

**Byers Gill Solar  
EN010139**

# 6.1.1 Environmental Statement Non-Technical Summary

Planning Act 2008

APFP Regulation 5(2)(a)

Infrastructure Planning (Applications: Prescribed Forms  
and Procedure) Regulations 2009

Volume 6

February 2024

Revision C01



<b>Table of Contents</b>		<b>Page</b>
<b>1.</b>	<b>Introduction</b>	<b>1</b>
1.2.	The need for solar	1
1.3.	About RWE	1
1.4.	Purpose of the Environmental Statement (ES)	2
1.5.	Site Location	2
1.6.	National and local planning policy and legislation	4
<b>2.</b>	<b>The Proposed Development</b>	<b>5</b>
2.1.	Summary of the Proposed Development	5
2.2.	Design Parameters	5
2.3.	Solar Farm Infrastructure	6
2.4.	Environmental Management	10
2.5.	Construction	15
2.6.	Operation	16
2.7.	Decommissioning	16
<b>3.</b>	<b>Alternatives and Design Iteration</b>	<b>17</b>
3.1.	Site selection	17
3.2.	Alternative site layouts	19
<b>4.</b>	<b>Approach to Environmental Impact Assessment</b>	<b>22</b>
<b>5.</b>	<b>Potential environmental effects</b>	<b>24</b>
<b>6.</b>	<b>Climate Change</b>	<b>25</b>
6.1.	Baseline	25
6.2.	Mitigation	25
6.3.	Summary of residual effects	25
<b>7.</b>	<b>Biodiversity</b>	<b>27</b>
7.1.	Baseline	27
7.2.	Mitigation	27
7.3.	Summary of residual effects	28
<b>8.</b>	<b>Landscape and Visual</b>	<b>29</b>
8.1.	Baseline	29
8.2.	Mitigation	29
8.3.	Summary of residual effects	29
<b>9.</b>	<b>Cultural Heritage and Archaeology</b>	<b>31</b>
9.1.	Baseline	31
9.2.	Mitigation	31
9.3.	Summary of residual effects	31
<b>10.</b>	<b>Land Use and Socioeconomics</b>	<b>33</b>
10.1.	Baseline	33
10.2.	Mitigation	33
10.3.	Summary of residual effects	34
<b>11.</b>	<b>Hydrology and Flood Risk</b>	<b>35</b>

11.1.	Baseline	35
11.2.	Mitigation	35
11.3.	Summary residual effects	35
<b>12.</b>	<b>Noise and Vibration</b>	<b>37</b>
12.1.	Baseline	37
12.2.	Mitigation	37
12.3.	Summary of residual effects	37
<b>13.</b>	<b>Traffic and Transport</b>	<b>39</b>
13.1.	Baseline	39
13.2.	Mitigation	39
13.3.	Summary of residual effects	39
<b>14.</b>	<b>Cumulative Effects</b>	<b>41</b>
14.1.	In-combination effects assessment	41
14.2.	Cumulative effects assessment	41
<b>15.</b>	<b>Summary</b>	<b>42</b>
<b>16.</b>	<b>How to find out more</b>	<b>47</b>

## Table of Figures

Figure 1-1 - Site location plan	3
Figure 2-1 - Panel Areas A-F	5
Figure 2-2 - Typical solar PV module	7
Figure 2-3 - Typical containerised BESS unit	8
Figure 2-4 – Concept landscape masterplan	14

## Table of Tables

Table 2-1 – Proposed access points	9
Table 2-2 - Management plans	11
Table 2-3 - Construction stages	15
Table 3-1 - Summary of design changes between PEIR and DCO application	20
Table 15-1 - Significant effects during construction	42
Table 15-2 - Significant effects during operation	44
Table 15-3 - Significant effects during decommissioning	46

# 1. Introduction

- 1.1.1. RWE Renewables UK Solar and Storage Limited (RWE) (the Applicant) is proposing Byers Gill Solar, a solar farm with battery energy storage systems (BESS) located between Stockton-on-Tees and Darlington. This is 'the Proposed Development'.
- 1.1.2. As the Proposed Development would be able to generate over 50 megawatts (MW) of electricity, it is considered to be a Nationally Significant Infrastructure Project (NSIP) which requires consent through the Development Consent Order (DCO) process. This is an application made to the Planning Inspectorate (PINS) and decided by the Secretary of State (SoS) in accordance with the Planning Act 2008.
- 1.1.3. As part of the DCO submission to PINS, an Environmental Statement (ES) has been prepared to provide information about the Proposed Development, the likely significant environmental effects, the measures to avoid, prevent or reduce such effects, and the reasonable alternatives considered. The ES has been produced in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations). This document is a Non-Technical Summary (NTS) of the ES which summarises the contents of the ES and its key conclusions.

## 1.2. The need for solar

- 1.2.1. The UK has made a legally binding commitment to achieve net zero carbon emissions by 2050. This can only be achieved with the roll-out of reliable, affordable, clean energy sources such as solar. The Proposed Development would provide new energy generating infrastructure, in line with national policy targets for decarbonisation, including meeting Net Zero targets, safeguarding energy supply and ensuring affordability.
- 1.2.2. The UK Government published their Energy Security Strategy in April 2022, announcing the intent to increase solar capacity by up to fivefold in the UK from 14 Gigawatt (GW) to 70GW by 2035, this commitment was reaffirmed in March 2023 when the Department for Energy Security and Net Zero published the 'Powering Up Britain' Policy paper. If achieved, alongside other renewable generation, the UK will have a 100% renewable energy grid by 2035.

## 1.3. About RWE

- 1.3.1. RWE is a leading solar and battery energy storage developer with one of the largest development pipelines in the UK and a leading supplier of renewable energies globally. RWE recently acquired JBM Solar (the Applicant) which is now known as RWE Renewables UK Solar And Storage Limited. The highly experienced JBM Solar team are now part of RWE, and have been developing projects in the UK since 2012, achieving consent for projects delivering over 1.2 Gigawatt (GW) of generating capacity across the UK and Ireland.

- 1.3.2. RWE is currently developing a pipeline of solar and solar with storage projects with a potential generating capacity in excess of 4GW in the UK by 2025. In addition to the 800MW consented in the UK in the last 24 months, RWE has an additional 350MW already in the planning system across 11 sites and a programme to submit in excess of 500MW in the coming year.

## **1.4. Purpose of the Environmental Statement (ES)**

- 1.4.1. The ES has been prepared to accompany the DCO application and presents the findings of the environmental assessments undertaken for the Proposed Development, the measures to avoid, prevent or reduce such effects, and the reasonable alternatives considered. The ES has been prepared by competent experts in each specialist topic area.

## **1.5. Site Location**

- 1.5.1. The Proposed Development is located in the north-east of England, within the boundaries of Stockton-on-Tees Borough Council, Darlington Borough Council and Durham County Council. Figure 1-1 details the location of the Proposed Development.
- 1.5.2. The majority of the Proposed Development is located within the administrative boundary of Darlington Borough Council. The eastern part of the cable route used to export electricity crosses into the administrative area of Stockton-on-Tees Borough Council. The northern extent of the application boundary for the DCO application (the 'Order Limits') borders Durham County Council's administrative area and a small portion of the Order Limits are within the administrative area of Durham County Council.
- 1.5.3. The Order Limits are located within proximity to the villages of Bishopton, Brafferton, Great Stainton, Newton Ketton, Old Stillington and Redmarshall, amongst others. These areas and their surroundings are agricultural fields, and have trees, hedgerows, access tracks, woodlands, and farm holdings scattered within them.



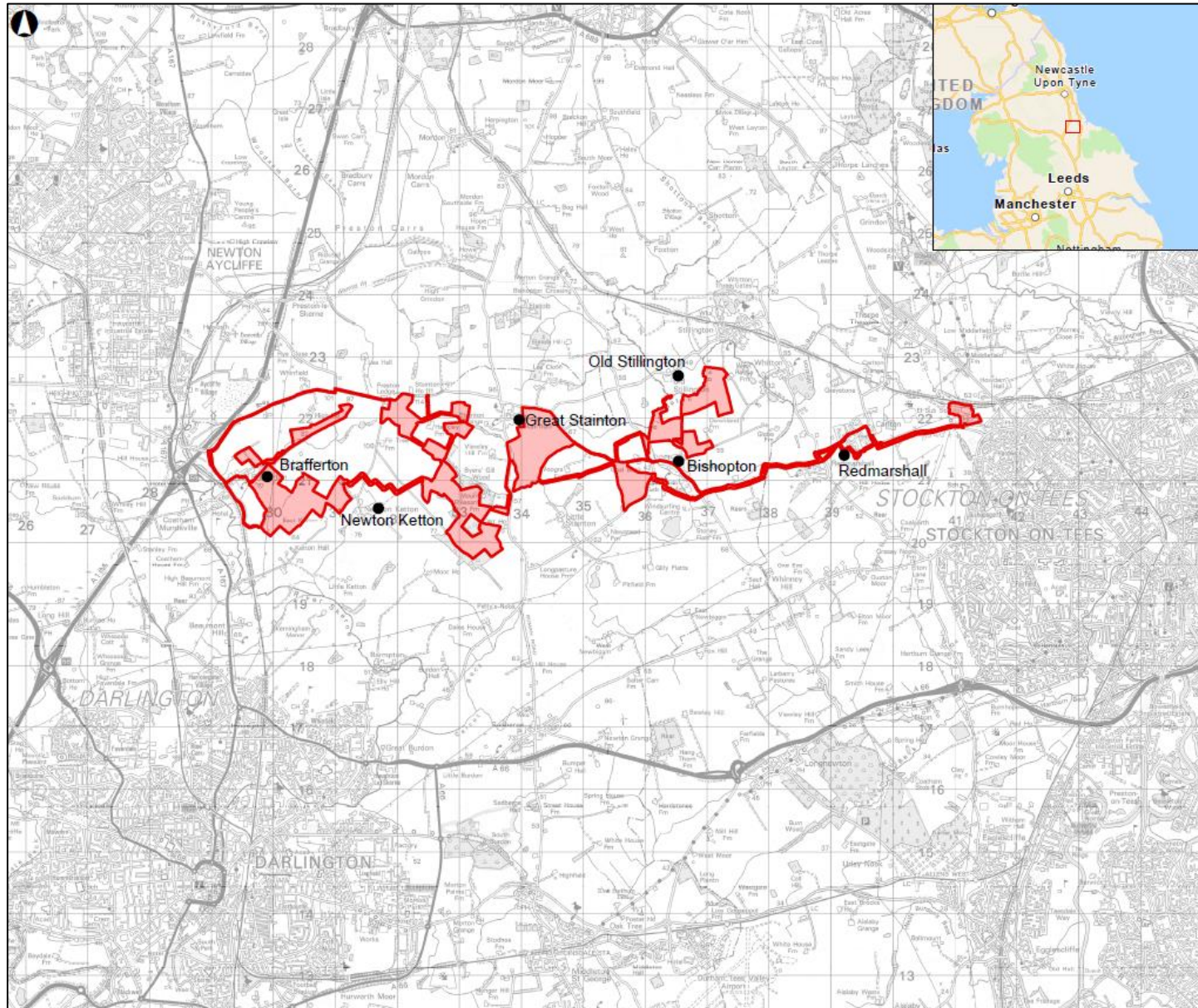


Figure 1-1 - Site location plan

## **1.6. National and local planning policy and legislation**

- 1.6.1. As the Proposed Development is an NSIP, RWE is required to make an application for a DCO, the process of which is set out in the Planning Act 2008. The application will be examined by PINS and determined by the SoS. Requirements for undertaking an Environmental Impact Assessment (EIA) are set out in the EIA Regulations.
- 1.6.2. The Government has produced National Policy Statements (NPS) for energy NSIP developments. The NPSs provide the relevant technical matters which should be considered and are the primary basis for decision-making on energy DCO applications. Following their designation on 17 January 2024, there are three NPSs which are considered to be relevant to the Proposed Development:
- Overarching NPS for energy (NPS EN-1)
  - NPS for renewable energy infrastructure (NPS EN-3)
  - NPS for electricity networks infrastructure (NPS EN-5)
- 1.6.3. This DCO application has been prepared considering these NPSs.
- 1.6.4. The ES also takes into account the National Planning Policy Framework (NPPF), and the local policies of Darlington Borough Council, Stockton-on-Tees Borough Council, and Durham County Council.
- 1.6.5. More information on the national and local planning policy and legislation can be found in ES Chapter 1 Introduction (Document Reference 6.2.1). An assessment of the compliance of the Proposed Development with relevant policy is provided in the Planning Statement (Document Reference 7.1).

