

Nationally Significant Infrastructure Project in the Energy Sector

ENVIRONMENTAL IMPACT ASSESSMENT SCOPING REPORT

On behalf of INRG Solar (Little Crow) Ltd

December 2018



ENVIRONMENTAL IMPACT ASSESSMENT

SCOPING REPORT

LITTLE CROW SOLAR PARK

INRG SOLAR (LITTLE CROW) LTD

REGULATION 10(3) INFRASTRUCTURE PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017

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1. INTRODUCTION

The Proposals

- 1.1 INRG Solar (Little Crow) Ltd ["the developer"] is proposing a renewable led energy scheme on land to the east of Steel Works site at Scunthorpe, North Lincolnshire.
- 1.2 The main elements of the development is the construction, installation, operation and decommissioning of a ground mounted solar park with a maximum design capacity of up to 150MWp (megawatts peak) and up to 90 Megawatts of batterybased electricity storage facility. There will also be electrical connection infrastructure and the point of connection into the local electricity grid is directly to the 132KV electricity overhead pylon which already runs through the development site.
- 1.3 A site location plan of the development area is provided at Appendix 1.1.

APPENDIX 1.1: SITE LOCATION PLAN

The Regulations

- 1.4 As the development will generate over 50MWp of energy it is a nationally significant infrastructure project (NSIP), and therefore requires a Development Consent Order (DCO) under the Planning Act 2008. The development is categorised as a 'schedule 2' development under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017¹ (Schedule 2, Paragraph 3. Energy industry (a) industrial installations for the production of electricity, steam and hot water (projects not included in Schedule 1 to these Regulations). Regulation 3(1) identifies how Schedule 2 development are likely to have significant effects on the environment by virtue of factors such as its nature, size or location.
- 1.5 In consideration of the footprint of development, the developer has voluntarily determined that an Environmental Impact Assessment ["EIA"] will be required and will be submitting an Environmental Statement with the Development Consent Order application for the development.



Purpose of the EIA Scoping Report

- 1.6 The purpose of this EIA Scoping Report is to ensure that the EIA accompanying the DCO application is focused on the key impacts likely to give rise to significant adverse effects. As well as identifying aspects to be considered in the EIA this document also identifies those aspects that are not considered necessary to assess further. As NSIP projects are typically associate with long lead in times, this Scoping Report has been prepared following a drafting of a working Environmental Statement. This has allowed the developer and it experienced team of environmental consultants to evolve the preliminary design of the scheme based on 'hands on' technical assessments.
- 1.7 North Lincolnshire Council have provided informal pre-application advice over the development and this includes their guidance ever the structure of the Environmental Statement.

APPENDIX 1.2: NORTH LINCOLNSHIRE INFORMAL PRE-APPLICATION ADVICE

Requirement of Scoping Report

- 1.8 Regulation 10(3) of the 2017 Regulations states that a request for a scoping opinion must include:
 - (a) a plan sufficient to identify the land;
 - (b) a description of the proposed development, including its location and technical capacity;

(c) an explanation of the likely significant effects of the development on the environment; and

(d) such other information or representations as the person making the request may wish to provide or make.

- 1.9 The guidance presented in Planning Inspectorate Advice Note 7 has also been taken into consideration in the preparation and presentation of this Scoping Report.
- 1.10 In accordance with the 2017 Regulations, this EIA Scoping Report contains:
 - information to identify the location of the proposed development;

- a brief description of the nature and purpose of the proposed development and its possible effects on the environment; and
- information and representations from the developer on the aspects of the proposed development and environment that are not considered necessary to assess further.
- 1.11 The developer invites consultees to comment on the Scoping Report as a whole together with the following questions:
 - What environmental information do you hold or are aware of that will assist in the EIA described here?
 - Do you agree with the proposed approach for baseline collection, prediction and significance assessment?
 - Are there any key issues or possible effects which have been omitted?
 - Do you agree with the list of issues to be scoped out, and the rationale behind the decision?
- 1.12 This report is structured to provide information on the individual factors which require consideration under regulation 10(3) of the 2017 Regulations. The Scoping Report presents the findings of an initial appraisal of the likely environmental effects of the proposed development on the receiving environment, based on the current understanding of the baseline conditions. The report identifies the potential for likely significant effects with reference to: the current understanding of baseline sensitivity; the proposed approach to further baseline data collection (where required); issues that can be scoped out from further assessment; issues that require further assessment on basis of potential for significant effects in each case. The Scoping Report comprises a Main Written Statement (this statement) supported by Technical Appendices.

The Project Team

1.13 INRG Solar (Little Crow) Ltd is advised by a team of experienced and competent environmental consultants. A statement will accompany the Environmental Statement that will outline the relevant experience and qualifications or the experts.

- 1.14 The preliminary consultants that have been involved with project to date are: -
 - Pegasus Group lead planning consultant, also providing planning advice, technical assessments of environment in terms of landscape; socio economic and coordinating the EIA
 - Clarkson and Woods Ecological Consultants is providing ecological and nature conservation advice
 - Transport Planning Associates is providing technical input with regards to traffic and access
 - Cotswold Archaeology is providing technical input with regards to heritage and archaeology
 - Kernon Countryside Consultants and Askew Land & Soil providing technical input on agriculture and agricultural land
 - Clive Onions Ltd drainage and flooding
 - Integrale ground conditions
 - Clemet Acoustics acoustics
 - Bureau Veritas air quality and carbon saving
 - Barton Hyett Associates arboriculture
 - SMS plc network and network constraints

2. METHODOLOGY

- 2.1 This section sets out the approach that would be taken to complete the EIA of the proposed development. Chapter 2 of the Environmental Statement will explain the everchanging methodology that will be applied to all the technical chapters of the Environmental Statement.
- 2.2 This chapter is supported by the following appendices: -
 - Appendix 2.1: Air Quality Report
 - Appendix 2.2: Phase 1 Ground Conditions Report
 - Appendix 2.3: Flood Risk Assessment and Drainage Strategy Report

GENERAL APPROACH TO ENVIRONMENTAL STATEMENT

2.3 The Environmental Statement must contain the information specified in regulation 18(3) and must meet the requirements of Regulation 18(4). It must also include any additional information specified in Schedule 4 to the 2017 Regulations which is relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.

2.4 Regulation 18(3) states: -

(3) An environmental statement is a statement which includes at least-

(a) a description of the development comprising information on the site, design, size and other relevant features of the development;

(b) a description of the likely significant effects of the development on the environment;

(c) a description of any features of the development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;

(e) a non-technical summary of the information referred to in sub-paragraphs(a) to (d); and

(f) any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.

2.5 Schedule 4 states: -

1. A description of the development, including in particular: (a) a description of the location of the development; (b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases; (c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.

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

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example

greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

5. A description of the likely significant effects of the development on the environment resulting from, inter alia: (a) the construction and existence of the development, including, where relevant, demolition works; (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste; (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters); (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; (g) the technologies and the substances used. The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC(a) and Directive 2009/147/EC(b).

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and

operational phases. prevented, reduced or offset, and should cover both the construction and operational phases.

8. 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. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(c) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(d) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

9. A non-technical summary of the information provided under paragraphs 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.

- 2.6 Reflecting on the above, the Environmental Statement will comprise the following information:
 - A description of the development comprising information about the site including the nature, size and scale of the development including details on its construction, operation, management and decommissioning;
 - The data necessary to identify and assess the main effects which the development is likely to have on the environment;
 - A description of the likely significant effects of the development covering, direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects, explained by reference to the development's possible effect on cultural and archaeological heritage, landscape and the interaction between any of the foregoing material assets (as appropriate).

- Where significant adverse effects are identified with respect to any of the foregoing, mitigation measures will be proposed in order to avoid, reduce or remedy those effects;
- A summary in non-technical language of the information specified above; and
- A statement outlining the relevant experience of the experts who have undertaken the assessment and drafted the technical chapters within the Environmental Statement.

CONSIDERATION OF ALTERNATIVES

- 2.7 The 2017 Regulations do not require an applicant to consider alternatives. However, where alternatives have been considered, paragraph 2 of Schedule 4 requires the applicant to include in their Environmental Statement a description of the reasonable alternatives studied and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.
- 2.8 The Environmental Statement will therefore include a discrete section that provides details of the alternatives considered and the reasoning for the selection of the chosen scheme, including a comparison of the environmental effects.

ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

- 2.9 The content of the Environmental Statement will be based on the following:
 - Review of the baseline situation through existing information, including data, reports, site surveys and desktop studies;
 - Consideration of the relevant National Policy Statement (NPSs), National Planning Policy Framework (NPPF) and accompanying National Planning Practice Guidance (NPPG), and the statutory extant and emerging development plan policies;
 - Consideration of potential sensitive receptors;
 - Identification of likely significant environmental effects and an evaluation of their duration and magnitude;
 - Expert opinion;



- Modelling;
- Use of relevant technical and good practice guidance; and
- Specific consultations with appropriate bodies.
- 2.10 Environmental effects will be evaluated with reference to definitive standards and legislation where available. Where it has not been possible to quantify effects, assessments will be based on available knowledge and professional judgment.

DETERMINING SIGNIFICANCE

- 2.11 The purpose of the Environmental Impact Assessment is to identify the likely 'significance' of environmental effects (beneficial or adverse) arising from a development. In broad terms, environmental effects are described as:
 - Adverse detrimental or negative effects to an environmental resource or receptor;
 - Beneficial advantageous or positive effect to an environmental resource or receptor; or
 - Negligible a neutral effect to an environmental resource or receptor.
- 2.12 It is proposed that the significance of environmental effects (adverse, negligible/neutral or beneficial) would be described in accordance with the following 7-point scale: -

major	moderate	minor	neutral/not	minor	moderate	major
beneficial	beneficial	beneficial	significant	adverse	adverse	adverse

- 2.13 Significance reflects the relationship between two factors:
 - The magnitude or severity of an effect (i.e. the actual change taking place to the environment); and
 - The sensitivity, importance or value of the resource or receptor.
- 2.14 The broad criteria for determining magnitude are set out in Table 2.1.

Table 2.1: Degrees of Magnitude and their Criteria

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Magnitude of Effect	Criteria
High	Total loss or major/substantial alteration to elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Medium	Loss or alteration to one or more elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible / detectable but the underlying character / composition / attributes of the baseline condition will be similar to the pre-development.
Negligible	Very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable, approximating to a 'no change' situation.

2.15 The sensitivity of a receptor is based on the relative importance of the receptor using the scale in Table 2.2.

Table 2.2:	Degrees	of Sensitiv	ity and	their	Criteria
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Sensitivity	Criteria
High	The receptor / resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Medium	The receptor / resource has moderate capacity to absorb change without significantly altering its present character, or is of high



	and more than local (but not national or international) importance.
Low	The receptor / resource is tolerant of change without detrimental effect, is of low or local importance.
Negligible	The receptor / resource can accommodate change without material effect, is of limited importance.

2.16 Placement within the 7-point significance scale would be derived from the interaction of the receptor's sensitivity and the magnitude of change likely to be experienced (as above), assigned in accordance with Table 2.3 below, whereby effects assigned a rating of Major or Moderate would be considered as 'significant'.

	Sensitivity of Receptor					
		High	Medium	Low	Negligible	
	High	Major	Major	Moderate	Negligible	
Magnitude of Change	Medium	Major	Moderate	Minor to Moderate	Negligible	
	Low	Moderate	Minor to Moderate	Minor	Negligible	
	Negligible	Negligible	Negligible	Negligible	Negligible	

Table 2.3: Degrees of Significance

- 2.17 The above magnitude and significance criteria are provided as a guide for specialists to categorise the significance of effects within the Environmental Statement. Where discipline-specific methodology will be applied that differs from the generic criteria above, this will be clearly explained within the given chapter.
- 2.18 A significance of effects would be assigned both before and after mitigation.

MITIGATION

- 2.19 Standard measures and the adoption of construction best practice methods to avoid, minimise or manage adverse environmental effects, or to ensure realisation of beneficial effects, will be incorporated into the design and development of proposal. The assessment of the development would include the mitigation measures where required noting any residual effects.
- 2.20 All mitigation measures would be specified in the Draft Development Consent Order. Where the assessment of the development would identify potential for adverse environmental effects, the scope for mitigation of those effects, for example by way of compensatory measures, will be considered and outlined in the appropriate technical chapter.
- 2.21 Where the effectiveness of the mitigation proposed will be considered to be uncertain, or where it depends upon assumptions of operating procedures, then data and/or professional judgment will be introduced to support these assumptions.

CUMULATIVE AND IN-COMBINATION EFFECTS

Cumulative Effects

- 2.22 In accordance to the EIA Regulations, the Environmental Statement will also give consideration to cumulative effects. Cumulative impacts are those effects of development that may interact in an additive or subtractive manner with the impacts of other developments including those that are not currently in existence but may be by the time the development is implemented.
- 2.23 North Lincolnshire Council provide the following advice on this matter on 30 October 2018: -

With respect to proposals which are not currently in existence and may need to be taken into account as part of a cumulative impacts assessment the only major scheme that I am aware of which may have the potential to have cumulative environmental impacts is PA/2018/1316, a pending application for the retention of an existing wellsite for long-term hydrocarbon production at Lodge Farm, Clapp Gate, Appleby.

The council does maintain an up-to-date weekly list of submitted planning applications on its website and we would be able to carry out a search of recent



planning approvals and pending planning applications in a specified Zone of Influence should this be required.

Combination Effects

2.24 Combined effects arise where effects from one environmental element bring about changes in another environmental element. These will be reviewed, where relevant, in each of the technical chapters of this Environmental Statement.

Proposed Structure of the Environmental Statement

- 2.25 The proposed structure of the Environmental Statement takes into account the preliminary environmental information pertinent to the site and informal preapplication consultation with North Lincolnshire Council and other prescribed bodies. The Environmental Statement will comprise studies on each of the aspects of the environment identified as likely to be significantly affected by the development (the 'technical chapters'). It is anticipated that the Environmental Statement will be structured into three key documents:
 - Non-Technical Summary (NTS) [Volume 1] this would provide a concise summary of the Environmental Statement identifying the likely significant environmental effects and the measures proposed to mitigate or to avoid adverse effects of the development.
 - Main Report [Volume 2]- Comprising the main volume of the Environmental Statement, including 'general chapters' that describe the EIA context, provide a description of the development site and development proposal, and set out the scope of the Environmental Statement, followed by the 'technical chapters' for each environmental theme with the associated figures and appendices and concluding with a summary.
 - Technical Appendices [Volume 3] this would provide the technical appendices supporting the Main Report.
- 2.26 For continuity, the figures and appendices will be arranged and presented using the same reference numbers as the chapters as a means of providing supportive background and technical information.

STRUCTURE OF TECHNICAL CHAPTER

- 2.27 The 'technical' chapters of the Environmental Statement will generally been set out in the following way:
 - Introduction to introduce the topic under consideration, state the purpose of undertaking the assessment and set out those aspects of the development material to the topic assessment;
 - Consultation a description of the informal and formal consultation undertaken with prescribed bodies over the methodology of the chapter;
 - Assessment Approach to describe the method and scope of the assessment undertaken and responses to consultation in relation to method and scope in each case pertinent to the topic under consideration;
 - Baseline Conditions a description of the baseline conditions pertinent to the topic under consideration including baseline survey information;
 - Assessment of Likely Significant Effects identifying the likely effects, evaluation of those effects and assessment of their significance, considering both construction and operational and direct and indirect effects;
 - Mitigation and Enhancement describing the mitigation strategies for the significant effects identified and noting any residual effects of the development;
 - Cumulative and In-combination Effects consideration of potential cumulative and in-combination effects with those of other developments; and
 - Summary a non-technical summary of the chapter, including baseline conditions, likely significant effects, mitigation, enhancement and conclusion.

Scope of the EIA

2.28 The proposed scope of information and assessment to be supplied within the Environmental Statement is set out below and is considered to provide a clear understanding of the potential significant effects of the development upon its environment and the mitigation measures proposed to avoid or ameliorate those effects.

- 2.29 The information, scope and knowledge required to undertake the Environmental Impact Assessment will be acquired from a number of varied sources to ensure that all impacts, whether explicit from the outset or coming to light during the projects, are appropriately assess in the Environmental Statement.
- 2.30 The proposed environmental themes to be scoped 'into' or 'out' of the Environmental Statement are given below: -

Environmental Theme	Scoped in / out	Reasons for Scoping Out
Agriculture	In	Topic would be addressed in the Environmental Statement
Air Quality	Out	There are a number of regulatory and legislative constraints in place to control pollution from construction and demolition activities. The Building Act 1984 and subsequent Building Regulations 2000 are in place to ensure the safety of people in and around the building during work. Part III of the Environmental Protection Act (EPA) 1990 identifies the emission of dust from construction sites as having the potential to be a statutory nuisance and requires its control under Section 80. A number of best practice guides are available, which provide a basis against which Codes of Construction Practice may be benchmarked. The Greater London Authority (GLA) in partnership with London Councils has produced a guidance documents that recommends mitigation measures, depending upon the scale of development and its location, to control nuisance dust from various activities during construction and demolition phases.

Table 2.4: Proposed Scope of Environmental Statement



BRE (Building Research Establishment) has also
produced a report that outlines the measures to
control the emissions of nuisance dust.
In December 2011, the IAOM published a guidance
document to assess the impact of construction on
air quality. The quidance was reviewed in January
20129 and undated in Educative 2014 to
incorporate new evidence. The entropy adented
in this accomment is based on adenting the
In this assessment is based on adopting the
methodology published in the 2014 version of the
IAQMI guidance.
The significance of the impact of the construction
phase on air quality has been determined through
application of the criteria outlined in IAOM
construction guidance.
Defra maintains a nationwide model of existing and
future background air quality concentrations at a
1km grid square resolution. The data sets include
annual average concentration estimates for NOx,
NO2, PM10 and PM2, using a base year of 2015.
The Pollution Climate Mapping (PCM) model on
which these are based is semi-empirical in nature;
it uses the National Atmospheric Emissions
Inventory (NAEI) emissions to model-predict the
concentrations of pollutants at the centroid of each
1km grid square, but then calibrates these
concentrations in relation to actual monitoring
data.
Annual mean background concentrations for use in
this assessment for NOx, NO2, PM2.5 and PM10
have derived from the background maps available
on the Defra UK-Air website. Sample locations
include 1km grid squares within the proposed

development itself and two receptor sites located
280m and 1km east of the proposed site.
The appropriate of dust/DM10 offects from the
construction phase of the development was subject
to a qualitative assessment following LAOM
auidance Following the construction dust
assessment the development site is found in
relation to dust soiling to be at worst low risk from
earthworks, construction and trackout. In relation
to human health impacts, the development Site is
found to be at worst low risk for all three activities.
In regards to construction phase vehicle
movements, the average number of two-way HDV
movements per day is expected to be well below
the 100 AADT criteria. Therefore, it is not
considered that there will be any potential for
significant air quality effects from development
related road traffic emissions during the
construction phase. Such potential impacts have
therefore been scoped out from requiring a detailed
impacts
impacts.
Effective mitigation measures were not specified as
there is no risk defined. Furthermore, impacts from
dust emissions during the construction phase
would be not significant, which is supported by
the low levels of annual mean emissions. It is
considered that despite there not being a defined
risk present, it is still advisable that a number of
good practice measures are implemented, such as
considerate traffic speed and observing minimal
dust dispersion where at all possible during
construction and transport activities.

		Maintenance vehicles are only expected to visit the site four times a year. Therefore it is unlikely that the number of vehicle movements during the operational phase will exceed those of the construction phase. As a result, operational phase impacts associated with road traffic emissions are deemed to be not significant and therefore scoped out of requiring a detailed assessment within the Environmental Statement. The air quality report is provided at appendix 2.1
Acoustics	Out	It is proposed that the noise and vibration impacts is scoped out of the Environmental Statement and presented as a standalone report accompanying the application. In order to set noise emissions criteria relative to the requirements of the Local Authority, it is necessary to establish the prevailing background noise levels of the site and surrounding area. An environmental noise survey would be undertaken in accordance with the requirements of BS 7445: 1991 'Description and measurement of environmental noise Part 2- Acquisition of data pertinent to land use' in order to measure the acoustic descriptors LAmax, LA10, LAeq and LA90. It is anticipated that the survey will be undertaken for a period of 72 hours at 2 locations representative of noise levels at the nearest noise sensitive receiver positions. Manual measurements would also be conducted in parallel to an inspection of the general area in order to identify any significant noise sources and/or any noise-sensitive premises.

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	Based on the daytime and night-time background noise patterns observed onsite, noise emissions criteria would be set in accordance with the agreed planning requirements of the Local Authority.
	The noise assessment report will cover the construction phase of the proposed solar park as well as its operation and decommissioning.
	Based on the construction programme, manufacturer provided noise emission levels of proposed transformer and inverter units, noise impact calculations would be undertaken for nearby noise sensitive receivers.
	Calculated noise emissions levels would be compared against the set noise emissions criteria in order to investigate whether mitigation measures are necessary to achieve compliance with the requirements of the Local Authority.
	The following standards and guidance documents would be considered throughout the assessment:
	 BS 4142: 2014: 'Method for rating industrial noise affecting mixed residential and industrial areas'
	 BS 8233: 2014: 'Sound Insulation and Noise Reduction for Buildings - Code of Practice'
	 Local Authority conditions and statement of common ground
	Detailed noise impact calculations will be presented in order to demonstrate compliance of the proposed installation with noise emissions criteria, incorporating proposed mitigation measures where appropriate.



