



Craig Y Perthi Solar Farm

Environmental Impact Assessment Scoping Report

Prepared for

RWE

RWE Renewables UK

July 2026
3312-01-EIA-001



Document Control

Revision	Date	Prepared By	Reviewed / Approved By
3312-01-EIA-001	July 2026	James Walkington	Steve Harding

© AXIS P.E.D. Ltd 2026. All rights reserved.

This document and its accompanying documents contain information which is confidential and is intended only for the use of the client. If you are not one of the intended recipients any disclosure, copying, distribution or action taken in reliance on the contents of the information is strictly prohibited.

Unless expressly agreed, any reproduction of material from this document must be requested and authorised in writing from AXIS P.E.D. Ltd. Authorised reproduction of material must include all copyright and proprietary notices in the same form and manner as the original and must not be modified in any way. Acknowledgement of the source of the material must also be included in all references.



Well House Barns, Chester Road, Bretton, Chester, CH4 0DH
1st Floor, Barfield House, Alderley Road, Wilmslow, SK9 1PL
Maling Exchange, Studio 305, Hoults Yard, Walker Road, Newcastle Upon Tyne, NE6 2HL

T: 0344 8700 007
enquiries@axis.co.uk
www.axis.co.uk

CONTENTS

1.0	INTRODUCTION AND BACKGROUND	1
1.1	Introduction	1
1.2	The Applicant.....	1
1.3	Planning History and Evolution of the Proposed Development.....	2
1.4	Requirement for Environmental Impact Assessment (EIA).....	4
1.5	Purpose of Scoping.....	5
1.6	Content of this Scoping Report	7
2.0	THE SITE	8
3.0	THE PROPOSED DEVELOPMENT.....	10
3.1	The Proposed Development	10
3.2	Key Design Considerations	11
3.3	Embedded Mitigation	16
3.4	Standard Control Measures	19
3.5	Components of the Solar Farm	24
3.6	Construction of the Solar Farm	33
3.7	Decommissioning.....	39
4.0	EIA SCOPING SUMMARY	41
4.2	Traffic and Transport.....	43
4.3	Air Quality / Noise and Vibration	45
4.4	Population and Human Health	45
4.5	Geology and Soils.....	46
4.6	Material Assets and Waste	47
4.7	Climate Change	48
4.8	Major Accidents and Disasters.....	48
4.9	Lighting / Glare	49
5.0	OVERARCHING IMPACT ASSESSMENT METHODOLOGY	50
5.1	Introduction	50
5.2	ES Chapter Structure.....	50
6.0	LANDSCAPE AND VISUAL IMPACT ASSESSMENT	66
6.1	Introduction	66
6.2	Baseline	66
6.3	Potential Effects	77
7.0	BIODIVERSITY	81
7.1	Introduction	81
7.2	Baseline	81
7.3	Potential Effects	85
7.4	Assessment Methodology	86
8.0	CULTURAL HERITAGE	98



8.1	Introduction	98
8.2	Baseline	98
8.3	Potential Effects	101
9.0	HYDROLOGY AND FLOOD RISK	105
9.1	Introduction	105
9.2	Baseline	105
9.3	Potential Effects	106
10.0	PROPOSED CONTENTS OF THE ENVIRONMENTAL STATEMENT	112

TABLES

Table 4.1	Summary of proposed EIA scope	41
Table 5.1	Example Significance of Effect Matrix	52
Table 5.2	Cumulative Developments	61
Table 6.1	Summary of proposed EIA scope	66
Table 7.1	Solar Farm Zone of Influence on Ecological Receptors	81
Table 7.2	Consultation on Ecology	88
Table 7.3	Matrix for assessment of significant effect	90
Table 7.4	Avifauna interest features of internationally designated sites	97
Table 9.1	Deprivation of Sensitivity of Receptor	108
Table 9.2	Deprivation of Magnitude of Change	109
Table 9.3	Significance Matrix	111

FIGURES

Figure 1	– Location Plan
Figure 2	– Proposed Site Layout
Figure 3	– Historic Site Layout – Previous Application
Figure 4	– Environmental Constraints for Site Selection
Figure 5	– Cumulative Developments
Figure 6	– ZTV
Figure 7	– Illustrative Landscape Masterplan

APPENDICES

Appendix 1	– Acceptance of DNS Notification
Appendix 2	– ALC Report
Appendix 3	– Transport Statement
Appendix 4	– Construction and Transport Management Plan
Appendix 5	– Noise Report



1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

- 1.1.1 RWE Renewables UK ('the Applicant'), a part of the RWE Group, is proposing to develop a solar farm and associated development ('the Proposed Development') on land to the east of Newport near the Craig Y Perthi Wood and the village of Bishton. The site is west of the Magor Brewery, south of the M4 motorway, northwest of the Tesco Distribution centre, and north of Llanwern steelworks, separated by the South Wales Main Line.
- 1.1.2 The Proposed Development would be classed as a Development of National Significance ('DNS'), as it relates to an electricity generating station that has an installed generating capacity of between 10 and 350 MW¹. Any application for the Proposed Development would be determined by Planning and Environment Decisions Wales ('PEDW'), with a decision being made by the Welsh Ministers.
- 1.1.3 Confirmation from PEDW that the Proposed Development has been accepted as a DNS application, is included in Appendix 1.

1.2 The Applicant

- 1.2.1 The Applicant is part of the largest power producer in Wales, with over 1 GW of renewable energy generation, around a quarter of Wales' total renewable energy production. The Applicant operates out of its dedicated offices in Baglan, Port of Mostyn and Dolgarrog, directly employing over 300 people, with around 100 renewable energy apprentices in training through its partnership with Coleg Llandrillo. They place a special focus on engaging and working closely with local communities who in turn help to shape their developments, with over £21m already invested through dedicated community funds in Wales. In addition to their focus on supporting local communities, improving local biodiversity of their solar sites is another key priority, with a commitment to create a minimum biodiversity net gain of over 50% on every new solar scheme, 5x the industry standard.

¹ *The Developments of National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016 (as amended), Regulation 4(1)*



1.3 Planning History and Evolution of the Proposed Development

Planning context

- 1.3.1 The Proposed Development represents a revised form of the Craig y Perthi Solar Farm previously promoted by RWE Renewables UK as a Development of National Significance (“DNS”) under reference DNS/3279787 (‘the Previous Application’). The Previous Application was submitted on 11 April 2024, validated on 12 August 2024, and sought consent for a solar photovoltaic generating station with a maximum export capacity of approximately 99.9 MW, together with co-located battery energy storage systems (“BESS”), associated infrastructure, access, landscaping and grid connection. The site extended to approximately 240 ha and was located between the M4 motorway and the South Wales Main Line railway, near Llanwern, Underwood and Bishton. A portion (~15%) of the Previous Application’s footprint, in the south-east of the Site, was located within the Gwent Levels – Redwick and Llandeenny Site of Special Scientific Interest (“SSSI”) (‘Gwent Levels SSSI’).
- 1.3.2 The Previous Application was examined by an Inspector appointed by the Welsh Ministers. Hearings were held on 26 and 27 March 2025, followed by a site visit on 2 April 2025. Ultimately, the Inspector recommended that planning permission on balance should be refused, with the main grounds being as a result of potential harm to biodiversity, primarily in relation to developing within the SSSI, landscape and heritage aspects of the local environment.
- 1.3.3 The Welsh Ministers subsequently issued their decision on 21 October 2025 and refused planning permission. The main considerations, mirroring the findings of the Inspector’s Report, were the effects of the proposal on ecology (mainly related to development within the SSSI), landscape character and visual amenity, the setting of historic assets, and whether the identified harms were outweighed by the benefits of renewable energy generation and climate change mitigation.
- 1.3.4 In her decision, the Inspector noted that part of the Site lay within the SSSI, which is notified for aquatic plants and invertebrates associated with the reed and ditch drainage system. National Resources Wales (NRW) advised that the special interests of the SSSI are dependent on water quality and availability, the existence of the drainage system and its continued management. The Inspector concluded that the Previous Application did not satisfy the national policy requirement to avoid development within a SSSI unless it is necessary for the management of that site, in

direct contravention of other recent decisions including the 'Cardiff Parkway' (Cardiff Council planning reference **21/00076/MJR**) case which was called in by Welsh Ministers on 20th October 2022 and decided on 30th January 2025, and the 'North Court Wind Turbine' application (PEDW reference **CAS-04093-C1D8Z1**), and that the proposal had not properly followed the step-wise approach to avoiding ecological harm.

- 1.3.5 The Inspector also identified unresolved concerns regarding protected and priority species, particularly shrill carder bee and lapwing. Although the Previous Application included ecological enhancement and mitigation measures, including 12 ha of proposed bird nesting habitat, the Inspector was not satisfied that those proposals had demonstrated that adverse effects on these species would be avoided, or adequately addressed.
- 1.3.6 In addition to ecology, the Inspector found that the Previous Application would give rise to adverse effects on landscape character and visual amenity, particularly for users of public rights of way, and would result in significant adverse effects on the setting of heritage assets. The Inspector gave significant weight to the renewable energy and economic benefits of the proposal, but concluded that those benefits did not outweigh the identified harm to ecology, biodiversity, landscape character, visual amenity and heritage. The Welsh Ministers agreed with the Inspector's conclusions and refused planning permission.

Design Evolution

- 1.3.7 The Proposed Development has therefore been reviewed and amended in direct response to the reasons for refusal and the matters identified through the previous DNS examination. The principal design change is the reduction of the site area by around 44 ha (from 240 ha to 196 ha, an ~18.3% reduction in size) through the removal of the south-eastern portion of the Previous Application, which previously extended into the Gwent Levels SSSI. This allows the Proposed Development to avoid direct development within the SSSI entirely and responds directly to the Inspector's conclusions regarding the application of Planning Policy Wales, the step-wise approach and the need to avoid harm to statutory designated ecological sites in the first instance. Following NRW comments raised in relation to the quantum of mitigation land for nesting Lapwing within the site in the Previous Application, the Applicant has responded by including an additional 2 contiguous fields to the



northeast of the previously proposed mitigation area, in the area suggested by NRW prior to hearings. This has resulted in the mitigation land increasing in size from 12 ha to 16.5 ha (an ~17.3% increase).

- 1.3.8 Design evolution has also resulted in the removal of the BESS and central inverter elements from the Proposed Development. This responds to concerns raised during the Previous Application regarding the perception of battery-related fire risk, noise, operational infrastructure and the semi-industrialising effect of containerised battery units within the rural context. The Proposed Development is therefore materially simplified when compared with the Previous Application, comprising a solar-led development without battery storage.
- 1.3.9 The ability to make these changes and maintain a commercially viable scheme is a result of improved panel (increased efficiency/yield and more affordable) and inverter (more effective/efficient and cost effective string inverter) options which have been made available since the Previous Application was submitted into planning in April 2024.
- 1.3.10 Overall, the Proposed Development has been brought forward as a materially different proposal, informed by the findings of the previous DNS examination. The design evolution has focused on avoiding any direct incursion into the Gwent Levels SSSI, reducing the physical extent of the development, removing the BESS/central inverter infrastructure, and narrowing the scope of potential environmental effects to be assessed through the revised Environmental Statement.

1.4 Requirement for Environmental Impact Assessment (EIA)

- 1.4.1 Environmental Impact Assessment was prescribed by European law under Council Directive 85/337/EEC. This Directive has been amended four times, with the latest amendment, the Environmental Impact Assessment (EIA) Directive (2014/52/EU) entering into force on 15 May 2014.
- 1.4.2 In Wales, the Directive has been transposed most recently into law by The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 [SI 2017 No. 567 (W.136)] ('the EIA Regulations').
- 1.4.3 The EIA Regulations prescribe the types of development for which EIA is mandatory (Schedule 1 development) and others that may require an assessment if they have the potential to give rise to significant environmental impacts (Schedule 2



development). The Proposed Development is for the construction and operation of an approximate 196 ha solar farm, which is covered by Schedule 2, Part 3(a) of the EIA Regulations:

“3 Energy Industry

(a) Industrial installations for the production of electricity, steam and hot water (unless included in Schedule 1).

The area of the development exceeds 0.5 hectare.”

- 1.4.4 The Previous Submission qualified as a Schedule 2 development, though no formal screening was undertaken as it was assumed, given the location and scale of the proposals, potential significant effects were likely. This was confirmed through an initial pre-application consultation² with Newport City Council undertaken for the Previous Application, the advice from which directed the Applicant towards a formal EIA process.

1.5 Purpose of Scoping

- 1.5.1 The objective of the EIA process is to identify and evaluate all significant, direct and indirect environmental effects of the Proposed Development, during both construction and operation, on the environment. The EIA process culminates in the production of an ES.
- 1.5.2 Scoping is the part of the EIA process through which the content and extent of matters to be covered by the ES are identified, by considering the potential impacts that could arise from the construction and operation of the Proposed Development.
- 1.5.3 Only the significant environmental effects of the development should be subject to full environmental assessment within the ES. Planning Practice Guidance on Environmental Impact Assessment is clear that:

“...Whilst every Environmental Statement should provide a full factual description of the development, the emphasis should be on the “main” or “significant” environmental effects to which a development is likely to give rise. The

² Letter issued from RPS Consulting Services Limited (dated 25 October 2021)) and subsequent response from Newport City Council dated 25 January 2022



*Environmental Statement should be proportionate and not be any longer than is necessary to assess properly those effects. Where, for example, only one environmental factor is likely to be significantly affected, the assessment should focus on that issue only. Impacts which have little or no significance for the particular development in question will need only very brief treatment to indicate that their possible relevance has been considered...*³

- 1.5.4 The scoping process ensures that mitigation and enhancement measures are considered at an early stage of the design process. It also provides the opportunity for stakeholders to ensure areas of the environment that have the potential to be significantly affected by the Proposed Development are considered within the ES.
- 1.5.5 The scoping process also helps to identify potential design constraints at the start of the project evolution. This helps to ensure that environmental protection and sustainability are key factors in the final proposed solution.
- 1.5.6 Although the scoping process is often regarded as a discrete stage it should continue throughout the development of the EIA. It may be necessary to alter the extent of research required for a particular discipline as the understanding of the magnitude and significance of an impact is established. This is vital to ensure that resources and efforts are focused on the issues that have the potential to cause the most impact. Where a variation of any agreed scope is required, this will be confirmed in writing with PEDW and relevant statutory bodies.
- 1.5.7 A Scoping Report for the Previous Application was submitted to PEDW on 22 December 2022 under Regulation 15 of the EIA Regulations. In response to the Scoping Report, PEDW issued a Scoping Direction on 25 May 2023, which outlined where there was agreement with the applicant's Scoping Report and where certain other aspects were required to be included within the EIA process. The Scoping Direction also included the comments of statutory consultation bodies as defined by Regulation 2(1) of the EIA Regulations.

³ Planning Policy Guidance 2017. Environmental Impact Assessment Paragraph: 035 Reference ID: 4-035-20170728. [online]. Available at: <https://www.gov.uk/guidance/environmental-impact-assessment>



- 1.5.8 The Environmental Statement submitted as part of the Previous Application included a schedule of all the comments made by PEDW, with details of how these comments had been addressed as part of the EIA process or reported in the ES.
- 1.5.9 This EIA Scoping Report for the Proposed Development, has been prepared by taking account of the EIA scoping undertaken for the Previous Application, the resultant assessments undertaken for submission, and the subject matter discussed during the Hearings that took place in March 2025. This EIA Scoping Report has been submitted to PEDW and will be issued to relevant consultees, who will be invited to comment on:
- i) the development proposals;
 - ii) the proposed scope of assessment;
 - iii) relevant issues for consideration during the EIA process; and
 - iv) the scoping out of environmental matters that are considered unlikely to be significant.

1.6 Content of this Scoping Report

- 1.6.1 Following on from this Introduction, the remainder of this scoping report is organised to the following structure:
- i) Chapter 2.0 of the report briefly describes the Site and its surroundings;
 - ii) Chapter 3.0 provides a description of the development;
 - iii) Chapter 4.0 summarises the proposed scope of the EIA and the reasons why topics are proposed to be omitted;
 - iv) Chapter 5.0 outlines the broad principles of the EIA methodology;
 - v) Chapters 6.0 to 9.0 describe what the Applicant considers to be the main environmental issues that could arise through the construction and operation of the Proposed Development and how they will be assessed; and
 - vi) Chapter 10.0 sets out the proposed structure of the ES.

2.0 THE SITE

- 2.1.1 The location of the Proposed Development is shown on Figure 1.
- 2.1.2 The Site, including the associated infrastructure, cable run, wildflower meadows and wildlife enhancement areas, covers approximately 196 ha (previously 240 ha), and is currently used for agriculture as part of several pastoral and arable agricultural holdings, with the focus being at Castle Farm. The proposed area within fencing that will contain panelling and ancillary infrastructure is limited to around 111 ha (previously 135 ha), with dedicated wildflower areas accounting for around 43.3 ha and a further 16.5 ha of dedicated lapwing mitigation land (previously 12 ha) within and outwith the planning red line boundary. Where land is required outside the planning red line boundary for this mitigation, this will be secured via condition or S106 agreement.
- 2.1.3 The Site is adjacent to the South Wales Main Line railway, approximately 4 km to the east of the city of Newport. The railway line forms the southern boundary to the Site, whilst to the north and northwest, the Site is bounded by the M4, agricultural fields and areas of woodland within Llanwern Park. To the east, the Site is again largely bounded by agricultural fields, with views of the Tesco Distribution Centre, associated wind turbines, and the 150m Rush Wall (and soon to be constructed 150m North Court Wind Turbine).
- 2.1.4 Whilst being used for agriculture and being of a rural nature, the Site is located within a heavily industrialised area of South Wales, as is visible to the north, south, east and west of the Site. To the south of the Site, operations are ongoing at the Tata Steel Llanwern site. The western portion of the site is now redundant and being developed as part of the Newport Eastern Expansion Area at Glan Llyn, which will provide an additional urban environment. The eastern portion of the Tata Steel Llanwern site is still used for the rolling of steel.
- 2.1.5 To the east of the Site is Magor Brewery, currently operated by AB InBev, which produces over one billion pints of beer a year. There are plans to extend the Site further, including the installation of hydrogen technology to power the site. The Magor Brewery has historically been powered by a single 150m wind turbine, located nearby off Rush Wall Lane, within the Gwent Levels, with another 150m turbine under construction and approved at appeal in 2025 sited adjacent to this turbine.

- 2.1.6 To the southeast of the Site is the Gwent Europark, a logistics hub that includes storage and distribution facilities for national retailers including Tesco and Wickes, with the Tesco distribution facility also equipped with two wind turbines.
- 2.1.7 The village of Bishton is located south of the central area of the Proposed Development, with a buffer of existing field units to the west and **a minimum 75 m buffer to the nearest houses on the east of the village.**
- 2.1.8 The boundaries of the Site are generally formed by hedgerows and trees as part of recognised field boundaries within agricultural holdings. The southern boundary of the Site is made up of a combination of the South Wales Main Line, Bishton Road, and an unnamed road between Bishton and Wilcrick.
- 2.1.9 The Gwent Levels - Redwick and Llandeenny Site of Special Scientific Interest (SSSI) is adjacent to the Site, though the majority of the SSSI is separated from the Site by the Tata Steelworks, Tesco Distribution Centres, and the South Wales Main Line railway. The SSSI is 940 ha in total, **and no part of the SSSI is included within the site area.**
- 2.1.10 The proposed cable route connects the Site to the Grid Supply Point (GSP) at Uskmouth Power Station. This is an approximate 10 km grid connection within the highway boundary. Towards the GSP at Uskmouth Power Station, the cable route would be located in the existing highway adjacent to and within the Gwent Levels - Nash and Goldcliff SSSI and then adjacent to an approximate 200 m section of the Newport Wetlands SSSI.
- 2.1.11 There are no statutory environmental designations are within the Site, though there are three schedule monuments near to the Site. These are:
- i) Bishton Castle – located to the north of Bishton, adjacent to the Site boundary, and is the former location of a medieval castle or fortified house, with no ruins remaining.
 - ii) Wilcrick Hill Camp – located approximately 600 m to the east of the Site and is the location of a probable Iron Age Hillfort.
 - iii) Deserted Medieval Village – Located to the northwest of Wilcrick Hill Camp, and it is a collection of earthworks comprising four rectangular enclosures.

3.0 THE PROPOSED DEVELOPMENT

3.1 The Proposed Development

3.1.1 This chapter of the Scoping Report provides a description of the layout and design of the various components of the Proposed Development along with the operational process that would occur. A description of the construction methods, including the measures proposed to mitigate potential construction phase effects is also provided.

3.1.2 The main components of the Proposed Development are:

- i) Photovoltaic solar panels and associated support frames.
- ii) String inverters and associated transformers.
- iii) An onsite 132 kv substation and associated infrastructure.
- iv) Two switchgear buildings.
- v) Approximately 5 km of improved footpaths/green lanes, enhancing Public Rights of Way through the Site.
- vi) Approximately 3.3 km of new permissive path walkways.
- vii) Approximately 7.8km of access tracks, making use of existing farm entrances and tracks where possible.
- viii) Wooden post deer/stock fencing with mammal gates incorporated.
- ix) In-ward facing infrared CCTV cameras on 3 m poles.
- x) Ecological enhancements including bee hotels, reptile hibernacula, bird boxes, insect hotels, log piles, wildflower meadows enhanced for shrill carder bees, and a dedicated enhanced habitat for lapwing.
- xi) Community orchard.
- xii) Approximately 111 ha of fenced / panelled area.
- xiii) Over 11 km of new native species hedgerow / tree planting, with existing hedgerows filled in / improved.
- xiv) Areas of native species woodland planting and creation of a community orchard.
- xv) Around 43.3 ha of diverse wildflower meadow, enhanced with Shrill Carder Bee food plants.
- xvi) Approximately 16.5 ha of dedicated lapwing nesting habitat, secured with predator fencing.

3.1.3 The general layout of the Proposed Development is shown on Figure 2, with details of the various component parts of the Proposed Development illustrated within the



following sections of this chapter. For comparative purposes, the historic layout associated with the Previous Submission has been included as Figure 3, though this is solely for reference purposes.

3.1.4 More detailed drawings of these aspects will be included as a drawing pack of planning drawings for submission. These drawings include:

- i) Photovoltaic Panels, Frames & String Inverters.
- ii) Indicative Spares Containers.
- iii) Indicative Cable Trench Sections.
- iv) Indicative Substation Compound.
- v) Indicative Switchgear and Control Centre Building.
- vi) Indicative Fencing, Access Track and CCTV.
- vii) Access Gate.
- viii) Indicative Construction Compound.