## 2. The Proposed Development

### 2.1. Summary of the Proposed Development

2.1.1. The Proposed Development consists of a solar farm capable of generating over 50MW of electricity with co-located BESS, located between Darlington and Stockton-on-Tees in north-east England. The Proposed Development is approximately 490ha and comprises six Panel Areas (groups of solar photovoltaic (PV) panels) (Panel Areas A-F), as shown on Figure 2-1. The solar PV panels would be mounted on a metal frame in groups, fixed in position with panels facing south. An on-site electricity substation would be located within Panel Area C.

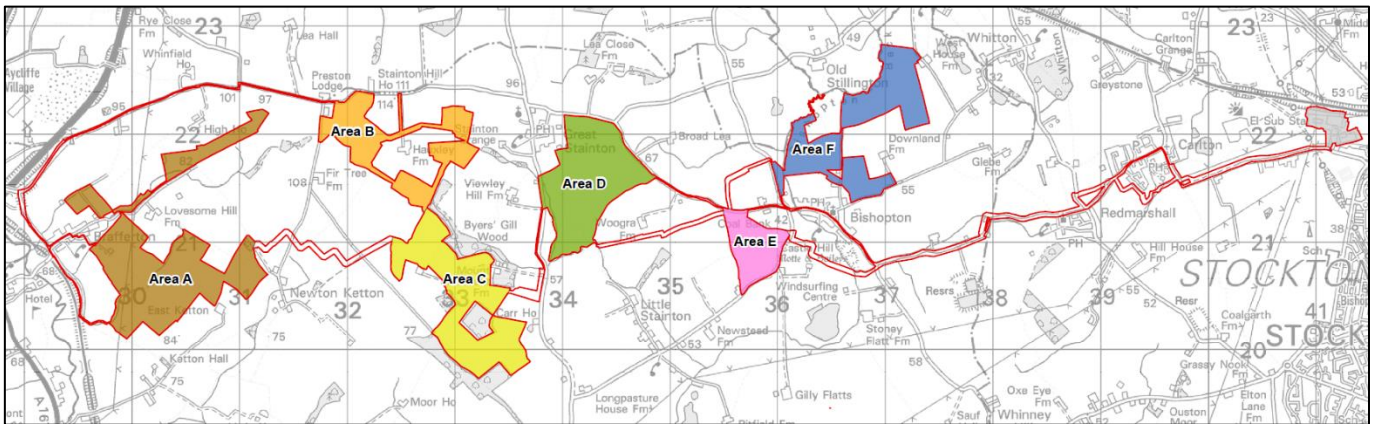


Figure 2-1 - Panel Areas A-F

2.1.2. The Proposed Development includes approximately 32.5km of 33kilovolt (kV) underground cabling between the Panel Areas and the on-site substation, as well as approximately 10km of 132kV underground cable to connect the Proposed Development to the grid connection at the existing National Grid Norton substation (located to the north-west of Stockton-on-Tees). This cabling could be placed either within roads or through off-road options and will be determined during detailed design. A range of supporting infrastructure is required for the Proposed Development, comprising: transformers and inverters; storage containers to hold this equipment; and security measures such as fencing, CCTV and lighting.

2.1.3. The Proposed Development includes environmental mitigation and enhancement measures to avoid or reduce adverse impacts on the surrounding environment and nearby communities. Figure 2.20 Landscape Concept Masterplan (Document Reference 6.3.2.20) of the ES presents the landscape, biodiversity, and cultural heritage mitigation and enhancements included within the Proposed Development Design.

### 2.2. Design Parameters

2.2.1. Due to rapidly changing and evolving solar and energy storage technology markets, the Proposed Development has been designed to maintain flexibility to allow the latest technology to be installed at the time of construction Parameters have been set to support the need for flexibility, the following sections provide further detail some of



these key parameters. Further details on specific parameters can be found in ES Chapter 2 The Proposed Development (Document Reference 6.2.2).

- 2.2.2. Each environmental topic within the ES has assessed the design parameters considered to be the likely worst-case scenario for that discipline to determine the potential for significant effects and identify suitable mitigation measures.

## **2.3. Solar Farm Infrastructure**

### **Solar PV modules**

- 2.3.1. Solar panels generate electrical power by using a solar PV module to convert sun light into direct current (DC) electricity.
- 2.3.2. Individual solar PV modules, as illustrated in Figure 2-2, more commonly known as solar panels, contain several PV cells wired and encapsulated by tempered glass. Solar PV modules are sealed for weatherproofing and held together by a metal frame in a mountable unit that is securely fixed to the ground to a depth of approximately 1m. In certain locations across the Proposed Development, archaeology constraints have been identified and an alternative mounting structure is therefore proposed in the form of ballast slabs which sit on the surface rather than penetrating the ground.
- 2.3.3. Strings of solar PV modules will be aligned in East-West rows with panels facing south, at an angle of +/- 10° to 30°.
- 2.3.4. The individual solar PV modules for the Proposed Developed will be a maximum height of up to 3.5m. The minimum height of the lowest part of the panel would be 0.8m.
- 2.3.5. The solar PV modules would be arranged in groups known as strings, across six Panel Areas (groups of solar photovoltaic (PV) panels), Panel Areas A-F, as outlined in Figure 2-1. There would be a minimum 4m and maximum 12m between strings.



Figure 2-2 - Typical solar PV module

### **Inverter units**

- 2.3.6. The electrical output from the solar PV modules would be exported by low voltage cabling to shipping container style storage units which would contain infrastructure to convert the electrical power generated by the solar PV modules from direct current (DC) to alternating current (AC), as well as manage this power and export it onto the national grid. There would be up to 106 containers located across the Proposed Development, 9 of which would be used for storage to contain extra equipment to support maintenance activities. These would be placed on a concrete pad foundation and would measure approximately 3m in height, 2.5m in width and 12m in length.

### **Battery Energy Storage System**

- 2.3.7. A BESS is a battery storage system. For the Proposed Development it is likely to consist of lithium-ion batteries and will allow energy to be stored on site, prior to its export to the national grid, to ensure that there is an equal distribution of electricity, providing a balance in services where surplus electricity is produced.
- 2.3.8. The BESS, as illustrated in Figure 2-3, would comprise of containerised battery storage systems, DC-DC converter boxes and ancillary equipment .
- 2.3.9. The BESS would be arranged together on site alongside inverters and transformers.
- 2.3.10. The BESS would require associated heating, ventilation and cooling (HVAC) systems to ensure efficiency of the batteries and these systems would be integrated within the individual containers.



Figure 2-3 - Typical containerised BESS unit

### Typical cabling

- 2.3.11. Low voltage cabling within the Panel Areas would be required to connect solar PV modules and the BESS to inverters, which transform the voltage from the lower voltage to 33kV. Cabling from the solar PV modules to the inverters would typically be installed above ground.
- 2.3.12. Higher voltage cables (33kV) of approximately 32.5km are required to connect the inverters and other electrical infrastructure to the on-site substation. Where 33kV cables are outside of the Panel Areas the preference is to use off-road routes, however this is currently under discussion with landowners and will be confirmed through detailed design. On-road routes are included in the Order Limits to ensure the Proposed Development is deliverable should it not be possible for all cable routes to be off-road. The cable routes for the Proposed Development will be confirmed post decision.
- 2.3.13. Additional underground cabling will be required to connect the on-site substation with the National Grid substation at Norton. It is anticipated that 10km of underground 132kV cabling would be required to connect the Proposed Development from the on-site substation to the substation at Norton.
- 2.3.14. It is anticipated that underground cables would be installed using a cable plough, wherever possible. This is considered to be the most efficient and least impactful method of cable installation, causing minimal disruption to the ground, by cutting, installing, and back-filling in one operation. Only in instances where the cable plough cannot be used, alternative methods, such as conventional trenching or horizontal directional drilling (HDD), will be used in more constrained locations such as going underneath water courses and roads. HDD involves the use of a directional drilling machine to drill through a surface level pilot borehole, along a guided path, and lay the required cabling. It is a trenchless method and results in minimum surface disturbance.

### Typical on-site substation

- 2.3.15. A substation would be required for the Proposed Development to convert low voltages from the solar PV modules to high voltages suitable for the national grid. The substation will connect the Panel Areas to the national grid.
- 2.3.16. The substation would also house other electrical equipment to support the Proposed Development.
- 2.3.17. The on-site substation would be located in Panel Area C.
- 2.3.18. The substation compound would be a maximum of 70m in length, 70m in width with a 30m x 70m parking and turning area. The equipment within would have a maximum height of 15m (which would only relate to a communications tower, with the highest electrical equipment being 8m).

### Access tracks and access points

- 2.3.19. Access to the Proposed Development during operation would be required for maintenance. A series of access tracks are proposed within the Order Limits. Access tracks would be permeable to allow water to filtrate through and maintain greenfield runoff rates.
- 2.3.20. There are a number of designated access points onto the local highway network. Access points onto the local highway network include those as listed in Table 2-1.

Table 2-1 – Proposed access points

Panel area	Access Points
Panel Area A: Brafferton	High House Lane Unnamed farm tracks off Brafferton Lane
Panel Area B: Hauxley Farm	Unnamed farm tracks off Lodge Lane
Panel Area C: Byers Gill Wood	Bishopton Lane / Elstob Lane
Panel Area D: Great Stainton	Elstob Lane Unnamed road off The Green
Panel Area E: West of Bishopton	Unnamed road off The Green
Panel Area F: North of Bishopton	Unnamed road off The Green and existing farm tracks Mill Lane from Bishopton
Norton Substation	Existing access from Letch Lane
Underground cables	To be accessed from within Panel Areas and work undertaken along the cable route. Ongoing access would only be required should a problem occur.