		Should feasible mitigation measures be incapable of demonstrating acceptable noise emissions levels for nearby receivers, a relocation or reselection of units will be recommended.
Biodiversity and nature conservation	In	Topic would be addressed in the Environmental Statement.
Cultural Heritage including Architectural and Archaeological	In	Topic would be addressed in the Environmental Statement.
Ground Conditions & Minerals	Out	 Integrale Limited have undertaken a Phase 1 desk study, concentrated on ground conditions, geotechnical and contamination aspects. The desk study also informed the drainage considerations by Clive Onions Limited. The phase 1 report is provided at appendix 2.2 To summarise, previous investigation records available on the BGS website under the Open Government Licence include 5 boreholes sunk across the northern area and indicate: Higher Eastern half of site, at or above 55mAOD – Topsoil over Weathered oolitic limestone of Lincolnshire Limestone Formation; Central northern area between 40-50mAOD – Blown Sand to 2-4m depth, overlying Middle & Lower Lias mudstones and locally limestones;

	 Lower northwestern area at 36mAOD – yellow and grey clays of Coleby Mudstones (with thin veneer of Blown Sand likely).
	Data available on the LandIS Soilscapes Viewer and within a Soil Site Extended Report is included indicates:
	• The complete site area is classified as underlain by freely draining slightly acid sandy soils. These have typically low fertility arable land cover, and drain to groundwater.
	• The complete site area is underlain by Newport 1 Type Soils. These are deep well drained sandy and coarse loamy soils. They are free draining and permeable in unconsolidated sands or gravels, which have a relatively high permeability and high storage capacity. They have a very low potential for ground movement (shrinkage or swelling).
	• These soils will, by nature of their high permeability, readily transmit a wide range of pollutants because of the rapid drainage and low attenuation potential.
	 The uppermost 300mm of the soil profile is sandy and 'light'.
	 Newport 1 Soils have typically an upper 250mm of dark brown slightly stony sandy loam or loamy sand, overlying brown slightly stony loamy sand or sand, with a weak fine subangular blocky structure. Below 500-550mm depth, these develop into yellowish red or brownish yellow slightly stony sand of single grain structure.
	Historical maps revealed the following:

1885 to 1906 - Majority of site agricultural fields with drainage ditches in lower area. Gokewell Priory Farm with pond in northern area. Hummocky /marshy area in extreme lower southwest with pond. Several small scale excavations or pits in lower western area may indicate surface diggings for ironstone.
1948 to 1955 – No significant changes within the site
1968 to 1980 - Overhead powerlines constructed crossing SW to NE from substation within Iron & Steel Works to SW. Possible new drainage ditches (and small pond?) within hummocky area in extreme northwest near Crow Covert. Clearance of Sodwall Plantation (possible ironstone workings?)
1994 to 2002 Gokewell Priory Farm buildings demolished – exact date unclear from mapping. Opencast ironstone workings annotated in extreme SW site extension area.
2002 to 2014 No significant changes apparent within site. Maximum elevation of drainage ditches / surface water courses on this mapping at 36mAOD in north, 43mAOD centrally, 35mAOD central southern, and 30mAOD in southern area.
The potential relevant contamination sources are therefore considered to be limited to remnant metals in soils within any localised backfilled ironstone pits, and air borne derived particulates from the extensive industrial complex to the west and southwest, remaining within shallow depth site topsoil. The Gokewell Priory Farm building area has been demolished since 1994-2002, and no specific
development in that area is proposed. The

		 hummocky areas west of this (near Crow and Little Crow Coverts) may relate to either this demolition or drainage works, or less likely to ironstone working. A future solar farm & battery storage end use and known neighbouring agricultural land uses have been used to develop an understanding of the likely sensitive human receptors. In view of the very limited ground intrusion needed to install the panels, and the shallow depth of any service runs, or access track/roadways, it is envisaged that potential receptors to contamination (if present within the soils on-site, or via migration from adjacent sites) are limited to: Construction Workers during installation or maintenance. Future maintenance staff or neighbouring workers. With regards to mineral extraction, preliminary understanding is that the ironstone is deemed to be unsuitable for either safeguarding and/or extraction and a desktop resource assessment would be submitted in support of the application. A Phase 1 Ground Condition Survey supplemented by Phase 2 exploratory work will be submitted alongside the Environmental Statement.
Flood Risk and Drainage Strategy	Out	Initial assessment has shown that water quality entering the environment will be improved, infiltration will improve and runoff rates will be

reduced, bring overall benefit to the environment.
A FRA and Drainage Strategy Report is provided at
Appendix 2.3
The site is located in Flood Zone 1, at low risk of
flooding, according to the Environment Agency
(EA) Flood Map for Planning, consistent with its
elevated location, and is therefore appropriate
development in terms of fluvial flood risk in
accordance with the National Planning Policy
Framework (NPPF).
The EA Surface Water Flood Risk Map shows
isolated ponding within a few areas in the site -
indicative of the generally free-draining nature of
the soil. In the west of the site the water is shown
to issue from a spring line and flows westwards.
The spring line is shown below, in an image which
has been extracted from the Geotechnical Report.
Localised areas up to 50m wide appear to have a
very gentle fall to the east, and, leading through
woodland. There are no evident watercourses or
signs of surface water flows to the east, indicating
that the rainfall infiltrates into the ground where it
lands, ie the shallow gradient allows infiltration.
The site contains a number of watercourses,
generally running north south along the slope, and
linked by watercourses flowing down the slope,
which are shown on the maps. A detailed
topographic survey has been undertaken of the
site, and shows that the channels are well-defined
and approximately 1m deep.
The soil is shown to be free draining and the
underlying coll is naturally desired by the set
underlying soil is naturally drained by the springs
which issue along the spring line. The mechanism

		would therefore be that rainfall infiltrates into the
		soil, and then follows a layer with low permeability
		and issues at a generally low rate over a prolonged
		period from the ground, forming a watercourse. It
		is proposed to retain the watercourses which issue
		from the spring line, and provide a minimum 8m
		buffer from top of bank with no development.
		For the reasons set out above it is proposed to
		scope out this topic. A Flood Risk Assessment and
		Drainage Strategy will be prepared alongside the
		Environmental Statement.
Landscape and Visual	In	Topic would be addressed in the Environmental Statement.
Traffic and Transport	In	Topic would be addressed in the Environmental Statement.
Socio Economic	In	Topic would be addressed in the Environmental Statement.
Human Beings	In	Topic would be addressed throughout the Environmental Statement. Residential amenity would be considered in the Landscape and Visual Impact Chapter. Severance, driver delay would be discussed in the Traffic and Transport chapter.

- 2.31 The proposed structure of the Environmental Statement main statement will follow:
 - Chapter 1 Introduction
 - Chapter 2 Methodology
 - Chapter 3 The Development Site and its Environs
 - Chapter 4 Development Proposal



- Chapter 5 Legislative Context, Climate Change, Energy Policy & Guidance
- Chapter 6 Landscape and Visual Impact
- Chapter 7 Ecology and Nature Conservation
- Chapter 8 Cultural Heritage and Archaeology
- Chapter 9 Transport and Traffic
- Chapter 10 Agriculture
- Chapter 11 Socio Economics Issues



3. THE DEVELOPMENT SITE

3.1 Chapter 3 of the Environmental Statement will provide a description of the site and its environs.

Site Description

- 3.2 The development site is located on a localised ridge between the settlements of Scunthorpe to the west and Broughton to the east. The village of Broughton is separated from the site by an extensive area of dense woodland. Between the main residential and commercial areas of Scunthorpe, directly adjacent to the western boundary of the site, lies the extensive industrial complex of the Scunthorpe Steel Works. To the north the ridge continues approximately 11km to the banks of the Humber Estuary. Also to the north is an area of heathland known as Risby Warren. To the south the ridge runs approximately 35km to the City of Lincoln. A Roman Road, Ermine Street runs adjacent to Broughton to the east of the site. A secondary scarp slope known locally within Scunthorpe as 'The Cliff' lies to the west. Away from Scunthorpe the landscape is largely rural.
- 3.3 The site extends to approximately 226 hectares and is comprised largely of arable fields which are bounded and heavily contained by dense woodland to the north, east and south which serve to provide significant screening of the site from the wider landscape. Phased forestry operations take place in the surrounding woodland.

Public Rights of Way

3.4 A Public Right of Way (Footpath 214 on the Definitive Rights of Way map) crosses the site. Site work identified that, as it is used on the ground, the route does not follow the exact alignment as it is shown on OS mapping, and instead follows the line of a track which runs within site (as it is shown on the Definitive Map). In 2009 a section of PRoW was diverted to follow an existing track. The 2009 diversion order includes within its schedule the description "a 604-metre-long footpath with a width of four metres ... and leading on an existing stone track around the western, northern and eastern perimeters of the field ...". North Lincolnshire Council Right of Way Officer has confirmed that "The wording [of the diversion order] reinforce the representation of the path's position upon the map, serves to eliminate any doubt as to the fact that the track is the route that the footpath follows"².

Landform and Topography

- 3.5 In terms of landform the site lies on the edge of a localised ridge, raised slightly above the surrounding landscape, which would generally give potential for it to be visible from much of the wider landscape. However, as the site survey work has confirmed, surrounding woodland encloses much of the site, and therefore any views remain generally well contained.
- 3.6 The local ridge forms part of a wider scarp and vale topography. The site straddles part of the west facing scarp slope and the east facing limestone plateaux which runs eventually into the lower dip slope towards the River Ancholme.

Land Use, Buildings and Infrastructure

3.7 Land use across the site is predominantly agricultural with fields laid down to a mixture of arable and managed grassland. Some forestry operations are being undertaken within the surrounding woodland resulting in the storage of logs in piles next to the main access track through the site. There is no built form within the site, but a poultry unit is located adjacent to the east of the site, whilst to the west the vast expanse of industrial development associated with the Scunthorpe steel industry lies adjacent to the site. This area extends for more than 2km beyond which the lies the urban area of Scunthorpe. Various utilities cut through the site and these include a water main; 33k overhead power lines³; and, a double row of 132kv overhead pylons. The lines pass through the adjacent woodland without opening up large gaps in which the site can be seen.

Agricultural Land

3.8 The site is shown on the "provisional" Agricultural Land Classification map (MAFF 1983) as undifferentiated Grade 3 land. Provisional ALC maps are not sufficiently accurate to allow a full assessment of a site and should not be used for other than general guidance at a strategic level.

² Email correspondence between North Lincolnshire Council and Pegasus Group dated 7 August 2018.

³ The existing wooden poles and steel masts along the route have been in situ for some time and are in the process of being replaced by Norther Powergrid Plc due to the age.



Biodiversity Features and Environmental Designations

- 3.9 The site generally comprises open arable farmland, which is surrounded by a network of hedgerows and ditches as well as extensive woodland plantations. The most frequently encountered habitat at the site consists of open arable farmland. The arable fields comprised a mixture of spring-sown cereals and oilseed rape, as well as game cover crops at the edge of some fields. Field margins are characterised by coarse, semi-improved grassland. This habitat is also encountered alongside farm tracks and in some areas of fields which had been left fallow.
- 3.10 Field boundary hedgerows are generally species-poor although the hedgerows varied in height, length, condition and management4.
- 3.11 The northern, western and southern boundaries are bordered by woodland, mainly comprising semi-mature to mature plantation broadleaved woodland but with some coniferous elements and semi-natural woodland also present. Small pocket broadleaved woodland are also present in the west of the site. Broughton Far Wood Site of Special Scientific Interest (SSSI) and Broughton Alder Wood SSSI are located 820m and 920m east of the site boundary respectively. Broughton West Wood Local Wildlife Site (LWS) partially borders the east of the site, and is designated for its woodland habitat.
- 3.12 The proposed development site is a considerable distance from the Humber Estuary a Special Protection Area (SPA), Special Conservation Area (SAC) and Ramsar site. The area encompassing the SPA is situated approximately 11km north of the site at the closest point, whilst the SAC and Ramsar site is located 9km west at the closest point. It primarily receives its designation for its estuarine habitats, which support a range of associated species including internationally important assemblages of wintering and migratory birds.

Cultural Heritage

3.13 The site of the former medieval Gokewell Priory (NLHER ref. MLS1805) is located within the northern area of the site. This s a non-designated site and survives as above-ground remnant earthworks and potential belowground archaeological remains.

- 3.14 The landscape surrounding the site of the former medieval priory has undergone extensive change since the medieval period. The medieval field systems are no longer extant, and the surrounding area is now made up of very large, modern blocks of agricultural land. The agricultural regimes have also changed noticeably since the medieval period, with more intensive ploughing and use of the land.
- 3.15 The designated heritage assets located within the 2km study area are set out below: -
 - Scheduled Earthworks of Raventhorpe Medieval Settlement, located c.940m south of the Site (NHLE Ref: 1016426);
 - Grade II Raventhorpe House, located c. 900m south of the Site (NHLE Ref: 1346807);
 - Grade II Listed Springwood Cottage, located c.450m northeast of the Site (c.315m north of the access track (NHLE Ref: 1083734));
 - Grade II Listed Stable Northeast of Springwood Cottage, located c.450m northeast of the Site (NHLE Ref: 1310038);
 - Grade II Listed Stone Cottage and Adjoining Outbuildings, Broughton, located c.900m southeast of the Site (NHLE Ref: 1310013);
 - Grade II Listed 66 High Street, Broughton, located c.1.5km southeast of the Site (NHLE Ref: 1083740);
 - Grade I Listed Church of St Mary Broughton and the Grade II Listed Church Gates, located c.1.4km southeast of the Site (NHLE Refs: 1161801 and 1083741);
 - Grade II Listed The Hollies, Broughton, located c.1.4km southeast of the Site (NHLE Ref: 1309931);
 - Grade II Listed Broughton War Memorial, located c.1.5km southeast of the Site (NHLE Ref: 1391424);
 - Grade II Listed Broughton Grange Farmhouse, located 1.9km east of the Site (NHLE Ref: 1083736); and
- Grade II Listed Coach House/Stable approximately 10m east of Broughton Grange Farmhouse, located 1.9km east of the Site (NHLE Ref: 1346496).
- 3.16 The archaeological understanding of the site is ongoing by way of geophysical surveys, field walking and trial trenching.

Hydrology

- 3.17 The site is located in Flood Zone 1, at low risk of flooding, according to the Environment Agency Flood Map for Planning, consistent with its elevated location.
- 3.18 There are isolated ponding within a few areas in the site indicative of the generally free-draining nature of the soil. In the west of the site the water is shown to issue from a spring line and flows westwards.
- 3.19 The site contains a number of watercourses, generally running north south along the slope, and linked by watercourses flowing down the slope. A detailed topographic survey has been undertaken of the site, and shows that the channels are well-defined and approximately 1m deep.
- 3.20 Localised areas up to 50m wide appear to have a very gentle fall to the east, and, leading through woodland. There are no evident watercourses or signs of surface water flows to the east, indicating that the rainfall infiltrates into the ground where it lands, ie the shallow gradient allows infiltration.

Ground conditions

- 3.21 The complete site area is classified as underlain by freely draining slightly acid sandy soils. These have typically low fertility arable land cover, and drain to groundwater. The complete site area is underlain by Newport 1 Type Soils. These are deep well drained sandy and coarse loamy soils. They are free draining and permeable in unconsolidated sands or gravels, which have a relatively high permeability and high storage capacity. They have a very low potential for ground movement (shrinkage or swelling). These soils will, by nature of their high permeability, readily transmit a wide range of pollutants because of the rapid drainage and low attenuation potential. The uppermost 300mm of the soil profile is sandy and 'light'.
- 3.22 Newport 1 Soils have typically an upper 250mm of dark brown slightly stony sandy loam or loamy sand, overlying brown slightly stony loamy sand or sand, with a

weak fine subangular blocky structure. Below 500-550mm depth, these develop into yellowish red or brownish yellow slightly stony sand of single grain structure.

- 3.23 Historical maps revealed the following:
- 3.24 1885 to 1906 Majority of site agricultural fields with drainage ditches in lower area. Gokewell Priory Farm with pond in northern area. Hummocky /marshy area in extreme lower southwest with pond. Several small scale excavations or pits in lower western area may indicate surface diggings for ironstone.
- 3.25 1948 to 1955 No significant changes within the site
- 3.26 1968 to 1980 Overhead powerlines constructed crossing SW to NE from substation within Iron & Steel Works to SW. Possible new drainage ditches (and small pond) within hummocky area in extreme northwest near Crow Covert. Clearance of Sodwall Plantation (possible ironstone workings)
- 3.27 1994 to 2002 Gokewell Priory Farm buildings demolished exact date unclear from mapping. Opencast ironstone workings annotated in extreme SW site extension area.
- 3.28 2002 to 2014 No significant changes apparent within site. Maximum elevation of drainage ditches / surface water courses on this mapping at 36mAOD in north, 43mAOD centrally, 35mAOD central southern, and 30mAOD in southern area.
- 3.29 Any potential relevant contamination sources are therefore considered to be limited to remnant metals in soils within any localised backfilled ironstone pits, and air borne derived particulates from the extensive industrial complex to the west and southwest, remaining within shallow depth site topsoil. The Gokewell Priory Farm building area was demolished prior to 2002, and no specific development in that area is proposed.
- 3.30 The hummocky areas west of this (near Crow and Little Crow Coverts) may relate to either this demolition or drainage works, or less likely to ironstone working. With regards to mineral extraction, preliminary understanding is that the ironstone is deemed to be unsuitable for either safeguarding and/or extraction and a desktop resource assessment would be submitted in support of the application.



3.31 North Lincolnshire Council has declared an Air Quality Management Area (AQMA), which incorporates part of Scunthorpe town centre and an area east of Scunthorpe, including the Steel Works site. The development site is located within the AQMA.



4. DEVELOPMENT PROPOSAL

- 4.1 The main element of the development is the construction, operation, management and decommissioning of a ground mounted solar park with a maximum design capacity of up to 150MWp (megawatts peak) and up to 90MW of battery storage capacity.
- 4.2 Indicative Layout Drawings are provided at Appendix 4.1 and comprise: -

Drawing No	Title	Paper Size		
Solar & general site layout				
A10B0C0	Table Layout (general layout)	AO		
A02B0C0	Details (cross sections)	AO		
Battery Compound				
P2064-31-03 Rev O	Site Elevations and camera detail [battery compound]	A1		
P2064(02)-25-01-O	40ft Client container A1			
P2064(01)-25-02-0	53ft Battery Container A3			
P2064(01)-25-010-0	Transformer and Inverter Skid A3			
P2064(01)-25-01-O	53ft Battery container Plan & 3D View A3			

APPENDIX 4.1: INDICATIVE LAYOUT DRAWINGS

4.3 The photovoltaic panels would be laid out in straight arrays set at an angle of c. 20 degrees from east to west across the field enclosures. The distance between the arrays would respond to topography but would typically be between 3.5 metres to 6 metres. The top north edges of the panels would be up to 3.5 metres above ground level and the lower edges of the panels would be approximately 0.8 metres above ground level. The arrays would be static.

4.4 Battery storage will allow the development to fully utilise the network connection capacity when the solar park is not exporting at peak capacity. Battery storage will be connected to the distribution terminals in the substation and consists of batteries that can store energy from and release electrical energy to the electricity network.

Operational Lifespan

- 4.5 An operational lifespan of 35 years would be sought.
- 4.6 The solar and battery elements could either be delivered independently of each other or at the same time. They could therefore be constructed and become operational ether independently or at the same time. An operational lifespan of 35 years will be sought for each element and, subject to when they are constructed, the operational lifespans could run concurrently or interdependently. The Environmental Statement will provide a full description of the potential construction, operational and decommissioning variances. A single main substation compound will serve the whole development.
- 4.7 The application proposal would also include a package of landscape, ecological and biodiversity benefits that could include the installation of barn owl boxes, bird nesting boxes, bee hives, log piles and other hibernacula such as small buried rubble piles suitable for reptile species, amphibians and insect life. Development exclusion zone will be provided for the site of the former Gokewell Priory.
- 4.8 Land between and beneath the panels would be used for biodiversity enhancements and seasonal sheep grazing. Tree planting would be introduced along the north east section of the development boundary.
- 4.9 The arrays would be set within a 2.0m high security fence. The distance between the proposed fencing and existing hedges would vary across the site and at its minimum distance this would be circa 4m. Development would have an 15m buffer zone between the ancient woodland located to the east of the development site.
- 4.10 The security measures that will accompany the scheme include CCTV.
- 4.11 The existing woodland and hedgerow plantations that surround the various field enclosures would continue to be managed by the landowner as part of its woodland forestry licence.



SUPPORTING INFRASTRUCTURE

- 4.12 There will also be electrical connection infrastructure and the substation compound would be centrally located within the site and to the east of the existing double row of 132kV overhead electricity pylons which traverse the site and duly provides the point of connection to the local electricity network.
- 4.13 The metal framework that houses the solar modules will be supported at intervals by double posts approximately 6m apart. The posts will be driven into the ground at an approximate depth of 1.5 m.
- 4.14 The cabling from each array will be concealed in trenches linking the modules to the transformers and then the main substation compound.

RENEWABLE ENERGY AND CARBON DISPLACEMENT

- 4.15 The solar park would generate clean renewable energy for the equivalent of over 40,000 homes a year. The anticipated CO2 displacement is 50,000 tonnes per annum.
- 4.16 The proposal would provide a clean, renewable and sustainable form of electricity. It would make a valuable contribution to the generation of electricity at a local level. The scheme would add to the Council's progress in meeting its renewable energy target. It would also assist in meeting national targets.
- 4.17 The Environmental Statement will describe the energy generate process of the solar panels and the storage / discharge process of the batteries. The likely significant effects associated with the technologies to be used would be described and assessed.

ACCESS

4.18 It is proposed that construction traffic will arrive from the M180 junction 4, the A15, the A18, the B1208 and B1207 to the site access. From the M180 junction 4 vehicles will use the A15 northbound to the Briggate Lodge Roundabout and then travel east along the A18 towards Brigg. From the A18, vehicles will turn left onto the B1208. The B1208 measures between approximately 5.5 and 6 metres wide. Vehicles will travel along the B1208 to the junction with the B1207 and then continue straight ahead into the site access. No construction vehicles associated with the development proposal would travel through Broughton.



Temporary Construction Compound

- 4.19 During the construction phase, one main construction compound will serve the development proposal and this will be located off the main site entrance, thus reducing the distance delivery vehicles will need to travel after reaching the site's entrance.
- 4.20 The Environmental Statement will include a detailed description of the construction compound including its size and its duration required on site. Construction phase is expected to take around 11 months, if the development is constructed in its entirety.

Statutory Undertakers

4.21 The provision of easements for the existing services that traverse the site, such as water pipes and overhead powerlines, will be incorporated into the layout design. The Environmental Statement will include a description of how easement will be maintained during construction and operation of the development proposal.

Mitigation and enhancement

- 4.22 When the application is made, the description of development will be sufficiently developed to include design, size and locations of the different elements of the proposed development and this will include all mitigation and enhancement measures. This will be supplemented by technical appendices providing: -
 - Construction Environmental Management Plan;
 - Construction Traffic Management Plan;
 - Archaeological WSI / Watching Brief;
 - Landscape and Ecological Management Plan;
 - De-commissioning Plan.

EIA Flexibility

4.23 The need for flexibility is identified in a number of National Policy Statements (NPS) which suggest the Rochdale Envelope as an approach to address uncertainties inherent to the Proposed Development. This very pertinent to solar and battery industries due to the rapid pace of change in technology.

4.24 In order to maintain an element of design flexibility, the Environmental Statement set out maximum or a range of design parameters that will be used in the project description chapter of the Environmental Statement. A parameter led assessment will consider the 'worst case scenario' for the Environmental Statement. Such parameters will include the maximum height of the arrays, the maximum number and maximum size of supporting infrastructure and to allow the micro-siting of infrastructure.

Operation

4.25 During the operational phase, the activities on site would amount to servicing of plant and equipment and vegetation management. A landscape and ecological management plan would be submitted as part of the Environmental Statement and this document would set out how the land would be managed throughout the operational phase of development.

Decommissioning

- 4.26 A decommissioning plan will support the Environmental Statement, it will set out details of the decommissioning programme to be carried out after a 35 year generation period, the proposed lifetime of the Development Consent Order, or following a prolonged period of cessation, whichever is the earliest. It will include the method for the removal of all the solar panels, cabins, structures, batteries, enclosures, equipment and all other apparatus above and below ground level from the site and details of their destination in terms of waste/recycling, and details of how the site is to be restored. Any elements that will not be removed will also be listed.
- 4.27 The decommissioning of the proposal is expected to take 12 weeks and generating 80 vehicle movements per week.

Compulsory Purchase

4.28 A compulsory purchase provision may be incorporated into the DCO to reflect any rights, such as mineral rights, within the development site at time of submission.

Temporary Diversion of Public Rights of Way

4.29 Temporary diversion of a section of the right of way traversing the site will be required only during the construction period and the affected section of the route will be clearly described in the final Environmental Statement. It is proposed that the temporary closure will be secured through the DCO and during the duration of the temporary closure an alternative path will be provided which will run around the perimeter of the site until it re-joins the PRoW at the site boundary. It is anticipated that the temporary diversion will only be required to allow the build out of the soar park and this will be for a maximum of 11 months for construction and less for the subsequent decommissioning.

5. THE LEGISLATIVE CONTEXT, CLIMATE CHANGE, ENERGY POLICY & GUIDANCE

5.1 The Environmental Statement will include a chapter setting out the legislative and planning context of energy development. The chapter will be structured into three parts. The first part will provide a brief explanation of global warming and climate change, and the extensive policy initiatives originating at the International, European, and National Levels to adapt human activities and to address the threat. The second part will examine the planning regulatory framework and the national energy policy context which sets the basis for decision-taking for nationally significant energy infrastructure projects. The third part of the chapter will examine why it is necessary and desirable to develop renewable energy resources in preference to fossil fuels such as coal, oil and gas.