3.2 Key Design Considerations

Site Selection and Alternatives

- 3.2.1 The requirement to consider alternatives as part of the EIA process in Wales is set out in The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. Regulation 17(3)(d) requires an Environmental Statement to describe the reasonable alternatives studied by the applicant, where relevant to the proposed development and its specific characteristics, together with the main reasons for the option chosen, taking into account likely significant environmental effects.
- 3.2.2 This is expanded by Schedule 4, paragraph 2, which refers to alternatives such as design, technology, location, size and scale, and requires the Environmental Statement to explain the main reasons for selecting the chosen option, including a comparison of environmental effects where relevant.
- 3.2.3 In the context of the Proposed Development, the availability of reasonable alternative sites is strongly influenced by the location of the identified grid connection point. As shown on Figure 4, this significantly limits the practical search area for a solar farm of this nature, as sites must be capable of connecting to the electricity network in a technically and commercially viable manner.

Consideration of Major Accidents and Disasters

3.2.4 Schedule 4, paragraph 8 of the EIA Regulations requires that any ES includes 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. Schedule 4 continues that this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events and the approach to managing emergencies.

3.2.5 The reference to disasters is interpreted to relate to natural events, as indicated by the preamble to the 2014 Directive (2014/52/EU)⁴, which states at paragraph 15:

“In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment”.

3.2.6 In 2020, additional guidance⁵ from the Institute of Environmental Management and Assessment aimed to provide a clearer steer as to what constituted a major accident and disaster and how the topic should be addressed as part of the EIA process.

3.2.7 The guidance states (on page 3):

“A major accident is an event (for instance, train derailment or major road traffic accident) that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e., contractors) to manage.”

3.2.8 The guidance continues:

⁴ Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

⁵ IEMA (September 2020) Major Accidents and Disasters in EIA: A Primer



“A disaster is a man-made/external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause an event or situation that meets the definition of a major accident.”

3.2.9 Interpreting these definitions, it is unlikely that natural disasters would be a significant risk for the Proposed Development. The Proposed Development is not on, or near, any known geological fault lines, and as a result is unlikely to be affected directly by an earthquake, or indirectly through a tsunami. The Solar Farm would also not be considered a high security risk, though security measures will be incorporated as part of the design to deter thefts and acts of vandalism.

3.2.10 Nonetheless, it is recognised that disasters can occur as a result of human intervention e.g., conflict and war, political influences etc.

3.2.11 In relation to major accidents the EIA Regulations refer to Directive 2012/18/EU (the control of major-accident hazards involving dangerous substances).⁶ This directive defines major accidents as:

“An occurrence such as a major emission, fire, or explosion resulting from uncontrolled developments in the course of the operation of any establishment covered by this Directive, and leading to serious danger to human health or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances”.

3.2.12 The Proposed Development is located within a politically, geologically, and meteorologically stable part of Europe. Accordingly, the Proposed Development is not at material risk from, for example, civil unrest or war.

3.2.13 In terms of any vulnerabilities specific in this location (i.e., on the Site), the Site partly lies in an area susceptible to flooding. The layout of the Proposed Development has been amended to ensure the substation is not located within areas at risk of flooding. Therefore, the development is not considered to be vulnerable to any potential ‘natural’ events that could result in significant environmental effects.

3.2.14 With regard to major accidents the 2014 Directive describes that:

⁶ Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC



“It is important to consider their [i.e., the Proposed Development] vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment.”

- 3.2.15 Therefore, the focus is on the vulnerability of the Proposed Development to major accidents and/or disasters and the likelihood of significant adverse effects occurring.
- 3.2.16 The solar panels used within the arrays are inert and would not lead to any major emission, fire, or explosion. All other electrical infrastructure within the Proposed Development would be subject to regular routine maintenance and inspection such that it will not pose a significant risk to creating an accident.
- 3.2.17 Therefore, it is concluded that the Proposed Development would not give rise to significant adverse effects on the environment deriving from the vulnerability of the development to risks of major accidents and / or disasters.

Climate Change

- 3.2.18 Schedule 4 of the EIA Regulations requires Environmental Statements to include:
- 5. A description of the likely significant effects of the development on the environment resulting from, inter alia:*
- (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*
- 3.2.19 This section of the chapter firstly considers the impact of the project on climate change and then goes on to consider the vulnerability of the project to climate change.

Impact of the Proposed Development on Climate

- 3.2.20 The Proposed Development would not result in any direct emissions of greenhouse gases. However, as with most new development there would be indirect emissions associated with the construction and operation of the various development components.
- 3.2.21 Emissions would arise from the construction of the facility through embedded carbon within construction materials, the operation of construction vehicles and non-road

- mobile machinery (NRMM) during the construction phases and the transport of construction materials to Site and waste away from the Site.
- 3.2.22 Sustainable construction and procurement methods would be adopted where possible, with locally sourced materials and services being preferred for both construction and operation of the Proposed Development. This could be achieved in a number of ways such as:
- i) Using prefabricated elements, which reduce waste, vehicle movements and the need for onsite construction materials.
 - ii) The use of locally sourced construction materials where practicable.
 - iii) The use of machinery and plant that adhere with prevailing emissions standards and which are maintained in good repair to remain fuel efficient.
 - iv) Minimising the disturbance to soil resources through careful design and soil management.
 - v) Reducing construction vehicle emissions through adoption of a Construction Traffic Management Plan.
- 3.2.23 Minimising waste production during construction would also help reduce the carbon impact by using less materials, avoiding carbon emissions associated with disposal and reducing construction waste vehicle movements.
- 3.2.24 The operation of the development would generate renewable electricity would have the potential to directly offset **2,798,621 tonnes of CO₂ over its lifetime**, the equivalent of taking **652,793 cars off the road for a year**, or **planting over 46 million trees**⁷. Other climate change benefits derived from the development include a reduction in the intensity of agricultural practices at the Site. This has climate change benefits in terms of reduced use of fertilizer (which is a carbon intensive material), carbon sequestration through tree and hedgerow planting and reduced soil disturbance leading to increased soil organic matter.
- 3.2.25 The scheme will generate enough clean domestic energy to be able to meet the needs of **42,077 Welsh homes per year**⁸, improving energy security in Wales and

⁷ <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results>

⁸ Figures taken from the latest available data (2024) reflecting an average per household mean electricity consumption of 3,155.2kWh per household per annum <https://www.gov.uk/government/statistics/regional-and-local-authority-electricity-consumption-statistics>



its resilience against the price and supply shocks that arise from global geopolitical uncertainty.

The Vulnerability of the Project to Climate Change

- 3.2.26 Weather patterns are continuing to change as a result of climate change, which could result in potential impacts for future development. Therefore, this requires development projects to ensure that they remain resilient to the long-term effects of climate change. The Met Office has produced a series of climate predictions up to 2080 as part of the UK Climate Projections 2018 (UKCP18) project⁹. The latest projections¹⁰ set out a greater chance of warmer wetter winters and hotter summers with higher intensity rainfall events and storms becoming more common. Increases in storm surges and sea level rise is also predicted.
- 3.2.27 In relation to surface water flooding and increased propensity for flooding events resulting from climate change the Proposed Development is not classed as a vulnerable development. The Site lies outside any area at risk from river flooding and is in an area of low risk from coastal flooding. Whilst parts of the Site are shown to be susceptible to surface water flooding this is very localised and associated with topography. The panels are themselves not vulnerable from surface water flooding as they are raised 800 mm from ground level and cabling would not be affected. The main operational compound is not located in an area affected by surface water flooding. Nonetheless, critical infrastructure such as the transformers, substation and control rooms would be constructed on concrete plinth foundations, which would raise them above ground level and therefore reduce the impact of any localised surface water flooding.
- 3.2.28 The Proposed Development is not considered to be vulnerable to any other impacts associated with climate change.

3.3 Embedded Mitigation

- 3.3.1 The iterative design of the Proposed Development has incorporated mitigation measures to address environmental sensitivities and constraints at the earliest

⁹ <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>

¹⁰

https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_headline_findings_v4_aug22.pdf



possible opportunity, so that these can be considered as part of the assessment process. The Illustrative Landscape Masterplan, presented in Figure 7, highlights the current indicative incorporated mitigation measures that form part of the Proposed Development. These measures are discussed further below, and where relevant in more detail in each of the technical assessments included within the ES.

Landscape and visual

- 3.3.2 The Site has been designed based on the prevalence of medium to large, geometric fields, which are well suited to solar farms in terms of landscape and visual effects.
- 3.3.3 Several fields near Bishton were removed following the consultation on the Previous Application, to better integrate the Proposed Development into the immediate and wider landscape. Following refusal, further changes have been made to the Proposed Development, with an ~44 ha reduction in overall area. This includes:
- i) Field near the Grade II listed St Mary's Church, the removal of which helps maintain the setting and provides an opportunity for biodiversity enhancements by incorporating a new copse and an additional diverse wildflower meadow.
 - ii) Several fields to the southeast of the Scheme within the SSSI have come out entirely to avoid interaction with the SSSI and associated Reens.

Biodiversity

- 3.3.4 With respect to bird species using the Site, during the accepted nesting season (March to August inclusive) construction would not take place in areas where nesting birds have been recorded. This will require the installation programme to be managed in a way that is complimentary to the establishment of further breeding bird mitigation. An EcOW would be present throughout the duration of construction.
- 3.3.5 Per the RSPB (2025)¹¹ *'research by scientists from the RSPB and University of Cambridge as part of the Centre for Landscape Regeneration found that – hectare for hectare – solar farms in agriculturally dominated East Anglia contained a greater number of bird species and overall number of birds than surrounding arable farmland...and nearly three times as many birds compared to nearby arable farmland.'*

¹¹ <https://www.rspb.org.uk/whats-happening/news/solar-farms-managed-for-nature-boost-bird-numbers-and-biodiversity>



- 3.3.6 Existing farm access tracks and entrances will be used wherever practicable during construction, maintenance and decommissioning, and incorporated into the site design. This would help to utilise existing hedgerow gaps, which would minimise the loss of breeding habitat for birds. Approximately 11 km of new hedgerow is proposed, with minimal loss expected.
- 3.3.7 The solar arrays have been designed with significant clearance between rows, which will permit vegetation growth beneath the panels and continue to provide bird foraging and potential nesting habitat. By design, solar panels would be positioned at an inclined angle and this, along with the large gaps between rows, would enable birds to distinguish the surface of the solar panels.
- 3.3.8 With respect to otter and water voles, the Proposed Development has also been designed so that there will be no obstructions to watercourses, therefore allowing any fauna to commute freely.
- 3.3.9 Around 43.3 ha of wildflower meadow are proposed on-site, creating a diverse habitat for wildlife on an otherwise monocultural land holding. This wildflower meadow will be enhanced with Shrill Carder Bee food plants, providing a vital resource for this species.
- 3.3.10 A dedicated lapwing nesting area is proposed on-site, comprised of around 16.5 ha of largely contiguous flat land with limited boundary features, and enhanced with predator fencing.

Water Resources and Flood Risk

- 3.3.11 The construction compounds would be formed from permeable gravel (or similar) material, which would allow water to percolate into the ground as per the existing situation and thus negate impacts on local drainage. A laydown area would be located within the construction compound to avoid unnecessary construction vehicle movements across the Site.
- 3.3.12 Transformers, switchgears and containers, which are spread evenly across the Site, would be designed so that they are sited on gravel beds 0.3m deep allowing for distribution of runoff and infiltration into the ground below, minimising the potential increase in surface water runoff.



Public Rights of Way

- 3.3.13 There are a number of Public Rights of Way (PRoW) that cross the Site, representing well established and historic community routes. These are illustrated on Figure 7 Illustrative Landscape Masterplan. The majority of these PRoW are designated as footpaths, with the exception of a Restricted Byway (158/22/1) that runs for approximately 150 m south of Castle Farm Shop, and a Green Lane (388/GL4/1), which starts immediately south of the residential property called Wellsworth, and runs north-east through to Ridings Wood.
- 3.3.14 All of these PRoW would remain open for public use during both construction and operation of the Proposed Development. All footpaths would be widened to a minimum of 10 m to improve accessibility, with ongoing management to maintain surfaces and the wildflower margins that would be planted within these routes.
- 3.3.15 Approximately 5km of PRoWs which run through the site would be enhanced considerably, from their current poor condition during winter/wet periods whereby access is severely limited with inaccessible stiles, to grassed, maintained 10m pathways with wildflower verges, picnic benches, accessible gates, clear PRoW signage, and accompanying informational boards detailing the local area and its features. Additionally, a further **3.3km of new permissive paths** on otherwise private land would be implemented. **This represents a clear benefit to local accessibility to green spaces.**

Buffer Zones

- 3.3.16 A number of buffer zones have been established to protect valuable natural resources, including trees, reens and ecologically important field margins. The following minimum buffers have been adopted as standard as part of the design of the Proposed Development:
- i) 15 m from woodland, including Ancient Woodland.
 - ii) Variable buffers for Ancient and Veteran trees
 - iii) 12 m from reens.
 - iv) 7 m from other ditches.
 - v) 5 m from hedgerows.

3.4 Standard Control Measures



- 3.4.1 In addition to the embedded mitigation described above, standard control mechanisms would be implemented during construction to mitigate and temporary impacts during this phase of the Proposed Development. The two main standard control measures would be the Construction Environmental Management Plan (CEMP) and the Construction Traffic Management Plan (CTMP).
- 3.4.2 Adherence to these measures would be mandatory for the Applicant and the chosen contractor, and it would be expected that these control measures would be updated prior to, and during, construction to ensure that they remain up to date. For example, changes in environmental legislation between submission of the planning application and the start of construction would need to be addressed as part of an iteration to the CEMP.
- 3.4.3 Further details on the CEMP and the CTMP are provided below.

Outline Construction Environmental Management Plan

- 3.4.4 A draft Outline Construction Environmental Management Plan (OCEMP) will be developed for the construction phase of the development and will be included as an appendix to the ES.
- 3.4.5 The purpose of the OCEMP is to manage and report environmental effects of the project during construction. The OCEMP sets out how environmental issues would be managed in accordance with relevant legislation, regulations and best practice guidance. It would be the responsibility of the main contractor to develop and enforce a finalised version of the CEMP. It is suggested that the requirement for a finalised CEMP to be prepared is subject to a planning condition once the detailed design is completed to allow main contractor input.
- 3.4.6 The objectives of the CEMP will be to:
- i) Highlight environmental impacts resulting from the development and identify sensitive receptors within the development site to the construction team.
 - ii) Reduce and manage environmental impacts through appropriate construction methods.
 - iii) Reduce and manage environmental impacts through implementing environmental best practice during the construction period.
 - iv) Undertake ongoing monitoring and assessment during construction to ensure environmental objectives are achieved.

- v) Provide emergency procedures to protect against environmental damage.
 - vi) Provide an environmental management structure for the construction stage.
 - vii) Recommend mechanisms to reduce risks of environmental damage occurring.
 - viii) Ensure procedures are in place for consultation with Natural Resources Wales, Newport County Council Officers, and other stakeholders throughout the works if necessary.
- 3.4.7 Prior to the commencement of construction works an environmental walkover would be undertaken to establish any changes in the environmental baseline since the surveys undertaken as part of the EIA and planning submission. This walkover would be used to update any of the defined construction procedures as necessary.
- 3.4.8 The main contractor would also develop a local community liaison strategy. This strategy would detail how the contractor would engage with the local community to inform them of the construction progress and inform them of any works that may give rise to queries or concerns. The strategy would also set out the means to allow the public to raise any concerns with the contractor and mechanisms to resolve any complaints.
- 3.4.9 The main contractor would take regard of current guidance published by Natural Resources Wales as well as other UK sources where relevant.

Construction Traffic Management Plan

- 3.4.10 A Construction Traffic Management Plan (CTMP) and Transport Statement (TS) has been prepared to accompany this Scoping Report (as Appendix 3 and 4 respectively). These will also accompany the submission. The CTMP and TS will likewise be included as an appendix to the ES.
- 3.4.11 The CTMP and TS includes:
- i) Baseline Conditions – A description of the existing site and the surrounding areas transport and highway characteristics.
 - ii) Development Proposals and Access Arrangements – An overview of the Proposed Development, with the associated construction access and constructing routeing construction scheme overview, and the indicative construction programme.
 - iii) Construction Programme – An overview of the proposed construction schedule.

- iv) Construction Traffic Generation – Reporting of the estimated volume and type of vehicles that will be generated throughout the construction phase of the development.
 - v) Construction Traffic Mitigation Measures – The mitigation measures that would be adopted during construction to minimise the impact of construction on local residents, businesses, and the local highway network.
 - vi) Construction Travel Plan – Details how sustainable modes of travel will be encouraged and promoted during the construction period.
- 3.4.12 In order to reduce the impact of vehicles accessing the Site from local roads, two centralised site compounds would be implemented to the north of Bishton, adjacent to the Castle Farm egg production unit. This would be the main receiving point for HGV deliveries.
- 3.4.13 Two additional compounds along Bishton Road to the west of St Cadwaladr's Church, and off of the road between Bishton and Wilcrick by Wilcrick Moor Reen, would be used to manage how construction traffic accesses and egresses the Site. Tractors and trailers would be used to transport goods from the centralised compounds to the north of Bishton to these compounds, and then subsequently to individual land parcels across fields rather than on the external road network.
- 3.4.14 The site benefits from close proximity to the M4 Junctions 23A and 24, the A48 and the B4245. As such, construction traffic travelling to and from the north will route along roads which are designated as HGV routes. The motorway is part of the strategic road network and therefore suitable for larger vehicles.
- 3.4.15 It is likely that the vast majority of construction trips from the west will exit the M4 at Junction 24 and route along the A48 before turning right on the B4245. Vehicles will then travel southbound along Waltwood Road before utilising Bishton Road to access the Site from the north.
- 3.4.16 Vehicles travelling from the east will exit the M4 at Junction 23A and route along the B4245 before turning to travel southbound along Waltwood Road. Construction HGVs would then utilise Bishton Road to access the Site. Access and egress to the Site are taken via the same route.
- 3.4.17 All deliveries should be controlled by a delivery booking system which would distribute deliveries across the week and across working hours. Deliveries should

- not be accepted outside of their designated timeslot, and such deliveries would be asked to re-book, unless there is capacity to accommodate within the specified loading area.
- 3.4.18 It is anticipated that all deliveries to the Site will be organised to take place between the hours of 08:00 - 18:00, Monday to Friday and 08:00 - 13:00 Saturday. Deliveries are likely to fluctuate within the construction period, but it is envisaged that the majority of movements would be Monday to Friday with only a limited number of movements on a Saturday. Deliveries will vary in amount per day during the construction period with an average of twelve deliveries (twelve inbound plus twelve outbound movements) per day over the 36-52 week period.
- 3.4.19 The Applicant estimates that there may be up to a maximum of 80 staff on site per day. The Applicant's experience of similar developments elsewhere suggests that car sharing is prevalent within the construction industry and can reduce the number of cars on site to 40. This will be achieved through management of staff travel patterns and actively encouraging car sharing.
- 3.4.20 A wheel cleaning procedure will be used in order to mitigate the amount of mud that could potentially be deposited on the highways by vehicles exiting the Site. An area close to the Site exit will be utilised for wheel washing prior to vehicles leaving site. A power washer will be used to wash off any mud from the vehicle's wheels, with excess mud/slurry being collected and disposed of.
- 3.4.21 Pedestrian safety throughout the construction programme will be paramount. To ensure pedestrian safety during loading and unloading activity, a Banksman / traffic marshal should be present to minimise the likelihood of conflict with pedestrians. Warning signage will be provided locally to the Site to ensure that vehicles, pedestrians, and cyclists are aware that construction activity is taking place. The site will be properly secured, helping to ensure that pedestrians and the general public cannot access the construction site unauthorised.
- 3.4.22 The Applicant, or its representative, will liaise with all neighbouring residents and businesses to ensure they are aware of the construction programme and the development proposals. Communication with local residents and businesses will begin prior to commencement of construction.

3.4.23 The chosen contractor would be encouraged as part of the contract to introduce a Travel Plan for its staff to limit the number of private car trips to the Site. The Travel Plan will form part of iterations to the CTMP and would be agreed with Newport County Council prior to works beginning on Site.

3.4.24 Further information regarding traffic and transport implications of the Proposed Development can be found in the Transport Statement, which is included in this Scoping Report in Appendix 3.

3.5 Components of the Solar Farm

Solar Panels and Frames

3.5.1 The Proposed Development comprises the installation of static solar PV panels mounted to a steel and aluminium frame. The panels would be tilted at a horizontal angle of approximately 15-25° and would face due south, or 180° from north. The proposed layout of the solar panels is illustrated on Figure 2, and a typical solar panel frame configuration is illustrated below in Image 3.1.

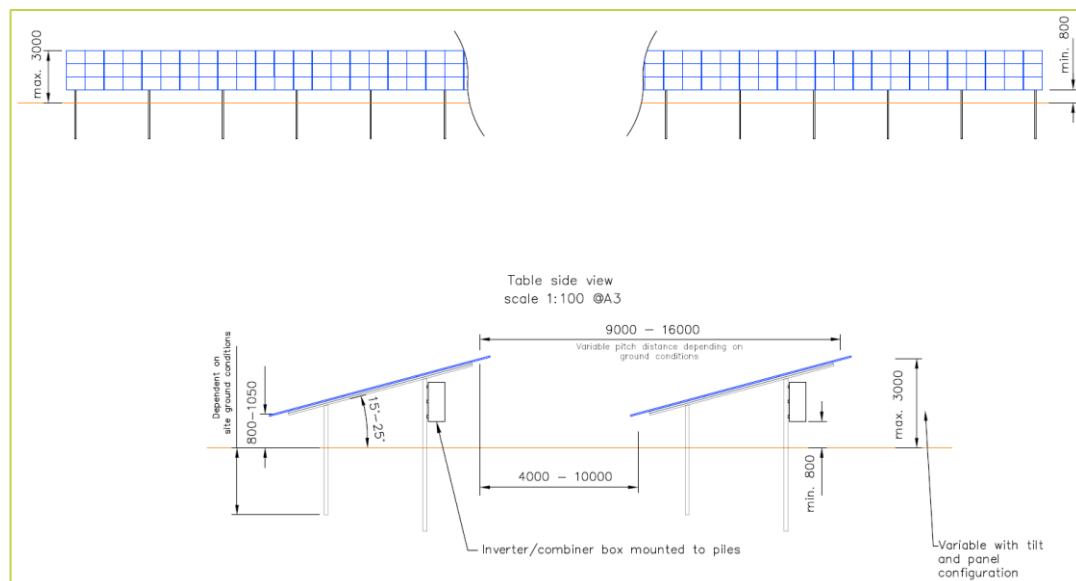


Image 3.1 Photovoltaic table and string inverter layout

3.5.2 The layout, angle and tilt of the solar panels has been designed to maximise solar efficiency across the solar farm, whilst avoiding adverse impacts in relation to glint and glare. The solar farm layout has been designed by modelling sun paths and the shadowing that this results in. This results in an optimum design of solar exposure of the panels, whilst ensuring there is no overshadowing of adjacent arrays.

