

OLD MALTON SOLAR FARM

Development of a solar farm and battery energy storage system with associated infrastructure

VOLUME 1: ENVIRONMENTAL STATEMENT MAIN TEXT

NOVEMBER 2022

IMPORTANT INFORMATION

This document (Volume 1: ES Main Text) should be read in conjunction with the following:

Volume 2: ES Figures and Visualisations

Volume 3: ES Technical Appendices

Volume 4: Non-Technical Summary

Scoped Out Topics Summary and Appendices:

- **Appendix A – Landscape and Visual Appraisal**
- **Appendix A1 – LVA methodology**
- **Appendix A2 – Viewpoint Analysis**
- **Appendix A3 – Landscape Sensitivity**
- **Appendix A4 – Residential Visual Amenity Assessment**
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- **Appendix A6 – LVA Figures**
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- **Appendix B2 – Construction Traffic Management Plan**
- **Appendix C1 – Flood Risk and Drainage Assessment Report**
- **Appendix C2 – Sequential Test**
- **Appendix D1 – Arboricultural Impact Assessment**
- **Appendix E1 – Phase 1 Geoenvironmental Site Assessment and Minerals Assessment**
- **Appendix F1 – Glint and Glare Assessment**

Planning Statement

Design and Access Statement

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/1 INTRODUCTION

Introduction

- 1.1. Harmony Energy ('the Applicant') is applying to Ryedale District Council ('the LPA') for planning permission for the development and operation of a solar farm and battery energy storage system with associated infrastructure including substation, access tracks, pole mounted CCTV, fencing and landscaping (the Proposed Development).
- 1.2. This Environmental Statement (ES) has been prepared to report the findings of the Environmental Impact Assessment (EIA) undertaken on behalf of the applicant for the Proposed Development in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended).
- 1.3. This ES has been prepared by Energy Planning Ltd, part of the PWA Planning Group on behalf of the Applicants. A number of specialists have been commissioned to undertake the various assessments which comprise the ES.
- 1.4. This chapter of the ES provides the details of the application Site, the structure of the ES, and the EIA team.

The Application Site

- 1.5. The application Site ('the Site') is shown outlined in red in ES Figure 1.1: Site Location Plan and ES Figure 1.2: Existing Site Plan. The Site is located on land adjacent to Eden Camp, Old Malton, which is approximately 2.5km north of Malton Town Centre. The A64 is located directly to the south of the Site and links north and west Yorkshire. The A169, which runs from Malton to Whitby lies to the east of the site's boundary. The Site extends to 52.86ha, representing a significant reduction from the site area subject to the Scoping stage, when a total area of 65ha was put forward.
- 1.6. At present the Site comprises of intensively farmed agricultural land, with multiple existing tracks intersecting the Site. Hedgerows and other vegetation, including individual trees, are located around the Site and between the field boundaries. It is

proposed that these boundary treatments will be retained and strengthened as part of the proposals wherever possible. Access to the Site is currently provided in multiple different locations, including off Freehold Lane, Great Sike Road, Borough Mere Lane and Fenton Lane, which all intersect portions of the Site.

- 1.7. The surrounds of the Site are generally made up of agricultural land, separated by hedgerows and some individual and groups of trees. The Eden Camp Museum and site of the approved Eden Business Park, which is a designated employment area within the adopted Development Plan, lie to the southeast of the Site. Several farmsteads and properties lie close to the Site boundary, including the closest property at Windmill Farm to the southeast, Acomb House to the north and Eden Farm to the east. There are strips and blocks of woodland in the vicinity, none of which are within the Site itself. Public rights of way (PROW) run through the southern part of the Site along Great Sike Road, and along Freehold Lane from which access will be taken.
- 1.8. The Site is not subject to any ecological designations. The majority of the Site is classified as a mix of Grade 2 and Grade 3 (subgrades a and b) agricultural land, with some small pockets of Grade 1 and non-agricultural land present. The Site lies predominately within areas of Flood Zone 3, where the risk of flooding is at its highest. The Site lies within an Open Countryside designation as per Ryedale's Local Plan. The Site is not subject to any landscape designations; Howardian Hills AONB is located 1.7km to the southwest of the Site.
- 1.9. There are no cultural heritage designations associated with the Site itself, although the Grade II listed Acomb House Farmhouse is located 210m to the north of the Site.
- 1.10. A Planning History Search has been undertaken with the LPA which shows that no planning applications have been submitted which are directly relevant to the proposals at hand.

The Proposed Development

- 1.11. A detailed explanation of the Proposed Development is provided in Chapter 3: Description of Proposed Development. In brief, the Proposed Development would comprise the development and operation of a solar farm and battery energy storage system with associated infrastructure including substation, access tracks, pole mounted CCTV, fencing and landscaping.

The EIA Team

- 1.12. The Applicant has appointed an EIA team to assist with the Proposed Development and to prepare the ES. The EIA team and their roles is provided below.

Company	Role
Energy Planning Ltd., part of the PWA Planning Group.	EIA co-ordination and management ES production and author of: Chapter 1: Introduction Chapter 2: EIA Process Chapter 3: Description of Proposed Development Chapter 4: Need and Alternatives Chapter 5: Planning Policy and Guidance Chapter 9: Summary of Effects and Conclusions Planning Statement Design and Access Statement Non-Technical Summary Planning Advice
Avian Ecology Ltd.	Chapter 6: Ecology
CFA Archaeology Ltd.	Chapter 7: Cultural Heritage
Land Research Associates Ltd.	Chapter 8: Soils and Agricultural Land Classification.

Table 1.1: EIA Team

Structure of Environmental Statement

- 1.13. The ES comprises four volumes:
- Volume 1: ES Main Text
 - Volume 2: ES Figures
 - Volume 3: Technical Appendices
 - Volume 4: Non-Technical Summary
- 1.14. The scope and context of the ES is provided in Chapter 2.
- 1.15. The planning application is also accompanied by a Planning Statement which assesses the application against the relevant planning policies and guidance, a Design and Access Statement which explains the design principles of the scheme, and a document titled Scoped Out Topics Summary which summaries the main findings of the assessments which do not form part of the ES.

Availability of Environmental Statement

- 1.16. A hard copy of the ES documentation is available for viewing at Ryedale District Council offices during their normal office hours. The Council's address is Ryedale House, Old Malton Road, Malton, YO17 7HH.
- 1.17. The full ES documentation is also available on the applicant's website: <https://www.harmonyenergyplanning.co.uk/oldmalton/>.
- 1.18. Electronic copies of the full ES documentation on CD and hard copies of the Non-Technical Summary can be obtained for a fee of £5.00 per copy. A hard copy of the full ES can also be provided for a fee of £150.00 per copy. If you wish to acquire a copy, please submit a request to the following address:

Energy Planning Ltd.
2 Lockside Office Park
Lockside Road
Preston

PR2 2YS

Or email: info@pwaplanning.co.uk

/2 EIA Process

Introduction

- 2.1. The process of Environmental Impact Assessment in the context of town and country planning in England is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the '2017 Regulations'). These regulations apply to development which is given planning permission under Part III of the Town and Country Planning Act 1990.
- 2.2. The aim of Environmental Impact Assessment (EIA) is to protect the environment by ensuring that a local planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process. The regulations set out a procedure for identifying those projects which should be subject to an Environmental Impact Assessment, and for assessing, consulting and coming to a decision on those projects which are likely to have significant environmental effects.
- 2.3. A Screening Opinion was sought from the LPA for the Proposed Development in March 2020. In their Screening Opinion dated 13th July 2020 and provided as Appendix 2.1, the LPA determined that the proposals would require an EIA. A response on the Screening Opinion request was also received from Historic England. This is also provided in Appendix 2.1.
- 2.4. A Scoping Opinion was subsequently sought from the LPA in November 2020. The LPA's Scoping Opinion and the scoping responses from the various consultees is provided as Appendix 2.2.
- 2.5. This ES has been prepared in accordance with the Department for Communities and Local Government (2014) Planning Practice Guidance: Environmental Impact Assessment (updated 2020).

Scope and Content of EIA

- 2.6. The EIA process is an iterative approach involving refinement and amendment of the proposals following identification of potential adverse environmental effects. Changes are aimed at eliminating, reducing or mitigating the potential adverse environmental effects identified through the EIA process. Consequently, the EIA process has also involved:
- Identification of likely significant environmental effects that would result from the Proposed Development;
 - Adapting changes to the Proposed Development and /or mitigation measures to reduce, eliminate or offset the adverse effects identified; and
 - Assessment of the significance of the residual impacts, i.e. those effects that remain after mitigation.
- 2.7. The primary purpose of undertaking an EIA and producing an ES is to provide the decision-making authority with sufficient information to determine whether the Proposed Development that is subject to the EIA is acceptable. The EIA process provides a systematic method for identifying the impacts of a Proposed Development, an assessment of the magnitude of those impacts and an evaluation of whether the impacts are significant by reference to the sensitivity of those receptors.
- 2.8. Specialist consultants have been engaged to undertake technical assessments of the Proposed Development, in order to predict the likely significant environmental effects associated with the Proposed Development. The findings of these assessments are summarised in Chapters 6 to 8, with the summary of effects provided in Chapter 9. The full list of chapters in this ES is as follows:

	Chapter Number and Title
1	Introduction
2	EIA Process
3	Description of Proposed Development
4	Need and Alternatives
5	Planning Policy and Guidance

6	Ecology
7	Cultural Heritage
8	Soils and Agricultural Land Quality
9	Summary of Effects and Conclusions

Table 2.1: ES Chapter Structure

2.9. For each of the technical chapters, a systematic approach has been followed where possible which comprises:

- Introduction
- Scope of Assessment
- Legislative and Policy Context
- Methodology
- Baseline Conditions
- Identification and Assessment of Potential Effects
- Mitigation Measures
- Summary and Conclusions

2.10. The Scoping Report detailed that a chapter would be provided to address cumulative effects, with an appraisal undertaken of other relevant developments, planning applications or consents in the vicinity of the Site. Given the nature of the development, 5km is considered an appropriate area of search. No relevant developments considered likely to lead to in-combination environmental effects have been identified and consultation with the LPA has not revealed any developments which they consider should be included. As such, cumulative impacts are covered in Chapters 6 to 8 in so far as they relate to those topic areas but are not addressed in a stand-alone chapter of the ES.

2.11. Each assessment was undertaken against criteria contained within relevant topic guidance and planning policy, taking into account any mitigation measures proposed.

2.12. According to Regulation 18(3) of the 2017 Regulations, an ES is a statement which includes at least:

- (a) a description of the proposed 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 proposed development on the environment;
- (c) a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
- (d) a description of the reasonable alternatives studied by the developer, which are relevant to the proposed 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.

2.13. The requirements of Regulation 18(3) are satisfied in this ES.

2.14. Schedule 4 of the 2017 Regulations sets out the information that should also be included within an ES, where relevant to the characteristics of the particular development or type of development and to the environmental features likely to be affected. Table 2.2 below sets out the requirements and where this information can be found within the ES.

Required Information		Section of ES
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	Chapter 1: Introduction provides a description of the Application Site to satisfy 1(a). Chapter 3: Description of Proposed Development provides the detail on the physical characteristics of the Proposed Development to satisfy 1 (b).

	<p>land-use requirements during the construction and operational phases;</p> <p>(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;</p> <p>(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.</p>	<p>Regarding 1 (c) and (d), the main characteristics are covered in Chapter 3: Description of Proposed Development.</p> <p>The information required by 1 (d) with regards to soil is provided in Chapter 8: Soils and Land Classification.</p> <p>Other listed topic areas scoped out of EIA by LPA.</p>
2	<p>A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.</p>	<p>Chapter 4: Need and Alternatives</p>
3	<p>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.</p>	<p>The baseline description of the Site is provided in Chapter 1: Introduction, and within the individual technical chapters of the ES:</p> <p>Chapter 6: Ecology</p> <p>Chapter 7: Cultural Heritage</p> <p>Chapter 8: Soils and Agricultural Land Classification</p> <p>Chapter 9: Summary of Effects</p>
4	<p>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</p>	<p>Chapters 6, to 8 of the ES and the relevant Technical Appendices describe the environmental factors specified in Regulation 4(2) likely to be significantly affected by the development.</p>

	<p>(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.</p>	<p>All other topics scoped out of EIA by LPA.</p>
<p>5</p>	<p>A description of the likely significant effects of the development on the environment resulting from, inter alia:</p> <p>(a) the construction and existence of the development, including, where relevant, demolition works;</p> <p>(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;</p> <p>(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;</p> <p>(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);</p> <p>(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;</p>	<p>Chapters 6 to 8 of the ES and the relevant Technical Appendices describe the environmental factors specified in Regulation 4(2) likely to be significantly affected by the development.</p> <p>Human health impacts have been scoped out of the ES due to the nature of the Proposed Development.</p> <p>Chapter 10: Summary of Effects</p> <p>The vulnerability of the Proposed Development to climate change with regards to flooding has</p>

	<p>(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;</p> <p>(g) the technologies and the substances used.</p> <p>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 <u>92/43/EEC(1)</u> and Directive <u>2009/147/EC(2)</u>.</p>	<p>been scoped out of the EIA, however, is addressed in the support information to the planning application.</p>
6	<p>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.</p>	<p>ES Chapters 6, 7 & 8 and the corresponding Technical Appendices provide this information where relevant.</p>
7	<p>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</p>	<p>Mitigation measures are provided in ES Chapters 6, 7 & 8 where relevant.</p>

	are avoided, 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(3) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(4) 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.	This topic has been scoped out of the EIA.
9	A non-technical summary of the information provided under paragraphs 1 to 8.	A Non-Technical Summary is provided as Volume 4 of the ES.
10	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	References are provided in individual ES Chapters and corresponding Technical Appendices where relevant.

Table 2.2: Location of information within ES in line with EIA Regulations 2017

Community Consultation

2.15. A programme of community consultation was undertaken in 2021 and comprised the following:

- A leaflet and accompanying feedback form, which was distributed to around 2,000 residential addresses surrounding the Site on 20th August 2020;

- A public website, available to view in addition to the leaflet which went 'live' on 20th August 2020; and
- Individual correspondence with all relevant ward councillors and Malton Town Council.
- Presentation to Malton Town Council on 30th June 2021.
- Online public consultation event held on 15th December 2021.

2.16. Full details of the public consultation process and a review of the feedback received is detailed in the accompanying Statement of Community Involvement which has been submitted with the planning application.

2.17. All environmental issues raised during the public consultation process have been addressed in the relevant chapters of the ES.

Other Consultation

2.18. A formal request for pre-application advice was made to the LPA in March 2020. The request included a written statement and plans relating to the proposals. At that time, a much larger area of land was being considered, which has since been refined into the Site. This is explained further in Chapter 4: Need and Alternatives. A copy of the LPA response is provided in Appendix 2.3.

2.19. Screening and Scoping exercises were also undertaken with specific regard to the EIA and as detailed earlier in this Chapter.

Statement of Competence

- 2.21. The 2017 EIA Regulations¹ require an ES must be prepared by competent experts and an ES must be accompanied by a statement outlining the relevant expertise or qualifications of such experts.
- 2.22. The production of the ES has been co-ordinated by PWA Planning. The individual technical reports and chapters for each specialist topic have been prepared by a range of experts in each field as set out in table 2.3 below.

EIA Role	Author	Competency
Preparation and ES Main Text chapters 1, 2, 3, 4, 5 & 9. Co-ordination of EIA and review of all EIA documents. Preparation of Non-Technical Summary	PWA Planning	Energy Planning Ltd. is part of the PWA Planning Group, a niche planning and development consultancy who have prepared, co-ordinated and submitted a number of EIA for large scale development proposals. Louise Leyland BSc MPlan MRTPI is a Chartered Member of the Royal Town Planning Institute with 15 years' planning experience in both the public and private sector. She has worked on numerous EIA submissions in the renewable energy and minerals and waste sectors and has been responsible for the co-ordination of the EIA submitted herein.
Chapter 6: Ecology	Avian Ecology	Avian Ecology Ltd. is a specialist Ecological Consultancy. The project lead, Stacey Whiteley BSc (Hons.) MCIEEM, is a Principal Ecologist with over 10 years of experience in the field of ecological impact assessment. This chapter has been prepared by Stacey Whiteley and Zac Hinchcliffe BSc (Hons.) MRes of Avian Ecology Ltd. and separately reviewed by Andrew Logan

¹ The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Regulation 18, Paragraph (5).

		MSc MCIEEM within over 12 years of experience in Ecological Impact Assessment. Field surveys were carried out by Samantha Turner BSc (Hons) MSc MCIEEM.
Chapter 7: Cultural Heritage	CFA Archaeology	CFA Archaeology Ltd is a Registered Organisation with the Chartered Institute for Archaeologists (CIfA) and has considerable experience in conducting EIA cultural heritage studies for a wide range of development projects. The Cultural Heritage chapter was authored by Joe Turner (BA MSc ACIfA) who has 8 years' post graduate experience in commercial archaeology (as a field archaeologist and consultant) and has produced many heritage assessments including EIAs. The work was managed, and the outputs reviewed, by George Mudie (MA (hons) FSA Scot MCIfA), CFA's Principal Heritage Consultant. He has 25 years' post graduate experience in commercial archaeology and 20 years full-time experience as an archaeological consultant.
Chapter 8: Soils and Agricultural Land Classification	Land Research Associates	The Chapter has been prepared by Laura Thomas, MSc, MISoilSci, of Land Research Associates Limited. Laura has a Masters in Soils and Sustainability, is a full member of the British Society of Soil Science and has over six years experience in the sector. All outputs are cross checked by Dr Mike Palmer, Director of Land Research Associates, with over fifteen years experience in the sector and a professional member (CSci) of the British Society of Soil Science.

Table 2.3: Table of Competence

/3 Description of Proposed Development

Introduction

3.1 This Chapter provides a description of the characteristics of the Proposed Development for the purposes of informing the identification and assessment of the likely potential significant environmental effects.

3.2 The following Figures support this Chapter of the ES:

- ES Figure 1.1 – Site Location Plan
- ES Figure 1.2 – Existing Site Plan
- ES Figure 1.3 – Proposed Site Plan
- Planning drawings:
 - PL001 Solar Panel Mounting Structure
 - PL005b MV Power Station
 - PL006 Customer Substation
 - PL007 Gate, Fence, CCTV Camera, Satellite Dish and Road Construction Details
 - PL010 Storage Container
 - PL011 BESS Container
 - PL012 BESS Transformer

Overview of Proposed Development

3.3 The Proposed Development comprises of a solar farm and battery energy storage system with associated infrastructure including substation, access tracks, pole mounted CCTV, fencing and landscaping. The solar farm element has the capacity to generate up to 30.4MW of electricity, whilst the battery energy storage system has a capacity of 12.63MW. The proposed site layout is provided in ES Figure 1.3

3.4 The Proposed Development would comprise of rows, or strings, of solar panels arranged across the site, together with ancillary equipment. The layout has been designed to make the most efficient use of the Site, whilst avoiding any necessary site constraints.

This includes the existing vegetation features, the majority of which are retained and which are predominantly around field boundaries, buffers from any ecological features, and appropriate set-back distances from the closest residential properties. All panels have an anti-glare coating to minimise glint and glare as much as possible.

- 3.5 The rows of panels would be mounted on aluminium frames supported by upright poles driven into the ground to a depth of approximately 1m. No piling and little excavation is required for their installation, with ground disturbance kept to a minimum. Should any archaeological remains be discovered at a later date, the aluminium frames can be mounted on concrete pads which sit on the surface of any of the affected areas, rather than be driven into the ground.
- 3.6 The panels would be angled south to take advantage of as much sunlight as possible. The panel mounting system is provided in Figure PL001. The strings of panels would be separated by around 4.5m, to allow for ease of movement around the panels for maintenance and to prevent shadowing. The total height above ground of the panels/strings would be 3.098m. A total of 18no. MV power stations (which are also known as inverter transformers) are located at points around the site (elevations provided in Figure PL005b).
- 3.7 A substation and battery energy storage are also to be provided as part of the Proposed development, which are to be located on the smaller parcel of land to the south of Freehold Lane adjacent to the western boundary of Eden Camp.
- 3.8 The battery storage system will be accessed via a new track off Freehold Lane, with additional tracks running between and around the battery equipment. The system will comprise 12no. battery containers and 24no. transformers. Elevations for these elements are provided as PL0011 and PL0012. It should be noted that the battery units to be used are to be the latest lithium-iron-phosphate (LFP) chemistry batteries, and not the nickel-cobalt-aluminium batteries which have been associated with fire risk. The customer substation will be located to the immediate north of the battery equipment. The substation elevations are provided in PL006.

- 3.9 It is proposed that the Site will be surrounded with a perimeter fence, 2.5m in height. For security reasons, pole mounted CCTV cameras would be provided around the Site, each with a maximum height of 3m. Satellite dishes at a height of 3m are also provided around the Site. Elevations for these elements are provided in Figure PL007.
- 3.10 The Proposed Development will be connected directly to the national grid, with the point of connection at the adjacent Malton Substation located to the immediate east of the proposed battery storage location.
- 3.11 The Proposed Development has an estimated life-span of 40 years, after which time the equipment would be removed and the Site returned to its original state. The applicants would be happy to accept a planning condition in this respect.
- 3.12 The existing vegetation running between fields on Site, notably the existing hedgerows and trees, will be retained as much as possible as part of the Proposed Development. The exception to this is four short sections of Category C hedgerow to allow for access between fields and the installation of the electricity connection to the substation as detailed in the Arboricultural Impact Assessment submitted with the planning application. A comprehensive landscaping scheme is proposed for the Site, with existing hedgerows reinforced and managed at height, in addition to new sections of hedgerows and trees planted to assist in screening the Proposed Development and increase biodiversity opportunities. The field in the southeast portion of the Site has been left partially undeveloped; planting of species rich grasses is proposed here to increase the biodiversity gain resulting from the Proposed Development. In total, a biodiversity net gain of 105.39% in biodiversity habitat units will accompany the Proposed Development, as well as 42.67% in biodiversity hedgerow units.
- 3.13 The solar farm would be accessed off Edenhouse Road to the southeast of the Site. The access road will run along Freehold Lane, where the Site entrance gate is located, then head north adjacent to the west boundary of Windmill Farm. Internal access roads are proposed throughout the Site to ensure access for operation and maintenance. The battery energy storage portion of the Proposed Development would also be accessed off Freehold Lane, with an access road running south.

/4 Development Alternatives

Introduction

- 4.1. Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the '2017 Regulations') sets out the information to be contained within an Environmental Statement. Part 2 states that "*A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.*" should be provided.
- 4.2. This Chapter of the ES provides the main alternatives considered by the Applicant, and the reasons, including consideration of environmental effects, why the Proposed Development was selected.

Site Selection

- 4.3. The Proposed Development would be connected to the Distribution Network, to allow energy stored to be distributed to the wider network. Accordingly, the key factor which has guided the location of this development is the need to be in proximity to the existing Substation which sits adjacent to the Site.
- 4.4. The cost of grid connection is a significant proportion of the total capital expenditure of a solar farm and is one of the determining factors in locating the solar farm at this particular site. Given the size of the project, the only available connection point is at a 'Bulk Supply Point'. A Bulk Supply Point is a major asset owned by the Distribution Network Operator which transforms Extra-High Voltage electricity down to a manageable distribution voltage to feed primary substations located within the region.
- 4.5. Old Malton is a good example of a Bulk Supply Point. It is located on the outskirts of a town and drops the voltage on the network from 132,000 volts to 66,000 volts which then feeds primary substations in Malton, Whitby, Scarborough and the surrounding

area where it is transformed down again to service customers at 11,000 volts and below. The Old Malton Substation is the only such publicly available Bulk Supply Point in Ryedale.