## Other infrastructure

- 2.3.21. A perimeter security fence would be installed to enclose the operational areas of the Proposed Development. The fence is likely to be a deer fence with a maximum height of 2m. The fence would be designed in such a way to allow small animals to pass through Order Limits and would also be gated to allow access to and from the Order Limits.
- 2.3.22. Infra-red security detection cameras would be mounted on poles of up to 3m in height located within the perimeter fence. It is anticipated that these cameras would have motion detection technology for recording, and would be pointed directly within the Order Limits and away from any land outside of the Order Limits.
- 2.3.23. In general, it is anticipated that the Proposed Development would not be lit, however, infrared security lighting would be required around key electrical infrastructure. This lighting would be sensor triggered and therefore not continuous.
- 2.3.24. The overarching principle of the drainage strategy for the Proposed Development is to provide sustainable drainage solutions (SuDS) at source, ensuring that surface water run-off is managed as per existing site conditions.

## 2.4. Environmental Management

- 2.4.1. The design of the Proposed Development has emerged as part of an iterative design process between the engineering and environmental assessment teams, as well as through statutory consultation and proactive engagement with statutory consultees, key stakeholders, and the community.
- 2.4.2. This means that throughout the iterative design process, changes have been made and implemented into the design of the Proposed Development to avoid or reduce adverse environmental effects and to make the Proposed Development fit better into the wider landscape. These measures and changes are considered essential to the Proposed Development and are committed to as part of the delivery of the Proposed Development. Key measures embedded include:
- Limiting the height of the solar PV modules to 3.5m in height.
  - The extent of solar panels has been driven by a number of offsets and buffers which were applied to the design as standard. These included:
    - 30m from existing badger setts;
    - 5m buffer to trees with potential for bats and bat roosting;
    - 15m buffer applied to ancient and veteran trees, as well as root protection areas for all other trees;
    - 8m buffer applied to watercourses and flood zones; and
    - Increased set-back around Little Stainton Beck.
  - Excluding solar PV modules from areas close to homes and the landscape character areas of Brafferton, Bishopton and Great Stainton to reduce potential visual impacts.



- In response to geophysical and trial trenching undertaken, the use of an alternative mounting structure is proposed in some areas across the Order Limits. This alternative approach utilises ballast slabs which sit on the surface of the ground rather than penetrating the ground, thereby protecting any archaeological features in situ.
- Ensuring that fencing would be either a wire-mesh or deer fence (if required) and it would measure 2m in height in order to present an appearance that is appropriate to the rural context.
- CCTV columns would be placed between the fencing and the solar PV modules, and oriented to look toward the Panel Areas and not beyond. These CCTV columns would be no more than 3m in height.
- Access tracks and cable routes would be located to pass through existing gates and gaps in hedgerows where feasible, to avoid the need for removal of trees or hedges.
- Inverters and batteries would be approximately 3m in height and would be finished in grey to blend in with the Proposed Development and minimise visual impact, these would be located amongst the solar PV modules throughout the Panel Areas.
- The substation would be no more than 8m in height with the exception of the communications mast which would be up to 15m. It would be screened by Square Wood and proposed planting.

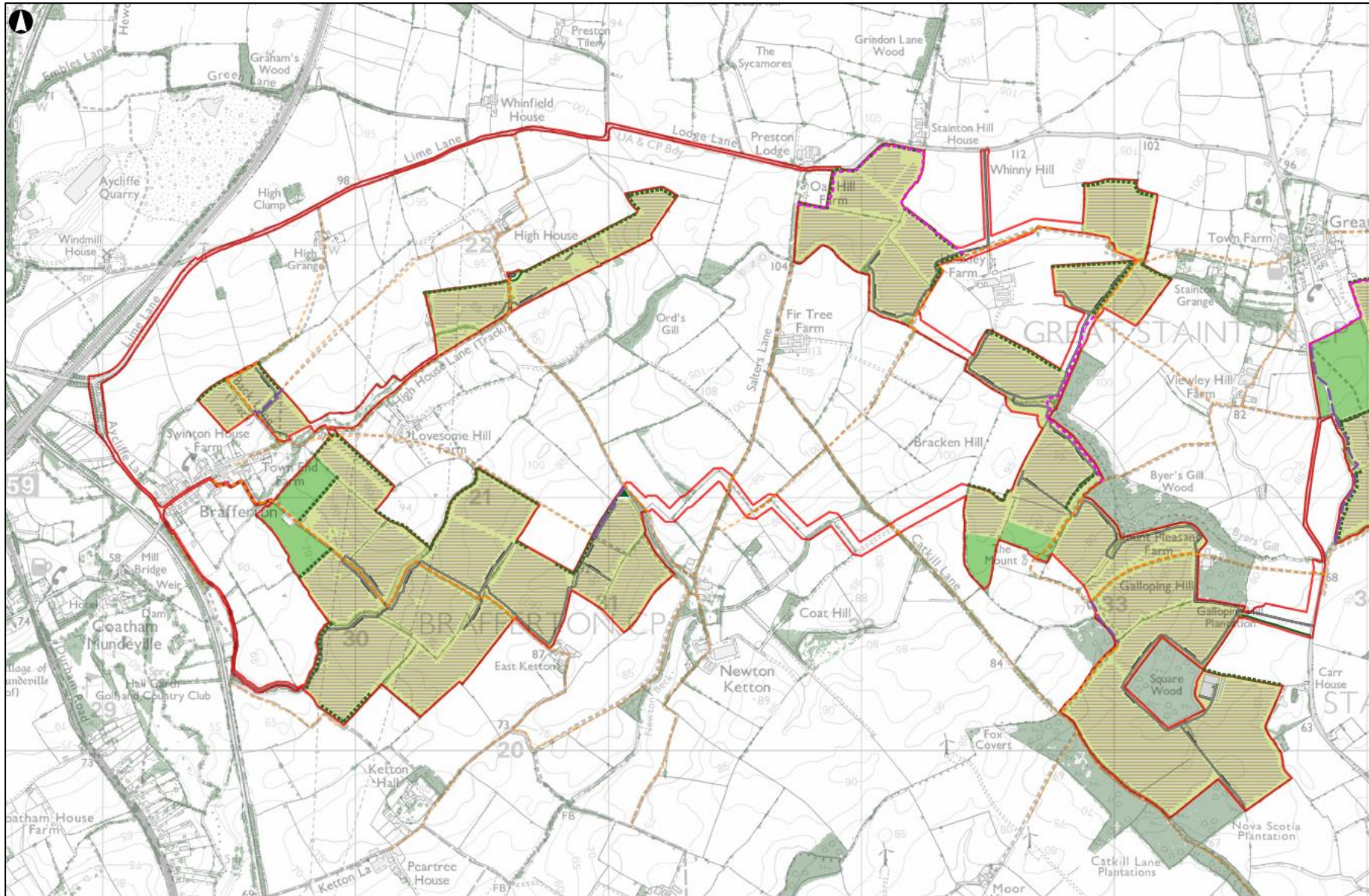
2.4.3. A concept landscape masterplan has been established for the Proposed Development and details the proposed planting and landscaping for the Proposed Development. A summary of this is shown in Figure 2-4.

2.4.4. In addition, a suite of management plans will be in place to control impacts upon the environment, these include those set out in Table 2-2.

**Table 2-2 - Management plans**

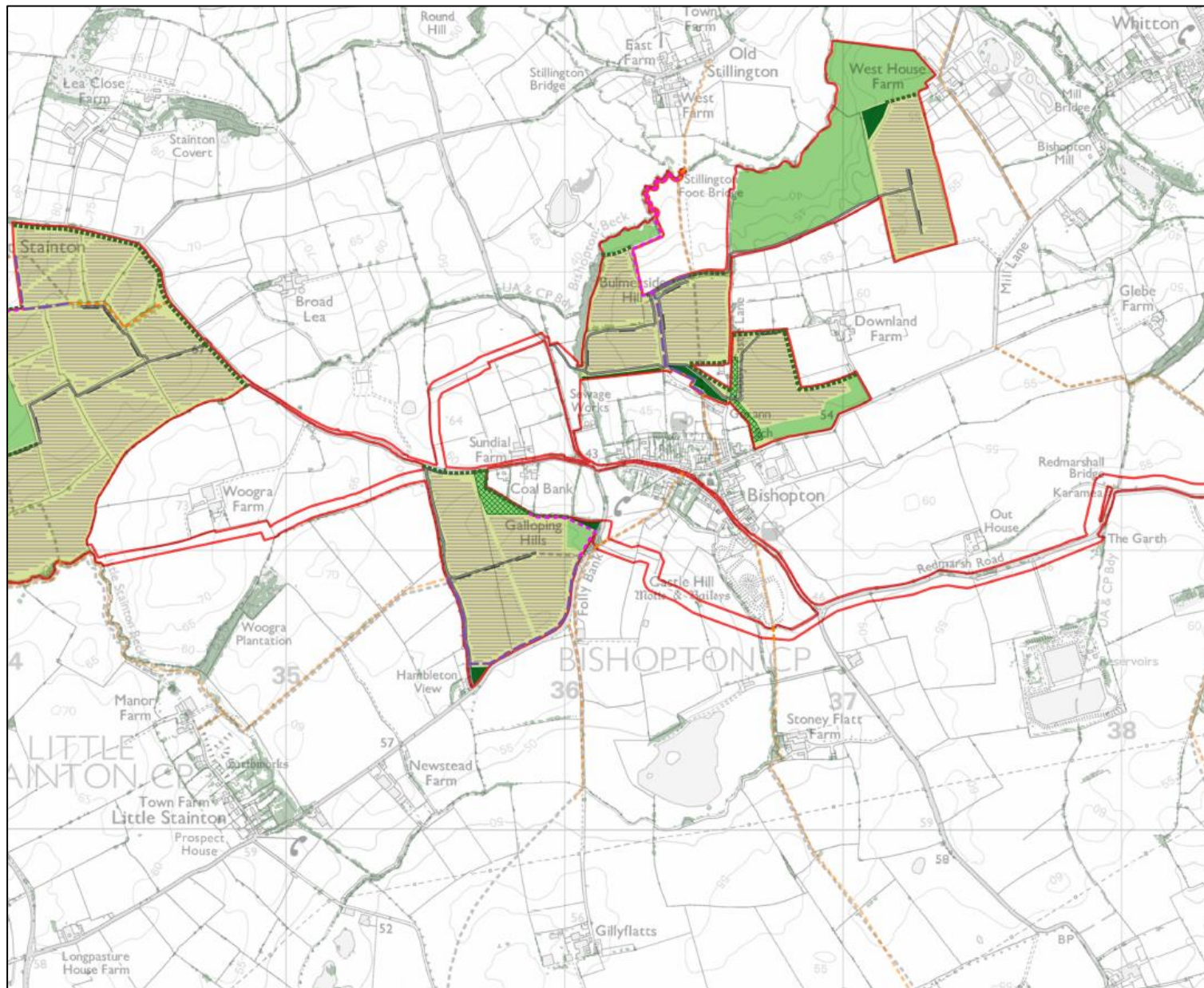
<b>Management Plan</b>	<b>Purpose</b>	<b>Stage</b>
Outline Construction Environmental Management Plan (CEMP)	Sets out how negative environmental impacts will be minimised during construction.	▪ Construction
Outline Construction Traffic Management Plan (CTMP)	Sets out how construction traffic and staff vehicles will be managed during construction.	▪ Construction
Outline Pollution and Spillage Response Plan	Sets out methods to manage pollution and spillage incidents on site during construction.	▪ Construction
Outline Materials Management Plan (MMP)	Sets out how excavated materials that will be generated in the course of constructing the Proposed Development will be re-used in a manner that is compatible with the Waste Framework Directive and associated regulations.	▪ Construction
Outline Site Waste Management Plan (SWMP)	Sets out how the Proposed Development will manage resources efficiently, and measures to prevent and minimise waste.	▪ Construction
Outline Soil Resources Management Plan (SRMP)	Sets out the overall approach to managing soil resources affected by the Proposed Development.	▪ Construction