- 3.5.3 Whilst due south is the optimum direction for solar arrays, often impacts associated with glint and glare require slight amendments to the layout and orientation of solar arrays to avoid adverse impacts at local receptor points. An assessment of glint and glare impacts was undertaken on the solar arrays orientated due south, focusing on potential impacts at local residential receptors, the South Wales Main Line railway and nearby road infrastructure, comprising the B4245 and the M4. A full glint and glare assessment will be included as an appendix to the ES.
- 3.5.4 Whilst the orientation of the solar arrays has not deviated from due south, glint and glare impacts have been mitigated, either through the presence of existing vegetation screening, or the additional of new screening, as indicated on Figure 7 Illustrative Landscape Masterplan. As the issues associated with glint and glare have been iterative to the emerging design, it is unlikely that there would be any glint and glare impacts as a result of the Proposed Development that cannot be mitigated.
- 3.5.5 The solar PV support frames would be arranged into rows set 4 m to 10 m apart, depending on the location within the Solar Farm and the requirement for access between frames. The lower, front edge of the solar panels would be raised approximately 800 - 1050 mm above ground level, with the rear edge raised to a maximum of 3 m above ground Level. This spacing would enable the area under the panels to be continuously grazed by sheep
- 3.5.6 The solar PV support frame structures would consist of steel uprights and aluminium or steel cross bars. The steel uprights would comprise hollow 3 mm sheet steel post with a u-shaped cross section.
- 3.5.7 The posts would be ram driven into the ground using several specialist small scale GPS controlled piling machines to a depth of approximately 1 m to 2 m, depending on ground conditions. The rest of the support frame would then be fitted to the posts to create angled support tables ready for the solar panel installation.
- 3.5.8 If required, which would usually be in areas where breaking ground might be problematic due to ground conditions, archaeological remains or utilities risk, frames can be mounted on concrete pads that are laid on the surface. However, there is currently no identified need for this method within the Solar Farm.
- 3.5.9 The solar PV modules would be mounted support frame tables, which would be pre-constructed to help minimise on-site construction activity. The individual solar PV

modules within the Proposed Development would likely consist of dark blue, dark grey or black photovoltaic cells, however solar technologies are developing rapidly, and it is not possible to specify the precise panel type, as this will depend on the competitive procurement process and the technology available at the time of construction.

- 3.5.10 The solar PV modules would be connected in strings and cabling would be secured to the rear of the solar panel and would be protected from grazing livestock by suitable trunking/elevation. From the end of each run the cables would be taken below ground and would be connected to string inverters located at the end of the rows within the Site. If there are areas of archaeological sensitivity, surface mounted cable trunking would be used to avoid any impacts on buried archaeology. The string inverters would in turn connect into the substation.

Inverters

- 3.5.11 The development requires the installation of string inverters at the end of each row of panels. The inverters control and increase the voltage of the electricity generated by the solar panels before it reaches the on-site substation and ultimately the distribution network. The transformer stations comprise individual steel containers (approximately 12.2 m long × 2.4 m wide × 2.9 m high). The string inverters would sit on the end of the rows of panels.

Electrical Cabling

- 3.5.12 On-site cabling would be required to connect the solar panels to the centralised inverters and the substation and control centre. In addition, a high voltage connection to the point of grid connection at the Severn Power Station is required.
- 3.5.13 Image 3.2 provides details of indicative cable trenches. Cable trenches would generally run parallel and adjacent to the on-site access tracks and fence lines, which aids maintenance and reduces the likelihood of damage. In addition to electrical cabling the trenches may also carry earthing, data and communications cables and will be backfilled with excavated materials to the original ground level. Marker posts would be placed on either side to clearly demarcate the location of the cable crossing, if required. Cabling will also be required for power and data transfer associated with the CCTV system described below. This will generally follow the



perimeter fence lines where the CCTV cameras would be located. If there are areas of archaeological sensitivity, surface mounted cable trunking could be used.

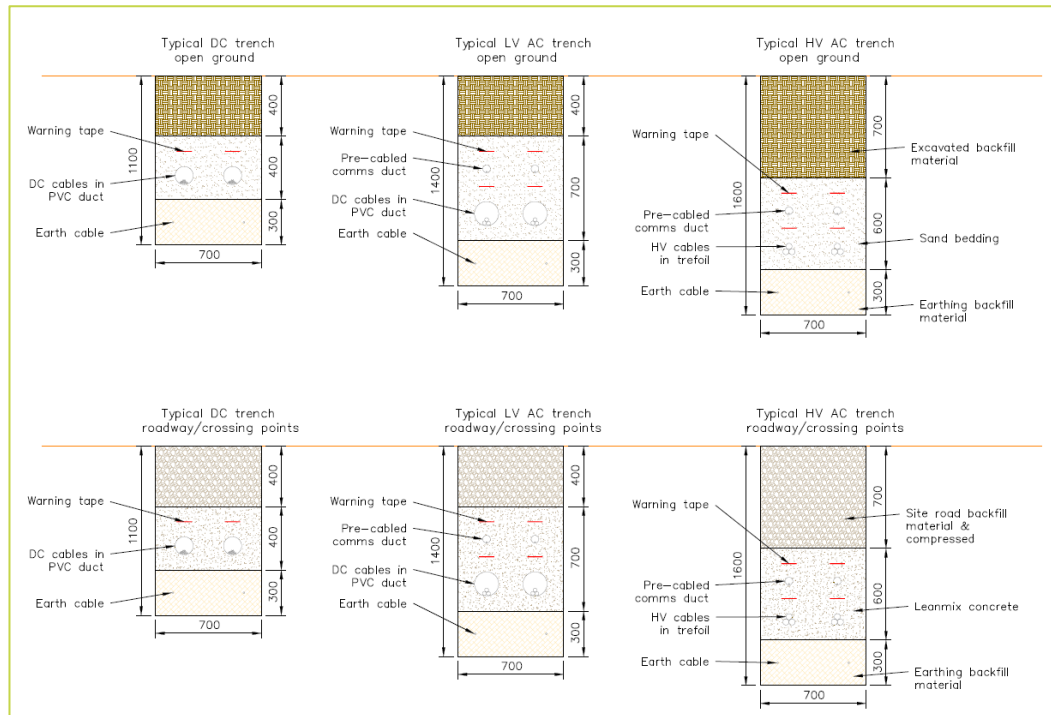


Image 3.2 Cable trench cross section

Operational Compound

- 3.5.14 The operational compound for the Proposed Development would be located within the south-west of the Site, as shown on Figure 2. The compound would provide a Control Room and the Substation.
- 3.5.15 The compound would be approximately 67 m × 76 m in area. Except for the concrete foundations for the various elements of equipment, the compound would comprise ground that would be permeable to surface water.
- 3.5.16 The compound would be fenced for security purpose. It is proposed that the details of the fencing are subject to a planning condition but are likely to comprise a wire mesh form, with matching gates for vehicular and staff access.

Substation

- 3.5.17 The substation would be finished in grey or green finish, with the BS Colour/RAL to be agreed through condition. The final design for the substation would be subject to agreement with the DNO, which would adopt the substation once operational.

Switchroom & Control Centre Building

- 3.5.18 The Switchroom and Control Centre building would be located adjacent to the Substation building.
- 3.5.19 The Switchroom building would control the power flows from the solar array to the Substation. The Control Centre would contain equipment necessary for monitoring the performance of the solar farm. This would not be permanently manned and would be for visiting maintenance engineers. As such welfare facilities would not be included.
- 3.5.20 The building would be finished in a grey or green finish, with the BS Colour/RAL to be agreed through condition. The overall footprint of the Switchroom Building would be approximately 25 m².
- 3.5.21 The indicative layout of the operational compound is illustrated below in Image 3.3.

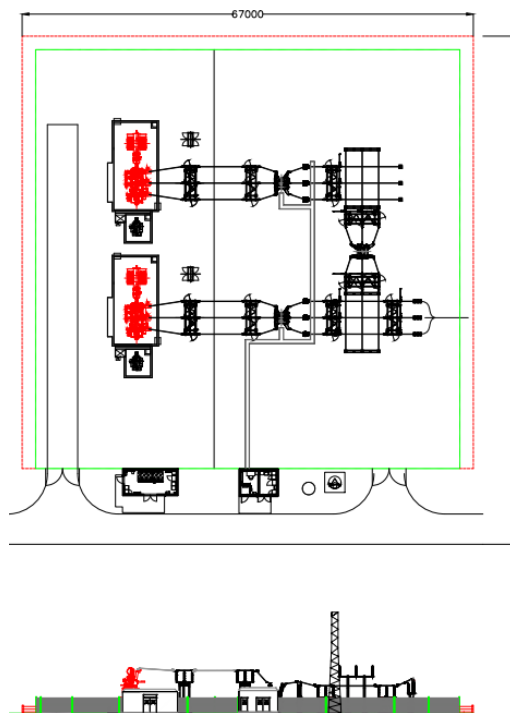


Image 3.3 Indicative operational compound

Access Tracks

- 3.5.22 Operational access to the Site would largely be from the east via Bishton Road.

- 3.5.23 The Proposed Development would utilise existing farm track routes, where practicable, with new access track approximately 4 m wide, created as required. The access tracks have been located so they utilise existing field gates between fields to reduce the impact on hedgerows where practicable.
- 3.5.24 The permanent access track would be formed by excavating 250 mm and laying clean Type 1 crushed concrete over a GeoGrid Ground Stabilisation mesh. This in turn, would be laid on a compacted soil base, with a depth of 150 mm. The layout of the permanent access tracks is illustrated on Figure 2.

Security

- 3.5.25 Security would be provided by approximately 2 m high deer/stock fencing (with mammal gates incorporated) and pole mounted CCTV cameras. The fencing would be attached to wooden poles that would be located 3.5 m apart. Sections of the fencing would incorporate a mammal gate, measuring 200 mm X 200 mm to avoid any severance issues for terrestrial mammals.
- 3.5.26 The CCTV poles would have a maximum height of 3 m and would generally have one dome camera focussed along a specific area of the Site. At certain locations two cameras would be deployed so that they can be targeted on specific locations. All cameras would operate using infra-red technology and as such no additional lighting would be required.

Drainage

- 3.5.27 The solar panels would allow rainwater to fall between gaps to the ground below the panels where it would percolate into the ground. Erosion would be prevented by maintaining the grass sward beneath the panels.
- 3.5.28 All new site access tracks would be constructed of permeable stone and would infiltrate to ground. The transformer stations, Switchroom Building, Control Centre and Substation would drain to localised filter drains / stoned surrounds that would allow percolation to ground.
- 3.5.29 Foul water from the welfare facilities within the control room would be captured in a sealed septic tank and emptied periodically by tanker.

Lighting

- 3.5.30 Lighting would be limited to the Switchgear Building and Control Buildings. Low level lighting would be positioned above access doors and would only be activated by passive infra-red sensors for security/emergency purposes or when switched on by a maintenance engineer. No areas of the Proposed Development would be continuously lit during operation.

Landscaping

- 3.5.31 The landscape proposals for the Site are illustrated indicatively on Figure 7 and would be developed in detail prior to commencement of the development.
- 3.5.32 The soft landscape proposals build on the existing landscape features and comprise:
- i) Retention of existing vegetation patterns as far as practicable by maintaining a minimum 5 m buffer between field boundary hedgerows and woodland, and the stock fencing around the development areas.
 - ii) Creation of buffer zones between fence lines and field boundaries for habitat connectivity, either seeding these areas with species-rich grassland mixes or allowing natural regeneration through a managed rewilding approach.
 - iii) Gaps in existing hedgerows would be planted up, and the hedgerows would be maintained at a height of approximately 3 m to provide enhanced visual screening.
 - iv) Planting over 11 km or new hedgerow.
 - v) Planting belts of specimen trees along field boundaries within the Site to screen local views and provide habitat connectivity.
 - vi) Use of Native species trees and shrubs to diversify the range of native species in the local area to reduce biosecurity threats from pests and disease.
 - vii) Creation of approximately 16.5 ha of habitat created for lapwing mitigation.
 - viii) Creation of around 43.3 ha of wildflower meadow, creating a species rich diverse habitat for wildlife on an otherwise monocultural land holding.

Grid Connection

- 3.5.33 The solar farm would be connected to the National Grid via underground cabling to the substation at Uskmouth Power Station. The underground cabling would be entirely located within the public highway, either in the carriageway or adjacent



footways. The route of the proposed cabling is presented on Figure 1, but in essence is:

- i) Exiting field units throughout the Site into the main cable trench on Bishton Road, south through the village of Bishton.
- ii) West along Bishton Road to the junction with Station Road
- iii) North along Station Road continuing on to Cot Hill.
- iv) West along Cot Hill to the junction with the A38 Southern Distributor Road
- v) South-west on the A38 Southern Distributor Road to the roundabout junction with Balfe Road
- vi) Continuing south / southwest on the A38 Distributor Road until the roundabout junction with Nash Road.
- vii) West onto West Nash Road.
- viii) Entry to Uskmouth Power Station.

- 3.5.34 The grid connection would be located underground within the highway boundary and there would be no above ground infrastructure required other than within the operational substation compound.
- 3.5.35 Rigid corrugated cable ducts would be laid within a trench excavated to a depth of approximately 1 m and to a width of approximately 0.7 m (the approximate width of an excavating bucket) using a wheeled excavator or similar. The cabling duct would be placed on a blinding layer of sand or screened earth to prevent damage from sharp objects. A further blinding layer would then be placed on the ducting. The trench would then be backfilled with the previously excavated material. Further details on the cable trenching is shown below in Image 3.4.
- 3.5.36 A working area of approximately 3 to 4 m in width would be required during the trenching and cable laying works for the operation of machinery and temporary storage of excavated material prior to backfilling.
- 3.5.37 Local road closures and diversions are likely to be required for worker safety, though full closures, if required, would be kept to a minimum and would mainly affect parts of Bishton Road.

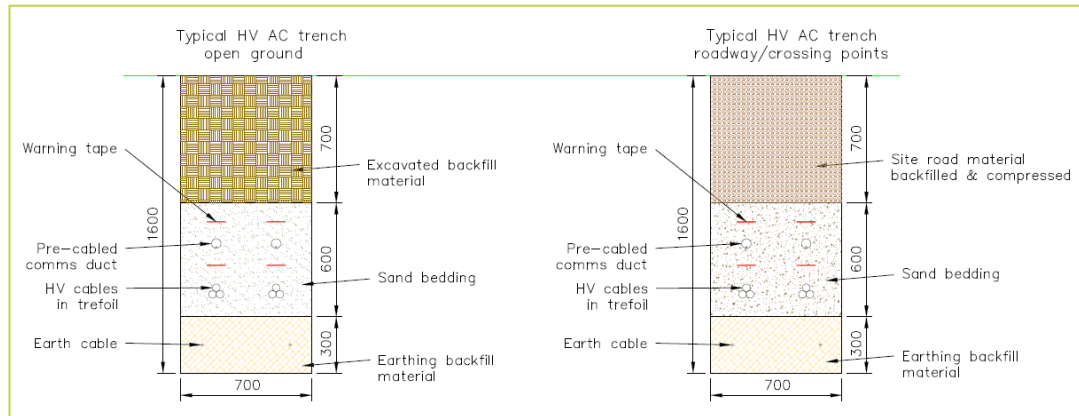


Image 3.4 Grid Connection cable route cross section

Operation of the Solar Park

- 3.5.38 Once the Proposed Development is constructed access to the Site would be limited to routine solar maintenance and landscape management operations. The Proposed Development would not be permanently staffed. Maintenance access to the Site would be by a small van or similar.
- 3.5.39 Should more major repairs be required, such as the replacement of transformer stations, more staff and specialist equipment (cranes and low loaders) would be required. This is not anticipated to be a regular occurrence.
- 3.5.40 The main operational noise would be associated with the string inverters, transformers and substation. These noise levels have been determined to be not significant through the design process, with levels emitted by fixed plant predicted to be below background noise levels at sensitive receptors. This can be found in the accompanying Noise Report (Appendix 5). This Noise report will also be included as an appendix to the ES.
- 3.5.41 As set out above the main activity during the operational phase of the development would be sheep grazing and free range chicken grazing below the solar panels and/or periodic mowing or other landscape maintenance. This would retain most of the Site in productive agricultural use, and continue its current pastoral use.



Image 3.5 Continuation of sheep farming with solar panels

3.6 Construction of the Solar Farm

- 3.6.1 The following section provides a summary of the key elements of the construction of the Proposed Development. This description is not intended to be prescriptive and the exact construction methods, phasing and programme would be determined by the appointed designers and contractors. However, the following description enables the principal construction phases and methods to be understood and assessed.

Programme

- 3.6.2 The timing of the construction works would be dependent on the grant of planning permission for the Proposed Development, subsequent contract negotiations and prevailing weather and ground conditions.
- 3.6.3 The construction period is anticipated to take approximately 36-52 weeks, including testing and commissioning.
- 3.6.4 This construction programme would allow for the following key construction-related works to be undertaken:
- i) Erection of 'Heras' fencing around tree root protection areas.
 - ii) Establishment of site compound.
 - iii) Construction of site access tracks.
 - iv) Erection of deer / stock fencing and gates to site perimeter.
 - v) Installation of solar panels, string inverters and frames.

- vi) Installation of CCTV poles and cameras.
- vii) Installation transformer stations.
- viii) Installation of cable trenches.
- ix) Installation of control building, switchroom building and substation building.
- x) Grid connection.
- xi) Cultivation and seeding.
- xii) Hedgerow and woodland planting.
- xiii) Final landscaping works and installation of ecological enhancements (insect hotels, bird boxes, bat boxes, reptile hibernacula and bee hotels).

Construction Hours

- 3.6.5 Construction activities would take place six days per week, during the following hours:
- i) Monday to Friday 08:00 – 18:00 and Saturday 08:00-13:00; with
 - ii) No works on Sundays or Bank Holidays.
- 3.6.6 Any piling operations would be limited to between 08:00 and 17:00, Monday to Friday only, and not on Saturday, Sunday or Bank Holidays.

Site Access and Compounds

- 3.6.7 The Proposed Development is located in a predominantly rural area with local roads commensurate with its location. As a result, the applicant is keen to minimise the potential impact of the development on the local roads, especially during the construction period when the volume of vehicles generated by the development will be highest.
- 3.6.8 In order to reduce the impact of vehicles accessing the Site from local roads, two centralised main site compounds will be implemented. The purpose of these two main site compounds is to allow all deliveries to be made to two centralised areas, to the east and west of Bishton Road then (in most instances) shuttled across the Site (internally) to various parcels of land using a tractor and trailer. It should however be noted that on some occasions, there may be a requirement to access various land parcels by road, this is due to the fragile nature of some deliveries, it will however be kept to a minimum, so as not to increase HGV traffic along local roads.

- 3.6.9 The location of these two compounds would be in the vicinity of access points 1 and 2, highlighted below on Image 3.6.

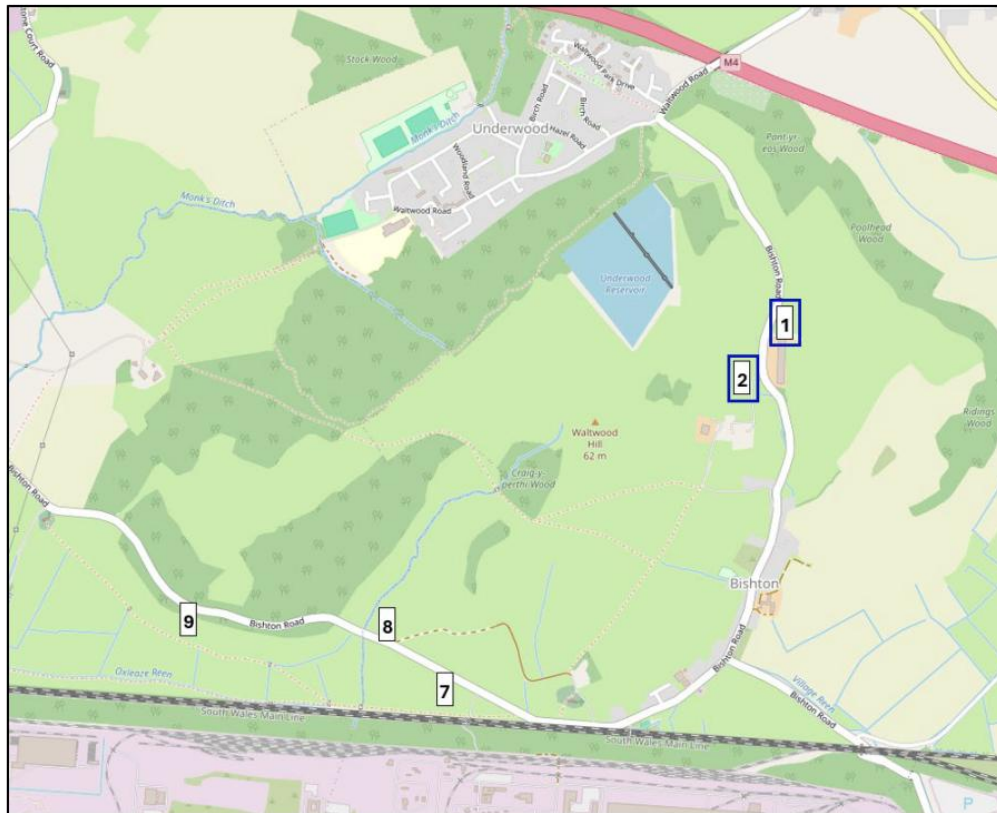


Image 3.6 Location of access points for main construction compounds

- 3.6.10 The compounds are located to the east and west of Bishton Road, access to each central compound will be promoted via existing accesses, the first currently serving the egg factory, the second serving Castle Farm Dairy. Compounds would typically measure 75m in length and 75m in width. A 'Durabase Mat System' or a similar non-ground penetrating mat system would be used within the compounds.
- 3.6.11 An indication of a typical site compound layout is shown below in Image 3.7.