- 4.6. A routine Extra-High Voltage connection would be for the District Network Operator (DNO) to provide a connection to their network (point of connection), then install a cable and fibre optic communications cable from this point to the new site and establish a new metering compound on site. However, during detailed negotiations with Northern Powergrid (NPg - the DNO for this area) they have agreed to provide the applicants with a connection configuration which utilises a metering circuit breaker (MCB) within their Old Malton Substation. This has a significant cost saving to the project and avoids NPg having to build a new substation on the proposed development site. Without this offer, the cost of connecting at Old Malton would not be commercially viable.
- 4.7. Due to technical constraints on their network, NPg will only allow this connection configuration if the applicant's own substation (which is a requirement of all projects of this scale) is located within 300m of the existing Old Malton Substation. This is due to the requirements of their network protection policy and how the embedded current transformers (CTs) operate. This is explained below.
- 4.8. All electrical connections require some form of metering equipment to measure the capacity that is imported or exported. In addition to this, large scale generators require additional protection equipment to disconnect the generator should there be a fault at the generator site or on the network. The disconnection speed requirements are 200m/s and are dictated by national engineering policies. The disconnection times are there to ensure that disconnection occurs to preserve life and equipment in the event of a fault. This also ensures that the network operator can keep continuity of supply for the rest of the wider Malton customers in the event of a failure.
- 4.9. In order to achieve these disconnection times, a number of different pieces of equipment are utilised. One of these pieces of equipment is a current transformer (CT) and the DNO stipulates that these are required to be installed at the metering circuit

breaker and within 300m of the generator's substation. This distance requirement is set by the limiting factor of the CT's and as such is dictated by the network operator's policy. If the generator's substation was in excess of 300m from the compound, the network operator policy would require the additional electrical assets as described above.

- 4.10. For the proposed development, the metering CB and the protection CT's will be housed within the existing Old Malton Substation compound and therefore the solar system intake substation (that is the substation proposed within the application site) is required to be within 300m of the existing substation.
- 4.11. It is therefore considered that a distance of 300m between the substation to be located at the solar farm, and the Old Malton Substation, is the maximum distance that could be tolerated from a technical point of view. Accordingly, the applicants have only considered connection points within 300m of the Old Malton Substation.
- 4.12. ES Figure 4.1 provides a buffer of 300m from the Old Malton Substation. Given the need for the solar farm to be located adjacent to its own substation (which in turn must be no greater than 300m from the Old Malton Substation), this provides few options for an alternative location of the solar farm. Land to the south of the A64 is largely designated as a Visually Important Undeveloped Area in the Ryedale Proposals Map or is constrained by existing built development. Land to the east of the Site, east of the A169, could be achievable, however it is subject to much of the same constraints as the Site itself and is not therefore considered to offer a more suitable alternative to the Site.
- 4.13. Moreover, one of the factors which influences site selection is a willing landowner, which is achieved at the Site.

Site Area and Layout

- 4.14. The layout of the Proposed Development has been an iterative process during the preparation of the ES.

Site Area

- 4.15. The Proposed Development will be developed without subsidy. In order to make subsidy-free solar projects viable, developers must maximise economies of scale and efficiencies whilst simultaneously reducing capital expenditure across all parts of the project - otherwise they will not be viable and will not be built. These issues mean that only large-scale solar farms are viable for the applicants. In this instance, the size of the development has been dictated by the available capacity at the Old Malton Substation, and the projects economics (including the connection costs), which mean a 49.9MW solar development is viable. The capacity of the Proposed Development at 30.4MW then equates directly to the physical size of the development. As detailed below, this represents a reduction in the scale of the development from previous iterations.
- 4.16. At the Screening and Pre-Application stage, an area of 160ha was put forward for consideration, with it made clear that the intention was to develop approximately 120-130ha of this land. This is shown in ES Figure 4.2.
- 4.17. At the Scoping stage, the land available had been revised down to 85ha, with a proposal to develop approximately 65ha in total. This reduction was due to more efficient solar panels having been developed for use at the site, significantly reducing the required land take. This is shown in ES Figure 4.3.
- 4.18. A final site area was determined following Scoping, and it was that site that was subject of the public consultation in 2021. This area is shown in ES Figure 4.4 and comprised 74.2ha. This represented an increase above the 65ha suggested at Scoping, due to the desire to allow for larger wildlife corridors and habitat enhancement areas within the Site.
- 4.19. The final Site area is 52.86ha, as shown in ES Figure 1.1. A number of factors have led to this reduction, the principal factor being the desire to utilise as little Best and Most Versatile (BMV) agricultural land as possible. The use of BMV was the main issue raised during the pre-application consultation with the public and was one of the key issues

which the LPA raised during formal pre-application discussions. The reduction in area has still allowed for significant wildlife corridors and habitat enhancement measures within the Site as explained below. The reduction has however meant the capacity of the solar development has reduced from 49.9MW to 30.4MW.

Technical Constraints

- 4.20. The layout of the Proposed Development has had regard to a number of technical constraints which have become apparent as the various assessments required to support the planning application and ES have been undertaken.
- 4.21. An Agricultural Land Classification was undertaken at an early stage of the project, which identified that the Site and wider area is a combination of Grades 1, 2, 3a and 3b land with some non-agricultural land, Grades 1, 2 and 3a being classed as 'best and most versatile' (BMV). Appendix 8.1 provides the Agricultural Quantity of Land report for the Site and wider area, providing the results of the assessment undertaken for the original 160ha which was put forward, with the final Site area overlaid.
- 4.22. Whilst it has not been possible to exclude the higher BMV grades from the Site altogether, the final layout has sought to minimise the amount of Grade 1 and 2 land utilised. The areas of predominately Grade 1 and 2 land to the west of the final Site have been excluded in favour of including a larger area of Grade 3a and 3b land. The application site now comprises only 6% Grade 1 land, 35% Grade 2 land and 15% Grade 3a land, meaning 56% of the site is considered BMV agricultural land. The remaining 44% comprises Grade 3b (33%) and non-agricultural land (11%). The Site put forward at public consultation (ES Figure 4.4) involved a much higher proportion of BMV land, at 70%, meaning a significant reduction has occurred following the feedback received by the applicants.
- 4.23. ES Figure 4.5 provides the Defra produced map of Yorkshire and Humberside which predicts the likelihood of BMV land across the region. It is clear from this map that outside of the existing urban and industrial areas, and outside of the designated National Parks of the Yorkshire Dales and North Yorkshire Moors, the majority of land in the region is predicted as BMV. BMV land is therefore commonly occurring in the

region and difficult to avoid. The extensive land grading maps were shown and explained in detail during the Public Consultation delivered by the applicant.

- 4.24. Ecological surveys have been ongoing throughout 2020 and 2021, with the assessment of these presented in Chapter 6 of this ES. The initial surveys undertaken ensured that the Proposed Development has been designed to avoid higher value habitats and ensure their retention where they occur, maintain suitable exclusion buffers around streams/ditches, hedgerow, trees and ponds, and maintain a minimum 5m stand-off to field boundaries preventing damage to existing hedgerows and trees.
- 4.25. Reduction of the Site area to the proposed 52.86ha has still allowed for generous wildlife corridors at field margins and the inclusion of an area of wildflower grassland in the southeast corner of the site (as show in ES Figure 6.6 – Biodiversity Management Plan). These measures have ensured that the Biodiversity Net Gain for the proposed Development is 105.39%, which is a significant increase above the existing biodiversity condition of the Site.
- 4.26. A Tree Survey was undertaken early in the project and the Site layout has been designed around the identified constraints, including the desire to ensure that all trees have been retained, with only short sections of hedgerow removed where absolutely necessary. Buffers to root protection zones around trees and hedges have been maintained.
- 4.27. There are three dwellings located in close proximity to the Site; Windmill Farm, Eden Farm and Acomb House. The potential impact of the Proposed Development on these dwellings has been considered during the course of the preparation of the layout of the Site.
- 4.28. Windmill Farm sits adjacent to the southern and eastern boundaries of the Site. In the initial 160ha area considered, the land on all sides of this dwelling were included as potential development land. However, following advice from the landscape architect for the project, it was decided to exclude land to the south and west of this dwelling from the Site. Additionally, the field to the immediate north of this dwelling is where the proposed grassland wildflower meadow is proposed. These measures have limited the impact on this dwelling.

- 4.29. Land to the immediate north, east and south of Eden Farm was included in the initial 160ha at the Screening stage. These fields were excluded from the final Site area to ensure an appropriate buffer to this dwelling was provided.
- 4.30. The impact on these properties has been assessed in a Residential Visual Amenity Assessment (Scoped-Out Topics Appendix A4) submitted with the planning application. For all three properties, it has been found that the effects of the Proposed Development would not be of such a nature that they would potentially affect the living conditions at any property to the point it becomes an unattractive place to live.

Impacts of Alternatives

- 4.31. The layout of the Site has been designed to ensure that as much Grade 1 and Grade 2 agricultural land has been excluded from the Site as possible. Had a greater area of land to the west been included which is predominantly Grade 2, in favour of Grade 3a and b land, the impacts on agricultural land for the lifetime of the Proposed Development would have been greater. As this is a reversible loss, it is not considered that impacts would have necessarily been significant in EIA terms, but for the lifetime of the Proposed Development, this land would not be available for arable agricultural use, but instead would be given the opportunity to rest and recover from intensive farming practices.
- 4.32. Ensuring that appropriate buffers have been provided to ecological and arboricultural features has ensured that ecological impacts have been minimised. Through provision of wider field margins and the wildflower grassland area in the southeast corner of the Site, native planting, gapping up existing hedgerows and other measures biodiversity net gain of 105.39% has been achieved.
- 4.33. As explained above, the Site layout has sought to provide appropriate buffers to the closest properties, such that impacts are considered acceptable.

Conclusions

- 4.34. The selection of the general area for the Proposed Development has been led by technical factors relating to the availability of a suitable point of connection of large-scale solar development. The size of the Proposed Development is a result of the project economics, including the location of and availability of capacity to connect the project to the grid.
- 4.35. The larger area initially put forward at the Screening stage was reduced at Scoping stage and refined further following public consultation. This has been an iterative process which has sought to avoid the best and most versatile agricultural land as far as possible, bearing in mind technical constraints.
- 4.36. The final layout for the Proposed Development has had regard to the need to maintain buffers around ecological and arboricultural constraints and maintain an appropriate set-back distance from nearby dwellings.
- 4.37. The final Site area and layout has also sought to achieve the maximum biodiversity net gain for the Proposed Development.
- 4.38. It is considered that the Site selection, size and layout of the Proposed Development are appropriate, having been formulated by an iterative process during the various stages of the EIA and on land which is not subject to any constraints which would preclude development.

/5 PLANNING POLICY

Introduction

- 5.1 This chapter of the ES seeks to identify Development Plan policies which are relevant to the Proposed Development together with any other policy and/or guidance documents, including emerging policy documents which may be material to the consideration of the Proposed Development.
- 5.2 The consideration of the Proposed Development against policy is included within the accompanying Planning Statement.

The Development Plan

- 5.3 The Application Site is located entirely within the administrative boundary of Ryedale District Council. The current Development Plan for this area comprises:
- Ryedale Plan – Local Plan Strategy (2013);
 - Ryedale Plan – Local Plan Sites Document (2019);
 - Helmsley Plan (2015);
 - Saved policies of the Yorkshire and Number Regional Spatial Strategy (relevant to Green Belt development only);
 - Minerals and Waste Joint Plan 2022

Ryedale Plan – Local Plan Strategy

- 5.4 The Ryedale Plan sets out a long-term vision, objectives and strategy to guide development and investment from 2012 over a 15-year period. The purpose of the Ryedale Plan is to encourage new development and to manage future growth whilst ensuring that change across the District is based on a presumption in favour of sustainable development. The Ryedale Plan will help to support the delivery of new homes, jobs and other services to address the needs of local communities.
- 5.5 The Ryedale Plan sets out local issues and challenges which need to be addressed to provide for more balanced and sustainable communities, to reduce impact on the natural and historic environment and to adapt to the anticipated impacts of climate

change. In relation to climate change, the Ryedale Plan sets out how the District can deal with the costs associated with diminishing oil and gas supplies through producing more of its own energy. In turn this creates a source of energy closer to the user, which is more secure and reduces the costs of transporting energy. The text goes on to state two ways climate change can be mitigated is through realising the potential of natural renewable energy sources and delivering decentralised energy supplies in new development and promoting its use in existing buildings.

5.6 The Ryedale Local Plan sets out a number of aims and objectives to address the District’s issues and maximise opportunities for communities. Aim 3 states that to protect and enhance the environment, natural assets and resources will be utilised for renewable/low carbon energy generation to increase resilience to climate change. Similarly, Objective 12 seeks to respond to climate change by reducing greenhouse gas emissions and helping Ryedale to adapt to the impacts of climate change.

5.7 In accordance with the Ryedale Plan Policies Map, the Site is located within the Open Countryside. Accordingly, **Policy SP1** is of importance to the Proposed Development as it sets out the general locations of development. Within the Open Countryside the policy states that development will be restricted to certain forms of development which does not specifically refer to renewable energy development. **Policy SP18** deals specifically with renewable energy development and provides in principle support for renewable energy generation where this can be satisfactorily accommodated in the landscape and where other impacts can be acceptably mitigated.

5.8 A full list of relevant policies from the Ryedale Plan – Local Plan Strategy is provided below is Table 5.1:

Ryedale Plan – Local Plan Strategy	
SP1	General Location of Development and Settlement Hierarchy
SP9	Land-Based and Rural Economy
SP10	Generic Development Management Issues
SP12	Heritage
SP13	Landscapes
SP14	Biodiversity
SP15	Green Infrastructure Networks
SP16	Design

SP17	Managing Air Quality, Land and Water Resources
SP18	Renewable and Low Carbon Energy
SP19	Presumption in Favour of Sustainable Development
Ryedale Plan – Local Plan Site Document	
SD12	New Employment Land Provision

Table 5.1 – Relevant Development Plan Policies

5.9 A full assessment of the Proposed Development against the above policies will be provided in the Planning Statement.

Ryedale Plan – Local Plan Site Document

5.10 The Ryedale Plan Local Plan Site Document covers the period 2012-2017. The document contains site specific policies for the development of land for a range of land uses and site-specific protection policies. Sites have been identified or allocated for development in this document in order to ensure that the amount of development that the District is committed to providing to 2027 is achieved within this period. The application Site is not allocated within this document, however under Policy SD12 New Employment Provision, 17.8ha to the east of the Site is allocated for 'Agri-Business Park and Business Technology Park, Eden House Road, Malton'. This site is said to be considered a major employment/business opportunity for the District which occupies a good location in relation to the Principal Town and strategic road network.

Minerals and Waste Joint Plan 2022

5.11 The newly adopted MWJP provides the strategy for minerals and waste development in North Yorkshire, the City of York and the North York Moors National Park for the period 2016-2030. Relevant to the Proposed Development is that the MWJP seeks to ensure minerals resources are safeguarded for the future.

5.12 The Proposals Map associated with the MWJP identifies that the Site is not within a minerals safeguarding zone, although it sits adjacent to an area safeguarded for surface minerals, which includes sand and gravel, crushed rock, brick clay, building stone, silica sand and shallow coal. The Minerals Safeguarding Assessment provided for the Proposed Development (Scoped-Out Topics Appendix E1) finds the Site is within 250m of an area

safeguarded for building stone and limestone specifically, with Policy S01 of the MWJP stating that within 250m of this resource, other forms of surface non-mineral development should protect the resource. Policy S02 states that permission for development other than minerals extraction will be granted where it would not sterilise the mineral or prejudice future extraction, and that the nature of development is of a temporary nature that does not inhibit extraction within the timescale that the mineral is likely to be needed. These issues are covered in the Planning Statement.

- 5.13 The other documents in the Development Plan, notably the Helmsley Plan and The Yorkshire and Humber Plan Regional Spatial Strategy to 2026 relate specifically to the town of Helmsley and a small portion of Southern Ryedale which lies within the York Green Belt. These documents however do not contain any relevant policies to the Proposed Development presented here.

Material Considerations

Malton and Norton Neighbourhood Plan

- 5.14 It is understood that the Submission version of the Malton and Norton Neighbourhood Plan (MNNP) was submitted to Ryedale District Council in January 2022 and that the Regulation 16 consultation on the plan was recently undertaken, ending on 20th July 2022. Following this, the plan will need to be subject to independent examination, and if successful, will then need to proceed to a local referendum where a majority vote is required in order for the district to adopt the plan. Once adopted it will form part of the development plan, however at this stage it is material consideration in the determination of this planning application.
- 5.15 According to the Proposals Map of the MNNP, the Site is covered by Policy E4 - Green and Blue Infrastructure. Policy E4 states that in order to be supported, development proposals must not harm the function of a number of Green and Blue Infrastructure areas identified on the MNNP Proposals Map, as part of a multifunctional wildlife, amenity and recreational network. It states that any development within or adjacent to Green

and Blue Infrastructure must, subject to viability considerations, include measures to extend it.

- 5.16 There are no specific policies which address climate change or renewable energy in the MNNP. It is mentioned that whilst the Town Councils completely understand and sympathise with pressures to do more through the plan, with regard for example to zero carbon construction and community energy, there is nothing it can add, crucially in planning policy terms, which is not already stated in the adopted Local Plan Strategy and within the currently limited context of national planning policy.

National Planning Policy Framework (NPPF) 2021

- 5.17 The NPPF sets out Government planning policies for England and how these are expected to be applied. Paragraph 11 of the NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development and that a presumption in favour of sustainable development is at the heart of the NPPF. For decision taking this means:

- Approving development proposals that accord with the development plan without delay; and
- Where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:
 - the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed⁷; or
 - any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.

- 5.18 Sustainable development is broadly defined in Paragraph 8 of the Framework as having three overarching objectives, namely an economic, social and environment objective.

5.19 Section 14 of the NPPF deals with the challenge of climate change, flooding and coastal change. With regards to low carbon and renewable energy, the NPPF states at Paragraph 152 that the planning system should help to:

"...contribute to radical reductions in greenhouse gas emissions... and support renewable and low carbon energy and associated infrastructure."

5.20 With specific regard to renewable energy, Paragraph 158 states that LPAs should not require applicants to demonstrate the overall need for such proposals, and that they should look to approve the application if its impacts are (or can be made) acceptable.

5.21 Section 15 of the NPPF deals with conserving and enhancing the natural environment. At paragraph 174, it is required that planning decisions ensure, amongst other things, that valued landscapes, biodiversity and geological value and soils are protected, net gains for biodiversity are enhanced and the intrinsic character and beauty of the countryside is recognised.

5.22 Footnote 58 notes that where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred over higher quality.

5.23 Section 16 deals with the historic environment, with paragraphs 199 to 202 referring to the assessment of harm to designated assets. Where less than substantial harm is identified, this harm should be weighed against the public benefits of the proposal.

National Planning Policy Guidance

5.24. With specific regard to solar farm development, the PPG on Renewable and Low Carbon Energy provides the following points of consideration for the decision maker at Paragraph 013 Ref ID: 5-013-20150327:

- Where a proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for

continued agricultural use where applicable and/or encourages biodiversity improvements around arrays;

- That solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use;
- The proposal's visual impact, the effect on landscape of glint and glare and on neighbouring uses and aircraft safety;
- The extent to which there may be additional impacts if solar arrays follow the daily movement of the sun;
- The need for, and impact of, security measures such as lights and fencing;
- Great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting. As the significance of a heritage asset derives not only from its physical presence, but also from its setting, careful consideration should be given to the impact of large scale solar farms on such assets. Depending on their scale, design and prominence, a large scale solar farm within the setting of a heritage asset may cause substantial harm to the significance of the asset;
- The potential to mitigate landscape and visual impacts through, for example, screening with native hedges; and
- The energy generating potential, which can vary for a number of reasons including, latitude and aspect.

EN-1: Overarching National Policy Statement for Energy

5.25 EN-1 was published in 2011 and was part of a suite of National Policy Statements (NPS) issued by the Secretary of State for Energy and Climate Change. It sets out the Government's policy for delivery of major energy infrastructure, amongst which is EN-3 which specifically relates to renewable energy. The purpose of the NPS is to guide the development of Nationally Significant Infrastructure Projects (NSIPs) in the energy sector. Whilst the Proposed Development falls below the threshold of being an NSIP, these statements provide useful background information and guidance from the Government.

- 5.26 Paragraph 3.3.10 is of particular relevance:
"As part of the UK's need to diversify and decarbonise electricity generation, the Government is committed to increasing dramatically the amount of renewable generation capacity".
- 5.27 Section 3.4 sets out the role renewable electricity generation can play and provides the targets (as at 2011) for 15% of energy to come from renewable resources by 2020, with an aim to decarbonise the power sector by 2030, making it necessary to bring forward new renewable electricity generating projects as soon as possible. It was said therefore that, *"The need for new renewable electricity generation projects is therefore urgent."* Whilst these targets have been superseded by renewed ambitions, the urgent need for renewable energy remains.
- 5.28 A draft replacement to EN-1 2011 was published in 2021 for consultation: **Draft Overarching National Policy Statement for Energy (EN-1)**. This document refers specifically to solar development, stating at paragraph 3.3.21 that:
"Wind and solar are the lowest cost ways of generating electricity, helping reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation). Our analysis shows that a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar".
- 5.29 With regard to energy storage, it is stated at paragraph 3.3.24 and 25 that:
"Storage has a key role to play in achieving net zero and providing flexibility to the energy system, so that high volumes of low carbon power, heat and transport can be integrated."
"Storage is needed to reduce the costs of the electricity system and increase reliability by storing surplus electricity in times of low demand to provide electricity when demand is higher. Storage can provide various services, locally and at the national level. These include maximising the usable output from intermittent low carbon generation (e.g.

solar and wind), reducing the total amount of generation capacity needed on the system...”

EN-3: Overarching National Policy Statement for Renewable Energy Infrastructure

5.30 EN-3 was published in 2011 and provides specific guidance on renewable energy development for NSIP projects. As above, although the Proposed Development is not an NSIP, it is considered that this guidance is relevant.

5.31 As with EN-1, a draft replacement to EN-3 2011 was published in 2021 for consultation:

Draft Overarching National Policy Statement for Renewable Energy Infrastructure (EN-3). The opening paragraph to this draft NPS states that:

“Electricity generation from renewable sources of energy is an essential element of the transition to net zero. Our analysis suggests that demand for electricity is likely to increase significantly over the coming years and could more than double by 2050. This could require a fourfold increase in low carbon electricity generation, with most of this likely to come from renewables.”

5.32 Section 2.47 deals specifically with solar development, stating at 2.47.1 that:

“Solar farms are one of the most established renewable electricity technologies in the UK and the cheapest form of electricity generation worldwide. Solar farms can be built quickly and, coupled with consistent reductions in the cost of materials and improvements in the efficiency of panels⁴¹, large-scale solar is now viable in some cases to deploy subsidy-free and at little to no extra cost to the consumer. The government has committed to sustained growth in solar capacity to ensure that we are on a pathway that allows us to meet net zero emissions. As such solar is a key part of the government’s strategy for lowcost decarbonisation of the energy sector.”

5.33 Section 2.48 deals with factors influencing site selection. At 2.48.13, it is stated that it would be preferable to avoid “Best and Most Versatile” land where possible, but that

this should not be a predominating factor in determining the suitability of the site location. Paragraph 2.48.15 specifically states that the development of ground mounted solar is not prohibited on sites of agricultural land classified as grades 1, 2 and 3a, or those sites designated for natural beauty or ecological or archaeological importance. These issues will be discussed at length in the Planning Statement.

UK Solar PV Strategy: Roadmap to a Brighter Future

- 5.34 This document was published in 2013. It states that solar PV is one of the eight key renewable technologies that can help to create a clean, balanced UK energy mix, and that it has significant advantages, being versatile, scalable and able to be developed quickly in a variety of locations.

6/ Ecology

Introduction

- 6.1. This Chapter of the ES has been prepared in relation to the Proposed Development, as described in Chapter 3.
- 6.2. It considers the likely significant effects on important ecological features associated with the construction, operation and decommissioning of the Proposed Development.
- 6.3. The assessment is based upon information gathered from desk study and habitat and species surveys and consultation feedback. The potential for the Proposed Development to have an effect either alone or in combination with other projects on designated sites and protected and notable habitats and species is assessed and mitigation measures are set out where relevant. Opportunities for biodiversity enhancement are also described.
- 6.4. The assessment is based on the Guidelines for Ecological Impact Assessment (EcIA) in the United Kingdom (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018²)
- 6.5. This chapter is supported by the following figures and technical appendices:
 - Volume 2: Figures:
 - Figure 6.1. Statutory Designated Sites
 - Figure 6.2. Non-statutory Designated Sites
 - Figure 6.3. Habitat Plan
 - Figure 6.4. Pond Plan
 - Figure 6.5. Breeding Bird Survey Plan
 - Figure 6.6: Biodiversity Management Plan

² CIEEM (2018, updated 2019) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester

- Volume 3: Technical Appendices
 - Appendix 6.1. Ecological Impact Assessment Methodology
 - Appendix 6.2. Habitat and Species Baseline
 - Appendix 6.3. Information to Inform Habitats Regulations Assessment
 - Appendix 6.4. Biodiversity Net Gain Assessment
 - Appendix 6.5: Biodiversity Management Plan
 - Appendix 6.6: Outline Construction Environmental Management Plan

6.6. Figures and technical appendices are referenced in the text where relevant.

6.7. The Site is defined by the red line site boundary shown in Figure 6.1. Statutory Designated Sites in Volume 2 of the ES.

