Construction Year without the Scheme; and
- Peak Construction Year with the Scheme.

- 13.5.5 The peak construction year will be ascertained from the construction programme once available and will consider both HGV and all other traffic associated with the construction of the Scheme.
- 13.5.6 The future baseline will be established by extrapolating the 2022 ATC data to future years using appropriate factors (based on the local MSOA) using the industry standard software TEMPro. This will provide a robust estimate as to the future baseline traffic levels during the three phases of construction.
- 13.5.7 A consideration of any committed and cumulative developments within the area will also be included.

Planned Surveys

- 13.5.8 ATCs will be undertaken during a neutral month and will provide two-way traffic flows, classified by vehicle type, including HGVs. In line with Transport Assessment Guidance (TAG) Unit M1.2 (Ref. 186) neutral periods are defined as Monday to Thursday from March through to November (excluding August) and avoiding the weeks before / after Easter. Surveys may be carried out outside these months if the conditions being surveyed are representative.
- 13.5.9 As discussed in section 13.4, the locations and timings of the ATC surveys, along with the requirement for any detailed junction capacity modelling will be agreed with East Riding of Yorkshire Council, North Yorkshire County Council and Selby District Council.
- 13.5.10 The ATC locations that have been selected, subject to agreement, will provide a basis for the analysis and incorporate local routes within the Study Area close to potential sensitive receptors, and routes along local strategic links, to provide a robust baseline for assessment. These locations will be surveyed for one full week, 24 hours a day.
- 13.5.11 The proposed ATC locations are shown on Figure 13-1.

13.6 Potential Effects and Mitigation

- 13.6.1 The nature of the Scheme is such that the greatest impact is likely to occur during the construction and decommissioning phases and this will be the focus of the assessment of transport affect presented in the ES.

Construction

- 13.6.2 During construction there will be temporary increases in traffic flows on the road network that will be used by construction vehicles to access the different construction areas. As stated in Section 2.4, it is currently estimated that, as a worst case, there could be up to a total 15 HGV movements per day during the peak construction period (e.g., 52-weeks of the 12 to 18 month construction programme). In addition, there will be ancillary construction traffic and vehicle movements associated with construction worker transportation (as a worst case it is currently estimated that up to 600 staff per day will be required to work on the Scheme during peak construction period).

13.6.3 A key change from the baseline position is the number and percentage of HGVs using local roads. Traffic generation for each phase of the development will be provided to AECOM so that it can be used for assessment purposes and inform the future baseline.

13.6.4 Other aspects of the construction phase could lead to a significant effect, such as:

- Severance to communities caused by a large increase in traffic for a longer period;
- Temporary increase in abnormal loads (for example, associated with the delivery of transformers for the 132/33 kV substations);
- Increased risk of road traffic accidents caused by a large increase in traffic for a longer period;
- Temporary road closures, diversions and widening;
- Construction traffic using temporary bell mouths and site entrances for access to construction areas; and
- Temporary closures or diversions of PRow and other public access routes.

13.6.5 Traffic associated with the different aspects of the Scheme and phases (split by vehicles/HGVs) will then be added to the network to form the future traffic levels. This will then be used to form the basis for assessment.

13.6.6 Further detail on proposed access to the Scheme will be included within the ES chapter and the Transport Assessment, which will be submitted with the application.

13.6.7 The potential mitigation measures, which could be implemented during the construction phase include:

- Development of a Construction Traffic Management Plan, which includes details on restrictions of HGV movements to certain routes, days of the week and times of the day; and
- Development of a Construction Worker Travel Plan, which includes details of methods to be used to encourage sustainable travel to / from sites for workers.

Operation

13.6.8 It is anticipated that there will be up to three permanent staff on-site at any one time during the operational phase, predominantly undertaking maintenance tasks. In addition, as a worst case assumption at this stage it is assumed there will be 10 to 20 visitors per week (equating to 2 to 4 visitors per day) for deliveries and servicing of equipment. Staff vehicles and those used for maintenance will primarily be four wheeled drive vehicles and vans, with HGVs rarely accessing the Solar PV Site during Scheme operation (only required for exceptional maintenance activities).

13.6.9 Due to the low level of trips likely to be generated within the network peak hours (with up to seven arrivals and seven departures expected daily), it is proposed to scope operational phase transport effects out the EIA. Further

detail of the operational stage transport arrangements will be set out in the ES and TA to support this approach.

Decommissioning

13.6.10 At this stage the number of vehicle movements required to decommission the Scheme is not known, as such the level of predicted impact cannot be identified at this stage. However, it is predicted to be similar to the construction phase.

13.6.11 At the time of decommissioning, an assessment similar to that undertaken for the construction phase as part of the ES would be carried out.

Mitigation

13.6.12 Based on the potential for significant effects generated by the Scheme on traffic and transport, it is likely that mitigation will be required to reduce the potential impacts.

13.6.13 Embedded and Additional (Project Specific) Mitigation Measures including travel planning and HGV management will be incorporated into a Framework Construction Traffic Management Plan (CTMP) to be submitted with the application.

13.6.14 Programming of HGV movements may be subject to restricted periods of the day and the working week on some, or all, of the access routes. For example, on routes close to schools HGV movements may be restricted during drop off and pick up times to improve traffic flow and safety.

13.6.15 Other minor highway improvements could potentially be carried out in sensitive locations to reduce the impact of the construction traffic.

13.6.16 The assessment of routes from the A road network to the sites will determine the feasibility of routes and where mitigation works are required.

13.6.17 It is anticipated that all mitigation required will be set out within the outline designs where required for route improvements between the A road network and the Site. Swept path analysis will be presented to support these designs where required. Temporary diversion or other mitigation measures for footpaths and cycle paths will be proposed where necessary.

13.7 Assessment Methodology

Impact Assessment Methodology

13.7.1 The methodology for assessing the impact of development-generated traffic will be based on that outlined in Institute of Environmental Assessment's (IEA, now known as the Institute of Environmental Management and Assessment) 'Guidelines for the Environmental Assessment of Road Traffic' (January 1993) (Ref. 185). The IEA guidelines state that a link on the

highway network should be included within the study if one of the following criteria is met:

- Rule 1 – Traffic flows increase by more than 30% (or HGV flows increase by more than 30%); or
- Rule 2 – Traffic flows in sensitive areas increase by more than 10%.

13.7.2 The IEMA guidelines recommend that several environmental effects may be considered important when considering traffic from an individual development. This chapter will consider the following effects:

- Total Traffic Increase
- HGV Increase
- Severance;
- Pedestrian delay;
- Pedestrian and cyclist amenity;
- Fear and Intimidation;
- Accidents and safety.

13.7.3 The significance of effect is determined through consideration of two elements; the magnitude of the impact and the sensitivity of the receptor. The following sections outline the approach that would be used to determine these factors.

13.7.4 The overall effect will be determined by measuring the magnitude of the impact following mitigation measures (where applicable) against criteria including; the number of activities of the population affected; the type and sensitivity of the receptor; and the type of impact. Effects are defined as beneficial or adverse, with effects further defined using the following classifications:

- Minor – slight, very short, or highly localised impact of no significant consequence;
- Moderate – limited impact (by extent, duration or magnitude) which may be considered significant; and
- Major – considerable impact (by extent, duration or magnitude) of more than local significance, or in breach of recognised acceptability, legislation, policy or standards.

13.7.5 The IEMA guidelines state that the magnitude of each impact should be determined as the predicted deviation from the baseline conditions.

Transport Assessment

13.7.6 The ability of the highway network to accommodate the development traffic will be assessed and reported in a Transport Assessment (TA) which will form a technical annex to the ES Chapter. The TA will include information on:

- A review of relevant national, regional and local policies;
- Description of the existing baseline conditions – a thorough description of the roads, railway lines, footpaths, bridleways and cycle paths. Traffic

flows on these routes and levels of use on bridleways, footpaths and cycle paths will be measured through site observations and agreed with the relevant planning authority;

- A review of the road safety data for the most recent five-year period within the identified search area;
- Description of the Scheme, setting out timescales for construction, compound locations, access routes to compounds, construction methods;
- Traffic generation of compounds and any other relevant sites for construction staff with a profile of arrivals and departures for the day and HGV traffic with a profile of arrivals and departures for the day;
- Distribution and assignment of trips on the road network with construction traffic distributed based on a gravity model of worker catchment area and HGVs assigned from the A road network;
- Analysis of abnormal load requirements and routing;
- Swept path analysis to assess construction vehicle movements and access suitability;
- Mitigation measures; and
- Summary and conclusions.

Receptor Sensitivity

13.7.7 As stated above the methodology for assessing the impact of Scheme generated traffic will be based on that outlined in the IEA guidelines. The general criteria for defining the importance or sensitivity of receptors are set out in Table 13-1.

Table 13-1: Receptor sensitivity criteria (traffic and transport)

Sensitivity	Description
Very High	Schools, colleges, playgrounds, hospitals, retirement homes.
High	Heavily congested junctions, residential properties very close to carriageway.
Medium	Congested junctions, shops/businesses, areas of heavy pedestrian / cycling use, areas of ecological/nature conservation, residential properties close to carriageway.
Low	Tourist/visitor sites, places of worship, residential areas set back from the highway with screening.
Negligible	Those people and places located away from the affected highway link.

13.7.8 The link sensitivity will be based upon an average sensitivity of the whole link with a separate assessment of high / very high receptors. Some links will be broken down into sensible sections where appropriate i.e., between two main junctions or villages etc.

Magnitude

13.7.9 General criteria for defining the magnitude of an impact are set out in Table 13-2. Key factors influencing this include:

- The physical or geographical scale of the impact, (note that this will be relative to the scale of the receptor or resource affected);
- The duration of the impact – will it be short term, lasting for a few days or weeks, or long term, lasting for several years;
- The frequency of the impact – will it occur hourly, daily, monthly or will it be permanent lasting for the duration of the development; and
- The reversibility of the effect – can it be reversed following completion of construction of the development.

Table 13-2: Impact magnitude (traffic and transport)

Sensitivity	Description
High	Total loss or major alternation to key elements/features of the baseline conditions such that post development character/composition of baseline condition will be fundamentally changed.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition of the baseline condition will be materially changed.
Low	Minor shift away from baseline conditions. Changes arising from the alteration will be detectable but not material; the underlying character/composition of the baseline condition will be similar to the pre-development situation.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a 'no change' situation.

13.7.10 The IEMA guidelines state that the magnitude of each impact should be determined as the predicted deviation from the baseline conditions. This will be done for the construction and decommissioning phases. The operational phase will be scoped out.

13.7.11 The IEMA guidelines sets out a number of criteria by which the magnitude of impact can be measured. These are outlined below. Many of the criteria do not provide specific thresholds by which such impacts can be measured, and as a result will be measured qualitatively where necessary. These are described below and summarised in Table 13-3.

13.7.12 **Severance** is defined in the IEMA guidelines as the '*perceived division that can occur with a community when it becomes separated by a major traffic artery*'. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impeded pedestrian access to essential facilities. IEMA guidelines suggest that a

30%, 60% and 90% increase in traffic flows will result in a low, medium, and high change in severance respectively.

13.7.13 **Pedestrian Delay** is considered to be affected by the changes in volume, composition or speed of traffic, in terms of their respective impacts on the ability of pedestrians to cross roads. In general, increases in traffic levels and/or traffic speeds are likely to lead to greater increases in pedestrian delay.

13.7.14 **Driver Delay** – Traffic delays to non-development traffic can occur at several points on the network surrounding the site including; at the site entrance where there will be additional traffic movements, on the highways passing the site where there is likely to be additional traffic, at other key intersections along the highway which might be affected by increased traffic. These delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the network.

13.7.15 **Pedestrian and Cycle Amenity** is broadly defined as ‘the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic’. The guidance suggests that a tentative threshold for judging the significance of changes in pedestrian and cycle amenity would be where the traffic flow is halved or doubled.

13.7.16 **Fear and Intimidation** is ‘dependent on the volume of traffic, its HGV composition, and its proximity to people or the lack of protection caused by such factors as narrow pavement widths’.

13.7.17 A detailed assessment of **Accidents and Safety** will be carried out by examination of road traffic accident data for the most recent five-year period available. This analysis will be included in the Transport Assessment and undertaken to highlight if there are any existing safety issues on the local road network which may be exacerbated by the Scheme. The outcome of the assessment will be presented in the ES.

13.7.18 Information provided in Table 13-3 expands on the information from Table 13-2 and shows further details of the individual aspects of the assessment and the thresholds to be applied for each.

Table 13-3: Impact magnitude criteria (traffic and transport)

Magnitude	Description	Illustrative Criteria
High	HGV Construction Traffic	High number of construction vehicles using roads over a protracted period of time. More than a 40% increase for more than 6 months.
	Pedestrians / Cyclist Amenity	Limited or no facilities for pedestrians and cyclists with limited crossing facilities and low-quality linkages to the local facilities.
	Severance	Increase in total traffic flows of 90% and above (or increase in HGV flows over 10% based on the sensitivity of the receptors).

Magnitude	Description	Illustrative Criteria
	Accidents and Safety	High increase in traffic at known collision locations.
Medium	HGV Construction Traffic	Moderate number of construction vehicles using roads over a protracted time period. 16-39% increase for more than 6 months; or More than 40% increase for 3-6 months.
	Pedestrians / Cyclist Amenity	Few facilities for pedestrians and cyclists with limited crossing facilities and linkages to the local facilities.
	Severance	Increase in total traffic flows of 60-89% (or increase in HGV flows over 10% based on the sensitivity of the receptors).
	Accidents and Safety	Moderate increase in traffic at known collision locations.
Low	HGV Construction Traffic	Small number of construction vehicles using roads over a short period of time. 6-15% increase for more than 6 months; 31-39% for 3-6 months; or >40% increase for less than 3 months.
	Pedestrians / Cyclist Amenity	Facilities for pedestrians and cyclists with safe and convenient crossing facilities and good linkages to the local facilities.
	Severance	Increase in total traffic flows of 30-59% (or increase in HGV flows over 10% based on the sensitivity of the receptors).
	Accidents and Safety	Minor increase in traffic at known collision locations.
Negligible	HGV Construction Traffic	Occasional construction vehicles using roads over a short period of time. Less than 5% Increase for more than 6 months; or Between 6-30% increase for 3- 6 months; or Between 31-40% for less than 3 months.
	Pedestrians / Cyclist Amenity	Dedicated facilities for pedestrians and cyclists with safe and convenient crossing facilities and good linkages to the local facilities.
	Severance	Increase in total traffic flows of 29% or under (or increase in HGV flows under 10%).
	Accidents and Safety	Negligible increase in traffic at known collision locations.

Significance

13.7.19 The general approach adopted for evaluating the significance of effects considering the sensitivity of the receptor and the magnitude of impact is outlined in Table 13-4. Effects predicted to be ‘major’ or ‘moderate’ are considered significant whilst effects predicted to be ‘minor’ or ‘neutral’ are considered not significant.

Table 13-4. Significance of effects matrix (traffic and transport)

Impact Magnitude	Receptor Sensitivity				
	Negligible	Low	Medium	High	Very High
High	Minor	Moderate	Moderate	Major	Major
Medium	Negligible	Minor	Moderate	Moderate	Major
Low	Negligible	Negligible	Minor	Moderate	Moderate
Negligible	Negligible	Negligible	Negligible	Minor	Minor

13.8 Assumptions, Limitations and Uncertainties

- 13.8.1 At this stage the exact extent of the Study Area cannot be confirmed in terms of traffic and transport as detailed discussions have not yet taken place with National Highways or East Riding of Yorkshire Council/North Yorkshire County Council/Selby District Council as highway authorities for the SRN and LRN respectively. As set out in Section 13.4 such discussions are due to take place and will be carried out in advance of assessment.
- 13.8.2 The Site is located within a rural area where access is likely to be constrained in terms of the design of highway and access to public transport.
- 13.8.3 It is assumed that as they will be carried out during a neutral month (see paragraph 13.5.8) base traffic surveys will be representative of normal traffic conditions. Construction traffic flows will be based upon a best estimate of likely requirements adopting a precautionary approach so that numbers are not underestimated.