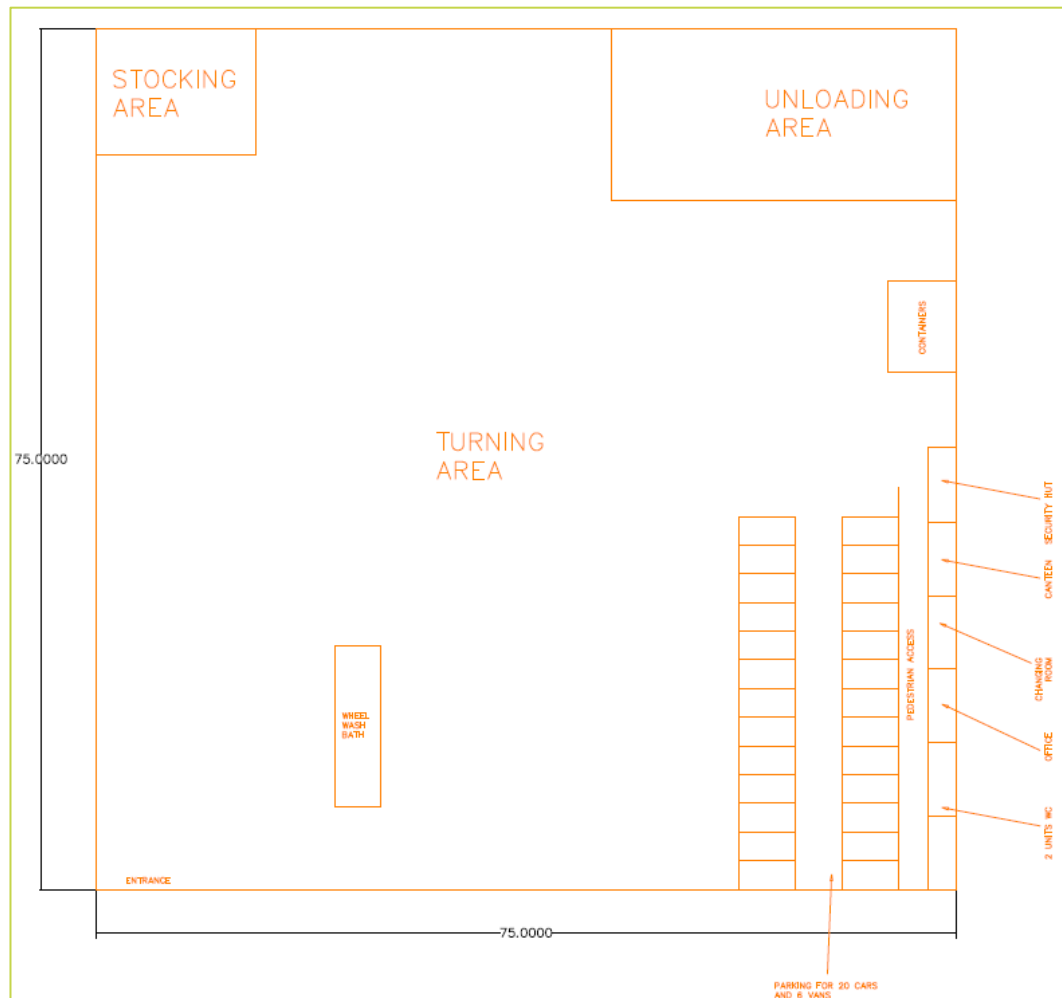


Image 3.7 Typical construction compound layout

- 3.6.12 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.
- 3.6.13 For security and safety purposes, any live construction areas would be closed to the public throughout the construction phase. Site security staff would patrol the Panel Areas in addition to hazard warning signs and CCTV.
- 3.6.14 The main compound would include:
- i) Temporary offices/buildings providing office, canteen, and welfare facilities for construction operatives.
 - ii) Parking areas construction workers.
 - iii) Dedicated waste storage areas.
 - iv) Fuel and oil chemical stores.

- v) Equipment and material laydown areas.
- 3.6.15 All construction staff would arrive and park at the main construction compound. During periods of maximum construction activity, when manpower requirements would be greatest, staff would be encouraged to car share and/or use minibuses provided by the contractor from a central pickup location away from the Site. These arrangements would be included within a Construction Phase Travel Plan, which would be agreed as part of the consenting process.
- 3.6.16 At the end of the construction period the construction compound would be decommissioned. Materials would be removed, and the areas would be restored to grassland.

Construction Plant

- 3.6.17 Plant on site is likely to comprise:
- i) A number of small-scale mechanical pile driving rigs for frame supports.
 - ii) 360° excavators.
 - iii) Dumper trucks and rollers for access tracks.
 - iv) Trenching machines.
 - v) Telehandlers.
 - vi) Cranes for transformers and inverter containers.

Main Construction Works

- 3.6.18 The main construction phases of the project are described below.

Site Preparation and Development of Construction Compounds

- 3.6.19 The perimeter of the construction Site would be fenced with the proposed deer/stock fencing. Temporary 'Heras' fencing or similar would be used around compounds and other work areas until the perimeter fencing is erected, and the Site secured.
- 3.6.20 The construction compound(s) would be created for the initial Site earthworks phase. The compound would provide temporary Site offices, welfare facilities and material and plant storage areas. Dedicated refuelling areas and chemical and oil storage areas would also be provided within the compound as required and these would be fully bunded to comply with Natural Resources Wales requirements.

- 3.6.21 The numbers and size of this equipment will depend on the works that are being undertaken on site at a given time.

Earthworks, Foundations and Piling

Excavations

- 3.6.22 The topsoil excavated for the permanent access tracks and foundations for the Transformer Stations, Substation Building, Control Room and Switchroom Building would be re-used on site or stored adjacent to the excavations for use in restoration following decommissioning.

Temporary Excavations

- 3.6.23 Temporary excavations required for construction would be minimal and would primarily be associated with trench excavations for cable runs. Topsoil and subsoil would be stored separately immediately adjacent to the excavation in stockpiles not exceeding 1 m in height. Temporary excavations would be reinstated immediately following construction to restore the previous soil profile. Topsoil would be graded out to marry the excavations with the existing site levels and the areas would be seeded with a meadow grassland seed mix suitable for sheep grazing as detailed above.

Foundations

- 3.6.24 The foundations for the Transformer Stations, Substation, Control Room and Switchroom Building would be slab foundations or concrete sleepers, depending on ground conditions.
- 3.6.25 Foundation slabs and sleepers would be cast in-situ and concrete would be delivered directly to the Site via concrete mixer lorry.

Piling

- 3.6.26 As set out above the support posts for the solar panel frame would be ram driven into the ground using a number of specialist small scale GPS controlled piling machines to a depth of approximately 1.2 m depending on ground conditions. A typical small scale piling machine used for solar farm construction is illustrated in Image 3.8 below.





Image 3.8 Typical GPS Solar Farm Pile Driver

Lighting

- 3.6.27 Lighting during construction would need to be sufficient to satisfy health and safety requirements, whilst ensuring impacts on the surrounding environment, including from sky glow, glare and light spillage, are minimised.
- 3.6.28 Artificial lighting would only be used during the hours of darkness, low levels of natural light or during specific construction tasks to ensure the health, safety and welfare of those on site, including construction staff and visitors.
- 3.6.29 Appropriate lighting would be installed and operated to ensure that:
- i) Access/egress points are clearly visible during operational hours.
 - ii) Staff and visitors can move safely around the Site.
 - iii) Site security can be monitored and maintained.
 - iv) Sufficient area lighting is provided for the Site office and laydown areas.
- 3.6.30 This would involve the use of mobile task lighting to provide the lighting necessary to satisfy Health and Safety requirements. Mobile lighting would be mounted on telescopic poles.

3.7 Decommissioning

- 3.7.1 After 40 years, the majority of the Proposed Development would be decommissioned and the Site would be returned to solely agricultural use, unless a new planning

- application is forthcoming. Decommissioning would require similar plant to the construction phase and would result in very similar traffic impacts.
- 3.7.2 With the exception of the on-site substation and associated access track, which would likely be subject to a separate local planning application should the DNO require this beyond the 40 year life of the scheme, all above and below ground infrastructure would be removed from Site and, where practicable, would be recycled. The substation and associated access track would be adopted by the DNO upon commissioning and would therefore be removed by the DNO should it be considered surplus to requirements.
- 3.7.3 Following decommissioning at the end of the Proposed Development's operational life or when panels need to be replaced due to failures/damage, solid waste will be created. Solar panels comprise a high proportion of glass along with smaller amounts of aluminium and other metals. **Around 99% of materials used will be recyclable.** As the solar industry expands the recycling market is following. There are an increasing number of specialist recycling firms that are developing technologies to allow the photovoltaic cells to be more easily recycled, enabling an even greater proportion of the solar panels to be recycled. In addition, support frames, fencing, CCTV poles and cabling all contain recyclable materials and stone/concrete can be processed for use as secondary aggregate.
- 3.7.4 Solid waste generated by decommissioning works can therefore be effectively managed by moving waste up the waste hierarchy through recycling for beneficial use. As such significant effects associated with disposal of waste as a result of the Proposed Development would not occur.
- 3.7.5 The methods used in construction mean that remediation works following the removal of the panels and associated infrastructure are relatively minor and will return the Site to its previous character. All below ground infrastructure would be removed from site, ensuring that the land can be returned to full agricultural use for both grazing and arable production.
- 3.7.6 By virtue of the type of development proposed, the vast majority of the land would retain its 'greenfield' status throughout its life.

4.0 EIA SCOPING SUMMARY

4.1.1 In terms of the typical environmental topics to be considered within the EIA process for a solar farm development, Table 4.1 below provides a summary of whether topics are to be scoped in or out of the EIA process, with supporting justification. This approach was agreed and implemented in the Previous Application. Given the Site has reduced in size by ~44 ha, it is anticipated that the potential effects will be reduced, and thus the topics scope out can remain scoped out.

4.1.2 Where topics are being scoped out, further information is provided in this chapter to justify this decision. Where topics have been included for further assessment, these are described further in Chapters 6 to 10 of this scoping report.

Table 4.1 Summary of proposed EIA scope

Topic	Construction Effects	Operational Effects	Scoped In / Out
Landscape and Visual	Impact of construction plant and the movement of construction vehicles likely to affect local views and residential amenity.	Likely significant change in local and strategic views as well as a change in landscape character	In
Biodiversity	Potential removal of habitat including trees and hedgerow, with associated disturbance of protected species. Potential for increased nitrogen deposition on nature conservation sites due to the presence of construction vehicles.	Potential impacts on foraging and breeding habitat for various protected species	In
Air Quality	Due to the impact of construction vehicles increasing background pollutant concentrations at sensitive receptors including residential receptors and ecological sites. Potential for dust creation due to construction activity for nearby residential properties.	No likely significant effects due to minimal traffic generation and no emissions from onsite technology.	Out. Agreed to be scoped out of Previous Application.
Noise and Vibration	Potential impact of construction vehicles increasing background noise levels at residential receptors	No likely significant effects due to minimal traffic generation and plant being designed to meet BS 4142 ¹² .	Out. Agreed to be scoped out of Previous Application.
Cultural Heritage	Potential impacts on uncharted archaeology.	Potential impacts on the setting of historic designations, including Bishton Castle scheduled monument.	In
Population and Human Health	No likely significant effects at a community level with respect to local amenity.		Out (though aspects of health will be referenced as

¹² BSI Group (2019) BS 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound

Topic	Construction Effects	Operational Effects	Scoped In / Out
	No significant temporary or permanent realignments of Public Rights of Way are proposed, and suitable offsets from footpaths from any development have been incorporated into the design following consultation through pre-app with Newport City Council. Aspects of human health associated with the construction phase will be addressed, as appropriate, within relevant chapters of the ES.		required). Agreed to be scoped out of Previous Application.
Geology and Soils	No land take of Best and Most Versatile Agricultural Land is required. Soil management protocols will be included as standard within a Construction Environmental Management Plan. Solar installations will not impact geological features due to limited piling into soil. Buried peat unlikely to be impacted due to avoidance of areas where buried peat was identified during previous archaeological evaluation.	Vehicle and worker movements unlikely to impact soil characteristics	Out. Agreed to be scoped out of Previous Application.
Material Assets and Waste	Waste will be minimised through construction and no significant impacts on landfill sites are anticipated. Sustainable sourcing of construction materials will be advocated within the supply chain. It is unlikely that any Mineral Safeguarding area will be sterilised.	Negligible amounts of waste will be produced during operation.	Out. Agreed to be scoped out of Previous Application.
Climate Change	Embodied carbon will be calculated and reported within the Proposed Development chapter of the ES.	No impacts on climate change will be experienced during operation. Benefits associated with non-fossil fuel generation of electricity will be reported in the Proposed Development Chapter of the ES.	Out (as a standalone chapter – climate change will be addressed in the introductory sections of the ES)
Water Resources	Potential increase in surface run off from soil compaction.	Potential flood risk issues that may require mitigating. Likely beneficial effects from reduced water infiltration as a result of a change in agricultural practices.	In
Traffic and Transport	Limited requirement for construction traffic. Average vehicle movements will be in the order of 12 movements per day, based on six deliveries.	Isolated and infrequent maintenance will be required, resulting in negligible operational traffic movements.	Out. Agreed to be scoped out of Previous Application.

Topic	Construction Effects	Operational Effects	Scoped In / Out
	There will only be minor fluctuations in this scheduling.		
Major accidents and disasters	Unlikely that any major accidents or disasters will occur during construction due to scale and type of construction activity.	No major accidents or disasters are likely due to the operational characteristics of the Site. It is unlikely that the Proposed Development would be susceptible to any realistic accidents or disasters.	Out. Agreed to be scoped out of Previous Application.
Lighting / glare	Lighting of construction sites will be addressed as part of the Landscape and Visual assessment.	Site lighting will be minimal and designed in a way as to not significantly affect residential properties or sensitive species. Glint and glare study will inform the design process and be considered embedded mitigation.	Out. Agreed to be scoped out of Previous Application.
Cumulative effects	Potential for an inter-project cumulation of any effects, irrespective of whether they are individually deemed significant or not. In combination effects with other projects may occur		In

4.2 Traffic and Transport

- 4.2.1 Traffic and Transport was scoped out of the EIA for the Previous Submission. Given the resubmission features a smaller site, with 2 fewer proposed entrances, it stands to reason that the impact would in fact likely be lesser than the original submission and thus, this item would remain scoped out. The construction period is expected to take in the order of 8 to 12 months. It is expected that construction hours would likely be between 07:00 and 18:30 hours Monday to Friday and 07:00 to 13:00 hours on Saturday.
- 4.2.2 Over the duration of the eight-to-12-month construction period, it is predicted there would be an average of five to six HGV deliveries per day (10 to 12 HGV movements per day).
- 4.2.3 An Access Strategy was prepared for the Previous Application to confirm the options for providing an access route to the Site. This Access Strategy was included as part of a Construction Traffic Management Plan that formed an appendix to the Environmental Statement for the Previous Application and is included in Appendix 4. The Access Strategy is considered applicable for the Proposed Development and will form part of a revised CTMP for the Proposed Development.
- 4.2.4 There are highway restrictions to the west at Llanwern, in particular the Lodge Hill / Langstone Lane corner which articulated HGVs are unable to turn through. On this

- basis, it is envisaged that the access route would be from the north via the B4245 Magor Road, Waltwood Road and Bishton Road.
- 4.2.5 This is the same access route that was used for construction of the Egg Production Unit at Castle Farm, Bishton (reference: 18/0756, consented in September 2019). This route has therefore recently been used by construction vehicles.
- 4.2.6 Furthermore, this route is also currently used by farm and agricultural vehicles, thus there are already large vehicles routeing along it. There are some residential properties along Bishton Road, all of which are set back from the carriageway and some of which are screened by hedgerow etc.
- 4.2.7 As above, construction vehicles are predicted to be low and temporary in nature. Their movement is expected to be no different to the current farm and agricultural vehicles that travel along the access route.
- 4.2.8 A detailed Construction Traffic Management Plan detailing the delivery routes, construction compounds and a suite of traffic management measures to minimise impacts and maintain road safety is attached as Appendix 4.
- 4.2.9 Once operational, the development will be operated remotely, thus there would be no daily requirement for access. Access is only required for maintenance and inspection which is undertaken by a 4x4 type vehicle approximately once per month.
- 4.2.10 The vehicle movements associated with the occasional visits to the operational development would have a negligible influence on the surrounding population and highway network.
- 4.2.11 As above, a detailed Construction Traffic Management Plan is attached as Appendix 4, which contains a suite of traffic management measures to minimise impacts and maintain road safety. This will also be submitted as part of the DNS application.
- 4.2.12 In addition, a Transport Statement has been prepared and is attached as Appendix 3 which details the vehicle movements generated by the development when it is being constructed and when it is operational. The Transport Statement undertakes assessments of the impact of these vehicle movements and identify mitigation measures in coordination with the Construction Traffic Management Plan such that the transport related impacts of the development are acceptable. This will also be submitted as part of the DNS application.

- 4.2.13 On the basis of the above, and on the basis that this topic was successfully scoped out of the previous, larger site submission, it is therefore considered that transport, both construction and operational can be scoped out of the ES and adequately addressed through the submission of separate standalone technical reports, which are attached and will accompany any future application.

4.3 Air Quality / Noise and Vibration

- 4.3.1 Based on the vehicle movements described above, it is unlikely that the number of construction vehicle movements would give rise to potentially significant environmental effects. Construction activities will be controlled by a Construction Environmental Management Plan, with appropriate measures to mitigate air quality, dust and noise impacts on receptors during construction.
- 4.3.2 There would be no onsite processes that would result in any pollutants being released or elevated noise levels. Operational vehicle movements will be minimal and unlikely to be of a scale that would give rise to significant effects. The operational vehicle movements will be reported in the ES as part of the description of the development.
- 4.3.3 Plant noise will be controlled through adherence to the relevant British Standards. Assessments submitted as part of the original application and subsequent updated assessments have been undertaken which indicate that noise generated by fixed plant would be below current baseline ambient noise levels.

4.4 Population and Human Health

- 4.4.1 No community level impacts, and subsequent significant effects, are likely to occur as a result of the construction or operation of the Proposed Development. No community facilities will be lost, and it is unlikely that Public Rights of Way and other recognised routes would be either temporarily or permanently severed or significantly diverted.

4.5 Geology and Soils

- 4.5.1 An initial review of The Welsh Government's Predictive Agricultural Land Classification (ALC) Map¹³ demonstrates that the Proposed Development is within an area that is likely to be Grade 3b and Grade 4. Subsequent onsite ALC surveys undertaken for the Previous Application by Amet Property in October and November 2021, confirmed this grading, with the Site of the Proposed Development consisting a mix of Grade 3b land and Grade 4 non-Best and Most Versatile (BMV) land. This report was submitted to and approved by LQAS as part of the Previous Application. It has subsequently been updated to remove the area of the site removed and is included as Appendix 2.
- 4.5.2 Due to the limited intrusion into the ground during panel installation, with there being no deep excavations or foundations required, there is unlikely to be any disturbance to geological features.
- 4.5.3 Due to the historic and current agricultural use of the Site, it is unlikely that contamination would be an issue. Any isolated discoveries of contamination would be covered through protocols included within a Construction Environmental Management Plan.
- 4.5.4 Peat resources were identified within a localised area of the south-eastern part of the site during archaeological evaluation and geoarchaeological investigations undertaken in support of the Previous Application. The identified deposits comprised buried peat underlying alluvial clay horizons associated with the historic Gwent Levels wetland landscape.
- 4.5.5 The Previous Application considered peat resources through the Agricultural Land Classification assessment, Outline Soil Management Plan, Cultural Heritage assessment and subsequent post-hearing Further Information submitted during the examination process. These assessments considered the potential implications of the development in relation to peatland habitat value, hydrogeological function, carbon sequestration and paleoenvironmental interest.

¹³ [Agricultural land classification: predictive map | GOV.WALES](#) [accessed 29 September 2022]

- 4.5.6 Importantly, the peat deposits identified within the former application site did not comprise active peatland habitat. No blanket bog, raised bog, fen habitat or other Section 7 peatland habitat of principal importance was identified within the Site. The deposits were buried beneath alluvial clay soils and were not functioning as active peat-forming systems.
- 4.5.7 The Proposed Development has subsequently been amended following the refusal of the Previous Application. The area within which buried peat deposits were identified has now been excluded entirely from the Proposed Development and is proposed to be retained and managed as part of the breeding bird mitigation area associated with the revised scheme. As a result:
- i) no solar infrastructure is proposed within the peat-bearing area;
 - ii) no piling, trenching or intrusive construction activity would occur within the identified peat deposits;
 - iii) no alteration to local hydrology or drainage associated with development would occur within this area; and
 - iv) the peat resource would remain undisturbed throughout construction, operation and decommissioning phases.
- 4.5.8 Given the complete avoidance of the identified peat-bearing area through the revised design, together with the absence of active peatland habitat and the lack of intrusive development proposed within the retained mitigation land, there is no realistic pathway for likely significant effects upon peat resources to arise.
- 4.5.9 On this basis, peat is not considered to represent a likely significant environmental effect for the purposes of the EIA Regulations and it is therefore proposed that peat does not require assessment as a standalone topic within the Environmental Statement. Any residual soil handling and construction controls associated with the wider development would continue to be addressed through standard construction management measures and the Construction Environmental Management Plan, an outline of which will be submitted as part of the Environmental Statement, as appropriate.

4.6 Material Assets and Waste

- 4.6.1 The Proposed Development will use market ready components for the solar panels and frames, minimising any further use of natural resources. This will in turn help



minimise construction waste generated on site. Therefore, there is unlikely to be any detrimental impact on local or regional landfill capacity.

- 4.6.2 There is a small area of a safeguarded minerals within the Site, with these areas safeguarded for sand and gravel and hard rock resources. However, given the small incursion into this area and that the development does not preclude long term excavation of this material, this is unlikely to give rise to significant environmental effects.