<b>Management Plan</b>	<b>Purpose</b>	<b>Stage</b>
Archaeological Management Strategy (AMS)	Sets out how archaeological remains, both known and currently unknown, will be managed during construction.	<ul style="list-style-type: none"> <li>▪ Construction</li> </ul>
Outline Battery Fire Safety Management Plan (BFSMP)	Sets out the key measures to minimise the probability of a battery fire event and fire spread in the event of a fire. Sets out the proposed operational response to a fire event.	<ul style="list-style-type: none"> <li>▪ Operation</li> </ul>
Outline Landscape and Ecological Management Plan (LEMP)	Sets out the management of the landscape and ecological features of the Proposed Development.	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> <li>▪ Decommissioning</li> </ul>
Outline Public Rights of Way (PRoW) Management Plan	Sets out how PRoWs would be managed to ensure they remain safe to use, and disruption to users of the PRoW is minimised.	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> <li>▪ Decommissioning</li> </ul>
Arboricultural Method Statement (AIA)	Sets out the protection measures to be implemented during the construction phase, including activity supervision by a suitably qualified arboriculturist where appropriate.	<ul style="list-style-type: none"> <li>▪ Construction</li> <li>▪ Operation</li> <li>▪ Decommissioning</li> </ul>
Outline Decommissioning Environmental Management Plan (DEMP)	Sets out how negative environmental impacts will be minimised decommissioning.	<ul style="list-style-type: none"> <li>▪ Decommissioning</li> </ul>



See following page for continuation of this image.





- Legend**
- Existing Public Right of Way
  - Existing Vegetation and Woodland
  - Concept Masterplan Proposals**
  - ▨ PV Areas
  - ▭ Onsite Substation
  - Internal Access
  - Battery Energy Storage System
  - ▭ Biodiversity Enhancement / Wildflower Meadow
  - ▭ Tree Planting
  - ▨ Amenity Recreation Areas
  - ▨ Proposed Mitigation Hedgerow with Trees
  - ▨ Planting and Seeding Areas
  - Proposed Access Amendments**
  - Proposed Permissive Route
  - Proposed Re-route

Figure 2-4 – Concept landscape masterplan

## 2.5. Construction

- 2.5.1. It would take approximately 12-18 months to construct the Proposed Development all at once, or 18-24 months to undertake the construction of each Panel Area in phases following the granting of the DCO application. The final programme will be dependent on the detailed layout design and potential environmental constraints on the timing of construction activities.
- 2.5.2. The stages of construction for a typical panel area are set out in Table 2-3 with broad estimates for the time taken for each stage.

Table 2-3 - Construction stages

Stage	Description	Approximate time frames
Stage 1	<ul style="list-style-type: none"> <li>▪ Preparatory works</li> <li>▪ Mobilisation</li> <li>▪ Enabling works</li> </ul>	2 months
Stage 2	<ul style="list-style-type: none"> <li>▪ Foundations</li> </ul>	4-5 months
Stage 3	<ul style="list-style-type: none"> <li>▪ Module delivery and installation</li> </ul>	
Stage 4	<ul style="list-style-type: none"> <li>▪ Commissioning</li> </ul>	2 months
Stage 5	<ul style="list-style-type: none"> <li>▪ Site reinstatement and habitat creation</li> </ul>	

- 2.5.3. Working hours during the construction phase would be 08.00-18.00 Monday to Friday, 08.00-14.00 Saturday with no activities on Sundays or Bank/Public Holidays.
- 2.5.4. It is anticipated there would be around 30 – 50 staff working on each Panel Area on average. During Stage 3 this could peak to 100 workers per Panel Area for a limited period of time.
- 2.5.5. Proposed access points during construction would be as those set out in **Error! Reference source not found.-1**.
- 2.5.6. One construction compound would be required in each Panel Area for the construction of the Proposed Development. Compounds would typically measure 60m in length and 30m in width, they would be temporary and removed following completion of construction. The temporary construction compounds would contain construction worker welfare facilities, a site office, limited parking, wheel wash area, plant and machinery storage, Heavy Goods Vehicle (HGV) / delivery turning area and waste storage areas.
- 2.5.7. Temporary construction lighting would be intermittently used throughout the construction phase for select operations in isolated locations only at the construction compounds. Construction lighting may be used within the Panel Areas during nighttime hours in the winter if works require this.
- 2.5.8. Any live construction areas would be closed to the public throughout the construction phase.



## **2.6. Operation**

- 2.6.1. The Proposed Development is expected to be operational for up to 40 years.
- 2.6.2. During operation on-site activities would be limited and restricted to maintenance and monitoring activities.
- 2.6.3. The Panel Areas would be surrounded by a 2m high security / deer fence. In addition, the Proposed Development would be monitored with pole-mounted CCTV cameras along the perimeter fencing.
- 2.6.4. Access to the Proposed Development during operation for maintenance activities would include the access points as set out in Table 2-1.

## **2.7. Decommissioning**

- 2.7.1. Following operation, the Proposed Development would require decommissioning. The process of decommissioning would involve the removal of all solar infrastructure, including the solar PV modules, cabling within the Panel Areas and on-site supporting equipment, from the site to be recycled or disposed of in accordance with good practice and processes at that time.
- 2.7.2. The Order Limits would be returned to its original use as far as possible and practical with areas of established mitigation left in situ where possible and in agreement with landowners.
- 2.7.3. Decommissioning is expected to take between 6 to 12 months and could be undertaken in phases.

## 3. Alternatives and Design Iteration

### 3.1. Site selection

3.1.1. The location of the Proposed Development was selected through a staged process to ensure that a site could be identified which would be suitable for solar energy generation and feasible to deliver, whilst avoiding and minimising the potential for harm to the environment and communities. The key stages for site selection were:

- Identifying the search corridor.
- Consideration of environmental and planning constraints.
- Land assembly.
- Initial identification of panel areas.

3.1.2. A 'no development' alternative would not provide the additional electricity generation that would be delivered by the Proposed Development and has therefore not been considered further.

#### **Identifying the search corridor**

3.1.3. In order to focus the site selection process, an initial search corridor had to be defined. RWE identified optimal locations for solar farms of a nationally significant scale based on two key factors: the irradiance and yield; and the availability of grid connection capacity.

3.1.4. The north-east region has suitable levels of irradiance to gain a viable yield from current solar panel technology. For this reason, the north-east region was identified as a potential location for solar development by RWE.

3.1.5. In order for the Proposed Development to be feasible, it also requires a connection to the national grid through which the energy it generates would be delivered and would contribute to the national energy supply. Engagement with the relevant Distribution Network Operator (DNO) Northern Power Grid (NPG) identified that connection capacity was available from the Norton Substation, located to the north-west of Stockton-on-Tees. A connection agreement has been secured with NPG for the generation of 180 MW of electricity.

3.1.6. Having established the agreed grid connection for the Proposed Development, a search corridor of 6km was applied around the Norton substation in order to identify potential sites for the Proposed Development.

#### **Consideration of environmental and planning constraints**

3.1.7. A constraints mapping exercise was undertaken in order to assess potential locations for siting the Proposed Development within the search corridor. The following constraints within the search corridor were reviewed:

- Brownfield land register (previously developed land)

- Agricultural Land Classification
- Ecological designations
- Flood Zones
- Cultural Heritage
- Landscape designations
- Public Rights of Way (PRoW)

3.1.8. In considering the mapped constraints, RWE made a high-level judgement on the potential environmental effects of the Proposed Development, taking into account their previous experience and values as a responsible developer. Factors such as the spatial extent of constraints in relation to the area of search and the feasibility of deliverable environmental mitigation were considered by the Applicant as part of this evaluation.

### **Land assembly**

3.1.9. Through the analysis undertaken during the consideration of environmental and planning constraints, RWE identified a refined boundary of land parcels that could be suited to solar development. RWE began engagement with relevant landowners to receive expressions of interest. From the outset, RWE has sought to deliver the Proposed Development via landowner agreement rather than requiring compulsory acquisition. RWE approached landowners with a sufficient area of land for panel areas, mitigation and enhancement to enter into an option agreement. This was successfully achieved, enabling the potential panel areas of the Proposed Development to be defined.

### **Initial identification of panel areas**

3.1.10. The site selection process outlined above established that within the search corridor, there was sufficient available land, secured via agreement, located outside of major environmental and planning constraints. This was considered to fulfil the requirement to deliver a viable solar farm and the process progressed to developing an initial layout design for the Proposed Development.

3.1.11. Initially, all land subject agreement was proposed for use as a PV panel area. This initial design confirmed that there was the required land to meet the capacity of the available grid connection. Having established this, an exercise was undertaken to refine the location of the panel areas. This design iteration sought to introduce setbacks from communities and landowner properties, as well as adjust panel configuration to account for local topography and utility searches. Setbacks introduced at this stage included those to reduce the proximity of panels to Great Stainton village, Bishopton village, properties at Downland Farm, Coatham Mundeville Conservation area and Brafferton.

3.1.12. Having established this layout, the potential location of substations was considered, and an initial option selected. Following the substation selection process, options for cable routes were considered.

- 3.1.13. Having concluded the site selection process, the Applicant had identified a red line boundary and a site layout comprising of panel areas and potential cable route options, taking account of high-level environmental constraints, and detailed consideration of the impacts of elements of the scheme on specific receptors in the local environment. This design was the basis for undertaking further environmental and technical assessment ahead of undertaking an EIA Scoping Report.