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

- 5.2 The National Policy Statement for Energy (EN-1) sets out the national policy for energy infrastructure, which encompasses renewable energy schemes generating more than 50MW. EN-1 is part of a suite of national policy statements issued by the Secretary of State for Energy and Climate Change and ratified by Parliament. It has effect in combination with the relevant technology specific NPS, National Policy for Renewable Energy Infrastructure (EN-3), and together they provide the primary basis for decisions made by the Examining Authority.
- 5.3 EN-1 is divided into five parts:
- 5.4 Part 1 sets out the background to the policy document. Paragraph 1.71 identify how all energy NPSs have been subject to an Appraisal of Sustainability ["AoS"], as required by the Planning Act 2008. The key points from the AoS for EN-1, as set out at paragraph 1.7.2, are: -
 - The energy NPSs should speed up the transition to a low carbon economy and thus help realise UK climate change commitments sooner that continuation under the current planning system.
 - The energy NPSs are likely to contribute positively towards improving the vitality and competitiveness of the UK energy market by providing greater clarity for developers which should improve the UK's security of supply and, less directly, have a positive effects for the health and well-being I the medium to longer term through helping to secure affordable supplies of



energy and minimizing fuel poverty, positive medium and long term effects are also likely for equalities;

- The development of new energy infrastructure, at the scale and speed required to meet the current and future need, is likely to have some negative effects on biodiversity, landscape/visual amenity and cultural heritage. However the significance of these effects and the effectiveness of mitigation possibilities is uncertain at the strategic and non-locationally specific level at which EN-1 to EN-5 are pitched. Short-term construction impacts are also likely through an increased use of raw materials and resources and negative effects on the economy due to impacts on existing land and sea uses. In general, it should be possible to mitigate satisfactorily the most significant potential negative effects of new energy infrastructure consented in accordance with the energy NPSs, and they explain ways in which this can be done; however, the impacts on landscape/visual amenity in particular will sometimes be hard to mitigate.
- Paragraph 1.7.11 of EN-1 identifies how the principal area in which consenting new energy infrastructure in accordance with the energy NPSs is likely to lead to adverse effects which cannot always be satisfactorily mitigated.
- 5.5 Part 2 of EN-1 sets out the Government policy on energy and energy development infrastructure. It confirms the following
 - Government is committee to meeting its legally binding target to cut greenhouse gas emissions be at least 80% by 2050, compared to 1990 levels
 - the need to effect a transition to a low carbon economy so as to reduce greenhouse gas emissions; and
 - the importance of maintaining secure and reliable energy supplies as older fossil fuel generating plant closes as the UK moves towards a low carbon economy
 - Government's wider objective for energy infrastructure includes contributing to sustainable development and ensuring that energy infrastructure is safe.

- 5.6 Paragraph 2.2.27 of the EN-1 goes on to state "Sustainable development is relevant not just in terms of addressing climate change, but because the way energy infrastructure is deployed affects the well-being of society and the economy".
- 5.7 Part 3 of EN-1 defines and sets out the need that exists for nationally significant energy infrastructure. With regards to decision making, paragraph 3.1.1. of EN1-1, sates how "the UK needs all the types of energy infrastructure covered in this NPS in order to achieve energy security at the same time as dramatically reducing greenhouse gas emissions".
- 5.8 Paragraph 3.1.2 states *"It is for industry to propose new energy infrastructure projects within the strategic framework set by Government. The Government does not consider it appropriate for planning policy to set targets for or limits on different technologies".* It then goes on to identify how NSIP applications should therefore be assessed on the basis that the Government has already demonstrated that there is a need for those types of infrastructure and that the scale and urgency of that need is as described in the EN-1.
- 5.9 In terms of the planning balance, paragraph 3.1.4 of EN1 states "The [determining authority] should give substantial weight to the contribution which projects would make towards satisfying this need when considering applications for development consent under the Planning Act 2008".
- 5.10 Section 3.3 of the EN1 discusses the need for new nationally significant electricity infrastructure projects. The key reasons why Government believes there is an urgent need for new electricity NSIPs are identified as: -
 - Meeting the energy security and carbon reduction objectives;
 - Need to replace closing electricity generating capacity;
 - The need for more electricity capacity to support an increased supply from renewables.
 - Future increases in electricity demand; and
 - The urgency of the need for new electricity capacity.
- 5.11 Paragraph 3.3.11 identifies how renewable sources, such as solar, are intermittent and as such will require back-up sources at times when the availability of

intermittent renewable sources is low. Paragraph 3.3.12 goes on to identify how electrical storage technologies can be used to compensate for the intermittence.

5.12 Part 3.4 of EN-1 specifically discusses the role of renewable energy and states; -

The UK has committed to sourcing 15% of its total energy (across the sectors of transport, electricity and heat) from renewable sources by 202040 and new projects need to continue to come forward urgently to ensure that we meet this target. Projections suggest that by 2020 about 30% or more of our electricity generation – both centralised and small-scale – could come from renewable sources, compared to 6.7% in 200942. The Committee on Climate Change in Phase 1 of its advice to Government in September 2010 agreed that the UK 2020 target was appropriate, and should not be increased. Phase 2 was published in May 2011 and provided recommendations on the post 2020 ambition for renewables in the UK, and possible pathways to maximise their contribution to the 2050 carbon reduction targets.

Large scale deployment of renewables will help the UK to tackle climate change, reducing the UK's emissions of carbon dioxide by over 750 million tonnes by 2030. It will also deliver up to half a million jobs by 2020 in the renewables sector...

- 5.13 With regards to the urgency for renewables, paragraph 3.4.5 explains that in order to hit the 2020 target and to largely decarbonize the power sector by 2030, it is necessary to bring forward new renewable electricity generation projects as soon as possible. It goes on to state "The need for new renewable electricity generation projects is therefore urgent".
- 5.14 Part 4 of EN-1 sets out certain strategic principles to be applied in respect of nationally significant energy infrastructure schemes

Presumption in Favor of Development

- 5.15 Paragraph 4.1.2 states how the determining authority should start with the presumption in favor of granting consent to applications for energy NSIPs. That presumption applies unless any more specific and relevant polices set out in the relevant NPSs clearly indicate that consent should be refused.
- 5.16 The presumption is also subject to the provisions of the Planning Act 2008.

- 5.17 Paragraph 4.1.4 of EN-1 states how in considering any proposed development, and in particular when weighing its adverse impacts against its benefits, the determining authority should take into account: -
 - Its potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits; and
 - Its potential adverse impacts, including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.
- 5.18 Development consent obligations that are agreed with local authority is considered through paragraph 4.1.8 and states that the determining authority may take these into account provided that they are relevant to planning, necessary to make the proposed development acceptable in planning terms, directly relates to the proposed development, fairly and reasonably related in scale and kind to the proposed development, and reasonable in all other respects.
- 5.19 Part 4.4 deal with alternatives. Paragraph 4.4.1 states *"From a policy perspective this NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option".*
- 5.20 That said paragraph 4.4.2 identified how applicants are obliged to include in their Environmental Statement, as a matter of fact, information about the main alternatives they have studied and this should include an indication of the main reasons for the applicant's choice, taking into account the environmental, social and economic effects.
- 5.21 Paragraph 4.4.3 goes on to state that where there is a policy or legal requirement to consider alternatives the applicant should describe the alternatives considered in compliance with these requirements. Given the level and urgency of need for new energy infrastructure, the IPC should, subject to any relevant legal requirements (e.g. under the Habitats Directive) which indicate otherwise, be guided by the following principles when deciding what weight should be given to alternatives: -
 - the consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner;

- the determining authority should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security and climate change benefits) in the same timescale as the proposed development;
- where (as in the case of renewables) legislation imposes a specific quantitative target for particular technologies the determining authority should not reject an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and it should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals;
- alternatives not among the main alternatives studied by the applicant (as reflected in the Environmental Statement) should only be considered to the extent that the determining authority thinks they are both important and relevant to its decision;
- alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the determining authority's decision;
- alternative proposals which are vague or inchoate can be excluded on the grounds that they are not important and relevant to the IPC's decision; and
- it is intended that potential alternatives to a proposed development should, wherever possible, be identified before an application is made to the determining authority in respect of it (so as to allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Therefore where an alternative is first put forward by a third party after an application has been made, the determining authority may place the onus on the person proposing the alternative to provide the evidence for its suitability as such and the determining authority should not necessarily expect the applicant to have assessed it.

- 5.22 On the issue of design for energy infrastructure, paragraph 4.5.1 of the EN-1 identifies how (inter alia) "Applying "good design" to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area".
- 5.23 The relationship between design and function is explored through paragraph 4.5.3 and states "In the light of the above, and given the importance which the Planning Act 2008 places on good design and sustainability, the IPC needs to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable (including taking account of natural hazards such as flooding) as they can be. In so doing, the IPC should satisfy itself that the applicant has taken into account both functionality (including fitness for purpose and sustainability) and aesthetics (including its contribution to the quality of the area in which it would be located) as far as possible. Whilst the applicant may not have any or very limited choice in the physical appearance of some energy infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting relative to existing landscape character, landform and vegetation. Furthermore, the design and sensitive use of materials in any associated development such as electricity substations will assist in ensuring that such development contributes to the quality of the area".
- 5.24 Paragraph 4.9.1 of the EN-1 recognises that "The connection of a proposed electricity generation plant to the electricity network is an important consideration for applicants wanting to construct or extend generation plant". It goes on to state how "In the market system, it is for the applicant to ensure that there will be necessary infrastructure and capacity within an existing or planned transmission or distribution network to accommodate the electricity generated". This is an important consideration when considering alternatives as the applicant has secured a point of connection within the confides of the development site.
- 5.25 Part 5 of the EN-1 sets out the generic impacts that may or may not be pertinent to specific projects, these are lists as: -



Торіс	Commentary
Land use	With regards to agricultural land classification, para 5.10.8 states how applicants should seek to minimize impacts on the best and most versatile agricultural land except where this would be inconsistent with other sustainability considerations.
	Paragraph 5.10.15 identifies how the determining authority should ensure that applicants provide justification when locating sites on best and most versatile agricultural land. With regards to mitigation, EN-1 states that there may be ,little that can be done to mitigate the direct effects of an energy project on the existing use of the proposed site.
Landscape ar Visual	d Paragraph 5.9.8 sets out that for nationally significant energy infrastructure, projects need to be designed carefully, having regard to siting, operational and other relevant constraints the aim should be to minimize harm to the landscape, providing reasonable mitigation where possible and appropriate.
Biodiversity ar geological conservation	d As a general principle, development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives; where significant harm cannot be avoided, then appropriate compensation measures should be sought.
Historic Environment	Paragraph 5.8.8 states that as part of the Environmental Statement the developer should provide a description of the significance of the heritage assets assessed by the proposed development and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage asset and no more than is sufficient to understand the potential impact of the proposal on the significance of the heritage asset.

	Paragraph 5.8.12 goes on to state that in considering the impact of the proposed development on any heritage asset, the determining authority should take into account the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimize conflict between conservation of that significance and proposals for development.
Dust, odour, artificial lighting	Paragraph 5.6.3 of EN-1 recognises that for energy NSIP, some impacts on amenity for local communities is likely to be unavoidable. The aim should be to keep impacts to a minimum, and at a level that is acceptable.
Flood Risk	Applications for energy projects of 1 hectare of greater in flood zone 1 should be accompanied by a flood risk assessment. The surface water drainage arrangements for any project should be such that the volumes and peal flow rate of surface water leaving the site are no greater than the rate prior to the proposed project, unless specific off-site arrangements are made and
	results in the same net effect.
Air Quality and Emission	Paragraph 5.2.6 states "Where the project is likely to have adverse effects on air quality the applicant should undertake an assessment of the impacts of the proposed project as part of the Environmental Statement". The Environmental Statement should describe: any significant air emissions, their mitigation and any residual effects distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project; the predicted absolute emission levels of the proposed project, after mitigation methods have been applied; existing air quality levels and the relative change in air quality from existing levels; and any potential eutrophication impacts.
Socio Economic	Paragraph 5.12.3 states "Where the project is likely to have socio-economic impacts at local or regional levels, the applicant

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	should undertake and include in their application an assessment of these impacts as part of the E Environmental Statement". The effects should consider: the creation of jobs and training opportunities; the provision of additional local services and
	improvements to local infrastructure, including the provision of educational and visitor facilities; effects on tourism; the impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure. This could change the local population dynamics and could alter the demand for services and facilities in the settlements nearest to the construction work (including community facilities and physical infrastructure such as energy, water, transport and waste). There could also be effects on social cohesion depending on how populations and service provision change as a result of the development; and cumulative effects – if development consent were to be granted to for a number of projects within a region and these were developed in a similar timeframe, there could be some short-term negative effects, for example a potential shortage of construction workers to meet the
	needs of other industries and major projects within the region.
Traffic and Transport	With regards to decision taking, EN-1 recognises that a new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the Planning Inspectorate should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the IPC should consider requirements to mitigate adverse impacts on transport networks arising from the development.
Water Quality	Where the project is likely to have effects on the water environment, the developer should undertake an assessment of the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the



water environment as part of the Environmental Statement or
equivalent

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

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



6. LANDSCAPE AND VISUAL IMPACT

- 6.1 The landscape and visual impact assessment chapter of the Environmental Statement will review the development site and its surrounding context in order to describe and identify the relative level of effects arising as a result of the proposed development, in relation to:
 - the features and character of the local landscape; and
 - the visual amenity of people who view the site.
- 6.2 This chapter is supported by the following appendices: -
 - Appendix 6.1 Site Context
 - Appendix 6.2 Topography
 - Appendix 6.3 LVIA Viewpoints
 - Appendix 6.4 Environmental Designations
 - Appendix 6.5 Landscape Character Areas

PRELIMINARY BASELINE CONDITIONS

Site Description and Context

- 6.3 The site is located on a localised ridge between the settlements of Scunthorpe to the west and Broughton to the east as shown on appendix 6.2 Topography. The village of Broughton is separated from the site by an extensive area of dense woodland. Between the main residential and commercial areas of Scunthorpe, directly adjacent to the western boundary of the site, lies the extensive industrial complex of the Scunthorpe Steelworks. To the north the ridge continues approximately 11km to the banks of the Humber Estuary. Also to the north is an area of heathland known as Risby Warren. To the south the ridge runs approximately 35km to the City of Lincoln. A Roman Road, Ermine Street runs adjacent to Broughton to the east of the site. A secondary scarp slope known locally within Scunthorpe as 'The Cliff' lies to the west. Away from Scunthorpe the landscape is largely rural.
- 6.4 The site is comprised of arable fields which are bounded and heavily contained by dense woodland to the north, east and west which serve to provide significant

screening of the site from the wider landscape. During the site work, forestry operations were being undertaken in the surrounding woodland and logs were being stored in piles. It is not however apparent that any areas are being clear felled in such a manner that would open up any additional views of the site.

Baseline Survey Information

The Site and its Landscape Features

- 6.5 This section provides a description of the landscape features within the proposed development site and their context within the surrounding study area. The landscape context of the site and immediate surrounding area is shown in Figure 6.1 Site Context.
- 6.6 A Public Right of Way (Footpath 214 on the Definitive Rights of Way map) crosses the site. Site work identified that, as it is used on the ground, the route does not follow the exact alignment as it is shown on OS mapping, and instead follows the line of a track which runs within site. (This diversion to the track is shown on the Definitive Map).

Landform and Topography

- 6.7 In terms of landform the site lies on the edge of a localised ridge, raised slightly above the surrounding landscape, which would generally give potential for it to be visible from much of the wider landscape. However, as the site survey work has confirmed, surrounding woodland encloses much of the site, and therefore any views remain generally well contained.
- 6.8 The local ridge forms part of a wider scarp and vale topography as shown on the section on Figure 6.2 Topography. The site straddles part of the west facing scarp slope and the east facing limestone plateaux which runs eventually into the lower dip slope towards the River Ancholme.

Land Use, Buildings and Infrastructure

6.9 Land use across the site is agricultural, comprising fields laid down to a mixture of arable and managed grassland. Some forestry operations are being undertaken within the surrounding woodland resulting in the storage of logs in piles next to the main access track through the site. There is no built form within the site, but a poultry unit is located adjacent to the east of the site, whilst to the west the vast

expanse of industrial development associated with the Scunthorpe steel industry lies adjacent to the site. This area extends for more than 2km beyond which the lies the main residential and commercial urban area of Scunthorpe.

6.10 A triple row of power lines cuts across the site. The lines pass through the adjacent woodland but without opening up large gaps through which the site can be seen.

Landscape Character

- 6.11 Landscape Character is an expression of pattern within the landscape resulting from particular combinations of the natural and historical factors that make one place different from another. This results in areas that have a unity of character and a distinctive sense of place when viewed from a landscape-wide perspective.
- 6.12 Published Landscape Character Assessments that cover the proposed development site have been interrogated and are detailed below, (see also Figure 6.5 Landscape Character):
 - Natural England National Character Area Profiles, (NCA 45 Northern Linclonshire Edge with Coversands);
 - North Lincolnshire Landscape Character Assessment & Guidelines, North Lincolnshire Council, 1999 (SPG5)

National Character Areas (NCA)

6.13 The site falls within NCA 45: Northern Linclonshire Edge with Coversands. Key characteristics presented in the character area description are as follows:

"NCA 45: Northern Linclonshire Edge with Coversands:

Elevated arable landscape with a distinct limestone cliff running north–south, the scarp slope providing extensive long views out to the west.

Double scarp around Scunthorpe of ironstone, and extensive areas of wind-blown sand, the Coversands, giving rise to infertile soils supporting heathland, acid grassland and oak/birch woodlands, with rare species such as woodlark and grayling butterfly.

Underlying limestone supporting small areas of calcareous grassland.

Few watercourses on the plateau, which lies between the rivers Trent and Ancholme which flow into the Humber, and is cut through in the south by the River Witham.

Productive soils on limestone plateau giving rise to a large-scale landscape of arable cultivation with extensive rectilinear fields and few boundaries of clipped hedges or rubble limestone, supporting birds such as grey partridge and corn bunting.

Semi-natural habitats of acid and calcareous grassland and broadleaved woodland are small and fragmented, and often associated with disused quarries.

Limited woodland cover, with patches of both broadleaves and conifers associated with infertile sandy soils, elsewhere occasional shelterbelts.

Long, straight roads and tracks, often with wide verges; Ermine Street follows the route of a key Roman north–south route.

Nucleated medieval settlement patterns following major routes, especially Ermine Street; sparse on higher land, with springline villages along the foot of the Cliff and some estates and parklands.

Other development comprises the major settlements of Lincoln and Scunthorpe, with their prominent landmarks of the cathedral and steelworks, and several active and re-used airfields prominent on the ridgetop.

Vernacular architecture and walling, especially in villages, of local warm-coloured limestone with dark brown pantiles.

Several ground features, especially on the plateau, include prehistoric burial mounds, Roman artefacts and abandoned medieval villages".

6.14 Whilst this national scale assessment is useful in providing a broad contextual overview of landscape character, it is not intended to be applicable at a site-specific level and therefore it would be unlikely that the site displayed all of the above characteristics. However, the site is part of an elevated arable landscape overlaying the limestone ridge with limited field boundaries, Risby Warren to the north of the site area is formed from Coversands deposits, Ermine Street a Roman Road lies to the east of the site area and the Scunthorpe Steelworks complex to the west of the site is very prominent. These elements are typical of the landscape character and

context in which the site is located. In terms of characteristics which are a-typical of the wider NCA, of particular note are the extensive coniferous woodlands immediately surrounding much of the site.

6.15 The proposed development would only be visible from a very small proportion of the wider landscape within NCA 45, and at this scale would not result in any change to key identified landscape characteristics. It has therefore been determined appropriate not to assess the effects at this scale further and instead to focus the assessment on the more local scale character assessments discussed below.

North Lincolnshire Landscape Character Assessment (LCA) & Guidelines, (1999)

6.16 The North Lincolnshire LCA identifies six Character Areas that cover North Lincolnshire, each of which are further sub-divided into component local landscape types. The site is located in the 'Lincolnshire Ede Character Area'. This Character Area is sub divided into 11 local landscape types of which two, Wooded Scarp Slope (WWS) which contains the lower (western portion of the site) and Heathy Woodland (HW) which contains the upper (eastern portion of the site) are of relevance to the site, as shown in Figure 4 Landscape Character. The key characteristics of these landscape types, (of relevance to the proposals) are identified as:

Wooded Scarp Slope	Heathy Woodland
(Western portion of the site)	(Eastern portion of the site)
 i) Sinuous scarp slope overlain by	i) Elevated, gently undulating landscape of
coversands and designated as an	deciduous and coniferous woodland
Area of High Landscape Value.	containing areas of open scrub and
ii) West facing slopes are	heathland.
extensively wooded with small	ii) Attractive character, intimate and
areas of arable farmland, pasture,	enclosed, within the woodland contrasting
scrub and rough grass.	with more open heath areas.
iii) Where vegetation is limited,	iii) Contains three SSSIs (Broughton Far
views towards Scunthorpe are	Wood, Broughton Alder Wood and Risby

Table 6.1: Landscape Types within site area.



extensive, otherwise the	Warren) and is designated as an Area of
landscape is well enclosed and of	High Landscape Value. Ancient replanted
intimate scale.	woodland at Far Wood, West Wood and
	Spring Wood.
iv) Significant areas have been left	
to nature, resulting in mainly	iv) Views to the west towards Scunthorpe
deciduous woodland with birch,	restricted by vegetation.
pine, larch, oak, gorse and	
rhododendron.	v) Local historical interest provided by
	Ermine Street, a Roman road that bisects
v) Ecologically important area,	the woodland.
with three sites of Nature	
Conservation Interest.	

- 6.17 Within the North Lincolnshire Landscape Character Assessment & Guidelines (1999) the site lies within the 'Lincolnshire Edge' Character Area, and straddles the 'Heathy Woodland' and 'Wooded Scarp Slope' sub areas. The following extract from Part 1 of the Character Assessment under Landcover and Wildlife is of note in relation to the character of the site: 'Much of the area close to Scunthorpe is blighted by current and former industrial activity. The former rural landscape structure has been lost and the present appearance is degraded and unattractive. However, in the more rural landscape away from Scunthorpe the scenery has been degraded by agricultural intensification. Despite this, woodland blocks remain locally prominent landscape elements.'
- 6.18 In Part 2 of the Landscape Character Assessment, Landscape Strategy and Guidelines. The document notes for the Heathy Woodland Landscape Type that in peripheral woodland areas, consideration should be given to the restoration of lowland heathland. Under Wooded Scarp Slope the document notes that the development of hedgerows should be encouraged particularly where linking with woodland blocks, to maximise possibilities for habitat linkage and wildlife dispersal.
- 6.19 The site lies within a landscape which is characterised by the adjacent large scale industrial area and the electrical power which the area draws in from the national grid. It lies within a farmland area surrounding the town and industry of Scunthorpe, in which in addition to views of the town and the steel works, pylons cut across the landscape and views include other large scale industry and wind turbines beyond.

6.20 The character of the site is also in part influenced by the adjacent woodland, the extent of which is notable in a Lincolnshire context. There are also valuable heathland habitats in the wider landscape to north, but the site is in intensive arable production, in keeping with much of the local farmland.

Landscape Designations

- 6.21 There are no Landscape designations within the site. (See Figure 6.4 Landscape Designations) As referenced under Heathy Woodland in the north Lincolnshire Character Assessment (See Table 6.1 above) the eastern two thirds of the site previously fell within an area designated in the North Lincolnshire Local Plan (Adopted May 2003) as an Area of High Landscape Value however this policy was not saved in September 2007 when the Adopted Local Plan was reviewed. Portions of the woodland to the east of the site are designated as Ancient Woodland.
- 6.22 The assessment of potential effects on features and designated areas concerned with the historic environment (such as World Heritage Sites, Scheduled Ancient Monuments, Listed Buildings and Conservation Areas) does not form part of this assessment. The identification of these however can be important in providing an indication of the value and quality of the wider landscape character as well as an indication of potential sensitive visual receptors and areas from where existing views towards the site are potentially more sensitive to change.