Scope of Assessment

6.8. The EcIA has been undertaken with reference to the CIEEM guidance (2018) ² and the Town and Country Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (as amended)³.

6.9. The Scoping Report provided for the Proposed Development has set out the approach and key ecological features to be considered within the assessment. A Scoping Response from Ryedale District Council (Table 6.1, dated 14th January 2021) noted that although ecology for the most part does not require an EIA level assessment, the proximity of the Site to the River Derwent Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI) and potential for Likely Significant Effects (LSE), ecology should be scoped into the EIA.

6.10. The response also noted the requirement to undertake suitable ecological survey and desk study and for the provision of biodiversity net gain to accompany the Proposed Development.

6.11. The ecological impact assessment includes:

³ Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

- An evaluation of identified important ecological features and potential features; faunal species, habitats and vegetation (as appropriate) on an international, national and regional basis;
- A description and evaluation of the potential effects of the Proposed Development on statutory and non-statutory sites designated for nature conservation;
- A description and evaluation of the potential effects of the Proposed Development on species and habitats;
- Mitigation measures implemented to address any identified significant adverse effects;
- Identification of any residual effects after mitigation; and,
- Identification of opportunities for biodiversity enhancement.

6.12. Effects on ecological features have been assessed based upon the interaction between the importance or sensitivity of the feature, and the magnitude of change it is likely to experience. In accordance with the CIEEM guidelines², an EcIA need only assess in detail, impacts upon important ecological features i.e. those that are considered important and potentially affected. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable.

6.13. Where ecological features are not considered important enough to warrant further consideration, or where they will not be significantly affected, these are scoped out of the assessment presented here, and justification for exclusion is provided where required.

Consultation Undertaken

6.14. Consultation with statutory and non-statutory advisors has been undertaken through the Scoping and Pre-application process with Ryedale Council, to inform the approach to and undertaking of the assessment.

6.15. A summary of consultations undertaken, responses received and how they have been considered is provided in Table 6.1.

Consultee	Date	Stage	Summary	Action Taken
Natural England	17 th December 2020	Scoping	General advice provided: The ES should thoroughly assess potential impacts on designated sites, protected and notable species and priority habitats. Also recommended the assessment be supported by habitat, ornithological, botanical and invertebrate surveys.	This Chapter provides an assessment of the potential effects on statutory and non-statutory designated sites, protected and notable species and priority habitats. The assessment has been informed by habitat, ornithological and amphibian surveys. Detailed botanical and invertebrate surveys were not necessary to inform the assessment, the rationale for which is discussed in Section 6.88 and 6.187.
Natural England	15 th January 2021	Scoping	ES to consider the potential impacts on the invertebrate assemblage associated with the River Derwent SSSI.	Potential direct and indirect effects on the River Derwent SSSI, including its invertebrate assemblage, are considered in Section 6.88 and 6.187
North Yorkshire County Council	7 th December 2020	Scoping	Although in agreement that ecology does largely not require an EIA level assessment, the proximity of the Site to the River Derwent SAC and potential Likely Significant Effects on qualifying interest features should be included within the EIA.	Potential direct and indirect effects on the River Derwent SAC and its qualifying interests are considered in Section 6.88 and 6.187
Ryedale District Council	14 th January 2021	Scoping	Ecology should be scoped into the EIA to undertake an assessment of effects on the River Derwent SAC SSSI	Potential direct and indirect effects on the River Derwent SAC and SSSI are considered in Section 6.88 and 6.187

Table 6.1: Consultation Summary

Legislative and Policy Context

- 6.16. Relevant legislation and policy has been considered within the assessment with regards to the potential for direct or indirect effects on protected or notable species, or designated sites. Reference has been made to the following key pieces of legislation, planning policy and guidance summarised as follows.

National Legislation

- 6.17. The Conservation of Habitats and Species Regulations 2017, as amended (hereafter the 'Habitat Regulations') provide a framework of protection for European statutory designated sites (primarily Special Protection Areas (SPAs) and SACs, referred to as European Sites) and rare species (referred to as European Protected Species (EPS)). This may also be referred to as the 'Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. For the purposes of this report these two references are interchangeable and hereafter referred to as the 'Habitat Regulations'
- 6.18. The legislation has been considered within the assessment with regards to the potential for direct harmful effects on EPS, for example great crested newts (GCN), or indirect effects on European Sites.
- 6.19. The Wildlife and Countryside Act 1981 (WCA) is the primary legislation which protects animals, plants and habitats in the UK.
- 6.20. The Countryside and Rights of Way (CROW) Act 2000 primarily relates to public access to the countryside, but also amended existing law (the WCA) relating to nature conservation and the protection of wildlife under Part III, which is concerned with the introduction of improved protection and management of SSSIs.
- 6.21. The Natural Environment and Rural Communities (NERC) Act 2006 established the government body Natural England and made amendments to the both the WCA and CROW Act. For example, it extended the CROW biodiversity duty to public bodies and statutory undertakers, and altering enforcement powers in connection with wildlife

prosecution, and contains lists of habitats and species of Principal Importance (priority habitats and species) for biodiversity.

- 6.22. The WCA, CROW and NERC Acts have been considered within the assessment with regards to the potential for direct harmful effects on protected species, such as reptiles and breeding birds, or direct and indirect effects on nationally designated statutory sites (Sites of Special Scientific Interest (SSSIs)).
- 6.23. The Protection of Badgers Act 1992 makes it an offence to kill injure or take a badger from the wild. It is also an offence to damage or interfere with a sett unless a licence is obtained from a statutory authority. The Act was considered within the baseline survey methodology and the assessment so as to ensure no offence is committed, for example through disturbance of a badger sett.
- 6.24. The Hedgerows Regulations 1997 restrict the removal of hedgerows, or parts of hedgerows which are over 20m in length. As such the regulations are relevant to the application only in the event of a requirement for hedgerow removal. The presence or otherwise of hedgerows was established through field surveys. The legislation does not give a clear definition of the term 'hedgerow', but only applies to country hedgerows, which includes hedgerows next to nature reserves and SSSIs.

Planning Policy

- 6.25. The National Planning Policy Framework (NPPF) was originally published 2012 and most recently updated in July 2021. NPPF sets out the government's planning policies for England and how these are expected to be applied by determining bodies. Section 15 'Conserving and enhancing the natural environment' sets out the ways in which local authorities should protect habitats and biodiversity and promote conservation, restoration and enhancement measures through the planning process. In particular, NPPF states that significant harm should preferably be avoided through using alternative sites and adequate mitigation or, as a last resort, compensated for. Paragraphs 174 - 177 of NPPF have been considered and addressed in this assessment.

6.26. The Ryedale Local Plan Strategy 2021-2027 was adopted in September 2013. Strategic priorities include Strategic Priority 14: Biodiversity. Within this policy there are eight points of delivery which include:

- Co-ordinated and targeted activity by public, private, voluntary and charitable organisations to support the implementation of the Yorkshire and Humber Biodiversity Strategy and Delivery Plan; the Ryedale Biodiversity Action Plan and the Howardian Hills Area of Outstanding Natural Beauty Management Plan;
- Providing support and advice to landowners to encourage land management practices that support the objectives, priorities and targets of these plans and strategies;
- Minimising the fragmentation of habitats and maximising opportunities for the restoration and enhancement of habitats and improving connectivity between habitats through the management of development and by working in partnership with landowners and land managers;
- Maintaining, creating and improving ecological networks and Green Infrastructure routes to assist the resilience of habitats and species in the face of climate change;
- Supporting, in principle, proposals for development that aim to conserve or enhance biodiversity and geodiversity through the prevention of loss of habitat or species and the incorporation of beneficial biodiversity features;
- Requiring a net gain in biodiversity to be provided as part of new development schemes;
- Resisting development proposals that would result in significant loss or harm to biodiversity in Ryedale;
- Encouraging the use of native and locally characteristic species in landscaping schemes.

6.27. The Site falls within an area identified for Green Infrastructure within the In Draft Malton and Norton Neighborhood Plan 2020-2027 (dated February 2021). The Plan includes the requirement to 'protect and improve the local environment and particularly the ecological quality of the river corridor' and improve green infrastructure i.e. green

corridors providing connectivity for both wildlife and people. The Policy complements SP14 and SP15 of the Ryedale Local Plan Strategy (2021-2027).

Key Guidance

6.28. The following key guidance notes have been considered in the context of the assessment of the Proposed Development:

- 'Birds of Conservation Concern 5' (Stanbury *et al.* 2021)⁴; identifies those species which are particular conservation priorities at a national level.
- The UK Biodiversity Action Plan (UK BAP, 2012) includes a list of broad targets for the Government and its nature conservation agencies, in partnership with others, to conserve, and where practicable, to enhance wild species and wildlife habitats. UK BAP was succeeded by the 'UK Post-2010 Biodiversity Framework'; however the UK BAP listed priority species and habitats remain relevant as they were enshrined in appendices to the NERC Act. At a local level, the East Yorkshire Local Biodiversity Action Plan (LBAP) sets-out similar priorities at a county level, although is now largely superseded.
- BS 42020:2013 Biodiversity – Code of Practice for Planning and Development provides guidance on how to produce clear and concise ecological information and provides a framework to demonstrate how biodiversity has been managed. The assessment was written with clear understanding of the requirements of BS42020.

Methodology

Ecological Impact Assessment

6.29. The ecological impact assessment methodology is set out in **Appendix 6.1** and has been undertaken with reference to applicable wildlife and countryside legislation, national and local planning policy and CIEEM guidance (2018). The assessment

⁴ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114: 723-747

methodology also reflects the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) and focuses on those activities that could potentially generate significant effects on ecological features.

Approach to Mitigation

- 6.30. The Proposed Development has sought to minimise adverse ecological effects by following the 'mitigation hierarchy' as referred to in the revised NPPF 2021 (paragraph 175) and EIA Regulations 2017 (paragraph 18 (3)(c)), and includes measures envisaged to avoid, prevent, reduce and if possible, offset any identified significant adverse effects and, where appropriate, any proposed monitoring. Avoidance and mitigation measures have been achieved through careful planning and design and adoption of good construction and operation principles as described in the relevant Chapters in the ES. It is envisaged that this would be secured by a Construction Environmental Management Plan (CEMP) through appropriate planning conditions.

Assessment of Cumulative Effects

- 6.31. Potentially significant cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location.
- 6.32. The assessment of cumulative ecological effects follows a similar methodology to that described in Appendix 6.1. The degree of effect is determined by combining an evaluation of the sensitivity or value of the ecological feature and the magnitude of change or impact. The resulting effect is described and considers changes potentially arising from multiple developments, or the combined effects of different impacts occurring concurrently.
- 6.33. The assessment encompasses the effects of the proposal in-combination with relevant:
- existing developments, either built or under construction;
 - approved developments, awaiting implementation; and
 - proposals awaiting determination within the planning process with design information in the public domain.

- 6.34. No other projects have been identified within 5km of the Proposed Development; therefore cumulative and in-combination effects are not considered further within this assessment.

Ecological Baseline

- 6.35. Baseline information from desk study and habitat and species surveys is provided in Appendix 6.2 and summarised below.

Desk Study

- 6.36. A desk study was undertaken to identify any known existing features or species of ecological importance within a defined radius of the Site. This identified statutory designated sites for nature conservation through interrogation of the JNCC⁵ and Multi Agency Geographic Information for the Countryside (MAGIC)⁶ websites. A 5km Site boundary search radius was adopted for all statutory designated sites and extended to 10km for statutory designated sites of international significance with mobile qualifying interest species. The MAGIC website also includes details of granted EPS licence applications within 2km.
- 6.37. Biological records data on non-statutory designated sites and records of protected and notable species within 2km were obtained from the North and East Yorkshire Ecological Data Centre (NEYEDC).
- 6.38. Reference was also made to Ordnance Survey maps of the wider area and online aerial images (www.google.co.uk/maps) in order to determine any features of nature conservation interest in the wider area.

Habitat and Species Surveys

- 6.39. Detailed knowledge of habitats and the likely presence of protected or notable species has been derived from field surveys.

⁵ <https://jncc.gov.uk/our-work/uk-protected-areas/>

⁶ <https://magic.defra.gov.uk/>

6.40. Habitat and species surveys were undertaken between 2020 and 2021 as summarised in Table 6.2 and described more fully in Appendix 6.2.

6.41. All surveys were completed by suitably qualified and experienced ecologists.

Survey	Date
Extended habitat survey including Preliminary (bat) Roost Assessment (PRA)	17 th – 19 th August 2020
Great crested newt presence / likely absence (eDNA) survey	21 st May 2021
Breeding bird survey	May and June 2021

Table 6.2: Summary of habitat and species surveys undertaken to inform the assessment

Limitations and Assumptions

6.42. This Chapter makes an assessment of whether or not the identified potential effects are likely to be significant in relation to the criteria set out in the EIA Regulations 2017 and the Proposed Development description provided in Chapter 3.

6.43. A habitat baseline was prepared based on desk study data and an extended habitat survey. This type of survey does not constitute a detailed botanical survey or faunal species list or provide a full protected species survey but, enables competent ecologists to ascertain an understanding of the ecology of the site in order to:

- Broadly identify the nature conservation value of a site and assess the significance of any potential impacts on habitat/species recorded; and/or,
- Confirm the need and extent of any additional specific ecological surveys that are required to identify the true nature conservation value of a site (if any).

6.44. The habitat survey was undertaken in August 2020 and within the optimal period for botanical surveys (approximately April to September); therefore no significant constraints were identified to survey.

6.45. Due to access constraints to third party land, Ponds P6 and P7 could not be included within the Environmental DNA (eDNA) presence/absence survey for GCN (further detail provided in Appendix 6.2). A total of four ponds were included within the eDNA survey and presence of GCN was confirmed, therefore no limitations were identified in establishing the potential presence or likely absence of GCN.

6.46. No significant assumptions have been made, nor have limitations been encountered that represent a constraint to the objectives or robustness of the assessment.

Baseline Conditions

6.47. Information gathered from desk study and baseline habitat and species surveys undertaken between 2020 and 2021, described in Appendix 6.2, provide an ecological baseline to inform the assessment process. Key baseline information is summarised below.

Site Description and Context

6.48. The Site extends to 52.86ha, as shown on Figure 6.3. The Site is set in a wider landscape of level to gently undulating, agricultural land, mainly arable and interspersed with occasional small blocks of woodland. The built up area of Malton and Old Malton is present to the south, across the A64, and beyond the northern boundaries of the Site, the land slopes gently down to the River Rye.

6.49. The habitat over most of the Site consists of arable fields. Field boundaries comprise hedgerows in the main, predominantly species poor, many with mature trees. The Site is drained by a network of agricultural ditches.

Designated Sites for Nature Conservation

Statutory Designated Sites

6.50. This section should be read with reference to Figure 6.1

6.51. Table 6.3 provides a summary of statutory designated sites for nature conservation located within 5km of the Proposed Development, extended to 10km for sites with mobile qualifying interests. The distances are specified from the Site boundary to the designation boundary at its nearest point.

Site Name	Distance and Direction from Site	Description
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River Derwent SAC	0.6km south	Qualifying Features: Sea lamprey <i>Petromyzon marinus</i> River lamprey <i>Lampetra fluviatilis</i> Bullhead <i>Cottus gobio</i> Otter <i>Lutra lutra</i>
River Derwent	0.6km south	Qualifying features include an 'exceptionally rich assemblage of invertebrates: Mayfly <i>Baetis buceratus</i> Mayfly <i>Heptagenia fusogrisea</i> Mayfly <i>Brachycerus harisella</i> Stonefly <i>Taeniopteryx nebulosa</i> . Additionally, eleven species of dragonfly have been recorded including the banded demoiselle <i>Agrion splendens</i>
The Ings, Amotherby SSSI	2.5km west	Extensive meadow-fen area which is botanically species-rich.

Table 6.3: Statutory designated sites for nature conservation (Special Area for Conservation (SAC); Site of Special Scientific Interest (SSSI)).

Non-Statutory Designated Sites

- 6.52. This section should be read with reference to Figure 6.2.
- 6.53. Five non-statutory designated sites for nature conservation were identified. No citations were provided for any site. The nearest site is Malton Bypass Cuttings c.520m west of the Proposed Development. Full details are presented in Appendix 6.2.

Habitats

- 6.54. A review of MAGIC website identified deciduous woodland, coastal floodplain grazing marsh and good quality semi-improved grassland, classified as Habitat of Principal Importance under Section 41 of the NERC Act (2006) (a 'Priority Habitat') within 1km of the Site.

Habitat Baseline

- 6.55. Full habitat descriptions are provided in Appendix 6.2 and presented on Figure 6.3.

- 6.56. In summary, the habitats within the Site predominantly consists of arable farmland; supporting cereal (wheat and barley) crop. Field boundaries consist of species-poor hedgerows and a semi-improved neutral grassland strip which runs through the center of the Site.
- 6.57. Two ponds were located within the Site and a further four were located within 250m.
- 6.58. No notable arable plant species were found within the Site and no arable field margins of interest were present.
- 6.59. The Site is drained by a network of ditches, all with steep earth sides, some densely vegetated, others well mown or very shaded with sparse vegetation. These were almost entirely dry at the time of survey.
- 6.60. Two mature stand-alone trees were located within the Site and mature broadleaved woodland borders the Site to the north east and the south. A number of hedgerows contain mature trees.
- 6.61. No invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded within the Site during the extended habitat survey. No records of invasive species were returned from the desk study data search on or within 2km of the Site.

Protected and Notable Species

Bats

- 6.62. Single records of common pipistrelle *Pipistrellus pipistrellus* and brown long-eared *Plecotus auritus* bats were returned from NEYEDC within 2km of the Site, records related to the town of Malton.
- 6.63. The habitats within the Site, particularly the linear features of hedgerows, trees and adjacent woodland may offer low-moderate opportunities for foraging and commuting

bats. The arable fields, within which the majority of the proposed Development would be located, offers less favourable foraging and commuting opportunities and is unsuitable for roosting. A stand-alone tree within the Site was identified to offer moderate bat roosting potential. Surrounding farming properties (Windmill Farm and Eden Farm), although not directly assessed due to third party access restrictions, are likely to offer moderate opportunities for roosting bats.

Birds

- 6.64. The data search requested from NEYEDC returned seven swift *Apus apus* records, which are all located within the town of Malton, immediately south of the Site.
- 6.65. The habitats within the Site could potentially support ground nesting species when agricultural management/cropping conditions permit; including skylark *Alauda arvensis*.
- 6.66. The field boundary habitats provide foraging opportunities for barn owl *Tyto alba* and suitable habitats for farmland bird species such as yellowhammer *Emberiza citrinella*.
- 6.67. The wider area offers a diverse range of nesting and foraging opportunities, including grassland, woodland, hedgerows and scrub likely to be of value to local bird populations.
- 6.68. Breeding bird surveys undertaken in May and June 2021 recorded an assemblage of birds typical of arable farmland habitats. These included one species listed under Schedule 1 of the WCA, six species under S41, six UKBAP species and eight BoCC red listed species.
- 6.69. Up to 12 pairs of skylark were recorded, six of which located within the Site. Lapwing *Vanellus vanellus*, another ground nesting species was recorded displaying breeding behaviour during the second survey visit (one pair) but was not present during the final visit. The cropping regime implemented within the Site is not optimal for successful lapwing breeding and the Site is unlikely to support the species.

- 6.70. The results show that the Site supports a breeding bird assemblage typical of a farmland site. The number of skylark is considered notable in a local context. The Site does not support notable numbers of other ground nesting bird species.

Badger

- 6.71. One badger record was returned by NEYEDC, c. 550m south of the Site. The Site supports suitable habitats for foraging and sett building however no activity or setts were identified during survey.

Otter and Water Vole

- 6.72. A single record of otter was returned from NEYEDC 0.8km northeast of the Site on the River Rye. No records of water vole *Arvicola amphibius* were returned.
- 6.73. The network of ditches throughout the Site may potentially support water vole as they provide connectivity to the wider landscape along the River Rye corridor; however, all ditches were dry at the time of survey visits (in 2020 and 2021) which reduces the likelihood for water vole presence.
- 6.74. No suitable habitats for otter are present within the Site, and as for water vole, the ditch network provides very limited opportunities other than for dispersal.

Amphibians and Reptiles

- 6.75. A single adder *Viperus berus* record was received from NEYEDC 1km south of the Site within the center of a residential housing estate on a B road in Old Malton in 2017. This record is not in habitat suitable for adder and is therefore treated with caution.
- 6.76. Two ponds are located within the Site and eDNA surveys undertaken in May 2021 returned negative results, indicating that GCN were likely absent at the time of survey. A further two ponds were surveyed within 250m of the Site, one of which was confirmed positive for GCN eDNA. The pond with confirmed presence is located c.100m from the eastern Site boundary within a residential garden.

- 6.77. The dominant terrestrial habitat of arable farmland has limited suitability for amphibians, however the network of ditches and hedges does provide potentially suitable habitat, along with a degree of connectivity. Woodlands on or adjacent to the Site and small areas of species rich grassland also provide habitat with some suitability.
- 6.78. Although the arable crops provide negligible value for reptiles, some of the field margins provide suitable opportunities for shelter and foraging (albeit limited in extent) and are potentially suitable for species such as common lizard *Zootoca vivipara* and slow worm *Anguis fragilis*.

Invertebrates

- 6.79. Twenty terrestrial invertebrate records were received from NEYEDC including 17 bee species and three wasp species. Full details are provided in Appendix 6.2. No records were located within or immediately adjacent to the Site. No records of aquatic invertebrates were received. The managed agricultural land, with limited field margins is unlikely to support a notable or especially diverse invertebrate assemblage, although a wider range of species would be expected to be present along the margins and boundary hedgerows and woodlands and waterbodies/ditches.

Other Species

- 6.80. No other species are considered pertinent to the assessment of the Proposed Development.

Future Baseline

- 6.81. In the absence of the Proposed Development, the land within the Site is considered to remain under rotational agricultural management, consisting of arable cereal or root crop. Hedgerows are likely to remain in situ and subject to regular management. No other changes in the future baseline are anticipated.
- 6.82. The Site is not subject to any other development pressures or management which would affect the habitats or species in such a way that the present baseline conditions presented here would become substantially different.

6.83. Whilst short term small-scale variability in populations and distributions may occur, and revisions to conservation statuses and designations are possible, such changes would be unlikely to alter the conclusions of the assessment. These have also been accounted for through application of a precautionary approach and appropriate mitigation.

Valuation of Ecological Features

6.84. A summary of important ecological features is provided in Table 6.4. The level of importance assigned to each species is based upon baseline survey results and professional judgement.

6.85. Only those ecological features that it was considered could experience significant effects (e.g. affecting protected or notable habitats and species or biodiversity objectives or the favourable conservation status of a species' population), and which were identified as being of sufficient importance (informed also by professional judgement) to be material to decision making, have been identified for detailed assessment.

6.86. Ecological features assigned 'Site' importance have been scoped out of detailed assessment on the basis of their absence or presence in numbers of very low importance, low levels of activity recorded during baseline surveys (Appendix 6.2) and/or they are not considered a priority for assessment in accordance with CIEEM guidance (2018), given their generally accepted low sensitivity to solar farm developments.

6.87. Table 6.4 presents the evaluation of ecological features and provides the rationale as to why individual features have been included or excluded from the detailed assessment.