## 3.2. Alternative site layouts

### Amendments made prior to the EIA Scoping report

- 3.2.1. Environmental surveys and assessment commenced in early 2022. However, ongoing negotiations regarding voluntary land agreements resulted in some areas of land being removed from the scheme and new areas being added in. The key changes comprised:
- removal of large panel area to the south of the site;
  - the addition of land to the north-west of the site (Panel Area A);
  - the addition of land to Panel Area B; and
  - the addition and removal of small areas of land in Panel Area C.
- 3.2.2. These changes resulted in a new design iteration which became the basis for the EIA Scoping Report and initial environmental assessment.
- 3.2.3. Design iteration: EIA Scoping to Preliminary Environmental Information Report (PEIR) Following the submission of the EIA Scoping Report in October 2022, RWE sought feedback on the design from invited stakeholders through collaborative design workshops. The information provided at these workshops, as well as findings from initial assessments, helped to identify possible design changes that could be incorporated to further reduce or avoid effects on the environment and the community. They also provided the opportunity for local communities to provide wider community benefit ideas.
- 3.2.4. As a result of this process, a revised layout and an initial landscape and environmental masterplan of the Proposed Development was produced. This design formed the basis of the PEIR and the statutory pre-application consultation carried out between 5 May 2023 and 16 June 2023. Whilst not exhaustive, a list of the key changes made to the layout is provided below:
- Buffers applied to key environmental receptors as identified through surveys and environmental assessment:
    - 30m buffer to badger setts.
    - 5m buffer to trees with potential for bats.
    - 15m buffer applied to ancient and veteran trees, as well as root protection area for all other trees.
    - 8m buffer applied to watercourses and flood zone.
    - Increased set-back around Little Stainton Beck.

- Removal of panels in response to initial landscape and visual assessment to reduce impacts on identified receptors. These reductions were implemented in Panel Area A, Panel Area C, Panel Area E and Panel Area F.
- Re-routing of PRowWs across the site to mitigate potential visual impacts or to provide improvement to existing routes and user experience.

3.2.5. Infilling of panel areas where appropriate (i.e. in locations where PRowW relocated) Additionally, a minor amendment to the red line boundary was made at this stage to bring the Norton Substation into the Proposed Development boundary.

**Design iteration: PEIR to ES and DCO Application**

- 3.2.6. The design of the Proposed Development submitted for development consent includes a number of changes made since the PEIR and statutory consultation.
- 3.2.7. The final layout of the Proposed Development has been informed by three key factors:
- statutory consultation feedback;
  - landowner engagement; and
  - further technical assessment.
- 3.2.8. RWE received approximately 375 responses to the statutory consultation held between 5 May and 16 June 2023. The feedback was analysed thoroughly, and any matters raised relating to the design of the Proposed Development were identified and logged for consideration.
- 3.2.9. In addition to statutory consultation, RWE continued to engage with local landowners and the land requirement were reviewed to ensure only land necessary to deliver the Proposed Development was to be included. As a result, some parcels of land were removed from the planning boundary and a smaller extent of land was defined as the Order Limits.
- 3.2.10. Finally, the Applicant continued to progress technical assessment of the Proposed Development, both in relation to EIA and its potential effects on the environment and in relation to its operational function through modelling and viability testing. The technical assessment remained iterative throughout the preparation of the DCO Application, with regular reviews of any potential design changes arising as an outcome of such assessment..
- 3.2.11. The key design changes made to the Proposed Development between PEIR publication and DCO application are summarised in Table 3-1.

**Table 3-1 - Summary of design changes between PEIR and DCO application**

Design change	Reason
Reduction in maximum proposed solar PV panel height from 4.35m to 3.5m	To address concerns raised regarding scale and visual impact of the Proposed Development.
Selection of fixed-only solar PV panels	As the result of further technical modelling and design development by the Applicant, taking into account concerns raised regarding scale and



Design change	Reason
	visual impact of the Proposed Development given that the alternative of tracking PV panels would have a maximum height of 4.35m.
Increased set-back of panels in Panel Area B and Panel Area F further away from residential properties and settlements	To address concerns raised through statutory consultation regarding proximity to residential properties and settlements. This includes individual properties adjacent to Panel Area B and increased set-backs from Mill Lane, Bishopton village and Bishopton primary school.
Relocation of BESS further from residential receptors	To address concerns raised through statutory consultation regarding potential for impacts to residential receptors through noise, and of fire safety concerns.
Removal of land parcels (proposed for use as panel areas) in Panel Area C and Panel Area D.	Applicant had not secured voluntary land agreement and it was determined that the Proposed Development would remain viable without the parcels, whilst addressing concerns raised during consultation regarding overall scale of the panel areas.
Relocation of access tracks at Panel Area A, Panel Area B, Panel Area C and Panel Area D, including revisions to Order Limits as necessary.	Accesses were reviewed and amended based on updated technical information regarding construction and operational needs, and taking into account feedback received at statutory consultation. In particular, concerns raised by local residents regarding the proposed use of existing access through Brafferton village were a determining factor for changes to Panel Area A access.
Expansion of cable route in Panel Area D to utilise on-road route.	Land agreement not reached for off-road route.
Reduction in Order Limits in Panel Area F where land no longer required and through further engagement with landowner	Further technical assessment and design development of ecology mitigation determined the precise quantum of land required, enabling the remainder to be released from the Order Limits.

3.2.12. More information on the alternatives considered can be found in ES Chapter 3 Alternatives and Design Iteration (Document Reference 6.2.3). A detailed account of the statutory consultation feedback and the response to the matters raised is provided in the Consultation Report (Document Reference 5.1).

## 4. Approach to Environmental Impact Assessment

- 4.1.1. The EIA assesses the likely significant effects, both positive and negative, of the Proposed Development on the environment during construction, operation and decommissioning. The findings of the EIA are reported in the ES which informs decision makers and the public about the potential environmental effects of the Proposed Development and is submitted with the DCO application.
- 4.1.2. The main stages of the EIA process are:
- EIA Screening - Determining whether a proposed project falls within the remit of the EIA Regulations, whether it is likely to have a significant effect on the environment and therefore requires an assessment.
  - EIA Scoping - Determining the extent of issues to be considered in the assessment and reported in the Environmental Statement. The applicant asks PINS for its opinion on what information needs to be included (which is called a 'scoping opinion').
  - Preliminary Environmental Information Report (PEIR) – Provided to enable consultees (both specialist and non-specialist) to understand the likely environmental effects of the Proposed Development and helps to inform their consultation responses on the Proposed Development during the pre-application stage.
  - ES – Where it is decided that an assessment is required, the applicant must prepare and submit an Environmental Statement. The Environmental Statement must include at least the information reasonably required to assess the likely significant environmental effects of the development listed in the EIA Regulations.
- 4.1.3. An EIA Scoping Report was prepared and submitted in October 2022 to PINS and the resulting EIA Scoping Opinion from PINS has been considered in undertaking the EIA and in preparing the ES. Topics that have been included or 'scoped in' to the EIA are reflected within the ES chapters, this includes climate change; biodiversity; landscape and visual; cultural heritage and archaeology; land use and socioeconomics; and hydrology and flood risk.
- 4.1.4. A PEIR that contained preliminary environmental information was also prepared in May 2023 for the purpose of statutory consultation, consultation with stakeholders and the general public that the applicant must carry out before submitting a DCO application..
- 4.1.5. The ES has now been prepared, which this NTS summarises, to support the DCO application for the Proposed Development. A number of other supporting assessments and documents have also been prepared to support the ES. These include:
- A Habitat Regulations Assessment (HRA) screening assessment, provided in ES Appendix 6.5 HRA No Significant Effects Report (Document Reference 6.4.6.5). This concludes that there is no potential for Likely Significant Effects (LSE) on European protected sites.;
  - A Water Framework Directive (WFD) Assessment (Document Reference 6.4.10.2), which relates to the protection and enhancement of surface fresh water, estuaries, coastal waters and groundwater;
  - A Flood Risk Assessment and Drainage Strategy (Document Reference 6.4.10.1), considering flood risk both to and from the Proposed Development; and

- A Transport Statement (Document Reference 6.4.12.1), which assesses the traffic impacts of the Proposed Development during construction, operation and decommissioning.

- 4.1.6. As part of the ES, topics have identified an environmental baseline which sets out the current environmental conditions of an assessment study area, determined individually for each environmental topic, prior to the implementation of the Proposed Development. The study area for each environmental topic incorporates the Order Limits as a minimum for the Proposed Development.
- 4.1.7. Topic assessments then utilise this environmental baseline to determine likely impacts and effects that may result on the baseline environment from the implementation of the Proposed Development.
- 4.1.8. All environmental assessments in the ES follow a similar methodology. The likely effect that the Proposed Development may have on an environmental receptor is influenced by a combination of the sensitivity of the environmental receptor and the predicted magnitude of change from the baseline conditions (either positive (beneficial) or negative (adverse)).
- 4.1.9. The environmental sensitivity, value, or importance of an environmental receptor may be categorised by a range of factors, such as threat to rare or endangered species, transformation of natural landscapes, or changes to soil quality and land-use.
- 4.1.10. The overall likely effect is determined by the interaction of the above two factors (i.e., sensitivity/importance and predicted magnitude of change from the baseline). Each topic chapter sets a threshold above which effects are considered to be “significant” in terms of the EIA Regulations. Residual effects are the effects that remains after the proposed mitigation has been considered.
- 4.1.11. Cumulative effects have also been assessed, which take into account other proposed developments in the area which could lead to additional effects in combination with the Proposed Development.
- 4.1.12. The ES provides the latest environmental information obtained and assessed as part of the EIA. It accompanies the DCO application and follows a systematic approach to EIA and project design. The process of identifying environmental effects has been both iterative and cyclical, running in tandem with the iterative design process.

## 5. Potential environmental effects

- 5.1.1. This NTS provides an overview of the findings of the environmental assessments carried out. This includes the environmental effects of each topic assessed within the ES, including climate change; biodiversity; landscape and visual; cultural heritage and archaeology; land use and socioeconomics; and hydrology and flood risk; and cumulative and in-combination effects.
- 5.1.2. The following sections detail the likely significant effects of the Proposed Development on local communities and the environment, alongside how these effects would be mitigated, any additional enhancements that are proposed and requirements and secure control measures to ensure that any mitigation and enhancement is delivered. Further information on each section can be found in the corresponding ES chapter, available via the project page on the National Infrastructure Planning website, available at: <https://infrastructure.planninginspectorate.gov.uk/projects/north-east/byers-gill-solar/>.

## 6. Climate Change

### 6.1. Baseline

- 6.1.1. The assessment of climate includes the effects of greenhouse gas (GHG) emissions associated with the Proposed Development and resilience of the Proposed Development to cope with extreme weather events and other future impacts of climate change. The site is currently used for arable farming, with managed hedgerows and trees. As a result, the site likely has a high capacity for carbon capture and storage. The baseline GHG emissions also include the fuel use of agricultural vehicles and machinery.
- 6.1.2. The baseline for the assessment of climate resilience is made up of the current climate observations and future projected climate conditions and extreme weather events in the local area. UK climate projections predict an increase in annual temperatures and rainfall, with wetter winters and drier summers and increases in the frequency of heatwaves, prolonged periods with no rainfall and days with heavy rainfall (when precipitation is greater than 25mm).