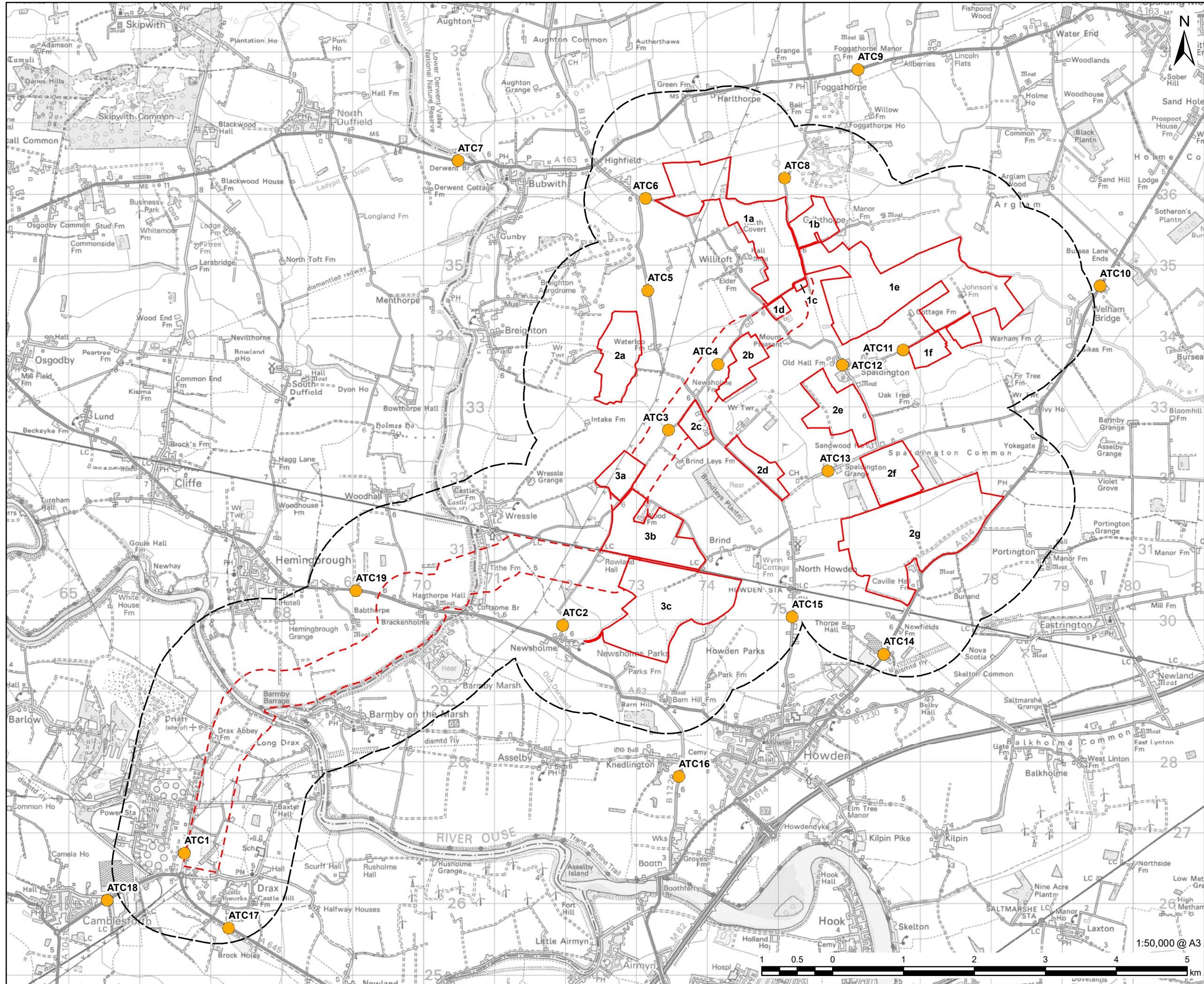
13.9 Summary of Elements Scoped In and Scoped Out

13.9.1 A summary of the elements scoped into and out of the assessment of transport and access are presented in Table 13-5.

Table 13-5: Elements scoped in and out of the assessment of transport and access

Element	Scoped in / Scoped Out
Severance (construction)	Scoped in. The temporary increase in traffic could generate potentially significant impacts on severance.
Driver delay (construction)	Scoped in. The temporary increase in traffic could have potentially significant impacts on driver delay.

Element	Scoped in / Scoped Out
Pedestrian delay (construction)	Scoped in. The temporary increase in traffic could have potentially significant impacts on pedestrian delay.
Pedestrian and cyclist amenity (construction)	Scoped in. The temporary increase in traffic could have potentially significant impacts on pedestrian and cyclist amenities.
Fear and intimidation (construction)	Scoped in. The temporary increase in traffic could have potentially significant impacts on fear and intimidation.
Road safety and accidents (construction)	Scoped in. The temporary increase in traffic could have potentially significant impacts on road safety.
Total traffic increase (construction)	Scoped in. The temporary increase in traffic could have potentially significant impacts.
HGV increase (construction)	Scoped in. The temporary increase in traffic could have potentially significant impacts in relation to HGVs.
Hazardous loads (construction)	Scoped out. There are no nearby road features which suggest that the transfer of materials poses a risk beyond that which would be expected on the general highway network
Assessments for the operational phase	Scoped out. No significant effects predicted due to low vehicle numbers
Assessments for the decommissioning phase	Scoped out due to uncertainties in relation to future traffic flows and the magnitude of impacts being the same or less than during construction and therefore able to conclude with confidence the significance of effect would be the same or less than has been determined for the construction phase.



PROJECT
East Yorkshire Solar Farm

CLIENT
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- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - 1km Buffer of Solar PV Site & Grid Connection Corridor
 - Potential Automatic Traffic Count Location

NOTES
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ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

FIGURE TITLE
Potential Automatic Traffic Count Locations

FIGURE NUMBER
Figure 13-1

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14. Human Health

14.1 Introduction

14.1.1 This section sets out the scope and methodology for the Human Health assessment of the Scheme.

14.2 Study Area

14.2.1 The assessment will consider all human health receptors in surrounding areas which have potential to be impacted by the Scheme. It should be noted, however, that it is not always possible to determine the catchment area for community facilities. Residents of an area may utilise facilities located within different districts, counties or regions without regard for statutory boundaries.

14.2.2 The Study Area for human health comprises four wards: Howdenshire, and Howden in East Riding of Yorkshire; and Camblesforth and Carlton, and Derwent within Selby District. These have been identified based on their proximity to the Scheme³, conferring a high likelihood that they could experience effects arising from construction activities and traffic, and the Scheme in operation and decommissioning.

14.3 Legislation, Planning Policy Context and Guidance

Legislation

14.3.1 The Infrastructure Planning (EIA) Regulations 2017 (Ref. 1) require the consideration of the likely significant direct or indirect effects of projects on 'population and human health'.

14.3.2 The Health and Care Act 2022 (Ref. 223) proposes health reforms in England, removes existing competition rules and formalises Integrated Care Systems (ICS). Each ICS has been established with four strategic purposes:

- Improve population health and healthcare;
- Tackling unequal outcomes and access;
- Enhance productivity and value for money; and
- Helping the NHS to support broader social and economic development.

Planning Policy

14.3.3 Planning policy and guidance relating to human health and pertinent to the Scheme include:

National Planning Policy

14.3.4 NPS EN-1 (Ref. 36) with specific reference to Section 4.13 which acknowledges that access to energy is beneficial to society as a whole and

³ The Red Line Boundary of the Scheme falls within Howdenshire Ward. Plot 3c borders Howden Ward. The Grid Corridor Connection goes through Derwent Ward and Camblesforth and Carlton Ward. National Grid Drax Substation is located in Camblesforth and Carlton Ward.

that the production, distribution, and use of energy may have negative impacts on some people's health. Decision-makers must consider the potential effects of development proposals on human health and identify measures to avoid, reduce or compensate for these impacts. Negative effects could be associated with both direct impacts (including increased traffic, air or water pollution, dust, odour, hazardous waste and substance, noise, exposure to radiation, and increases in pests) and indirect impacts (including access to key public services, transport or the use of open space for recreation and physical activity). Paragraph 5.10.2 acknowledges the health benefits of open space (including green infrastructure) which would be provided by the Scheme.

- 14.3.5 Draft version of NPS EN-1 (Ref. 95) section 4.3, 'Health' highlights the need to assess potential adverse health impacts, such as increased traffic, air pollution and noise, of proposed projects.
- 14.3.6 NPPF (Ref. 7) with specific reference to Section 8, 'Promoting healthy and safe communities' which sets out the need for planning policies to promote healthy, inclusive and safe places. This includes the provision of social, recreational and cultural facilities which the community needs.

National Guidance

NHS Long Term Plan 2019

- 14.3.7 The National Health Service (NHS) Long Term Plan 2019 (Ref. 194) sets out a ten-year programme of phased improvements to the NHS, including measures that the NHS will take to contribute to strengthening preventative health measures and reducing health inequalities. The plan outlines how the NHS will attempt to reduce health inequalities through wider preventative action in deprived areas and improve integrated community-based care systems.

Spatial Planning for Health: An evidence resource for planning and designing healthier places (2017)

- 14.3.8 Public Health England's guidance 'Spatial Planning for Health: An evidence resource for designing healthier places' (Ref. 195) highlights that the built and natural environment is a key environmental determinant of health and wellbeing.
- 14.3.9 The review identifies five key aspects of the built and natural environment which can be influenced by local planning policy:
- Neighbourhood design;
 - Housing;
 - Healthier food;
 - Natural and sustainable environment; and
 - Transport.
- 14.3.10 The review provides the evidence base underpinning why each of these aspects are important determinants of health and sets out principles which public health professionals and planners should follow to ensure healthier places.

14.3.11 Of these five key aspects, ‘neighbourhood design’ and ‘natural and sustainable environment’ are deemed most relevant to the Scheme:

14.3.12 With regard to ‘neighbourhood design’, the review states that “*The design of a neighbourhood can contribute to the health and well-being of the people living there.*” (Pg. 11, Ref. 195).

14.3.13 The ‘*natural and sustainable environment*’, is of importance for health, with “*a very significant and strong body of evidence linking contact and exposure to the natural environment with improved health and wellbeing*” (Pg. 38, Ref. 195).

Public Health England (PHE) Strategy 2020 to 2025

14.3.14 PHE’s Strategy 2020 to 2025 (Ref. 196) sets out the priorities through which PHE will work to protect and improve the public’s health and reduce health inequalities in the years leading up to 2025.

14.3.15 A key opportunity area highlighted in the Strategy which is pertinent to the Scheme is that which discusses place-based approaches to improving health outcomes through the creation of “connected, resilient, more cohesive communities” (Page 11, Ref. 196).

Planning Practice Guidance

14.3.16 Accompanying the NPPF, the National Planning Practice Guidance (PPG) (Ref. 197) provides guidance on planning and provides a web-based resource in support of the NPPF. The PPG offers guidance on health and wellbeing in planning and planning obligations, and covers:

- The role of health and wellbeing in planning; and
- The links between health and wellbeing and planning.

14.3.17 The guidance states that the health status and needs of the local population should be accounted for by plan-making authorities. Authorities “*should also assess quality, quantity of and accessibility to green infrastructure, sports, recreation and places of worship including expected future changes, and any information about relevant barriers to improving health and well-being*” (Paragraph 46, Ref. 197).

Local Planning Policy

14.3.18 Local planning policy relating to human health and pertinent to the Scheme comprises:

Yorkshire and the Humber

14.3.19 Yorkshire and the Humber Climate Action Plan (Ref. 198), which highlights the role of climate change response and mitigation (including encouraging renewable energy generation) to tackle poverty, improve public health and create and protect jobs.

East Riding of Yorkshire

14.3.20 The East Riding Local Plan (2016) (Ref. 8) and Draft Local Plan Strategy Document Update (May 2021) (Ref. 173), with particular reference to Policy S2: Addressing Climate Change, ENV1: Integrating high quality design, ENV5:

Strengthening green infrastructure, EC5: Supporting the energy sector, C2: Supporting community services and facilities and C3: Providing public open space for leisure and recreation.

14.3.21 The East Riding Health and Wellbeing Strategy 2019-2022 (Ref. 200), which aims to improve health outcomes and reduce health inequalities through four key priority outcomes:

- Children and young people in the East Riding enjoy good health and wellbeing
- Working age adults reduce their risk of ill health
- East Riding residents achieve healthy, independent aging
- Health inequalities in the East Riding are reduced.

Selby District Council

14.3.22 The Selby District Core Strategy Local Plan (Ref. 64), with particular reference to Policy SP12: Access to services, community facilities and infrastructure, Policy SP15: Sustainable development and climate change, SP17: Low-carbon and renewable energy and SP18: Protecting and enhancing the environment.

14.4 Consultation

14.4.1 No formal consultation, beyond the seeking of a Scoping Opinion, will be undertaken specifically to inform the assessment of human health impacts, however the information gathered during the non-statutory and statutory consultation events will be used as appropriate to help inform the scope of the assessment.

14.5 Baseline Conditions

14.5.1 A human health profile of the Study Area surrounding the Scheme will be built-up through desk-top research focusing on key indicators identified by Public Health England and Census data at ward level, including a comparison to local authority and national averages. Currently only certain datasets of the 2021 Census relevant to the assessment are available. The assessment will be based on 2011 Census as this is the most current 'complete' dataset available, however the 2021 Census dataset will be used in preference should all required data be released prior to ES submission.

14.5.2 Indicators deemed relevant to likely health impacts of the Scheme for each area have been identified in Table 14-1 below, which sets out data relating to the relevant wards, local authorities (East Riding of Yorkshire Unitary Authority and Selby District) and nation (England).

Table 14-1: Human health profile

	Howdenshire	Howden	Camblesforth and Carlton	Derwent	East Riding of Yorkshire	Selby	England
Population (2019)	15,213	5,171	6,073	5,741	341,173	90,620	55,550,138
Population aged under 16 (%) (2019)	16	15	16.1	17.4	16.4	18.4	19.2
Population aged over 65 (%) (2019)	23.3	25.1	22.5	19.5	26.2	20.4	18.4
Unemployment (% working age population claiming out of work benefits)	1.1	1.6	1.2	1.0	2.1	1.5	2.8
Long-Term Unemployment- rate per 1,000 working age population	1.5	2.6	1.6	0.0	3.3	1.8	3.2
General Health – bad or very bad (%)	4.5	4.4	5.1	4.4	5.4	4.6	5.4
Long term illness or disability (%)	16.4	16.9	16.8	13.8	19.1	26.4	17.6
Obese children (reception year) (%)	10.8	8.3	16.7	6.9	7.4	9.6	9.7
Emergency hospital admissions for COPD (SAR)	69.1	66.4	68.4	23.9	81.4	74.7	100
Deaths from respiratory diseases, all ages (SMR)	86.1	82.0	93.1	81.9	96.5	97.0	100

Source: PHE Local Health Data 2019 and 2011 Census

- 14.5.3 The human health profile shows that the population aged under 16 in the Study Area wards and in East Riding of Yorkshire and Selby is slightly below that of England. Conversely, every ward and local authority in the Study Area has a higher percentage of the population aged over 65 than in England.
- 14.5.4 Both unemployment and long-term unemployment rates are lower in the Study Area than in England.
- 14.5.5 The percentage of people self-reporting their health as ‘bad’ or ‘very bad’ and the percentage of people suffering from a long-term illness or disability are broadly comparable across the Study Area and England. This is also true of the percentage of obese children in the Study Area, with the exception of Camblesforth and Carlton ward, which is an outlier with a higher percentage of obese children.

14.6 Potential Effects and Mitigation

- 14.6.1 The Scheme has the potential to generate a range of health effects, some of which would be temporary, whilst others would be permanent. For the purposes of this ES, due consideration will be given to the Scheme in terms of the following:
- Impact on access to healthcare and other social services due to accessibility restrictions and/or increases in traffic during construction, operation and decommissioning;
 - Impact during construction, operation and decommissioning on air pollution, dust and odours, and on noise pollution and vibration, linked to onsite activities and traffic;
 - Impact of the Scheme on accessibility to open space and on active travel both during construction and decommissioning phases and operational phase;
 - Impact of the Scheme on access to employment and training, particularly for local residents; and
 - Contribution to social cohesion and community engagement.

14.7 Assessment Methodology

- 14.7.1 There is no consolidated methodology or practice for the assessment of effects on human health. Best practice principles are provided in the NHS England’s Healthy Urban Development Unit’s Rapid Health Impact Assessment (HIA) Toolkit 2019 (Ref. 201) and this toolkit forms the basis of the approach to assessing impacts on health and wellbeing. In addition, consideration will be given to the Health and Well-being checklist of the Wales Health Impact Assessment Support Unit (WHIASU) to inform the identification of relevant health determinants. Based on this, the impacts of the Scheme on human health are assessed qualitatively using professional judgement, best practice and drawing upon other assessments within the ES. Therefore, the methodology does not follow the proposed methodology outlined in **Chapter 5 Environmental Impact Assessment Methodology** of this Scoping Report.

14.7.2 The qualitative assessment of human health effects will consider the following health and well-being determinants of relevance:

- Access to healthcare services and other social infrastructure;
- Access to open space and nature;
- Air quality, noise and neighbourhood amenity;
- Accessibility and active travel;
- Access to work and training; and
- Social cohesion and neighbourhoods.

14.7.3 The assessment will consider the potential consequences for health and wellbeing from the construction, operation and decommissioning phases of the Scheme and draw upon the information reported within the following chapters of this Scoping Report:

- Air Quality (see Section 16.2);
- Land Quality (see Section 16.3.12);
- Noise and Vibration (Chapter 11);
- Transport and Access (Chapter 13);
- Socio-Economics (Chapter 12); and
- Landscape and Visual Amenity (Chapter 10).