Conservation Areas

6.23 The site does not lie within or adjacent to a Conservation area. Four Conservation Areas lie within the 5km study area as illustrated on Figure 6.4 Landscape Designations, At Appleby to the north, Scawby to the south and two in Scunthorpe.

Scheduled Monuments

6.24 There are no Scheduled Monuments within the site. The closest lies to the south of the site at Raventhorpe medieval settlement earthworks immediately south west of Raventhorpe Farm.

Listed Buildings

6.25 There are no Listed Buildings within the site. The site and grounds of the former Manby Hall lies to the immediate south west of the site. This property fell into total ruin in the Mid part of the last century it is no longer standing, it is not subject to a statutory designation

Baseline Visual Receptors

Extent of Visibility

- 6.26 In general, the position of the site on a localised ridge ought to make it notable in the landscape but the woodland surrounding the site limits the potential for views to the north, east and south. Furthermore, the large built form of the Steelworks to the west of the site, particularly the long rolling mills, limits the majority of potential views from the town.
- 6.27 A 'screened ' Zone of Theoretical Visibility (ZTV) plan (Figure 6.3 LVIA Viewpoints) has been produced which illustrates the theoretical extent of where the proposed development would be visible from, assuming 100% visibility, and includes the screening effect from vegetation and buildings. This has been generated on the assumption that the proposed panels would have a height of 3m. Indicative woodland and Building heights are modelled at 15m an 8m respectively.
- 6.28 The screened ZTV plan is a tool to help illustrate locations where views of the proposed development would not be possible so as to allow the focus of baseline studies to be made on those locations where views are theoretically possible.
- 6.29 Following desktop research and site visits, it is evident that the extent of actual visibility of the proposed development is even less than is suggested by the screened ZTV plan. Visibility would generally be limited to the immediate environs of the site owing to the combined effect of topography, built form particularly in terms of the large buildings associated with the steel works and the mature plantation woodlands surrounding much of the site.

General views and screening elements

6.30 As noted above views within the wider landscape beyond the site are restricted by the scarp and vale topography, and the influence of screening elements in the immediate environs of the site.

- 6.31 To the north, the site is largely enclosed by plantation woodland. A series of power lines cut across the site but the resulting channels through the woodland do not open strong lines of visibility into the site. To the north of the woodland immediately surrounding the site are further woodland blocks surrounding further agricultural fields. Two residential properties lie within the farmland to the north of the site, High Santon Farm and Springwood Cottage. The screened ZTV indicates that there is some potential for views of the scheme from the boundaries of Spring Wood Cottage. In the wider more open agricultural landscape to the north beyond mosaic scrubland landscape of Risby Warren the screened ZTV indicates some potential for views from areas along Risby Road and to the south of Appleby.
- 6.32 To the east woodland cover is even stronger with a thick plantation woodland occupying all the land between the site and the settlement of Broughton approximately 1km to the east. A series of permissive footpaths run through the main body of this woodland. A public right of way runs north west from Broughton through the woodland where it exits adjacent to the north eastern portion of the site and then crosses through the site area towards the settlement of Santon to the north and the Steel Works. Views from the pathways within the woodland are very limited and contained by the vegetation. As well as the vegetation restricting views from the east the topography also serves to limit visibility. The site largely lies across the scarp slope angled towards the west. The screened ZTV indicates patches of potential visibility in the wider landscape (Figure 5). A residential property Herron Lodge lies within the woodland from which no potential views are available.
- 6.33 To the south, woodland also wraps almost continually around the southern perimeter of the site. A series of power lines cut through the woodland but again very limited views are gained of the site area along these corridors. To the south of the perimeter woodland the landscape becomes more open where the land use is predominantly arable. A portion of this ground is now occupied by the Ravensthorpe Solar Farm which is visible from the adjacent A18 to the south and sections of the M180 also to the south. The screened ZTV indicates potential for views of the proposal area from the more open farmland areas to the south west.
- 6.34 To the immediate west lies the extensive estate of the Scunthorpe Steel Works including the furnaces and the rolling mills. This creates a large area of mixed industrial use including buildings, pipes, railways, gas holders and chimneys between the site and the main commercial and residential areas of the settlement

of Scunthorpe. The screened ZTV indicates that the majority of potential visibility lies within the area occupied by the Steel works with more limited potential within the settlement of Scunthorpe itself.

- 6.35 The most notable views of the site are therefore limited to the public footpath running through and across the site. There would be very limited visibility in the wider landscape, often limited to possible glimpsed views through very limited breaks in the forestry.
- 6.36 It is noted that there are views of the existing solar development at Raventhorpe Farm in views from the M180 to the south of the site, but the site lies behind a band of woodland and intervening steelworks buildings which serve to restrict the potential for any cumulative visibility between the two schemes.
- 6.37 It is also recognised that from the Wolds landscape to the east of the site views can be gained of large scale buildings within steel works which lie beyond the site. However, it is understood that the proposed panels would be too low lying to be seen above adjacent woodland and unlike the steelworks would generally not be visible from this area.
- 6.38 Views from within Scunthorpe would most likely be limited to those people living in the upper stories of the high rise residential blocks, as other views from lower lying areas would largely be screened out by steel works and other large sheds on eastern side of town.

Likely Environmental Effects

6.39 Following preliminary desktop research and field work⁵, the study area for the LVIA chapter of the Environmental Statement will be set at 5km from the site boundary.

⁵ The baseline landscape resource and visual receptors were identified in part through a desk-based study of published landscape character studies, relevant planning policy

Any views of the proposed development beyond this distance would be negligible and unlikely to give rise to any effects greater than minor. That said, as landscape considerations have been a key material consideration in planning decisions for solar park it is rightly include in the Environmental Statement.

ASSESSMENT METHODOLOGY

- 6.40 In accordance with published guidance, landscape and visual effects will be assessed separately, although the procedure for assessing each of these is closely linked. A clear distinction will be drawn between landscape and visual effects as described below:
 - Landscape effects relate to the effects of the proposals during construction, operation, management and decommissioning on the physical and other characteristics of the landscape as a resource in its own right and its resulting character and quality;
 - Visual effects relate to the effects on specific views experienced by visual receptors and on visual amenity more generally during construction, operation, management and decommissioning.

Landscape and Visual Impact Assessment Process

- 6.41 The assessment of landscape effects for the Environmental Statement will follow a recognised process set out below:
 - Identify the baseline landscape resource (i.e. individual landscape elements and landscape character) and its value;
 - Describe any mitigation measures proposed to avoid, reduce and ameliorate potential adverse impacts and to maximise the beneficial impacts of the development;
 - Evaluate the sensitivity of the landscape resource to the type of development proposed;

guidance, aerial photography and Ordnance Survey mapping. In addition, site visits were conducted during August 2017 and January 2018 when the viewpoint photographs were taken.



- Identify predicted landscape impacts of the development;
- Evaluate the magnitude of change to the baseline landscape resource; and
- Assess the level of residual effect of the development on the landscape.
- 6.42 The assessment of visual effects for the Environmental Statement will follow a similar process as set out below:
 - Identify a 'bare earth' Zone of Theoretical Visibility (ZTV) for the development using digital terrain data (i.e. the geographical area where views of the development are theoretically possible with a bare earth scenario);
 - Identify potential visual receptors for the development (i.e. groups of people who would have views of the development);
 - Describe any mitigation measures proposed to avoid, reduce and ameliorate potential adverse impacts and to maximise the beneficial impacts of the development;
 - Evaluate the sensitivity of the visual receptor groups to the type of development proposed;
 - Describe the nature of the baseline views (usually illustrated by a photograph) and the predicted visual impacts of the development on the views of each receptor group;
 - Evaluate the magnitude of change in the view of the receptor groups;
 - Assess the level of residual effects on the views from representative receptor groups and on overall visual amenity.

Assessment of Significance

- 6.43 The LVIA would take the precautionary approach that all effects, unless stated otherwise, are assessed as adverse. The criteria used as guidance in assessing the significance of the effects of the development are set out below.
- 6.44 The primary source of best practice for LVIA in the UK is The Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3) (Landscape Institute and the Institute for Environmental Management and Assessment, 2013).

The assessment criteria adopted to inform the assessment of effects has been developed in accordance with the principles established in this best practice document. It should however be acknowledged that GLVIA3 establishes guidelines not a specific methodology. The preface to GLVIA3 states *"This edition concentrates on principles and processes. It does not provide a detailed or formulaic 'recipe' that can be followed in every situation – it remains the responsibility of the professional to ensure that the approach and methodology adopted are appropriate to the task in hand"*

- 6.45 The criteria set out below have therefore been developed specifically for this assessment to ensure that the methodology is appropriate and fit for purpose.
- 6.46 The purpose of an LVIA when undertaken in the context of an Environmental Impact Assessment (EIA) is to identify and describe any likely significant landscape and visual effects arising as a result of the proposals.
- 6.47 An LVIA will consider:
 - effects on the landscape as a resource in its own right (the landscape effects); and
 - effects on specific views and visual amenity more generally (the visual effects).
- 6.48 Therefore, separate criteria are set out below for the assessment of landscape and visual effects.

Nature (sensitivity) of landscape features

6.49 The nature or sensitivity of an individual landscape feature or element reflects its susceptibility to change and the value associated with it. Sensitivity is therefore a function of factors such as the feature's quality, rarity, contribution to landscape character, degree to which the particular element can be replaced and cultural associations or designations that apply. A particular feature may be more 'sensitive' in one location than in another often as a result of local value associated with the feature. Therefore, it is not possible to simply place different types of landscape feature into sensitivity bands. Where individual landscape features are affected, professional judgement will be used as far as possible to give an objective

evaluation of its sensitivity. Justification will be given for this evaluation where necessary.

6.50 The nature or sensitivity of individual landscape features will be described as very high, high, medium, low or very low.

Nature (sensitivity) of landscape character

- 6.51 The nature or sensitivity of landscape character reflects its susceptibility to change and the value associated with it. It is essentially an expression of a landscape's ability to accommodate a particular type of change. It varies depending on the physical and perceptual attributes of the landscape including but not necessarily limited to: scale; degree of openness; landform; existing land cover; landscape pattern and complexity; the extent of human influence in the landscape; the degree of remoteness/wildness; perception of change in the landscape; the importance of landmarks or skylines in the landscape; inter-visibility with and influence on surrounding areas; condition; rarity and scenic quality of the landscape, and the value placed on the landscape including any designations that may apply.
- 6.52 For the Environmental Statement, the nature or sensitivity of landscape character will be considered with reference to a number of local character areas. Information regarding the key characteristics of these character areas will be extrapolated from relevant published studies where possible but also informed by project specific field assessment. An assessment of landscape sensitivity to the development proposed will be undertaken employing professional judgement for relevant local landscape character areas.
- 6.53 The nature or sensitivity of landscape character will be described as very high, high, medium, low or very low.

Nature (sensitivity) of visual receptors

6.54 The nature or sensitivity of visual receptor groups reflects their susceptibility to change and the value associated with the specific view in question. Sensitivity varies depending on a number of factors such as the occupation of the viewer, their viewing expectations, duration of view and the angle or direction in which they would see the site. Whilst most views are valued by someone, certain viewpoints are particularly highly valued for either their cultural or historical associations and this can increase the sensitivity of the view. The following criteria are provided for guidance only and are not exclusive:

- Very Low Sensitivity People engaged in industrial and commercial activities or military activities.
- Low Sensitivity People at their place of work (e.g. offices); shoppers; users of trunk/major roads and passengers on commercial railway lines (except where these form part of a recognised and promoted scenic route).
- Medium Sensitivity Users of public rights of way and minor roads which do not appear to be used primarily for recreational activities or the specific enjoyment of the landscape; recreational activities not specifically focused on the landscape (e.g. football); motel users.
- High Sensitivity Residents at home; users of long distance or recreational trails and other sign posted walks; users of public rights of way and minor roads which appear to be used for recreational activities or the specific enjoyment of the landscape; users of caravan parks, campsites and 'destination' hotels; tourist attractions with opportunities for views of the landscape (but not specifically focused on a particular vista); slow paced recreational activities which derive part of their pleasure from an appreciation of setting (e.g. bowling, golf); allotments.
- Very High Sensitivity People at recognised vantage points (often with interpretation boards), people at tourist attractions with a focus on a specific view, visitors to historic features/estates where the setting is important to an appreciation and understanding of cultural value.
- 6.55 It is important to appreciate that it is the visual receptor (i.e. the person) that has a sensitivity and not a property, public right of way or road. Also, the sensitivity of a receptor group is not influenced by the number of receptors. As an example, although many people may use a motorway, this does not increase the sensitivity of each receptor using it. Likewise, a residential property may only have one person living in it but this does not reduce the sensitivity of that one receptor. Whilst the number of receptors affected at any given location may be a planning consideration, for the purposes of this assessment it will not alter the sensitivity of the receptor group.
- 6.56 Where judgements will be made about the sensitivity of assessment viewpoints, the sensitivity rating provided will be an evaluation of the sensitivity of the receptor

group represented by the viewpoint and not a reflection of the number of people who may experience the view.

6.57 For some developments (e.g. wind energy developments) it important not to confuse the concept of visual sensitivity with the perception of the development. For example, it is recognised that some people consider wind turbines to be unattractive, but others enjoy the sight of them.

Nature (magnitude) of effects – General note

- 6.58 Prior to the publication of GLVIA3, LVIA practice had evolved over time in tandem with most other environmental disciplines to consider the level of effect (relative significance) principally as a function of two factors, namely: sensitivity of the receptor and magnitude of the effect (the term 'magnitude' being a word most commonly used in LVIA and most other environmental disciplines to describe the size or scale of an effect).
- 6.59 Box 3.1 on page 37 of GLVIA3 references a 2011 publication by IEMA entitled 'The State of EIA Practice in the UK' which reiterates the importance of considering not just the scale or size of effect but other factors which combine to define the 'nature of the effect' including factors such as the probability of an effect occurring and the duration, reversibility and spatial extent of the effect.
- 6.60 The flow diagram on page 39 of GLVIA3 suggests that the magnitude of effect is a function of three factors (the size/scale of the effect, the duration of the effect and the reversibility of the effect).
- 6.61 For certain types of development (e.g. residential) the proposed development is permanent and non-reversible. For other types of development (e.g. wind and solar energy) the proposed development is for a time-limited period and would be largely reversible at the end of the scheme's operational period. Reversibility of a proposed development is a material consideration in the planning balance but does not reduce the scale of the effect (i.e. the 'magnitude' in the traditional and commonly understood sense of the word) during the period in which the scheme is operational. In this regard, it would be incorrect to report a lesser magnitude of change to a landscape or view as a result of a time-limited effect or the relative reversibility of the effect.
- 6.62 For clarification, the proposed approach for the Environmental Statement chapter will be to consider magnitude of effect solely as the scale or size of the effect in the
traditional sense of the term 'magnitude'. Having identified the magnitude of effect as defined above, the LVIA will then describes the duration and reversibility of the identified effect, taking these factors into account as appropriate in the consideration of the level (relative significance) of the effect.

6.63 In the context of the above discussion the following criteria is proposed to describe the magnitude of effects.

Nature (magnitude) of effects on landscape features

- 6.64 Professional judgement has been used as appropriate to determine the magnitude of direct physical effects on individual existing landscape features using the following criteria as guidance only:
 - Very Low Magnitude of Change Negligible loss or alteration to existing landscape features;
 - Low Magnitude of Change Minor loss or alteration to part of an existing landscape feature;
 - Medium Magnitude of Change Some loss or alteration to part of an existing landscape feature; and
 - High Magnitude of Change Major loss or major alteration to an existing landscape feature.
 - Very High Magnitude of Change Total loss or alteration to an existing landscape feature.

Nature (magnitude) of effects on landscape character

6.65 The magnitude of effect on landscape character is influenced by a number of factors including: the extent to which existing landscape features are lost or altered, the introduction of new features and the resulting alteration to the physical and perceptual characteristics of the landscape. Professional judgement has been used as appropriate to determine the magnitude using the following criteria as guidance only. In doing so, it is recognised that usually the landscape components in the immediate surroundings have a much stronger influence on the sense of landscape character than distant features whilst acknowledging the fact that more distant features can have an influence on landscape character as well.

- Very Low Magnitude of Change Negligible loss or alteration to existing landscape features; no notable introduction of new features into the landscape; and negligible change to the key physical and/or perceptual attributes of the landscape.
- Low Magnitude of Change Minor loss or alteration to existing landscape features; introduction of minor new features into the landscape; or minor alteration to the key physical and/or perceptual attributes of the landscape.
- Medium Magnitude of Change Some notable loss or alteration to existing landscape features; introduction of some notable new features into the landscape; or some notable change to the key physical and/or perceptual attributes of the landscape.
- High Magnitude of Change A major loss or alteration to existing landscape features; introduction of major new features into the landscape; or a major change to the key physical and/or perceptual attributes of the landscape.
- Very High Magnitude of Change Total loss or alteration to existing landscape features; introduction of dominant new features into the landscape; a very major change to the key physical and/or perceptual attributes of the landscape.

Nature (magnitude) of effects on views and visual amenity

- 6.66 Visual effects are caused by the introduction of new elements into the views of a landscape or the removal of elements from the existing view.
- 6.67 Professional judgement will be used to determine the magnitude of impacts using the following criteria as guidance only:
 - Very Low Magnitude of Change Negligible change in views;
 - Low Magnitude of Change Some change in the view that is not prominent but visible to some visual receptors;
 - Medium Magnitude of Change Some change in the view that is clearly notable in the view and forms an easily identifiable component in the view;
 - High Magnitude of Change A major change in the view that is highly prominent and has a strong influence on the overall view.

- Very High Magnitude of Change A change in the view that has a dominating or overbearing influence on the overall view.
- 6.68 Using this set of criteria, determining levels of magnitude is primarily dependent on how prominent the development would be in the landscape, and what may be judged to flow from that prominence or otherwise.
- 6.69 For clarification, the use of the term 'prominent' relates to how noticeable the features of the development would be. This is affected by how close the viewpoint is to the development but not entirely dependent on this factor. Other modifying factors include: the focus of the view, visual screening and the nature and scale of other landscape features within the view. Rather than specifying general bands of distance at which the proposed development would be dominant, prominent or incidental to the view etc. The prominence of the proposed development in each selected view will be described in detail for each viewpoint taking all the relevant variables into consideration.

Type of effect

- 6.70 The assessment identifies effects which may be beneficial, adverse or neutral. Where effects are described as neutral this is where the beneficial effects are deemed to balance the adverse effects.
- 6.71 For some developments (e.g. wind energy developments) it is recognised that some people consider the development to be unattractive but others enjoy the sight of it. A landscape and visual assessment for these developments therefore assumes that all identified landscape and visual effects are 'adverse' unless stated otherwise. This allows decision makers to assess a worst-case scenario.

Duration of effect

- 6.72 For the purposes of this assessment, the temporal nature of each effect is described as follows:
 - Long Term over 5 years
 - Medium Term between 1 and 5 years
 - Short Term under 1 year

Reversibility of effect

- 6.73 The LVIA also describes the reversibility of each identified effect using the following terms:
 - Permanent effect is non reversible
 - Non permanent effect is reversible

Level of effect and identification of significant effects

- 6.74 The purpose of an LVIA when produced in the context of an EIA is to identify and describe any significant effects on landscape and visual amenity arising from the proposed development.
- 6.75 Neither EC Directive 2011/12/EU nor the 2017 Regulations define a threshold at which an effect may be determined to be significant. In certain other environmental disciplines there are regulatory thresholds or quantitative standards which help to determine the threshold of what constitutes a significant effect. However in LVIA, any judgement about what constitutes a significant effect is ostensibly a subjective opinion expressed as in this case by a competent and appropriately qualified professional assessor.
- 6.76 The level (relative significance) of landscape and visual effects is determined by combining judgements regarding the sensitivity of the landscape or view, magnitude of change, duration of effect and the reversibility of the effect. In determining the level of residual effects, all mitigation measures are taken into account.
- 6.77 The relative level of effect is described as major, major/moderate, moderate, moderate/minor, minor or minor/no effect. No effect may also be recorded as appropriate where the effect is so negligible it is not even noteworthy.
- 6.78 Those effects described as major, major/moderate and in some cases moderate may be regarded as significant effects as required by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

Proposed Visual Receptors

6.79 A number of viewpoint locations have been considered to help represent the nature of views towards the site from the surrounding landscape. Those have informed the initial selection were identified through ZTV analysis and a desk based study in advance of a site meeting. The following 11 viewpoint locations have been

considered. It is currently expected that the locations for the photomontages to accompany the Environmental Statement will be as follows:

- Viewpoint 1: View from Footpath 214, near Little Crow Covert looking southeast across the site;
- Viewpoint 2: View from Footpath 214, to the east of the site looking west across the site;
- Viewpoint 3: View from Footpath 212, near Raventhorpe Farm looking north towards the site
- 6.80 The photomontages will show the scale and massing of the proposed development in its landscape context from key locations in the surrounding locality and provide a useful tool to aid the judgements made in the LVIA process.
- 6.81 In line with good practice for LVIA, consultation took place with North Lincolnshire Council regarding the selection of viewpoints for the Environmental Statement Chapter: -

Viewpoint Number	Viewpoint Name
1	Footpath 214, near Little Crow Covert
2	Footpath 214, south eastern boundary of the site
3	Footpath 212, near Raventhorpe Farm
4	Risby Road, near High Risby
5	A1029, Winterton Road, Scunthorpe
6	Lakeside Parkway, Scunthorpe
7	Holme Lane, Overbridge of M180 motorway

Proposed LVIA Viewpoints (shown on Figure 6.3)



eaasus

Number	
8	Central Park, Scunthorpe
9	Carr Lane, near Worlaby Carrs Farm
10	Holme Lane, Messingham
11	B1207, south of Appleby

Residential receptors

6.82 The number of residential properties which offer the potential for residents to experience views towards the site in close proximity to the site are very limited. Those properties which may experience a view of the proposals are Spring Wood Cottage to the north of the site area. The Screened ZTV indicates some limited potential for views of the periphery of settlements at Appleby and along Risby Road to the north, around Worlably Cars Farm to the north east, within the settlement of Scunthorpe to the west (most likely people living in the upper stories of the high rise residential blocks), and the periphery of Messingham to the south west.

Users of publicly accessible paths

- 6.83 Footpath 214 runs through the site area from the woodland to the east of the site to Santon and the edge of the of the Steel Works to the north west. There is also a footpath south of the site area FP 212 with potential for views from the section to the immediate south of the site. The whole route runs from the A18 via Ravensthope west of the existing solar farm into and through the woods south of Footpath 214 into Broughton.
- 6.84 There are several other public footpaths in the vicinity of the site including a network of permissive paths through West Wood to the east of the site. The screened ZTV indicates that none of these routes have the potential to gain views of the proposals.
- 6.85 Within the wider landscape the screened ZTV incorporates some very limited sections of footpaths to the north around Viewpoint 4 at Risby Road, to the east

around viewpoint 9 where a footpath runs along the bank of the River Ancholme and to the south west around viewpoints 7 and 10 around the M180 and north of Messingham.

Users of the transport network

6.86 Due to the high degree of screening by topography and vegetation present around the site, the number of roads from which motorists and passengers are likely to experience views is very limited. The screened ZTV indicates that the main routes that would have the potential to experience views of the site would be a short section of the M180 to the south of the site, a section of Risby Road to the north between Scunthorpe and Appleby, some sections of Holme Lane and Northfield Road around Messingham in the vicinity of Viewpoints 7&9. Viewpoint 9 is located at the end of Carr Lane where it crosses the railway line between Scunthorpe and Barnetby. The screened ZTV indicates that all other road users in the wider landscape including those within the residential and commercial areas of Scunthorpe, (represented by Viewpoints 5,6 and 8) would have potential to gain no more than glimpsed views from local roads.