### 6.2. Mitigation

- 6.2.1. The Proposed Development has been designed, to avoid and prevent adverse environmental effects on climate change through the process of design development and consideration of good design principles.
- 6.2.2. A Construction Environment Management Plan will be implemented to reduce the likelihood of impacts or their magnitude upon the climate, if they were to occur. Key measures around resource use, re-use and disposal, travel and maintenance vehicles are integrated within this.
- 6.2.3. In terms of climate change resilience amongst other measures the Proposed Development has been designed to be resilient to impacts arising from projected future extreme weather events and climatic conditions and is located outside of Flood Zones.

### 6.3. Summary of residual effects

#### Greenhouse gas emissions

- 6.3.1. The greatest GHG impacts would occur during construction of Byers Gill Solar, stemming from the construction of the materials and components needed for the solar farm. Transportation of these materials, waste, fuel use and workers commuting to the site represent the other sources of GHG emissions. It is concluded that the construction of the Proposed Development would have a minor adverse effect on greenhouse gas emissions, which is not significant.
- 6.3.2. During operation, the maintenance of the Proposed Development over its 40 year lifespan will result in the largest portion of these operational GHG emissions. The



operational emissions are also expected to decrease over time with the electrification of machinery and vehicles. However, the Proposed Development's generation of renewable electricity will outweigh any direct emissions from its operation. Therefore, it is concluded that the operation of the Proposed Development would have a major beneficial effect on the climate, which is significant. In addition, the change in land use of the site, from agricultural/arable to a more diverse mix of grassland, scrubland, woodland and hedgerows would lead to a slight increase in the ability of the land to capture carbon which is deemed a positive effect.

- 6.3.3. Decommissioning emissions are harder to predict, as the conditions 40 years in the future are not yet known. It has been assumed that land which would be changed from arable to grassland or scrubland would revert to arable land following decommissioning and as such its ability to capture carbon reduced, but that any new woodlands and hedgerows planted or enhanced would remain. This is considered to result in a minor adverse effect on greenhouse gas emissions, which is not significant.

#### **Climate change resilience**

- 6.3.4. The Proposed Development has been designed to be resilient to impacts arising from projected future extreme weather events and climatic conditions, and designed in accordance with current planning, design and engineering practices and codes. This includes being modelled and designed to withstand flooding events with a 40% climate change allowance factored in.
- 6.3.5. No likely significant effects are predicted with regard to the vulnerability of the Proposed Development to climate change during construction, operation or decommissioning.

## 7. Biodiversity

### 7.1. Baseline

- 7.1.1. There are numerous sites designated for ecological interest within the vicinity of the Proposed Development. These include Teesmouth and Cleveland Coast Special Protection Area (SPA), Ramsar, Thrislington Special Area of Conservation (SAC) and several Sites of Special Scientific Interest (SSSI) including Newton Ketton Meadow SSSI. There are also two Local Nature Reserves (LNRs) and two Local Wildlife Sites (LWS) including Carr House Pond Darlington LWS which is located immediately adjacent to the Proposed Development.
- 7.1.2. There are protected and priority species within the Order Limits, including breeding and winter birds, invertebrates, amphibians, reptiles, bats, water vole and otter, badgers and other species such as brown hare and hedgehog. The majority of habitats across the Order Limits were species poor, however most of the hedgerows, ponds, areas of woodland and watercourses qualify as priority habitat.

### 7.2. Mitigation

- 7.2.1. During construction, works would be timed to minimise the impact on wildlife, and fences would be used to protect habitats and existing landscaping, including tree roots. These measures are set out in a Construction Environmental Management Plan.
- 7.2.2. New habitats would be created and existing ones enhanced, through the planting of hedgerows, wildflower meadows and legume rich grasses, both under the panels and around the edges of fields, which would significantly increase biodiversity and the number and diversity of animal species. These would be managed through a Landscape Environmental Management Plan.
- 7.2.3. The layout of the Panel Areas has been designed to avoid areas where wintering and nesting birds have been previously recorded, and some areas of the Proposed Development will not have any panels so habitats remain available for these species. The layout also means many habitat areas will remain, such as field margins, woodland, most hedgerows, and all trees.
- 7.2.4. A biodiversity net gain (BNG) of approximately 87% of habitats and 108% net gain in hedgerows is reported for the Proposed Development. BNG is a way of creating and improving natural habitats. BNG makes sure development has a measurably positive impact (net gain) on biodiversity, compared to what was there before development.

### 7.3. Summary of residual effects

- 7.3.1. Throughout construction and decommissioning, there would be potential impacts on wildlife, habitats, plants and watercourses, and all are assessed to be negligible – low<sup>1</sup> adverse, and not significant. This is partly due to the short term nature of the construction and decommissioning periods, as well as taking into account mitigating measures that would be applied regarding light, noise and pollution, and the timing of the works. Many habitats in the Order Limits run along field margins, and in the majority of instances are retained.
- 7.3.2. Small sections of hedgerows may need to be removed to allow for construction, however only poor quality hedgerows will be affected and would be replanted with native species. The majority of hedgerows will be retained. This is considered to be a short term impact and is not significant.
- 7.3.3. The operation of solar farms requires minimal work, and so there would not be a significant impact on biodiversity. Little lighting would be required, so nocturnal animals such as bats would not be affected.
- 7.3.4. During operation open ground will provide breeding and foraging habitat for ground nesting birds such as curlew, lapwing and skylark. Increased nesting and foraging habitats due to habitat enhancement of field margins, hedgerows and under solar panel area could result in a moderate beneficial effect upon breeding birds, this is considered not significant as the overall level of beneficial effect will depend on the efficacy of mitigation.

---

<sup>1</sup> Term specific to the biodiversity topic methodology which differs slightly to standard terms defined upfront which utilises the term 'minor' instead.

## 8. Landscape and Visual

### 8.1. Baseline

- 8.1.1. The Landscape and Visual assessment considers the likely effects of the landscape character, designated landscapes and visual receptors, such as people in the public domain, of the Proposed Development.
- 8.1.2. Byers Gill Solar is not located in any national or local landscape designations. The land within the Order Limits are agricultural area, with woodland, hedgerows and hedgerow trees across the landscape, leading to constrained views, although there are some higher and open locations nearby with wider views. There are villages and local roads throughout the Order Limits.

### 8.2. Mitigation

- 8.2.1. The layout of the Proposed Development has been designed so as to minimise the impact of the solar farm on local views of the landscape. Specific measures include:
- Reductions to the extent of the Panel Areas to mitigate effects on villages and views from homes – with particular consideration of the opportunities provided by topographic and vegetative screening.
  - Planting of tree lines along northern boundaries of the Panel Areas to reduce visibility where this can be achieved without shading panels by tree canopies.
  - Re-routing of footpaths that would pass through panel areas, so that routes would only have initially open views of solar panels to one side, and an established field boundary on the other.
  - New hedgerow planting where existing hedgerows are sparse or where the Panel Area edge does not coincide with an existing field boundary.
  - The proposed community orchard adjacent to Bishopton recreation ground and school to provide both mitigation and a community facility.
- 8.2.2. The land would also be maintained so that, once the solar farm has been decommissioned, the landscape is similar to its present state and can be returned to its current use.

### 8.3. Summary of residual effects

- 8.3.1. The on-site substation and associated communications mast, and solar panels, would be the most visible elements of the solar farm. Because of hedgerows, trees and the undulating landscape, the Panel Areas are mostly only visible up to 1.5km away, apart from a few areas where the panels are on slopes, or where occasional higher land in the distance would look across the Proposed Development. From Great Stainton, there would be frequent, close views of the Proposed Development, and it is likely the solar farm would become a key characteristic of the area. There are other nearby local areas that would be in close proximity to the Proposed Development, which will also

experience changes to views and character, including Bishopton. The effects are considered moderate adverse and greater during operation, considered a significant adverse effect.

- 8.3.2. Some walkers and road users within 1km would also be able to see the Panel Areas from different parts of the road and Public Right of Way (PRoW) network surrounding the Proposed Development. The effects are considered moderate adverse and greater during operation, considered a significant adverse effect.
- 8.3.3. Following the maturity of new planting in years 10-40 some of these effects would reduce, although would still be considered significant for the majority of receptors.

## 9. Cultural Heritage and Archaeology

### 9.1. Baseline

9.1.1. To understand the archaeological history of the Order Limits, geophysical surveys have been undertaken of the surrounding area. The earliest evidence of human activity in this area is from the Neolithic period, but there are few traces of human life in this area until the Iron Age. The area was occupied during the Saxon and Medieval periods, and local villages particularly grew during the 17th to 19th centuries, with the landscape being used for both agriculture and industrial production. Designated heritage assets within the Study Area for assessment, considered to be 2km from the Order Limits, comprise:

- Five Scheduled Monuments;
- Two Grade I Listed Buildings, and 74 Grade II Listed; and
- Two Conservation Areas.

9.1.2. Between 1916 and 1919, there was a First World War airfield located west of Bishopton, used for night landings. This was likely sparse, with a few timber structures, and would not have been paved. It is unlikely there are any physical remains of the airfield.

### 9.2. Mitigation

9.2.1. The design of the Proposed Development would be flexible, with the ability for foundations for panels moved to avoid certain archaeological features as necessary. Any archaeological remains found will be investigated and recorded. Enhancing and planting new hedgerows would mitigate views of the site, and so limit its impact on the character and setting of heritage assets.

9.2.2. An Archaeological Management Strategy will be in place to manage impacts upon archaeological remains.

9.2.3. There is an opportunity to use the Proposed Development to increase local knowledge about the history of the former First World War airfield. What shape this would take would be formulated through engagement with the local community and relevant stakeholders at the appropriate time.

### 9.3. Summary of residual effects

9.3.1. During construction, any known and unknown archaeological remains of low or negligible heritage significance within the Order Limits will remain in situ and will be recorded under a watching brief. The effect would be negligible and not significant.

9.3.2. Any unknown archaeological remains of medium heritage significance would be mitigated through design via the use of floating foundations. As a result there would be no impact. Although the Scheduled Monument motte and bailey castle located 400m



south-east of Bishopton will experience a change in setting during operation of the Proposed Development, this is considered to only be negligible and is not considered to be significant. The Proposed Development will be either screened by existing vegetation and/or buildings, not visible due to topography or located at a distance whereby it would not be considered to lie within the setting of the assets. No other significant effects are expected during operation to heritage assets, such as The Bishopton Conservation Area and Asset Group 3: Bishopton (a number of designated heritage assets located within the village of Bishopton) as the design has aimed to reduce any visual intrusion into assets settings.

- 9.3.3. During decommissioning there will be no direct or indirect effects on heritage assets from the Proposed Development.