14.7.4 Due to the diverse nature of health determinants and outcomes which are assessed, the assessment of human health effects describes the likely qualitative health outcomes, and it is not possible to quantify the severity or extent of the effects. The methodology set out in the HUDU Toolkit does not include a temporal scale of considerations of the effects. It does not provide a methodology for assessing the significance of outcomes or effects and as such none is proposed here. The potential health effects during construction, operation and decommissioning are described using the criteria as outlined in Table 14-2. Where an impact is identified, actions will be proposed to mitigate any negative impact on health, or to realise opportunities to create health benefits. It should be noted that in many cases, mitigation is embedded within the Scheme and the implementation of this is an underlying assumption of the assessment.

Table 14-2: Human health impact categories

Impact Category	Impact Symbol	Description
Positive	+	A beneficial impact is identified
Neutral	0	No discernible health impact is identified
Negative	-	An adverse impact is identified
Uncertain	?	Where uncertainty exists as to the overall impact

14.8 Assumptions, Limitations and Uncertainties

- 14.8.1 The Human Health assessment is based on professional judgement and considers both the adverse and beneficial impacts that the Scheme will have on surrounding receptors. It provides an indication of human health and well-being effects on people and the local community.
- 14.8.2 Ahead of there being a detailed construction programme, all temporary effects during construction and decommissioning will be assessed as occurring simultaneously and for a programme of approximately 18 to 24 months, within which there is estimated to be a peak construction period of 52-weeks when construction activities and associated HGV traffic movements are greatest, which is considered a worst case assumption for the assessment of health impacts. Whilst a phased construction may be possible, the approach taken to assuming an 18 to 24-month programme ensures that the likely ‘worst-case’ is assessed (i.e. all operations which may impact human health occurring within short space of time, for example leading to higher levels of daily emissions than would occur if the operations were more spread out), which may result in the overestimation of predicted health effects. Should the construction phase be lengthened or the Scheme delivered in phases, the predicted effects would be the same or less than those outlined in the ES chapter. Similarly, should parts of the Scheme be decommissioned in advance of the main decommissioning phase, the predicted effects would be the same or less than those outlined in this ES chapter. The assessment of a 18 to 24-month decommissioning period would therefore represent a worst-case scenario.

14.9 Summary of Elements Scoped In and Scoped Out

- 14.9.1 There are no elements scoped out of the human health assessment, a summary of the elements scoped into the assessment are presented in Table 14-3.

Table 14-3: Elements scoped in and out of the assessment of human health

Element	Scoped in / Scoped Out
Access to healthcare services and other social infrastructure – construction, operation and decommissioning	Scoped in. There is the potential for disruption to the accessibility of the public to healthcare services and other social infrastructure due to accessibility restrictions and/or increases in traffic during construction, operation and decommissioning.
Access to open space and nature – construction, operation and decommissioning	Scoped in. There may be some disruption to the accessibility of recreational routes (including PRoWs) and open space within and beyond the Site boundary.
Air quality, noise and neighbourhood amenity – construction and decommissioning	Scoped in. There may be air quality, noise and amenity impacts associated with onsite activities and traffic during the construction and decommissioning phases.

Element	Scoped in / Scoped Out
Accessibility and active travel – construction, operation and decommissioning	Scoped in. There may be effects on the accessibility and amenity of receptors within and beyond the Site boundary.
Access to work and training – construction, operation and decommissioning	Scoped in. There is potential for effects on work and training due to accessibility restrictions and/or employment generation associated with the Scheme.
Social cohesion and neighbourhoods – construction, operation and decommissioning	Scoped in. There are potential impacts associated with social cohesion and neighbourhoods due to potential disruption to the accessibility and amenity of receptors within and beyond the Site boundary, including businesses, visitor attractions, community facilities and residential properties.

15. Soils and Agricultural Land

15.1 Introduction

15.1.1 This chapter presents an initial baseline for Soils and Agricultural Land relevant to the Scheme, identifies the need for additional surveys to ensure there is appropriate information to accurately characterise the baseline, and sets out the Study Area. In addition, the chapter provides an overview of the assessment methodology to be followed for the environmental assessment and identifies the potential effects provisionally identified.

15.1.2 This chapter should be read alongside the following:

- **Chapter 8: Ecology** in relation to the assessment of potential impacts to the habitats supported by the land and soils within the Site;
- **Chapter 9: Flood Risk, Drainage, Surface Water** in relation to the assessment of potential impacts to the water environment from soil erosion;
- **Chapter 12: Socio-Economics** in relation to the assessment of the socio-economic impacts due to the change in land use.

15.2 Study Area

15.2.1 The Study Area for the Soils and Agricultural Land assessment is the boundary of the Site, which for this chapter is the Scoping Boundary and for the ES will be the Order limits. No buffer is applied when describing the Study Area as the impacts to soils and agricultural land only occur on the land that is directly impacted by the Scheme.

15.2.2 It is noted that through the iterative design process, the Study Area will become more refined overtime, particularly as the alignment of the Grid Connection Corridor is developed. The Study Area is therefore likely to change and evolve between scoping and final submission of the ES.

15.2.3 It is noted that to provide additional context to the discussion of agricultural land within the ES, the impacts (scale of loss of Best and Most Versatile (BMV) agricultural land) will also be considered in the wider (Regional) context of the administrative boundaries of East Riding of Yorkshire Council and Selby District Council.

15.3 Legislation, Planning Policy Context and Guidance

15.3.1 This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the assessment relevant to soils and agricultural land.

Legislation

15.3.2 Schedule 4, Part (y) of the Town and Country Planning (Development Management Procedure) (England) Order 2015 (Ref. 234) requires that Natural England be consulted if the area of a proposed permanent

development exceeds 20 ha of BMV land. Whilst Chapter 1 ‘New Financial Assistance Powers’ of the Agriculture Act (Ref. 231) states that the SoS “*may give financial assistance for, or in connection with, ...protecting or improving the quality of soil*”.

- 15.3.3 Currently there is no other legislation available which is relevant to agriculture and soils.

National Policy

- 15.3.4 Paragraph 5.10.8 of NPS EN-1 (Ref. 36) requires that impacts on BMV land are minimised and development directed towards non-agricultural land or land of poorer quality, where this is consistent with other sustainability considerations. It goes on to state that effects should be identified and applicants should seek to minimise impacts on soil quality taking into account any mitigation measures proposed. Draft NPS EN-1 (Ref. 95) retains the requirements of the current document and adds that where contamination is present, applicants should consider opportunities for remediation where possible. Applicants are also encouraged to develop and implement a Soil Management Plan which could help minimise potential land contamination.
- 15.3.5 There is no specific relevant policy within NPS EN-5 (Ref. 6) although Paragraph 5.10.8 of acknowledges the different impacts of OHL and underground cabling on agricultural land. Draft NPS EN-5 contains policy on the appropriate handling of soil, backfilling, and return of the land to the baseline condition (ALC grade) thus ensuring no loss or degradation of agricultural land. This should be based on soil and ALC surveys in line with the ALC guidelines (Ref. 233) and due consideration of the Defra’s Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref. 237).
- 15.3.6 Paragraphs 2.48.13 to 2.48.15 of Draft NPS EN-3 (Ref. 5) specifically relate to soils and agricultural land as factors influencing solar site selection. The policy mirrors NPS EN-1 (Ref. 36) stating that impacts on BMV land should be minimised where possible. Like Draft NPS EN-5 it directs the developer to the ALC guidelines (Ref. 227) and states land grading and soil types should be subject to survey to inform soil management at the construction, operation and decommissioning phases. It suggests this should be extended to the underground cabling and access routes. The soil survey data may also inform the suitable beneficial use of the land during the operational phase (for example informing the BNG assessment). Advice regarding soil survey and the Defra’s Code of Practice (Ref. 237) is reiterated.
- 15.3.7 The footnote to Paragraph 175 the NPPF 2021 (Ref. 7) states that “*Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality*”.
- 15.3.8 A Green Future: Our 25 Year Plan to Improve the Environment (Ref. 101) sets out the government’s 25-year plan to improve the health of the environment by using natural resources more sustainably and efficiently.

Local Policy

- 15.3.9 East Riding Local Plan (Ref. 104) Policy S4 (A.3.) ‘Supporting development in Villages and the Countryside’ seeks to protect BMV land and requires that

development “*does not involve a significant loss of best and most versatile agricultural land*”.

- 15.3.10 East Riding of Yorkshire and Kingston upon Hull Joint Minerals Local Plan (Ref. 12) Policy DM4: Best & Most Versatile Agricultural Land and North Yorkshire County Council Minerals and Waste Joint Plan (Ref. 13) Policies D10: Reclamation and afteruse and D12: Protection of agricultural land and soils, will be considered as policies relate to development in which there is temporary disturbance to soils and agricultural land, such as would occur for the underground cables. These policies require that soil quality is maintained so that the loss of BMV land is temporary as land can be returned to BMV status upon reinstatement.
- 15.3.11 Current adopted policy regarding soils and agricultural land in Selby is found in Selby District Core Strategy (Ref. 24), Policy SP18 and Objective 17. This seeks to protect BMV agricultural land by steering development to areas of least agricultural quality.
- 15.3.12 Emerging policy regarding soils and agricultural land in Selby is found in Selby District Council Local Plan Preferred Options (Consultation 2021) (Ref. 25). It states developers should avoid development of Grade 1 agricultural land unless there are exceptional circumstances where the benefits significantly outweigh the loss. Direct development towards land of the lowest quality available. Demonstrate soil resources have been protected and used sustainably in line with best practice.

Guidance

- 15.3.13 Planning Practice Guidance for the Natural Environment 2019 (PPGNE) under the heading Agricultural Land, Soil and Brownfield Land of Environmental Value advises that the ALC be used to assess the quality of farmland to enable informed choices to be made about its future use within the planning system.
- 15.3.14 It recommends Defra’s Code of Practice (Ref. 237) as a useful tool when setting planning conditions for development sites, as it provides advice on the use and protection of soil in construction projects, including the movement and management of soil resources.
- 15.3.15 Natural England’s Guide to Assessing Development Proposals on Agricultural Land (Ref. 233) sets out the government policies and legislation to refer to when considering development proposals that affect agricultural land and guidance on when Natural England should be consulted on development proposals. It also provides a detailed explanation of the ALC, information on published ALC resources and explains circumstances in which new detailed surveys may be required. The guidance also summarises the required survey methodology (also presented in Natural England’s 2012 Technical Information Note 049 (Ref. 232)).
- 15.3.16 As referred to above, Defra’s Construction Code of Practice for the Sustainable Use of Soil on Development Site (Ref. 237) provides Technical Guidance on the handling, storage and (re)use of soil within construction projects.

15.3.17 The Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings (Ref. 238) details stripping, handling, storage, reinstatement and management of soil resources, including advice on stockpile design.

15.3.18 The Ministry of Agriculture, Fisheries and Food's (MAFF) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land (Ref. 227) provides the current guidelines and criteria for grading the quality of agricultural land in England and Wales.

15.3.19 IEMA guidance document 'A New Perspective on Land and Soil in Environmental Impact Assessment' (Ref. 240) seeks to advocate a new and wider approach to assessing the soil functions, ecosystem services and natural capital provided by land and soils. It does not include a definitive methodology for how such assessment should be undertaken but provides examples for how a methodology should be developed.

15.4 Consultation

15.4.1 Consultation between the Applicant's land agent and landowners regarding survey access to the Solar PV Site is on-going. The Applicant's land agent will maintain ongoing communications with farmers and landowners throughout the planning and construction phases of the Scheme. Engagement with landowners and tenants will be ongoing during project design.

15.4.2 There have been no other consultations in relation to this chapter. Where required, consultations with Natural England take place during the EIA process. No other key stakeholder consultations are expected to take place specifically relating to agriculture and soils.

15.5 Baseline Conditions

15.5.1 The following sources of published information will be used to establish the baseline environment for soils and agricultural land within the ES:

- The Soil Survey of England and Wales: Northern England (1984) (Ref. 228);
- Soils of England and Wales, Map Sheet 1: Northern England 1:250,000 Map (1984) (Ref. 228);
- Provisional ALC 1:250,000 mapping of the Eastern Region (MAFF, 1993) (Ref. 229);
- Likelihood of Best and Most Versatile Agricultural Land - Strategic scale map, Eastern Region (Natural England, 2017) (Ref. 239);
- Multi-Agency Geographical Information for the Countryside (MAGIC). (DEFRA) (Ref. 69);

- Cranfield University (2015). 'Research to develop the evidence base on soil erosion and water use in agriculture: Final Technical Report (Ref. 230) and
- Met Office (1989) Climatological Data for Agricultural Land Classification (ALC) (Ref. 241).

15.5.2 A preliminary review of the available baseline data has been undertaken and is summarised below.

Agricultural Land

15.5.3 The ALC (Ref. 15) is the only standard method for classifying the quality of agricultural land in England and Wales. Land is assessed according to its versatility, productivity and workability, based upon inter-related parameters including climate, relief, soil characteristics and drainage. These factors form the basis for classifying agricultural land into one of five grades (with Grade 3 land divided into Subgrades 3a and 3b), ranked from excellent (Grade 1) to very poor (Grade 5).

15.5.4 The 1:250,000 scale Provisional ALC mapping (Ref. 15), which is also available via the Government's geographic information website, Magic.gov.uk (Ref. 69), is the most current and detailed published ALC data covering the whole of the Study Area. However, it is important to note that these data pre-date the revised ALC methodology issued in 1988 (Ref. 239) and as a result, the data do not provide a distinction between ALC Subgrades 3a (BMV) and 3b (non-BMV). Additionally, the scale of the mapping is such that it does not pick up variations in ALC grade for areas less than approximately 80 ha. The Provisional ALC mapping therefore provides an indication of the land quality in the Region, but the extent and distribution of BMV agricultural land within the Study Area cannot be defined from the Provisional mapping alone.

15.5.5 ALC survey data collated after the revised ALC methodology (Ref. 15) are available for certain discrete areas - usually in relation to data collated in advanced of proposed development or to inform Local Plan decisions. These data, known as Post-1988 surveys, do provide a distinction between Subgrades 3a and 3b and are available on Government's geographic information website, Magic.gov.uk (Ref. 69). There are no Post -1988 survey data within the Study Area, however Post-1988 data within the vicinity of the Site (for example the data to the south of Solar PV Plot 2g (Ref. 239)) will be reviewed for context.

15.5.6 As shown in Figure 15-1, the Provisional ALC data suggests that the Solar PV Site is predominantly within areas classified as Grade 4 with smaller areas of Grade 3 to the south and west. Solar PV Plot 2g is mapped as a combination of Grade 3 and Grade 2 land, which is the same Provisional grading as the land covered by the Post-1988 data to the south of the Plot (Ref. 239) for which the detailed survey showed the land to be a combination of Grades 1, 2, 3a and 3b.

15.5.7 Provisional ALC data suggests that the north of the Grid Connection Corridor is predominantly Grade 3 with patches of Grade 2, the middle section of the Corridor is Grade 1 land associated with the River Ouse, and land to the south of the Corridor around Drax is Grade 2 (Figure 15-1). Due to the east-

west orientation and extent of the bands of Grade 1 and Grade 2 land it is not possible for the Grid Connection Corridor (with an approximate northeast-southwest orientation) to avoid these.

- 15.5.8 To accurately define the ALC grading within the Solar PV Site, and therefore help inform Scheme design from an early stage, detailed soil and ALC survey to standard NE guidelines (Ref. 239 and Ref. 232) has been programmed for Autumn 2022. The detailed ALC survey will be undertaken by suitably qualified and experienced soil scientists at an approximate density of one inspection per ha, including one soil pit per 10 ha. Additionally, to inform the soil assessment composite samples (at a sampling density of between one per five and 1 per 10 ha depending upon the homogeneity of the land (based upon surveyor experience and professional judgement)) will be taken for laboratory analysis of Particle Size Distribution (PSD), soil organic matter (SOM), pH, and macronutrients (P, N, K, Mg). The sampling will be taken for different horizons. These data are required to help describe the sensitivity of the soil resource (as described in IEMA's guidance document Ref. 240) and will also feed into the design of the proposed habitat enhancement and BNG by ensuring that the proposed planting / seeding is suitable / can be supported by the soil types present.
- 15.5.9 Topsoil texture is a key component of ALC grading and often the determining factor in ALC classification. The PDS will therefore also be used in the ALC assessment to confirm the field determination of soil texture (which gives a valid, but an approximate result), with greater precision.
- 15.5.10 It is proposed that the soil and ALC survey excludes the Grid Connection Corridor. This area would incur temporary impacts but would be available for farming in the same way as currently following reinstatement of the soils. The top and subsoils would be stripped and stored separately adjacent to the cable trench and the soil profile would be reinstated upon completion (with all soil management and handling in line with Defra's code of Practice (Ref. 237)) allowing the original agricultural land use to resume and land quality (ALC grade) to be maintained. ALC grading would be calculated using the Provisional ALC Mapping (Ref. 15) to directly determine the proportions of ALC Grades 1, 2, 4 and 5. For areas Provisionally mapped as Grade 3, the relative proportions of Subgrade 3a and 3b would be calculated using Natural England's Likelihood of BMV Agricultural Land mapping (Ref. 239), whereby land mapped as High Likelihood is considered as Subgrade 3a; land mapped as Low Likelihood is considered as Subgrade 3b; and land mapped as Moderate Likelihood is split 50/50 between Subgrades 3a and 3b.