Ecological Feature	Geographical Scale of Importance	Potential Effect Pathways and Rationale for Selection of Features for Detailed Assessment
River Derwent SAC	International	Due to separation distance between the Proposed Development and the River Derwent SAC, direct impacts are not considered to occur. There is potential for indirect effects

Ecological Feature	Geographical Scale of Importance	Potential Effect Pathways and Rationale for Selection of Features for Detailed Assessment
		<p>(e.g. resulting from site runoff and pollution) on habitats and qualifying interest species via site runoff and pollution. The implementation of standard pollution prevention and runoff control measures that are a standard requirement to construction works (detailed in section 6.177 and 6.178) the impacts of the Proposed Development on this site are considered to be negligible and not considered further within this assessment.</p> <p><u>Included within detailed assessment.</u></p>
River Derwent SSSI	National	<p>Due to separation distance between the Proposed Development and the River Derwent SSSI, direct impacts are not considered to occur.</p> <p>There is potential for indirect effects (e.g. resulting from site runoff and pollution) on habitats and qualifying interest species.</p> <p>The implementation of standard pollution prevention and runoff control measures that are a standard requirement to construction works (detailed in section 6.177 and 6.178) the impacts of the Proposed Development on this site are considered to be negligible and not considered further within this assessment.</p> <p><u>Included within detailed assessment.</u></p>
The Ings, Amotherby SSSI	National	<p>Due to separation distance between the Proposed Development and The Ings, Amotherby SSSI (c.2.5km) and the implementation of standard pollution prevention and runoff control measures that are a standard requirement to construction works (detailed in section 6.177 and 6.178) the impacts of the Proposed Development on this site are considered to be negligible and not considered further within this assessment.</p> <p><u>Scoped out of detailed assessment.</u></p>
Non-statutory Designated Sites	County	<p>Five locally designated sites are situated within 2km of the Site. No detailed citation information is available; however, due to the separation distances between the Proposed Development and these sites and lack of clear pathways for effects, the Proposed Development, no direct or indirect impacts are considered to occur.</p>

Ecological Feature	Geographical Scale of Importance	Potential Effect Pathways and Rationale for Selection of Features for Detailed Assessment
		<u>Scoped out of detailed assessment.</u>
General Habitats	Site (individual habitats) Local (in relation to the collective mosaic of connected habitats and the species they support)	Habitats within the Site are common and widespread locally. The Proposed Development will remove arable land and create other habitats, mainly extensive areas of grassland. Priority habitats are present on Site and locally; however, no priority habitat is lost to development and there would be no fragmentation or isolation of priority habitat. <u>Included within detailed assessment</u> due to potential effects on protected or notable species that may utilise such habitats.
Bats	Local	The Site is generally of limited interest for bat species, but provides foraging and commuting opportunities along field boundary habitats. Mature trees may also offer roosting opportunities. <u>Included within detailed assessment.</u>
Birds	Local	The Proposed Development supports a breeding bird assemblage typical of a farmland setting, including species of conservation value. Potential for destruction of nests or disturbance to breeding birds depending on the timing of works. <u>Included within detailed assessment.</u>
Water Vole	Site	Suitable habitat for water vole is very limited within the Site (predominantly dry ditches). All ditches will be avoided and protected during the construction phase and no pathway for effect is identified. <u>Considered in relation to standard/precautionary good practice mitigation measures only.</u>
Otter	Site	Suitable habitat for otter is very limited within the Site. Otter may move along the ditch network to forage as part of a wider territory. All ditches and ponds will be avoided and protected during the construction phase and no pathway for effect is identified. <u>Considered in relation to standard/precautionary good practice mitigation measures only.</u>
Badger	Site	Site offers suitable foraging and sett building habitat for badger; however no evidence was recorded within the Site or within at least 50m. <u>Considered in relation to</u>

Ecological Feature	Geographical Scale of Importance	Potential Effect Pathways and Rationale for Selection of Features for Detailed Assessment
		<u>standard/precautionary good practice mitigation measures only.</u>
Amphibians	Local/County	<p>Two ponds are located within the Site but GCN were confirmed to be absent when surveyed in May 2021.</p> <p>One pond within 250m of the Site was confirmed to support GCN from eDNA survey in 2021.</p> <p>Dominant habitats within the Site (arable farmland) are of very low suitability as amphibian terrestrial habitat; however, the field margins, hedgerows and bordering woodland provide more favourable habitat.</p> <p><u>Included within detailed assessment.</u></p>
Reptiles	Site	<p>Arable land within the Site has very limited habitat suitability for reptiles; however, the field margins, hedgerows and bordering woodland offer increased opportunities. Reptiles are considered Site importance only.</p> <p><u>Considered in relation to standard/precautionary good practice mitigation measures only.</u></p>
Invertebrates	Site National (in relation to aquatic invertebrate assemblage of the River Derwent SSSI only)	<p>No records of protected or notable invertebrates were identified through desk study; however, hedgerows and arable field margins, although limited in extent provide some opportunities for invertebrates. The majority of the species are likely to common and widespread.</p> <p>Terrestrial invertebrates - <u>Considered in relation to standard/precautionary good practice mitigation measures only.</u></p> <p>Aquatic invertebrates are a qualifying interest feature of the River Derwent SSSI located nearby.</p> <p>Aquatic invertebrates - <u>Included within detailed assessment in relation to the River Derwent SSSI. Scoped in</u></p>
Other Species	Site	Records of brown hare and western European hedgehog were returned and are likely to be present within the arable habitats on Site.

Ecological Feature	Geographical Scale of Importance	Potential Effect Pathways and Rationale for Selection of Features for Detailed Assessment
		<p>These species are unlikely to be dependent on the Site at a population level.</p> <p><u>Considered in relation to standard/precautionary good practice mitigation measures only.</u></p>
Invasive Non-native species	Site	<p>No invasive species were recorded within the Site during survey or returned from desk study.</p> <p><u>Considered in relation to standard/precautionary good practice mitigation measures only.</u></p>

Table 6.4: Valuation of Ecological Features.

Identification and Assessment of Potential Effects

- 6.88. Potential effects on ecological features (those scoped in to the assessment as detailed in Table 6.4) have been considered. Effects are initially assessed in the absence of mitigation, with an assessment of residual effects presented thereafter. The assessment is based upon the Proposed Development as described in Chapter 3 and Site Design Plan and the Landscape Mitigation Strategy (LVA Figure 5).
- 6.89. The Proposed Development has been assessed for an operational life of 40 years.

Construction

- 6.90. Potential construction phase ecological effects associated with the Proposed Development are considered to relate to:
- Direct land take (habitat loss) to accommodate the Proposed Development;
 - Temporary disturbance and land take for construction for laydown areas and compounds;
 - Disturbance to, fragmentation or severance of connecting habitat or potential commuting routes within, and adjacent to, the Site; and,
 - Disturbance and pollution (indirect effects such as noise, vibration, dust and pollution from surface water runoff) resulting from site clearance and construction, plant and vehicle movements and site workers' activities.

- 6.91. Construction activity, including the use of plant and vehicles has the potential to generate dust and polluted runoff, which may impact upon off-Site terrestrial vegetation, or aquatic habitats and fauna if allowed to enter watercourses. With the exception of vehicle movements, there are no processes during construction that have emissions to air. However, during the excavation works, there is potential for dust to be generated (at a Site level) due to small scale excavation and storage of soils, laying of gravel tracks and the temporary construction compound and movement of vehicles. The products being delivered to Site are inert and do not produce dust. The degree of earthworks required to construct the solar panel support stands and ancillary features is relatively small requiring limited trenching and excavation, undertaken in phases across the Site and which does not require extensive soil stripping. Instead, panel supports are pile driven into the ground. As a result, the requirement for earthworks and associated potential for runoff or dust generation is likely to be limited in scale, duration and extent.
- 6.92. Mitigation measures have been incorporated into the Proposed Development to reduce environmental effects and ensure legislative compliance during the construction and decommissioning phases for protected and notable species.
- 6.93. Standard good practice construction methods will form an embedded part of the works and will include good practice construction measures, pollution prevention controls and monitoring to be implemented during construction in line with current industry and mandatory statutory guidance.
- 6.94. Potential effects are considered in relation to the River Derwent SAC/SSSI (and associated qualifying interest species including mobile species such as otter), habitats, birds, bats and GCN.

Designated Sites for Nature Conservation (River Derwent SAC and SSSI)

- 6.95. The River Derwent SAC is located 0.6km south of the Proposed Development and is designated for its populations of sea lamprey, river lamprey, bullhead and otter.

- 6.96. The only identified potential pathway for significant effects on the River Derwent SAC is indirectly through changes in hydrology and as a result of runoff, erosion and sedimentation, along with pollution which may result in the event of contamination spillage. To prevent any potential additional run-off, Section 6.169 outline controls to avoid or reduce Site runoff during construction
- 6.97. The Site is located within the Rye catchment⁷ and is drained by numerous ditches which drain into the River Rye and eventually into the River Derwent, therefore there is potential that any Site-related runoff could drain into the River Derwent SAC and result in potentially likely significant effects on the River Derwent SAC.
- 6.98. No new crossings or other works are required to any ditches within the Site and a buffer of 5m has been maintained from the bank of each ditch in the layout.
- 6.99. Construction will involve limited earthworks and does not require the extensive use of chemicals or materials that pose a notable pollution risk. The main potential pathway for effects is the increased soil sedimentation / runoff associated with clearance of the land prior to construction, which will be undertaken in phases and will be indiscernible from standard agricultural practice currently employed onsite.
- 6.100. The effects of dust generated during construction are generally considered to be restricted to areas very close to construction works and discernable dust effects fall away very rapidly with distance. Given the distance of the SAC/SSSI from the Site and the localised nature of any dust generation, no airborne effects on the designated features are considered likely.
- 6.101. Embedded mitigation measures, which are described in more detail in Section 6.169 outline controls to avoid or reduce Site runoff during construction and operation and prevent sediments entering ditches. Measures are adopted which are a standard requirement of any development and are sufficient to preclude indirect effects on the River Derwent SAC/SSSI. Given the stand-off buffers that will be maintained from all

⁷ <https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3387>

ditches, implementation of embedded controls during construction and network of intervening watercourses before any runoff reaches the River Derwent, no discernable sedimentation or pollution effects are considered to occur.

- 6.102. Potential sedimentation / runoff would likely result in indiscernible effects on mobile qualifying interest species of the River Derwent SAC (otter / invertebrates) and water quality within the SAC in recognition of the adopted embedded mitigation, distance between the Site and the SAC/SSSI and dilution along the watercourse network.
- 6.103. In the absence of mitigation measures (beyond those which are embedded) and with the avoidance of works to the on-Site ditch network, construction effects are considered to be **temporary** and **negligible magnitude** on a receptor of International/national importance, of **negligible adverse**, which is **not significant** in the context of the EIA Regulations.
- 6.104. In the long term, the operation of the Proposed Development would likely result in reduced runoff and sedimentation overall, resulting in positive effects compared to the agricultural baseline, an identified key contribution to the unfavourable condition of the SAC⁸.

Information to Inform a Habitats Regulations Assessment in relation to the River Derwent SAC is provided in Technical Appendix 6.3.

Habitats

- 6.105. Construction of solar installations requires very low levels of direct land take (typically less than 5% footprint on the ground). The BRE guidance states that, "as panels are raised above the ground on posts, over 95% of a site used for solar installation development is still accessible for plant growth and complementary agricultural activities, such as conservation grazing".

⁸ https://www.therrc.co.uk/DesignatedRivers/Yorks_Derwent_factsheet_3.pdf

- 6.106. The solar panel array layout has been designed to avoid impacts to hedgerows, trees, ditches and waterbodies, safeguarding these and adjacent off-Site habitats with suitable buffers and standard pollution prevention and runoff control measures during construction. There will be no loss of any priority habitats. A semi-improved neutral grassland strip on a disused track will be protected and maintained during the construction phase.
- 6.107. The majority of these features will be retained and protected, with all retained trees within the vicinity of construction areas protected during works, following British Standards BS5837:2012 Trees in relation to design, demolition and construction. This would be secured through the Construction Environmental Management Plan (CEMP).
- 6.108. The development footprint is contained within arable farmland of low ecological value, and which is widespread and commonly occurring in the locality of the Site. This arable land is subject to varying degrees of disturbance due to agricultural management.
- 6.109. The retention and protection of the boundary features will maintain habitat connectivity within the Site and with the wider landscape. There will be no severance or fragmentation of habitat as a result.
- 6.110. Construction-related disturbance will be temporary and short term in nature lasting approximately five months.
- 6.111. The ecological effects from the construction phase are therefore restricted to the direct disturbance and loss of open farmland (arable), to be replaced by grassland vegetation under and around the panels which will be maintained for the duration of the operation of the Proposed Development. The effect on arable land take is assessed as **negligible** and **not significant**.
- 6.112. Standard construction phase pollution and runoff management in line with current good practice will be sufficient to avoid the potential for indirect effects on off-Site habitats. These are considered to be of **negligible** magnitude on features of importance at the

Local scale and therefore to be **negligible adverse and not significant** in the context of the EIA Regulations.

Protected and Notable Species

Birds

- 6.113. The Site provides suitable breeding and foraging habitat for a typical farmland bird assemblage. Potential effects on birds during construction relate to the loss of breeding or foraging habitat, directly within the Proposed Development footprint, or indirectly within adjacent areas through disturbance or displacement if undertaken within the bird breeding season.
- 6.114. Hedgerows and trees located along field boundaries (which will be largely retained and protected as part of the Proposed Development) will typically support a range of typical farmland nesting bird species; these habitats will likely be subject to some level of localised indirect disturbance or displacement for a temporary period during the construction (should this occur during the breeding season).
- 6.115. Ground nesting species (including skylark) would be displaced due to construction if this takes place during the breeding season. Areas of suitable foraging and nesting habitat will however remain available both in the wider area and on-unworked parts of the Site. The species and numbers of birds potentially affected is related to the agricultural management regime at the time construction commences. Overall patterns of ground nesting activity, including breeding bird success (nesting and raising young) is highly dependent on the agricultural land management regime in place over a number of years. It has been noted in literature⁹ that ground nesting and other species may nest between rows of panels; hence any displacement during construction is not likely to be permanent.
- 6.116. The reversion of arable land into extensive meadow grassland on completion of construction works will increase the value of the Site for most bird species, providing

⁹ https://www.rspb.org.uk/Images/Solar_power_briefing_tcm9-273329.pdf

strengthened habitat connectivity; as such any habitat losses or disturbance during construction would be considered **short-term and reversible**.

- 6.117. The addition of an undeveloped field dedicated to the provision of species-rich meadow grassland will also provide available ground nesting habitats for species such as skylark.
- 6.118. The potential for disturbance to skylark, has been identified as a specific impact which, depending on the period of construction, may result in significant effects at a Local scale. On a precautionary basis, potential effects on either individuals or local populations of skylark are therefore assessed as being of minor magnitude (breeding season only), temporary and not significant on this receptor of Local importance, in the absence of mitigation. Effects would **be negligible and not significant** if undertaken outside the breeding season.
- 6.119. In relation to other species (the general bird population), temporary disturbance, habitat loss and displacement impacts on small numbers of birds during construction are considered to be temporary and low magnitude (breeding season only), on receptors of Site or Local value, are considered to be **minor adverse** in the context of this rural agricultural landscape, temporary (during the construction phase only) and **not significant**.
- 6.120. Mitigation measures are proposed to ensure legal compliance and prevent the risk of accidental destruction of nests if works are undertaken during the breeding season and to reduce the overall potential disturbance effects on farmland birds.

Bats

- 6.121. Construction-related effects on bats are likely to involve the loss of a small extent of low value foraging habitat (arable farmland).
- 6.122. All features of moderate or high interest for bats (hedgerows, woodland edge, mature trees, ponds, strips of semi-improved grassland) will be retained and protected from construction activities.

- 6.123. New hedgerow planting and grassland creation proposed within Appendix 6.5 will provide additional bat foraging/commuting opportunities than above baseline habitats, once established.
- 6.124. Overall, effects on bats from construction are considered of **low magnitude** and temporary on a feature of importance at the **Local** scale and therefore **not significant**.

Great Crested Newt (GCN)

- 6.125. It is acknowledged that most adult GCN likely stay within around 250m of breeding ponds (English Nature, 2001; Langton et al., 2001¹⁰). GCN were confirmed present in a pond within 250m of the Site, however, GCN were not recorded present in the two on-Site ponds during baseline surveys in 2021 (as detailed in Appendix 6.2). This species is therefore not considered to be currently using the on-Site waterbodies for breeding, but may be present within suitable terrestrial habitats including nearby woodland, along hedgerow bases and in grassland and field margins. GCN are less likely to be present within the arable land, which is generally considered to be of low suitability for amphibians.
- 6.126. All on Site ponds will be retained and protected by a 50m buffer through layout design. The pond with confirmed GCN presence outside the Site is located >100m from any construction works. Waterbodies will be protected during construction with standard good practice pollution prevention measures in place.
- 6.127. Construction phase effects, in the absence of suitable mitigation measures, may occur as a result of inadvertent killing or injury to individual GCN if present in terrestrial habitat within the working zones (arable land). The construction works will be temporary and time-limited over a period of five months with foraging, refuge and dispersal opportunities across the Site enhanced thereafter (see Section 6.183 Mitigation). This would result in a **minor adverse** effect on individual GCN in the absence of mitigation.

¹⁰ Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001). *Great Crested Newt Conservation Handbook*. Froglife, Halesworth https://www.froglife.org/wp-content/uploads/2013/06/GREAT_CRESTED_NEWT-Conservation-Handbook_compressed.pdf

- 6.128. Higher value habitat (field boundaries and hedgerows) will be retained and protected with buffer zones throughout the construction phase, maintaining foraging, refuge and connectivity around the Site during this period.
- 6.129. The risk of direct impacts on individual animals or indirectly through habitat loss or disturbance affecting individuals, or the local population through displacement or loss of habitat for foraging or shelter, is considered to be limited. No long term habitat severance or fragmentation effects will occur during the (temporary) construction phase that could adversely affect the favourable conservation status of local GCN populations.
- 6.130. Although extensive in area, habitat loss or disturbance during the construction phase affecting individual animals could result in **minor adverse** effects in the absence of mitigation.
- 6.131. Potential impacts on the favourable conservation status of the local GCN population is considered to result in temporary, **short term, reversible and negligible** adverse effects on foraging and dispersal opportunities, which is not significant in the context of the EIA Regulations.

Operation

- 6.132. Operational effects are those occurring following the construction of the Proposed Development. Some effects may reduce with time and habituation, or remain for the lifetime of the development. Solar installations operate with little intervention or disturbance required, limited to occasional maintenance visits.
- 6.133. There are no significant additional operational effects relating to land take, habitat loss, or disturbance other than those already addressed under Construction. Some ground disturbance affecting the grassland areas may result from periodic repairs or maintenance such as retrenching of underground cables or restringing of arrays, however these will be temporary in nature and will include reinstating soils and re-seeding with a suitable species diverse grass and wildflower mix in accordance with the BMP (Appendix 6.5).

- 6.134. Such short-term and reversible disturbance is assessed to be **low magnitude** and **not significant**.
- 6.135. The provision of grassland creation and hedgerow planting as detailed within Appendix 6.4 and 6.5 will provide a substantial biodiversity gain once established, leading to a **major positive** effect overall which is **significant**.
- 6.136. Potential effects are considered for statutory designated sites, habitats and protected and notable species.

Designated Sites for Nature Conservation (River Derwent SAC and SSSI)

- 6.137. The River Derwent SSSI is located 0.6km south of the Proposed Development. The operational solar farm will not generate runoff or other emissions and has negligible potential to have any discernable effects on water quality of the river. Similarly there will be no effects on fish or aquatic macrophytes associated with the SSSI or SAC. Otters may travel along the local watercourse and ditch networks as part of a wider territory. There will be no change to habitat connectivity or foraging opportunities for otters as a result of the operation phase, with the ditch network and ponds retained, and access to land within the Site maintained via gaps or mammal gates positioned along the perimeter fence.
- 6.138. The SSSI is notified for supporting a rich invertebrate assemblage typical of slow-flowing rivers, including three species of mayfly, one species of stone fly and 11 species of dragonfly. There is limited evidence regarding the potential adverse effects of operational solar farms on aquatic invertebrate populations. The RSPB produced a Policy Briefing in 2014¹¹ which noted the potential adverse effects identified by Horvath et al (2010)¹² and Taylor et al (2019)¹³ have published a literature review on the subject.

¹¹ RSPB (2014) Solar Energy: Policy Briefing.

¹² Horvath, G. et al (2010) Reducing the maladaptive attractiveness of solar panels to polarotactic insects. Conservation Biology.

¹³ Taylor *et al* (2019) Potential ecological impacts of ground-mounted photovoltaic solar panels.

- 6.139. Research identified that there is potential for aquatic invertebrates (once emerged and flying) such as mayflies, stoneflies and dragonflies to be attracted to solar PV arrays as they use polarized light to guide them to suitable egg laying habitats (water bodies). This could subsequently result in reduced reproductive success of populations.
- 6.140. Research by Horvath et al (2010) indicated that consideration should be given to the appropriate siting of solar farms where important populations of aquatic invertebrates are present locally, although it is recognised that the addition of non-polarized white gridding eliminates attraction (Horváth et al., 2010) and anti-reflective coatings reduce the ability of panels to polarize light (Száz et al., 2016¹⁴)
- 6.141. The potential attraction of invertebrates to other anthropogenic features which reflect polarized light such as asphalt roads, cars and glass buildings is also considered to occur and could affect important invertebrate populations (Taylor et al (2019)).
- 6.142. Solar panels included within the design of the Proposed Development include anti-reflective coating to increase efficiency which will also reduce their reflectivity of polarized light to substantially below that of water, although this effect is less marked at higher angle of incidence.
- 6.143. The use of anti-reflective coatings on the panels means the risk to local populations is considered small in the context of the scale of the Proposed Development and presence of other more polarizing light sources between the Site and the River Derwent SAC (e.g. buildings within the town of Old Malton, network of roads and parked cars within and surrounding the village), relative location of waterbodies and mitigated by the proposed management of terrestrial habitat on Site to increase the habitat suitability for amphibians.

¹⁴ Száz, D., Mihályi, D., Farkas, A., Egri, Á., Barta, A., Kriska, G., ... Horváth, G. (2016). Polarized light pollution of matte solar panels: Anti-reflective photovoltaics reduce polarized light pollution but benefit only some aquatic insects. *Journal of Insect Conservation*, 20, 663–675.

- 6.144. Furthermore, the Site will not be lit at night and therefore will not attract nocturnal aquatic invertebrates that are attracted to artificial polarized light sources and no polarized light pollution will occur.
- 6.145. Overall, potential operational effects on the River Derwent SSSI are considered to be no more than **low magnitude** on a receptor of national value, resulting in a maximum of **minor adverse** effect which is **not significant** in the context of the EIA Regulations.

Habitats

- 6.146. There will be no operational effects on habitats over and above those described in the Construction effects section above.
- 6.147. Habitats within the Site will be enhanced in accordance with the methods detailed within the BMP and Landscape Plan. Overall the proposals will enhance habitat diversity and value to a range of species including invertebrates, birds, amphibians and small mammals.

Protected and Notable Species

Birds

- 6.148. Once constructed, the Proposed Development will generate negligible noise or disruption, and the Site is likely to experience fewer disturbances than under current normal farming practices. Periodic cleaning and maintenance of PV modules will take place outside of the nesting bird season (generally March-August inclusive) where practicable and involves minimal levels of disturbance. The ecological impacts of periodic PV cleaning and maintenance is assessed to be **negligible** and **not significant** in the context of the EIA Regulations.
- 6.149. There would be no additional habitat loss (and hence loss of potential breeding areas) over and above that assessed under Construction Effects. In recognition of the landscape proposals included in the design of the Proposed Development, and with appropriate management as described in the BMP, the additional planting is likely to contribute to a minor positive effect on farmland birds that use hedgerows and field

margin habitats. Long term provision of habitat favourable to a range of bird species (extensive grassland creation and new hedgerow planting) is positive to local bird populations, including birds using the Site for breeding and birds from neighbouring land taking advantage of enhanced foraging opportunities (Montag et al, 2016), which is **minor positive** but **not significant** in terms of the assessment criteria

- 6.150. The open nature of the arable fields will be altered by the installation and operation of the solar panels, which could potentially deter some ground nesting birds. However, many ground nesting species, including skylark, fail to successfully raise young on arable land due to the cropping regime. In contrast, undisturbed grassland, managed appropriately to favour birds and other wildlife, is likely to provide suitable habitat over the lifetime of the solar farm. Similarly, the network of existing and new planted hedgerows around the Site and woodland and trees, will also provide suitable foraging and breeding opportunities for arboreal nesting bird species.
- 6.151. Skylark have been observed nesting within undeveloped areas of solar farms and will utilize habitats within the solar farm, within their territorial boundaries (Montag et al, 2016). Providing an important and more productive resource for declining species such as skylark, which is of particular importance when their breeding success is so closely linked to agricultural regimes.
- 6.152. More recent studies conducted by the RSPB and outlined in their conservation blog¹⁵ further support high bird usage of solar farms by farmland bird species, including skylark. In addition, the West Oxfordshire Farmland Birds Project¹⁶ recorded corn bunting *Emberiza calandra* feeding and nesting within an operational solar farm in 2020, further illustrating that a range of species can and do utilise grassland on solar sites.
- 6.153. RSPB guidance¹⁷ recommends areas of at least 16m² as suitable for skylark nesting, if positioned away from hedges and woodland in relatively open grassland, and it is noted that the proposed layout of the Site provides a moderate sized area of undeveloped

¹⁵ <https://community.rspb.org.uk/ourwork/b/biodiversity/posts/bird-use-on-solar-farms-final-results>

¹⁶ <https://twitter.com/woxfarmbirds/status/1277632799017664519?s=12>

¹⁷ <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/skylark/>

open space in the south east and suitable conditions for nesting birds, including skylarks. This land will be protected for the operational life of the Proposed Development and therefore provide a consistent area of nesting habitat, unlike the current agricultural cropping regime which would not consistently provide suitable habitats annually.