## 10. Land Use and Socioeconomics

### 10.1. Baseline

- 10.1.1. The number of economically active people within Stockton on Tees, Darlington and County Durham is broadly in line with the average for the North East Region.
- 10.1.2. There are a number of facilities in close proximity to the Order Limits including places of worship, leisure centres, education provision, community facilities, and public houses.
- 10.1.3. Two development site allocations Berrymead Farm; and Skerningham approximately 1 mile from the Order Limits. There is a safeguarded limestone mineral resource which part of the Proposed Development covers; this only represents a small element of the overall limestone resource in the county and the limestone could be extracted following decommissioning of the solar farm.
- 10.1.4. There a number of Public Rights of Way (PRoW) in the area, although none of these are part of recognised regional or national trails. There are no National Cycle Network routes in the area, although it is known to be used for recreational cycling.
- 10.1.5. The Order Limits are comprised of agricultural, arable land. The topsoil is predominantly clay, medium clay loam or heavy clay loam, with slowly permeable clay subsoil beneath. Within the Order Limits, 2.4 ha is classed as Grade 2; 27.6 ha is classed as Subgrade 3a; and 425.5ha is classed as Subgrade 3b under the agricultural land classification. Grade 2 and Subgrade 3a are classed as Best and Most Versatile (BMV) agricultural land. As such there is a total of 30 ha BMW land within the Order Limits.

### 10.2. Mitigation

- 10.2.1. New additional, and diverted, permissive PRoWs are integrated into the design of the Proposed Development, to enhance the existing network of footpaths and enabling a more cohesive public right of way network.
- 10.2.2. Any impacts to soil resources would be avoided where possible, and otherwise managed through a Soil Management Strategy.

### 10.3. Summary of residual effects

- 10.3.1. The Proposed Development will offer a number of direct and indirect economic benefits during construction and decommissioning, including some direct employment of construction staff as well as local supply chain opportunities. Non-local construction staff would be staying and spending locally during the construction period, bringing wider indirect benefits to local accommodation, businesses and service providers. This is assessed to have a minor beneficial effect, which is not significant. There is unlikely to be any effect during operation due to the limited number of workers required to maintain the Proposed Development.
- 10.3.2. Access will be maintained to recreational and community facilities throughout construction and operation and as such the effect will be negligible and not considered significant.
- 10.3.3. Considering development land, there will be a minor adverse effect upon the safeguarded limestone mineral resource following the sterilisation of a small amount of this resource during construction, this is not considered significant. The two development allocations in close proximity to the Order Limits would remain unaffected by the Proposed Development.
- 10.3.4. There will be some impact on the existing PRowS during construction and decommissioning, considered minor adverse, but this would be short term, and as such this effect is not considered significant. It is the intention to retain access to PRowS during the operational stage wherever safe and practicable to do so. Temporary closures or diversions to allow for maintenance activities will be subject to agreement with the Local Planning Authority. Any impacts would be short term and considered minor adverse, and as such not considered significant.
- 10.3.5. The Proposed Development would require the temporary loss of approximately 457ha of agricultural land, in addition to approximately 33ha of non-agricultural land. The vast majority (93%) of the agricultural land is of Subgrade 3b quality; areas of BMV quality land in Grades 2 and 3a total 30ha or 6.6% of the agricultural land used temporarily. The effect of the Proposed Development on all agricultural land during construction would therefore be a direct, temporary, long-term moderate adverse effect, which is significant. The effect on BMV quality land would also be moderate adverse, which is significant. However it is anticipated that the quality of agricultural land would have improved by the time of decommissioning due to the undisturbed nature of the grassland leading to benefits to soil health and structure. This effect cannot be quantified at this stage but is expected to be moderate beneficial, and potentially significant.
- 10.3.6. Most of the soils within the Proposed Development area are clay or heavy clay loam which are soil textures of high sensitivity. Following best practice guidance on soil management should ensure that any damage is minimal and that the soil will continue to be able to fulfil its various ecosystem functions. The effect on soil resources would therefore be moderate adverse during construction.

# 11. Hydrology and Flood Risk

## 11.1. Baseline

- 11.1.1. Groundwater in the Order Limits is drained towards the east, south and west, via the Whitton Beck, Newton Beck and River Skerne respectively. Due to this drainage, the site can be considered to be hydrologically linked to some nearby designated sites, such as Newton Ketton Meadow (a Site of Special Scientific Interest (SSSI)) and the Teesmouth and Cleveland Coast (SSSI and Ramsar Site). The nearby watercourses do not achieve a good ecological status, due to poor soil management and sewage discharge.
- 11.1.2. The Order Limits is within Source Protection Zones, which safeguard drinking water quality. Most of the Order Limits is within Flood Zone 1, and so is not considered to be at a significant risk of flooding. Two parts of the site are within Flood Zone 3, and so have a higher risk of flooding. The majority of the site is a low risk of surface water flooding and groundwater flooding.

## 11.2. Mitigation

- 11.2.1. A Flood Risk Assessment and Drainage Strategy have been prepared and propose a drainage scheme and maintenance plan that would ensure that surface water run off is managed as per existing site conditions. Measures will be put in place to manage runoff and sediment, and pollution. In addition, a Construction Surface Water Management Plan will be in place. This would identify any risks to surface water and how they would be managed and monitored through construction.
- 11.2.2. An 8m buffer zone has been designed into the scheme design from the fence line of the Proposed Development to the watercourses, with increased vegetation helping to manage erosion and sedimentation and increase the biodiversity of the area. Infrastructure has been offset a further 2m from the fencing such that it is approximately 10m away from the watercourse. Building in areas of fluvial (river) flood risk has been avoided.
- 11.2.3. Any land used during the construction, such as the site compound, would be replanted.
- 11.2.4. The site would be covered with vegetation at all times, helping to reduce any potential pollution from reaching the watercourses.

## 11.3. Summary residual effects

- 11.3.1. There is a potential risk of increased pollution to watercourses during the construction and decommissioning phases, with the highest increase anticipated during excavation works. No large scale excavations would be required for installation of the solar panels, but some may be required for the construction of the substation. It is considered that

the risk of construction activities affecting water quality is minor adverse and not significant.

- 11.3.2. Nearby designated sites could also be at risk of increased pollution, however considering the implementation of a Construction Environment Management Plan and Construction Surface Water Management Plan increased pollution to designated sites has been assessed as negligible, and not significant.
- 11.3.3. Similarly, there would be similarly negligible effects on groundwater and public water supply during construction or decommissioning, considered not significant.
- 11.3.4. There is a potential of increased flood risk from the compaction of soils by heavy machinery, but this would be mitigated such that the effect is assessed as negligible and not significant.
- 11.3.5. It is considered that during operation, fuel spills from maintenance vehicles or contaminated run off from maintenance activities that could enter the watercourses are of a low likelihood. It is therefore concluded that there would be a minor adverse effect which is not significant.
- 11.3.6. Further, use of maintenance vehicles could result in soil compaction if not managed properly which in turn could increase flood risk, however given run-off control measures, the use of permeable access tracks and the implementation of a Surface Water Management Plan these would be minor adverse which is not significant.
- 11.3.7. The change in use of the land from agriculture to the Proposed Development would result in fewer spray chemicals and fertilisers being used, which could reduce the amount of phosphates and nitrates entering the watercourses; this is considered an overall beneficial effect, which is not significant.

## 12. Noise and Vibration

### 12.1. Baseline

- 12.1.1. The Proposed Development is in a rural area of low population density, except for individual settlements such as Bishopton and Redmarshall to the north and Carlton to the east. Potential noise-sensitive dwellings are located within these settlements or as more isolated properties or farms. The nearest identified sensitive receptors to the Proposed Development include:
- The settlements of Brafferton, Newton Ketton, Great Stainton, Bishopton, Old Stillington
  - Local farms and isolated properties
  - Ecological designated sites – Redcar Field SSSI, Newton Ketton Meadow SSSI, Whitton Bridge Pasture SSSI
- 12.1.2. A baseline noise monitoring survey was undertaken in April 2023 at 9 monitoring locations over a 24 hour period. This showed existing ambient average baseline noise values of between 43 and 70 dB<sub>LAeq,T</sub>.

### 12.2. Mitigation

- 12.2.1. Any potential noise and vibration impacts are managed through the implementation of mitigation and management measures through the Construction Environmental Management Plan. Travel planning and HGV management mitigation measures during the construction stage will be incorporated into a Construction Traffic Management Plan.
- 12.2.2. The inverters, which form part of the battery system for the solar farm, have been located at least 300m from sensitive locations to minimise any potential noise effects. The inverters will also be housed within containers which will further reduce the noise levels at source.

### 12.3. Summary of residual effects

- 12.3.1. During construction and decommissioning, there may be effects from construction traffic such as HGVs, but these would be temporary in nature. There is predicted to be a negligible effect on traffic levels, so any increase in noise will not be significant. Similarly, there is unlikely to be perceptible vibration from construction traffic.
- 12.3.2. Given the potentially small distances between the construction activities and residential dwellings some receptors may be subject to short term, adverse and reversible, moderate adverse noise effects, which are considered significant. However, this is likely to be limited to short periods of time during any working day, and not for an extended number of days longer than 1 month, due to the transient nature of the construction. Construction will also be during daytime hours only. To minimise the potential levels of

noise generated by the construction measures outlined in the Construction Environment Management Plan will be followed.

- 12.3.3. Minimal traffic trips would be required during the operation of the Proposed Development and contained largely to those required for maintenance, and so it is unlikely there will be a significant effect on noise or vibration. However, there could be some noise created by the supporting infrastructure for the Proposed Development, although this is assessed to be negligible and not significant due to ensuring 'noisy' equipment is placed as far as practicable from receptors.



## 13. Traffic and Transport

### 13.1. Baseline

- 13.1.1. The Order Limits is in a rural area, with a number of nearby local villages. The nearest Strategic Roads are the A1, A66 and A19. On assessing collision data, there does not appear to be a common causation factor or significant trend for these incidents. There are weight limits on some local roads.
- 13.1.2. There are limited pavements or footways nearby the Proposed Development and no National Cycle Networks. There are numerous Public Rights of Way (PRoW) and some advisory cycle routes and bridleways that go through the Panel Areas.
- 13.1.3. There is little existing public transport provision.

### 13.2. Mitigation

- 13.2.1. A Construction Traffic Management Plan would be produced to minimise any negative environmental impacts. This would include access arrangements, transportation of materials and waste, and the management of vehicles on site.

### 13.3. Summary of residual effects

- 13.3.1. Additional traffic caused by the construction of the Proposed Development is predicted to be negligible and temporary. During the construction phase, the majority of roads within the study area see an increase in traffic movements of less than 10%<sup>2</sup>. There are however some routes where construction traffic would temporarily increase daily traffic flows by more than 10%. Lime Lane is forecast to see an increase of up to 20% in daily traffic flows and Aycliffe Lane an increase of up to 12%. However, these roads are subject to low traffic flows and it is considered that this will have a negligible effect on traffic which is not significant.
- 13.3.2. The negligible increase in traffic is not expected to have an impact on driver delays.
- 13.3.3. The route of the cables has not yet been decided, however road based routes could be used which could have a temporary minor adverse impact on driver delay, considered not significant.
- 13.3.4. The negligible increase in traffic is not expected to have an impact on pedestrian and cyclist journeys.
- 13.3.5. The minimal amount of operational work required by solar farms would also mean there would be a negligible amount of traffic caused by the operation of the Proposed

---

<sup>2</sup> 10% is the threshold criteria for determination of significant effects

Development. Operational trips are expected to increase daily traffic by only 0.02% and are therefore not significant.