4.7 Climate Change

- 4.7.1 Climate change is a global issue and whilst the contribution of individual projects may be negligible, significant cumulative effects can arise. Given the nature of the Proposed Development, it is not deemed proportionate to undertake an individual topic assessment as a standalone chapter within the ES. Instead, aspects of climate change will be addressed within relevant sections of the ES, namely:

- i) **Assessment of embodied carbon** – The introductory chapters of the ES will outline the embodied carbon within construction material as well as reporting the carbon emissions associated with construction vehicle movements. This will be set against relevant UK climate budgets.
- ii) **Climate change resilience** – the design of the Proposed Development will be reported in the introductory chapters of the ES and will explain the standards and specifications adhered to relation to structural integrity. The Water Resources section of the ES will include how climate change allowances have been incorporated into the assessment of flood risk.
- iii) **In Combination Climate Change Assessment** – the inter and intra climate change related impacts (e.g., land take, habitat removal, construction plant operation) will be identified and assessed within the specific cumulative effects section of the ES.

4.8 Major Accidents and Disasters

- 4.8.1 The Site is not likely to be at risk from slope instability, earthquakes or coastal flooding. High winds are unlikely to materially damage the solar panels as they will be installed to withstand high wind conditions. Furthermore, commercial solar arrays are not susceptible to extremes of temperature, as they have a normal operating range of -40°C to 80°C.



- 4.8.2 Operation of the Proposed Development will not give rise to any major accidents or disasters. All technology will adhere to best practice standards and will be maintained to an agreed schedule.

4.9 Lighting / Glare

- 4.9.1 Temporary lighting required to construct the Proposed Development, will be controlled through the Construction Environmental Management Plan and be designed to avoid any significant impact on residential properties or ecological receptors.
- 4.9.2 A full Glint and Glare report will be submitted as part of the application, however as modern solar panels are coated in an Anti-Reflective Coating to ensure light is absorbed rather than reflected, this is not considered to be a constraint. Likewise, numerous solar farms are now sited besides and co-exist alongside operational airports and active runways, further demonstrating their suitability and the lack of glint/glare emitted.
- 4.9.3 No permanent lighting is likely to be required during the operation of the Proposed Development and any security lighting will use infrared technology to prevent any nuisance or constant light spill.

5.0 OVERARCHING IMPACT ASSESSMENT METHODOLOGY

5.1 Introduction

- 5.1.1 This chapter provides a brief description of the approach to the environmental assessment process and describes the broad principles that will be applied within each technical assessment. The approach to EIA is not standardised, but there are established and recognised approaches set out by professional institutions about methods to be used for the assessment of environmental effects. Where appropriate, the environmental effects of the Proposed Development have been assessed using definitive standards, relevant legislation, and guidance applicable to each of the technical areas covered within this ES.

5.2 ES Chapter Structure

- 5.2.1 In order to provide a clear and robust assessment each of the technical chapters presented within the ES follows the structure set out in the subsequent paragraphs.

Introduction

- 5.2.2 A brief summary of the approach to the topic is provided outlining any key issues relevant to the subject area being assessed.

Methodology

- 5.2.3 This section provides details of the assessment method followed, and provides the following information:
- i) A description of any relevant legislation, policy or guidance that has been considered in the assessment.
 - ii) The findings from any consultations undertaken to date.
 - iii) the approach taken to gathering of any desk-based or field data. Where specific surveys have been undertaken an outline of the survey methodology is provided.
 - iv) The approach to the impact assessment is defined. This includes how the particular topic has defined impact magnitude, receptor sensitivity and how these relate to the overall level effect / significance.
 - v) Any limitations or assumptions made in the assessment.

Baseline

- 5.2.4 This section of the chapter provides a description of the baseline conditions at the Site and its environs, relevant to the topic being assessed. The baseline conditions have been established through consultation, collation and analysis of existing data sets and reports, and in some cases site specific field data. The baseline identifies any sensitive receptors that will need to be evaluated in the assessment.
- 5.2.5 Where relevant and appropriate the likely future state of the environment is set out by predicting future change in the baseline conditions in the absence of the Proposed Development, in line with current guidance. The future baseline is then taken into account when assessing the likely effects of the project over its operational lifetime.

Assessment of Effects

- 5.2.6 This section of the chapter describes the likely significant environmental effects of the Proposed Development on the baseline condition at the Site and its environs, relevant to the assessment topic. As indicated above, the assessment considers potential future changes in the baseline environment where relevant. The assessment includes a description of the nature, extent and significance of these effects. The assessment considers the embedded mitigation measures that have been specifically incorporated into the Proposed Development to reduce environmental effects of the project.
- 5.2.7 The Applicant is applying for a temporary, yet generational development, for 40 years, therefore the assessment of effects will consider the construction, operational and decommissioning phases of the Proposed Development.
- 5.2.8 The EIA Regulations do not provide definitive methods for the assessment of significance and a variety of methods are employed within EIA methodologies. The method used to assess the effects is specific to each discipline. Where available and appropriate, the assessments follow impact assessment criteria and methodology set out by relevant professional institutions. Where such guidance is not available, or prescriptive methods are not set out by the relevant professional body, then assessment criteria have been developed by the technical specialists to enable a clear and structured assessment to be undertaken.

- 5.2.9 The level of the effect is, in general, derived by considering the magnitude of the impact and the sensitivity of the receptor to a change resulting from the Proposed Development.
- 5.2.10 Depending on the discipline there are several factors that need to be considered when establishing the type and magnitude of an effect, including:
- i) Whether the effect is adverse or beneficial.
 - ii) Whether it is temporary or permanent.
 - iii) Extent or spatial scale of the effect.
 - iv) Duration of the effect.
 - v) Whether the effect is reversible.
 - vi) Probability / likelihood of the effect.
- 5.2.11 Similarly, the sensitivity of a receptor is the function of several elements dependent on the discipline and effect being assessed, these could include:
- i) Designation and legal status.
 - ii) Quality.
 - iii) Rarity.
 - iv) Importance.
 - v) Ability to adapt to change.
- 5.2.12 Having established the magnitude of the effect and the sensitivity of the receptor, the significance of the effect is then defined. For some disciplines, a matrix is used to classify the level of effect by correlating magnitude and sensitivity, as shown in Table 5.1.

Table 5.1 Example Significance of Effect Matrix

		Magnitude of Impact Severity			
		High	Medium	Low	Negligible
Receptor Sensitivity	High	Major	Moderate	Minor to Moderate	Negligible or Minor
	Medium	Moderate	Minor to Moderate	Minor	Negligible
	Low	Minor to Moderate	Minor	Negligible or Minor	Negligible
	2013	Negligible or Minor	Negligible	Negligible	Negligible
	Negligible	Major	Moderate	Minor to Moderate	Negligible or Minor

- 5.2.13 Where a matrix is not used, the magnitude of change and the sensitivity of the receptor is used to make a reasoned professional judgement to establish the level of the effect and whether it is significant or not.
- 5.2.14 Where the findings of an assessment are set out as different levels of effect (e.g., major, moderate, minor, etc.) the assessment clearly sets out where an effect is significant. This may vary between disciplines and the threshold is defined within each chapter. This approach is used to assist the decision maker, consultees and other interested parties in establishing the most important environmental effects of the Proposed Development.
- 5.2.15 There is no statutory definition of what level of effect is to be regarded as significant and there is often not a single, definitive, correct answer as to whether an effect is significant or not. Generally, in EIA terms, a significance of effect of 'Moderate' or above would be deemed significant.
- 5.2.16 A significant effect does not necessarily mean that such an effect is unacceptable to decision-makers nor necessarily results in a breach of planning policy. This is a matter to be weighed in the planning balance alongside other material considerations¹⁴. What is important is that the likely significant environmental effects of any proposal are transparently assessed and described in sufficient detail to enable the determining authority to make a balanced and well-informed judgement as part of the decision-making process.
- 5.2.17 In all instances, the assessments contained within this ES set out the basis of the judgements made so that the readers of the ES can see the weight attached to the different factors and can understand the rationale of the assessment. In this sense the ES clearly explains how the significance of effects has been derived.

Mitigation

- 5.2.18 It is a requirement of the EIA Regulations to describe the measures envisaged to avoid, prevent, reduce and where possible offset any significant effects on the

¹⁴ A material consideration is a matter that should be taken into account in deciding a planning application or on an appeal against a planning decision <https://www.planningportal.co.uk/services/help/faq/planning/about-the-planning-system/what-are-material-considerations> Accessed 7 October 2022.



environment. Mitigation measures can be used to reduce or avoid any adverse effect, whether that effect is deemed to be ‘significant’ or not.

Mitigation Hierarchy

5.2.19 Mitigation can be achieved in several ways. The Institute of Environmental Management (IEMA) Impact Assessment Guidelines document ‘Implementing the Mitigation Hierarchy from Concept to Construction (2024)’ describes the concept and implementation of the ‘mitigation hierarchy’ as follows (illustrated at Image 5.1):

“A systematic approach used to minimise adverse effects of a project or scheme on the environment and people. It is a series of steps or principles to guide decision-making and prioritise activity. The hierarchy comprises four stages, with the most desirable first: avoid, prevent, reduce and, finally, offset. The hierarchy indicates that avoidance is the priority and offsetting should only be relied on as a last resort. For definitions of these terms within the hierarchy.”

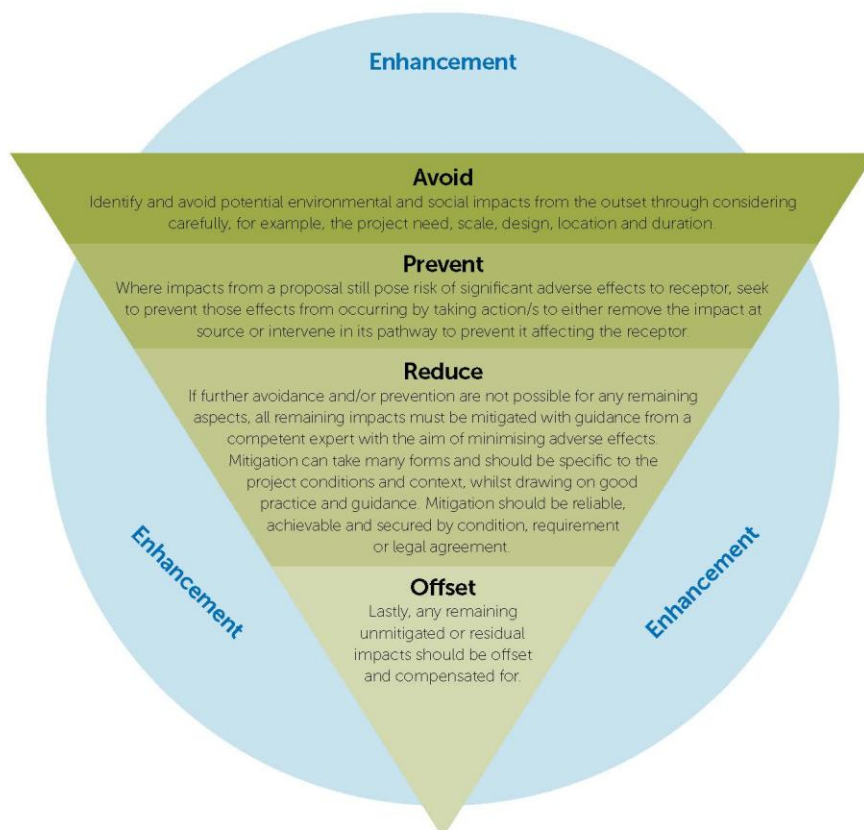


Image 5.1 – The Mitigation Hierarchy

Classified Mitigation

5.2.20 The IEMA Impact Assessment Guidelines document ‘Implementing the Mitigation Hierarchy from Concept to Construction (2024)’ states that: *“classifying mitigation measures into one of three key types helps to achieve a more proportionate ES, as it allows for some mitigation measures to be taken-as-read in assessing effects (i.e. these mitigations are embedded intrinsically into the project design as set out in the project description.”* Within the Guidance, there are three distinct forms of mitigation as follows:

- i) Primary (inherent)
 - An inherent part of the project design and should be described in the design evolution narrative and included in the project description.
- ii) Secondary (foreseeable)
 - Requires further activity to achieve the anticipated outcome – typically, these will be described in the ES chapters but often secured through planning conditions, requirements, and/or management plans.
- iii) Tertiary (inexorable)
 - Required regardless of any EIA assessment as it is imposed, for example, because of legislative requirements and/or standard sectoral practices.

Enhancement

5.2.21 Enhancement can be considered as environmental gains that are not required as a form of mitigation. The IEMA Impact Assessment Guidelines document states with respect to enhancement that: *“outside of specific requirements for biodiversity net gain.....there is no regulatory driver for securing overall environmental gain through development. However, the EIA process is likely to gather information that could allow a developer to build effective and valuable environmental benefits into the design of their project. Such benefits can help enable development and provide reasons for communities and wider stakeholders to support the developer’s aspirations for the site.”*

Initial Development Design and Impact Avoidance/Reduction Measures

5.2.22 Each ES topic chapter contains a section entitled ‘Initial Development Design and Impact Avoidance/Reduction Measures’ which describes mitigation measures



identified at the commencement of the EIA assessment process to avoid, prevent, reduce, or offset likely adverse effects from the Proposed Development.

5.2.23 Mitigation from all three mitigation classifications is identified as 'Initial Development Design and Impact Avoidance/Reduction Measures'; an example of each (specific to the Proposed Development) is provided below:

- i) **Primary** – careful siting of the proposed structures as far as reasonably practicable from the nearest residential receptors to minimise amenity effects.
- ii) **Secondary** – provision of a Construction Environmental Management Plan (CEMP) with detailed management plans for task and/or environmental receiver specific to be produced by the Principal Contractor (PC) post-consent. It should be noted that the requirement for a CEMP was identified at the EIA scoping stage (prior to the commencement of the EIA assessment process). As such, an Outline CEMP document has been produced for this DNS application, which will be subject to planning condition, adopted by the PC and expanded to include a series of detailed management plans. The Outline CEMP is therefore classified as primary mitigation, with the detailed CEMP (which will be a 'live' document) also classified as secondary mitigation.
- iii) **Tertiary** – compliance with the relevant aspects of Guidance for Pollution Prevention documents, and BS5228: 2009+A1 'Code of Practice for Noise and Vibration Control on Construction and Open Sites. It should be noted that tertiary mitigation typically (but not exclusively) apply to the construction phase; as such tertiary mitigation for this project is also detailed in the Outline CEMP, which means that such tertiary mitigation is also secondary mitigation.

5.2.24 Where relevant, primary mitigation will be described in ES Chapter 4.0 (The Proposed Development), where it is an inherent part of the Proposed Development design. Mitigation measures identified as 'Initial Development Design and Impact Avoidance/Reduction Measures' have been considered when coming to a judgement of the likely significance of the effects of the Proposed Development.

Further Mitigation and Monitoring

5.2.25 Each ES topic chapter will contain a section entitled 'Further Mitigation and Monitoring' which describes further mitigation measures identified after the completion of the initial EIA assessment process to avoid, prevent, reduce, or offset



likely adverse effects from the Proposed Development. Such mitigation measures can be classified as primary or secondary (they are not tertiary as such measures will be implemented regardless of the outcome of the EIA assessment process).

5.2.26 Mitigation measures identified as 'Further Mitigation and Monitoring' include an explanation as to how their implementation would mitigate/reduce the identified effects of the Proposed Development.

5.2.27 The residual effects (after the implementation of 'Further Mitigation and Monitoring') are described in in each topic chapter. The likely significant residual effects will be summarised in ES Chapter 9.0 (Summary of Environmental Effects).

Enhancement

5.2.28 Each ES topic chapter will contain a section entitled 'Enhancement Measures' which, where relevant, describes enhancement measures deemed to be proportionate and relevant to the Proposed Development which would provide notable benefits.

5.3 Cumulative Effects

5.3.1 Schedule 4, Paragraph 5(e) of the EIA Regulations requires that the ES include:

'A description of the likely significant effects of the development on the environment resulting from...

... (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'.

5.3.2 The EIA Regulations do not define cumulative effects. However, a commonly accepted description is:

'Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project' (European Commission, 1999).

Types of Cumulative Effect

5.3.3 Two major types of cumulative effect are generally recognised, '*Intra-project*' and '*Inter-project*' effects.



Intra-project Effects

- 5.3.4 Intra-Project cumulative effects (or the in-combination effects) between environmental disciplines are inherently considered in each environmental topic ES chapter. For example, topic areas such as biodiversity and noise and vibration cannot be considered in isolation since changes affecting one topic area also have the potential for implications for other topic areas. Additionally, effects upon the setting of heritage assets may derive from change in view (i.e. a visual effect) or change in noise levels (i.e. a noise effect). The ES identifies potential interactions between environmental topic areas where relevant (under the sub-heading 'Inter-Relationship of Potential Effects').

Inter-project Effects

- 5.3.5 Inter-project effects are those that occur because of the likely effects of the Proposed Development interacting with the likely effects of other development in the vicinity. For example, construction and/or operation traffic effects of the Proposed Development combined with the construction and/or operation traffic effects of another major development using the same access routes may result in cumulative effects on the surrounding highway network.
- 5.3.6 For the purpose of the EIA process, inter-project effects will be referred to as 'cumulative effects' and will be considered in each of the environmental topic ES chapters (under the heading 'Cumulative Effects'). The method provided below describes how other projects have been identified for the consideration of cumulative effects.

Methodology for cumulative assessments

- 5.3.7 There is no defined methodology in the UK as to how cumulative effects should be assessed. In determining the approach to be adopted to this element of the assessment, reference is made to the following guidance:
- i) Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Commission 1999).
 - ii) Cumulative Effects Assessment Practitioners Guide (Canadian Environmental Assessment Agency 1999).
 - iii) Guidelines for Environmental Impact Assessment (Institute of Environmental Management and Assessment 2006).

- iv) The State of Environmental Impact Assessment Practice in the UK (Institute of Environmental Management and Assessment 2011).
- v) DNS Guidance Appendix 3 (Environmental Impact Assessment).

Identification of Cumulative Developments

5.3.8 Paragraph 5(e) of Schedule 4 of the EIA Regulations requires a:

“description of the likely significant effects of the development on the environment resulting from the culmination of effects with other existing and/or approved projects.”

5.3.9 In this regard the regulations are specific about the projects that should be considered to result in cumulative effects i.e., existing and/or approved projects. However, it is proposed to also include projects that are currently awaiting determination within the cumulative assessment as there is a possibility that these projects could be approved whilst the application for the Proposed Development is being determined. Accordingly, the assessment of cumulative impacts will encompass the effects of the Proposed Development in combination with relevant:

- i) existing development, under construction.
- ii) approved development, awaiting implementation.
- iii) schemes awaiting determination within the planning process.

5.3.10 The presence of operational schemes (and for some disciplines, schemes that are under construction, but not yet operational) is an established influence upon the environment, that will be considered when determining the baseline for the non-cumulative assessment for each discipline chapter. The non-cumulative assessment of effects will have full regard to the presence of such schemes when arriving at any conclusions.

5.3.11 As such, the additional schemes that would form part of the assessment of cumulative effects will be major projects that have either been granted planning consent but have not yet been constructed and major projects for which a planning

application is awaiting determination. Major projects are developments that are one or more of the following¹⁵:

“a) the winning and working of minerals or the use of land for mineral-working deposits;

(b) waste development;

(c) the provision of dwellinghouses where—

(i) the number of dwellinghouses to be provided is 10 or more; or

(ii) the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub-paragraph (c)(i);

(d) the provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or

(e) development carried out on a site having an area of 1 hectare or more.”

5.3.12 Projects that fall outside the above criteria will only be included in the assessment if specifically identified by stakeholders and agreed as material to the ES.

5.3.13 Each topic will have a different spatial zone where potential cumulative significant effects could occur. A preliminary search area of 2.5 km from the Site has been used to identify schemes that have the potential to result in cumulative effects.

5.3.14 As the NCC planning website does not contain a ‘map search’ function to identify planning applications, engagement with the NCC Planning Department during the pre-application process, and the use of third-party planning resources, helped identify and agree a list of other projects within the NCC administrative area that qualified as cumulative developments. Additionally, a search was undertaken on the PEDW casework website to identify any other Developments of National Significance that may interact with the Proposed development either during construction or operation. Finally, Local Development Plan Allocations were reviewed to identify the

¹⁵ The Town and Country Planning (Development Management Procedure) (Wales) Order 2012

scale and delivery timeframes of any plan-led development to identify where these could coincide with the delivery of the proposed development.

- 5.3.15 The list of identified cumulative development is set out in **Table 5.2** below. The consideration of the potential for cumulative effects is considered in each of the environmental topic ES chapters (under the heading 'Cumulative Effects').

Table 5.2 Cumulative Developments

Name of Development	Description of Development
Rush Wall Solar Farm - Land near the village of Redwick, south-east of Newport, Wales on the Caldicot Levels DNS application - 3220457 (PEDW)	The installation of a solar park with an approximate design capacity of 75MW. Development includes ancillary electrical equipment and infrastructure, access tracks, security fencing and CCTV.
Magor Net Zero - Land Adjacent to Brewery House Magor Brewery Newport Road Magor Monmouthshire NP26 3DJ EIA Scoping Stage (PEDW)	Proposed solar and wind power facility at a location south of the brewery; including ground-mounted solar PV, wind turbine, hydrogen electrolyzers, hydrogen and energy storage and ancillary and associated infrastructure and cabling.
Land at Vinegar Hill, Undy - Land At Vinegar Hill Vinegar Hill Undy Monmouthshire Planning Ref - DM/2019/01937 (Monmouthshire County Council)	Outline planning application for up to 155 dwellings, associated open space and infrastructure with all matters excluding access reserved, of which full planning permission is sought for 72 dwellings, associated open space and infrastructure.
Rockfield Farm, Undy - Rockfield Farm, The Elms, Undy, Caldicot, Monmouthshire, NP26 3EL Planning Ref - DC/2016/00883 (Monmouthshire County Council)	Master planned development of 13.8 hectares of land for residential use and employment use; up to 266 Proposed residential units and approximately 5575 square meters of B1 floor space.
Magor Brewery - Newport Road Magor Caldicot Monmouthshire NP26 3RA Planning Ref - DM/2020/00103 (Monmouthshire County Council)	Erection of sixteen fermentation vessels, enclosed supporting structure and external stairs; extension of existing high level access walkway; earth works; and temporary works including re-use of existing car park as vessel assembly site, creation of two temporary replacement car parks, temporary site roads and walkways, and associated works.
Glan Llyn Development Site - Queensway Llanwern Newport South Wales (Newport City Council)	Comprehensive regeneration of former Newport Llanwern Steelworks for residential, business and community development. Numerous applications dating back to the original outline application in 2006.
Llanwern Village Planning Ref - 13/0806 amending 06/0845 (Newport City Council)	13/0806 variation of condition (time limits) of planning permission 06/0845 for residential development (up to 1100 dwellings) and provision of primary school, village centre, public open space, landscaping and associated infrastructure works (affecting Public Rights of Way 397/3, 397/7, 397/9 AND 397/10).