Soils

- 15.5.11 The published soils data for the Site are taken from Soil Survey of England and Wales (Ref. 228) 1:250,000 mapping. As for the ALC data, the scale of the data/mapping is such that it is not accurate to the field level and does not pick up small-scale local variations in soil type. It does however provide a general indication of the soil types within the Study Area which can be utilised for the assessment.
- 15.5.12 Soil series are the lowest category in the soil classification system and are precisely defined based upon particle-size distribution, parent material

(substrate) type, colour and mineralogical characteristics. The Soil Survey of England and Wales mapping shows soil associations which are groupings of related soil series.

- 15.5.13 A hard-copy of the mapping has been reviewed for the Scoping Report however the digital data will be purchased to allow figure production for the ES.
- 15.5.14 The majority of the soils within the Solar PV Site are mapped as the Foggathorpe 2 (712i) association, these are mainly slowly permeable seasonally waterlogged stoneless clayey and fine loamy over clayey soils with some similar coarse loamy over clayey soils. They are at very small risk of erosion by water (Ref. 230). Soils of the Sessay (831b) association are mapped to the north of the rail line and are located in Solar PV Plots 2g and 3b. These soils generally occur on flat land and are fine and coarse loamy often stoneless, permeable soils affected by groundwater They are often associated with slowly permeable seasonally waterlogged fine loamy over clayey and clayey soils and are at small risk of erosion by wind (Ref. 230).
- 15.5.15 With the exception of a very small area adjacent Solar PV Plot 3b, the section of the Grid Connection Corridor within the administrative area of East Riding of Yorkshire Council is all mapped as the Foggathorpe 2 association, as described above. The Sessay association (as described above) is present adjacent to Plot 3b.
- 15.5.16 Within the administrative area of Selby District Council, the soils are more variable and occur in a more mosaic-like pattern. From north to south in the approximate order they are first encountered these soils are mapped as Foggathorpe 2 (712i), Fladbury 3 (813d), Sessay (831b), Blackwood (821b) and Romney (532b) associations.
- 15.5.17 Soils of the Foggathorpe 2 and Sessay associations are described above. Soils of the Fladbury 3 association occur on flat land and are considered to be at risk of flooding, they are stoneless clayey, fine silty and fine loamy soils affected by groundwater which are at very small risk of water erosion. Soils of the Blackwood association are deep permeable sandy and coarse loamy soils which are at small risk of erosion by wind. Farmed land generally requires groundwater to be controlled by ditches. Soils of the Romney association occur on flat land and farmed land generally requires groundwater to be controlled by ditches and pumps. Soils are deep stoneless permeable calcareous coarse and fine silty soils, that are at very small risk of water erosion.
- 15.5.18 The proposals for soil survey are described in the agricultural land section above.

15.6 Potential Effects and Mitigation

15.6.1 The assessment will consider the following receptors within the Study Area:

- Agricultural land and land use including the loss of BMV land;
- Quality of soil resources in terms of potential for disturbance/damage or improvement through changes in land management; and
- Loss of soil resources (including biosecurity).

Agricultural Land

- 15.6.2 The Scheme would result in a short-term temporary land-use change from agricultural to non-agricultural for the duration of the construction period of the Grid Connection Corridor and Solar PV Site; and could potentially result in a long-term temporary land-use change from agricultural to non-agricultural for all or parts of the Solar PV Site depending upon whether sheep grazing (see Section 15.8) is to be undertaken during the Scheme's operational lifetime. Permanent loss of agricultural land within the Solar PV Site will likely be limited to any areas of ecological enhancement / habitat creation which are expected to remain after the Scheme has been decommissioned.
- 15.6.3 There is potential for BMV land to be present within the Solar PV Site (Provisional Grade 3) and therefore potential for short and long-term temporary and permanent loss of BMV agricultural land to occur, depending upon land use.

Soil Resource Quality

- 15.6.4 The disturbance of soil resources may occur *in situ*, for example through trafficking by vehicles or through soil removal, handling, storage and subsequent reinstatement. For both the construction and operational phase, activities that will cause disturbance to and potentially impact upon soil resources include the following:
- Stripping and stockpiling of topsoil and subsoil, storage and reinstatement;
 - Ground excavation;
 - Trenchless drilling (HDD);
 - Stockpiling materials;
 - Levelling ground;
 - Cable trenching;
 - Haul road construction; and
 - Vehicle movements onsite.
- 15.6.5 This disturbance may result in the impairment of soil function, quality and resilience. This effect comprises such changes as:
- Compaction and smearing (damage to soil structure);
 - Conditions within the soil profile conducive to excessive drying or wetness;
 - Mixing of distinct soil horizons (e.g. topsoil with subsoil) reducing their potential reuse;
 - Damage or removal of vegetation layer;
 - Changes in the soil profile stone content;

- Loss of nutrients (e.g. nitrogen), biota (e.g. bacteria, fungi, earthworms) and reduction in soil fertility; and
 - Loss of ecosystem services, such as the ability of the soil to support food production and habitat creation.
- 15.6.6 The solar PV frames are piled directly into the ground without prior soil removal with limited potential to damage soil in terms of soil structure, nutrient content and soil biological activity.
- 15.6.7 The majority of disturbance of soil resources will occur within the construction phase. This will be largely restricted to Grid Connection Corridor, and the substations and interconnecting cables and within the Solar PV Site. There will be some further small-scale disturbance associated with accesses, the battery storage facility and other infrastructure.
- 15.6.8 During the operational lifetime of the Scheme there is potential for additional disturbance of soil resources to occur during any maintenance or remedial works which may be required, especially in relation to the Grid Connection Corridor. The scale and extent of these works would be far less than required for initial construction, being confined to the specific areas where maintenance is required, and works would adhere to standard industry practice (i.e., embedded mitigation measures) and soil management as per the construction phase of works.
- 15.6.9 The removal of areas of the Solar PV Site from arable rotation for at least 40 years has the potential to deliver environmental benefits, the most important being increase in soil resource and land quality. This would occur through an increase soil organic matter (SOM) content due to the lack of regular disturbance by cultivation and potential inputs from the presence of livestock (sheep manure). Increase in SOM content equals carbon sequestration (SOM contains 58 % carbon), which would contribute to removing carbon dioxide from the atmosphere and mitigation of climate change. Increase in SOM content would also result in positive effects on other soil properties, such as water infiltration rates and water holding capacity (which contributes to flood alleviation), nutrient content, microbial diversity and activity. Increased SOM would also increase the soil buffering capacity, reducing the frequency of liming. It is also likely that the subsoil structure would be improved owing to deep root systems of the permanent grassland vegetation and increased earthworm activity (promoted by lack of disturbance and ample plant food source) stimulating the aggregation of soil particles.

Loss of Soil Resources

- 15.6.10 It is assumed that as development is temporary, all soil resources will be retained onsite and not exported for reuse elsewhere. There is unlikely to be surplus soil from the proposed permanent development, if this is to occur all soil will be retained for reuse on site.
- 15.6.11 The inappropriate removal, handling and storage of soil resources during construction activities may also render them unsuitable for reuse in site restoration and, therefore, also constitutes a loss of soil resource (e.g., the mixing of topsoil and subsoil; the mixing of soils of differing textures, or the mixing of soils with non-soil substrate or other unsuitable materials) as this mixing cannot be reversed nor the constituent materials returned to their

original state. Incorrect handling leading to mixing and loss of suitability is considered the greatest risk to soil retention.

15.6.12 The loss of soil resource may result in the impairment of the remaining soils' function, quality and resilience. This also comprises such changes as reduction of topsoil depth.

15.6.13 During large-scale projects such as the Scheme, there is the potential for disease and pathogen transfer between different areas of agricultural land (i.e., a biosecurity risk). This is considered in the loss of soil resource as the main cause of potential disease and pathogen transfer and is the transfer of soil from infected to uninfected areas via vehicles, plant and machinery.

Mitigation

15.6.14 The short-term temporary loss of agricultural land (including BMV) during construction of the Scheme and any maintenance works during operation cannot be avoided, however through ongoing consultation with landowners measures will be taken to minimise impacts to the surrounding land and farming operations as described in Section 15.4.

15.6.15 The permanent loss of agricultural land due to the Scheme will likely be limited to areas of ecological enhancement / habitat creation within the Solar PV Site which are expected to remain after the Scheme has been decommissioned. The loss of this land cannot be mitigated however, where practicable and depending upon the habitats to be created, these will be located on non-BMV land.

15.6.16 The potential for continued agricultural use within the Solar PV Site during operation by using the land as permanent pasture for sheep grazing is being explored by the Applicant. As set out in paragraph 2.5.4, this subject to confirmation of the absence any restrictive covenants that would prevent such use and the ES will demonstrate that grazing is secured in respect of the operation of the Scheme. Where this can be established the loss of agricultural land would be avoided (see also Section 15.8). It is noted that the density of grazing would be managed; and grazing restricted to drier periods when the land is less prone to poaching and compaction to mitigate damage to soil resources.

15.6.17 Where possible, mitigation measures to avoid or reduce soil damage and loss will be incorporated into the design of the Scheme (embedded mitigation) such that they inform its alignment (Grid Connection Corridor), layout (Solar PV Site) and/or how it shall be constructed. Through iterative assessment, potential impacts will be predicted and opportunities to mitigate them identified with the aim of preventing or reducing impacts as much as possible. This approach provides the opportunity to prevent or reduce potential adverse impacts from the outset.

15.6.18 Industry standard guidance/current best working practice (for example measures set out in Ref. 238 and Ref. 237) will be followed in relation to soil workings throughout the construction and operational phases of the Scheme and, as such, is considered to provide embedded mitigation. This mitigation will be set out in an Outline Soil Management Plan (SMP) to be submitted with the ES; this will form the basis of a detailed SMP to be produced pre-

construction. The SMP will also draw upon the soil survey data collected for the Scheme referenced in Section 15.5 to ensure that the mitigation measures are tailored to the soils encountered.

15.6.19 To minimise risk of soil erosion within the Solar PV Site, existing grass cover would be maintained, and new permanent grassland mix cover created (grassland mix dependent upon any habitat creation requirements). This cover would be maintained for the lifetime of the Scheme and would protect the soil surface from the effects of surface run-off. Any areas where vegetation cover was damaged and/or bare soil surface was visible, would be re-seeded. Additionally individual angled solar modules would be installed with rain gaps to allow water to disperse more evenly.

15.7 Assessment Methodology

15.7.1 The impacts to soils and agricultural land would be assessed for the construction and operational phases of the development. As set out in **Chapter 2 The Scheme** decommissioning impacts are expected to be similar to, or of a lesser magnitude than, construction effects. Therefore, decommissioning effects will be considered to be the same as construction phase effects and will be scoped out of specific assessment within the ES.

15.7.2 The assessment will be undertaken in consideration of IEMA's guidance document 'A New Perspective on Land and Soil in Environmental Impact Assessment' (Ref. 240). With particular reference to Section 9: Assessing Impacts on Land and Soil.

15.8 Assumptions Limitations and Uncertainties

15.8.1 It is not currently confirmed how the land will be managed under and around the solar PV modules, however it is assumed that sheep grazing will be undertaken on at least some of the Solar PV Plots, thereby mitigating the temporary loss of land to agricultural use during the operation of the Scheme. This is currently being explored by the Applicant through landowner discussions.

15.8.2 It is assumed that as the Scheme is not permanent, all soil resources will be retained onsite and not exported for reuse elsewhere.

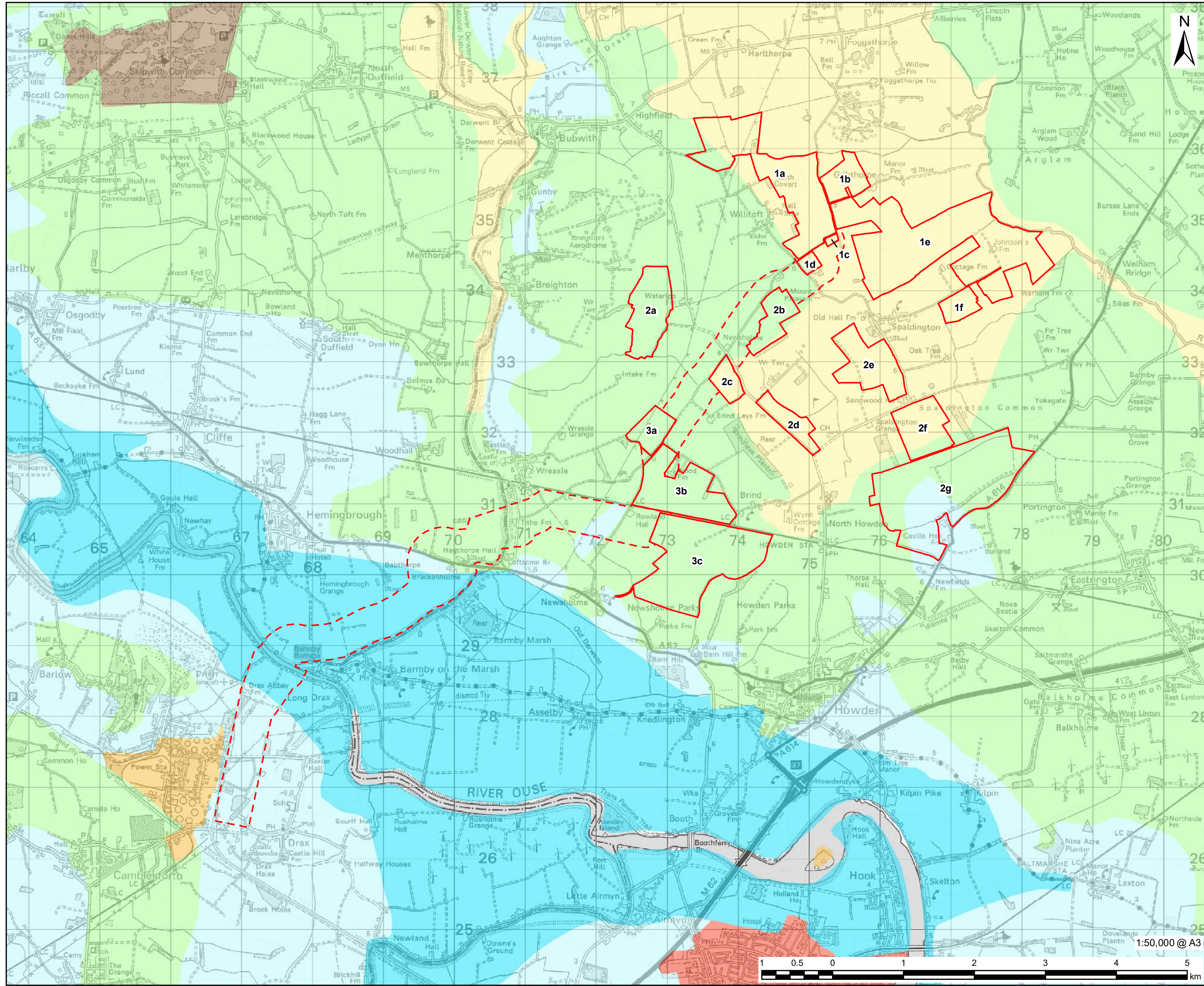
15.8.3 There is the potential for new development to have resulted in the loss of areas of agricultural land and soil resource since the soils and ALC mapping referred to in the assessment were produced. Although it would be proposed for the mapping to be reviewed against current aerial imaging and larger / obvious areas of change to be excluded from any calculation of areas presented in the ES, there would be some limited (due to the scale of the mapping) uncertainty as it would not be possible to capture all these changes accurately.

15.9 Summary of Elements Scoped In and Scoped Out of Assessment

15.9.1 A summary of the elements scoped into the assessment of soils and agricultural land are presented in Table 15-1.

Table 15-1: Elements scoped in and out of the assessment of soils and agricultural land

Element	Scoped in / Scoped Out
Agricultural land and land use – Construction and Operation.	Scoped in. The Scheme has the potential to impact agricultural land
Soil resource quality - Construction and Operation.	Scoped in. The Scheme has the potential to impact soil resources in terms of disturbance and damage. Improvements in soil quality may also arise.
Loss of soil resources - Construction and Operation.	Scoped in. The Scheme has the potential to result in a loss of soil resources, including related biosecurity effects.
Agricultural land and land use – Decommissioning.	Scoped out. The precise details of the decommissioning, although outlined in the Framework DEMP, are not known. However decommissioning effects are expected to be similar to, or of a lesser magnitude than, construction effects. Therefore, decommissioning effects are considered to be the same as construction phase effects and will be scoped out of specific assessment within the ES.
Soil resource quality - Decommissioning.	Scoped out. As above.
Loss of soil resources - Decommissioning.	Scoped out. As above.