- 6.154. As a result, the Proposed Development is considered likely to have a **minor adverse** impact on ground nesting birds at the Site level through displacement; however overall, a **neutral / minor positive** effect on local populations, in particular skylark, which is **not significant**.

Bats

- 6.155. There would be no additional habitat loss over and above that assessed under Construction Effects. There will be no habitat fragmentation and no permanent lighting of the facility will be required.
- 6.156. Natural England Guidance TIN101 states that there is some evidence from a laboratory-based study that bats may occasionally collide with solar panels; however, there is no evidence to date substantiating any associated collision risk¹⁸. The panels to be used for the Proposed Development will have a matt metal frame which breaks up the surface visual effect and it is considered that there is **negligible** potential for effects on local bat populations. Habitat enhancements proposed as part of the design include new native species hedgerow planting which along with extensive grassland creation, will enhance foraging opportunities and strengthen habitat links for commuting, which is positive but not significant in terms of the assessment criteria.
- 6.157. Overall, operational effects of the Proposed Development on bats are assessed to be **minor positive** effect which is positive but **not significant** in terms of the assessment criteria.

¹⁸ Harrison, C., Lloyd, H. & Field, C. (2016). *Evidence review of the impact of solar farms on birds, bats and general ecology*. Manchester Metropolitan University

Great Crested Newts

- 6.158. During the operational phase there would be no additional habitat loss over and above that assessed and discussed under Construction.
- 6.159. There will also be no habitat loss or disturbance affecting on neighbouring habitats and any populations of amphibians they may support. There will be no operational effects on off-site ponds in the wider area.
- 6.160. New grassland, hedgerow, tree planting, log piles and hibernacula created in line with the BMP will provide enhanced habitats which will be suitable for GCN providing areas suitable for breeding, foraging, overwintering and dispersal.
- 6.161. As a result, operational effects of the Proposed Development on all other protected and notable species once new planting and habitat creation has established are assessed to result in a **minor positive effect** which is **Positive but not significant** in terms of the assessment criteria.

Decommissioning

- 6.162. Site baseline conditions are likely to change significantly over the likely 40 years of operation, and prediction of these conditions at this point is considered unreliable in terms of predicting likely future decommissioning effects on biodiversity. However, potential impacts from decommissioning are considered to be similar to those already described in relation to the construction phase, namely direct and indirect disturbance, temporary/permanent habitat loss and vegetation removal. Updated ecological surveys will therefore be necessary prior to decommissioning in order to record the presence of protected and notable species and habitats and identify potential effects and any necessary protection and mitigation measures in order to comply with planning policy and wildlife legislation applicable at the time.

Mitigation Measures

Mitigation by Design

- 6.163. The project design, as set out in Chapter 3 includes a range of inherent elements which avoid or reduce the potential for adverse ecological impacts. The potential for adverse effects during the construction phase will also be controlled through standard good construction and environmental working practices as outlined the relevant topic chapters and summarised in Chapter 3.
- 6.164. Biodiversity protection measures have been included through consideration at the Proposed Development design phase, as detailed in the BMP presented in Appendix 6.5. In summary these comprise:
- Avoiding higher value habitats and retention of such habitats where they occur, such as woodland, hedgerows, ponds and trees;
 - Retaining and protecting on-site ponds to maintain aquatic habitat for amphibians, specifically great crested newts;
 - Maintaining suitable exclusion buffers around streams/ditches, woodland, hedgerows, trees and ponds – all habitats likely to be most valuable to protected and notable species;
 - Site runoff during construction and operation of the Proposed Development will be controlled and managed in line with legislative requirements, current good practice guidance to prevent possible indirect pollution effects on habitats (including waterbodies) and associated species;
 - Landscape proposals for the Proposed Development have been designed to provide an overall biodiversity gain; in line with BS 42020 – *A Code of Practice for Biodiversity in Planning and Development*. Landscape proposals ensure that there is no net loss of habitats of ecological value and all habitat loss will be mitigated for appropriately. All habitat enhancement measures will be informed by the BMP in Appendix 6.5;
 - Stand-off buffer for the installation of solar panels of 5m will be maintained from all field boundaries, preventing damage to hedgerows and trees and adjacent woodland during construction and operation;

- Avoiding lighting during the construction and operation phases, thereby maintaining dark corridors along hedgerow edges. Should lighting be required at any stage, the design will be in line with BCT guidance¹⁹; and,
- Positioning the facility within low value habitat through careful design.

Additional Mitigation

6.165. No significant effects have been concluded on identified important ecological features; therefore, no additional mitigation is required to offset significant effects in the context of the EIA Regulations.

6.166. Good practice measures are however included to ensure legislative compliance and to safeguard protected and notable species.

Ecological Clerk of Works

6.167. The suitably qualified and experienced Ecological Clerk of Works (ECoW) will be appointed prior to the commencement of construction and future decommissioning activities and through whom appropriate ecological advice will be provided throughout. The ECoW will be responsible for undertaking and/or coordinating checks for protected species before construction and decommissioning activities commence. The ECoW (or appointed 'clerk' on behalf of the ECoW) will also maintain a watching brief as necessary throughout the construction and any future decommissioning phase to ensure compliance with relevant legislation

Construction Environmental Management Plan

6.168. An Outline CEMP is provided as Appendix 6.6. It includes outline mitigation for designated sites, birds, bats, badger, amphibians and reptiles and other species at risk during the construction phase.

6.169. The final CEMP will be developed post consent through liaison with statutory bodies and the local planning authority. It will also include additional mitigation measures required

¹⁹ Guidance Note 8: Bats and Artificial Lighting Institution of Lighting Professionals and BCT (2018)

and described within Appendix 6.3: Information to Inform Habitats Regulations Assessment.

- 6.170. The CEMP would include all good practice construction measures, pollution prevention controls and monitoring to be implemented over the course of the Proposed Development in line with current industry and mandatory statutory guidance and is detailed within Chapter 3.
- 6.171. Habitat and species protection buffers will be maintained throughout the construction phase and will be implemented as part of the CEMP, and identified with appropriate fencing and signage along with the site team briefings and 'tool-box talks'.
- 6.172. No works will be permitted within protection buffers unless suitably guided by a method statement and under the supervision of an appointed ECoW to avoid impacts on protected and notable species (birds, bats, amphibians, badgers and water vole).

Enhancement Measures

- 6.173. National planning policy (NPPF July 2021) encourages development proposals to identify opportunities to improve biodiversity and geodiversity in proportion to the potential opportunities available and at the scale of a development.
- 6.174. In line with these principles and to ensure that ecology and biodiversity is considered throughout the planning, design and implementation of the Proposed Development, specific opportunities for biodiversity enhancements have been identified.
- 6.175. These proposed enhancements are detailed in the BMP presented in Appendix 6.5, and include:
- Planting native species hedgerows and trees selected to attract wildlife as part of the Landscape Plan and provision of log pile 'refuge' features to provide increased habitat diversity.
 - Creation of new species-diverse grassland habitats.

- Maintenance of site ponds to improve aquatic resources for amphibians and reptiles; and,
 - Install bird and bat boxes, insect hotels and build hibernacula for amphibians and reptiles.
- 6.176. Ongoing management practices are proposed through its operational lifetime that will enhance the Proposed Development for the benefit of local wildlife. The design and long-term management of the land seeks to maintain and improve functionality through protecting and enhancing potentially important wildlife corridors.
- 6.177. These habitat enhancement prescriptions will benefit a range of species, including birds, amphibians, invertebrates and small mammals.
- 6.178. The above measures are all anticipated to be secured through a planning condition.

Biodiversity Impact Assessment

- 6.179. A Biodiversity Impact Assessment was undertaken for the Proposed Development and is included within Appendix 6.4. This considered land take and habitat creation and was assessed using the Defra Metric Biodiversity Net Gain Calculator (version 3.0), adopting precautionary assumptions in relation to build area, cropping and grassland quality, which nonetheless demonstrates that an overall net gain of over **105.36%** in biodiversity habitat units will accompany the Proposed Development, as well as **42.67%** in biodiversity hedgerow units.
- 6.180. This net gain can be achieved through the proposed landscape planting and ecological enhancements along with long term management as part of the BMP.

Summary and Conclusions

- 6.181. Temporary and negligible effects have been identified in relation to the status of the SSSI/SAC and non-significant adverse effects on habitats within the Site. Associated with this will be negligible (short term) effects on species including birds, bats and great crested newts using habitats on Site for foraging, breeding and shelter.

- 6.182. Wildlife and Habitat enhancement is integrated as part of the Proposed Development through the Site restoration and includes: Native tree planting; New native hedgerow planting; Gapping up of existing hedgerows; Grassland creation; Pond maintenance; Installation of bird and bat boxes and insect hotels; and, Creation of log piles and hibernacula for reptiles and amphibians.
- 6.183. The objective of the Site restoration is to create high quality and diverse habitats, replacing poor quality existing habitats (arable farmland) lost during the construction and operation period, providing permanent habitat for qualifying interests of River Derwent SSSI/SAC and other species including birds, bats and terrestrial amphibians for which these habitats provide breeding, foraging commuting opportunities as well as places of shelter and refuge. The habitat creation will also contribute towards the Ecological Network of wetland sites.
- 6.184. Through habitat creation, residual effects in the long term are considered to be **negligible adverse / not significant** in relation to River Derwent SSSI/SAC and **major positive / significant** in relation Site habitats.
- 6.185. Residual effects are considered **negligible** or **minor positive** for birds, bats and amphibians. Good practice measures will be implemented to avoid impact on other species and ensure legislative compliance.
- 6.186. Standard protection measures in place, incorporating pollution control and drainage management will safeguard and protect retained habitats within the Site and adjacent habitats which include habitats within River Derwent SSSI/SAC.

/7 CULTURAL HERITAGE

Introduction

- 7.1. This chapter considers the environmental effects of the Proposed Development on archaeology and cultural heritage (historic environment sites and features, archaeology and built heritage); hereafter referred to as 'heritage assets'. The chapter details the results of a desk-based assessment carried out by CFA Archaeology Ltd (CFA) and incorporates the results of a geophysical survey (magnetometry) undertaken by Magnitude Surveys. The assessment draws on comments provided by Historic England and the North Yorkshire County Council in Scoping Opinions.
- 7.2. The specific objectives of the study were to:
- Identify the cultural heritage baseline within and in the vicinity of the Site.
 - Assess the Site in terms of its archaeological potential.
 - Consider the effects of the construction, operation and decommissioning of the Proposed Development on heritage assets, within the context of the relevant legislation and planning guidance.
- 7.3. The assessment evaluates the effects of the Proposed Development on:
- World Heritage Sites;
 - Scheduled Monuments and other archaeological features;
 - Listed Buildings and other buildings of historic or architectural importance;
 - Conservation Areas;
 - Registered Parks and Gardens; and
 - Historic Battlefields.
- 7.4. It assesses the potential direct effects on assets within the Site and the indirect effects of the Proposed Development on the settings of heritage assets in the wider landscape.
- 7.5. This Chapter is supported by the following figures and technical appendices:
- Figure 7.1: Heritage Assets within the Site
 - Figure 7.2: Heritage Assets and Events within the Inner Study Area

- Figure 7.3: Inner Study Area: Historic Mapping
- Figure 7.4: Inner Study Area: Historic Landscape Characterisation
- Figure 7.5: Designated Heritage Assets within the Outer Study Area
- Technical Appendix 7.1: Gazetteer of Heritage Assets within the Site
- Technical Appendix 7.2: Gazetteer of Heritage Assets within the Inner Study Area
- Technical Appendix 7.3: Gazetteer of Archaeological Events within the Site and the Inner Study Area
- Technical Appendix 7.4: Gazetteer of Designated Heritage Assets within the Outer Study Area
- Technical Appendix 7.5: Photographs from Field Visit
- Technical Appendix 7.6: Geophysical Survey Report

7.6. Figures and technical appendices are referenced in the text where relevant.

Scope of Assessment

7.7. This chapter presents an assessment of the Proposed Development's potential effects upon archaeology and cultural heritage assets. The assessment considers the potential for direct (i.e. physical) impacts on cultural heritage assets within the Site, arising from construction activities, and effects upon the settings of heritage assets with statutory designations in the wider landscape surrounding the Site.

Legislative and Policy Context

Legislation

7.8. The legislative framework relevant to the archaeology and cultural heritage assessment is provided in:

- The Ancient Monuments and Archaeological Areas Act; 1979;
- The Planning Act (Listed Buildings and Conservation Areas) Act 1990; and
- The Town and Country Planning (Development Management Procedure (England) Order 2010.

Planning Policies

- 7.9. National planning policy relevant to archaeology and cultural heritage that has been considered as part of this assessment includes:
- National Planning Policy Framework (NPPF) (MHCLG, 2021);
 - Planning Practice Guidance (PPG) (MHCLG, 2019); and
- 7.10. Local planning policies relevant to archaeology and cultural heritage that has been considered as part of this assessment include:
- Ryedale District Council Local Plan Strategy (2013) (Policy SP12 Heritage).

Guidance

- 7.11. Recognition has been taken of the following best practice guidelines and guidance:
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists, 2020);
 - Principles of Cultural Heritage Impact Assessment in the UK (IEMA, 2021);
 - Secretary of State's criteria for Scheduling Monuments (Scheduled Monument Statement, 2013);
 - Good Practice Advice Note 2: Managing Significance in Decision-Taking in the Historic Environment (Historic England 2015);
 - Good Practice Advice Note 3: The Setting of Heritage Assets (Historic England, 2017);
 - Conservation Principles, Policies and Guidance (Historic England, 2008);
 - Advice Note 15: Commercial Renewable Energy Development and the Historic Environment (Historic England 2021); and
 - Preserving Archaeological Remains. Appendix 3 – Water Environment Assessment Techniques (Historic England 2016).

Consultation

- 7.12. Historic England, North Yorkshire County Council, and Ryedale District Council provided Scoping Opinions relevant to the cultural heritage assessment in response to the EIA Scoping Report submitted in November 2020. The responses and actions taken in response are summarised in Table 7.1.

7.13. Table 7.1 also contains details of follow-up, post-scoping consultation undertaken with North Yorkshire County Council and Historic England in order to clarify points arising from the Scoping Opinions.

Consultee	Consultation Response	Applicant Action
<p>Historic England Scoping Opinion (09/12/2020)</p>	<p>Identified the following designated heritage assets which could receive potentially adverse effects on their settings:</p> <ul style="list-style-type: none"> • Old Malton Priory Church (ruined portions) (SM: 1004180) • Derventio Roman Fort (SM: 1004885) • Site of Malton Castle (SM: 1004051) • Priory Church of St Mary (Grade I LB: 1201925) • Walls bounding Churchyard of St Mary's Priory Church (Grade I LB: 1220206) • Acomb House Farmhouse (Grade II LB: 1201743) • Garforth Hall (Grade II LB: 1316005) <p>Where setting effects are anticipated it was recommended that views should be presented into and out of the Site and from a 3rd point, showing asset and Site, alongside section drawings and photomontages, as applicable. Stated that the ES chapter should consider potential impacts to non-designated heritage assets and noted in particular that early prehistoric archaeological remains in the Vale of Pickering are of national importance. Recommended that the assessment consider the likelihood of alterations to drainage patterns, which may lead to <i>in situ</i> decomposition or destruction of archaeological remains.</p> <p>Advised that Grade II Listed Buildings should be considered of high significance and that</p>	<p>These designated assets have all been considered in the assessment.</p> <p>Following assessment of the ZTV and completion of a site visit, it was not considered necessary to utilise photomontages to undertake the assessment.</p> <p>Historic England were contacted to clarify the meaning of 'section drawings' in this context, but no response was received.</p> <p>Grade II listed buildings are considered as assets of high significance and have been included within the 3km Outer Study Area in the assessment.</p> <p>Further consultation undertaken with regard to the drainage/water level assessment, detailed below.</p>

	those within the 3 km Outer Study Area should be included in the assessment.	
Ryedale District Council Heritage and Building Conservation Section Scoping Opinion (23/12/2020)	Agreed with the comments provided by Historic England (above) and that Grade II Listed Buildings should be by considered of high significance and that those within the 3km Outer Study Area should be included in the assessment.	Noted. Grade II listed buildings are considered as assets of high significance and those within the 3km Outer Study Area have been included within the assessment.
North Yorkshire County Council Archaeology Scoping Opinion (14/12/2020)	Advised that if geophysical survey identified significant archaeological remains then these should be subject to archaeological trial trenching as part of the assessment process, rather than part of the mitigation process. Aside from the above, confirms support for the proposed assessment methodology and mitigation measures.	Post-scoping consultation with regard to trial trenching undertaken (see below) and detailed in the Mitigation section of this Chapter.
North Yorkshire County Council Archaeology Post-Scoping Consultation (email 23/02/2021) <i>Consulted to discuss post-determination evaluation as the terms of the Agricultural Holdings Act tenancies in the Site do not allow access for the landlord to undertake intrusive surveys without the consent of the tenants.</i>	Noted the issues with access for intrusive surveys (e.g. trial trenching). Advised the need to outline the restrictions to pre-determination intrusive works and to provide options for further evaluation and design within the assessment. Commented that, with regard to archaeology, there can be some benefit to removing an area from arable and the overall physical harm of the solar arrays is fairly limited.	Noted. Access issues are detailed in the Limitations to Assessment section of this Chapter. The methodology for post-determination evaluation and mitigation is detailed in the Mitigation section of this Chapter.

<p>Historic England Post-Scoping Consultation (email 05/032021)</p> <p><i>Consulted to outline the discussions undertaken with Peter Rowe regarding post- determination evaluation.</i></p>	<p>Noted the current limits to pre-determination assessment and deferred to the advice from the NYCC Archaeologist.</p>	<p>Noted. The methodology for post-determination evaluation and mitigation is detailed in the Mitigation section of this Chapter.</p>
<p>Historic England Post-Scoping Consultation (email 21/05/2021)</p> <p><i>Consulted with regard to the scope of the drainage/water level assessment recommended within Historic England's Scoping Opinion.</i></p>	<p>Recommended developing a rudimentary deposit model for the Site (i.e., a summary of the known archaeology, geology and geomorphology of the Site and its' immediate environs). Suggested this should occur before any geophysical survey, as choice of technique may be influenced by the results, for example if deep deposits are present.</p> <p>Recommended that, if waterlogged organic-rich deposits suspected to contain archaeology are identified within the Site, or suspected to be present, then a Tier 1 water environment assessment ('first conceptual model') should be undertaken (in line with the Historic England guidance provided in section 2 of Appendix 3 of the 'Preserving Archaeological Remains'). If identified, further geoarchaeological or palaeoenvironmental investigations may be required, or arrangements made for the preservation <i>in situ</i> of waterlogged deposits.</p>	<p>Noted. A summary of the geology and geomorphology of the Site, alongside the known archaeology is presented in the Baseline of this Chapter. At present no intrusive works (including geotechnical investigations) have been undertaken within the Site, and no borehole data is publicly available for the Site. Geophysical survey had already been undertaken and no baseline data at present suggests that deeply buried deposits are present on Site. At present, no waterlogged organic-rich deposits contain archaeology remains are known to exist, or are suspected to present, within the Site. It is recommended that further</p>

		assessment and a Tier 1 water environment assessment is undertaken during post-determination intrusive works.
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Table 7.1: Consultation

Methodology

Study Areas

7.14. Following the approach agreed through Scoping, and follow up consultations, the cultural heritage assessment has adopted the following defined study areas:

- The Site (refer to **Figure 7.1**): defined by the Proposed Development site red line boundary, within which solar arrays and associated infrastructure are proposed, forms the study area for the identification of heritage assets that could receive direct effects arising from the construction of the Proposed Development.
- The Inner Study Area (refer to **Figures 7.2 to 7.4**): a buffer area of 500 m extending from the red line boundary forms the study area for the identification of heritage assets recorded in the HER and provides information on the archaeological potential of the immediate locality around the Site.
- The Outer Study Area (refer to **Figure 7.5**): a wider study area, extending 3 km from the edge of the red line boundary, has been used for the identification of cultural heritage assets whose settings may be affected by the Proposed Development.

Desk Study

7.15. The following information sources were consulted as part of the desk-based assessment:

- National Heritage List for England (NHLE) (May 2022): an on-line resource which provides details of all designated statutory assets (Scheduled Monuments, Listed Buildings, World Heritage Sites, Registered Parks and Gardens, Registered Battlefields, Conservation Areas, Designated Wreck Sites, etc);

- North Yorkshire Historic Environment Record (HER) (May 2021): consulted to obtain information on the locations of non-designated heritage assets and for archaeological events carried out within the Inner Study Area;
- Ordnance Survey maps and other historic mapping from the North Yorkshire Archives: consulted to provide information on the historic development of land-use within the Site;
- Aerial photographs covering the Inner Study Area, available online via Google Earth;
- LiDAR Digital Terrain Model (DTM) data at 1 m resolution, available as an online resource from the Environment Agency; and
- Appropriate documentary sources, archaeological journals, and regional research frameworks.

Field Surveys

- 7.16. A geophysical survey (magnetometry) (**ENY9160**) was undertaken across the Site by Magnitude Surveys Ltd²⁰ on various dates between 14/12/2020 and 25/03/2021, as access to various plots of land became available. The geophysical survey also extended to several fields outside of the Site boundary.
- 7.17. The survey was undertaken in order to identify any archaeological features and inform requirements for further archaeological evaluation and other mitigation measures. The full survey report is presented in Technical Appendix 7.6.
- 7.18. A field visit was undertaken on the 19/05/2021 to key designated heritage assets in the locality, to assess their baseline settings and their sensitivity to adverse effects from the Proposed Development.

Assessment Methodology

- 7.19. The effects of the Proposed Development on heritage assets have been assessed based on their type (direct effects and effects on setting) and nature (adverse or beneficial).

²⁰ Magnitude Surveys Ltd, 2021. Technical Appendix 7.6.

The assessment takes into account the significance of the heritage asset and its setting and the magnitude of the predicted impact.

Criteria for Assigning Significance to Heritage Assets

- 7.20. The attribution of relative significance of heritage assets identified by the study has been undertaken in accordance with the principles set out in the NPPF.
- 7.21. The NPPF defines significance of a heritage asset as: *“the value of a heritage asset to this and future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic”* (MHCLG 2021, Annex 2: Glossary).
- 7.22. Table 7.2 summarises the relative significance of those heritage assets relevant to the Proposed Development, recognising the advice received from Historic England and North Yorkshire Council Heritage and Building Conservation Section.

Significance of Asset	Definition / Criteria
High	Assets valued at a national level, including: Scheduled Monuments Sites of schedulable quality but not yet scheduled (i.e. that meet the relevant criteria for designation) Grade I, II* & II Listed Buildings Grade I & II* Registered Parks and Gardens Historic Battlefields
Medium	Assets valued at a regional level, including: Archaeological sites and areas that have regional value (contributing to the aims of regional research frameworks) Grade II Registered Parks and Gardens Conservation Areas
Low	Assets valued at a local level, including: Archaeological sites and areas of local importance Unlisted buildings and townscapes of some historic or architectural interest
Negligible	Assets of little or no intrinsic heritage value, including: Sites of former archaeological features, where there are no longer any remains Unlisted buildings of little or no historic or architectural interest

	<p>Artefact find-spots (where the artefacts are no longer in situ and where their provenance is uncertain)</p> <p>Poorly preserved examples of particular types of minor historic landscape features (e.g. field boundaries)</p>
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Table 7.2: Significance of Heritage Assets

Criteria for Assessing Magnitude of Impacts

7.23. The criteria for assessing the magnitude of impacts (adverse or beneficial), which measures the degree of change to the baseline condition of a heritage asset that would result from the construction of the Proposed Development, is presented in Table 7.3.