Name of Development	Description of Development
Future Energy, Llanwern (Newport City Council) Development Consent Order - Case Reference EN010171	Construction, operation, maintenance and decommissioning of Future Energy Llanwern, a ground mounted solar farm with a generating capacity of over 350 MW for a temporary period of 40 years.
Ringland Centre Ringland Circle Newport Planning ref – 18/1181 (Newport City Council)	Outline planning permission with all matters reserved for demolition of Ringland Centre, 6no. bungalows and library and construction of approximately 170no. homes and 1700 square metres of a1/a2/a3 floorspace, landscaping, internal road network, car parking and associated infrastructure.

5.3.16 As reported in Table 5.2, there are nine developments that have been identified that have the potential to give rise to significant cumulative environmental effects in conjunction within the Proposed Development. Figure 5 Cumulative Developments highlights the location of these developments, along with operational renewable energy projects that may give rise to cumulative effects during operation. These cumulative developments will be assessed within the individual technical chapters of the ES.

5.4 Potential Indirect “Upstream / Downstream Effects” (Finch Judgment)

5.4.1 On 20 June 2024, the Supreme Court handed down a majority judgement on R v Surrey County Council and others (on the application of Finch on behalf of the Weald Action Group), hereafter referred to as the Finch judgment. As described below, this has material implications for EIA and, specifically, the need to clearly consider likely significant environmental impacts of a development arising from potential indirect upstream and / or downstream effects.

5.4.2 In order to evaluate whether the Proposed Development could give rise to indirect upstream / downstream effects, it is considered important to understand the main findings of the Finch judgment.

5.4.3 The case related, specifically, to an application to Surrey County Council for planning permission to expand existing oil production from a well site at Horse Hill near Horley in Surrey. The proposed project relates to the extraction of oil from six wells over a period of 20 years. The application was mandatorily supported by an Environmental Impact Assessment (EIA).



- 5.4.4 The developer argued that, with regard to the impact of the project on climate, the scope of the EIA should be confined to the direct releases of greenhouse gases from within the well site boundary, during the lifetime of the project; and that the EIA need not include an assessment of the greenhouse gas emissions that would occur when the oil extracted from the wells was, ultimately, burnt elsewhere as fuel. The Council accepted this position and granted planning permission.
- 5.4.5 The claimant (Ms Finch) applied for judicial review of the Council's decision. She argued that the decision was unlawful because the EIA was required to, but did not, include an assessment of the combustion emissions. The claim was rejected by the High Court and, subsequently, the Court of Appeal upheld the judge's decision.
- 5.4.6 The claimant then appealed to the Supreme Court, who allowed the appeal by a three-to-two majority and held that the Council's decision was unlawful because the emissions that would occur when the oil produced is burnt as fuel are within the scope of the EIA required by law.
- 5.4.7 In short, in order to comply with Regulation 4(2) and Schedule 4 of the EIA Regulations, specifically, in relation to the provision of a description of the likely significant direct and 'indirect' effects, the EIA process should have considered the 'downstream' effects of the oil extraction. Specific to such assessment in this case was that, if the project goes ahead, it is not merely likely but inevitable that the oil produced from the well site will be refined and, as an end product, eventually undergo combustion, and that combustion will produce greenhouse gas emissions. There was consensus that those emissions would have a significant impact upon climate and that the amount of these emissions could be estimated using an established methodology.
- 5.4.8 It is acknowledged that the judgment is applicable outside of the sphere of fossil fuel extraction development. However, there are in essence three questions to determine whether an EIA is required to assess indirect upstream and / or downstream effects. If all of the questions give rise to a positive response (i.e. yes) then the EIA for the project must assess the upstream and / or downstream effects. If the answer to any of the questions is negative (i.e. no), then no such assessment is required.

The questions are:

- i) Would the development give rise to inevitable indirect upstream or downstream effects i.e. would there be inevitable causation?
- ii) Is it possible to undertake evidence-based meaningful assessment of the effects?
- iii) Will an assessment reasonably conclude likely significant effect(s)?

5.4.9 With regard to the Proposed Development, and the first question, The Applicant's position is as follows:

- i) There is a recognised need for renewable energy to facilitate the pathways to meet predicted future energy demand.
- ii) The Proposed Development would be a contributing factor to these pathways, therefore it is considered a required component of future UK electricity demand, which would otherwise be provided by other renewable energy developments.
- iii) The Proposed Development would utilise products and services already available within the market sector, meaning there would be no tangible impact on International manufacturing processes.
- iv) There are no end-user emissions resulting from the use of electricity produced by the Proposed Development.

5.4.10 Given the above points, it has been concluded that no further consideration needs to be given to upstream / downstream effects, as part of the EIA process.

5.5 Transboundary Effects

5.5.1 An initial transboundary screening exercise for the Proposed Development under Regulation 56 of the EIA Regulations has been undertaken. The Proposed Development is not likely to have a significant effect either alone or cumulatively on the environment in any European Economic Area (EEA) state.

5.5.2 The nearest EEA states are the Republic of Ireland at approximately 250 km west and France at over 300 km south-east of the Proposed Development site. Taking into account the potential pollution impact pathways through air, land and water, and the effects predicted to arise from the Proposed Development, the likelihood of significant effects on the environment of another EEA state is considered negligible.



Therefore, significant transboundary effects associated with the Proposed Development are not anticipated.

6.0 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

6.1 Introduction

- 6.1.1 This section of the Scoping Report introduces the landscape and visual baseline of the area, explains how receptors can be affected, identifies the viewpoints for assessment, and outlines the methodology to be employed for the Landscape and Visual Impact Assessment (LVIA).

6.2 Baseline

Site Visit

- 6.2.1 A site visit was undertaken in fine and clear weather in August 2021 to appraise the Site and its surroundings, including taking panoramic viewpoint photographs from within the Site and from surrounding publicly accessible locations.
- 6.2.2 Following consultation feedback, a further site visit was undertaken in October 2022 to take additional viewpoint photography.
- 6.2.3 The site surveys helped to gain an understanding of the Site and its context as well as the wider landscape character and visual amenity receptors and their views within the study area. The site survey also helped to identify opportunities and constraints and suggested potential landscape mitigation measures. This supplemented the available information collected during the desk study.
- 6.2.4 Photographic panoramic viewpoints were taken from largely publicly accessible locations within and surrounding the Site, as agreed through consultation. The panoramic viewpoints will be interpreted into photomontages, where the proposed development will be superimposed onto the photographic view. The photomontages will illustrate the proposed view at Year 1 and Year 10 (if applicable) when it is assumed that the landscape mitigation measures will have matured. The viewpoints are summarised in Table 6.1 below

Table 6.1 Summary of proposed EIA scope

VP No.	Viewpoint Name
1	From minor road east of Bishton
2	From minor road south-east of Bishton
3	From public right of way west of Bishton
4	From public right of way east of Underwood
5	From public right of way on fringes of Bishton
6	From Bishton

VP No.	Viewpoint Name
7	From public right of way adjacent to railway line
8	From Bishton Road adjacent to St Cadwaladr's Church
9	From public right of way east of Llanwern
10	From public right of way adjacent to Llanwern
11	From overbridge over M4
12	From Redwick Conservation Area on Green Street and NCR4 in Caldicot Levels Special Landscape Area and Gwent Levels Landscape of Historic Interest
13	From public right of way in Wentwood Special Landscape Area
14	From Wales Coast Path recreational route, in Caldicot Levels Special Landscape Area and Gwent Levels Landscape of Historic Interest
15	From public right of way on fringes of Llandeudov
16	From public right of way, on boundary of Caldicot Levels Special Landscape Area and in Gwent Levels Landscape of Historic Interest
17	From North Row and NCR4, in Caldicot Levels Special Landscape Area and Gwent Levels Landscape of Historic Interest
18	From public right of way adjacent to railway line
19	From public right of way, north of Bishton
20	From public right of way, east of Bishton
21	From proposed permissive path, adjacent to proposed orchard
22	From public right of way, adjacent to railway line
23	From public right of way, east of Bishton
24	From Bishton Castle Scheduled Monument, near Castle Farm

6.2.5 The location of the viewpoints, overlaid on a Zone of Theoretical Visibility (ZTV), is shown on Figure 6.

6.2.6 A ZTV has been calculated to the maximum height of the proposed development. The ZTV is a useful tool to determine the extent of potential visibility of the proposed development, including selecting viewpoints.

Establishing the baseline

6.2.7 The description of existing landscape and visual conditions will establish the landscape character, including landscape relevant designations and visual amenity context of the Site and its surrounds and will form the basis of the LVIA. Other existing renewable energy schemes, including solar and wind energy schemes, also form part of the baseline description.

6.2.8 The description of the baseline conditions includes:

- i) **Site description** – which is the description of the Site, the boundaries and the immediate surrounds;
- ii) **Landscape relevant designations** – which is the description of areas or features recognised for their landscape value, at a national, regional and local

- scale. These help inform the sensitivity and importance, attributed by the national and local government, to areas or features within the Site and study area;
- iii) **Landscape character** – which is the description of the physical characteristics of the landscape and their sensitivity to change. The landscape is divided into discrete areas of similar characteristics called ‘landscape character areas.’ Reference is made to previously published landscape character assessments at a national and local scale, including LANDMAP¹⁶. The sensitivity of the LANDMAP aspect areas are also described; and
- iv) **Visual amenity receptors** – which is the identification of people and a description of their views. Views from settlements including towns, villages, hamlets and individual residential properties and farms, national cycle routes, recreational routes, open access areas, local public rights of way, bridleways and cycleways, major and minor roads and railway lines are assessed. The sensitivity of the visual amenity receptors is also described.

Site Description

- 6.2.9 The site consists of a mixture of medium to large, regular and irregular fields. The fields are currently in agricultural use and are divided by a diverse mix of hedgerows, linear tree belts and small woodlands. Straight ditches (or reens) also border and divide the flat fields, focussed broadly to the south and east, and are often lined by mature vegetation. Sloping fields are focussed to the west and north, rising up from the fringes of the linear settlement of Bishton on the lower slopes. The linear settlement of Bishton largely runs along the minor road from the south to the north.
- 6.2.10 Numerous public rights of way and minor roads also cross and border the Site and the main railway line runs broadly from east to west along the southern fringes of the Site.
- 6.2.11 The large-scale buildings and structures of the Llanwern Steelworks to the south of the Site dominate the landscape and views. Further afield, the large-buildings and structures associated with the Gwent Europark to the south-east and the Magor

¹⁶ LANDMAP website (www.naturalresources.wales)

Brewery to the east are also present. The levels landscape to the south is also scattered with lines of pylons and wind energy schemes.

Landscape Relevant Designations

- 6.2.12 The site is not recognised for its value or sensitivity through any landscape relevant designations.
- 6.2.13 There are however landscape relevant designations within the wider study area and are described in more detail below.

The Gwent Levels Landscape of Historic Interest

- 6.2.14 The Gwent Levels Landscape of Historic Interest occurs to the east, south and south-west of the A4810 (Queens Way) and extends towards and along the coastal fringes, approximately 1.1km to the south of the Site boundary at its closest point.
- 6.2.15 The Gwent Levels Landscape of Historic Interest is recognised as an area uniquely rich in archaeological and historical resource. It consists of an extensive low-lying area of estuarine alluvium located on the north side of the Severn Estuary between Cardiff and the River Rhymney to the west and Chepstow on the River Wye to the east. The levels are a landscape of diverse environmental and archaeological potential. Having been reclaimed from the sea at various times during the historic period, the present land surface is a supreme example of a 'hand-crafted' landscape, artificially created and entirely the work of man, preserving clear evidence of distinctive patterns of settlement, enclosure and drainage systems from successive periods of use. There is also a proven, and possibly quite vast, potential for extensive, buried, waterlogged, archaeological and environmental deposits belonging to earlier landscapes. The levels are therefore a uniquely rich archaeological and historical resource in Wales and certainly of international importance and significance.
- 6.2.16 Landscapes of Historic Interest are protected by Newport City Council (NCC) in Policy CE4¹⁷ where they “*should be protected, conserved, enhanced and where appropriate, restored. Attention will also be given to their setting.*”

¹⁷ Newport City Council, Newport Local Development Plan, 2011-26, Adopted, January 2015



The Caldicot Levels Special Landscape Area

- 6.2.17 The Caldicot Levels Special Landscape Area (SLA), SP8 (v), occurs approximately 1.1km to the south, including running along the boundary of A4810 (Queens Way) to the south.
- 6.2.18 The Caldicot Levels SLA is described by NCC¹⁸ as a unique area of landscape consisting of reclaimed marsh and wetlands which extends from Cardiff to Chepstow. The area is characterised by its network of drainage ditches (reens) which vary in form and character. The main lines of vegetation follow the drainage ditches and these vary from no vegetation through to reeds and scrub to strong lines of trees of primarily willow and oak. The main visual detractors to the SLA are the interface with the Llanwern Steelworks on its northern boundary and the cluster of overhead lines that cross the SLA.
- 6.2.19 The Caldicot Levels SLA is influenced by lines of pylons, a consented solar scheme and scattered wind energy schemes.
- 6.2.20 Special Landscape Areas have been designated at a local level to protect areas of fine landscape quality. SLAs have been recognised by NCC in Policy SP8 where *“proposals will be required to contribute positively to the area through high quality design, materials and management schemes that demonstrate a clear appreciation of the area’s special features.”*
- 6.2.21 In addition, within SLAs *“priority will be given to landscape conservation and enhancement. The designation of a SLA does not preclude development but any proposals must demonstrate that they have been designed to respect the valued characteristics of the recognised landscape...Developers will be required to ensure that proposals do not impact or affect the intrinsic character, quality, feature or conservation value of the SLA. Designs will be required to be of a high standard, appropriate in scale and massing, integrated sympathetically into the landscape as well as ensuring long term management.”*

¹⁸ Newport City Council, Designation of Special Landscape Areas, June 2009

Magor Conservation Area

- 6.2.22 Magor Conservation Area is located approximately 2km to the east. The centre of Redwick to the south is also recognised as a conservation area.
- 6.2.23 Conservation areas are protected by Monmouthshire County Council (MCC) in Policy HE1¹⁹ where development proposals should “*preserve or enhance the character and appearance of the area and its landscape setting [and] have no serious adverse effect on significant views into and out of the Conservation Area.*”

Ancient Woodlands

- 6.2.24 There are scattered Ancient Woodlands in the study area, including to the east and west of Bishton and on the western fringes of the site boundary. Arboricultural surveys are currently ongoing, but the findings of these surveys will help finalise the design of the Proposed Development and inform further assessment.
- 6.2.25 Ancient Woodlands are protected by NCC in Policy GP5 where development should not result in the unacceptable loss or harm to trees, woodland or hedgerows that have wildlife or amenity value.

Landscape Character (LANDMAP)

- 6.2.26 The Natural Resources Wales (NRW) LANDMAP²⁰ landscape character information will be referred to for an understanding of landscape character within the Site and the wider study area. The five LANDMAP aspect areas are summarised below.

Visual and Sensory

- 6.2.27 The site is split between the moderate sensitivity Llanwern Park aspect area (NMPRTVS034), broadly to the north and west and the high sensitivity Wilcrick Moor aspect area (NWPRTVS036), broadly to the south, east and west.
- 6.2.28 The Llanwern Park aspect area is a gently undulating rounded hill landscape which rises up from the levels at 10m AOD to 60-80m AOD.

¹⁹ Monmouthshire County Council, Adopted Local Development Plan, February 2014

²⁰ LANDMAP website www.naturalresources.wales



- 6.2.29 The area is primarily pastoral, and fields are small to medium scale enclosed by cut hedges and trees. Most fields have sinuous boundaries while others are rectilinear. Blocks of deciduous woodland are noticeable and give emphasis to the hillsides in places and are prominent from the M4. Settlement is a combination of clustered villages, a relatively recent estate at Underwood, and scattered farmhouses. Llanwern Park Farm is surrounded by a parkland landscape. The adjacent M4 is a source of noise and movement in an otherwise tranquil area. Views from the area to the south are dominated by the Llanwern complex. The area is generally well-managed.
- 6.2.30 The landscape has a pleasing small scale hilly landform of pasture emphasised by woodland with the occasional small historic settlement. It is generally in good condition and of consistent character although there is some suburbanisation of dwellings to the west. The area is generally well managed but there are areas where hedgerows appear to have been removed.
- 6.2.31 The guidelines for the Llanwern Park aspect area (of relevance to the Proposed Development) include:
- i) The area is generally in good condition and managed well although woodlands appear to lack management. Manage woodlands to ensure long-term deciduous cover; and
 - ii) Replace fences with hedgerows where possible and encourage hedgerow trees.
- 6.2.32 The Wilcrick Moor aspect area is a remnant of the northern edge of the Caldicot levels and is separated from the main bulk of the levels by the Llanwern industrial area to the south. It is a narrow strip of land lying below 10m AOD and sits between hills to the north and the mainline South Wales Main Line to the south. It is pastoral land with a mixed pattern of linear rectangular and sinuous fields some enclosed by cut hedges or lined with willows, but all bounded by ditches. The most distinctive feature is the drainage network including undulating fields, field ditches and 'reens' of various sizes. These have strong reed and other marginal vegetation which contributes to the lowland character of the area. Modest linear settlements lie on the northern edges where the land begins to rise. Views are limited by rising land to the north and the tree belt beyond the railway line to the south.

- 6.2.33 Overall, this is a rare, distinctive landscape of rectangular and sinuous fieldscapes with reens, hedges and field boundary trees and attractive settlements and farmhouses with a strong sense of place.
- 6.2.34 The guidelines for the Wilcrick Moor aspect *area* (of relevance to the Proposed Development) include:
- i) Maintain rural character of levels and in particular field and drainage pattern;
 - ii) Replant and manage hedgerows and willows where there are gaps or deteriorating; and
 - iii) Maintain field ditches and associated vegetation.

Historic Landscape

- 6.2.35 The site is split between the high sensitivity Bishton and Wilcrick aspect area (NWPRTL014), broadly to the west and north and the outstanding sensitivity Oxleaze and Wilcrick Moor aspect area (NWPRTL012), broadly to the south, east and west.
- 6.2.36 The Bishton and Wilcrick aspect area is a landscape of large regular fields bounded to the north by the M4 Motorway and to the east by the urban encroachment of Newport. The reclaimed Oxleaze and Wilcrick Moors form the boundary to the south.
- 6.2.37 Settlement in the prehistoric period was centred on the Iron Age Wilcrick Hillfort to the east of the aspect area. The earthwork feature is situated on one summit of a double knolled hill surrounded by steep natural slope around which multiple ditches and ramparts had been constructed. A Round barrow from the Bronze Age is known at Stockwood and north of here a recumbent standing stone is in fields overlooking the M4 Motorway; the area and village of Langstone take their name from this stone, though it has been suggested that it could be of 10th century date. Roman remains are restricted to the recovery of a coin of Vespasian (AD 71) near Llanwern village.
- 6.2.38 Early medieval charters covering the vast majority of the area survive, demonstrating the importance of the area in that period. The charter for Bishton is particularly early and may well indicate that the land included in it was the boundaries of a Roman estate. Bishton takes its name from the medieval Bishoprick of Llandaff and the Church to St Cadwaladr was founded much earlier in around AD 570. The church at Wilcrick is first mentioned in the 13th century but what stands there now is a complete



19th century remodelling. To the west of the church there are the remains of a large deserted medieval settlement and two fields containing ridge and furrow. At Langstone there survives a deserted medieval settlement adjacent to an early motte and bailey castle. Langstone was one knight's fee in 1271 and was held by Sir William Bluet, who also held Raglan, under Gilbert de Clare, Earl of Gloucester. A mill was located near the motte and several further afield at Little Milton, Llanwern and Bishton.

6.2.39 The castle at Bishton consists of a motte but little else remains or is known. The major modern developments in the area are the Underwood housing estate and Reservoir. Underwood is an early 1960s council estate developed from a WWII prisoner of war camp and some of the original huts were still visible in 1990 but have since been demolished. The concrete houses of the estate were built using post-war housing initiatives and later for workers at the Spencer Steelworks, Llanwern. The reservoir on Waltwood Hill was added at this time and consisted of four lagoons, which fed the steelworks to the south.

6.2.40 The Oxleaze and Wilcrick Moor aspect area is a regular landscape of drained fields, artificially cut off from the Whitson aspect area, first by the course of the South Wales Main Line and then later by Llanwern Steelworks. Broadly medieval in date this landscape was enclosed and drained probably by the 13th century when Goldcliff and Nash were granted to Goldcliff Priory. However, the presence of an ecclesiastical 6th century settlement at Bishton may indicate that some drainage and reclamation may have occurred during the early-medieval period. Prehistoric flint tools and Roman roof tiles have been recovered from the moors, elsewhere on the Wilcrick Moor but now developed by the Gwent Euro Park, significant archaeological discoveries were made, including an Iron Age settlement, Roman wharf and coastal trading vessel. It is highly likely that this submerged landscape continues north into this area.

Cultural Landscape Services

6.2.41 The site is split between the moderate sensitivity Llanwern Park aspect area (NWPRTCLS048), broadly to the west and north and the high sensitivity Wilcrick Moor aspect area (NWPRTCLS050), broadly to the south, east and west.

Geological Landscape

- 6.2.42 The site is split between the high sensitivity Llanwern-Underwood aspect area (NWPRTGL011), broadly to the west and north and the moderate sensitivity Wilcrick Moor aspect area (NWPRTGL013), broadly to the south, east and west.
- 6.2.43 The Llanwern-Underwood aspect area is a level topped low plateau capped by Lower Lias limestones. Steep escarpment around most sides. Wooded in the north-west and north-east but with only limited development. Two valleys to the south represent former coastal inlets.
- 6.2.44 The Wilcrick Moor aspect area is a section of former coastal flat now isolated from mainly area of levels to the south by industrial development.