PROJECT
East Yorkshire Solar Farm

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- LEGEND**
- Solar PV Site
 - Grid Connection Corridor
 - Agricultural Land Classification (Provisional)**
 - Grade 1
 - Grade 2
 - Grade 3
 - Grade 4
 - Grade 5
 - Non Agricultural
 - Urban

NOTES

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ISSUE PURPOSE
EIA SCOPING REPORT

PROJECT NUMBER
60683115

FIGURE TITLE
Provisional Agricultural Land Classification

FIGURE NUMBER
Figure 15-1

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16. Other Environmental Topics

16.1 Introduction

- 16.1.1 The aim of the scoping stage is to focus the EIA on those environmental aspects that may be significantly affected by the Scheme. The following sections provide a summary of other environmental topics which have been considered during the preparation of this Scoping Report and for which standalone chapters are not anticipated to be required in the ES. As described in paragraphs 5.7.2 and 5.7.3, from previous solar farm experience it is considered that for these topics the demonstration of no likely significant effects can be quickly established without the need for detailed information on legislation and policy, methodology and baseline conditions being provided. The Other Environmental Topics chapter of the ES will include a brief assessment of each of the topics identified below, supported by a technical note that will be appended to the ES that will contain further information that evidences the ES section conclusion. The EIA methodology set out in **Chapter 5 Environmental Impact Assessment Methodology** of this Scoping Report will not apply to this chapter; it may not be necessary, for example, to outline an assessment methodology or baseline conditions if a preliminary or screening assessment identifies that the impacts will be none or negligible.
- 16.1.2 For clarity, the topics covered in sections below are not scoped out of the EIA. Rather, they are addressed proportionately within the ES in relation to the likelihood for significant effects based on the scoping work undertaken to date.

16.2 Air Quality

- 16.2.1 East Riding of Yorkshire Council undertakes routine ongoing monitoring of ambient air quality as part of their Local Air Quality Management responsibilities under Part IV of the Environment Act (1995) (Ref. 20). Monitoring is undertaken in using a network of 92 diffusion tubes located along principal traffic routes across the county to quantify kerbside NO₂ concentrations in the vicinity of relevant receptors (Ref. 202). Selby District Council also undertakes air quality monitoring of nitrogen dioxide (NO₂) using diffusion tubes. However, these are all located in and around Selby (Ref. 203).
- 16.2.2 There are no Air Quality Management Areas (AQMAs) within the administrative area of East Riding of Yorkshire Council and air quality is good. The most recent available monitoring results for 2020 generally indicate a reduction in levels of NO₂ compared with 2019 data (although this will have been influenced by the COVID pandemic).
- 16.2.3 Selby District Council has one AQMA in Selby town centre, however monitoring is all below the air quality objective for NO₂ (40 µg/m³). Monitoring results for 2020 and 2021 generally indicate a reduction in levels of NO₂ compared with 2019 data (although again this will have been influenced by

- the COVID pandemic). Due to the distance of the AQMA from the Site, it is not considered likely to be affected by the Scheme.
- 16.2.4 East Riding of Yorkshire Council provide an online map showing the location and results of current and historic monitoring locations (Ref. 204). The closest diffusion tubes to the Site are in Howden (approximately 5 km south) and Bubwith (approximately 5 km north west). Concentrations are well below the air quality objective of $40\mu\text{g}/\text{m}^3$ for NO_2 . As mentioned above, Selby District Council monitors only in and around Selby, and as such does not monitor close to the Site.
- 16.2.5 The Site is surrounded by numerous ecological sites, which are potential receptors for air quality. These will be screened for sensitivity to construction dust impacts and nitrogen deposition and included as receptors as appropriate.
- 16.2.6 The Study Area for construction dust is up to 350 m from the site boundary. The Study Area for vehicle emissions will be dependent on traffic volumes generated by the construction.
- 16.2.7 The potential air quality impacts of the Scheme are considered to be:
- Impacts of dust arising during the construction and decommissioning phases of the Scheme; and
 - Impacts of vehicle and plant emissions during the construction and decommissioning phases of the Scheme.
- 16.2.8 No effects are anticipated during operation due to the low number of anticipated vehicle movements and the nature of the Scheme.
- 16.2.9 Following construction, the Scheme is expected to result in minimal alteration to the baseline situation in respect of air quality. The only atmospheric emissions anticipated from the on-site infrastructure are very small fugitive emissions of SF_6 from switchgear. These emissions would not have an impact on ambient air quality and are not within the scope of the assessment, however their role as a GHG is considered within **Chapter 6 Climate Change**. As described in **Chapter 13 Transport**, there will be minimal operational vehicle movements to and from the Site. Therefore, consideration of air quality impacts during the operational phase is proposed to be scoped out of the EIA.
- 16.2.10 The potential impacts from dust emissions arising from activities during the construction and decommissioning phases of the Scheme will be considered using an approach based on the Institute of Air Quality Management's (IAQM) guidance (2014) (Ref. 205) for assessing impacts from such activities. This is a screening assessment and a risk-based qualitative assessment approach and is applied for air quality assessments throughout the UK. Mitigation measures will be identified and incorporated into the Framework CEMP. The implementation of these measures through the Detailed CEMP means that no significant air quality impacts from dust generation are envisaged.
- 16.2.11 As part of this assessment, potential sensitive receptors will be identified for the construction and decommissioning of the Scheme based on a review of

aerial photography, construction and decommissioning phasing plans and OS mapping, and with consideration to current guidance, including:

- Institute of Air Quality Management (IAQM) (2014) Guidance on the Assessment of Dust from Demolition and Construction (Ref. 205); and
- Defra (2018) Local Air Quality Management Technical Guidance (TG16) (Ref. 206).

16.2.12 Construction and decommissioning related plant emissions are anticipated to represent a small source of emissions relative to ambient local conditions in the vicinity of the Site based on the scale of construction that will occur and the number of plant vehicles that will be required. However, suitable mitigation measures for plant and motorised equipment will be recommended based on advice prescribed in in the IAQM (2014) (Ref. 205) guidance and incorporated into the Framework CEMP.

16.2.13 The anticipated number of vehicles that will be in operation during the construction and decommissioning phases of the Scheme will be considered in the context of the guidance published by Environmental Protection UK (EPUK) / IAQM (2017) (Ref. 207), IAQM (2014) (Ref. 208) and EPUK (2010) (Ref. 209). The latter sets out the criteria to establish the need for an air quality assessment for the construction phase of a development as being *“Large, long-term construction sites that would generate large HGV flows (>200 movements per day) over a period of a year or more.”*

16.3 Glint and Glare

16.3.1 Glint and glare is the effect of reflected sunlight causing harm or discomfort to a sensitive receptor. A glint can be defined as the momentary receipt of a bright light and a glare can be defined as the receipt of a bright light over an extended or continuous period of time (Ref. 211).

16.3.2 Glint and glare assessments are sometimes required to accompany planning applications for solar developments, depending on the determining authority’s judgement of their need. There are no guidelines setting out a particular methodological approach, but the receptors of interest are specified in the NPPF (Ref. 7) as well as guidance on renewable and low carbon energy issued by the Ministry of Housing, Communities and Local Government (MHCLG) (Ref. 151) which states:

“Particular factors a local planning authority will need to consider include... the effect on landscape of glint and glare and on neighbouring uses and aircraft safety.”

16.3.3 Draft NPS EN-3 (Ref. 96) sets out specific policy in relation to glint and glare from solar development at Section 2.52. Section 2.52.5 conflicts with the MHCLG guidance above stating that *“there is no evidence that glint and glare from solar farms interferes in any way with aviation navigation or pilot and aircraft visibility or safety”*. The requirement to consider the impacts to nearby homes and motorists and consider diurnal (particularly in the case of tracking panels) and seasonal differences within the assessment is also referenced.

- 16.3.4 As described in **Chapter 10 Landscape and Visual Amenity**, the effect of glint and glare on landscape will be considered in the EIA and presented within the LVIA chapter of the ES.
- 16.3.5 There are several potential receptors identified in the wider area as listed below (refer to Figure 1-1):
- Residential homes within 1 km of the Solar PV Site
 - Roads within 1 km of the Solar PV Site (A63, A614, B1230, B1228)
 - Brighton Aerodrome located approximately 500 m northwest of the Solar PV Site.
 - Railway users of the Hull-Selby Rail Line.
 - Users of the local PRowS.
- 16.3.6 Construction and decommissioning activities are expected to be undertaken in accordance with a CEMP. This will include information on how reflective surfaces are to be treated during construction and decommissioning phases with a view toward their final placement across the Site. It is expected that avoidance of the effects of glint and glare will be considered as part of construction and decommissioning planning. Further, the scale of the Site is such that the full areas will not be occupied for the duration of these phase activities and the movement of reflective surfaces will be temporarily localised to smaller areas on a rolling basis until works are complete. Based on the nature of the activities, the distances to receptors and the use of a CEMP, construction and decommissioning effects are proposed to be scoped out of the assessment.
- 16.3.7 Operational effects are considered to be fixed and will last for the duration of the Scheme. The interaction of solar PV panels with sensitive locations, for example vehicular junctions or pedestrian crossings on roads, or viewpoints along rail lines or roads, is primarily influenced by their siting, as solar PV panels require orientation toward the sunpath, and the choice of materials, where more reflective, or specular surfaces create a higher chance of creating distraction through discomfort or disability glare.
- 16.3.8 As Draft NPS EN-3 has been prepared considering the latest evidence base, and unequivocally states that there is no evidence that glint and glare interferes in anyway with aviation safety, such that the SoS is *“unlikely to have to give any weight to claims of aviation interference as a result of glint and glare from solar farms”*. The impacts of glint and glare on aviation (including Brighton Aerodrome) will therefore be scoped out of the assessment.
- 16.3.9 The setback mounting of the solar PV panels within the Site from its boundaries combined with the distance to potential receptors and angling of the panels from horizontal could help to limit how and where potential occurrences of glare could be created by the Solar PV Site.
- 16.3.10 Further, the dark colour and a matt material finish of the solar PV panels is designed to absorb light and could minimise potential occurrences of reflected light, reducing the likelihood that glare conditions could be created from the panels themselves.

- 16.3.11 Based on the expected design, screening and distance to sensitive receptors, significant effects are not considered likely. Nevertheless, as the design develops, consideration will be given to the potential for solar reflections to impact on sensitive receptors. This will include undertaking calculations to determine whether the solar PV panels will be visible from sensitive locations and if a solar reflection could occur, whether it is likely to be a significant nuisance or hazard. The calculations will be made using specialised software based on the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT). If glint and glare is likely to be a nuisance or hazard, mitigation will be proposed.
- 16.3.12 The results and recommendations of the glint and glare calculations will be incorporated into the Scheme design and presented as a technical appendix to the ES. Any mitigation planting or fencing recommended by the modelling will be incorporated into the Scheme design and assessed by the other technical chapters. It is considered that this will negate the need for a specific glint and glare chapter in the ES, however the assessment will be summarised in the Other Environmental Topics chapter of the ES as described above.

16.4 Ground Conditions

- 16.4.1 The guidance on Land Contamination Risk Management (LCRM) (Ref. 212) indicates that the first step in evaluating land contamination risks is a Preliminary Risk Assessment (PRA). The objective of the PRA is to identify and evaluate potential land quality risks and development constraints associated with the Scheme and to construct an initial conceptual site model that can be used to inform future decision making and the design future ground investigation.
- 16.4.2 A Phase 1 PRA report will be prepared, covering land within the Site. The Phase 1 PRA will be presented as a technical appendix to the ES.
- 16.4.3 The Phase 1 PRA will include the following:
- Details of land within the Site and surrounding land including development history, geology, hydrogeology, hydrology, soil and groundwater quality, and environmental setting;
 - Details of any available site investigation, risk assessment, remediation, validation reports for land within the Site or asbestos surveys for any properties within the site;
 - Details from a site walkover documenting:
 - The existing layout, current operations and condition of land within the Site, the property boundaries and immediately surrounding land;
 - The visual inspection of any accessible site storm-water, foul and offsite effluent discharges;
 - A visual inspection (non-intrusive) of the external building fabric of potential structures and inspection of any asbestos registers (if available);

- A conceptual site model (CSM) and an evaluation of potential contamination linkages; and
 - Conclusions and recommendations based on the findings.
- 16.4.4 Maintenance activities during the operational phase will be managed through an Operational Environmental Management Plan (to be prepared will be prepared following grant of DCO) and are proposed to be scoped out of the assessment.
- 16.4.5 Details of land designated for Mineral Safeguarding will be covered in a separate Minerals Safeguarding Report accompanying the ES. **Chapter 12 Socio-economics** discusses the non-sterilisation of these reserves due to the temporary nature of the solar development.
- 16.4.6 A number of environmental design and management measures will be employed as standard best practice to minimise impacts to both human health and controlled waters during the construction and decommissioning phases of the Scheme. These will be incorporated into the Framework CEMP which will be provided alongside the ES as part of the DCO application. As discussed previously, this will be developed into a Detailed CEMP prior to construction and implemented.
- 16.4.7 Potential environmental impacts that depending upon the design of the Scheme and site environmental conditions will be either be avoided, prevented, reduced or offset through the implementation of these mitigation measures include:
- Human exposure through direct contact / inhalation / dermal uptake of contaminants;
 - Creation of preferential pathways and mobilisation of contamination;
 - Contamination of natural soils, driving of contamination into an aquifer during piling, contamination of groundwater with concrete, paste or grout;
 - Pollution and degradation of water quality of any underlying aquifer;
 - Infiltration and / or runoff into the local drainage / sewerage network - pollution of drainage and sewerage network and any adjacent surface water features;
 - Run-off and infiltration of contaminants from material stockpiles;
 - Contamination of drainage and sewerage network and/or groundwater; and
 - Spread of nuisance dusts and soils to the wider environment and local roads.
- 16.4.8 On-site activities when the Scheme is complete and operational will be limited to the maintenance of the infrastructure. During maintenance activities there may be the need to use oils, grease, fuels, lubricants or cleaning agents on-site. There is a limited risk of chemical pollution arising from accidental spillages during these operations. An Operational Environmental Management Plan will be prepared following grant of DCO to address all operational related issues. This will include a spillage Emergency

Response Plan (ERP), which maintenance staff will be required to have read and understood. On-site provisions will be made to contain a serious spill or leak through the use of booms, bunding and absorbent material. Operational activities are proposed to be scoped out of the assessment.

- 16.4.9 It is anticipated that the results and recommendations of the Phase 1 PRA, once incorporated into the Framework CEMP, along with the environmental design and management measures above, for the construction, operation and decommissioning phases, will negate the need for a specific ground conditions chapter in the ES.

16.5 Major Accidents or Disasters

- 16.5.1 The EIA Directive (Ref. 187) considers major accidents or disasters and was transcribed into UK legislation via the EIA Regulations (Ref. 1). The Directive and domestic Regulations cite two specific Directives as examples of risk assessments to be brought within EIA, these are Directive 2012/18/EU of the European Parliament and of the European Council (which deals with major accident hazard registered sites) (Ref. 188) and Council Directive 2009/71/Euratom (which deals with nuclear sites) (Ref. 189). Neither of these Directives are relevant to the Scheme.
- 16.5.2 Schedule 4, Part 5d of the EIA Regulations (Ref.1) requires that the EIA contain “*a description of the likely significant effects of the development on the environment resulting from the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)*” and Schedule 4, Part 8 requires that the EIA contain “*a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned*”.
- 16.5.3 In the absence of established guidance on this topic, the following methodology has been adopted where ‘accidents’ are considered to be an occurrence resulting from uncontrolled developments in the course of construction and operation of a development (e.g., major emission, fire or explosion), and ‘disasters’ are considered to be naturally occurring extreme weather events or ground related hazard events (e.g., subsidence, landslide, earthquake). In general, major accidents or disasters, as they relate to the Scheme, fall into three categories:
- Events that could not realistically occur, due to the nature of the Scheme or its location;
 - Events that could realistically occur, but for which the Scheme, and associated receptors, are no more vulnerable than any other development; and
 - Events that could occur, and to which the Scheme is particularly vulnerable, or which the Scheme has a particular capacity to exacerbate.
- 16.5.4 An initial scoping exercise has been undertaken to identify all possible major accidents or disasters that could be relevant to the Scheme. This list was drawn from a number of sources, including the National Risk Register 2020 (Ref. 226). Major accidents or disasters with little relevance in the UK were

not included. The long list of major accidents or disasters is presented in Appendix B. This initial scoping exercise shows the potential vulnerability of the Project to the risk of a major accident and/or disaster associated with a variety of different events. Appendix B also provides further clarity on the topics and events which have been scoped into the EIA, and those which have been scoped out, with suitable justification provided.