Magnitude of Impact	Definition	
	Adverse	Beneficial
High	<p>Changes to the fabric or setting of a heritage asset resulting in the complete or near complete loss of the asset's cultural significance.</p> <p>Changes that substantially detract from how a heritage asset is understood, appreciated, and experienced.</p>	<p>Preservation of a heritage asset in situ where it would otherwise be completely or almost completely lost.</p> <p>Changes that appreciably enhance the cultural significance of a heritage asset and how it is understood, appreciated, and experienced</p>
Medium	<p>Changes to those elements of the fabric or setting of a heritage asset that contribute to its cultural significance such that this quality is appreciably altered.</p> <p>Changes that appreciably detract from how a heritage asset is understood, appreciated, and experienced.</p>	<p>Changes to important elements of a heritage asset's fabric or setting, resulting in its cultural significance being preserved (where this would otherwise be lost) or restored.</p> <p>Changes that improve the way in which the heritage asset is understood, appreciated, and experienced.</p>
Low	<p>Changes to those elements of the fabric or setting of a heritage asset that contribute to its cultural significance such</p>	<p>Changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed</p>

	that this quality is slightly altered. Changes that slightly detract from how a heritage asset is understood, appreciated, and experienced.	Changes that result in a slight improvement in the way a heritage asset is understood, appreciated, and experienced.
Negligible	Changes to fabric or setting of a heritage asset that leave its cultural significance unchanged and do not affect how it is understood, appreciated, and experienced.	

Table 7.3: Magnitude of Impact

Criteria for Assessment of Effects on Setting

- 7.24. Historic England’s guidance document, ‘Historic Environment Good Practice in Planning Note 3: The Setting of Heritage Assets, second edition (Historic England 2017) (GPA 3), provides advice on setting assessments. The guidance builds upon the requirements outlined within the NPPF and in PPG.
- 7.25. The NPPF (2021, Annex 2: Glossary) describes setting as:
“The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral”.
- 7.26. GPA 3 provides a five-step assessment process:
- **Step 1:** Identify which heritage assets and their settings are affected.
 - **Step 2:** Assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated.
 - **Step 3:** Assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it.
 - **Step 4:** Explore ways to maximise enhancement and avoid or minimise harm.
 - **Step 5:** Make and document the decision and monitor outcomes.
- 7.27. Following this approach, the ZTV for the Proposed Development has been used to identify those heritage assets from which there would be theoretical visibility of the

Proposed Development and a site visit was undertaken to designated assets within the Outer Study Area, and their environs, to conduct an assessment of their current settings and their susceptibility to change arising from the Proposed Development.

Assessing the Significance of Effects

7.28. The significance of the asset (Table 7.2) and the magnitude of the predicted impact (Table 7.3) has been used to inform the professional judgement of the potential significance of the resultant effect. Table 7.4 summarises the criteria used for assigning the significance of effect. Where two outcomes are possible through application of the matrix. professional judgement. supported by reasoned justification, has been employed to determine the level of significance.

Magnitude of Impact	Significance of Asset			
	High	Medium	Low	Negligible
High	Major	Major / Moderate	Moderate / Minor	Minor
Medium	Major / Moderate	Moderate	Minor	Minor /Negligible
Low	Moderate / Minor	Minor	Minor /Negligible	Minor /Negligible
Negligible	Minor	Minor /Negligible	Minor /Negligible	Negligible

Table 7.4: Significance of Effect

7.29. Major and moderate effects are considered to be 'significant' in the context of The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations). Minor and negligible effects are considered to be 'not significant'.

Requirements for Mitigation

7.30. The NPPF states that *'in weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgment will be required having regard to the scale of any harm or loss and the significance of the heritage asset'* (paragraph 203). Where impacts to non-designated heritage assets are predicted, the *'local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible'* (paragraph 205).

- 7.31. Policy SP12 of the Ryedale District Council Local Plan states that the Council will seek to protect features of historic value and interest '*having regard to the scale of any harm or loss and the significance of the heritage asset*' and one of the mechanisms for this will be to secure an appropriate mitigation strategy.
- 7.32. In line with the requirements of planning policy in relation to protecting archaeological sites and features, mitigation measures are presented below (paragraphs 7.132 to 7.141).

Assessment of Residual Effect Significance

- 7.33. The assessment of the significance of residual effects takes into account the mitigation proposed and the effectiveness of that mitigation to avoid, reduce or offset the predicted effects. Where an asset cannot be avoided through design but where the proposed mitigation would ensure that the affected asset is subject to an appropriate level of archaeological investigation and recording, resulting in its preservation by record, the significance of the residual effect is accordingly reduced. Where an asset (usually one of little or no heritage importance and negligible sensitivity) is lost without any mitigation, the residual effect remains the same as the predicted effect.

Assessment of Cumulative Impacts

- 7.34. No developments were identified by PWA Planning, or by the LPA, as requiring inclusion for cumulative impact assessment. Therefore, assessment of cumulative impacts in respect of cultural heritage have been scoped out.

Limitations to Assessment

- 7.35. It has not been possible to undertake pre-determination intrusive archaeological investigation works (trial trench evaluations) on the Site. The land within the Site is subject to Agricultural Holdings Act tenancies and the terms of the tenancies do not allow access for the landlord to undertake intrusive surveys. Consequently, no archaeological trial trenching (or other forms of intrusive investigations) has taken place

to date and the results of the assessment are based on the information currently available.

- 7.36. These restrictions have been discussed with North Yorkshire County Council's Archaeologist (see Table 7.1) and it was agreed that appropriate options for further evaluation, design solutions and mitigation should be put forward in this assessment to be undertaken post-determination. These are addressed in the Mitigation section below (paragraphs 7.132 to 7.141).
- 7.37. The geophysical survey that was undertaken across the Site recorded a large quantity of ferrous responses causing background 'noise' in the results in some of the fields. This is thought to have been caused by 'green waste', organic waste used as fertiliser on fields, which had been contaminated with metal and other domestic waste. The background noise caused by the presence of the green waste in some areas of the Site has affected the overall effectiveness of the magnetic survey.

Baseline Conditions

Site Description

- 7.38. The Site is located on the southern edge of the Vale of Pickering, 0.5 km to the north of Old Malton, and 0.5 km south of the River Rye. The Site is almost entirely flat terrain, ranging between 20-21 m aOD across its extent, and it is situated within the floodplain of the River Rye²¹. For comparison, the River Rye runs within a relatively modest channel, at 19-20 m aOD, whilst Old Malton and Malton are located on the eastern edge of a dip slope, on land ranging between 20-35 m aOD. The Site is comprised of a number of large rectilinear fields, which are separated by a network of drainage channels and ditches which discharge to the Rye (**Photographs 1, 2 and 3**).

Geological Setting

- 7.39. The Vale of Pickering, as it exists today, is largely a product of the last Ice Age, having been shaped by glacial movement, which scoured the underlying relatively soft

²¹ Environment Agency, 2021.

mudstone bedrock of the Vale (and the Site), which is located between much harder and more durable rocks situated to the north and south. The Vale now comprises a low lying plain oriented east to west, which is bounded on the west by the Howardian Hills, on the south-east by the chalky North Yorkshire Wolds, and on the north by the limestone of the North Yorkshire Moors²².

- 7.40. During the last Ice Age, the Vale was blocked by glaciers and glacial moraine at its eastern end and to the west by the Vale of York ice lobe. Meltwater from these glaciers, and rivers flowing into the Vale, subsequently formed a large glacial lake, known as Glacial Lake Pickering (19,000 to 15,000 BC). This lake's shoreline altitude ranged between 30–70 m Ordnance Datum (OD) (around 10 m higher than the current levels of the Site at its lowest range). When the surrounding glaciers began to retreat, water levels began to drain southwards into the Vale of York, eroding a steep-sided channel at Kirkham, south of Malton, which became the main outlet of water from the palaeo-lake, and was the route subsequently followed by the River Derwent²³²⁴²⁵.
- 7.41. Superficial Lacustrine (formed in lakes) deposits of clay, silt, and sand overly the bedrock within the Site. These are finer-grained sediments which settled in the deeper and quieter parts of the former Glacial Lake Pickering²⁶²⁷.

Historic Landscape Character

- 7.42. In the post-glacial landscape, Lake Pickering was succeeded by a smaller lake at the eastern end of the Vale, Lake Flixton (around 23 km to the north-east of Malton). As the climate warmed a diverse wetland environment had become established around Lake Flixton by the Mesolithic period. This was exploited by human populations, and peat formation at the edge of the lake facilitated the preservation of extensive archaeological deposits including the highly significant Star Carr archaeological site²⁸.

²² Ford et al., 2015.

²³ Evans et al., 2016.

²⁴ Ford et al., 2015.

²⁵ Taylor, 2018, p45.

²⁶ BGS, 2021.

²⁷ Ford et al., 2015.

²⁸ Taylor, 2018, pp45-51.

- 7.43. Throughout the prehistoric period, much of the low-lying landscape of the Vale may have been wetland fen, and peat deposits were widespread until significant drainage took place in the post-medieval period²⁹. No peat deposits have at present been recorded within the Site and, to date, no ground investigations have taken place within the Site.
- 7.44. In the medieval period the area within which the Site is located was part of Malton Common; recorded on later maps as 'Old Malton Moor', in 1770³⁰, and as 'Malton Common' in 1771³¹.
- 7.45. The 1770 map '*A plan of Malton...*' depicts 'Old Malton Moor' as bounded by enclosed fields bordering the River Rye, to the north and west, with medieval strip fields bounding it on the south (see **Figure 7.4**). A short southern extension of the Moor allowed access to the River Derwent. 'Pickering Road' bisected the eastern part of the Moor, on an approximately north to south axis, whilst a stream (or lane) can be seen on the map running approximately east to west, through the centre of the Moor. This stream intersects a large pond, likely 'Borough Mere', which is still present (**Photographs 3 and 4**) and is likely now partly 'fossilised' in the landscape by the modern Great Sike Drain and Great Sike Road.
- 7.46. Old Malton Moor was enclosed in 1805 following Enclosure Acts of 1794 and 1796³², enacted following the lobbying of the landowner Earl Fitzwilliam by the Freeholders of New Malton³³. The post-Enclosure landscape is depicted on historic Ordnance Survey maps from the mid-19th century to the mid-20th century (**Figures 7.3a to 7.3d**); a field pattern that largely persists to the present day.

²⁹ Powesland, n.d.

³⁰ *A plan of Malton in the North Riding of the county of York. The property of the Most Honourable Christopher Watson Wentworth, Marquess of Rockingham, Surveyed 1770*. North Yorkshire County record Office Ref: ZPM M 1-1.

³¹ *Jeffrey's Map of Yorkshire, 1771*. Digital Archives, n.d.

³² North Yorkshire County Record Office, 2020.

³³ Malton Buildings Group, n.d.

- 7.47. A news article from 31st August 1866, records a significant flooding event, stating that *‘..the flood obtained access to Old Malton Moor, which, for the first time since the enclosure, half a century ago, is flooded’*³⁴. This record suggests that, prior to Enclosure and associated drainage, the Moor was likely prone to flooding.

Heritage Assets within the Site (Figure 7.1, Appendix 7.1)

Prehistoric

- 7.48. There are no recorded heritage assets, or find-spots, of prehistoric date within the Site.

Romano-British

- 7.49. There are no recorded heritage assets, or find-spots, of Romano-British date within the Site.

Early Medieval

- 7.50. There are no recorded heritage assets, or find-spots, of Romano-British date within the Site.

Medieval

- 7.51. There are no recorded heritage assets, or find-spots, of medieval date within the Site, although several archaeological anomalies, identified by the geophysical survey, have been interpreted as pre-Enclosure in date, and tentatively assigned a medieval date. They may though have earlier or later origins.
- 7.52. A series of parallel positive linear anomalies spaced approximately 10 m apart (**5**) were recorded in the western side of the Site, west of Borough Mere Lane. These anomalies share a similar alignment to many of the post-Enclosure field boundaries within the Site and are similarly oriented approximately north to south. The magnetic response of these anomalies is however more diffuse than that of the confirmed post-Enclosure field boundaries and have less well-defined edges. These linear anomalies continue northwards outside of the Site boundary (**10**), where they appear to meet with and

³⁴ JBA Trust, 2020.

align with a rectilinear anomaly (**11**) and may connect to two weaker anomalies further to the north (**12** and **13**) (paragraphs 7.74 to 7.78).

- 7.53. The parallel anomalies (**5**) appear to lead to, or intersect with, Borough Mere (a large pond located on the edge of the Site; **Photographs 3** and **4**) on a north to south orientation, and it is noted that the lane which now runs to the east of these anomalies is named 'Borough Mere Lane'. As mentioned above, they also appear to be broadly aligned with the post-Enclosure landscape. It is possible that these anomalies (**5** together with **10**, **12** and **13** located outside the Site boundary) record a pre-Enclosure trackway across Old Malton Moor, and the similar alignment with later field boundaries may suggest that the post-Enclosure landscape (fields and lanes) was informed by a pre-established pattern.
- 7.54. This possible trackway (**5**) of pre-Enclosure and possibly medieval date is assessed as having heritage value at a local or regional level and to be of **low** or **medium** significance.

Post-Medieval

- 7.55. Several of the geophysical anomalies recorded within the Site are aligned with post-Enclosure field boundaries (**1**, **3** and **4**) that can be identified on historic mapping (**Figures 7.3a** to **7.3d**). A further anomaly (**2**) aligns with these and has a similar geophysical response although it is not recorded on historic mapping. These can confidently be assigned a post-medieval date and are assessed as having some heritage value at a local level and to be of **low** significance.
- 7.56. In addition to the former field boundaries, the HER includes an entry for the discovery, during a survey in 1986, of an agricultural blade and a horseshoe (**7**), likely of post-medieval date, at the edge of the field in the southern half of the Site. These unstratified and unprovenanced finds are no longer present within the Site and the find-spot is assessed to be of **negligible** significance.

Modern

- 7.57. There are no recorded heritage assets, or find-spots, of modern date within the Site.

Unknown

- 7.58. The HER records the presence of a complex, and probably multi-period, field system (**6**) within the Site (centered within the southern half), identified from cropmarks shown on an aerial photograph taken in 1976. This aerial photograph is not held by the HER and was not available to be viewed as part of this assessment. No cropmarks could be identified on the aerial satellite imagery examined during the desk-based study and nothing is visible in LiDAR imagery. The nature of these possible cropmarks therefore remains undetermined, but it is possible that some of the geophysical anomalies described above may be related to the possible cropmark evidence and the possible multi-period field system is therefore assessed as potentially having heritage value at a local or regional value and to be of **low** or **medium** significance.
- 7.59. Several weak linear and curvilinear anomalies of unknown origin were recorded throughout the Site by the geophysical survey. At present, it is not possible to determine whether these anomalies have an archaeological origin, or to make any reasoned assessment of their potential archaeological significance.

Heritage Assets within the Inner Study Area (Figure 7.2, Appendix 7.2)

Prehistoric

- 7.60. There are no recorded heritage assets, or find-spots, of prehistoric date within the Inner Study Area, but there is recorded prehistoric evidence more widely within the locality.
- 7.61. During excavations at Coronation Farm, Westgate, Old Malton, just outside and to the south of the Inner Study Area, archaeological features and finds spanning the prehistoric period have been recorded. Flints of Mesolithic, Neolithic and Bronze Age date have been recovered but they appeared to be deposited within later features and so are poorly provenanced. A row of regularly spaced pits, interpreted as a probable pit alignment, and a ring ditch, were recorded and dated to the late Bronze Age to early

Iron Age period, based upon typology. However, no finds were recovered from any of these features³⁵.

- 7.62. During the Neolithic and Bronze Age there is evidence of settlement and burials on both the edges of the Vale and on islands within the peat fen. Extensive Bronze Age cemeteries have been identified between the 30 m and 40 m aOD contours on the south side of the River Derwent³⁶.
- 7.63. In the Iron Age, square barrow cemeteries with thousands of burials have been identified within the Vale and on its northern and southern slopes. Often extensive 'ladder settlements' (defined by enclosures bordering a central trackway and extending considerable distances) also appear, continuing in use into the Roman period. Prominent examples have been found between Malton and Hovingham around 8 km to the west³⁷; as well as to the east at Sherburn (around 12 km from the Site) and West Heslerton (around 9 km from the Site) where the ladder settlement skirted the former fen-edge along a 30 m aOD contour³⁸

Romano-British Period

- 7.64. There is one recorded find-spot of Romano-British date within the Inner Study Area. Three abraded sherds of pottery (**21**) were found near the A64 to the south of the Site. One of these was dated to the Roman period, and the other two were recorded as possibly Roman or possibly Saxo-Norman in date.
- 7.65. A Roman fort was established at Malton by Governor Agricola during the second half of the first century AD, on a site overlooking the River Derwent. A large civilian settlement (*vicus*) eventually developed around the fort and on the south side of the river at Norton, and roads led from the fort to the west, east, and south linking Malton and Norton with other Roman sites³⁹ further afield.

³⁵ PCAS, 2017.

³⁶ English Heritage, 2012.

³⁷ English Heritage, 2012.

³⁸ Powesland, 1999.

³⁹ Otaway, P., 2013.

- 7.66. During the excavations at Coronation Farm (described above), ditches and pits were dated to the Roman period. Roman pottery sherds were the primary artefactual evidence, but ceramic building material was also recovered, suggesting the presence of a building in the vicinity of the excavation site⁴⁰.

Early Medieval

- 7.67. There is one recorded find-spot of early medieval date within the Inner Study Area: the possible Roman or Saxo-Norman pottery sherds (**21**) described above.
- 7.68. Enclosure ditches and pits of early medieval date and a 'Grubenhau' type structure (dated typologically to the Early to Middle Saxon period) were recorded during excavations at Coronation Farm, just outside of and to the south of the Inner Study Area⁴¹.
- 7.69. There is a concentration of early medieval settlement within the Vale of Pickering, with regularly spaced settlements occurring along its southern edge; for example (heading eastwards from Old Malton), at Rillington, West Heslerton, East Heslerton, and Sherburn. The region also boasts a high concentration of churches, with early medieval stone sculpture found at a number of settlements⁴², including at Old Malton⁴³.
- 7.70. The manor of Malton was established during this period and is recorded in the Domesday Book as possessing a church⁴⁴.

Medieval

- 7.71. Following the Norman Conquest, most of the land in Malton passed to King William, although the Domesday Book also identifies Count Robert of Mortain and the Archbishop

⁴⁰ PCAS, 2017.

⁴¹ PCAS, 2017.

⁴² English Heritage, 2021, p39.

⁴³ Durham University, 2021.

⁴⁴ Open Domesday, 2021.

of York as holding land here⁴⁵. The manor presumably held within it the Commons, within which the Site is located.

- 7.72. Malton manor was subsequently granted to Ivo de Vascy, who likely built the castle at Malton, next to the Roman fort⁴⁶. This 'valuable' manor was later granted to Eustace Fitzjohn by Henry I⁴⁷.
- 7.73. In 1150, Eustace Fitzjohn founded the Gilbertine Priory at Old Malton⁴⁸. Financial records of the Priory indicate that it expanded rapidly in the 13th century, purchasing land and undertaking building work. The Priory was primarily involved in sheep farming, which was undertaken from various granges it owned⁴⁹. The Priory would also have held the right to undertake pasturing on Malton Common.
- 7.74. There are no recorded heritage assets, or find-spots, of definite medieval date within the Inner Study Area, however several archaeological anomalies, identified by the geophysical survey in fields bordering the Site, have been interpreted as pre-Enclosure in date, and tentatively assigned a medieval date. They may though have earlier or later origins. These anomalies may also relate to features recorded within the Site (**5**: paragraphs 7.52 to 7.54).
- 7.75. A series of parallel positive linear anomalies spaced approximately 10 m apart (**10**) form a continuation of similar anomalies (**5**) located within the Site, immediately to their south. These linear anomalies appear to meet with and align with a rectilinear anomaly (**11**).
- 7.76. The rectilinear anomaly (**11**) measures approximately 27 m east to west by around 10 m north to south. The shape of the anomaly is suggestive of a rectangular enclosure and its position appears to suggest that it is bound to a post-Enclosure field boundary

⁴⁵ Open Domesday, 2021.

⁴⁶ Rushton 2003, p45.

⁴⁷ Dalton, P., 1996, p358 and p362.

⁴⁸ Dalton, P., 1996, pp371-375.

⁴⁹ Graham, R., 1904, pp139-140.

(9). However, it is also broadly aligned with, and is perhaps associated with, the parallel anomalies described above (10).

- 7.77. A possible continuation of the linear anomalies (10) can be seen further to the north (12 and 13) in the adjacent field, and these appear to curve slightly to the north-east and north-west respectively. This group of anomalies (5, 10, 12 and 13) may represent a pre-Enclosure trackway across Old Malton Moor (paragraph 7.53).
- 7.78. If attached to this possible trackway, the rectilinear anomaly (11) may be contemporary, and it is tentatively interpreted as being a stock enclosure.

Post-Medieval

- 7.79. The Malton estate, was purchased in 1713 by Thomas Watson-Wentworth, and passed to his son, Thomas Watson-Wentworth the 1st Marquess of Rockingham⁵⁰. It was later passed to the 2nd Marquess of Rockingham in 1750 and, in 1782, to Earl Fitzwilliam⁵¹. Earl Fitzwilliam acquired the majority of the fields within the former Common following the Enclosure of in 1805, whilst the remaining fields were divided between the Freeholders of Malton (with reference to the Site, this was divided down the centre with Earl Fitzwilliams allotments on the west side, and the Freeholders on the east⁵²).
- 7.80. There are nine recorded heritage assets of post-medieval date within the Inner Study Area, primarily related to the post-Enclosure landscape.
- 7.81. Several post-Enclosure field boundaries (8, 9, 14 and 15) that can be identified on historic mapping (Figures 7.3a to 7.3d) are recorded as geophysical anomalies in fields bordering the Site (see also assets 1, 2, 3 and 4 located in the Site).
- 7.82. A large drainage ditch known as 'The Cut' (17) is located on the northern edge of the Inner Study Area, alongside the River Rye. The drain follows part of the southern side

⁵⁰ Smith, E. A., 1965, p53.

⁵¹ Cooper, S., n.d.

⁵² *A Plan of the Manor and Parish of Old Malton Describing the Allotments upon the Fields and Common*, Ralph Burton, 1805. North Yorkshire County record Office Ref: I.

of the Rye, and also runs alongside the west side of the River Derwent (outside the Inner Study Area). It was reportedly dug by Lord Fitzwilliam, around 1810 to improve marshy parts of his estate bordering these two rivers.

- 7.83. Old Malton Mill (**16**), recorded as 'Folly Mill' in 1832 (now Windmill Farm), is located on Great Sike Road, on the edge of the Site, and dates to the early 19th century. The tower of the mill is still present, although its sails have been removed. A large millstone (**23**) was recorded at Windmill Farm during a survey undertaken in 1986.
- 7.84. A former field boundary (**22**), indicated as a slight bank, was recorded during the same survey to the west of the Site.
- 7.85. A post-medieval ditch (**25**), dated by the find of a probable 19th century copper alloy pin, was recorded during an excavation east of Eden Camp in 2016.

Modern

- 7.86. Immediately bordering the southernmost plot of the Site is Eden Camp (**21**). This was established in 1942 as a prisoner of war camp to accommodate Italian prisoners of war that had been captured by the Allied forces in North Africa. The camp was erected on a plot of agricultural land off Eden House Road, which lent it its name. When first established, the camp comprised only tents, erected within a barbed wire enclosure. Huts were later constructed by the first 250 prisoners of war who were settled at the camp. In 1944, the Italian prisoners of war were replaced by German prisoners who lived at Eden Camp until they were released in 1948⁵³. Eden Camp is now a museum.
- 7.87. On the eastern edge of the Inner Study Area, the HER records a linear feature previously identified as a cropmark, but later shown to be the line of a high-pressure gas pipeline (**19**).
- 7.88. The remains of a possible 20th century agricultural structure (**24**) were recorded during an excavation near Eden Camp in 2016.