Landscape Habitat

- 6.2.45 The site is largely within the moderate sensitivity Mosaic aspect area (NWPRTLH032).
- 6.2.46 This aspect area comprises the flatter fields between the steel works and the hills. It is a mosaic of small pasture, temporary grass lay and arable fields many of which with hedges. There is also a large golf course. There are several areas of locally significant habitat the most important is Ringland way marsh which supports important species. This area contains several locally important biodiversity sites, together with the mosaic of grassland and arable and the occurrence of the reed swamp, and ancient semi-natural woodland blocks gives this area a moderate value.

Visual Amenity Receptors

- 6.2.47 There are scattered and varied visual amenity receptors within and in close proximity to the Site.
- 6.2.48 Visual amenity receptors include the following:
- i) Bishton is a linear settlement largely stretched out along a minor road, broadly running from north to south. It is situated adjacent to the levels landscape which dominates to the east and south with hills rising and forming a backdrop to the settlement to the west and north. The Llanwern Steelworks to the south dominates the landscape and selected views from the settlement fringes.

- ii) Llandeenny consists of a scattering of houses, farms and associated agricultural buildings, the 'core' adjacent to the railway line. The village is separated from the Site by flat to gently sloping fields and appears to be well-enclosed by surrounding vegetation.
- iii) Wilcrick is a scattering of houses and farms at the foot of Wilcrick Hill adjacent and to the south of the B4245 (Magor Road). The hamlet is separated from the Site by flat to gently sloping fields and appears to be well-enclosed by surrounding vegetation.
- iv) Underwood is a compact settlement, situated adjacent and to the south of the M4. It is separated and enclosed from the Site by the intervening wooded ridge;
- v) A network of Public Rights of Way branch out from Bishton, including to the east of the settlement to cross the levels landscape and to the west to cross the rising and often woodland dominated hills. The public rights of way cross the Site.
- vi) Longer distance views from the public rights of way crossing the levels landscape are often restricted in the flat landscape by intervening 'lines' of mature vegetation. It is only as the public rights of way rise up across the hills to the west of Bishton that more expansive views are possible across the Site and the wider landscape influenced by the adjacent Llanwern Steelworks and more distant lines of pylons and scattered wind energy schemes. Even from the public rights of way that cross Wilcrick Hill to the east, the mature woodland vegetation dominating the hill slopes restricts wider views towards the Site itself;
- vii) A network of minor roads branch out from Bishton and cross the levels landscape to the east. Although intermittently enclosed by linear vegetation, expansive views across the adjacent regular fields and the Site, including towards Bishton are possible from the straight minor roads. The minor roads however become more enclosed to the north as it passes through Bishton and heads towards Underwood. The minor road is very enclosed by mature hedgerow and woodland vegetation, and it is only from gaps in this enclosure, such as field gates, that glimpsed and fleeting views over the adjacent sloping fields and the Site are possible;
- viii) A4810 (Queens Way) connects with the M4 at Junction 23A and heads to the south-west to connect with the fringes of Newport. Skirting the fringes of the expansive levels landscape broadly to the south, the major road is largely well-enclosed by mature vegetation and large-scale development, including the Magor Brewery to the east, the Gwent Europark to the south-east and the Llanwern Steelworks to the south; and

- ix) The South Wales Main Line also runs along the southern boundary of the Site.

6.3 Potential Effects

Construction effects

- 6.3.1 Construction activities that have the potential to temporarily affect the landscape character and views from visual amenity receptors include:
 - i) Deliveries to site and vehicle movements on and off site;
 - ii) Installation of solar panels, sub-station/transformer stations/storage containers, fencing and gravel access roads; and
 - iii) Reinstatement works to areas disturbed by construction activities.
- 6.3.2 From the description of the construction activities as outlined above, any effects on landscape character and visual amenity receptors and their views during the construction phases will be short-term, reversible and of a temporary nature.

Operation effects

- 6.3.3 A Zone of Theoretical Visibility (ZTV) has been calculated to the maximum height of the proposed development and is illustrated in Figure 6.
- 6.3.4 The ZTV is a useful starting point for assessing the operational impacts and effects of the proposed development on landscape character (including landscape relevant designations) and visual amenity receptors and their views.
- 6.3.5 The ZTV illustrates that the potential extent of visibility of the Proposed Development is focussed within the Site itself and in the immediate surrounds, mainly extending across the levels landscape to the east.
- 6.3.6 The main impacts of the Proposed Development will be in proximity and within the Site itself, including from the fringes of Bishton, from the network of public rights of way that branch out from Bishton and cross the Site and from the network of minor roads that bisect and border the Site.
- 6.3.7 The wider impacts of the Proposed Development will be restricted by the undulating landform and woodland focussed to the west and north and the large-scale buildings associated with the Llanwern Steelworks to the south.

- 6.3.8 Sensitive design and siting of the solar panels around the fringes of the settlement and along the public rights of way and minor road network will minimise these impacts.
- 6.3.9 The completion of photomontages from these key proximity views from the fringes of the settlement, including from the public rights of way and the minor roads will help illustrate the influence of the Proposed Development, including how the potential landscape mitigation measures will help to restrict the impacts over time.

Landscape and Design Strategy

- 6.3.10 The key aims of the landscape and design strategy will be to minimise the influence of the proposed development on the immediate and wider landscape and in selected views, in order to mitigate or ameliorate the effects identified above.
- 6.3.11 To ensure acceptability of the Proposed Development, it will also be important to protect the 'best' existing landscape features, to integrate the Proposed Development into the adjacent surroundings and also provide immediate screening and a maturity to the proposals.
- 6.3.12 Respecting the residential amenity of the high sensitivity residential properties at Bishton as well as making a positive enhancement to the character and appearance of the area when viewed locally will also be a priority.
- 6.3.13 The aims of the landscape and design strategy will therefore be to:
- i) Retain, protect and enhance strong boundary treatments, including planting. Emphasis should be placed on strong boundary treatments within and on the boundaries of the Proposed Development, through the protection and enhancement of selected existing mature vegetation, including additional native planting. This will help to integrate the proposed development into the immediate and wider landscape;
 - ii) Introduce design elements to reduce the influence of the Proposed Development particularly when perceived from Bishton and the network of public rights of way that branch out from Bishton and cross the Site, for example, through the sensitive design and positioning of the solar panels, including substantial 'set-backs' from sensitive receptors; and
 - iii) Provide enhancements to the landscape, including nature conservation and biodiversity benefits, through increased management of existing landscape

features including vegetation and reens, extensive new grasslands, managed for biodiversity and areas of new native hedgerow, tree and shrub planting as well as a community orchard.

6.3.14 Design and mitigation measures have also been informed through reference to relevant NCC policies and the strategy and guidelines of the landscape as defined by the LANDMAP assessment.

6.3.15 In particular, NCC Policy CE10: Renewable Energy states that:

“Renewable energy schemes will be considered favourably, subject to there being no over-riding environmental and amenity considerations... Large scale proposals may be more appropriately located outside of the defined settlement boundary if no appropriate brownfield sites exist. The cumulative impacts of renewable energy schemes will be an important consideration.”

6.3.16 Proposed landscape mitigation measures are identified on the Illustrative Landscape Masterplan in Figure 7.

Assessment Methodology

6.3.17 The LVIA will be carried out by experienced chartered landscape architects. They apply professional judgements in a structured and consistent way, following the guidelines produced by the relevant professional bodies concerned with landscape and visual impact assessment.

6.3.18 In line with the *Guidelines for Landscape and Visual Impact Assessment*²¹ (GLVIA), the primary guidance in respect of LVIA, the methodology used for the assessment will have three iterative key stages, as follows:

- i) **Existing conditions (or baseline assessment)** – this will include the gathering and description of information to inform the LVIA, including information on other solar and renewables schemes within the study area;
- ii) **Design** – this will include input into the design at key stages including defining the Site boundary and extent of development, identification of opportunities and

²¹ Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, 2013, *The Landscape Institute and the Institute of Environmental Management and Assessment*

constraints, review of initial design layout, discussion and recommendation of mitigation measures; and

- iii) **Assessment of Impacts and Effects** – this will include an assessment of the potential landscape and visual effects of the proposed development, including any residual effects following the growth of landscape mitigation measures and any additional cumulative effects, when perceived in combination with other development schemes. An assessment of the effects during winter will also be considered.

7.0 BIODIVERSITY

7.1 Introduction

7.1.1 This section of the Scoping Report outlines the pertinent issues relating to ecology and nature conservation and describes how they will be assessed as part of the EIA process.

7.2 Baseline

7.2.1 The study area for the biological records search provided by South East Wales Biodiversity Records Centre (SEWBRc) in Cardiff is 5 km radius centred on the Site. The data will identify and locate records of species of animals and plants recorded in the search area over the last 50 years and will identify sensitive ecological receptors.

7.2.2 The study area for ecology will vary depending on the ecological receptor in question as set out in CIEEM Guidance. The extent of study area for ecological receptors relates to the zone of likely impact or 'zone of influence' as a result of the solar park, as set out below. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries.

Table 7.1 Solar Farm Zone of Influence on Ecological Receptors

Ecological feature	Zone of influence - Construction	Zone of influence - Operation
Hedgerows, reedbeds, ponds, eutrophic standing waters, coastal and floodplain grazing march, arable field margins	Site area	Site area
Shrill Carder Bee <i>Bombus sylvarum</i>	Site area	Site area
Breeding birds	Site area plus 250 metre buffer	Site area plus 250 metre buffer
Winter birds	Site area plus 250 metre buffer	Site area plus 250 metre buffer
Passage birds	Site area plus 250 metre buffer	Site area plus 250 metre buffer
Nocturnal birds	Site area	Site area
Water vole	Site area plus 30 metre buffer	Site area
Otter	Site area plus 50 metre buffer (100m where natal habitat present)	Site area
Bats	Site area	Site area
Common Dormouse	Site area and lapwing mitigation area	Site area

Ecological feature	Zone of influence - Construction	Zone of influence - Operation
Reptiles	Site area	Site area
Amphibians (common and widespread)	Site area plus 30 metre buffer	Site area
Great Crested Newts	Site area plus 100 metre buffer where accessible ²²	Site area
Aquatic invertebrates associated with the reen network	Areas within Gwent Levels – Redwick Llandeenny SSSI	Areas within Gwent Levels – Redwick Llandeenny SSSI
Aquatic plants associated with the reen network	Areas within Gwent Levels – Redwick Llandeenny SSSI	Areas within Gwent Levels – Redwick Llandeenny SSSI
Terrestrial invertebrates along reen banks and associated with hedgerows	Site area plus 30 metre buffer	Site area
Internationally designated sites	5km	5km
Nationally designated sites	5km	5km
Local Sites of importance for nature conservation	1km	1km

7.2.3 The known sensitive ecological receptors are set out in the table above. In terms of statutory and non-statutory protection the below is a summary of the features within the likely Zone of Influence.

Statutory sites within 5 km

7.2.4 The following SSSI are within the zone of influence:

- i) Gwent Levels SSSI – Redwick and Llandeenny. Aquatic invertebrate surveys were completed in July 2022 for the Previous Application and will be updated in 2026
- ii) Gwent Levels – Whitson;
- iii) Gwent Levels - Nash and Goldcliff;
- iv) Gwent Levels – Magor and Undy;
- v) Newport Wetlands;
- vi) Magor Marsh;
- vii) Penhow Woodlands;

²² The majority of existing water bodies associated with the site are reens and ditches. As these have connectivity and low levels of waterflow (with respect to reens this is usually in both directions) it was judged that if GCN were present within 250 metres, eDNA would be detected by sampling suitable reens and ditches within 100 metres. Currently no guidelines exist for sampling linear features for GCN eDNA.

- viii) River Usk; and
- ix) Severn Estuary.

7.2.5 The Severn estuary, 4.1 km to the south, has several nationally and internationally important designated sites:

- i) Severn Estuary SPA - This site was designated due to its importance during the spring and autumn migration periods for waders moving up the west coast of Britain, as well as in winter for large numbers of waterbirds, especially swans, ducks and waders. Wintering and breeding bird surveys were completed in 2021-2022 and 2022-2023, and 2021, 2022, 2023 and 2024 respectively for the Previous Application and have been updated in 2025, and winter 2025-2026 respectively, with further visits to the lawing breeding area in 2026.
- ii) Severn Estuary Ramsar - The site is particularly important for the run of migratory fish between the sea and rivers via the estuary, and migratory birds during spring and autumn migrations.
- iii) Severn Estuary SAC – Selected for migratory fish and estuarine habitats.
- iv) Severn Estuary SSSI – Estuarine fauna including waterfowl, migratory fish, invertebrates. Important for wintering and passage birds.

7.2.6 The River Usk SAC to the west has been selected for riverine habitats, fish species and Otter.

Non-statutory sites within 1 km

- i) Cae Wall Wood Site of Importance for Nature Conservation (SINC);
- ii) Craig-Y-Perthi Field North SINC;
- iii) Craig-Y-Perthi Field South SINC;
- iv) Craig-Y-Perthi Wood SINC;
- v) Dockwell Wood SINC;
- vi) Greenmoor Pool SINC;
- vii) Hartridge Fields SINC;
- viii) Hartridge Wood SINC;
- ix) Monk's Ditch SINC;
- x) Pamt Yr Eos Wood SINC;
- xi) Ridings Wood SINC;
- xii) The Routes Wood SINC;

- xiii) Underwood Field SINC;
- xiv) Upper Cottage Pond SINC; and
- xv) Wilcrick Fort West SINC.

7.2.7 In addition, there are a number of areas of Ancient and Semi-natural woodland within 1 km.

European protected species (Conservation of Habitats and Species Regulations 2017)

7.2.8 Otter – may be active within the reens and may be using rough ground for resting. Otter surveys were completed for the Previous Application in May 2023 and will be updated in Summer 2026.

7.2.9 Bats – although agriculturally managed grasslands have little value for bats, hedges and reens may be used by foraging and commuting bats, whilst mature trees may support roosting bats. Bat activity surveys were completed in 2024 and are considered valid for this current application, subject to the PEA walkover in 2026.

7.2.10 Great crested newt (GCN) – there is potential for GCN to be associated with reens. However, GCN HSI surveys and eDNA assessment of suitable waterbodies was completed for the Previous Application in Spring 2021 and no evidence of GCN was found. On this basis, it is reasonable to assume they are absent from site. An additional area was eDNA assessed in 2023 for the Previous Application, and updated eDNA will be undertaken in 2026.

Nationally protected species (wildlife and countryside act 1981)

- i) Breeding birds; Breeding bird surveys were completed in 2021, 2022, 2023 and 2024 for the Previous Application and then updated in 2025, with further visits to the lapwing breeding area in 2026.
- ii) Reptiles;
- iii) Amphibians; and
- iv) Water Vole. Water surveys were completed in 2023 for the Previous Application and updated in 2026



Protection of Badgers act 1992

- 7.2.11 It is probable that Badgers are active within this area. Badger surveys were completed as part of the preliminary ecological appraisal for the Previous Application in May 2023, and will be updated in 2026.

Habitats of principal importance (Section 7 of the Environment (Wales) Act 2016)

- 7.2.12 There is potential for the following habitats of principal importance to be associated with the Site:
- i) Hedgerow (also protected under the Hedgerow Regulations, 1997);
 - ii) Reedbed;
 - iii) Pond;
 - iv) Eutrophic standing waters;
 - v) Coastal and floodplain grazing marsh; and
 - vi) Arable field margins.

Species of principal importance (Section 7 of the Environment (Wales) Act 2016)

- 7.2.13 Shrill Shrill Carder Bee *Bombus sylvarum* – Shrill Carder bee habitat within the Gwent levels SSSI section was mapped in May 2023 for the previous although this bee was not encountered. This habitat has subsequently been removed from the Proposed Development. **Updated shrill carder bee surveys will be completed from June to September 2026, comprising three visits to map individuals and their habitats across the whole application site.**

7.3 Potential Effects

Construction effects

- 7.3.1 During the construction phase, there is predictable adverse effects which are generally unavoidable; many are temporary or short term and can be minimised as part of construction management, but some have the potential for more lasting effect. These include:
- i) temporary habitat loss associated with temporary access routes, cable trenches, storage, and site buildings and site compounds;



- ii) areas for plant maintenance and for storage of oils, fuels and chemicals;
- iii) dust generation;
- iv) environmental incidents and accidents;
- v) acoustic disturbance and vibration from construction activities;
- vi) ground excavation;
- vii) horizontal directional drilling operations;
- viii) removal of site offices and temporary compounds/tracks; and
- ix) vegetation clearance.

Operation effects

7.3.2 During the operational phase, effects may arise from:

- i) maintenance;
- ii) changes in land-management. These can be positive, associated with changes in agricultural practices, and the creation of buffers to reens, ditches and hedgerows; and
- iii) loss of habitat, habitat fragmentation and disturbance to valued receptors.

7.4 Assessment Methodology

Guidance and best practice

7.4.1 In terms of guidance on methodology, the Chartered Institute for Ecology and Environmental Management (CIEEM) Guidelines for ecological impact assessment will be followed. The specific guidance and best practice set out below will also be followed where relevant:

- i) Ecological impact assessment
 - CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and marine. Technical Guidance Series. Chartered Institute of Ecology and Environmental Management, 43 Southgate Street, Winchester, Hampshire.
- ii) Preliminary ecological appraisal
 - CIEEM, 2017. Guidelines for Preliminary Ecological Appraisal (GPEA). Technical Guidance Series. Chartered Institute of Ecology and Environmental Management, 43 Southgate Street, Winchester, Hampshire.

- Joint Nature Conservation Committee, 2010. Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit. Reprinted by JNCC, Peterborough
- iii) Bird surveys
 - Baillie, S.R., Marchant, J.H., Leech, D.I., Renwick, A.R., Eglington, S.M., Joys, A.C., Noble, D.G., Barimore, C., Conway, G.J., Downie, I.S., Risely, K. & Robinson, R.A. (2012)
 - BirdTrends 2011. BTO Research Report No. 609. BTO, Thetford.
<http://www.bto.org/birdtrends>
 - Marchant, J.H., Hudson, R., Carter, S.P. & Whittington, P.A. (1990) Population Trends in British Breeding Birds. BTO, Tring.
 - Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746.
 - Johnstone I & Bladwell S. (2016) Birds of Conservation Concern in Wales 3: the population status of birds in Wales, Birds in Wales 13, 3-31.
- iv) Water vole
 - <https://www.gov.uk/guidance/water-voles-protection-surveys-and-licences#survey-methods>
 - Competencies for species survey; Water Vole. CIEEM. UK
 - Water Vole Mitigation Handbook. Mammal Society. UK
- v) Otter survey
 - <https://www.gov.uk/guidance/otters-protection-surveys-and-licences#survey-methods>
 - Competencies for species survey; Eurasian Otter. CIEEM. UK
- vi) Terrestrial and aquatic invertebrate surveys
 - Palmer, M., Drake, M. and Stewart, N. (2010) A manual for the survey and evaluation of the plant and invertebrate assemblages of ditches. Version 4. Buglife, Peterborough.
- vii) Botanical surveys
 - Stace, C., 2010. New Flora of the British Isles. 3rd edition. Cambridge University Press, Cambridge.
 - Rodwell, J.S. (ed.) 1991. British Plant Communities. Volume 1. Woodlands and scrub. Cambridge University Press.

- Rodwell, J. S. (ed.) 1992. British Plant Communities. Volume 3. Grassland and montane communities. Cambridge University Press.
- Rodwell, J.S. (ed.) 1995. British Plant Communities. Volume 4. Aquatic communities, swamps and tall-herb fens. Cambridge University Press.

viii) Badger survey

- <https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects#survey-methods>
- Competencies for species survey; Badger. CIEEM. UK

ix) Amphibian surveys

- ARG UK (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom.
- Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F. (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

Consultation

7.4.2 Alongside and continuing after this EIA scoping consultation which requests feedback on the scope and methodologies for assessment, the following consultation is planned or has been completed. It is worth noting that as part of the Previous Application, feedback was received via the public consultation, formal consultation responses following submission, Hearings held as part of the application, and the Inspector's report. **This feedback has been carefully considered and incorporated into the updated Proposed Development, removing all land located within the SSSI from the scheme, enhancing all wildflower with Shril Carder Food Plants, and the inclusion of 16.5 ha of bird mitigation land compared with 12ha previously proposed as part of the Previous Application.**

Table 7.2 Consultation on Ecology

Consultee	Aim of Consultation	Trigger for Consultation
Newport Ecologist	To gain further feedback on methodology and results of phase 2 surveys.	Draft preliminary ecological reports completed for comment.
NRW		
Gwent Wildlife Trust	Present detailed outline plans and gain further feedback on mitigation proposals.	Outline design and mitigation measures agreed in principle with developer.
RSPB		
		Draft Environmental Statement consultation with

Consultee	Aim of Consultation	Trigger for Consultation
	Seek formal feedback on the format, contents and assessment of effects in the Draft Environmental Statement.	draft DNS application prior to submission.

Assessment Criteria

7.4.3 Potential effects on valued receptors, adverse or positive, will be identified for both the construction and operational phases. The effects will then be assessed and characterised according to the following criteria:

- i) Direction (positive, adverse, or neutral);
- ii) Magnitude of impact;
- iii) Spatial extent over which the impact would occur;
- iv) The temporal duration of the impact;
- v) Permanence;
- vi) Frequency and timing; and
- vii) Potential for cumulative effects.

7.4.4 The assessment identifies any information gaps and any uncertainties that may be material in the confidence of predicting effects. Confidence levels are assigned following the CIEEM (2016) scale. Confidence in predictions is given as:

- i) Certain/Near-Certain: probability estimated at 95% chance or higher.
- ii) Probable: probability estimated above 50% but below 95%.
- iii) Unlikely: probability estimated above 5% but less than 50%.
- iv) Extremely Unlikely: probability estimated at less than 5%.

7.4.5 The precautionary principle is applied whenever there is substantial doubt. The impact timescale is given as:

- i) Acute, immediate, and discrete;
- ii) Short-term: 0-3 years;
- iii) Medium term 3-10 years; and
- iv) Long term: >10 years.