- 16.5.5 This long list was then screened to identify the third group of major accidents or disasters listed above, to form a shortlist of events to be taken forward for further consideration. Appendix B also provides further clarity on the topics and events which have been scoped into the EIA, and those which have been scoped out, with suitable justification provided.
- 16.5.6 Although the majority of the major accidents or disasters on the long list are already considered under other legislative or design requirements, this is not considered to be sufficient reason to automatically eliminate the major accident or disaster from any further consideration. This is consistent with the approach for other topics, for example that the need to comply with nature conservation legislation does not mean that ecology and nature conservation do not need to be considered in EIA. However, where it is concluded that the need for compliance is so fundamental, that the risk of any receptors being affected is so remote, major accidents or disasters on the long list are not included on the shortlist.
- 16.5.7 Likewise, it is considered reasonable and proportionate to exclude certain receptor groups from the outset. Construction workers, as a receptor, can be excluded from the assessment, because existing legal protection is considered to be sufficient to minimise any risk from major accidents or disasters to a reasonable level. Legislation in force to ensure the protection of workers in the workplace includes:
- Health and Safety at Work etc. Act 1974 (Ref. 190);
 - The Management of Health and Safety at Work Regulations 1999 (Ref. 191);
 - The Workplace (Health, Safety and Welfare) Regulations 1992 (Ref. 192); and
 - Construction (Design and Management) (CDM) 2015 Regulations (Ref. 193).
- 16.5.8 However, it is considered highly likely that as the design of the Scheme evolves in preparation of the DCO application, it will become clear that there is no real risk or serious possibility of these events interacting with the Scheme. In that eventuality, it is proposed to scope out from the ES the assessment of such major accidents or disasters. The ES would note and explain where this approach has been taken. Should the possibility of any events interacting with the Scheme remain, this would be assessed and presented in the ES.

Table 16-1: Major accidents or disasters shortlisted for further consideration

Major accident or disaster	Potential receptor	Comments
Floods	Property and people in areas of increased flood risk.	Both the vulnerability of the Scheme to flooding, and its potential to exacerbate flooding, will be covered in the Flood Risk Assessment, and also reported in ES, both in terms of the risk to the Scheme and increased risk caused by the Scheme. Mitigation will be considered and, where necessary, incorporated into the Scheme design.
Fire	Local residents, habitats and species.	There may be some potential for fire as a result of the battery storage element of the Scheme. However, the battery energy storage system will include automatic cooling and suppression systems, which are designed to regulate temperatures to within safe conditions to minimise the risk of fire. A Framework Battery Fire Safety Management Plan will be prepared for the Scheme. The development of the Framework Management Plan will be considered in the iterative design of the Scheme ensuring that design requirements to ensure fire safety (such as ensuring adequate provision of land for water storage) and management of any firewater runoff are captured. It is anticipated that this will be a stand-alone report submitted alongside the DCO application.
Road accidents	Aquatic environment Road users	<p>The risk of road collisions and accidents will be addressed in the Transport Assessment.</p> <p>The risk posed by spillage from hazardous loads as a result of a road traffic accident during construction or decommissioning has been scoped out of the ES as there are no nearby road features which suggest that the transfer of materials poses a greater risk than would be normally expected on the general highway network.</p> <p>The general risks of spillages of hazardous materials / chemicals will be considered in the Flood Risk, Drainage and Water Resources chapter of the ES. The potential for glint and glare to affect road users will be considered within a technical appendix to the ES if any risks are identified. Mitigation will be considered and, where necessary, incorporated into the Scheme design.</p>

Major accident or disaster	Potential receptor	Comments
Rail accidents	Rail users	The site is located adjacent to the railway line. The potential for glint and glare to affect trains will be considered within the ES if any risks are identified. Mitigation will be considered and, where necessary, incorporated into the Scheme design.
Flood Defence Failure	Property and people in areas of increased flood risk	This will be covered in the Flood Risk Assessment and will also be reported in ES, both in terms of the risk to the Scheme and increased risk caused by the Scheme.
Utilities failure (gas, electricity, water, sewage, oil, communications)	Employees and local residents	The Scheme has the potential to affect existing utility infrastructure above and below ground. To identify any existing infrastructure constraints, both consultation and a desk based study will be undertaken.
Mining / Extractive Industry	Employees	There is the potential for current or past quarrying activity in the vicinity to lead to unstable ground conditions due to nearby active quarries. However, the risk will be considered as part of the geotechnical design, ensuring that the risk is designed out.
Plant disease	Habitats and species	New planting may be susceptible to biosecurity issues, such as the increased prevalence of pests and diseases, due to climate change. The planting design will take account of biosecurity risks through a wider mix of species including some non-natives.

16.5.9 Where further design mitigation is unable to remove the potential interaction between a major accident or disaster and a particular topic, the relevant ES chapter will identify the potential consequence for receptors covered by the topic and give a qualitative evaluation of the potential for the significance of the reported effect to be increased as result of a major accident or disaster.

16.5.10 The potential receptors of effects resulting from major accidents or disasters will be reported in the relevant topic chapter, and as such it is considered that this will negate the need for a specific major accidents or disasters topic chapter in the ES. Nevertheless, there will be signposting of major accident or disaster impacts in the ES to enable these to be identified.

16.6 Telecommunications, Television Reception and Utilities

16.6.1 Solar farms have the potential to affect existing below ground utility infrastructure for example through 'cable strike' when piling the Solar PV

frames or excavating the cable trenches, but are not at a height to affect above ground telecommunications. The scheme will be designed to ensure appropriate buffers are applied in relation to the placement of solar PV panels and other infrastructure in relation to buried infrastructure and OHL to allow safe access and working areas.

- 16.6.2 To identify any existing infrastructure constraints, both consultation and a desk-based study will be undertaken. Consultation with relevant telecommunication and utilities providers is a routine part of development and consultees will include water, gas and electricity utilities providers and telecommunications providers as appropriate. Information obtained from consultation will be used to inform the Scheme design and appropriate protective provisions will be included in the DCO to ensure the protection of apparatus wherever any existing infrastructure has the potential to be affected by the Scheme.
- 16.6.3 Taking the above into account, relevant measures will be captured within the Scheme design, therefore a separate utilities ES chapter is not considered to be required.

16.7 Materials and Waste

Introduction

- 16.7.1 This section follows the methodology and checklist for action set out in the Institute of Environmental Management and Assessment (IEMA) guide to: Materials and Waste in Environment Assessment, Guidance for a Proportionate Approach (referred from herein as the 'IEMA Guidance') (Ref. 215).
- 16.7.2 For the purpose of this Scoping Report, materials and waste comprise:
- The consumption of materials (key construction materials only); and
 - The generation and management of waste.
- 16.7.3 Materials are defined in the IEMA Guidance as “*physical resources that are used across the lifecycle of a development. Examples include key construction materials such as concrete, aggregate, asphalt and steel.*”
- 16.7.4 Other material assets considered include built assets such as landfill void capacity and allocated/safeguarded mineral and waste sites.
- 16.7.5 Impacts on Mineral Safeguarding Areas (MSAs) are not assessed in a materials and waste assessment in accordance with the IEMA Guidance, however are included here since minerals are a planning consideration. **Chapter 12 Socio-economics** scopes out socio economic impacts to MSAs (subject to agreement with the Local Mineral Planning Authorities) due to the non-sterilisation of these reserves due to the temporary nature of the solar development.
- 16.7.6 Waste is defined as per the Waste Framework Directive (Waste FD) (Ref. 216) as “*any substance or object which the holder discards or intends or is required to discard*”.

Study Area

16.7.7 The Study Areas for materials and waste are defined in line with the IEMA Guidance. Two types of Study Areas are defined:

- A Scheme Study Area – for construction and operational waste generation, use of construction and operational materials and consideration of impacts on allocated/safeguarded mineral and waste sites and presence of MSAs. The Study Area is deemed to include the footprint of the proposed works, together with any temporary land requirements during the construction. For the purpose of Scoping, sites within 500 m of the Scheme have been reviewed.
- An expansive Study Area – within which waste is managed and materials are sourced:
 - Non-hazardous and inert waste management – Yorkshire and the Humber and East Midlands
 - Hazardous waste management – England.
 - Availability of key construction materials, crushed rock, sand and gravel, ready-mixed concrete and asphalt – Yorkshire and the Humber and East Midlands.
 - Availability of key construction materials, steel – UK.

Baseline Conditions

16.7.8 Baseline information has been reviewed and consists of:

- National and regional availability (consumption/sales) for key construction materials (steel (Ref. 217), aggregates, asphalt and concrete (Ref. 218));
- Landfill void capacity in the East Midlands and Yorkshire and the Humber (non-hazardous and inert landfill void capacity), and England (hazardous landfill void capacity) (Ref. 219);
- Allocated/safeguarded waste and mineral sites, MSAs, historic and permitted landfills (Ref. 220) in the vicinity of the Proposed Development.

Potential Effects and Mitigation

16.7.9 Potential materials and waste effects include changes in demand for construction materials, changes in available landfill void capacity and direct impacts on allocated/safeguarded mineral and waste sites during construction, operation and decommissioning.

16.7.10 Throughout Scoping management measures have been considered. These are measures that are inherent in the design and construction of the Scheme (or are required regardless of any EIA assessment, as they are imposed, for example, as a result of legislative requirements and/or standard sectoral practices (known as embedded mitigation). Some of these measures have been identified and are described below.

Construction

16.7.11 Construction materials required to construct the Scheme are unlikely to be significant in the context of regional or national construction material availability.

16.7.12 The types of wastes generated during construction are likely to comprise:

- General waste from site offices and welfare facilities;
- Small quantities of waste from the maintenance of construction vehicles;
- Packaging waste from incoming materials; and
- Other waste from construction of fencing, access roads and other supporting infrastructure.

16.7.13 The PV panels, racks, inverters and other supporting equipment will be manufactured off-site to the specified sizes, and wastage during installation is expected to be minimal.

16.7.14 Large-scale earthworks are not expected, and therefore there is not expected to be either a surplus or shortfall of fill material requiring either export or import.

16.7.15 It is anticipated that a large proportion of non-hazardous and inert waste from the construction of the Scheme is likely to be recovered rather than disposed of to landfill, reducing the overall quantities of waste for disposal. Therefore, waste arisings are unlikely to be significant in the context of regional or national landfill void capacity.

16.7.16 There are no allocated/safeguarded waste and active mineral sites, or historic and permitted landfills within the Site boundary. Some sites have been identified within 500 m of the Scheme, however these sites are unlikely to be directly impacted.

16.7.17 The Scheme lies in an MSA as outlined on the East Riding of Yorkshire Joint Minerals Plan Policies Map (Ref. 221) and the North Yorkshire Minerals and Waste Joint Plan and policies map (Ref. 13 and Ref. 222) (Brick Clay and Sand and Gravel). A Minerals Safeguarding Report will be prepared during the EIA process.

16.7.18 The Scheme will aim to prioritise waste prevention, followed by preparing for re-use, recycling and recovery and lastly disposal to landfill as per the waste hierarchy.

16.7.19 All management of waste will be in accordance with the relevant regulations and waste will be transported by licensed waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them.

16.7.20 The construction of the Scheme will be subject to measures and procedures defined within a Construction Environmental Management Plan (CEMP). The CEMP will include the implementation of industry standard practice and control measures for environmental impacts arising during construction, such as the control of dust and the approach to material and waste management on site. A Framework CEMP and Framework Site Waste Management Plan (SWMP) will be included alongside the ES, the construction contractor will

use these documents to produce their CEMP and SWMP prior to works commencing on site.

Operation

16.7.21 During operation, including maintenance activities, waste generation is expected to be negligible, since solar PV panels do not generate any waste as part of the energy production process. Waste arising associated with maintenance activities such as component replacement during the operational life of the Scheme will be managed in the same way as waste from the final decommissioning of the Scheme (described below).

Decommissioning

16.7.22 At the end of the Scheme's operational life, it will be decommissioned. As this is expected to be at least 40 years in the future, it is not possible to identify at this stage either the waste management routes or specific facilities that would be used, as these are liable to change over such a timescale.

16.7.23 A Framework Decommissioning Environmental Management Plan (Framework DEMP) also known as a Decommissioning Strategy, will be prepared as part of the EIA, and will set out the general principles to be followed in the decommissioning of the Scheme. A detailed DEMP based on the Framework DEMP will be prepared and agreed with the relevant authorities at that time of decommissioning, in advance of the commencement of decommissioning works. It is expected that the Requirements of the DCO would commit to its production.

Assessment Methodology

16.7.24 A checklist in the IEMA Guidance offers the basis for action during the scoping stage of the EIA process. The scoping questions within the process have been considered and the following can be concluded:

- The scale, nature, and timing of the Scheme is known.
- Comparable/historical data for developments of a similar scale and/or nature is available.
- There is appropriate assurance in the validity of data, information and evidence concerning primary and tertiary mitigation measures.
- The Study Area is defined.

16.7.25 Considering the above, it is concluded that significant adverse materials and waste impacts are not expected during either construction, operation or decommissioning, and hence the need for a separate waste chapter has been scoped out of the EIA, but the impacts will be assessed and presented within the ES as described above.

17. Structure of Environmental Statement

17.1.1 The ES will consist of three volumes and a Non-Technical Summary (NTS). This section provides a summary of each document that will form the ES.

17.1.2 **ES Volume 1: Main Report** — this will form the main body of the ES, detailing the results of the environmental assessment, likely significant effects arising from the Scheme, and the proposed mitigation measures. The ES will also identify opportunities for social and economic benefits and environmental enhancement. The ES will be divided into a number of background and technical chapters, each being supported with figures and tabular information. ES Volume 1 will consider the environmental effects associated with a number of identified topics, which may receive significant environmental effects. Each topic will be assigned a separate technical chapter in the ES as follows:

- Chapter 6: Climate Change;
- Chapter 7: Cultural Heritage;
- Chapter 8: Ecology;
- Chapter 9: Water Environment;
- Chapter 10: Landscape and Visual Amenity;
- Chapter 11: Noise and Vibration;
- Chapter 12: Socio-Economics and Land Use;
- Chapter 13: Transport and Access;
- Chapter 14: Human Health;
- Chapter 15: Soils and Agricultural Land; and
- Chapter 16: Other Environmental Topics.

17.1.3 In addition to the above, the following chapters will be produced as part of the ES:

- Chapter 1: Introduction;
- Chapter 2: The Scheme;
- Chapter 3: Alternatives and Design Evolution;
- Chapter 4: Consultation;
- Chapter 5: Environmental Impact Assessment Methodology;
- Chapter 17: Effect Interactions; and
- Chapter 18: Summary of Environmental Effects.

17.1.4 **ES Volume 2: Figures** — A complete set of figures will be provided for reference which support the assessments in ES Volume 1.

17.1.5 **ES Volume 3: Technical Appendices** — A complete set of appendices will be provided for reference. These comprise of background data, technical

reports, tables, figures and surveys which support the assessments in ES Volume 1.

- 17.1.6 **ES Non-Technical Summary (NTS)** — The NTS will be presented in a separate document and provides a concise description of the Scheme, the considered alternatives, baseline, assessment methodology, potential environmental effects and mitigation measures. The NTS will be designed to provide information on the Scheme in an accessible format which can be understood by a wide audience and to assist interested parties with their familiarisation of the project.

18. Summary and Conclusions

- 18.1.1 This Scoping Report represents notification under Regulation 8(1)(b) of the EIA Regulations that the Applicant will undertake an EIA in respect of the Scheme and produce an ES to report the findings of the EIA.
- 18.1.2 It also represents a formal application to PINS under Regulation 10 of the EIA Regulations for a 'Scoping Opinion' as to the information to be provided within the ES that will form part of the DCO application. This report has identified the environmental effects that are considered to have the potential to be significant and proposes the approach to be used in assessments that will be undertaken for the EIA to characterise and understand the significance of these effects. The prescribed consultees are invited to consider the contents of this report and comment accordingly within the statutory 42 day time period.
- 18.1.3 For clarity, Table 18-1 presents a summary of the proposed scope of the technical topics as well as which elements of these topics that are to be scoped out and the rationale behind this decision.
- 18.1.4 Table 18-2 summarises the approach taken to the topics discussed in **Chapter 16 Other Environmental Topics** of this Scoping Report.