Users of recreational sites

6.87 There are no recreational sites within the study area, beyond the local footpath network detailed above, which would have the potential to gain views of the site.

CUMULATIVE AND IN-COMBINATION EFFECTS

6.88 Other solar energy schemes in the surrounding landscape which are already operational, such as the Ravensthorpe scheme, have been considered to form part of the baseline environment against which the development has been assessed. Notwithstanding this, it is relevant to also consider the overall effect of the developments in combination. Having considered the potential for effects on both landscape character and visual amenity it is not considered that there are any significant cumulative effects above and beyond those identified for the Little Crow scheme of itself. Whilst there may be a small number of locations where the Little Crow scheme would be seen in combination with other solar energy development, these locations would be highly limited in nature.



7. ECOLOGY AND NATURE CONSERVATION

- 7.1 The ecology chapter of the Environmental Statement will consider the likely significant effects of the proposed development on ecological features during its construction, operation, management and decommissioning phases. The specific objectives of the assessment would be to:
 - Identify where there is potential for significant effects on designate sites and habitats considered to be of conservation or ecological value;
 - Detail the presence / possible presence of protected species and other species of particular conservation value;
 - Describe any mitigation measures proposed to avoid, reduce and ameliorate potential adverse impacts and to maximise the beneficial impacts of the development;
 - Assess the significance of residual effects that are likely to remain following implementation of mitigation and restoration measures and describe if any result in likely significant effects on ecological features.
- 7.2 This chapter is supported by the following appendices: -
 - Appendix 7.1: Copy of Natural England Informal Pre-app Response
 - Appendix 7.2: Phase 1 Habitat Map and Target Notes
 - Appendix 7.3: Designated Sites for Nature Conservation with 1km
 - Appendix 7.4: Extended phase 1, arable plants, great crested newts & water Vole Survey Report
 - Appendix 7.5: Wintering birds surveys
 - Appendix 7.6: Breeding Birds Surveys
 - Appendix 7.7: Bat Survey Activity

Habitat Regulation Assessment

7.3 On 14 September 2018, Natural England confirmed as part of its Discretionary Advice Service that it was satisfied that, on the basis of the information provided, it can be excluded that the proposed plan or project will have a significant effect on the Humber Estuary SAC/ SPA/ Ramsar, either individually or in combination with other plans or projects. Furthermore, Natural England advised it was satisfied that the proposed operations are not likely to damage any of the interest features of the Humber Estuary SSSI, Broughton Alder Wood SSSI or Broughton Far Wood SSSI.

7.4 Copy of Natural England response is provided at Appendix 7.1

PRELIMINARY BASELINE CONDITIONS

Overview of Development Site

- 7.5 The development site consists of predominantly arable fields bordered by a network of hedgerows and extensive woodland plantations. The land gradually slopes to the western edge of the site. Grassland, scrub and ruderal habitat are also present in discrete areas around the site. The wider landscape is characterised by the industrial steelworkings to the west of the site, and further arable farmland and plantation woodland to the north and east. Beyond the woodland to the south lies a solar park constructed in 2015.
- 7.6 The following field surveys have informed the baseline.

Survey	Methodology	Timing
Extended Phase 1 Habitat Survey	Extended Phase 1 survey based on JNCC (2010)6 and IEA (1995)7 guidance. Including hedgerow assessment, walkover assessment for value of the site for protected and notable species e.g. badgers, roosting bats, reptiles and invertebrates etc.	Over 4 days in July, August & September 2017

Summary of Field Surveys

⁶ JNCC (2010) Handbook for Phase 1 habitat survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough

⁷ Institute of Environmental Assessment (1995). Guidelines for Baseline Ecological Assessment. E & FN Spon, London.



Survey	Methodology	Timing
Great Crested Newt Habitat Suitability Index (HSI) and eDNA testing	HSI assessment in accordance with Oldham et al. (2000) ⁸ Great crested newt eDNA survey in accordance with Biggs et al. (2014) ⁹	Over 2 visits in April & June 2018
Arable Plants Survey	Survey based Plantlife Important Arable Plant Areas Methodology ¹⁰ , adapted for EIA purposes	1 visit in June 2018
Water Vole Survey	Based on guidance provided by the Mammal Society in Dean et al. (2016) ¹¹	2 visits in September 2017 and April 2018
Wintering Bird Survey	Survey adapted from British Trust for Ornithology (BTO) Farmland Bird Survey methodology (e.g Gillings et al.) ¹²	4 visits during November 2017 to February 2018
Breeding Birds Survey	Surveys adapted from BTO Common Bird Census methodology ¹³	3 visits during April to June 2018

⁸ Evaluating the suitability of habitat for the great crested newt (Triturus cristatus) (2000) Oldham et al. Herpetological Journal 10:143-155.

⁹ Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

¹⁰ Byfield,A.J. & Wilson, P. J. (2005). Important Arable Plant Areas: identifying priority sites for arable plant conservation in the United Kingdom. Plantlife International, Salisbury, UK

¹¹ Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). The Mammal Society, London

¹² Gillings, S., Wilson, A.M., Conway, G.J., Vickery, J.A., and Fuller R.J. (2008) Winter Farmland Bird Survey – Research Report No. 494. BTO, Thetford
¹³ Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H. (2000). Bird Census

¹³ Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H. (2000). Bird Census Techniques. Academic Press, London



Survey	Methodology	Timing
Bat Activity Survey	Manual Transect and Automated Detector Survey based on protocol	2 manual transects and 2 automated
	described by the Bat Conservation	detector surveys,
	Trust (2016) ¹⁴	April to June 2018

Designated Sites

International Statutorily Designated Sites Within 10km

- 7.7 Humber Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar Site
- 7.8 The Humber Estuary is designated a Special Protection Area (SPA), Special Conservation Area (SAC) and Ramsar site. The area encompassing the SPA is situated approximately 11km north of the site at the closest point, whilst the SAC and Ramsar site is located 9km west at the closest point. It primarily receives its designation for its estuarine habitats, which support a range of associated species including internationally important assemblages of wintering and migratory birds.
- 7.9 The development site is situated a considerable distance from the Humber Estuary, and contains markedly different habitats to the estuarine habitats cited within the relevant designations, and the development site is highly unlikely to represent functionally linked habitat for the wildlife supported by the designated sites. Disturbance effects on wading and overwintering species is unlikely at such significant distances.
- 7.10 The Humber Estuary SAC, SPA and Ramsar site is considered to be outside of the zone of influence of the proposals and are not considered further within the assessment. Following preliminary consultation with the North Lincolnshire Ecologist and Natural England, both of these parties were of the opinion that the proposals will not significantly impacts the interest features of the Humber Estuary designated sites.

¹⁴ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).



National statutorily designated sites within 5km

7.11 Five Sites of Special Scientific Interest (SSSIs) are located within 5km of the site, and are described below:

Broughton Far Wood SSSI

- 7.12 This is an extensive block of commercial woodland located approximately 820m east of the proposed solar array, although is 350m from the site access (which will utilise an existing farm track). This is designated for its rich woodland canopy and ground flora, as well as its areas of herb-rich limestone grassland in the north east corner.
- 7.13 The SSSI is separated from the site by further woodland plantation, arable fields and the B1207 road. The distances and the intervening landscape between the site and the SSSI is highly likely to attenuate any direct impacts on the ecological integrity of the SSSI.
- 7.14 There lies potential for the indirect impacts during construction however, as the main access route for construction vehicles will follow the B1208 which lies adjacent to the northern boundary of the SSSI.

Broughton Alder Wood SSSI

7.15 Situated approximately 1km east of the main development site, and is designated for its wet, alder Alnus glutinosa woodland and associated fen and spring habitats and flora. It is separated from the development site by extensive plantation woodland, the B1207 road, and a poultry farm. The distances and intervening landscape between this SSSI means direct or indirect impacts as a result of the proposals are highly unlikely to occur, and the SSSI is considered to be outside of the zone of influence

Risby Warren SSSI

7.16 This is a remnant area of heathland which supports a variety of associated plant communities, include dune, heathland, acid and calcareous grassland which are affected by airborne pollution from the nearby industrial sites. Tree cover on the SSSI comprises coniferous shelter belt planting and as well as scattered birch Betula sp. and gorse Ulex europaeus. This is located approximately 2.65km north west of the site and is separated from the development site by plantation woodland, agricultural farmland, heavy industry and guarry workings. Given the distance and



landscape lying between Risby Warren and the development site, the SSSI is considered to be outside of the zone of influence of the proposals.

Manton and Twigmoor SSSI

7.17 This comprises a complex of three separate sites, which are located approximately 3.1km south of the site at the closest point. Important habitats supported by the SSSI include heathland, acid grassland and wetland features, with wet woodland also present. Together the site components support a diverse range of associated floral species. The intervening landscape comprises woodland plantations, an existing solar array, a golf course and the busy A18 and M180 roads. This SSSI is considered to be beyond zone of influence of the development.

Castlethorpe Tufas SSSI

7.18 This is situated approximately 3.4km and is designated for its' geological interest, and is not considered further within this assessment.

Non-statutorily designated sites within 1km

- 7.19 Eleven locally designated sites for nature conservation are located within 1km of the application, which are described in Table 7.2. Of these, eight are Local Wildlife Sites (LWSs) selected by the Greater Lincolnshire Nature Partnership due to their importance for wildlife at a local level. Three sites are Sites of Nature Conservation Interest (SNCIs), the status of which has been superseded by the LWSs, but these sites retain SNCI status until they have been assessed against the LWS criteria. A map of designated sites within 1km of the site is presented in Appendix 7.3.
- 7.20 Non-statutorily designated sites within 1km of the development site: -



Site	Designation	Description	Size (ha)	Distance and bearing from site
Manby Wood	LWS	Botanically diverse wooded area, primarily consisting of broadleaved plantation with small areas of young coniferous plantation. Supports a variety of associated ground flora.	80.1	Adjacent to south-eastern boundary of site
Heron Holt	LWS	Woodland with parts containing diverse range of deciduous species and structural variety, with other parts consisting of dense pine and sycamore plantation. Supports a variety of woodland ground flora.	33.3	Adjacent to eastern boundary of site
Broughton West Wood	LWS	Mostly mature deciduous plantation, representative of re-planted ancient woodland, with substantial areas of younger growth and some coniferous elements. Very rich in woodland botany.	83.8	Adjacent to eastern boundary of site
Santon Wood East	LWS	A strip of field edge woodland connecting two planted woodland blocks of varying age and structure, which contains some ancient woodland indicator species.	6.77ha	140m north



Site	Designation	Description	Size (ha)	Distance and bearing from site
Broughton Far Wood	LWS	Botanically diverse plantation woodland containing mature or maturing broadleaved trees with some pine in places.	50.8	440m east
Gadbury and Lundimore Woods	LWS	Mixed plantation woodland considered to represent re- planted ancient woodland, supporting diverse ground flora. Known to support common pipistrelle Pipistrellus pipistrellus bat roosts.	81.5	450m south
Rowland Planation	LWS	Dominated by botanically- poor woodland plantation, although supports some areas with richer ground flora, and also contains diverse grassland rides and a small area of wetland	121	560m east
Far Wood Farm Meadow	LWS	An area of marsh, drier grassland and coarse vegetation formally cropped for hay. Supports diverse range of flush and grassland botany.	1.9	800m east



Site	Designation	Description	Size (ha)	Distance and bearing from site
Santon Wood	SNCI	Deciduous plantation woodland managed for forestry. Contains some good woodland ground flora.	101	Adjacent to north western boundary, contains part of the development site
Broughton West Wood	SNCI	Two strips of woodland shelter belts, predominantly consisting of deciduous plantation woodland with a small element of coniferous growth. Occasionally diverse woodland ground flora found in some areas. Support a wide range of typical woodland bird species.	6	Adjacent to south eastern boundary of site
Spring Wood Broughton	SNCI	Dense coniferous plantation woodland with very little ground flora	9.2	230m north of site access

- 7.21 Brougton West Wood LWS, Manby Wood LWS, Heron Holt LWS, Broughton West Wood SNCI and Santon Wood SNCI are all included in this assessment primarily due to their proximity to the site. Parts of Manby Wood LWS and Broughton West Wood are considered to represent Plantations on Ancient Woodland Sites (PAWS) as identified using the Natural England/DEFRA web-based MAGIC database¹⁵.
- 7.22 Broughton Far Wood LWS and Rowland Plantation are also included within this assessment, as they border the B1208 road which is expected to be the main route

¹⁵ www.MAGIC.gov.uk

for construction site traffic travelling to and from the site, which may result in indirect impacts occurring. Broughton Far Wood LWS also comprises PAWS woodland.

7.23 The remaining locally designated sites are considered to be of sufficient distance from the site that no direct or indirect impacts are likely to occur as a result of the development proposals, and are therefore considered to be outside of the zone of influence.

Habitats

7.24 A Phase 1 Habitat Map is provided in Appendix 7.2

Arable

Arable fields

7.25 This was the most frequently encountered habitat at the site, accounting for approximately 200ha of the land within the survey area. At the time of survey, the arable fields comprised a mix of winter barley, early wheat, vining peas and rapeseed, as well as game cover crops at the edge of some fields. The land within the cultivated arable fields holds very little intrinsic value for biodiversity and is considered to be of Negligible Importance.

Arable Field Margins

- 7.26 The margins of the arable fields were generally narrow (0.5m to 2m wide) and comprised typical coarse grasses and herbaceous species. Uncultivated strips of grassland 2-6m wide were noted on either side of farm tracks running though the site and at some headlands around arable fields, particularly in the north east of the site. The vegetation within these habitats was similar in composition to the rest of the arable field margins described above, although evidence that this habitat was subject to less frequent disturbance was noted; a layer of thatch was present and a higher abundance of floral species was present. For the purposes of this assessment, these grassland strips were considered to represent semi-improved grassland although they have been included under the broad habitat type of Arable Field Margins.
- 7.27 The total extent of arable margin habitat at the site was approximately 3ha. Although the arable weed species recorded on site were generally widespread

species typical of such habitat, henbane Hyoscyamus niger, which was recorded in the north western corner of the site, is classified as Vulnerable on the vascular plant Red Data Book for Great Britain¹⁶. A species is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium term future.

7.28 Arable field margins are a priority habitat identified as a conservation target both locally and nationally. Consequently, this habitat is assessed to be of Local Importance.

Poor Semi-improved Grassland

- 7.29 Areas of agricultural land in the south west of the site were dominated by tall rank grasses and herbs. In damper areas, rushes such as soft rush Juncus effusis and toad rush Juncus bufonius were noted. Although this habitat may support notable species occasionally, it is readily-establishing and was not considered to offer elevated ecological compared to habitats within the wider landscape.
- 7.30 A small (~0.3ha) area of semi-improved grassland containing abundant orchids was present in south eastern corner of the site, around the edges of a raised circular mound at and extending east of this feature. Common spotted orchid Dactylorhiza fuchsia was frequently encountered as was northern or southern marsh orchid Dactylorhiza praetermissa / Dactylorhiza purpurella, as well as occasional bee orchid Ophrys apifera, Although these orchid species are widespread in the UK and can be found in a range of habitats, the presence of these signifies this area as likely to have been subject to less improvement than the other grassland habitat present at the site. This area lies outside of the construction zone and thus is not expected to be impacted by the development.
- 7.31 This habitat is considered to be of Site Importance for biodiversity.

Improved Grassland

7.32 A block of mown improved grassland measuring approximately 3.5ha and dominated by cock's foot was present towards the east of the site. This habitat offered only limited value for wildlife and was considered to be of Negligible Importance.

¹⁶ Cheffings, C.M. & Farrell, L. (2005) Species Status Report No 7: The Vascular plant red data list for Great Britain. Joint Nature Conservation Committee, Peterborough.



Semi-natural Broad-leaved Woodland

- 7.33 Much of the site was bordered by woodland, although the majority of woodland habitat comprised planted mixed/broadleaved woodland (see below). However, just beyond the western site boundary lay a strip of semi-natural riparian woodland on the banks of a stream, sloping down some 5-10m to the stream below and covering an area of approximately 1.5ha. This habitat comprised semi-mature oak Quercus robur, silver birch Betula pendula, hawthorn Crataegus monogyna, goat willow Salix caprea, alder Alnus glutinosa and elder Sambucus nigra.
- 7.34 An area of this habitat measuring 0.25ha was also present at the junction of three hedgerows in the south west of the site, which comprised mature oak, lime Tilia sp hawthorn, elder, silver birch and grey willow, and an understorey of enchanter's nightshade Circaea lutetiana and wood avens Geum urbanum.
- 7.35 Although relatively small in extent, this habitat is likely to be of value to a range of wildlife associated with woodland and is considered to be of Local Importance

Plantation Broad-leaved Woodland

- 7.36 Much of the woodland beyond the northern and south eastern boundary of the site comprised planted broadleaved trees as well as a roughly rectangular area of 1.75 ha in between arable land within the western area of the site.
- 7.37 Although this varied in age and species composition between different areas of the site, generally speaking this comprised abundant semi-mature to mature ash Fraxinus excelsior, oak, Norway maple Acer platanoides, poplar Populus sp., silver birch and sycamore Acer pseudoplanatus with hawthorn, blackthorn Prunus spinosa, sweet chestnut Castanea sativa, hazel Corylus avellana also frequently encountered with an associated ground flora noted at the edges of the woodlands close to the site boundary, including species such as bramble Rubus fruticosus, ivy Hedera helix, wood avens, lords-and-ladies Arum maculatum, and nettle.
- 7.38 Much of this habitat at the site boundaries are locally designated Sites of Nature Conservation Interest (see above). This habitat also represents Lowland Mixed Deciduous Woodland, which is a local and national priority habitat. The extent of this habitat which lies outside of the designated sites is classed as being of Local Importance.

Plantation Mixed Woodland

- 7.39 Although predominantly consisting of broad-leaved species, parts of the woodland bordering the southern and western parts of the site contain a large element of coniferous plantation. Species such as larch Larix decidua, scot's pine Pinus sylvestris and Corscian pine Pinus nigra were recorded in these areas amongst the broadleaved species described above. The woodland beyond the south east corner of the site, within Broughton Far Wood LWS and Manby Wood LWS known as 'Far Wood') is classed as 'plantations on ancient woodland sites' (PAWS), and the understorey in this area was noted to be more representative of mature woodland, with species such as enchanter's nightshade, green alkanet Pentaglottis sempervirens and dog's mercury Mercurialis perennis noted.
- 7.40 A small area of this habitat (approx. 0.1 ha) was present within the central northern part of the site, and comprised planted larch, poplar Populus sp. and cypress trees with young hawthorn and elder.
- 7.41 This habitat is likely to support a wide range of associated wildlife. Much of this habitat forms part of designated Local Wildlife Sites. The remaining extent of this habitat within and adjacent to the site does not meet the priority habitat criteria and is considered to be of Site Importance.

Plantation Coniferous Woodland

7.42 An area of woodland comprising entirely of planted larch was present beyond the southern boundary of the site. This habitat was relatively small in extent (approx. 1.1ha) and low in both species composition and structural diversity, and provided fewer opportunities for wildlife compared to the other types of woodland at the site. This habitat is consequently considered to be of Site Importance.

Scrub

7.43 Areas of dense, unmanaged scrub were occasionally encountered in the centre of the site, as well as more frequently along the western site boundary. In most places, this habitat usually comprised semi-mature hawthorn, bramble, blackthorn, elder and young willow. Scattered stands of scrub were occasionally encountered elsewhere at the site, such as at field margins and along ditch banks. Although this habitat is likely to support a range of protected and notable wildlife species, it is readily establishing and frequently found in the wider landscape. This habitat is assessed to be of Site Importance.

- 7.44 The agricultural fields were bordered in parts by a network of hedgerows. The majority were poor in terms of species diversity, although species-rich hedgerows are present at the site. The hedgerows also varied in structural diversity; some were relatively intact whereas frequent gaps were noted in others, and trees were present in some, with others being managed at a uniform height. In total, the hedgerow habitat at the site measured approximately 4.2km in length.
- 7.45 The hedgerows are likely to be of importance for a wide range of associated wildlife, and provide connective links to between valuable habitat within and adjacent to the site. Hedgerows in general are a priority habitat for Lincolnshire as well as on a national scale. This habitat is therefore considered to be of Local Importance.

Ponds

- 7.46 Five ponds were present within the survey area. Two of the ponds appeared to be ephemeral and dried up during spring and early summer (A small field pond present at the northern edge of the site was shallow, heavily silted and overshaded by an adjacent tree, with very little aquatic vegetation present. The remaining two ponds were larger, more open and likely to hold water year-round, and were seen to support a range of marginal and aquatic vegetation.
- 7.47 Two further ponds were noted off-site but within 500m, situated approximately 100m west and 330m south respectively. These have not been surveyed at the time of writing due to a lack of permissible access.
- 7.48 The ponds are likely to support a variety of associated wildlife and are considered to be of Local Importance

Scattered Broadleaved Trees

- 7.49 A small number (4) of semi-mature to mature trees were present at the site which were not associated with adjacent woodland or field boundaries. These generally comprised ash trees, with an oak, a horse chestnut Aesculus hippocastanum and a white willow Salix alba also present. None of the trees were considered to represent good examples of veteran trees, as they were generally similar in age and size to the trees at the nearby woodland and hedgerows, and did not occupy prominent positions in the landscape.
- 7.50 The trees are considered to be of Site Importance for biodiversity.



Tall Ruderal

- 7.51 Discrete parts of the site outside of the cultivated fields were dominated by tall ruderal species, particularly nettle, great willowherb, meadowsweet Filipendula ulmaria, mugwort, burdock marsh thistle, ragwort and hogweed.
- 7.52 This habitat is relatively small in extent and easily replaceable in the short-term, and is considered to be of Site Importance for biodiversity.

Ditches

- 7.53 A network of drainage ditches were present at some of the field boundaries. At the time of survey, nearly all of the ditches were dry or held very little water, although aquatic/marginal vegetation could be seen which indicated seasonal inundation with water.
- 7.54 A ditch running along the western site boundary was deeper and wider than most of the other ditches and was considered to hold water permanently. Two of the other ditches held running water which flowed east-west towards lower land beyond the western site boundary, eventually into a former opencast workings to the west of the site.
- 7.55 The ditches have the potential to support a range of protected species and species of conservation concern. This habitat is considered to be of Local Importance.

Species

Badgers



7.57 The arable fields, grassland and woodland habitats within the site are likely to represent key foraging grounds for local group(s) of badgers present. Badgers are

a widespread species and considered to be of Site Importance, and receive protection under the relevant legislation.

Bats

- 7.58 The data search revealed a number of existing records of at least 6 species of bat from the desk study area. The majority of the trees present within and adjacent to the site were either not mature enough, or did not display signs of damage or decay which usually leads to potential roosting features (PRFs) forming within trees. Four trees at the site were however identified as having 'low' or 'moderate' potential to support roosting bats according to the categorisation described by the Bat Conservation Trust¹⁷. Three additional trees noted during the initial Phase 1 Surveys in 2017 as having 'low' roost potential were felled by during the winter months (January to March) of 2018.
- 7.59 Two bat activity surveys and static detector surveys were undertaken to establish the baseline conditions with regards to bats on site; in particular to establish the use of the site by foraging/commuting bats and the assemblage of bats present.
- 7.60 The surveys identified the presence of at least five bat species using the site: common pipistrelle Pipistrellus pipistrellus, soprano pipistrelle P. pygmaeus, noctule Nyctalus noctula, Myotis species Myotis sp, and brown long eared Plecotus auritus.
- 7.61 The activity surveys identified the hedgerows and woodland edges as being of most value for foraging/commuting bats. Overall, for an area of arable land surrounded by woodland and hedgerows, generally low levels of bat activity were recorded at the site. Moderate common pipistrelle activity was however recorded in some areas, particularly at the woodland at the western site boundary, where the highest number of bat passed were recorded. Bat activity was lowest at the hedgerow/scrub network in the south western corner. Bat activity within the interior of the arable/grassland fields was minimal.
- 7.62 The assessment of importance of the site for foraging and commuting bats employs the methodology described by Wray et. al (2010)¹⁸. Following this criteria, the

¹⁷ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).