⁵³ Eden Camp, 2021.

Unknown

- 7.89. Several short lines of ditch (**19**), of unknown date, identified as cropmarks to the north of Freehold Lane, have been interpreted as representing an irregular trackway.

Archaeological Potential

- 7.90. The desk-based assessment and geophysical survey have shown that archaeological features are present within the Site. These features appear to relate primarily to the post-Enclosure field system (post-1805) (**1**, **2**, **3** and **4**), although one feature may relate to a trackway (**5**) of possible pre-Enclosure date; perhaps of medieval origin. It is unfortunate that the presence of 'green waste', including some ferrous contamination, in some parts of the Site, produced background 'noise' in the geophysical survey data. It is possible that this contamination may be masking other archaeological features that might be present within the Site.
- 7.91. Historic mapping shows that the entirety of the Site lay within the limits of 'Old Malton Moor' (Malton Common). Prior to Enclosure, and associated drainage, this low-lying area, between the River Rye and River Derwent, would have been seasonally wet, uncultivated land, utilised and managed by the Commoners of Malton for a variety of activities, such as for grazing of livestock.
- 7.92. Prior to the medieval period, there is evidence in the wider landscape around the Site of prehistoric and Romano-British settlement activity. Although evidence of occupation in these periods is notably absent within the Site and in the Inner Study Area. It is likely that the Site was exploited during these periods, but its low-lying location within the floodplain of the River Rye may have meant it was not suitable for settlement or for arable farming. Peat deposits containing archaeological and environmental evidence of prehistoric date have been identified elsewhere in the Vale of Pickering, but at present there is no evidence for such deposits within the Site.
- 7.93. It is likely that further archaeological features and deposits are located within the Site. It is probable that previously unrecorded features will date to the post-Enclosure period

(former field boundaries) and possibly of the pre-Enclosure (medieval and post-medieval) use of the Common. The possibility of encountering features of earlier origin (prehistoric to early medieval) cannot be ruled out.

Designated Heritage Assets within the Outer Study Area (Figure 7.5; Appendix 7.4)

- 7.94. There are three Scheduled Monuments within 3 km of the Site: the ruined portions of Old Malton Priory (**1004180**), on the southern side of Old Malton; and Malton Castle (**1004051**) and Roman Fort (**1004885**), on the south-east edge of Malton.
- 7.95. There are two Grade I Listed Buildings within 3 km of the Site: Priory Church of St Mary (**1201925**); and the Walls Bounding Churchyard of St Mary's Priory Church (**1220206**). Also located within 3 km of the Site, there are 14 Grade II* Listed Buildings, within Old Malton and Malton, as well as 248 Grade II Listed Buildings, mostly located within the townscapes of Old Malton, Malton, and Norton. A number of other individual or small groups of Listed Buildings are located within the wider rural landscape around the Site, predominantly related to farms and farmsteads. The majority of the Listed Building are not intervisible with the Site (see Appendix 7.4).

Identification and Assessment of Potential Effects

Construction

Direct Effects

- 7.96. Any ground-breaking activities associated with the construction of the Proposed Development, (such as those required for installation of array panel ground anchors, excavations for underground cabling, construction of tracks, substations, compounds, etc.) have the potential to disturb or destroy features of cultural heritage interest within the Site. Other construction activities, such as vehicle movements, materials storage, soil and overburden storage, and landscaping also have the potential to cause permanent and irreversible effects on the cultural heritage of the Site.

- 7.97. Although the installation of the solar arrays would most probably only involve limited ground penetration, the frequency of excavations across the Site would likely disturb the integrity of any buried remains that are present and could potentially diminish the archaeological value of any remains present; or destroy archaeological evidence contained within any buried features.
- 7.98. Based on the archaeological evidence from existing records of known archaeological sites within the Site, and the results of the geophysical survey, there is potential for direct impacts on several recorded heritage assets.
- 7.99. A number of field boundaries of post-Enclosure date (**1**, **2**, **3** and **4**) could be directly affected by cable trenching and ground anchors. Impacts to broad ditch features could result in an adverse impact of **low** magnitude depending on the width, depth and spacing of cabling and panels. For an asset of **low** significance, the resultant effect is assessed as being of **minor** or **negligible** significance.
- 7.100. A possible trackway (**5**), of pre-Enclosure, and possibly medieval date, could be directly affected by cable trenching and ground anchors. Impacts to broad ditch features could result in an adverse impact of **low** magnitude depending on the width, depth and spacing of cabling and panels. For an asset of **medium** significance, the resultant effect is assessed as being of **minor** significance.
- 7.101. Further unrecorded archaeological deposits may be present within the Site and, based on the current knowledge of heritage assets located within the Site, it is likely that these will relate to further post-Enclosure field boundaries of **low** significance, as well as potentially further features of the pre-Enclosure Commons, potentially of **medium** significance. It also can't be ruled out that earlier, prehistoric or Roman features may be present within the Site; although, based on current baseline knowledge, the possibility of encountering such remains within the Site during construction work is assessed as being **low**. Post-determination archaeological investigations have yet to be undertaken within the Site, but this proposed work is described in the mitigation section below (paragraphs 7.132 to 7.141).

- 7.102. Advice received from Historic England highlighted the potential to disturb well-preserved waterlogged deposits, if they are present within the Site, due to changes to the water table and drainage pattern which may be brought about by the construction of the Proposed Development.
- 7.103. At present, no intrusive works have been undertaken within the Site, and there is currently no record of any peat or other waterlogged deposits being located within the Site. Details of the Site's hydrogeology and the proposed surface water drainage strategy are provided in detail in the Flood Risk and Drainage Assessment, provided as Appendix C1 to the planning application.
- 7.104. If present, there is potential that any buried peat deposits that could contain archaeological materials of **high** significance. The currently available information is that there are no anticipated impacts to the water levels on site as a result of the Proposed Development. The majority of the Site's permeability will remain unchanged and where small areas such as transformer and inverter stations increase the impermeable area, mitigation will allow the dispersal of additional run off and mimic existing conditions. Taking this advice into account, it is assessed that any adverse impacts resulting from a change to the water table would be of a **negligible** magnitude, and the resultant effect to assets of **high** significance (if present) would be of only **minor** significance.
- 7.105. Further water environment assessment will be undertaken during post-determination evaluations and ground investigation works and, where necessary, appropriate mitigation measures will be identified and implemented (paragraphs 7.132 to 7.141).

Operation

Direct Effects

- 7.106. There are no identified assets likely to receive a direct effect arising during operation of the Proposed Development. This is due to an approach of mitigation (paragraphs 7.132 to 7.141) which will address direct effects during the construction phase.

Setting Effects

- 7.107. The Proposed Development could result in adverse effects on the setting of cultural heritage assets within both the Inner Study Area and the Outer Study Area. Potential effects on the settings of heritage assets would however diminish with increasing distance from the Site. It is considered that beyond 3 km, the Proposed Development would not appreciably alter features of the setting of the heritage assets present that contribute to their cultural significance, nor would it appreciably alter how a heritage asset is understood, appreciated and experienced. No designated heritage assets beyond 3 km of the Site have been identified either by appraisal of the Screening ZTV or through notification by Historic England or North Yorkshire Council as having settings that could be adversely affected by the Proposed Development.
- 7.108. The ZTV, which is the approach adopted for the Landscape and Visual Impact Assessment (Figure 4 in Appendix A - LVA), models woodland at 15 m and buildings at 7.5 m in order to assess the theoretical visibility of the Proposed Development from viewpoints in the surrounding landscape. No account has been taken in preparation of the ZTV for the presence of other intervening vegetation such as hedgerows, trees that are not part of areas of woodland, or other vegetation which bounds the fields of the Site, and are present in the surrounding landscape, or are located along the A64 to the south of the Site and other roads around the Site.
- 7.109. Technical Appendix 7.4: Gazetteer of Designated Heritage Assets within the Outer Study Area, contains a tabulated assessment of the predicted effects on the settings of designated heritage assets from which there is some degree of predicted theoretical visibility of the Proposed Development based on analysis of the ZTV.
- 7.110. The assessment of operational effects on the settings of heritage assets has been carried out with reference to the layout of the Proposed Development and the locations of the cultural heritage assets shown on Figure 7.5. The criteria detailed in Tables 7.2 (Significance of Heritage Assets), 7.3 (Magnitude of Impact) and 7.4 (Significance of Effect) have been used, along with professional judgement, to assess the nature and magnitude of the effects set out in the Technical Appendices.

- 7.111. The following discussion addresses those assets where a potential for significant adverse effects has been identified and which were identified by Historic England within their Scoping Opinion, as requiring detailed consideration. Where applicable, the assessments are supported with photographs, which are presented within Technical Appendix 7.5.

Scheduled Monuments

*Old Malton Priory Church (ruined portions) (SM: **1004180**) - (includes Priory Church of St Mary (LB Grade I: **1201925**) and Walls Bounding Churchyard of St Mary's Priory Church (LB Grade I: **1220206**))*

- 7.112. These designated assets all relate to the Priory Church of St Mary, which is located on the southern edge of Old Malton, 850 m to the south of the Proposed Development and in a slightly elevated setting above the River Derwent. The church lies within an enclosed churchyard with residential buildings along its northern edge and several large mature trees within the churchyard. It is a heritage asset of national importance and high significance.
- 7.113. The ZTV (**Figure 7.3**) indicates that there could, theoretically, be some visibility of the Proposed Development from Old Malton Priory Church. In practice however, the screening provided by trees in and around the Priory Church site and houses along the B1257 through Old Malton will entirely screen any visibility of the Proposed Development from the Priory Church. Looking from the Proposed Development towards Old Malton, the church tower is not visible (**Photograph 6**), demonstrating the absence of intervisibility between the Site and Old Malton Priory Church. Considering the possibility of views of the Priory Church from locations to the south including views of the Proposed Development, it is evident from Figure 7.3 that there is no visibility of the Proposed Development from the B1248 through Norton. Therefore, the Proposed Development would not be visible behind and backdropping views of the Old Priory Church.

- 7.114. It is evident from the assessment that there will be no change to the setting or cultural significance of Old Malton Priory Church, and it is concluded that there would be no harm to its cultural significance resulting from the Proposed Development.

*Site of Malton Castle (SM: **1004051**)*

- 7.115. The Site of Malton Castle, which comprises buried remains of the castle within woodland surroundings, lies in an elevated position above Castlegate on the south-east side of Malton, between the Old Malton Road and the River Derwent. It lies on the south side of the Derventio Roman fort (1004885) and south-east of St Leonard's with St Mary's church. It would formerly have had open views to the south over the River Derwent and is 1.7 km south of the Site. It is a heritage asset of national importance and high significance.
- 7.116. The ZTV indicates that there is no visibility of the Proposed Development from the scheduled monument, which in any event is screened from views towards the Proposed Development by the built environment of Malton to the north of the Castle. It is evident from Figure 7.3 that there are no locations to the south or south-east of the Castle from which the Site of the Castle and the Proposed Development would be seen in the same view with the Proposed Development in the background.
- 7.117. It is evident from the assessment that there will be no change to the setting of the Site of the Castle, and it is concluded that there would be no harm to its cultural significance resulting from the Proposed Development.

*Derventio Roman fort (SM: **1004885**)*

- 7.118. The earthwork remains of the Roman fort are located on the south-east side of Malton, situated between the Old Malton Road and the River Derwent, and 1.5 km to the south of the Proposed Development. Like Malton Castle (**1004051**) it is located in an elevated position above the River Derwent in the parkland setting of Orchard Fields. It is partly covered by and edged by trees that define the extent of the scheduled area. It is a heritage asset of national importance and high significance.

- 7.119. The ZTV indicates that there is no visibility of the Proposed Development from the scheduled monument, which in any event is screened from views towards the Proposed Development by the built environment of Malton to the north of the fort. It is evident from Figure 7.3 that there are no locations to the south or southeast of the Castle from which the remains of the Roman fort and the Proposed Development would be seen in the same view with the Proposed Development in the background.
- 7.120. It is evident from the assessment that there will be no change to the setting of Derwentio Roman fort, and it is concluded that there would be no harm to its cultural significance resulting from the Proposed Development.

Listed Buildings

*Acomb House Farmhouse (LB Grade II: **1201743**)*

- 7.121. The Grade II listed Acomb House Farmhouse is located immediately to the north of the Site (**Figure 7.5**). It is a heritage asset of national importance and high significance.
- 7.122. Acomb farm was established following Enclosure of Old Malton Moor, and is first observed on mapping dating to 1843, where it is depicted as four rectangular structures surrounding a central courtyard⁵⁴. The farmhouse, which is located to the south of the rest of the farmstead, is first depicted on Ordnance Survey mapping, revised in 1909, suggesting a late 19th century or early 20th century date, although the list entry suggests a late 18th or early 19th century date (**Figure 7.3b**).
- 7.123. The farmhouse lies within a localised farmstead setting in an agricultural landscape context. It stands to the south of the farmsteading, in a small garden plot defined by stone walls and hedges. To the north of the farmhouse there is a mixture of contemporary and later farm buildings and sheds to the east of which lies further modern sheds. The principal elevation of the farmhouse faces south, with an open

⁵⁴ *Plan of the township of Old Malton in the North Riding of the County of York, belonging to the Right Honourable Earl Fitzwilliam*, 1843 by Robert Wise. North Yorkshire Record Office Ref: ZPB M 1/11.

aspect view, over a bowed garden wall, across open fields in this direction and along the line of the access track to the farm. The farmstead and the fields that immediately surround the farmhouse contribute to appreciation of its cultural significance as a prominent historic farmhouse in a rural, agricultural setting. The view of the farmhouse as approached from the south, along Borough Mere Lane, also contributes to its cultural significance (**Photographs 7, 8 and 9**).

- 7.124. The Proposed Development would introduce a solar farm development into the fields to the south of the listed farmhouse (**Figure 7.2**) and would be visible from the farmhouse and its immediate surroundings and would appear in the view of the farmhouse as it is approached from the south along Borough Mere Lane. The solar development would be low-lying in the landscape, either side of the farm access track, and would not interrupt the view of the farmhouse when approached along the farm access track off Borough Mere Lane. The Proposed Development would not though alter the immediate farmstead setting of the farmhouse or appreciably disrupt its rural agricultural context. The historic field pattern would be retained, and the surviving hedgerows would be kept. It will remain possible for visitors to the farm to appreciate the cultural significance of the farmhouse in its farmstead setting and its historic farming landscape association would not be lost. The Proposed Development would, at its closest, be just over 200m from the farmhouse and separated from the farmhouse by a hedge line bounding the northern extent of the Site. From that point on Borough Mere Lane, the farmhouse would retain its prominence against a background of associated, historically contemporary, farm buildings and modern farm sheds in an agricultural landscape.
- 7.125. The impact of the Proposed Development on the setting of Acomb House Farmhouse, is assessed as being of low magnitude (**Table 7.3**): the Proposed Development would slightly detract from how the farmhouse is understood, appreciated, and experienced, especially from more distant views on approach to the farm. On an asset of high significance, the resultant effect, based on professional judgement taking into account the factors that contribute to the cultural significance of Acomb House as a historic farmhouse in a rural setting, is assessed as being of **minor** significance (**Table 7.4**), and not significant in EIA terms.

7.126. As the change to the setting of Acomb House Farmhouse is assessed as being not significant, it is concluded that there will be no harm to its cultural significance resulting from the Proposed Development.

*Garforth Hall (LB Grade II: **1316005**) and Garden Wall Attached to West Side of Garforth (LB Grade II: **1149120**)*

7.127. The Grade II Listed Garforth Hall, and associated walled garden, are located 1.5 km to the north-west of the Site, 50 m north of the River Rye (**Figure 7.5**). It is a heritage asset of national importance and high significance.

7.128. The Hall is situated on slightly raised ground and is surrounded on its east and west by possibly medieval ridge and furrow earthworks. It is speculated that the Hall may originally have belonged to the Priory at Old Malton, as its walled garden is constructed with significant quantities of Hildenley limestone, which was used almost exclusively by the priories of Old Malton and Kirkham during the medieval period. The stone used in the construction of the walled garden may have been reused from an earlier building on the site⁵⁵.

7.129. The Hall lies within a localised farmstead setting with open aspects to the east and west, to the fields containing ridge and furrow earthworks. On its south side it is bounded by a garden (of which only the western section of the wall remains) which is lined by numerous trees which provide a sense of privacy. The northern aspect of the Hall is screened by hedgerows and trees which bound Ryton Rigg Road.

7.130. The ZTV indicates theoretically visibility of the Proposed Development from the Hall and garden walls but, in practice, the distances between the two and intervening hedgerows effectively screen all visibility of the Proposed Development from the Hall (**Photographs 10 and 11**).

⁵⁵ The Earth Stone and Lime Company, n.d.

- 7.131. It is assessed that there will be no change to the setting of Garforth Hall and garden walls, and it is concluded that there would be no harm to the cultural significance of the Hall resulting from the Proposed Development.

Mitigation Measures

- 7.132. Due to the limitation to undertake pre-determination intrusive works within the Site due to the Agricultural Holdings Act tenancy agreements, it was agreed that further intrusive archaeological assessment could be take place post-determination. This, it has been agreed, can be secured by an appropriately worded condition.
- 7.133. The scope of any further archaeological works: trial trenching; excavation; watching brief(s); etc. would be developed in consultation with (and subject to the agreement of) the NYCC Principal Archaeologist acting on behalf of Ryedale District Council and set out in one or more Written Scheme(s) of Investigation (WSI). The WSI(s) would make provision for further evaluation, mitigation, and post-excavation analyses, as necessary, as well as for the dissemination of the results of the archaeological works, and for archiving of the project materials and records.

Pre-construction Phase

- 7.134. In the first instance, a programme of archaeological evaluation (trial trenching) will be undertaken across the Site. The trial trenches will be located in order to target archaeological anomalies identified by the geophysical survey as well as 'blank' areas within the Site.
- 7.135. The aim of the archaeological trial trenching will be to establish the presence/absence, extent, condition, character, quality, date, and significance of any archaeological features or deposits identified. It will also enable further assessment of the potential impacts of the Proposed Development on the archaeological resource and allow mitigation measures to be proposed.
- 7.136. Mitigation measures will be enacted either through design (preservation *in situ*) or through further archaeological work (preservation by record).

- 7.137. Design mitigation will be enacted through avoidance of archaeological features entirely or the use of 'concrete shoes' to avoid impacts to significant archaeological features, should they be identified by the programme of trial trenching.
- 7.138. Further archaeological work to preserve archaeological features by record would take place in the form of strip, map, and record excavation, or through targeted watching briefs (see below) undertaken at the construction phase, including an appropriate programme of post-excavation assessment, analysis, and reporting.
- 7.139. Should well-preserved waterlogged deposits be identified within the Site, or are suspected to be present within the Site, following the archaeological evaluation and/or geotechnical investigations, then a Tier 1 water environment assessment would be undertaken as part of that work. The results of that assessment would then inform an appropriate programme of mitigation as outlined above.

Construction Phase

- 7.140. Watching briefs may be required to be undertaken at the construction stage. For example, during the excavation of cable trenches, and the stripping of topsoil and subsoil for the construction of compounds or transformer and inverter stations. The requirement for any watching briefs would be developed in consultation with the NYCC Principal Archaeologist informed by the results of post-determination archaeological investigations (see above, paragraphs 7.134 to 7.139).
- 7.141. If significant discoveries are made during any watching briefs carried out, and it is not possible to preserve the discovered remains *in situ*, provision would be made for the excavation where necessary, of any archaeological deposits encountered to a standard acceptable to the NYCC Principal Archaeologist. The provision would include the consequent production of written reports, on the findings, with post-excavation analysis and publication of the results of the works, where appropriate.

Operation Phase

- 7.142. No mitigation is required in relation to any heritage assets during the operational phase of the Proposed Development.

Summary and Conclusions

- 7.143. A desk-based assessment and geophysical survey has identified seven heritage assets, or possible archaeological features, within the Site. These mostly relate to geophysical anomalies corresponding with former field boundaries which were established at the point of Enclosure of Old Malton Moor in 1805. The geophysical survey also identified some undated anomalies which appear to represent a possible trackway relating to the pre-Enclosure landscape (perhaps medieval or post-medieval in date).
- 7.144. There is evidence of prehistoric and Romano-British settlement activity within the wider landscape around the Site, although not within the Site or in Inner Study Area. The Site and the Inner Study Area are situated in a low-lying area, designated as being within the floodplain of the River Rye, and would likely have been at least seasonally waterlogged prior to drainage at the point of Enclosure in the early 19th century.
- 7.145. Due to limitations for Site access to undertake intrusive works pre-determination, it has been agreed, with Historic England and the NYCC Principal Archaeologist, that post-determination evaluation can therefore be undertaken. This work will comprise a programme of archaeological trial trenching in the first instance, which will aim to further characterise the identified archaeological features and anomalies within the Site, and identify any other, previously unrecorded archaeological remains. That work will then inform the scope and details of any further mitigation measures that may be necessary.
- 7.146. The assessment has considered the effect of the Proposed Development on the settings of designated heritage assets in the wider landscape, following the approach approved by Historic England.

- 7.147. Only one designated asset: Grade II listed Acomb House Farmhouse (**1201743**) was identified as having a setting likely to be adversely affected by the Proposed Development. The impact on the setting of this Grade II Listed Building has been assessed as being of **low** magnitude, resulting in an effect assessed as being of **minor** significance and **not significant** in EIA terms, and therefore it is concluded that there would be no harm to the cultural significance of the Farmhouse resulting from the Proposed Development.
- 7.148. The effects on the setting of those other designated heritage assets in the Outer Study Area, from which, based on analysis of Screening ZTV, there is predicted theoretical visibility are assessed as being of **negligible** significance (not significant in EIA terms) and it is concluded that there would be no harm to their cultural significance resulting from the Proposed Development.

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
<i>During Construction</i>					
Impact from the installation of array panel ground anchors, excavations for underground cabling, construction of tracks, substations, compounds, etc. upon post-Enclosure field boundaries (1, 2, 3 and 4).	Minor	Adverse	Further characterisation of these features will be undertaken during post-determination trial trenching. However, no further mitigation is anticipated to be required to preserve these features of low significance.	Minor	Adverse
Impact from the installation of array panel ground anchors, excavations for underground cabling, construction of tracks, substations, compounds, etc. upon possible pre-Enclosure trackway (5).	Minor	Adverse	Further characterisation of these features will be undertaken during post-determination trial trenching and appropriated mitigation will be devised where appropriate.	Minor / Negligible	Adverse
<i>During Operation</i>					
Effect on the settings of scheduled monuments Site of Malton Castle (1004051) and Derventio Roman fort (1004885).	No change	n/a	No mitigation required.	No change	n/a

Effect on the settings of the scheduled monument Old Malton Priory Church (ruined portions) (1004180), and Grade I listed buildings Priory Church of St Mary (1201925) and Walls Bounding Churchyard of St Mary's Priory Church (1220206).	No change	n/a	No mitigation required.	No change	n/a
Effect on the setting of Grade II listed Acomb House Farmhouse (1201743).	Minor	Adverse	No mitigation required.	Minor	Adverse
Effect on the settings of Grade II listed Garforth Hall (1316005) and Garden Wall Attached to West Side of Garforth (1149120).	No change	n/a	No mitigation required.	No change	n/a
Effects on settings of other designated heritage assets in the Outer Study Area.	No change / Negligible	Adverse	No mitigation necessary.	No change / Negligible	Adverse

Table 7.5: Summary Table

References

Cartographic Sources

A plan of Malton in the North Riding of the county of York. The property of the Most Honourable Christopher Watson Wentworth, Marquess of Rockingham, Surveyed 1770. North Yorkshire Record Office Ref: ZPM M 1/1.

Jeffery's Map of Yorkshire – 1771. [CD-ROM], Digital Archives, n.d.

Plan of the township of Old Malton in the North Riding of the County of York, belonging to the Right Honourable Earl Fitzwilliam, 1843 by Robert Wise. North Yorkshire Record Office Ref: ZPB M 1/11.