Table 18-1: Scope of technical topics and elements to be scoped out

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out	Rationale for Scoping Out
Climate Change	<p>Assessment of GHG emissions during construction, operation, and decommissioning.</p> <p>A statement on resilience of the Scheme to future climate changes will be provided.</p>	<p>In-combination impacts of temperature, sea level rise, precipitation change, and changes in wind patterns are proposed to be scoped out of the in-combination climate impact assessment.</p> <p>Sea level rise is proposed to be scoped out of the climate change resilience review.</p>	The Site is not located in an area that is susceptible to sea level change, and no in combination effects with other environmental disciplines is predicted.
Cultural Heritage	<p>It is proposed to undertake an assessment of impact on both physical effects on heritage assets, and effects on their setting including changes to visual intrusion, noise, air quality, severance, access and amenity.</p> <p>Further archaeological work may be required, the extent and scope of which will be determined following completion of a cultural heritage archaeological desk-based assessment, and in consultation with relevant consultees.</p> <p>Effects of connection to the National Grid on the setting of heritage assets</p>	None	Not applicable

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out	Rationale for Scoping Out
Ecology	<p>The EclA will include consideration of designated sites and protected and/or notable habitats and species. Effects considered include habitat loss, disturbance and indirect impacts such as watercourse pollution during construction. Operational effects include disturbance during maintenance, security lighting and management of on-site and adjacent habitats.</p> <p>A Preliminary Ecological Appraisal (PEA) has been undertaken, and further surveys will be undertaken as follows: additional Phase 1 habitat surveys as required, hedgerow, breeding birds. Wintering and passage birds, Great Crested Newts, bats, badger, otter and water vole, reptiles, aquatic ecology.</p> <p>A habitat conditions assessment will also be carried out on land within the Site in order to perform a biodiversity net-gain assessment.</p> <p>Effects of connection to the National Grid on ecological receptors during operation will also be assessed should an over-ground option be taken forward.</p>	Terrestrial invertebrates	<p>Due to the predominantly arable nature of the Site, it should be possible to avoid areas of likely high habitat suitability for terrestrial invertebrates; therefore, it is not proposed at this stage to undertake detailed terrestrial invertebrate surveys. However, this will be reviewed as part of the extended Phase 1 Habitat survey scope.</p>

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out	Rationale for Scoping Out
Flood Risk, Drainage and Surface Water	<p>Qualitative assessment of the effects of the Scheme, considering the risk to surface and groundwater bodies resulting from construction or decommissioning works or future operation activity using a source-pathway-receptor approach and development of mitigation to control potential effects. The assessment criteria will follow those outlined in the Design Manual for Roads and Bridges (DMRB) LA113 Road Drainage and the Water Environment, as a robust and well tested method for scoping the assessment and predicting the significance of effects of development projects.</p> <p>A Preliminary WFD assessment will be undertaken.</p> <p>A Surface Water Drainage Strategy and FRA will be prepared.</p>	Nutrient Neutrality Assessment	There is no hydrologic continuity between the Site and any of the designated sites identified by Natural England as requiring assessment.
Landscape and Visual Amenity	<p>Assessment of likely effects on landscape features and character, and views and visual amenity during construction, operation and decommissioning.</p> <p>Photomontages from key viewpoints will be prepared for both year 1 and year 15 of operation.</p>	Lighting Assessment	Any lighting during the construction phase would be temporary and directed away from homes, live traffic and habitats as far as is reasonably practicable. Lighting during operation will also be on temporarily (triggered by motion detection and directed at the Scheme infrastructure).

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out	Rationale for Scoping Out
Noise and Vibration	Baseline noise monitoring will be undertaken at locations representative of surrounding noise-sensitive receptors. An assessment of construction and decommissioning plant noise, and operational plant will be undertaken.	Vibration from the operation of the Scheme.	No major vibration sources are envisaged to be introduced as part of the Scheme and as such there will be no associated vibration effects. It is proposed that operational ground-borne vibration is scoped out of any further assessment
	Road traffic noise during the construction and operational phases of the Scheme.	Separate assessment for noise from the decommissioning phase	The noise assessment presented for the construction phase will therefore be considered representative (or an overestimate) of the decommissioning phase.
Socio-Economics and Land Use	Assessment of effects including temporary employment during construction and decommissioning and gross value added, creation of long term employment opportunities during the operational phase including consideration of any existing uses on-site, and change of land use and impacts on recreation, open space (including PRow) and community facilities.	Minerals Safeguarding	The mineral deposits will not be permanently sterilised by the Scheme and can be extracted, if required, after its decommissioning.
Transport and Access	Construction vehicle movements associated with the Scheme will be established and assessed in terms of	Operational vehicle movements due to low numbers of vehicles.	Scoped out due to low vehicle numbers

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out	Rationale for Scoping Out
	<p>impact on the local highway network. This will include an assessment of the impact on severance, driver delay, pedestrian delay, pedestrian and cyclist amenity, fear and intimidation and road safety. Criteria/ requirements for the above assessments to be considered and discussed with the LHA given these will be temporary construction impacts. Any mitigation measures to be recommended.</p>	<p>Hazardous loads</p> <hr/> <p>Assessments for the decommissioning phase due to uncertainties in relation to future traffic flows and transport infrastructure.</p>	<p>There are no nearby road features which suggest that the transfer of materials poses a risk beyond that which would be expected on the general highway network.</p> <hr/> <p>Scoped out due to uncertainties in relation to future traffic flows and the magnitude of impacts being the same or less than during construction and therefore able to conclude with confidence the significance of effect would be the same or less than has been determined for the construction phase.</p>
Human Health	<p>A qualitative human health assessment will draw upon information covered elsewhere in the ES (including air quality, land quality, noise, transport and access and visual amenity).</p>	None	Not applicable

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out	Rationale for Scoping Out
Soils and Agricultural Land	Assessment of the impacts of the Scheme upon soil resource quality, loss of soil resource (including biosecurity implications) and agricultural land and land use at the construction and operational phases.	Assessments for the decommissioning phase.	The precise details of the decommissioning, although outlined in the Framework DEMP, are not known. However decommissioning impacts are expected to be similar to, or of a lesser magnitude than, construction effects. Therefore, decommissioning effects will be considered to be the same as construction phase effects and will be scoped out of specific assessment within the ES.

Table 18-2: Approach to other environmental topics

Environmental Topic	Proposed Approach
Air Quality	Qualitative dust assessment to identify measures to be included in a Framework CEMP. Suitable mitigation measures for construction and decommissioning plant and motorised equipment will be included in the Framework CEMP. Effect of Scheme operation and operational traffic on air quality is proposed to be scoped out.
Glint and Glare	An assessment will be undertaken to identify the potential for solar reflections to impact on sensitive receptors for both orientation options to inform design development. Construction and decommissioning effects are proposed to be scoped out of the assessment.
Ground Conditions	A PRA will be included in the ES and the results and recommendations of this will be incorporated into the Framework CEMP. Maintenance activities during the operational phase will be managed through an Operational Environmental Management Plan and are proposed to be scoped out of the assessment.

Environmental Topic Proposed Approach

Major Accidents and Disasters	Where the major accidents and disasters identified are not already being considered within the scope of existing technical assessments, they will continue to be reviewed with the design team to ensure the risks are understood and addressed through design as necessary. However, it is considered highly likely that as the design of the Scheme evolves in preparation of the DCO application, it will become clear that there is no real risk or serious possibility of the event interacting with the Scheme. In that eventuality, it is proposed to scope out from the ES the assessment of such major accidents or disasters. The ES would note and explain where this approach has been taken.
Telecommunications	Consultation and a desk based study to identify any existing infrastructure constraints and this information will be used to inform the Scheme design.
Materials and Waste	Description of the potential streams of construction, operation and decommissioning waste and estimated volumes will be described within the ES.

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20. Glossary

Agricultural Land Classification (ALC)	The standardised method for classifying agricultural land in England and Wales according to its versatility, productivity and workability, based upon inter-related parameters including climate, relief, soil characteristics and drainage, i.e. ALC assesses land quality based upon the type and level of agricultural production the land can potentially support. These factors form the basis for classifying agricultural land into one of five grades (with Grade 3 land divided into Subgrades 3a and 3b), ranked from excellent (Grade 1) to very poor (Grade 5).
Air Quality Management Area (AQMA)	Places where air quality objectives are not likely to be achieved. Where an AQMA is declared, the local authority is obliged to produce an Action Plan in pursuit of the achievement of the air quality objectives.
Baseline conditions	The conditions against which potential effects arising from the Scheme are identified and evaluated.
Battery energy storage system	Proposed development of a battery storage installation and associated development to allow for the storage and exportation of energy to the National Grid.
Best and most versatile (BMV) agricultural land	Best and most versatile (BMV) agricultural land of excellent (ALC Grade 1), very good (Grade 2) and good (Subgrade 3 a) agricultural quality.
Construction Environmental Management Plan (CEMP)	A site specific plan developed to ensure that appropriate environmental management practices are followed during the construction phase of a project.
Cumulative Effects	Effects upon the environment that result from the incremental impact of an action when added to other past, present or reasonably foreseeable actions. Each impact by itself may not be significant but can become a significant effect when combined with other impacts.
Environmental Impact Assessment (EIA)	A process by which information about environmental effects of a proposed development is collected, assessed and used to inform decision making. For certain projects, EIA is a statutory requirement.
Environmental effect	The consequence of an action (impact) upon the environment such as the decline of a breeding bird population as a result of the removal of hedgerows and trees.
Environmental impact	The change in the environment from a development such as the removal of a hedgerow.
Environmental Statement	A document produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations to report the results of an EIA.

Preliminary Ecological Appraisal (PEA)	Comprises a desk study, Phase 1 Habitat Survey (which categorises habitats to a broad level using the methodologies set out by JNCC (1993 as amended) guidelines) and Protected Species Scoping survey (which includes preliminary survey work to identify the presence or potential presence of legally protected species).
Flood Zone 3	This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Flood Zone 2	This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.
Flood Zone 1	This is land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1% Annual Exceedance Probability (AEP)).
Geophysical survey	Geophysical survey is a non-intrusive pre-construction archaeological evaluation technique that exploits a variety of physical or chemical characteristics of rocks and soils etc, in an attempt to locate underground features of archaeological interest. Types of geophysical survey include magnetometer survey, magnetic susceptibility survey and resistivity survey.
Grid Connection Corridor	Corridor which represents the maximum extent of land within which the cable route would be located.
Heavy Goods Vehicle (HGV)	Vehicles with 3 axles (articulated) or 4 or more axles (rigid and articulated).
Historic Environment Record	The record of archaeological and built heritage features in a county or district, usually held and maintained by the relevant County Council.
Inverter	Inverters convert the direct current (DC) electricity collected by the PV modules into alternating current (AC), which allows the electricity generated to be exported to the National Grid. Battery energy storage systems also use inverters to convert between DC and AC. The batteries function in DC and electricity must be converted to AC to pass into or from the grid.
Jointing pit	Underground structures constructed at regular intervals along the cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Mitigation	Measures including any process, activity, or design to avoid, prevent, reduce, or, if possible, offset any identified significant adverse effects on the environment.
National Policy Statement (NPS)	National Policy Statements are produced by government. They comprise the government's central policy documents for the development of nationally significant infrastructure.

Nationally Significant Infrastructure Projects (NSIP)	NSIPs are large scale developments such as certain new harbours, power generating stations (including wind farms), highways developments and electricity transmission lines, which require a type of consent known as ‘development consent’ under procedures governed by the Planning Act 2008 (and amended by the Localism Act 2011).
Grid connection substation	A compound containing electrical equipment to enable connection to the National Grid.
Preliminary Environmental Information (PEI)	PEI is defined in the EIA Regulations as: <i>“information referred to in Regulation 14(2) which – (a) has been compiled by the applicant; and (b) is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development).”</i>
Preliminary Risk Assessment	Report that presents a summary of readily-available information on the geotechnical and/or geo-environmental characteristics of the site and provides a qualitative assessment of geo-environmental and/or geotechnical risks in relation to the proposed development.
Principal Aquifer	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
Receptor	A component of the natural or man-made environment that is affected by an impact, including people.
Scheme	The East Yorkshire Solar Farm comprising solar PV and battery storage and associated development for connection to the national transmission system via Grid Connection.
Setting	The surroundings within which a heritage asset is experienced and any element, which contributes to the understanding of its significance.
Soil (as referred to in Chapter 15 Soils and Agricultural land)	The upper layers of the earth’s surface, comprising a mixture of mineral and organic components that contain air, water and micro-organisms. Soils provide a substrate for plant growth, a habitat for animals and storage for water and carbon. Generally, soils are considered to occur to a maximum depth of 1.2 m, but are often shallower
Soil Associations	Groupings of related soil series (see below).
Soil series	Soil series are the lowest category in the soil classification system and are precisely defined based upon particle-size distribution, parent material (substrate) type, colour and mineralogical characteristics.

Solar PV Site	The maximum extent of land potentially required for the solar photovoltaic (PV) generating panels and on-site energy storage facilities.
Site / Scheme Boundary	The maximum extent of land potentially required temporarily and/or permanently for the construction, operation and maintenance of the Scheme, including the Solar PV Site and the Grid Connection Corridor.
Source Protection Zone (SPZ)	SPZs show the risk of contamination from any activities that might cause pollution to groundwater sources such as wells, boreholes and springs used for public water supplies. The closer the activity, the greater the risk. SPZs can comprise of up to three main zones (inner, outer and total catchment). A fourth zone of special interest can also occasionally be applied to a groundwater source.
Sustainable drainage systems (SUDS)	Surface water drainage systems developed in line with the ideals of sustainable development (e.g. swales, ponds, basins, filtration flow control, etc).
Transformers	Transformers control the voltage of the electricity generated across the site before it reaches the electrical infrastructure.
Visual receptors	People with views of the development or associated activities. These are located within the visual envelope and are typically residents, motorists, pedestrians, recreational users in residential areas on publicly accessible roads, footpaths and open spaces.
Water Framework Directive	<p>The Water Framework Directive ("WFD") introduced a new system for monitoring and classifying the quality of surface and ground waters.</p> <p>The Directive requires that Environmental Objectives be set for all surface waters and groundwater to enable them to achieve Good Ecological Potential/Status by a defined date.</p>
Zone of Theoretical Visibility	The zone within which views of a proposed development may be experienced, as determined by analysis of OS data and field survey. It is influenced by many factors including topography and intermediate visual intrusions, such as blocks of woodland and buildings.

21. Abbreviations

AADT	Average Annual Daily Traffic Flow
AC	Alternating current
AEP	Annual Exceedance Probability
agl	Above ground level
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
APFP	Applications: Prescribed Forms and Procedure
AQMA	Air Quality Management Area
ATC	Automatic Traffic Counts
BAP	Biodiversity Action Plan
BGS	British Geological Survey
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
BOD	Biological Oxygen Demand
BPM	Best Practicable Means
BRE	Building Research Establishment
BS	British Standard
CBC	Common Bird Census
CCC	Climate Change Committee
CCTV	Closed circuit television
CDM	Construction Design Management
CEMP	Construction Environmental Management Plan
CH ₄	Methane
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute of Archaeologists

CO ₂	Carbon dioxide
COPA	Control of Pollution Act 1974
COSHH	Control of Substances Hazardous to Health
CSM	Conceptual Site Model
CTMP	Construction Traffic Management Plan
DBA	Desk-Based Assessment
DC	Direct current
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DEMP	Decommissioning Environmental Management Plan
DLL	District Level Licence
DMRB	Design Manual for Roads and Bridges
EC	European Commission
EclA	Ecological Impact Assessment
eDNA	Environmental DNA
EEA	European Economic Association
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPS	European Protected Species
EPSM	European Protected Species Mitigation
EPUK	Environmental Protection UK
ERP	Emergency Response Plan
ES	Environmental Statement
ESRC	Economic and Social Research Council
EU	European Union
FRA	Flood Risk Assessment

GCN	Great Crested Newt
GHG	Greenhouse gas
GLVIA3	Guidelines for Landscape and Visual Impact Assessment, Third Edition
GRP	Glass reinforced plastic
GVA	Gross Value Added
GWDTE	Groundwater Dependent Terrestrial Ecosystem
H&SP	Health and Safety Plan
ha	hectare
HDD	Horizontal Directional Drilling
HER	Historic Environmental Record
HFCs	Hydrofluorocarbons
HGV	Heavy goods vehicle
HIA	Health Impact Assessment
HLC	Historic Landscape Characterisation
HMSO	Her Majesty's Stationery Office
HMWB	Heavily Modified Water Body
HRA	Habitat Regulation Assessment
HSI	Habitat Suitability Index
HUDU	Healthy Urban Development Unit
HV	High voltage
HVAC	Heating, ventilation and cooling
IAQM	Institute of Air Quality Management
IAS	Invasive Alien Species
IBD	Internal Drainage Board
ICCI	In-combination climate change impact
ICE	Inventory of Carbon and Energy
IEA	Institute of Environmental Assessment

IEMA	Institute of Environmental Management and Assessment
IHBC	Institute of Historic Building Conservation
INNS	Invasive Non-Native Species
ISO	International Organisation for Standardisation
JNCC	Joint Nature Conservation Committee
km	Kilometre
kV	Kilovolt
LDR	Long Distance Route
LFA	Lead Flood Authority
LHA	Local Highway Authority
LLFA	Lead Local Flood Authority
LNRR	Local Nature Reserve
LPA	Local Planning Authorities
LRN	Local Road Network
LSE	Likely significant Effects
LSOAs	Lower Layer Super Output Areas
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
MAGIC	Multi-Agency Geographical Information for the Countryside
MHCLG	Ministry of Housing, Communities and Local Government
MSA	Mineral Safeguarding Areas
MSOA	Middle Layer Super Output Area
MW	Megawatts
NCA	National Character Area
NERC	The Natural Environmental and Rural Communities
NEYEDC	North and East Yorkshire Ecological Data Centre
NF ₃	Nitrogen trifluoride
NGET	National Grid Electricity Transmission