¹⁸ Wray, S., Wells, D., Long, E. and Mitchell-Jones, T. (2010). Valuing Bats in Ecological Impact Assessment. In Practice, December 2010. Chartered Institute of Ecology and Environmental Management.

values of the site for the various species recorded range between 12 and 17. The average score when all species found within the site were considered together was 14.2. This would place the site within the Local level of geographic importance.

Otter

7.63 The data search did not reveal any recent (post-2000) records of otter within 2km. The ditches on site are unlikely to be used by otters if present in the locality, being either dry or holding shallow water, which would not provide the sources of prey needed to sustain a population of this species at the site. It is considered that otters are highly unlikely to occur at the site and this species has been scoped out of this assessment.

Water Voles

7.64 The data search returned 7 records of water vole from within 2km, the most recent of which was from 2013. The ditches and ponds at the site have potential to be used by water voles, with suitable foraging and burrowing habitat present, although the fact that most of the ditches were dry reduces the value of the site somewhat for water voles, as they generally favour features which hold water permanently. Detailed surveys for water voles undertaken in September 2017 and April 2018 did not identify any evidence of the presence of this species. It is considered that water voles are likely to be absent from the site and this species has been scoped out of this assessment.

Brown Hare

7.65 Small numbers (up to eight individuals) of brown hare have been recorded using the arable fields during the surveys completed to date. The mosaic of open fields, woodland and hedgerow provides optimal habitat for this species. This species is a priority species targeted for conservation nationally, and is considered to be of Local Importance.

Breeding Birds

7.66 Breeding bird surveys have been undertaken between April and July 2018. In total, 55 bird species were recorded using the site during the survey. 21 of the 55 species are listed as species of conservation concern, being either red listed or amber listed according to the British Trust for Ornithology's (BTO) studies into population

declines among British birds within the last 30 years¹⁹. Several farmland bird species recorded at the site are targets for conservation both locally, as part of the Lincolnshire LBAP, as well as nationally. These include lapwing Vanellus vanellus, yellow wagtail Motacilla flava, skylark Alauda arvensis, linnet Linaria cannabina, yellowhammer Emberiza citrinella, reed bunting Emberiza schoeniclus and bullfinch Pyrrhula pyrrhula.

- 7.67 Birds breeding within the site can be divided into two different categories; namely ground nesting birds that potentially breed within the open fields, and which require open sightlines for predator avoidance during nesting, and other bird species which nest within boundary vegetation such as hedgerows, trees and scrub. This assessment will separately assess the impacts on ground nesting birds and other breeding birds, as the proposals are likely to affect these two different categories in distinct ways.
- 7.68 Most of the bird species recorded at the site were found to be associated with the boundary habitats, predominantly within the woodland, hedgerows, scrub and wetland features. The exceptions to this were skylark, yellow wagtail, lapwing, meadow pipit and reed bunting, which were considered to be nesting within the open fields.
- 7.69 The approximate number of territories considered to be present at the site for these species (of open habitats) are as follows:
 - Skylark 25 territories.
 - Yellow wagtail up to 3 territories
 - Lapwing 1 or 2 territories
 - Meadow pipit 1 or 2 territories
 - Reed Bunting 3 territories
- 7.70 The open field habitats, particularly the large arable cereal fields in the north east of the site, were considered to provide optimal habitat for nesting skylarks which is reflected in the large number of territories recorded at the site. A possible three

¹⁹ Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. Mark Eaton, Nicholas Aebischer, Andy Brown, Richard Hearn, Leigh Lock, Andy Musgrove, David Noble, David Stroud and Richard Gregory

yellow wagtail territories, again focussed within the north eastern arable fields, is also a notable record for this species which is of elevated conservation concern nationally. Although all these species are relatively widespread in Lincolnshire, due to the assemblage of ground nesting bird species using the site during the breeding season, particularly the large number of skylark, the site has been assessed as having District Importance for breeding birds of open farmland

7.71 The woodland, hedgerows, trees and scrub habitats at the field boundaries at the site were found to be used for breeding by a range of species of conservation concern, generally in small to moderate numbers. This includes yellowhammer, linnet, bullfinch, willow warbler Phylloscopus trochilus, mistle thrush Turdus viscivorus, song thrush Turdus philomelos, dunnock Prunella modularis and kestrel Falco tinnunculus. Overall, the assemblage of breeding bird species associated with boundary habitats is assessed as being of Local Importance

Wintering Birds

- 7.72 Wintering bird surveys were undertaken between November 2017 and February 2018. In total, 51 bird species were recorded using the site during the survey. 24 of the 51 species are listed as species of conservation concern, being either red listed or amber listed by the BTO. Several farmland bird species recorded at the site are targets for conservation both locally, as part of the Lincolnshire LBAP, as well as nationally. These include lapwing, starling, Sturnus vulgaris, skylark, linnet Linaria cannabina, yellowhammer, reed bunting and bullfinch.
- 7.73 As for breeding birds within the site can be divided into bird species of open farmland which require open sightlines for foraging and predator detection within fields, and other bird species which utilise boundary habitats for foraging and shelter, such as hedgerows and woodland. This assessment will separately assess the impacts on wintering bird species of open farmland and other wintering birds, as the proposals are likely to affect these two different categories in significantly distinct ways.
- 7.74 Most of the bird species recorded at the site were found to be associated with the boundary habitats. However some species of conservation concern which are known to rely on or regularly use open arable fields for foraging and roosting were recorded on site area either as part of large flocks (lapwing and skylark) or as small, loose flocks and individuals (such as meadow pipit). Skylark were recorded in moderate to large numbers (peak count of 159).The consistent presence of large

numbers skylarks shows the site is of noteworthy importance to local wintering populations of this species. Lapwing, although present in relatively large numbers (peak count of 109) on two survey visits, their absence from the two remaining visits indicates that the site is at least in part used in conjunction with other suitable fields in the surrounding landscape.

- 7.75 Consequently, the site can be valued as being of District Importance for wintering birds of open country (in particular skylark and to a lesser extent lapwing.
- 7.76 The remainder of the bird activity recorded can be attributed to species more closely associated with hedgerow and woodland habitats and those birds of open country which seek shelter within dense hedgerows such as thrushes, finches, and other small passerines. Of these species, a healthy assemblage was present predominantly within these boundary features, including some species of conservation concern. Although species of conservation concern were noted, these were generally present in small numbers and no noteworthy relative abundance of a species was recorded. The site can be valued as being of Site Importance to wintering birds of woodland and hedgerows.

Amphibians

Great Crested Newts

7.77 The ponds present on site have potential to be used by great crested newts Triturus cristatus during the breeding period. However, an eDNA survey of all of the ponds on site did not return a positive result for great crested newt DNA within the ponds, signifying the likely absence of this species from the site (see Appendix 7.1). It is considered that great crested newts are likely to be absent from the site and this species has been scoped out of this assessment.

Other amphibians

7.78 The aquatic habitats on site are likely to be used by more widespread amphibian species, such as common toad Bufo bufo (a priority species). Hedgerows, woodland and scrub habitats elsewhere at the site could represent foraging and sheltering habitats for this species although again the arable fields are unlikely to be used by this species, and as such common toad (if present) is likely to be of Site Importance.

Reptiles

- 7.79 No recent records of reptiles were revealed by the desk study. The hedgerows, scrub, woodland edges, ditches and grassland areas offer some value for foraging and sheltering widespread reptile species, such as slow worm Anguis fragilis and grass snake Natrix helvetica. However, the large expanses of arable land were considered to offer poor suitability for reptiles.
- 7.80 As suitable habitat for reptiles was restricted to the margin and boundary habitats, reptiles are likely to be in small numbers if present and restricted to these areas. Reptiles are considered most likely to be of Site Importance if present.

Invertebrates

- 7.81 The data search revealed a number of existing records of notable butterfly and moth species from within the local area. Habitats at the margins and boundaries of the field are likely to be of value for a range of invertebrate species typical of woodland edge and hedgerows, and a number of such species belonging to the order Lepidoptera were recorded during the surveys to date, including cinnabar moth Tyria jacobaeae, (a priority species). The ponds and ditches on site are also likely to support a range of aquatic invertebrates. However, assemblages of invertebrates supported by the arable fields comprising the vast majority of the site are likely to be poor, particularly for pollinating species.
- 7.82 Overall, it is considered that invertebrates using the site and immediately adjacent habitat are of Local Importance.

Potential Impacts

- 7.83 Without mitigation and enhancement, the effects of the development proposal upon biodiversity have the potential to be adverse, for example:
 - Loss and/or disturbance to flora and fauna during construction, operation and decommissioning;
 - Loss of existing on-site habitats during site clearance;
 - Disturbance of certain habitats and species during operation; and,
 - Damage/disturbance to adjacent sites of ecological value (removal of trees).
- 7.84 The proposed development seeks to mitigate for potential negative ecological impacts and to provide an overall biodiversity enhancement strategy, through a



comprehensive site-wide ecologically informed landscape design and the implementation of a detailed landscape and ecological management and monitoring plan and schedule.

Assessment Methodology

- 7.85 The standard approach applied in the UK to Ecological Impact Assessment (EcIA) is that developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2016. This methodology will be used to evaluate existing conditions, and to assess the significance of likely effects on ecological features that may arise during construction and operation of the proposed development. This involves determining the importance of each ecological feature and undertaking an impact assessment pre and post-implementation of mitigation measures.
- 7.86 When assessing the baseline biodiversity importance of natural features found on the site, the following characteristics will be considered:
 - Animal or plant species which are rare or uncommon, either internationally, nationally or more locally;
 - Ecosystems which provide the habitats required by the above species;
 - Species that are afforded legal protection;
 - Endemic or locally distinct sub-populations of a species;
 - Habitat diversity, connectivity and/ or other synergistic associations;
 - Species of Principal Importance under the NERC Act;
 - Notably large populations or concentrations of animals considered uncommon or threatened in a wider context;
 - Plant communities that are considered to be typical of valued natural/ seminatural vegetation types;
 - Species at the edge of their range; and
 - Species-rich assemblages of plants or animals.

- 7.87 Habitats and species identified in the baseline conditions will all be attributed with an ecological importance. The importance or potential importance of an ecological feature will be described according to its importance in a geographical context i.e. (International, National, Regional, Metropolitan/County, and Local importance). An intermediary category of 'District' importance has been derived and will apply where a feature is present on or adjacent to the site, and is considered to be of higher importance to nature conservation than in a 'Local' context, but is considered to be of lower importance on a 'County' scale. Furthermore, a category of 'Site' importance will be applied to a feature which is present or potentially present at the site, but where the importance to nature conservation of the feature is of relatively low value in the context of the wider landscape. A further 'Negligible' category will be assigned to features of no particular intrinsic nature conservation importance.
- 7.88 Additional weight will be given to habitats or species that are given special protection under domestic or international law, especially those for which sites have been designated. This includes specially protected features such as hedgerows (Hedgerow Regulations) and trees (Tree Preservation Orders). Non-statutory designated sites also attract special consideration.
- 7.89 Published selection criteria, contained within the selection of Biological Sites of Special Scientific Interest (SSSI), can also be referred to, to aid the assessment of importance. Where significant habitats, such as Ancient Woodland, do not carry a designation, these are nevertheless considered at a specified geographic level.
- 7.90 For the purposes of the Environmental Statement assessment, only receptors identified within the baseline conditions as being of Local importance or above will be considered 'Important Ecological Features (IEFs)' in line with the guidelines set out by CIEEM. The impacts of the proposed development will only be assessed on those IEFs with importance equal to, or higher than local level. Appropriate mitigation may be proposed for non-IEF where it is necessary to ensure offences are not committed under relevant legislation.

Characterisation of Impacts

7.91 When assessing the impact of the development and changes to the baseline conditions on site, predictions will be made which focus solely on the zone of influence whilst taking into consideration the lifetime of the development. The zone of influence has been assessed separately for each individual receptor.

- 7.92 Each potential impact on an IEF will be assessed at its respective geographical scale and, where appropriate, using following parameters:
 - Positive or negative (whether the impact will have a Positive or Negative effect);
 - Magnitude (the size of the impact);
 - Extent (area over which impact occurs);
 - Duration (time impact expected to last before recovery);
 - Reversibility (an impact may be permanent or temporary); and
 - Timing and frequency (impact may be seasonal e.g. bird nesting season).

Mitigation Measures

- 7.93 Mitigation measures are described where adverse effects are identified upon the IEFs. The mitigation measures will aim to reduce the overall effect value. It is not always possible to fully mitigate an adverse effect to neutral levels. An assessment of residual effects which takes account of the proposed mitigation is then made. Due consideration is given to the reliability of mitigation measures and the likelihood that they will achieve their stated goals, using the terms defined above.
- 7.94 Mitigation measures are also identified for species which did not qualify as IEF but which are afforded legal protection under the Wildlife and Countryside Act (1981) or other legislation, and as such will require certain precautionary methodologies to avoid offences being committed.

Assessment of Significance

7.95 Following the methodology described by CIEEM, an ecologically significant effect is defined as "an effect that 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". Significance will be described as being 'significant' or 'not significant'.



8. CULTURAL HERITAGE AND ARCHAEOLOGY

- 8.1 The cultural heritage assessment would consider the potential effects of the proposed development on cultural heritage assets (archology and built heritage).
- 8.2 The Chapter is accompanied by the following appendices.
 - Appendix 8.1: Little Crow, Santon, North Lincolnshire Cultural Heritage Baseline Study (Pegasus Group, November 2018).
 - Appendix 8.2: Little Crow, Santon, North Lincolnshire Geophysical Survey Report (SUMO, September 2018).
 - Appendix 8.3: Little Crow Solar Park, Scunthorpe, North Lincolnshire -Archaeological Watching Brief (Cotswold Archaeology, November 2018).
 - Appendix 8.4: Little Crow Solar Park, Scunthorpe, North Lincolnshire -Archaeological Fieldwalking Survey (Cotswold Archaeology, November 2018).

PRELIMINARY BASELINE CONDITIONS

Baseline Survey Information

8.3 The baseline has been informed by a desk base assessment augmented by a walkover survey. Importantly, the baseline position is evolving as archaeological investigations continue on site in consultation and agreement with North Lincolnshire Council.

Prehistoric and Romano-British

- 8.4 The North Lincolnshire HER records three prehistoric features within the site, a possible round barrow, a section of the prehistoric route corridor known as the Jurassic Way, and a collection of flints discovered prior to 1976, but with an uncertain provenance.
- 8.5 In addition to the recorded prehistoric features from within the development site, prehistoric material has been recovered from the wider study area, comprising worked flint and sherds of pottery recovered to the south east of the site.
- 8.6 There is no recorded evidence for Roman activity within the site, although the route of Ermine Street, a major Roman road runs from north to south to the east of the

site. Within the wider study area, fieldwalking and archaeological investigations have identified areas of Roman activity centred in particular around Raventhorpe to the south

Early Medieval and Medieval

- 8.7 There is no recorded activity of the early medieval period located within the site. However the deserted medieval village of Manby), which has its origins in the early medieval period, is located to the south and the possible remnants of ridge and furrow, which extend into the southern area of the development site are likely to represent the open fields of the village during this period. Further south, the Scheduled Monument of Raventhorpe is another example of a deserted medieval village which has its origins in the early medieval period.
- 8.8 Evidence of medieval activity within the site is associated with the location of the former Gokewell Priory, a small Cistercian nunnery founded in the 12th century and dissolved following the Dissolution of the abbeys in 1536. The site of the priory later formed the location for Gokewell Priory Farm, with material from the Priory reused within the construction of the farmbuildings. Archaeological works undertaken in the 1970s in relation to the Priory Farm recorded the earthworks to the south and west of the farm, and included a photographic record.

Post Medieval and Modern

- 8.9 Following the dissolution of Gokewell Priory, the material was reused to create Gokewell Priory Farm (Appendix 8.1: Figure 2, MLS1027 and MLS25419), also labelled as Cokewell on mapping. The exact date of construction is unknown but it was certainly constructed by the early 19th century, as is demonstrated by its depiction on the 1842 Tithe Map (Appendix 8.1: Plate 18). The Tithe Map and apportionment illustrate that Gokewell Priory Farm was the only area of development within the site during the post-medieval period, the remaining areas under a mixture of arable and pasture agricultural use.
- 8.10 Late 19th and 20th century Ordnance Survey mapping shows the site to have remained undeveloped although the HER records the site of a World War II Hevay Anti-Aircraft Battery as being located within the eastern area of the site.
- 8.11 Gokewell Priory Farm was demolished in the 1980s and the site cleared. The site has since been used almost exclusively for arable cultivation.



Undated

8.12 The Heritage Assessment also records a number of potential archaeological features of uncertain date within the site. These comprise two possible medieval stock enclosures in the southern extent of the development site and an incomplete ovoid ditch within the north western area which may be associated with the plantation of woodland to commemorate Queen Victoria in the late 19th century.

The Setting of Designated Heritage Assets

Summary of Designated Heritage Assets

- 8.13 Designated heritage assets within 2km of the site include the Scheduled Monument of Raventhorpe medieval settlement, the Grade I Listed Church of St Mary Broughton and 10 Grade II Listed Buildings located to the north, east and south of the site). The closest assets to the site comprise two Grade II Listed Buildings, Springwood Cottage and barn located c 650m to the north east of the site and Raventhorpe House (a Grade II Listed Building) and the Scheduled Monument of Raventhorpe medieval village, both located c 870m to the south of the site.
- 8.14 The walkover survey carried out as part of the Heritage Assessment has established that there would no non-physical effects on any of the designated heritage assets located within the environs of the site. The Heritage Assessment concluded that the site does not form part of the setting of any of the heritage assets which contribute to their significance, nor is there any intervisibility between the site and any of the assets due to the distance, topography and tree cover. The development should therefore not result in any change that will cause harm to the setting of any of the heritage assets, and as such the proposals are considered to be in accordance with statutory requirements.

Significance of Identified Sensitive Receptors

8.15 The following section discusses the heritage significance of potential sensitive cultural heritage receptors with regard to the development. This is also summarised in Table 8.1, below.

Known and Potential Archaeological Remains

8.16 It should be noted that whilst the Heritage Assessment recorded a number of potential archaeological features within the site, there remains the potential for

further hitherto unidentified remains to be present. As it is not possible to ascertain the heritage significance of any potential assets without any investigations, the significance of any such feature remains uncertain. However, any such remains, based on the known archaeological potential of the site, would unlikely be of highest significance and would most probably comprise non-designated heritage assets.

Cropmarks of a round barrow – prehistoric date

- 8.17 The possible remains of a prehistoric round barrow have been identified within the central area of the site as cropmarks seen on aerial photographs. There were no upstanding physical remains identified within the Site visit, nor have there been any archaeological investigations undertaken to ground truth this feature. However, archaeological remains associated with this asset are likely to be present within the location specified by the HER, and further such remains may also be present within the site.
- 8.18 These features would be of evidential and historical (illustrative) value in their contribution towards our understanding of the nature and extent of prehistoric activity within the local landscape and would constitute non-designated heritage assets of archaeological interest.

Artefact scatters – prehistoric date

8.19 The listing of a collection of prehistoric artefacts recovered from within the site is unfortunately poorly documented. The chance finds of isolated artefacts, whilst indicating a presence within the wider area, is of limited evidential value, and would be of limited archaeological significance.

Jurassic Way Trackway – prehistoric date

8.20 The line of the prehistoric Jurassic Way trackway from Lincoln to Winteringham has been conjectured as passing through the site. The location of the Site upon the high ground of a natural ridgeway does suggest a suitable location for an early route of movement but its alignment through the site is conjectural and there is a very limited potential for archaeological remains associated with the route to remain in situ. However, if remains were to be encountered they would be of archaeological interest.

Agricultural remains associated with Manby DMV

- 8.21 Ridge and furrow earthworks have been identified within the south of the site although there were no upstanding remains identified during the Site visit. Modern agricultural ploughing techniques are likely to have removed any upstanding earthworks associated with these features, although archaeological remains may survive beneath the plough soil. The ridge and furrow are believed to be associated with the deserted medieval village of Manby to the south, but the presence of tree cover along the southern boundary of the site provides a tangible barrier between the DMV and the ridge and furrow remains.
- 8.22 The majority of the site was depicted as agricultural land on the Tithe Map and the whole development site has the potential to contain early medieval modern agricultural remains, such as infilled boundary and drainage ditches or infilled furrows relating to further areas of ridge and furrow cultivation.
- 8.23 It is likely that any archaeological remains associated with the ridge and furrow may survive within the development site. Such remains have little potential to contribute towards our understanding of medieval and post-medieval farming practices and would at most comprise non-designated heritage assets of limited archaeological interest.

Cistercian Priory and Gokewell Priory Farm – medieval /post-medieval date

- 8.24 The site of a Cistercian priory is documented as lying beneath the remains of Gokewell Priory Farm, limited upstanding remains of which are visible within the development site. Whilst the later farm buildings reused the architectural fabric of the priory, leaving no original upstanding remains, it is likely that archaeological remains associated with the earlier priory survive within the area of the farm.
- 8.25 The heritage significance of such remains associated with early medieval activity would derive from their evidential and historic values contributing towards our understanding of ecclesiastical land use during the early medieval and medieval periods. Whilst such remains would be of heritage significance, they are unlikely to be of sufficient archaeological interest to comprise heritage assets of the highest significance and would constitute non-designated heritage assets of archaeological interest.

Heavy Anti-Aircraft Battery – modern date

8.26 The site of a heavy anti-aircraft battery has been recorded in documentary sources as being located within the eastern area of the site. There is no upstanding evidence
to identify the location of the asset, although large pieces of concrete seen within the plough soil may be associated with the structure. Archaeological remains associated with the military use of the site would be unlikely to be of more than local significance.

Designated Heritage Assets

8.27 As outlined above, the proposed development of the site is not deemed likely to impact on the settings of any designated assets to an extent that it alters the significance of the asset and as such there are no identified designated sensitive receptors.

Likely Environmental Effects

8.28 Construction and Decommissioning Phase Effects

- 8.29 The physical effects of the development upon the known and as yet unidentified archaeological resource would primarily result from groundworks associated with the construction of the development, which might include:
 - Any preconstruction ground investigation works;
 - Installation of the solar panel modules;
 - Excavation of any service trenches; and
 - Any stripping and excavations associated with the creation of the battery storage area and substantial area.
- 8.30 Whilst there may be some temporary impacts during the construction phase upon the designated heritage assets (i.e. scaffolding; movement of machinery), these impacts will be relatively limited and temporary when compared with the completed development and therefore it was considered that the discussion of impacts upon designated heritage assets should refer to the development in its Operation Phase. Development Plans do not propose any modules within the area occupied by the remains of the Priory Farm and as such there should be no impact on any in situ remains associated with the medieval priory.

Operation Phase Effects

8.31 No additional impacts upon the buried archaeological remains are anticipated following the completion of the development. As such, these receptors are scoped out of discussion as part of the Operation Phase. With regard the potential non-physical effects upon designated heritage assets, it has been demonstrated within the Heritage Statement that the development will not introduce change into the wider environs of the designated assets which will change their setting to the degree that it impacts on their significance.