Ordnance Survey, Six-inch, Yorkshire 107, Surveyed: 1848 to 1850, Published: 1854. National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire 124, Surveyed: 1850 to 1851, Published: 1854. National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CVII.SW, Revised: 1910, Published: 1913, Yorkshire CVII.SE, Revised: 1909, Published: 1913. National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CXXIV.NE, Revised: 1909, Published: 1913. National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CVII.SW, Revised: 1926, Published: 1929. National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CXXIV.NW, Revised: 1926, Published: 1929. National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CVII.SE, Revised: 1926 to 1927, Published: 1929.
National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CXXIV.NE, Revised: 1926, Published: 1929.
National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CVII.SW, Revised: 1950, Published: 1953.
National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CXXIV.NW, Revised: 1950, Published: 1952.
National Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CVII.SE, Revised: 1950, Published: 1953. National
Library of Scotland.

Ordnance Survey, Six-inch, Yorkshire CXXIV.NE, Revised: 1950, Published: 1952.
National Library of Scotland.

Literature

Cooper, S., n.d., *The 2nd Marquis of Rockingham's Properties in 1776*, [PDF] Available
at:

<<http://www.chivalryandwar.co.uk/Resource/THE%202nd%20MARQUIS%20OF%20ROCKINGHAM'S%20PROPERTIES%20IN%201776.pdf>>.

Dalton, P., 1996, Eustace Fitz John and the Politics of Anglo-Norman England: The Rise
and Survival of a Twelfth-Century Royal Servant, *Speculum*, Vol. 71, No. 2: pp. 358-
383.

The Earth Stone and Lime Company, n.d. *Schedule and Specification for repair works
to Garden Wall, Garforth Hall Farm, Ryton.*

English Heritage, 2012, *Vale of Pickering: Statement of Significance*, English Heritage Yorkshire and Humber Region.

Evans, D. J. A., Bateman, M. D., Roberts, D H., Medialdea, A., Hayes, L., Duller, G. A. T., Fabel, D. and Clark C. D., 2016, Glacial Lake Pickering: stratigraphy and chronology of a proglacial lake dammed by the North Sea Lobe of the British–Irish Ice Sheet, *Journal of Quaternary Science*, Vol. 32, Issue 2: pp723-751.

Ford, J R, Hughes, L, Burke H F and Lee, J R. 2015. The Vale of Pickering: an initial summary of the Quaternary/superficial geology and data holdings. British *Geological Survey Internal Report*, OR/15/064.

Graham, R., 1904, The Finance of Malton Priory, 1244-1257, *Transactions of the Royal Historical Society New Series*, Vol. 18: pp131-156.

JBA Trust, 2020, *Yorkshire North York Moors Flood History - Esk, Rye, Pickering Beck, Derwent, Leven*, [PDF] Available at: <<https://www.jbatrust.org/wp-content/uploads/2020/09/Yorkshire-Rye-and-N-York-Moors.pdf>>.

Malton Buildings Group, n.d., *The Enclosure of Old Malton Moor*, [PDF] Available at: <https://www.maltonbuildingsgroup.com/history/old_malton/history_old_malton_moor_enclosure.pdf>.

Magnitude Surveys Ltd, 2021, Old Malton Solar: Geophysical Survey Report, Magnitude Surveys Ref: MSSE825.

Otaway, P., 2013, *Roman Yorkshire, People, Culture and Landscape*, Pickering: Blackthorn Press.

Pre-Construct Archaeological Services (PCAS), 2017, *Land South of Westgate, Old Malton, North Yorkshire: Archaeological Scheme of Strip, Map and Record*, PCAS.

Powesland, D., 1999, The West Heslerton Assessment, *Internet Archaeology*, Available at: <<http://intarch.ac.uk/journal/issue5/westhes/0sum.htm>>.

Rushton, J., 2003, *The History of Ryedale, North Yorkshire, from Earliest Times to the Year 2003*, Pickering: Blackthorn Press.

Smith, E. A., 1965, Earl Fitzwilliam and Malton: A Proprietary Borough in the Early Nineteenth Century, *The English Historical Review*, Vol. 80, No. 314: 51-69.

Taylor, B., 2018, Climate and Environment, in: Milner, N., Conneller, C. and Taylor, B. (eds), *Star Carr Volume 1: A Persistent Place in a Changing World*, York: White Rose University Press.

Websites

British Geological Survey (BGS), 2021, *Geology of Britain viewer*, [Online] Available at: <<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>> [Accessed 28 May 2021].

Durham University, 2021, *Catalogue*, [Online] Available at: <<http://www.ascorpus.ac.uk/>> [Accessed 11 June 2021].

Eden Camp, 2021, *About Us*, [Online] Available at: <<https://www.edencamp.co.uk/about-us/>> [Accessed 02 July 2021].

Environment Agency, 2021, *Flood map for planning*, Available at: <https://flood-map-for-planning.service.gov.uk/>. [Accessed 28 May 2021].

North Yorkshire County Record Office, 2020, *Focus on Malton: Maps and Plans*, [Online] Available at: <https://nycroblog.com/2020/06/26/focus-on-malton-maps/> [Accessed 11 June 2021].

Open Domesday, 2021, *[Old] Malton*, [Online] Available at: <<https://opendomesday.org/place/SE7972/old-malton/>> [Accessed 11 June 2021].

Powesland, D., n.d., *25 Years of Archaeological Research on the Sands and Gravels of Heslerton*, The Landscape Research Centre, Available at: <http://www.landscaperesearchcentre.org/html/25_years_digging.html> [Accessed 28 May 2021].

Legislation, Policy and Guidance

Ancient Monuments and Archaeological Areas Act 1979.

Chartered Institute for Archaeologists (CIfA), 2020, *Standard and Guidance for Historic Environment Desk-Based Assessment*, Reading: University of Reading.

Department for Culture, Media & Sport (DCMS), 2013, *Scheduled Monuments and nationally important but non-scheduled monuments*, London: DCMS.

Historic England, 2015, *Managing Significance in Decision-Taking in the Historic Environment, Good Practice Advice Note 2*, Swindon: Historic England.

Historic England 2016, *Preserving Archaeological Remains, Appendix 3 – Water Environment Assessment Techniques*, Swindon: Historic England.

Historic England, 2017, *The Setting of Heritage Assets, Good Practice Advice Note 3*, Swindon: Historic England.

Historic England, 2008, *Conservation Principles, Policies and Guidance*, Swindon: Historic England.

Historic England, 2021, *Commercial Renewable Energy Development and the Historic Environment, Advice Note 15*, Swindon: Historic England.

IEMA, 2021, *Principles of Cultural Heritage Impact Assessment in the UK*, London: IEMA, IHBC & CIfA.

Ministry of Housing, Communities & Local Government (MHCLG), 2021, *National Planning Policy Framework*, London: HMSO.

MHCLG, 2019, *Planning Practice Guidance (PPG): Historic Environment*, London: HMSO.

Planning (Listed Buildings and Conservation Areas) Act 1990.

Ryedale District Council, 2013, *Local Plan Strategy*, Malton: Ryedale District Council.

Town and Country Planning (Development Management Procedure (England) Order 2010.

/8 Soils and Agricultural Land Quality

Introduction

- 8.1. This Chapter assesses the potential effects of the Proposed Development on soil resources and agricultural land quality within the 52.86 ha site area. The Chapter has been prepared by Land Research Associates Ltd (LRA) on behalf of the client.
- 8.2. Within the Site, agricultural production is the main visible function supported by the land, so agriculture will be an important receptor of any likely significant effects of the Proposed Development. The soils within the Site on which current and future land uses are based, acts as a filter to attenuate and immobilise substances falling on it, regulates rainfall movement to surface water and groundwater and supports ecological habitats and biodiversity. The sustainable management of soil and land is a central pillar in sustainable development and, consequently, any effects on soil would also be important.

Scope of Assessment

- 8.3. The scope of this assessment covers all soil and agricultural land resources within the Site covering a total area of 52.86 ha (see Map 1 included as part of Appendix 8.1 for the redline boundary of the survey area).

Legislative and Policy Context

National Planning Policy

- 8.4. This Chapter will assess the impact of the Proposed Development on two sensitive receptors: agricultural land quality (best and most versatile land) and soil resources. These receptors are highlighted in National Planning Policy Framework (NPPF, 2021) as requiring protection in local policy.

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing...soils...

b) recognising the...economic and other benefits of the best and most versatile land"
Chapter 15, paragraph 174

Planning Guidance

- 8.5. Government guidance advises that LPAs should "*encourage [sic.] the effective use of land by focusing large scale solar farms on previously developed and non agricultural land, provided that it is not of high environmental value*".
- 8.6. Where development is proposed on greenfield land, the LPA should consider "*whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continues agricultural use where applicable and/or encourages biodiversity improvements around arrays.*"⁵⁶

Local Planning Policy

- 8.7. The Site is located within Ryedale District Council and covered by relevant policy SP17 – Managing Air Quality, Land and Water Resources of their Adopted Local Plan Strategy (2013). The policy states that:

"Land resources will be protected and improved by...prioritising the use of previously developed land and protecting the best and most versatile agricultural land from irreversible loss. New land allocations will be planned to avoid and minimise the loss of the Best and Most Versatile Agricultural Land. Proposals for major development coming forward on sites that are not allocated for development which would result in the loss of the Best and Most Versatile Agricultural Land will be resisted unless it can be demonstrated that the use proposed cannot be located elsewhere and that the need for the development outweighs the loss of the resource"

⁵⁶Ministry of Housing, Communities and Local Government, (2015). Renewable and low carbon energy, Planning Practice Guidance. Paragraph 013 Reference ID: 5-013-20150327.

Methodology

- 8.8. The assessment is designed to consider the effect of the Proposed Development on two sensitive receptors: soil resources and agricultural land quality (namely best and most versatile land).
- 8.9. Soil resources were reviewed by means of a desk study of published and unpublished soil maps and reports and more accurately assessed by a detailed survey across the Site. The detailed survey involved observations of soil and land characteristics at intersects of a 100 m grid.
- 8.10. Agricultural land quality was assessed using information from the soil resources survey and other constraints to agricultural land use such as climate, flooding and slope. This information was then assessed against the MAFF Agricultural Land Classification post 1988 guidelines⁵⁷ to grade the land. See the Technical Report in appendix 8.1 for more information.

Limitations

- 8.11. There are no known limitations associated to assessments made within this Chapter.

Significance Criteria

- 8.12. There is no nationally agreed scheme for classifying the effects of development on agriculture or soils and the approach used in this chapter has been developed over a number of years. Effects of a project can be adverse, causing significant negative effects on a receptor, beneficial, resulting in advantageous or positive effects on a receptor, or negligible.
- 8.13. Assessing the effects on soil is complicated as it is a multi-functional resource, able to support crops, habitat areas, mitigate flood risk etc. However, the main requirement in

⁵⁷ MAFF, (1988).Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land.

regard to solar sites is that the soil is capable of supporting its prior land-use at the end of the solar farm lifetime, typically arable farming.

8.14. The magnitude of effect on BMV land will depend on the amount to be taken by the development. Schedule 4 of the Town and Country Planning (Development Management Procedure) (England) Order 2015 only requires Natural England to be consulted (on behalf of the Secretary of State for the Environment, Food and Rural Affairs) on development that involves the loss of not less than 20 ha of grades 1, 2 or 3a agricultural land. Consequently, the magnitude of losses smaller than this threshold are considered to have a small effect on the national stock of BMV land. Losses of over 80 ha of BMV land are equivalent to the size of a medium to large farm and consequently the magnitude of effect is considered to be high. The judgment-based classification is given in Table 8.1.

Receptor	High	Medium	Low	Negligible
<i>Soil resource</i>	Loss or irreversible damage to all topsoil resources.	Loss or irreversible damage to soil such that insufficient exist for restoration	Sufficient soil resources protected to complete agreed restoration scheme	Only minor disturbance of soils within the site.
<i>Agricultural land</i>	Irreversible loss of more than 80 ha of BMV land.	Irreversible loss of 20 – 80 ha of BMV land.	Irreversible loss of 5 – 20 ha of BMV land.	Irreversible loss of less than 5 ha of BMV land.

Table 8.1: Magnitude of Impacts

8.15. Permeable loamy soils are regarded as of the highest sensitivity, since these soils are of highest quality for restoration. Soils supporting valuable habitats typically have unique properties (such as low nutrient concentrations) which is vital to support the specific ecosystem. Disturbed soils and those with high clay content and naturally poor structure are of less value for restoration and regarded as of lower sensitivity.

8.16. Best and most versatile agricultural land (i.e. Grades 1, 2 and 3a on MAFFs 1988 Agricultural Land Classification (ALC) system) is considered to be a limited national resource, is given special consideration in national policy, and can be considered to be

of higher sensitivity than land in Grades 3b, 4 and 5. The loss of lower quality land is considered of lower importance under the planning system of England and Wales.

- 8.17. The sensitivity criteria used in the assessment of effects on soils and agricultural land are summarised in Table 8.2 below; Table 8.3 combines the magnitude and sensitivity to give the overall significance of effect.

Receptor	High	Medium	Low
<i>Soil resource</i>	Permeable loamy soils providing a broad range of ecosystem services and/or supporting valuable habitats.	A mixture of soils, none of them supporting valuable habitats.	Slowly permeable damaged or contaminated soils providing a limited range of ecosystem services.
<i>Agricultural land</i>	Grades 1, 2 and subgrade 3a	-	Subgrade 3a, grades 4 and 5

Table 8.2: Sensitivity of Receptors

		Sensitivity		
		High	Medium	Low
<i>Magnitude</i>	<i>High</i>	Major	Major	Moderate
	<i>Medium</i>	Major	Moderate	Minor
	<i>Low</i>	Moderate	Minor	Minor
	<i>Negligible</i>	Minor	Negligible	Negligible

Table 8.3: Significance of Effects

Baseline Conditions

- 8.18. The site has three main soil types: medium loamy, sandy loam and slowly permeable soils. The site is a combination of grade 1, 2, subgrade 3a and 3b agricultural quality. The land is variably limited by wetness or droughtiness restrictions. The land grade areas are shown in table 8.4, full details on soils and agricultural land quality are provided in Technical Report Appendix 8.1.

Grade/subgrade	Area (ha)	% of the land
<i>Grade 1</i>	3.2	6
<i>Grade 2</i>	18.4	35
<i>Subgrade 3a</i>	7.9	15
<i>Subgrade 3b</i>	17.7	33
<i>Non agricultural</i>	5.7	11
<i>Total</i>	52.9	100

Table 8.4: Areas occupied by the different land grades

Identification and Assessment of Potential Effects

Soil resources

Installation phase

- 8.19. Soils will be stripped from the battery storage area and from tracks used to access land for solar panel installation. There is the potential for soil resources to be damaged through stripping and trafficking during the installation phase if it is carried out when the soils are plastic. The heavy slowly permeable soils are especially susceptible due to their high clay content, although all soils are vulnerable when wet. The compaction of soils would lead to reduced drainage capabilities and restricted rooting for vegetation. There is the potential for compaction damage of all topsoils across the site, a high magnitude effect to a predominantly high sensitivity (loamy permeable soils) receptor. This equates to a potential major adverse effect of the proposed development.

Operational phase (c. 40 years)

- 8.20. The land will be sown to grass. The micro-climate created by shade beneath panels and sunlight between panels could lead to some difference in grass sward diversity, although this is not considered an adverse effect. Provided land is not overstocked, there is the opportunity for soil structure to improve through the rest period from arable use. The soils under grassland will be managed without the use of chemicals and have

been found to store increased carbon, increased organic matter and have increased soil biota.^{58,59}

Post-operation

- 8.21. Post-operation of the solar farm, the land can be returned to arable use. The soils under grassland will have increased soil biota, organic matter and carbon. They will have improved ecosystem services, a beneficial effect of the Proposed Development to soil resources.

Agricultural land quality

Installation phase

- 8.22. During the installation of the solar farm all land within the Site will be removed from agricultural use. This is a medium magnitude (29.5 ha) temporary loss of best and most versatile (grade 1, grade 2 and subgrade 3a) agricultural land which is a high sensitivity receptor: equating to a temporary major adverse effect.

Operational phase (c. 40 years)

- 8.23. During the operational phase of the solar farm, grassland will be established. Although the quality of the agricultural land remains, there are constraints to utilising its full potential due to the presence of the Proposed Development meaning land use is effectively restricted to permanent pastureland (Grade 4). This is a medium magnitude (30.5 ha) temporary loss of best and most versatile (grade 1, grade 2 and subgrade 3a) agricultural land which is a high sensitivity receptor: equating to a temporary major adverse effect.

Post-operation

- 8.24. Following the lifetime of the solar farm the infrastructure will be removed and the land will be returned to conventional agriculture. The land will retain its agricultural land

⁵⁸ Nick van Eekeren, et. al., (2008). *Soil biological quality after 36 years of ley-arable cropping, permanent grassland and permanent arable cropping*, Applied Soil Ecology, Volume 40, Issue 3, Pages 432-446, ISSN 0929-1393, <https://doi.org/10.1016/j.apsoil.2008.06.010>.

⁵⁹ Dawson, J.J.C. & Smith, P. (2006). *Review of carbon loss from soil and its fate in the environment*. Final Technical Review Report for Defra project SP08010.

quality, therefore there is no adverse effect to agricultural land quality post-operation of the Proposed Development.

Mitigation Measures

Soil resources

- 8.25. Soil resources would be protected from compaction damage during the installation phase of the solar farm through production of a Soil Management Plan (SMP), provided as Appendix 8.2. This should be undertaken by a suitably qualified practitioner in accordance with the principals outlined in the MAFF (2000) Good practice guide for handling soils⁶⁰. The SMP includes: means of soil protection from compaction damage and remedial measures (such as ripping/subsoiling) to remove damage; depth and method of soil stripping and stockpiling during cable laying; soil handling advice.
- 8.26. The SMP will facilitate the protection of all soil resources on site and mitigate the potential effects of the Proposed Development to negligible.

Agricultural land quality

- 8.27. The solar panel layout, rows and width of field margins should be designed to accommodate machinery and equipment that will be required to top/harrow and seed grass to allow improved grassland management to be carried out on the site. The depth of buried cables and protection/positioning of above ground cabling should also be considered where agricultural machinery and livestock will be operating. Cables should be buried deep enough to avoid risk of disturbance from farm practices and care should also be taken when considering the position of cables to avoid damage to land drains.

Cumulative Effects

- 8.28. There are no significant developments within 5 km of the site. Furthermore, soil and agricultural land loss from an individual site should be considered on a site by site basis (against the benefits of the scheme). Therefore there are no relevant cumulative effects to the Proposed Development.

⁶⁰ MAFF, (2000), Construction

Summary and Conclusions

- 8.29. There are no permanent significant adverse effects of the Proposed Development to soil resources and agricultural land quality. The implementation of an SMP will protect soil resources during the installation phase of the Proposed Development. There are beneficial effects to soil following a 40-year break from arable use, these include increased soil biota, soil organic matter and soil carbon storage.
- 8.30. There are temporary major adverse effects to agricultural land quality during the lifetime of the Proposed Development as the infrastructure of the Proposed Development limits agricultural land use to pastureland. There are no permanent adverse effects to land quality however, and upon the removal of the Proposed Development conventional agriculture can resume as before. There is no reduction in agricultural land quality.

/9 SUMMARY OF EFFECTS AND CONCLUSIONS

Introduction

- 9.1. This Chapter of the ES presents a summary of the likely significant environmental effects of the Proposed Development, which have been assessed within the technical chapters of the ES.
- 9.2. This ES has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. It sets out the baseline environmental information and contains details of the Proposed Development having regard to its location, scale and nature.
- 9.3. The ES identifies the most relevant development plan policies which are pertinent to the determination of the planning applications for the Proposed Development. This is in order to ensure that information is provided to allow an assessment against the planning policy tests set out in the Development Plan and advice set out in national planning policy.
- 9.4. The ES has considered the likely environmental effects of the Proposed Development. The ES does not identify any significant effects for any of the assessments undertaken which covers all of the assessments scoped into the ES in discussion with the LPA: Ecology, Cultural Heritage, Soils and Agricultural Land Classification.
- 9.5. Moreover, the Proposed Development would bring about a number of environmental and social benefits to the immediate local and wider area. These include the provision of a large-scale renewable energy project for the area and the associated environmental advantages, and a significant Biodiversity Net Gain for the Site itself, of 105.39%.

Summary of Environmental Effects and Mitigation Measures

Subject	Summary of Potential Effects	Mitigation Measures
Ecology	<p><u>Significant Effects:</u></p> <p>No residual significant adverse ecological effects during the construction and operational phases of the Proposed Development are predicted.</p> <p>The provision of biodiversity enhancements, including grassland creation and hedgerow planting would lead to a major positive effect, which is significant.</p> <p><u>Other Effects:</u></p> <p>Through habitat creation, residual effects in the long term are considered to be negligible adverse / not significant in relation to River Derwent SSSI/SAC.</p> <p>Residual effects are considered negligible or minor positive for birds, bats and amphibians. Good practice measures will be implemented to avoid impact on other species and ensure legislative compliance.</p>	<p>Wildlife and habitat enhancement is integrated as part of the Proposed Development.</p> <p>The formulation of a Construction Environmental Management Plan (CEMP) would reduce impacts during construction further, including with regards to pollution control and drainage management.</p> <p>The use of anti-reflective coatings on solar panels, and that the Site will not be lit at night, would assist in reducing potential effects.</p>
Cultural Heritage	<p><u>Significant Effects:</u></p> <p>No residual significant adverse heritage effects during the construction and operational phases of the Proposed Development are predicted.</p>	<p>A program of archaeological evaluation (trial trenching) will establish the presence/absence, extent, condition, character, quality, date and significance of any archaeological features or deposits identified. Further mitigation, either through design or further archaeological work may be required.</p>

	<p><u>Other Effects:</u></p> <p>There is potential for disturbance to buried remains during construction, including field boundaries, trackways and possible enclosures. Further unrecorded remains may also be present.</p> <p>Acomb House Farmhouse is Grade II listed and is the only designated assets identified as having a setting likely to be adversely affected by the Proposed Development. A minor effect which is not significant is predicted, meaning no harm to the cultural significance of the building is expected.</p>	<p>Design mitigation will be enacted through avoidance of archaeological features entirely or the use of 'concrete shoes' to avoid impacts to significant archaeological features, should they be identified by the program of trial trenching.</p> <p>Further archaeological work to preserve archaeological features by record would take place in the form of strip, map, and record excavation, or through targeted watching briefs undertaken at the construction phase, including an appropriate program of post-excavation assessment, analysis, and reporting.</p>
<p>Soils and Agricultural Land Quality</p>	<p><u>Significant Effects:</u></p> <p>No residual significant adverse effects on soil resources and agricultural land quality are predicted during the construction and operational phases of the Proposed Development.</p> <p><u>Other Effects:</u></p> <p>During construction, there is the potential for a major adverse effect on soil resources, however the implementation of a Soil Management Plan (SMP) would reduce these to a negligible effect. During the operational phase, soil structure improvement is expected, with increases in carbon storage, organic matter and soil biota expected, leading to a beneficial effect.</p> <p>Temporary major adverse effects would occur during the construction and operational phases of the Proposed</p>	<p>The Soil Management Plan will facilitate the protection of all soil resources on Site and mitigate the potential effects of the Proposed Development to negligible.</p> <p>Design of the Proposed Development will allow machinery and equipment to facilitate improved grassland management. Cables should be buried deep enough to avoid disturbance from continuing farm practices.</p>

	<p>Development due to the loss of the full potential of use of best and most versatile agricultural land. No permanent adverse effects would occur since the Site would be returned to agriculture post-operation, with no reduction in agricultural land quality.</p>	
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- 9.6. The overall conclusion of this ES is that significant adverse effects associated with the Proposed Development relate solely to the temporary removal of a portion of best and most versatile land from full agricultural production during the operational phase. The Site will be returned to agricultural land post-operation, with increased soil quality, meaning there are **no residual significant adverse effects as a result of the Proposed Development.**
- 9.7. A **major positive effect which is significant in EIA terms** is expected as a result of the habitat enhancement measures proposed across the Site as part of the Proposed Development, with a Biodiversity Net Gain of 105.39% predicted.
- 9.8. When the temporary adverse effect on agricultural land is balanced against the benefits of the Proposed Development, which include an increase in soil quality during and post-operation, a significant amount of Biodiversity Net Gain and the advantages associated with the production of renewable energy, the long-term effects of the Proposed Development are considered to be **positive.**
- 9.9. The Proposed Development is therefore considered to be acceptable in environmental terms.



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