NGR	National Grid Reference
NHLE	National Heritage List for England
NHS	National Health Service
NNR	National Nature Reserve
NO ₂	Nitrogen Dioxide
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
NPS	National Policy Statement
NPSE	Noise Policy Statement for England
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
NVQ	National Vocational Qualification
NVZ	Nitrate Vulnerable Zone
OHL	Over Head Lines
ONS	Office for National Statistics
OS	Ordnance Survey
PBDE	Polybrominated diphenyl ethers
PCAN	Place Based Climate Action Network
PEA	Preliminary Ecological Appraisal
PEI	Preliminary Environmental Information
PEIR	Preliminary Environmental Information Report
PFCs	Perfluorocarbons
PFOS	Perfluorooctane sulphate
PHE	Public Health England
PIA	Personal Injury Accident
PINS	Planning Inspectorate
PPE	Personal protective equipment

PPG	Pollution Prevention Guidance
PPG	Planning Practice Guidance
PRA	Preliminary Risk Assessment
PRF	Preliminary Roost Assessment
PRF	Potential Roost Features
PRoW	Public Right of Way
PV	Photovoltaic
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SAR	Standardised Admission Ratio
SDLP	Selby District Local Plan
SF ₆	Sulphur hexafluoride
SFRA	Strategic Flood Risk Assessment
SGHAT	Sandia Laboratories Solar Glare Hazard Analysis Tool
SINC	Sites of Nature Conservation Interest
SMR	Standardised Mortality Ratio
SoCC	Statement of Community Consultation
SoS	Secretary of State
SPA	Special Protection Area
SPG	Supplementary Planning Guidance
SPZ	Source Protection Zone
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
SWMP	Site Waste Management Plan
TA	Transport Assessment
TAG	Transport Assessment Guidance

tCO ₂ e	Tonnes of carbon dioxide equivalent
TRL	Transport Research Laboratory
UK	United Kingdom
UKBAP	UK Biodiversity Action Plan
UKCIP	UK Climate Impacts Programme
UKCP18	UK Climate Projections 2018
W	Watts
Waste FD	Waste Framework Directive
WCA	Wildlife and Countryside Act 1981
WFD	Water Framework Directive
WHIASU	Wales Health Impact Assessment Support Unit
WSI	Written Scheme of Investigation
WTN	Waste Transfer Note
ZOI	Zone of influence
ZTV	Zone of Theoretical Visibility

Appendix A Transboundary Effects Screening Matrix

- A.1 Regulation 32 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires the consideration of any likely significant effects on the environment of European Economic Association (EEA) States.
- A.2 Guidance upon the consideration of transboundary effects is provided in the Planning Inspectorates Advice Notes 12: Development with significant transboundary impacts consultation⁴.
- A.3 The following screening matrix provides the consideration of transboundary effects for the Scheme, taking guidance from Advice Note 12 (Annex 1).

Table A1: Screening matrix for possible substantial effects on the environment of EEA States

Criteria and Relevant Considerations	Commentary with Regard to Proposed Scheme
Characteristics of the development <ul style="list-style-type: none"> • Size of the development • Use of natural resources • Production of waste • Pollution and nuisance • Risk of accidents • Use of technologies 	The resources required for the construction of the Scheme are likely to be obtained from the global market, but it is envisaged that materials would be obtained locally wherever possible. No waste, nuisances or accidents are likely to extend beyond the border of the UK. No novel technologies are proposed that have the potential for transboundary effects.
Location of development (including existing use) and Geographical area <ul style="list-style-type: none"> • What is the existing use? • What is the distance to another EEA state? • What is the extent of the area of a likely impact under the jurisdiction of another EEA state? 	The Scheme's closest EEA boundary is France, located approximately 370 km to the south-east. No impacts are likely to extend beyond the jurisdiction of the UK, with the exception of potential greenhouse gas emissions. The latter is expected to be minimal given the nature of the Scheme, which will not emit GHG emissions during its operation (except for any emissions associated with maintenance vehicles and repair works).

⁴ <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-twelve-transboundary-impacts-and-process/>

Criteria and Relevant Considerations	Commentary with Regard to Proposed Scheme
<p>Environmental importance</p> <ul style="list-style-type: none"> • Are particular environmental values (e.g., protected areas – name them) likely to be affected? • Capacity of the natural environment. • Wetlands, coastal zones, mountain and forest areas, nature reserves and parks, Natura 2000 sites, areas where environmental quality standards already exceeded, densely populated areas, landscapes of historical, cultural or archaeological significance. 	<p>There are a number of European statutory designated nature conservation sites within 10 km of the Scheme.</p> <p>The potential for significant effects relating to these designated sites will be accounted for in the EIA. However, it is not anticipated that there is potential for transboundary effects (and therefore any effects on important environmental receptors beyond the UK).</p>
<p>Potential impacts and carrier</p> <ul style="list-style-type: none"> • By what means could impacts be spread (i.e., what pathways)? 	<p>The only potential transboundary environmental impact which is considered likely is from GHG emissions. These emissions would be spread by atmospheric processes and are anticipated to be minimal given the nature of the Scheme. The Scheme is expected to offset GHG emissions through the generation of clean electricity, that otherwise would have been generated from a typical fuel mix comprising technologies such as gas fired power stations for example.</p>
<p>Extent</p> <ul style="list-style-type: none"> • What is the likely extent of the impact (geographical area and size of the affected population)? 	<p>The only potential transboundary environmental impact which is considered likely is from greenhouse gas emissions, which are known to contribute to changes on climate on a global scale.</p>
<p>Magnitude</p> <ul style="list-style-type: none"> • What will the likely magnitude of the change in relevant variables relative to the status quo, taking into account the sensitivity of the variable? 	<p>The impact of GHG emissions is considered irreversible within human lifetimes, however as above, the emissions are expected to be minimal during construction and decommissioning (in the order of one to three years) and is expected to lead to a beneficial</p>

Criteria and Relevant Considerations	Commentary with Regard to Proposed Scheme
<p>Probability What is the degree of probability of the impact? Is the impact likely to occur as a consequence of normal conditions or exceptional situations, such as accidents?</p>	<p>contribution to UK GHG emissions during operation (assumed to be 40 years). The temporal pattern of GHG emissions is likely to be relatively constant during the construction and decommissioning phases. It is proposed to calculate the likely GHG emissions as part of the EIA. GHG</p>
<p>Duration Is the impact likely to be temporary, short-term or long-term? Is the impact likely to relate to the construction, operation or decommissioning phase of the activity?</p>	<p>impacts will be put into context in terms of their impact on the UK's five-year carbon budgets which set legally binding targets for greenhouse gas emissions. The GHG emissions offset through the production of cleaner electricity during the operational phase will be accounted for within the GHG emissions calculations.</p>
<p>Frequency What is the likely to be the temporal pattern of the impact?</p>	<p>In any event, the global nature of GHG impacts means that it is not possible to apportion or identify any impact in GHG emissions in terms of environmental effects on any particular country or state.</p>
<p>Reversibility Is the impact likely to be reversible or irreversible?</p>	<p>It follows that there is no potential for significant effects on the environment of any EEA State or group of EEA States resulting from GHG emissions from the Scheme, as the environmental receptor in this regard is the global atmosphere, rather than the environment of any country or state or group of countries or states. The GHG emissions are considered at a global level, and so are captured by the assessment in any event.</p>
<p>Cumulative Impacts Are other major developments close by?</p>	<p>Proposed developments within 5 km of the Scheme will be taken into consideration in the Environmental Impact Assessment (EIA). However, it is not anticipated that there is potential for significant cumulative transboundary effects.</p>

Appendix B Long List of Major Accidents and Disasters

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
1 Geological disasters				
1.1 Landslides	No	<p>The risk of landslides will be considered as part of the geotechnical design, ensuring that the risk is designed out, both in terms of the vulnerability of the Scheme to these types of events; however given the flat nature of the land this risk is considered minimal.</p> <p>The Scheme is not anticipated to increase the risk of landslip happening onsite or elsewhere (it is not substantially heavy, and the Site is relatively flat); it will not significantly change the erosion potential of the soil or stability of the land.</p>	N/A	N/A
1.2 Earthquakes	No	<p>The Scheme is not located in a geologically active area and as such earthquakes are not considered to be a real risk or serious possibility.</p>	N/A	N/A
1.3 Sinkholes	No	<p>The risk of sinkholes will be considered as part of the geotechnical design and the construction method and Scheme</p>	N/A	N/A

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
<p>design amended if needed, ensuring that the risk is designed out, both in terms of the vulnerability of the Scheme to these types of events, and also in terms of the potential for the Scheme to increase the risk of such an event happening.</p>				
<p>2 Hydrological disasters</p>				
2.1 Floods	Yes	<p>Both the vulnerability of the Scheme to flooding, and its potential to exacerbate flooding, will be covered in the Flood Risk Assessment, and also reported in the ES (both in terms of the risk to the Scheme and increased risk caused by the Scheme).</p>	<p>Property and people in areas of increased flood risk.</p>	<p>Chapter 9 Water Environment (including Flood Risk Assessment). Mitigation will be considered and, where necessary, incorporated into the Scheme design.</p>
2.2 Limnic eruptions	No	<p>Not applicable as there are no lakes nearby.</p>	N/A	N/A
2.3 Tsunami/Storm surge	No	<p>Not applicable as the Scheme is not in a coastal location.</p>	N/A	N/A
<p>3 Meteorological disasters</p>				
3.1 Blizzards	No	<p>The Scheme is considered to be no more vulnerable than any other development. It will be designed to cope with the UK climate and extreme</p>	N/A	N/A

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
		weather events; blizzards should not affect the Scheme integrity.		
3.2 Cyclonic storms	No	Although there are storms in the UK, their destructive force tends to be much less than in other parts of the world and the Scheme is not particularly vulnerable to any potential effects. It will be designed for the British climate and weather extremes.	N/A	N/A
3.3 Droughts	No	Droughts are only considered as a disaster due to water shortages for essential services and where there are indirect impacts on food production, loss of soils etc. The Scheme is not considered to be vulnerable to drought.	N/A	N/A
3.4 Thunderstorms	No	As the Scheme includes metal components, there is a risk of lightning strikes. However, these risks will be removed or reduced through inbuilt control systems and can be scoped out at this stage.	N/A	N/A
3.5 Hailstorms	No	The Scheme is considered to be no more vulnerable than any other development.	N/A	N/A
3.6 Heat waves	No	While impacts are expected as a result of projected temperature increases (due	N/A	No

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
		to climate change), these temperature increases are not expected to have a significant impact on the Scheme. It is anticipated that the cooling systems for the battery energy storage systems, will regulate temperatures to within safe conditions.		
3.7 Tornadoes	No	Although there are tornadoes in the UK, their destructive force tends to be much less than in other parts of the world and the Scheme is not particularly vulnerable to any potential effects.	N/A	No
3.8 Fires	Yes	There may be some potential for fire as a result of the battery storage element of the Scheme. However, the battery energy storage system will include cooling systems, which are designed to regulate temperatures to within safe conditions to minimise the risk of fire. In addition, the Scheme design will include adequate separation between battery banks to ensure that an isolated fire would not become widespread and lead to a major incident. Fire detection and suppression features would be installed to detect (e.g. multispectrum infrared flame detectors) and suppress fire (e.g.	Local residents, habitats and species.	Chapter 2 The Scheme

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
		water base suppression systems) to minimise the effect of any fire.		
3.9 Air Quality Events	No	<p>The Scheme is not located within any Air Quality Management Areas (AQMA). The nearest AQMA is in Selby Town Centre. This AQMA will not be affected by the Scheme.</p> <p>Although there are likely to be emissions during construction and decommissioning of the Scheme, it is considered that these can be managed through the implementation of a Construction Environmental Management Plan. Good practice measures will be set out in a Framework Construction Environmental Management Plan to be appended to the ES.</p>	N/A	N/A
4 Transport				
4.1 Road Accidents	Yes	<p>The risk posed by construction/operation/decommissioning traffic on the Local Road Network will be considered in the Transport chapter of the ES.</p> <p>The risk posed by spillage from hazardous loads as a result of a road traffic accident during construction or</p>	Aquatic environment Road users	Chapter 13 Transport Chapter 8 Flood Risk, Drainage and Surface Water Glint and Glare Study Mitigation will be considered and, where necessary,

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
		<p>decommissioning will be considered in the Flood Risk, Drainage and Water Resources chapter of the ES.</p> <p>The potential for glint and glare to affect road users will be considered within a technical appendix to the ES if any risks are identified.</p>		<p>incorporated into the Scheme design.</p>
4.2 Rail Accidents	Yes	<p>The site is located adjacent to the railway line connecting local stations such as Howden, Wressle and Newland. The potential for glint and glare to affect trains will be considered within a technical appendix to the ES if any risks are identified.</p>	Rail users	<p>Glint and Glare Study Mitigation will be considered and, where necessary, incorporated into the Scheme design.</p>
4.3 Aircraft Disasters	No	<p>The potential for glint and glare to affect aircraft has been scoped out of the assessment due to guidance in the Draft NPS EN-3 (Ref. 96) which states that sets out specific policy in relation to glint and glare from solar development at Section 2.52. Section 2.52.5 conflicts with the MHCLG guidance above stating that <i>“there is no evidence that glint and glare from solar farms interferes in any way with aviation navigation or pilot and aircraft visibility or safety”</i></p>	N/A	N/A

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
5 Engineering Accidents/Failures				
5.1 Bridge Failure	No	Not applicable as no bridges used or constructed as part of Scheme.	N/A	N/A
5.2 Tunnel Failure or Fire	No	None nearby.	N/A	N/A
5.3 Dam Failure	Yes	Parts of the Site are at risk from reservoir flooding. This will be covered within the Flood Risk Assessment and will be reported in the ES, both in terms of the risks to the Scheme and increased risk to third parties caused by the Scheme.	Property and people in areas of increased flood risk.	Chapter 9 Water Environment Mitigation will be considered and, where necessary, incorporated into the Scheme design.
5.4 Flood Defence Failure	Yes	This will be covered in the Flood Risk Assessment and will also be reported in ES, both in terms of the risk to the Scheme and increased risk caused by the Scheme.	Property and people in areas of increased flood risk.	Chapter 9 Water Environment Mitigation will be considered and, where necessary, incorporated into the Scheme design.
5.5 Mast and Tower Collapse	No	Not applicable as there are no masts or towers nearby.	N/A	N/A
5.6 Building failure or fire	No	No buildings are close enough to the Scheme for it to be affected by building failure or fire.	N/A	N/A
5.7 Utilities failure (gas, electricity, water, sewage, oil, communications)	Yes	The Scheme has the potential to affect existing utility infrastructure above and below ground. To identify any existing	Employees and local residents	Chapter 14 Other Environmental Considerations.

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
		infrastructure constraints, both consultation and a desk based study will be undertaken.		Consultation with relevant utilities providers is a routine part of solar development and consultees will include water, gas and electricity utilities providers and telecommunications providers as appropriate. Information obtained from consultation will be used to inform the layout design.
6 Industrial Accidents				
6.1 Defence industry	No	Not applicable as there is no defence manufacturing nearby.	N/A	N/A
6.2 Energy Industry (fossil fuel)	No	Not applicable as there is no energy industry (fossil fuel) nearby.	N/A	N/A
6.3 Nuclear Power	No	Not applicable as there are no nuclear power stations nearby.	N/A	N/A
6.4 Oil and gas refinery/storage	No	Not applicable as there is no relevant industry nearby.	N/A	N/A
6.5 Food Industry	No	Not applicable as there is no relevant industry nearby.	N/A	N/A
6.6 Chemical Industry	No	Not applicable as there no relevant industry nearby.	N/A	N/A

Major accident or disaster	Relevant for long list?	Why? (note if risk to the project, or project exacerbates risk)	Potential Receptors	Covered already in proposed ES? If so, where?
6.7 Manufacturing Industry	No	Not applicable as there no relevant industry nearby.	N/A	N/A
6.8 Mining / Extractive Industry	Yes	There is the potential for current or past quarrying activity in the vicinity to lead to unstable ground conditions. However, the risk will be considered as part of the geotechnical design, ensuring that the risk is designed out.	Employees and local residents	N/A
7 Terrorism/Crime/Civil unrest	No	The Scheme is unlikely to be a target for these types of incidents due to its rural location and low number of exposed targets.	N/A	N/A
8 War	No	The Scheme is no more vulnerable than any other infrastructure.	N/A	N/A
9 Disease				
9.1 Human disease	No	The Scheme is considered no more vulnerable than any other infrastructure.	N/A	N/A
9.2 Animal disease	No	The Scheme is considered no more vulnerable than any other infrastructure.	N/A	N/A
9.3 Plant disease	Yes	New planting may be susceptible to biosecurity issues, such as the increased prevalence of pests and diseases, due to climate change.	Habitats and species	Chapter 8 Ecology Chapter 10 Landscape and Visual Amenity (including Biodiversity and Landscape Management Plan)

Major accident or disaster

Relevant for long list?

Why? (note if risk to the project, or project exacerbates risk)

Potential Receptors

Covered already in proposed ES? If so, where?

The planting design will take account of biosecurity risks through a wider mix of species including some non-natives.