Assessment Methodology

- 8.32 The proposed methodology for the assessment of development effects will be informed by the following documents:
 - National Planning Policy Framework (NPPF; 2018);
 - NPPF Planning Practice Guidance: Conserving and enhancing historic environment (March 2014)²⁰;
 - Standard and Guidance for Historic Environment Desk-Based Assessment, published by the Chartered Institute for Archaeologists (CIfA)²¹;
 - Historic England's Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment (published by English Heritage in 2008)²²;
 - Historic England's Historic Environment Good Practice ^{Advice} in Planning Note
 2: Managing Significance in Decision Taking (2015)²³;
 - Historic England's Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2015)²⁴;

Sources of Information

²⁰ Department for Communities and Local Government (2014) National Planning Policy Guidance: Conserving and Enhancing the Historic Environment

²¹ Chartered Institute for Archaeologists (2014) Standard and Guidance for Historic Environment Desk-Based Assessment, <u>http://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_3.pdf</u>

²² English Heritage (2008) Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment, English Heritage

²³ Historic England (2015) Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision Taking

²⁴ Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets

- 8.33 In order to collect historic environment data for the purposes of this Chapter, a minimum 1km study area around the site will be adopted in the final Heritage Baseline, as this area is considered to provide sufficient contextual information about the site and its surrounding landscape, from which to assess the archaeological potential and potential impacts on the archaeological resource.
- 8.34 The following sources of publically available archaeological and historical information were consulted as part of the preparation of the Heritage Assessment:
 - National Heritage List for England for designated heritage assets, such as Listed Buildings and Scheduled Monuments;
 - North Lincolnshire Historic Environment Record (HER) for records of archaeology and heritage sites, finds and events recorded within the study area;
 - Online sources, including British Geological Survey (BGS) and additional historic mapping.
 - Further information with regard to the methodologies utilised within the Heritage Assessment can be found in Appendix 8.1.

Settings Assessment

- 8.35 The document Historic Environment Good Practice Advice in Planning Guidance Note 3: The Setting of Heritage Assets²⁵ provides the key industry-standard guidance on setting and development management, including assessment of the implications of development proposals of the significance of designated heritage assets. In relation to development within the setting of a heritage asset, the guidance states that the protection of the setting of designated assets does not necessarily preclude change.
- 8.36 A staged approach is recommended for settings assessment as this has been utilised as part of the Heritage Assessment, which provides details of the methodologies used. In summary, step 1 requires heritage assets which may be affected by development to be identified. Step 2 of the settings process includes an assessment whether, how and to what degree the setting makes a contribution

²⁵ Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets



to the significance of the heritage assets, with the assessment of the effect of a development of the significance of an asset carried out as part of Step 3.

Assessment of Significance

Assessment of Significance of Heritage Assets

- 8.37 Heritage significance is defined as the value of a heritage asset to this and future generations because of their heritage interest. That interest may be archaeological, architectural, artistic or historic in nature. The assessment of significance for this chapter will be guided primarily by the key industry-standard policies and guidance contained in Conservation Principles, where it is described with reference to the following four key forms of value:
 - Evidential value will be derived from the potential of a place to yield evidence about past human activity. It is primarily associated with the physical remains or the historic fabric of the heritage asset. This value is proportionate to the potential of the asset to contribute to the understanding of the past. When there are no written records, such physical remains, including archaeological deposits, may provide the only source of information about the past;
 - Historical value will be derives from the ways in which past people, events and aspects of life can be connected through a site to the present. It can be illustrative or associative in attribution. The illustrative aspect relates to the ability of the asset to provide links and insights into past communities and their activities. The associative aspect derives from the association of the asset with a notable historic family, person, event or movement;
 - Aesthetic value will be derived from the ways in which people draw intellectual and sensory stimulation from a place. This value may have developed through conscious design or be the result of the fortuitous evolution of the place over time. This aspect may include the physical form of the asset as well as its location within the setting; and
 - Communal value will be derived from the meaning of a place for the people who relate to it. The commemorative and symbolic aspects of this value reflect the meanings of a heritage asset for the people who draw part of their identity from it or have emotional links to it (such as memorials raised by community effort). The social aspect of this value is associated with

places perceived as source of identity or distinctiveness and spiritual value is attached to places of worship.

- 8.38 Significance derives not only from a heritage asset's physical fabric, but also from its setting. The setting of a heritage asset is defined as the surroundings within which it is experienced; its extent is not fixed and may change as the asset and its surroundings evolve. However, setting is not a heritage asset in its own right, nor is it a heritage designation in its own right. Its importance lies in what it contributes to the significance of the heritage asset. This contribution may be positive, negative or neutral.
- 8.39 The statements of significance development for each of the assets reflect the language of the Planning Act 1990, utilising terms such as character and appearance (of Conservation Areas), and architectural and historic interest (of Listed Buildings). Further frames of reference, found within Conservation Principles, allow for terms such as 'evidential', 'historical', 'aesthetic' and 'communal' to be used to convey the many heritage values that combine to make up the heritage significance of an asset.
- 8.40 The statements of significance describe 'what matters and why', i.e. which aspects of an asset and its setting contribute to the heritage significance of the asset and how. Although the statements rightly acknowledge the fabric of heritage assets as representing the principal embodiment and physical manifestation of their heritage significance, the surroundings of the assets, and the ways in which they can be experienced, often contribute to their overall significance. This will be assessed in line with the settings assessment methodology (Appendix 8.1).
- 8.41 Although terms such as High, Medium or Low value, and National, Regional or Local importance are often adopted in EIA to express a summary description of the 'relative significance' heritage assets, they are not universally recognised or accepted terms within heritage sector guidance and amongst heritage professionals. This is because these concepts require complex definitions to properly allow for their application, and do not directly relate to the language or key tests required in determining planning applications or heritage consents.
- 8.42 The proposed criteria adopted for the Environmental Statement Chapter are laid out below, with terminology used derived directly from the NPPF.

Table 8.1: Criteria for Assessing the Significance of Heritage Assets



Heritage Significance	Description of Criteria		
Designated heritage assets of the highest significance	As defined in the NPPF, these include: Scheduled Monuments, Protected Wreck Sites, Battlefields, Grade I and II* Listed Buildings, Grade I and II* Registered Parks and Gardens, and World Heritage Sites. Heritage assets displaying considerable evidential, historic, aesthetic or communal value, as identified by Conservation Principles, which are of comparable significance to designated heritage assets of the highest significance, would also fall within this category.		
Designated heritage assets of less than the highest significance	In accordance with the NPPF, these include, by elimination, Grade II Listed Buildings, Conservation Areas and Grade II Registered Parks and Gardens.		
Non-designated heritage assets	Heritage assets, the significance of which has not yet been ascertained.		
Uncertain	Heritage assets the significance of which has not yet been ascertained.		
Negligible	Remains that do not have sufficient significance to warrant consideration in planning decisions, and which are therefore not considered to constitute heritage assets.		

Assessment of Development Effects

8.43 The proposed methodology employed here moves away from the more traditional 'scalar', quantitative, matrix-led approach, adopting a descriptive, qualitative presentation of the findings of the assessment. This is because the descriptions of anticipated development impacts upon heritage assets are qualitative rather than quantitative and the adopted approach allows for greater accuracy in understanding the potential harm the proposed development may cause to the significance of heritage assets. As with the approach adopted in assessing heritage significance

of heritage assets, this approach directly reflects key concepts in planning policy and heritage guidance with regard to the assessment of development effects upon heritage assets. It therefore offers an appropriate way to define such effects. Clear statements of significance (the 'what matters and why' approach), and a sound understanding of the character of the proposed development, as presented in this assessment methodology, allow for a transparent articulation of the nature/degree of any identified effects.

- 8.44 The effects of the Proposed Development arise as a result of change to the heritage assets. The significance of a heritage asset can be harmed or lost through alteration, destruction or development within its setting. In terms of harm though changes to setting, as clearly illustrated within the NPPF, any attempt to convey the impact or harm of a development has to be framed within the tightly-defined parameters of harm to the significance of the heritage asset itself. This is a fundamental principle. In summary, a project could bring about change within the setting of a heritage asset, resulting in harm to its significance, or the way in which that significance is experienced. References such as 'harm to setting' are therefore avoided.
- 8.45 The assessment of the effect of the development upon cultural heritage resource takes into account numerous factors, including the scale of development, the type and extent of physical disturbance and the visual effects. The development effects may be:
 - Direct or indirect. Direct effects arise from physical change to the resource, which affects its physical remains or fabric (i.e. excavations which may affect the archaeological remains or alterations to historic buildings). Indirect effects relate to changes within the setting of heritage assets;
 - Permanent or temporary. Due to their character, direct effects upon the physical remains of heritage assets are permanent, and not reversible. However, effects on the settings of heritage assets may be temporary, if the development has a limited lifespan. These temporary effects can be short, medium or long-term.
- 8.46 Beneficial, when the development leads to the enhancement of the heritage resource, or adverse, when it results in harm to, or loss of, the significance of a heritage asset. If the resource will not be affected by the proposed development, there will be no impact.

8.47 To further assist in the decision-making process, the following approach to the assessment of effects upon heritage assets (Table 8.2) will be adopted. This has been done in order to improve the intelligibility of the assessment results for purposes of quick reference and ready comprehension. The language used here is entirely consistent with the NPPF and the Planning Act 1990, and provides sufficient information to reach informed judgement.

Level of Effect	Description	Applicable Policies
Heritage Benefit	The proposals would enhance the heritage significance of a heritage asset.	Enhancing the significance of a heritage asset is a desirable development outcome in respect of heritage. It is consistent with key policy and guidance, including the NPPF paragraphs 185, 192 and 200
No harm (neutral effect)	The proposals would preserve the significance of a heritage asset.	Preserving a Listed Building and its setting is consistent with Section 66 of the Planning (Listed Buildings and Conservation Areas) Act 1990. Preserving or enhancing the character or appearance of a Conservation Area is consistent with Section 72 of the Act. Sustaining the significance of a heritage asset is consistent with paragraph 185 of the NPPF and should be at the core of any material local planning policies in respect of heritage.
Harm to Non- Designated Assets	The proposals would affect the heritage significance of a non-designated heritage assets.	Paragraph 197 of the NPPF states that the in determining planning application, the effects of the proposed development on the significance of non-designated heritage assets needs to be taken into

Table 8.2: Magnitude of Effect upon Heritage Assets



Level of Effect	Description	Applicable Policies	
		account. A balanced judgement is required to weigh direct or indirect impacts on non-designated assets, having regard for the scale of harm and the significance of the asset.	
Less than Substantial Harm	The proposals would result in a restricted level of harm to the significance of a designated heritage asset, such that the asset's contributing heritage values would be largely preserved (lower end). The proposals would lead to a notable level of harm to the significance of a designated heritage asset. A reduced, but appreciable, degree of its heritage significance would remain (upper end).	 This level of harm is defined within the NPPF specifically with regard to designated heritage assets. In determining an application, this level of harm should be weighed against the public benefits of the proposal (paragraph 196). Proposals involving change to a Lister Building or its setting, or any features of special architectural or historic interest which it possesses, or change to the character or appearance of Conservation Areas, must also be considered within the context of the Planning Act 1990. 	
Substantial The proposals would very Harm much reduce the designated heritage asset's significance or vitiate that significance altogether.		Paragraphs 193, 194 and 195 of the NPPF state that substantial harm or loss to designated heritage assets of the highest significance should be wholly exceptional and to assets of less than highest significance – exceptional. Proposed development leading to such harm should be refused unless it is demonstrated that this substantial harm is necessary to achieve substantial public benefits.	

8.48 In line with EIA best practice, it is considered that 'substantial harm' to designated heritage asset would equate to a significant adverse effect in line with the language used within the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (as amended 2015). 'Less than substantial harm' to designated heritage assets could also trigger the same significant effect, but no prescriptive criteria are proposed to prejudge this threshold, leaving it to professional judgment. With regard to the harm to non-designated assets, professional judgment will be used to ascertain whether the significant effect is triggered, taking into account the relative significance of such assets as well as the level of harm upon them.

Mitigation Measures and Residual Effects

8.49 When effects upon the cultural heritage resource are identified, mitigation measures will be proposed in order to prevent, reduce or offset any significant effects. It may also be possible to enhance heritage assets as part of the development. In such circumstances, the weight given to the heritage values of the asset should be proportionate to the significance of the asset and the development effect upon it. In order to assess residual effects following the implementation of the mitigation measures upon the significance of heritage assets, professional judgement is used.



9. TRANSPORT AND TRAFFIC

- 9.1 This chapter of the Environmental Statement will assess the potential effects relating to traffic volumes and transport in relation to the construction, operational and de-commissioning phase of the development. The assessment will focus on the be based on the effect of Heavy Good Vehicles, car and delivery vehicle movements associated during the construction and de-commissioning phase. A more discrete assessment will be given to operational traffic as this is expected by be negligible.
- 9.2 This chapter is also supported by the following technical appendices: -
 - Appendix 9.1 B1207 Automatic Traffic Count
 - Appendix 9.2 Preliminary Transport Statement
- 9.3 A full Transport Statement and Construction Traffic Management Plan would be prepared to support the Environmental Statement at the DCO submission stage.

Baseline Conditions

- 9.4 An initial high level appraisal of the potential road access routes to the development site has been undertaken. In informal consultation with the Local Highway Authority, it is considered that the most suitable and likely access route is by road, and would exit the Junction 4 of the M180 motorway. Junction 4 of the M180 is approximately 4.5 kilometres to the south.
- 9.5 From the M180 junction 4 vehicles will use the A15 northbound to the Briggate Lodge Roundabout and then travel east along the A18 towards Brigg.
- 9.6 From the A18, vehicles will turn left onto the B1208. The B1208 measures between approximately 5.5 and six metres wide. Vehicles will travel along the B1208 to the junction with the B1207 and then continue straight ahead into the site access.
- 9.7 Swept path analysis of the site access will support the Environmental Statement and this may expanded to include some sections of the approach roads. No abnormal loads are expected as part of the construction phase.

Accident Analysis

9.8 As part of the final Environmental Statement chapter, a full review of personal injury accident data will be undertaken for the links within the proposed study area.



Potential Impacts

- 9.9 The environmental effects of changes in the traffic during construction, operation and de-commissioning of the proposed development will be assessed in the Environmental Statement.
- 9.10 The key effects which will be assessed are as follows:
 - Severance IEMA Guidance defines severance as "the perceived division that can occur within a community when it becomes separated by a major traffic artery" (Para 4.27, Ref 11.2) that 'separates people from places', for example difficulties crossing existing roads or the physical barrier of the road itself. There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEMA guidance suggests "that changes in traffic flow of 30%, 60% and 90% are regarding as producing slight, moderate and substantial changes in severance respectively" (Para 4.31, Ref 11.2). The guidance also suggests that 'marginal changes in traffic flows are, by themselves, unlikely to create or remove severance'.
 - Driver Delay IEMA Guidance states that "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 system" (Para 4.34, Ref 11.2). As such, the impact of the proposed development on driver delay will be considered in relation to background traffic, and existing conditions at the locations set out in paragraph in the study. Junction assessment modelling can be used to estimate increased vehicle delays at junctions if necessary.
 - Pedestrian Delay IEMA Guidance states that "changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general increases in traffic levels are likely to lead to increases in delay" (Para 4.35, Ref 11.2). There are a range of local factors that affect pedestrian delay including the level of pedestrian activity, visibility and general physical conditions of the site. However, IEMA Guidance does not set out thresholds for judging the significance of changes in levels of delay, and suggests that the assessor uses their judgement to determine whether pedestrian delay is a significant impact.

- Pedestrian Amenity (including Fear and Intimidation) Pedestrian amenity is broadly described in the IEMA Guidelines as "the relative pleasantness of a journey" (Para 4.39, Ref 11.2) and can be affected by traffic flow, composition and footway widths. This definition includes pedestrian fear and intimidation and can be considered a much broader category when considering the overall relationship between pedestrians and traffic. The Guidelines suggest that a threshold for judging this would be "where the traffic flows (or its lorry component) is halved or doubled" (Para 4.39, Ref 11.2).
- Accidents and Safety The IEMA guidelines do not include any definition in relation to accidents and safety, suggesting that professional judgement will be needed to assess the implications of local circumstance, or factors which may increase or decrease the risk of accidents.

ASSESSMENT METHODOLOGY

- 9.11 The assessment contained in the Environmental Statement will be carried out in accordance with "Guidance on Transport Assessments", prepared by the Department for Transport (DfT) in March 2007 (which is now archived but still considered relevant), "Guidelines for the Environmental Assessment for Road Traffic", Institute of Environmental Management and Assessment (IEMA) and the Design Manual for Roads and Bridges (DMRB), Highways England.
- 9.12 The assessment will comprise a desk based assessment and site visits to ensure a robust assessment is undertaken of the development site. An Automated Traffic Count (ATC) survey has been undertaken in December 2017 along the B1027 and informal advice received by Highways England and the Local Highways Authority confirmed that no additional ATC data would be required to feed into the Environmental Statement.

STUDY AREA

- 9.13 It is proposed that study area for the development should follow the proposed construction traffic route to the site from M180, namely the A15; A18; and B1208 Brigg Road.
- 9.14 The roads leading to the site already serve HGVs associated with the Steel Works, which is accessible from Dawes Lane to the north of the site. The proposed construction traffic route is therefore considered to be suitable for use by the

relatively low number of HGVs that will be associated with the construction period. The likelihood of background traffic being delayed significantly is low.

9.15 Following the assessment of effects, transport mitigation measures are described which will further mitigate the potential impacts of the development. An assessment of residual effects following implementation of these mitigation measures is then provided.

Assessment of Significance

- 9.16 The assessment of potential impacts as a result of the site will take into account both the construction and operational phases. The significance level attributed to each impact will be assessed based on the magnitude of change due to the Proposed Development, and the sensitivity of the affected receptor to change.
- 9.17 There are four categories of impact significance considered, which are negligible (i.e. imperceptible), Minor significance (i.e. not noteworthy or material), Moderate significance (i.e. noteworthy or material) and Major significance (i.e. extremely noteworthy or material).

Traffic Flows

- 9.18 The IEMA Guidelines (Ref 11.2) set out two rules which have been used as threshold impacts to define the scale and extent of this assessment as follows:
 - Rule 1: Include highway links where traffic flows will increase by more than 30% (or where the number of HGVs will increase by more than 30%); and
 - Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more.
- 9.19 It is worth noting that, on roads where traffic flows are low, any increase in traffic flow may result in a predicted increase that would be higher than the IEMA Guidelines. However, it is important to consider any overall increase in road traffic in relation to the capacity of the road.
- 9.20 The IEMA Guidance states that *"For many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed up by data or quantified information wherever possible", and "those preparing the Environmental*

Statement will need to make it clear how they have defined whether a change is considered significant or not" (paragraph 4.5, Ref 11.2).

9.21 The Guidelines identify general thresholds for traffic flow increases of 10% and 30%. Where the predicted increase in traffic / HGV flow is lower than these thresholds then the significance of the effects can be considered to be low or not significant and further detailed assessment is not required. However, to ensure a relative assessment of the increase in traffic flows in environmental terms the following criteria defined in Tables 9.2 and 9.3 will be used to determine magnitude of impact and receptor sensitivity respectively. To assist with the judgement of magnitude of impact, reference will be made to the IEMA guidelines. These thresholds are guidance only and provide a starting point by which a detailed analysis will inform a subjective analysis of the impact magnitude.

Magnitude	Definition	
Very High	Receptors of greatest sensitivity to traffic flows, such as schools, playgrounds, accident blackspots, retirement homes, areas with no footways with high pedestrian footfall	
High	Traffic flow sensitive receptors, such as congested junctions, residential areas, hospitals, shopping areas with active frontages, narrow footways, parks and recreational areas	
Medium	Receptors with some sensitivity to traffic flow, such as conservation areas, listed buildings, tourist attractions, and residential areas	
Low Receptors with low sensitivity to traffic flows distant from affected roads		
Very Low	Road network not affected.	

Table 9.2 Sensitivity/Importance of the Identified Environmental Receptor

Table 9.3 Magnitude of Impact on the Identified Environmental Receptor



Magnitude	Definition
Very High	Changes to peak or 24hr traffic within the Study Area by 30% or more
High	Changes to peak or 24hr traffic within the Study Area by between 20% and 30%
Medium	Changes to peak or 24hr traffic within the Study Area by between 10% and 20%
Low	Changes to peak or 24hr traffic within the Study Area up to 10%
Very Low	No Change (+/- daily Variation)

- 9.22 With reference to the proposed links and junctions pertinent to the scheme, it is considered that the entire network represents a low sensitivity receptor. This is due to the location of the roads, away from settlements, and the fact that they already carry a significant amount of HGVs to the steel works sites. In addition, the level of pedestrian activity of the roads are not considered to be high enough to represent major receptor sensitivity.
- 9.23 The significance of potential effects is determined by the magnitude of the impact and the sensitivity of the receptor. A major and moderate significance of potential effects is considered to be "significant" in EIA terms.
- 9.24 Negligible, low, minor and high significances as categorised can either be beneficial (positive, i.e. reduction in traffic flows), negligible (no real impact) or adverse (negative, i.e. increase in traffic flows). They can be temporary or permanent and have an effect for the short, medium or long term. The definitions of which are as follows:
 - A short term effect an effect that will be experienced for 0-5 years;
 - A medium term effect an effect that will be experienced for 5-15 years; and



• A long term effect – an effect that will be experienced for 15 years onwards.



10. AGRICULTURE

- 10.1 This technical chapter of the Environmental Statement would assess the potential significant effects of the proposed development on agricultural land and farm businesses.
- 10.2 This chapter is accompanied by the following figure: -
 - Figure 10.1 MAFF (1983) Provisional ALC Northern Region, 1:250,000

PRELIMINARY BASELINE CONDITIONS

- 10.3 Three baseline conditions are assessed:
 - agricultural land;
 - farm businesses and land management techniques; and
 - fixed assets or infrastructure.
- 10.4 Baseline information was gathered through a combination of desk study and field survey, mostly carried out in August 2017. The agents for the main landowners were interviewed in person.

Agricultural Land

- 10.5 The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades (Grade 1 'excellent' to Grade 5 'very poor'), with Grade 3 subdivided into Subgrade 3a 'Good' and Subgrade 3b 'Moderate'. ALC is based upon an assessment of limiting factors, including soils, climate and other physical limitations and the way in which these factors interact. The Grade or Subgrade of land is determined by the most limiting factor present. Natural England estimate that around 42% of all agricultural land in England is of BMV quality26.
- 10.6 Across England, Grades 1 and 2 amount to about 16.9% of all land. Natural England's estimate of 21% of land in England being of Subgrade 3a suggests that about 40% of Grade 3 land nationally is expected to fall within Subgrade 3a.

²⁶ Natural England (2012) Technical Information Note 049 Agricultural Land Classification: protecting the best and most versatile agricultural land

- 10.7 Within Lincolnshire the proportion is much higher. Nationally about 36.2% of all land falls within the BMV category. In North Lincolnshire the equivalent percentage is about 68.2%.
- 10.8 The provisional agricultural land quality of the area around Scunthorpe is shown on the ALC map reproduced in Appendix 10.1.

APPENDIX 10.1 PROVISIONAL ALC MAP

- 10.9 The Predictive BMV Land Assessment maps (DEFRA, 2018) show most of the agricultural land around Scunthorpe to be in the moderate (20% 60% area bmv) or high (>60% area bmv) category. The site is shown as in the moderate area and therefore (with the exception of a small area to the north of Scunthorpe) represents the poorest quality land around the town. The Site is shown on the "provisional" ALC map (MAFF 1983)27 as undifferentiated Grade 3 land.
- 10.10 Provisional ALC maps are not sufficiently accurate to allow a full assessment of a site and should not be used for other than general guidance at a strategic level. Accordingly the ALC grading has been undertaken and the results will form part for the Environmental Statement.