- 13.3.6. Decommissioning of the Proposed Development could give rise to the same level of forecast trip generation as the construction phase of the Proposed Development. Therefore, the construction stage represents a worst case scenario of the potential impacts of the decommissioning phase. It is expected that the principles agreed to minimise disruption during construction will be reviewed and applied during decommissioning in consultation with the local authority.

## 14. Cumulative Effects

### 14.1. In-combination effects assessment

14.1.1. An assessment of in combination effects has been undertaken as part of the EIA to consider impacts from multiple topics upon the following receptor groups:

- Human receptors
- Ecological Designated Sites and county level designations and priority habitats
- Protected Species
- Designated Heritage features

14.1.2. The assessment concluded that there would be no significant in-combination effects.

14.1.3. In-combination climate change impacts have been scoped out of assessment the EIA as the Proposed Development is not anticipated to exacerbate climate parameters, as agreed through the EIA Scoping Opinion.

### 14.2. Cumulative effects assessment

14.2.1. A cumulative effects assessment has been undertaken using a Zone of Influence<sup>3</sup> for environmental aspects (based on the extent of likely effects), and consideration of other developments which could give rise to cumulative effects in combination with the Proposed Development.

14.2.2. The assessment of the cumulative impacts of these other developments has concluded that in the majority of cases there will be no significant cumulative effects.

14.2.3. However, there is expected to be a significant cumulative effect relating to the temporary loss of agricultural land. Each other development, along with the Proposed Development, will manage their impact upon agricultural land via Soil Resource Management Plan. In the case of the Proposed Development, the agricultural land will only be lost temporarily, and likely to return in better condition following decommissioning of the Proposed Development.

---

<sup>3</sup> The Zol refers to the spatial area over which an effect from a project is likely to be experienced.

## 15. Summary

15.1.1. A summary of the significant residual effects from the Proposed Development are provided in Table 15-1, Table 15-2 and Table 15-3. Residual effects are defined as those effects that remain following the implementation of environmental mitigation measures secured via the DCO.

Table 15-1 - Significant effects during construction

Impact	Embedded/Essential Mitigation and how secured	Receptor Sensitivity	Magnitude of impact	Significance of effect
<b>Climate change</b> - No significant residual effects				
<b>Biodiversity</b> - No significant residual effects				
<b>Landscape and visual</b>				
Changes to character of Bishopton (on road cable route)	No specific measures are proposed to mitigate the short-term effects on landscape and visual receptors that would arise during construction. During construction the following embedded measures will be applied: <ul style="list-style-type: none"> <li>A pre-commencement survey of vegetation prior to construction should be undertaken to establish the extent to which any vegetation removal may be needed and identify required protection zones.</li> <li>Protect and retain existing trees and vegetation via construction exclusion zones and tree protective fencing.</li> <li>Temporary site lighting during construction required to enable safe working during hours of darkness will be designed as far as reasonably practical so as not to cause a nuisance outside of the Proposed Development. Standard best practice measures will be employed to minimise light spill, including glare.</li> </ul>	High/medium	Moderate	Major/moderate, Adverse, Significant
Changes to views from PRoW within 1km – Between A167, Salters Lane, Lea Hall and Little Ketton Farm		High/medium	Moderate	Major/moderate, Adverse, Significant
Changes to views from ProW within 1km – East of Salters Lane between Lea Hall, Newton Ketton, Elstob Lane and Hill House Lane		High/medium	Moderate	Major/moderate, Adverse, Significant
Changes to views from ProW within 1km – East of Elstob Lane and Hill House Lane, between Bleach House Bank, Stoney Flatt Farm and Gillyflatts		High/medium	Moderate	Major/moderate, Adverse, Significant
Changes to views from PRoW within 1km - East of Bleach House Bank between Stillington, Redmarshall and Stoney Flatt Farm		High/medium	Moderate	Major/moderate, Adverse, Significant

Impact	Embedded/Essential Mitigation and how secured	Receptor Sensitivity	Magnitude of impact	Significance of effect
<b>Cultural heritage and archaeology</b> - No significant residual effects				
<b>Land use and socioeconomics</b>				
Loss of land for agricultural production	Outline Soil Resources Management Plan (Document Reference 6.4.2.12)	Low	High	Moderate adverse, significant  It is also noted that the cumulative loss of agricultural land, alongside other developments, could be considered significant in EIA terms due to the extent of temporary loss that may happen collectively.
Disturbance of soil resources	Outline Soil Resources Management Plan (Document Reference 6.4.2.12)	High	Low	Moderate adverse, significant
<b>Hydrology and flood risk</b> - No significant residual effects				
<b>Noise and vibration</b>				
Construction activities noise and vibration	A Construction Environmental Management Plan (CEMP) would be produced by the PC and agreed with the relevant local planning authorities prior to construction. ES Appendix 2.6 Outline CEMP (Document Reference 6.4.2.6) outlines the mitigation and management measures to be implemented to manage any potential noise and vibration impacts.	Moderate	Low	Moderate adverse, significant
<b>Traffic and transport</b> - No significant residual effects				

Table 15-2 - Significant effects during operation

Impact	Embedded/Essential Mitigation and how secured	Receptor Sensitivity	Magnitude of impact	Significance of effect
<b>Climate change</b>				
Production of low carbon energy during operation	Not applicable due to nature of effect.	-	-	Beneficial, significant  It is also noted, that cumulative effect with other renewable energy production developments are reasonably expected to provide a notable beneficial effect in the UK's journey towards net-zero as this is intrinsic to their need. It is reasonable to assume this could be considered significant in EIA terms due to its potential national influence, although this cannot be quantified at this stage.
<p><b>Biodiversity</b> - No significant residual effects</p> <p>However, it is noted a notable the cumulative benefit of biodiversity net gain alongside other developments could be considered significant in EIA terms due to its potential influence both locally and more nationally in terms of halting the decline of biodiversity and encouraging its restoration.</p>				
<b>Landscape and visual</b>				
Changes to character of LCA Darlington 6: Great Stainton Farmland	The layout of the Proposed Development has been designed so as to minimise the impact of the solar farm on local views of the landscape. Specific measures include: <ul style="list-style-type: none"> <li>Reductions to the extent of the Panel Areas to mitigate effects on villages and views from homes – with particular</li> </ul>	Medium	Substantial	Major/moderate, Adverse, Significant
Changes to character of Great Stainton		High/medium	Moderate	Major/moderate, Adverse, Significant
Changes to character of Bishopton		High/medium	Substantial/moderate (Years 1-10)	Major/moderate, Adverse, Significant (Years 1-10)

Impact	Embedded/Essential Mitigation and how secured	Receptor Sensitivity	Magnitude of impact	Significance of effect
Changes to views at Great Stainton	consideration of the opportunities provided by topographic and vegetative screening. <ul style="list-style-type: none"> <li>▪ Planting of tree lines along northern boundaries of the Panel Areas to reduce visibility where this can be achieved without shading panels by tree canopies.</li> <li>▪ Re-routing of footpaths that would pass through panel areas, so that routes would only have initially open views of solar panels to one side, and an established field boundary on the other.</li> <li>▪ New hedgerow planting where existing hedgerows are sparse or where the Panel Area edge does not coincide with an existing field boundary.</li> <li>▪ The proposed community orchard adjacent to Bishopton recreation ground and school to provide both mitigation and a community facility.</li> </ul>	High/medium	Substantial/moderate	Major/moderate, Adverse, Significant
Changes to views at Bishopton		High/medium	Substantial/moderate (Years 1-10)	Major/moderate, Adverse, Significant (Years 1-10)
Changes to views from PRow within 1km - Between A167, Salters Lane, Lea Hall and Little Ketton Farm		High/medium	Substantial (Years 1-10) Substantial/moderate (Years 10-40)	Major/moderate, Adverse, Significant (Years 1-10) Major/moderate, Adverse, Significant (Years 10-40)
Changes to views from PRow within 1km - East of Salters Lane between Lea Hall, Newton Ketton, Elstob Lane and Hill House Lane		High/medium	Substantial/moderate (Years 1-10) Moderate (Years 10-40)	Major/moderate, Adverse, Significant (Years 1-10) Major/moderate, Adverse, Significant (Years 10-40)
Changes to views from PRow within 1km - East of Elstob Lane and Hill House Lane, between Bleach House Bank, Stoney Flatt Farm and Gillyflatts		High/medium	Substantial/moderate	Major/moderate, Adverse, Significant
Changes to views from PRow within 1km - East of Bleach House Bank between Stillington, Redmarshall and Stoney Flatt Farm		High/medium	Moderate	Major/moderate, Adverse, Significant
<b>Cultural heritage and archaeology</b> - No significant residual effects				
<b>Land use and socioeconomics</b> - No significant residual effects				
<b>Hydrology and flood risk</b> - No significant residual effects				
<b>Noise and vibration</b> - No significant residual effects				
<b>Traffic and transport</b> - No significant residual effects				



Table 15-3 - Significant effects during decommissioning

Impact	Embedded/Essential Mitigation and how secured	Receptor Sensitivity	Magnitude of impact	Significance of effect
<b>Climate change</b> - No significant residual effects				
<b>Biodiversity</b> - No significant residual effects				
<b>Landscape and visual</b>				
Changes to views from PRoW within 1km - Between A167, Salters Lane, Lea Hall and Little Ketton Farm	No measures are proposed to mitigate the short-term effects on landscape and visual receptors that would arise during decommissioning.	High/medium	Moderate	Major/moderate, Adverse, Significant
<b>Cultural heritage and archaeology</b> - No significant residual effects				
<b>Land use and socioeconomics</b>				
Improved soil health and return to agricultural production	Outline Soil Resources Management Plan (Document Reference 6.4.2.12) and leaving the land fallow	Low to high	High	Moderate beneficial, significant
<b>Hydrology and flood risk</b> - No significant residual effects				
<b>Noise and vibration</b>				
Decommissioning activities noise and vibration	A Decommissioning Environmental Management Plan (DEMP) would be produced by the PC and agreed with the relevant local planning authorities prior to decommissioning. ES Appendix 2.7 Outline DEMP (Document Reference 6.4.2.7) outlines the mitigation and management measures to be implemented to manage any potential noise and vibration impacts.	Moderate	Low	Moderate adverse, significant
<b>Traffic and transport</b> - No significant residual effects				

## 16. How to find out more

- 16.1.1. The Environmental Statement and other supporting documents for the DCO can be viewed and downloaded via the project page on the National Infrastructure Planning website, available at: <https://infrastructure.planninginspectorate.gov.uk/projects/north-east/byers-gill-solar/>.
- 16.1.2. Hard copies can be requested free of charge from [enquiries@byersgillsolar.com](mailto:enquiries@byersgillsolar.com).
- 16.1.3. Any comments ('written representation') on the application should be made directly to PINS during the examination stage of the Proposed Development via the project page outlined above.
- 16.1.4. The status of the project through examination and determination will be kept up to date via the project page outlined above.
- 16.1.5. More information regarding the DCO process is available on the National Infrastructure Planning website, available at: [https://infrastructure.planninginspectorate.gov.uk/application\\_process/the\\_process](https://infrastructure.planninginspectorate.gov.uk/application_process/the_process).