Farm Businesses

10.11 Two farm businesses ae located with the development site. The majority of the Site, some 192 ha, is owned by the Brocklesby Estate. The Estate has owned the land since the 1970s. The agricultural land in the Santon area extends to about 280 ha and is all in arable production, set aside or fallow. Approximately 120 ha of woodland is owned. The wider Estate farms over about 10,000 hectares. Consequently the land at Santon forms a small percentage of the Estate only The land within the site is farmed in hand using contractors, and has been for the last two years. This arrangement is expected to continue. Arable produce harvested on the land is hauled either to the Brocklesby Estate at Kirmington, or is taken to the contractor's farmyard at Roxby. In the past the land has been let out under two agricultural tenancies. It has been mostly used for arable farming. It is known that woodchip has been added to the soil, and outdoor pigs have been reared, in an endeavour to increase the moisture retentivity of the soil by increasing organic matter levels.

10.12 One field on the north-eastern part of the Site, north of the poultry farm, is in arable use and is owned by a neighbouring arable farmer. This is a large mostly arable farming business based nearby on the edge of Broughton and farming land north of the Site and to the east. They farm one field within the proposed Site.

Fixed Assets or Infrastructure

10.13 Some of the land may have been the subject of underfield drainage schemes installed in the 1970's, but the details (if any) are not now known. None of the land is fenced and none of the fields are provided with water. The Site is crossed by a number of services, including electricity. Trespass is not a significant issue across the Site.

ASSESSMENT APPROACH

Methodology

- 10.14 This assessment will consider two key agricultural circumstances at the development site:
 - the effects of the development on agricultural land during its construction, operation, management and decommissioning; and
 - the effects of the development on farm businesses during construction, operation, management and decommissioning.
- 10.15 The assessment of the effects on agricultural land and farm businesses has been carried out in three stages. Firstly, the magnitude of the potential effect has been considered. Secondly, the importance / sensitivity of the receptor has been considered. Thirdly, the significance of the effects has been determined by the interaction of the magnitude and sensitivity.
- 10.16 There are no defined thresholds for assessing the effects of non-agricultural development on agricultural assets. The National Planning Policy Framework28 (the NPPF) states that "planning policies and decisions should contribute to and enhance the natural and local environment by ... recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland" (BMV). BMV is defined

²⁸ Department for Communities and Local Government (2018) National Planning Policy Framework (revised)

in Annex 2 of the NPPF as land in Grades 1, 2 and 3a of the Agricultural Land Classification (ALC). Identification and consideration of BMV agricultural land is therefore necessary and the loss of BMV is a measure of the effect of proposed development. The thresholds set out in the following tables have been developed over time and are based on professional judgement and accepted best practice.

10.17 The magnitude of the effects of the Proposed Development has been assessed against the criteria set out in Table 10.1.

	Definition				
of Effect	Effects on Agricultural Land	Effects on Farm Businesses			
High	The Proposed Development would directly lead to the loss of over 50 ha of BMV agricultural land.	The effect of the Proposed Development would either render a full-time agricultural business non- viable or result in very significant changes to its day-to-day management and operation, or result in a closure of a part-time farm business.			
Medium	The Proposed Development would directly lead to the loss of between 20 ha and 50 ha of BMV agricultural land.	The Proposed Development would either require significant changes in the day-to-day management of a full-time agricultural business, or very significant changes to a part-time farm business.			

Table 10.1: Methodology for Determining Magnitude of Effect

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Monsitudo	Definition			
of Effect	Effects on Agricultural Land	Effects on Farm Businesses		
Low	The Proposed Development would directly lead to the loss of less than 20 of BMV agricultural land or the loss of any quantity of non-BMV land (Grades 3b, 4 and 5).	The Proposed Development would require only moderate to minor changes in the day-to-day management or structure of a full-time agricultural business or would have a significant effect on a part- time business.		
Negligible	No permanent adverse effect on agricultural land.	The Proposed Development would require only negligible changes to a full- time agricultural business, or minor to negligible effects on a part-time business.		

10.18 The methodology for determining the sensitivity of the receptors is set out in Table 10.2. Two receptors have been identified: agricultural land and farm businesses. The sensitivity of these receptors is defined by the quality of the agricultural land and the scale of the farm business. BMV agricultural land is of national importance whilst poorer quality agricultural land (non-BMV) and farm businesses are of local importance.

Sensitivity	Receptor
High	Land resources are matters of potentially national
	importance, as identified in the NPPF. The BMV agricultura

 Table 10.2: Methodology for Determining Sensitivity of Receptors

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Sensitivity	Receptor			
	land (Grades 1, 2 and 3a) is of national importance. The effect on land resources is a combination of the quantum and quality of agricultural land affected, relative to both the national resource and the relative availability of land of that quality locally. Land resources of BMV quality should therefore be classified as being of high environmental value (sensitivity).			
Medium	Land that is of poorer quality, Grades 3b, 4 and 5, is of lower sensitivity and is afforded no special protection in the NPPF. It is nevertheless a finite resource of local importance and so is regarded as of moderate sensitivity. Full-time farm businesses are of medium sensitivity, as the way that farms are operated will vary over time according to ownership, security of tenure and local and international economic factors. Farm businesses are tolerant of some change without detriment to their character.			
Low	Part-time farm businesses are of low sensitivity. The way that farms are operated will vary over time according to ownership, security of tenure and local and international economic factors. Farm businesses are tolerant of some change without detriment to their character.			

10.19 The significance of the effects of the Proposed Development has been determined by the interaction of the magnitude of the effect and the sensitivity of the receptor, as set out in the matrix at Table 10.3.

Table 10.3: Significance Matrix



Magnituda	Sensitivity			
Magnitude	High	Medium	Low	
High	Major Adverse /	Moderate Adverse	Minor Adverse /	
	Beneficial	/ Beneficial	Beneficial	
Medium	Moderate Adverse /	Minor Adverse /	Minor Adverse /	
	Beneficial	Beneficial	Beneficial	
Low	Minor Adverse /	Minor Adverse /	Minor Adverse /	
	Beneficial	Beneficial	Beneficial	
Negligible	Negligible	Negligible	Negligible	

Assessment of Significance

- 10.20 There is no definition of 'significance' in EIA or in the NPPF regarding the loss of agricultural land. However, the alternative use of 20 ha or more of BMV agricultural land for predominantly non-agricultural purposes, requires consultation with Natural England (as set out in the Policy section below). Based on this threshold and on professional experience, the alternative use of 20 ha or more of BMV agricultural land would be identified as a potential significant adverse effect in EIA terms, i.e. an effect of moderate adverse significance and above (as per the matrix at Table 10.3).
- 10.21 With regards the impacts of development on farm businesses, the definitions are based on professional judgement. For instance, very significant changes in the day-to-day operation of a full time farm unit is considered a significant adverse effect, i.e. an effect of moderate adverse significance (as per the matrix at Table 10.3).



11. SOCIO ECONOMICS ISSUES

11.1 This section of the Environmental Statement will assess the potential effects on socio-economic resulting from the construction and operation of the development.

PRELIMINARY BASELINE CONDITIONS

Population

11.2 Based on data from the Census, the population of Frodingham ward was around 8,200 in 2011. Data from the 2017 ONS Mid-Year Population Estimates show that, the total population of North Lincolnshire is around 171,300. Figure 11.1 shows population change between 2007 and 2017. Over this timeframe, North Lincolnshire's population grew by 5.2% – equating to 8,500 more people. The corresponding rises for Yorkshire and The Humber and Great Britain over the same period were 5.5% and 7.7% respectively.

Figure11.1:Populationchange,2007-17Source:ONS, Mid-Year Population Estimates



- 11.3 Data on population change by age in North Lincolnshire shows that from 2007 to 2017, the young dependant population group (aged 0 to 15) increased by around 900 (2.9% growth), the number of economically active people (16-64) increased by about 100 (0.1% growth) and people aged 65+ increased by approximately 7,500 (a rise of 26.9%). All three age groups experienced growth over the same timeframe in Yorkshire and The Humber and UK, although the 65+ cohort grew fastest in both areas by 21.1% in Yorkshire and The Humber and 23.0% in the UK.
- 11.4 The latest ONS population projections (2016-based) were published in May 2017 and these indicate that the population of North Lincolnshire is predicted to increase steadily – by around 5,600 between 2016 and 2036 (a 3.3% increase). Population growth in Yorkshire and The Humber (5.9%) and England (10.2%) is expected to be higher over the same period. In North Lincolnshire between 2016 and 2036, the population aged 65+ is expected to rise by just over 15,200 (43.8%). The 16-64 cohort is projected to decline by around 6,400 (6.15), while the number of people aged 0-15 is estimated to decrease by 3,300 (10.5%) over the same time period. Figure 11.2 presents a population pyramid for North Lincolnshire between 2016 and 2036, highlighting a long-term contraction in the young population and a rise in the number of elderly people.

Figure 11.2: Population projections, 2016-36



Source: ONS, Mid-Year Population Estimates

Skills

11.5 In 2017, 27.2% of working age residents (16-64) in North Lincolnshire had a degree level qualification or higher (NVQ4+); 16.3% had NVQ3 only, which equates to 2 A Levels and 4 AS Levels; and 20.1% had NVQ2 only (5+ GCSEs or equivalent). Around 7.8% of the District's population had no qualifications. Yorkshire and The Humber region and the UK have a greater proportion of people aged 16-64 with higher level (NVQ4+) qualifications – 33.0% and 38.4% respectively. North Lincolnshire has a lower proportion of working age residents with no qualifications compared with the UK (8.0% versus 7.8%), and the region (9.5%). Figure 11.3 shows the full skills breakdown.

Figure 11.3: Skill Levels of the Resident Working Age (16-64) Population, 2017

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Group



Source: Annual Population Survey, January-December 2017

Deprivation

- 11.6 The Index of Multiple Deprivation 2015²⁹ provides an indication of the average levels of deprivation for LSOAs (Lower layer Super Output Area) across England. The Index provides an overall assessment of the average levels of deprivation as well as an assessment against particular domains of deprivation.
- 11.7 The site falls within the North Lincolnshire 010C LSOA. The area has medium levels of deprivation, ranking at 14,964, falling inside the fifth most deprived decile amongst the 32,844 LSOAs nationally (see Figure 11.4). The LSOA is within the 30% most deprived areas nationally for education, skills and training; and living environment. However, it is within the 10% least deprived areas nationally for Barriers to Housing and Services.

Figure 11.4: Index of Multiple Deprivation for Site Location, 2015 Source: Ministry of Housing, Communities & Local Government

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²⁹ September 2015, English Indices of Deprivation 2015, Department for Communities and Local Government.



Employment

- 11.8 Based on data from the 2016 Business Register & Employment Survey, published by ONS, 72,000 people work in North Lincolnshire (7,000 (10.0%) of which work in Frodingham ward). Overall, between 2010 and 2015, employment in North Lincolnshire remained flat. While it fluctuated in the intervening years, job numbers
- 11.9 in 2010 were 71,000 the same as 2015. Yorkshire and The Humber and Great Britain saw increases of 4.5% (103,000 jobs) and 6.8% (1.9million jobs) respectively over the same timeframe (see Figure 11.5)³⁰

Figure11.5:EmploymentChange,2010-15Source:Office for National Statistics – Business Register & Employment Survey

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³⁰ 2016 jobs data are also available, however due to changes in the methodology they are not comparable with figures dating back to 2010. Jobs growth has therefore been analysed over the period 2010-15 to allow for like-for-like comparison.



- 11.10 The largest sector in North Lincolnshire as of 2016 is public administration, education and health, with 17,500 jobs representing 25.0% of total employment. Job numbers in the sector decreased by 2,500 between 2010 and 2015. Between 2015 and 2016, jobs in the sector remained the same (17,500).
- 11.11 In terms of overall size, health is followed by two sectors manufacturing (which supports 14,000 jobs in the District 20.0%) and wholesale and retail (which supports 10,000 jobs (14.3%) in North Lincolnshire). The construction sector, which is likely to see employment opportunities during the Proposed Development's build phase, supports around 6,000 jobs in North Lincolnshire. This equates to approximately 8.6% of total employment in the District, above the corresponding shares for Yorkshire and The Humber (5.1%) and the UK (4.8%). Figure 11.6 presents the sector employment share in further detail.

Figure11.6:SectorEmploymentShare,2016Source:Office for National Statistics – Business Register & Employment Survey

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Business Base

11.12 The total number of businesses in North Lincolnshire has increased by 500 since2010 (8.2% growth). This was below the increases seen in Yorkshire and TheHumber (18.0%) and UK (21.6%) over the same timeframe (see Table 11.4).

Table11.4:Changeinbusinessnumbers,2010-17Source:ONS, UK Business Count

Area	2010	2017	Absolute Change	% Change
North Lincolnshire	6,120	6,620	500	8.2%
Yorkshire and The Humber	187,810	221,560	33,750	18.0%
United Kingdom	2,574,225	3,129,385	555,160	21.6%

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Groun

11.13 In terms of business share by size, North Lincolnshire is broadly in line with Yorkshire and The Humber. The District has a slightly lower proportion of micro businesses – 82.3% (between 0 and 9 employees) than the UK – 84.5% - and a slightly higher proposition of small (10 to 49 employees) and medium-sized (50 to 249 employees) businesses than the national average (see Table 11.5).

Area	Micro (0 to 9)	Small (10 to 49)	Medium-sized (50 to 249)	Large (250+)
North Lincolnshire	82.3%	14.3%	3.7%	0.5%
Yorkshire and 8 The Humber	82.6%	14.0%	3.6%	0.4%
United Kingdom	84.5%	12.6%	3.0%	0.4%

Table 11.5: Business share by size, 2017

Source: ONS, UK Business Count

Wages

- 11.14 For residents of North Lincolnshire, the median annual gross wage for full-time workers is £27,265, as of 2017. This is around £1,500 lower than that of the UK (£28,758), but around £1,000 below the regional figure (£26,236). Since 2010, gross annual wages for full-time workers who are residents of North Lincolnshire have increased by approximately £1,700 an increase of 6.9%. This is lower than the growth seen in Yorkshire and The Humber (9.5% around £2,300), and the UK (11.1% around £2,900)³¹.
- 11.15 For workers in North Lincolnshire, the median annual gross wage for full-time jobs (£27,505 in 2017) is around £1,200 lower than the UK median (£28,758), but £1,200 above Yorkshire and The Humber median (£26,258). Between 2010 and 2017, residents' wages in North Lincolnshire increased by 6.4% (£1,643), lower

³¹ Data sourced from Annual Survey of Hours & Earnings (Resident Analysis) for 2010 and 2017, published by ONS.

than the growth seen in Yorkshire and The Humber (£2,402 – 10.1%) and the UK (11.1% – around £2,900³²) over the same period³³.

*Commuting*³⁴

- 11.16 Just over 50,400 people live and work in North Lincolnshire. There are a substantial number of people travelling into North Lincolnshire from surrounding/neighbouring areas to work around 12,600. This includes around 3,800 from North East Lincolnshire, 2,600 from Doncaster and 1,400 from West Lindsey.
- 11.17 There is also a high number of residents commuting out for work around 12,000.This includes almost 4,700 working in North East Lincolnshire, over 2,900 in West Lindsey, 2,000 in Doncaster and just over 1,100 in East Riding of Yorkshire.
- 11.18 The overall figure for out-commuters (15,778) is higher than the figure for incommuters (14,802), giving a net outflow of just under 1,000 commuters.

Unemployment

11.19 Overall, the unemployment rate in North Lincolnshire fell between 2010 and 2018 (see Figure 11.7). As of April 2017-March 2018, the unemployment rate for people aged 16-64 in North Lincolnshire was 5.8%. Compared with the figure of 8.1% for 2010, this represents a substantial improvement. However, the rate did increase slightly between 2017 and 2018 (by 0.7 percentage points, from 5.1% to 5.8%). The unemployment rate in North Lincolnshire is higher than the regional rate (4.9%) and the UK average of 4.4%³⁵.

Figure 11.7: Unemployment Rate (16-64), 2010-2018

³² Resident and workplace-based wages are both the same at a UK level, hence the reported changes in paragraphs 6.3.12 and 6.3.13 are the same.

³³ Data sourced from Annual Survey of Hours & Earnings (Workplace Analysis) for 2010 and 2017, published by ONS.

³⁴ Based on travel to work data from the 2011 Census.

³⁵ Unemployment data sourced from Annual Population Survey (April 2017-March 2018), published by ONS.

10.0%

9.0%

8.0%

7.0%

6.0%

5.0%

4.0%



2015

2016

-United Kingdom

2017

2018

Source: Office for National Statistics – Annual Population Survey

2013

2014

-Yorkshire and The Humber

2012

-North Lincolnshire

Economic Activity

2010

2011

11.20 The economic activity rate in North Lincolnshire is 79.1%, based on ONS data for April 2017-March 2018. This is 0.8 percentage points than the rate in the UK, which is 78.3%. It is also above Yorkshire and The Humber average of 77.3%³⁶. Although the rate of economic activity dropped to a low point of 76.7% in 2016, it recovered to the peak of 79.1% in 2018 (See Figure 11.8).

Figure 11.8: Economic Activity Rate (16-64), 2010-2018

³⁶ Economic activity data sourced from Annual Population Survey, published by ONS. DECEMBER 2018 | GR | P17-0718





Source: Office for National Statistics – Annual Population Survey

Likely Significant Effects

11.21 The main issues to be considered in the Environmental Statement include: -

Construction

11.22 The socio economic effects will apply largely during the construction phase of the solar park. Economic benefits will arise through the provision of temporary jobs during the construction phase at the site. Research published in 2014 by the Centre for Economic & Business Research (Cebr) on solar powered growth in the UK³⁷ highlighted analysis by the Solar Trade Association on the cost of solar energy. The analysis estimated that by 2016, the capital investment cost of building one megawatt of solar power for a large-scale development³⁸ would be around £800,000. Assuming this price is broadly similar in 2018, when applied to the Proposed Development (both the 150MW of solar and the 50MW of battery storage) this equates to a capital cost of £160million.

 ³⁷ Solar powered growth in the UK – the macroeconomic benefits for the UK of investment in solar PV: Cebr (report for the Solar Trade Association), September 2014.
 ³⁸ Cebr's report noted that large-scale arrays usually have a capacity of at least 1MW.

Gross value added

11.23 The contribution of the site to economic output will be calculated by taking the onsite jobs associated with the scheme, and multiplying this by an estimate of average levels of gross value added (GVA) per construction employee in Yorkshire and The Humber. The estimated indirect/induced jobs will be multiplied by the average GVA per job in the region overall for a proposed 10 month construction period.

Operation

11.24 The main socio economic effects of the operational phase can be placed into two categories – employment and gross value added.

Employment

11.25 Details of permanent on-site jobs supported by the development are still to be finalised. However, the numbers are not expected to be significant.

Gross value added

11.26 The contribution of the site to economic output will be calculated by taking the job creation associated with the scheme, and multiplying this by an estimate of average levels of GVA per employee in Yorkshire and The Humber.

Other Benefits

- 11.27 Using data on regional and local authority electricity consumption published by the Department for Business, Energy and Industrial Strategy³⁹, it has been possible to calculate the site-specific capacity for solar parks. For the development in North Lincolnshire, 150MW of solar park capacity is estimated to power around 40,200 UK homes per annum.
- 11.28 The likely effects of land use to the existing agricultural estates will be discussed in the agricultural chapter of the Environmental Statement.

De-commissioning

³⁹ *Regional and local authority electricity consumption statistics*: Department for Business, Energy and Industrial Strategy, January 2018.
11.29 The operational phase of the development is targeted at 35 years. Following cessation of generation at the site the development will be decommissioned. The cost of this activity would generate further direct and indirect socio economic impacts and effects similar to those of the construction phase. The Environmental Statement will provide a discreet assessment of decommissioning as it is difficult to accurately predict, for example, the labour costs associated with decommissioning in 35 years.

ASSESSMENT APPROACH

Extent of Study Area

11.30 The proposed study area for this chapter of the Environmental Statement will focus on the effects in the administrative area of North Lincolnshire Council and the wards within which the Proposed Development is located.

Methodology

- 11.31 There is no specific guidance available which establishes a methodology for undertaking an Environmental Impact Assessment (EIA) of the socio economic effects of a proposed development. Accordingly, the approach adopted for this assessment is based on professional experience and best practice, and in consideration of the policy requirements/tests set out within the National Planning Policy Framework (NPPF) and local planning policy.
- 11.32 The 2017 Regulations⁴⁰ state that an Environmental Statement should contain:

A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population.

- 11.33 Following this guidance, the assessment will specifically include the following:
 - Identification of the socio economic baseline in respect of each of the key socio economic issues identified, focussing on the characteristics of the economy and labour force. These characteristics have been used as a measure for assessing future changes associated with or resulting from the Proposed Development.

⁴⁰ The Infrastructure Planning (Environmental Impact Assessment Regulations 2017), available from: <u>http://www.legislation.gov.uk/uksi/2017/572/pdfs/uksi_20170572_en.pdf</u>

- Qualification of the full range of socio economic effects, both direct and indirect, arising from the construction (temporary effects) and operation (permanent effects) of the Proposed Development.
- 11.34 The baseline information has been collated with reference to the following:
 - NPPF; and
 - Office of National Statistics (ONS) data (various outputs as individually referenced in this chapter).

Assessment of Significance

11.35 The first step in the assessment is to identify the sensitivity of the receptors. In socio economic assessments, receptors are not sensitive to changing environmental conditions in the same way as many environmental receptors are. To address this, the assessment draws on a combination of measurable indicators and a consideration of the importance of the receptor in policy terms to gauge the receptor's sensitivity. For example, the number of jobs in the area may increase as new developments are completed and occupied by businesses. This is considered alongside the weight attached to these issues in local policy. For example, the Local Plan may have identified that employment and business growth as a particular priority. Table 11.1 shows the sensitivity criteria to be followed in the assessment.

Sensitivity	Evidence for Sensitivity Assessment
High	Evidence of direct and significant socio economic challenges relating to receptor. Accorded a high priority in local, regional or national economic regeneration policy.
Medium	Some evidence of socio-economic challenges linked to receptor, which may be indirect. Change relating to receptor has medium priority in local, regional and national economic and regeneration policy.

Table	11	1.	Sensitivity	Criteria
Table		1.	Jensitivity	Cinteria



Sensitivity	Evidence for Sensitivity Assessment
Low	Little evidence of socio-economic challenges relating to receptor. Receptor is accorded a low priority in local, regional and national economic and regeneration policy.
Negligible	No socio-economic issues relating to receptor. Receptor is not considered a priority in local, regional and national economic development and regeneration policy.

11.36 The magnitude of change upon each receptor has been determined by considering the predicted deviation from baseline conditions, both before and, if required, after mitigation. The criteria used for the assessment of magnitude of change, which can be either positive (beneficial) or negative (adverse) are shown in Table 11.2.

Magnitude of Impact	Description / Criteria
Substantial	Proposed Development would cause a large change to existing socio economic conditions in terms of absolute and/or percentage change.
Moderate	Proposed Development would cause a moderate change to existing socio economic conditions in terms of absolute or percentage change.
Minor	Proposed Development would cause a minor change to existing socio economic conditions in terms of absolute and or percentage change.
Negligible	No discernible change in baseline socio economic conditions.

Table 11.2: Magnitude of Change Criteria

Assessment of Cumulative Effects

- 11.37 Cumulative effects will need to be considered as part of the assessment. The cumulative impacts for the economy receptor will consider the impact of the development on the supply chain and labour market capacity and capability in the impact area and the extent to which this might interfere with the ability of the developer's ability to source key goods and services from within the impact areas.
- 11.38 It is expended that the effects of decommissioning would be similar to the construction effects however, since the future socio economic future conditions of the locality cannot be accurately predicted for a period beyond the operational life of the development, the chapter will provide a high level review of the decommissioning impacts.