7.4.6 Effects include, but are not restricted to:

- i) loss or change of habitat;
- ii) disturbance during construction, operation, and decommissioning;
- iii) chemical effects from airborne pollutants; and
- iv) contravention of legal status or protection (including where the receptor would not meet or exceed the value threshold).

7.4.7 The assessment will identify those positive and negative impacts which could result in a 'significant' effect, based on the integrity and the conservation status of the ecological feature. Effects are unlikely to be significant where features of local value or sensitivity are subject to small scale or short-term impacts. However, where there are several small-scale effects that are not significant alone, it may be that, cumulatively, these may result in overall significant effects.

7.4.8 For the purposes of this assessment, the significance of the effect is determined using the matrix in Table 7.3 below, where the scale of the effect is measured against the value of the receptor.

7.4.9 An ecologically significant effect is defined as an effects (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area. For the purposes of this assessment the effects that are identified in shaded cells are significant.

Table 7.3 Matrix for assessment of significant effect

Scale of Effect	Evaluation of nature conservation receptor				
	Very high/ International	High/ national	Medium/ regional	Low/ local	Negligible/site only
Major positive effect	Large positive	Large positive	Large positive	Large positive	Large positive
Intermediate positive effect	Moderate positive	Moderate positive	Moderate positive	Moderate positive	Moderate positive
Minor positive effect	Slight positive	Slight positive	Slight positive	Slight positive	Slight positive
Neutral	None	None	None	None	None
Minor negative effect	Slight adverse	Slight adverse	Slight adverse	Slight adverse	None
Intermediate negative effect	Large adverse	Large adverse	Moderate adverse	Slight adverse	None
Major negative effect	Very large adverse	Very large adverse	Large or moderate adverse	Slight adverse	None

European protected species and sites – definition of significance of effect

- 7.4.10 For European protected species such as otter, water vole, bats and great crested newts The Conservation of Habitats and Species Regulations 2017 require that disturbance should not:

‘significantly affect the ability of any significant group of animals of that species to survive, breed, or rear or nurture their young; or the local distribution or abundance of that species’.

- 7.4.11 Any disturbance above this threshold would be defined as significant for a European protected species and as a result mitigation licensing may be required to allow lawful development.

- 7.4.12 For a European Site, such as the Severn Estuary SPA, the integrity of a site is:

‘the coherence of the ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.’

- 7.4.13 Development should not have a significant effect on the integrity of a European Protected Site.

Mitigation

- 7.4.14 The key to effective mitigation will be to design sufficient avoidance into the proposals to limit adverse impact on the aquatic communities associated with the reens and passage/overwintering/breeding bird populations. This will involve ecological advice from the commencement of design, based on the results of surveys carried out and expertise, such as buffer areas adjacent to reens. This will also allow compensation and enhancement to be built in, where appropriate. In terms of the construction phase, control measures such as reen maintenance and sediment run-off control, will be detailed within the CEMP. Ongoing ecological management, enhancements and planting will be detailed in the Landscape and Environmental Management Plan.

- 7.4.15 An initial outline of the preliminary ecological advice is given below alongside actions implemented in the Proposed Development shown in **bold**.



- i) Existing farm access tracks and gateways should be used wherever possible during construction, operation and decommissioning. Any hedgerow lost would be replaced resulting in no net loss of hedgerow habitat. **Approx. 11 km of new hedgerow is proposed on-site with minimal hedgerow loss to be incurred, with existing farm tracks and entrances used within the design.**
- ii) During construction, operation and decommissioning buffers would be maintained from reens at the field margins, with wider buffers from the main reens. No obstructions would be placed within watercourses in order to minimise impacts on Otter, Water Vole, Reptiles and amphibians. **All land within the SSSI has been removed from the updated Proposed Development, resulting in no Reens now being in close proximity to the Proposed Development. Where watercourses are present within the scheme, a minimum 7m buffer has been adopted.**
- iii) The site would not be artificially lit during construction, operation and decommissioning in order to minimise impacts on bats, invertebrates, Otter and nocturnal bird movements. **No permanent lighting is proposed on-site.**
- iv) Wet meadow and hedgerow planting would aim to achieve no net loss in valued habitats. **Approx. 43.3 ha of diverse new wildflower meadow (EM2, EM8 and EM10 or similar) is proposed on-site, replacing monocultural cropping/poor condition grassland on-site.**

Lapwing Mitigation

- 7.4.16 The This section provides information with regard to the proposed Breeding Lapwing Mitigation Strategy, which was originally submitted as part of the Previous Application as APP101 ES Volume 4, Appendix 4.3 Landscape and Ecological Management Plan (LEMP). The following information has been informed by:
- i) further engagement with Mr Richard Facey, Natural Resources Wales.
 - ii) Post-Hearing Correspondence from NRW dated 11 April 2025 and 13 May 2025.
- 7.4.17 During the Hearing Sessions as part of the Previous Application, discussions regarding proposed lapwing mitigation centred on two key points:
- i) Is the total area of lapwing mitigation considered sufficient given the results of yearly breeding lapwing surveys and the population status of lapwing, particularly in Wales; and

- ii) Irrespective of the outcome of i), whether the proposed BLMS contained sufficient measures to increase successful lapwing breeding.

7.4.18 The Applicant and NRW are in high level agreement regarding the management of the Lapwing mitigation area proposed, however NRW has outstanding concerns regarding the size of the mitigation proposed based on the site's potential population. With regard to i) above, the adequacy of the breeding lapwing mitigation area included within the Proposed Development, this is addressed in the Statement of Common Ground agreed between the Applicant and NRW, which was submitted to the Inspector as part of the Previous Application.

Lapwing Status and Future Baseline

- 7.4.19 The number of breeding lapwing pairs within the Site fell from 21 pairs in 2021, to 18 pairs in 2023 and 13 pairs in 2024. It is therefore appropriate to assume that breeding lapwing are declining within the Site, in-line with both Wales and wider UK trends.
- 7.4.20 Whilst other mechanisms for restoring populations may become available in the absence of the development, such schemes are dependent on uptake by a willing landowner and therefore cannot be guaranteed or enforced. As such, the 'do nothing' scenario is highly likely to be a continued decline in breeding numbers and potentially could be the loss of breeding lapwings from the Site.

Proposed Amendments to Lapwing Mitigation Strategy

- 7.4.21 Mitigation for loss of breeding lapwing habitats will comprise sympathetic management of approximately 16.5 ha (an increase from the 12 ha included in the Previous Application) of existing agricultural land within the Site and centred around the highest concentration of breeding lapwing recorded during the 2021 surveys (which accounts for a worst-case scenario). This area will be managed specifically for the benefit of breeding lapwing and will be secured with legal agreements.
- 7.4.22 Measures proposed in Appendix 2 of the LEMP submitted as part of the Previous Application, will be maintained; however additional measures and controls are proposed in response to comments received during the Hearing (session 1, 26th March 2025). Bullet points 1 – 9 of the LEMP, Appendix 2 were subsequently amended, and will be incorporated into the LEMP that is submitted as part of the Proposed Development. It denotes:



- iii) Trees/boundary vegetation around the outer boundaries of the Lapwing Mitigation Area (Appendix 2, Map 1 of the LEMP) would be cut back to a height of no more than 3m and maintained at this height for the operational lifetime of the development. All cutting will be undertaken outside the bird breeding season.
- iv) Patches of scattered scrub/boundary vegetation along field boundaries within the Lapwing Mitigation Area (Appendix 2, Map 1 of the LEMP) would be removed to increase open aspect within the Lapwing Mitigation Area.
- v) A shallow scrape will be created within the central area of each field within the Lapwing Mitigation Area. This will be at least 20m² and designed to maximise the extent of muddy edge in keeping with good practice conservation advice (e.g., RSPB), as this will help to increase invertebrate numbers and provide a food resource for both adults and chicks. An example image is provided below.



- vi) Predator fencing will be installed and maintained along the external boundaries of the Lapwing Mitigation Area to reduce the risk of predation from mammals.
- vii) Maintenance of existing spring cropping regime across the mitigation area will continue; however only crops which produce short vegetation (<10cm) will be planted. No crops will be planted within 2m of the wader scrapes.
- viii) Spring tillage will be undertaken prior to the breeding season (March – July).
- ix) Spring-sown crops will not be treated with herbicide in order to allow weed-rich stubble to develop over the winter period.
- x) No farming operations to take place within the mitigation area between 15th March – 15th June).

- xi) There will be no public access to the mitigation area in order minimise disturbance to breeding birds.
- xii) An adaptive management plan will be implemented.

7.4.23 Vegetation removal and scrape creation, as previously outlined, will be implemented prior to construction of the solar array, where practicable to do so and where subsequent agricultural or construction activities would not jeopardise its efficacy.

Monitoring and Adaptive Management

7.4.24 The owners of the development will be responsible for the implementation of all Lapwing management and associated costs.

7.4.25 The following monitoring regime is proposed.

Year One

7.4.26 Year one is defined as the first 12 months following the first date of electricity export.

7.4.27 Monitoring of land managed for breeding Lapwings will occur on a two-monthly basis for the first six months following creation. It will be completed by a suitably qualified ecologist who will assess the habitat types within the mitigation area and make recommendations if issues are encountered.

Years Two to Five (inclusive)

7.4.28 At least the following monitoring visits will be undertaken:

- i) Early spring visit (February) to check habitat within the Lapwing Mitigation Area is in accordance with the agreed specification. Crop type, crop height and approximate extent of water present in scrapes will be measured. If habitats do not accord with the agreed specification, the owner of the development will be responsible for ensuring this is remedied prior to the onset of Lapwing breeding (i.e., mid-March). This will include integrity checks of the predator fencing and, if required, remedial actions.
- ii) Breeding Lapwing survey following recognised methodologies, recording numbers of pairs, nest locations and numbers of chicks (productivity). Habitat condition will also be checked. The precise methodology will be agreed with relevant stakeholders.



- 7.4.29 On completion on each year of survey (1 – 5), survey results will be reported to the LPA and other relevant stakeholders (e.g. RSPB or Gwent Wildlife Trust, if requested). If breeding presence and/or productivity does not achieve satisfactory results (an initial target minimum range of 0.6 - 1 fledged young / breeding pair / annum, with any revised targets in line with national averages) remedial measures will be discussed and agreed with the LPA and other relevant stakeholders, then implemented prior to the next breeding season.

Years Six Onwards

- 7.4.30 In all years, an early spring visit (February) to check habitat within the Lapwing Mitigation Area is in accordance with the agreed specification. This will follow the method outlined above.
- 7.4.31 In the event successful Lapwing breeding occurs in at least 3 of Years 1 to 5, monitoring of breeding success thereafter will be undertaken every fifth year (Years 10, 15, 20 and so on).
- 7.4.32 In the event Lapwing breeding does not occur in at least 3 of Years 1 to 5, additional monitoring of breeding will be undertaken annually and/or appropriate remedial measures will be determined and agreed with the LPA and other relevant stakeholders.

European designated nature conservation sites

- 7.4.33 There is potential for significant adverse effect on the Severn Estuary Special Protected Areas (SPA) and Severn Estuary RAMSAR should avifauna interest features of these designated sites (Table 7.4) be relying on habitats within the proposed solar farm. Any impact on the overwintering and passage birds that are interest features of these sites would probably be limited to temporary disturbance during the construction and decommissioning phases, and habitat loss during the operational phase.



Table 7.4 Avifauna interest features of internationally designated sites

Common Name	Ramsar interest feature?	SPA interest feature?
Gadwall	Y	Y
Whimbrel	Y	Y
White-fronted goose	Y	Y
Dunlin	Y	Y (over winter)
Redshank	Y	Y (over winter)
Shelduck	Y	Y (over winter)
Ringed plover	Y	Y (passage)
Lesser black-backed gulls	Y	
Bewick's swan		Y
Grey plover		Y
Pochard		Y
Teal		Y
Tufted duck		Y
Wigeon		Y
Curlew		Y (over winter)
Pintail		Y (over winter)
Lapwing		Y
Mallard		Y

8.0 CULTURAL HERITAGE

8.1 Introduction

8.1.1 This section of the Scoping Report outlines the pertinent issues relating to cultural heritage, namely built heritage and archaeology. It describes how the proposed development might affect these aspects and how impacts will be assessed as part of the EIA process.

8.1.2 The design process for the proposed development has been informed by the assessments undertaken for the Previous Application and through consideration of the discussion of likely impacts on the historic environment within the decision-making process regarding that application.

8.2 Baseline

8.2.1 There are no statutory or non-statutory designated historic assets within the red line boundary.

8.2.2 A Scheduled Monument (MM128) comprising the remains of a Medieval castle or fortified house and its immediate surroundings is located between the eastern and central blocks. This is known as Bishton Castle and was a seat of the Bishops of Llandaff; the current name 'Bishton' is a shortening of 'Bishopston'. The castle site includes two possibly rectangular building platforms set within a partial enclosure.

8.2.3 Just to the west of the western block is the churchyard of the Church of St Mary, Llanwern. A stone cross base in the churchyard is Scheduled (MM324); it comprises a partially sunken square/octagonal socket stone along with a cross-shaft that survives to a height of 1.4 m.

8.2.4 Approximately 600 m to the east of the eastern block is a Scheduled Monument known as Wilcrick Hill Camp (MM127). This is a substantial hillfort of probable Iron Age date, now heavily wooded.

8.2.5 Just to the north-west of Wilcrick Hill Camp is another Scheduled Monument (MM202) which comprises earthworks representing four rectangular enclosures with scarped terraces and low banks, each of the two central enclosures contains a house platform. This is a deserted village of probable Medieval date.



- 8.2.6 The Grade II* listed Church of St Mary, Llanwern is located just to the west of the western block of the proposal site. This aisleless single-cell church was probably built in the 14th century and enlarged in the 15th century.
- 8.2.7 To the south of the Church of St Mary and close to the western edge of the western block is a Grade II listed barn at Barn Farm. This is a tall, seven-bay barn of early 19th century date. To the north-west and within the 1 km buffer zone is a Grade II listed house known as Great Milton (3064), which includes a range of mid 16th century date along with later additions.
- 8.2.8 Close to the south-eastern edge of the central block is the Grade II listed Church of St Cadwaladr, Bishton. This includes some elements of 14th and 15th century date with major restoration in the 19th century.
- 8.2.9 The proposal site is located just to the north of the reclaimed former wetlands known as the Gwent Levels. A great extent of the Levels has been placed on the Register of Landscapes of Outstanding Historic Interest in Wales. The Gwent Levels Landscape of Outstanding Historic Interest (LOHI) is described in the Register as ‘a landscape of extraordinarily diverse environmental and archaeological potential. Although they are an important wetland resource in their own right, archaeologically the area contains a variety of landscapes of different dates, and nowhere else is it possible to make the period distinctions so easily’. The LOHI is subdivided into a total of 21 defined Historic Landscape Character Areas (HLCAs), each of which has been subject to detailed classification and description.
- 8.2.10 The boundary of the Gwent Levels LOHI on the Register is to the south of the proposal site, on the other side of the Llanwern steelworks site and the A4810 road, thus the proposal site falls outside of the LOHI. However, land within the eastern block of the proposal site is within the defined HLCA009 (Green Moor) and this land corresponds with the drained former wetland area between Bishton and Wilcrick which is traversed by an unclassified road.
- 8.2.11 HLCA009 Green Moor is described as ‘The lowest-lying area of back-fen’ and it is noted in the Register that ‘The block to the north of the railway retains its original fen-edge’. This land to the north of the railway, including land within the proposal site, was drained from at least the 16th century and was enclosed in the 17th or possibly 18th century.

- 8.2.12 Newport City Council has prepared a Supplementary Planning Guidance document 'Archaeology and Archaeologically Sensitive Areas' which was adopted in December 2025. One of the defined Archaeologically Sensitive Areas (ASAs) is the Gwent Levels and land within the southern part of the eastern block of the proposal site (corresponding largely with HLA009 Green Moor) is also within this ASA. Land in the southern parts of the western and central blocks of the proposal site are also within the ASA.
- 8.2.13 This identification of the Gwent Levels as an ASA is based on the overall archaeological potential of the former wetland area as described in the entry in the Register of Landscapes of Outstanding Historic Interest in Wales. This potential was confirmed through a programme of archaeological investigation carried out in connection with the construction of the Gwent Euro Park immediately south of the railway. Significant discoveries included a well-preserved Romano-Celtic boat (the Barland's Farm Boat) along with timber and stone structures.
- 8.2.14 Archaeological surveys and investigations within the former wetland areas that are present within the proposal site and which were undertaken for the Previous Application **did not identify any archaeological remains** and deposits similar to those found at the Gwent Euro Park site. Radiocarbon dating of organic deposits within the wetland sequence of the Gwent Levels indicated that peat formation had commenced as early as the later Mesolithic period, and continued until at least the Middle Iron Age, although this would not necessarily have been a single continuous process.
- 8.2.15 The remaining land within the proposal site comprises terrain that would have been at the edge of the former wetlands for many centuries. This is the dryland/wetland transition zone and has an elevated archaeological potential due to this topographic position. Archaeological surveys and investigations within the proposal site which were undertaken for the Previous Application identified one area of Early Roman activity, with the material recovered suggesting ironworking as well as potential settlement. Artefacts of later Roman date were recovered from test pits within an area of small irregular enclosures identified by geophysical survey.

8.3 Potential Effects

Construction Effects

- 8.3.1 The construction of the proposed development has the potential to impact directly and physically on buried archaeological remains. This would be mitigated via 'no-dig' solutions (including ballasted above ground foundations rather than piles driven into the ground), exclusion zones with no development permitted, or further investigative works that could involve extracting and preserving any important finds (such as Strip Map and Sample and Post-Excavation Analysis).

Operation Effects

- 8.3.2 The operation of the proposed development could result in changes within the settings of designated historic assets, and changes to historic landscape character, which could lead to adverse impacts and effects. Such changes can also occur during construction but would only be temporary

Assessment Methodology

- 8.3.3 The chapter will consider the potential effects, both physical and setting, of the project on built historic assets as well as on buried archaeological remains and on the character of the historic landscape. The proposed scope is informed by the work undertaken for the Previous Application. The following scope is intended to facilitate the production of an impact assessment that focuses on the potentially significant effects of the project, in keeping with current guidance.

Baseline studies

- 8.3.4 The assessment will be underpinned by baseline data gathered from the following sources:
- i) Published sources of data on historic assets;
 - ii) The Regional Historic Environment Record (HER) held by the Glamorgan Gwent Archaeological Trust (GGAT);
 - iii) Available LiDAR data and aerial photographs; and
 - iv) A review of the results of the archaeological surveys undertaken for the Previous Application.

- 8.3.5 Selected designated historic assets in the surrounding area will be visited in order to gather baseline data regarding their setting. The desk-based study will be presented as an appendix to the ES.
- 8.3.6 No further pre-submission archaeological surveys are proposed.
- 8.3.7 Due to part of the proposal site being located within a Historic Landscape Character Area which contributes towards a registered Landscape of Outstanding Historic Interest, a separate Assessment of the Significance of the Impact of Development on the Historic Landscape will be undertaken in line with the appropriate guidance. This report will be presented as an appendix to the ES.

Assessment of Effects

- 8.3.8 The scope will not include the physical loss of any designated historic assets as none are located within the project site. An assessment will be undertaken on all designated assets located within 1 km of the project site boundary and within the ZTV, and on buried archaeology within the project site. The assessment will consider both construction and operation phases of the project.
- 8.3.9 Effects on designated historic assets located more than 1 km from the boundary of the project site will not be assessed due to the low likelihood of significant effects being received, except where the asset includes a designed view towards the project site.
- 8.3.10 The following guidance documents will be used in this assessment:
- i) Cadw (2011) Conservation Principles for the Sustainable Management of the Historic Environment in Wales, March 2011;
 - ii) Cadw (2017a) Heritage Impact Assessment in Wales, May 2017;
 - iii) Cadw (2017b) Setting of Historic Assets in Wales, May 2017;
 - iv) Chartered Institute for Archaeologists (2014a) Code of Conduct;
 - v) Chartered Institute for Archaeologists (2017) Standard and Guidance for Historic Environment Desk-Based Assessment;
 - vi) Chartered Institute for Archaeologists (2014b) Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment;
 - vii) Chartered Institute for Archaeologists (2014d) Standard and guidance for archaeological field evaluation;

- viii) Chartered Institute for Archaeologists (2014e) Standard and guidance for the collection, documentation, conservation and research of archaeological materials;
 - ix) Chartered Institute for Archaeologists (2014f) Standard and guidance for the collection, compilation, transfer and deposition of archaeological archives;
 - x) Countryside Council for Wales, Cadw and Welsh Assembly Government (2007) Guide to good practice on using the Register of Landscapes of Historic Interest in Wales in the planning and development process, Revised (2nd) edition including revisions to the assessment process (ASIDOHL2);
 - xi) Landscape Institute (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd edition, Landscape Institute & Institute of Environmental Management and Assessment;
 - xii) Welsh Government (2026) Technical Advice Note 24: The Historic Environment, March 2026; and
 - xiii) Welsh Government 2024, Planning Policy Wales, Edition 12, February 2024.
- 8.3.11 The assessment will consider the likely effects of the project on the significance of heritage assets, including buried archaeological remains. It will consider:
- i) the effects of construction upon the physical fabric of assets within the Site;
 - ii) the effects of the operational phase of the project upon the setting of designated assets and non-designated assets within 1 km of the Site and within the Zone of Theoretical Visibility ZTV, or beyond 1 km of the Site and within the ZTV in the case of historic assets with designed views towards the Site; and
 - iii) the cumulative operational effects of the project and other developments within the vicinity of the Site.
- 8.3.12 The assessment of the likely effects on historic environment will be structured as follows:
- i) identification of historic assets that may be affected by the project;
 - ii) provision of a description of the significance of those assets carried through to assessment including the contribution made by their setting;
 - iii) identification of the likely effects of the project on historic assets; and
 - iv) assessment of significance of effects, taking into account measures proposed to avoid, reduce or remedy adverse effects.

- 8.3.13 Embedded mitigation may be devised to avoid any significant impacts associated with the construction and operation of the project. Where prevention of impacts through design is not reasonably practicable, further mitigation measures will be identified.
- 8.3.14 The significance of the effects will be evaluated, considering the methodology set out in Chapter 8 of this Scoping Report.
- 8.3.15 A separate assessment will be undertaken with regard to the impact of the project on the registered Gwent Levels Landscape of Outstanding Historic Interest (LOHI). This will be in the form of an ASIDOHL2 report (Assessment of the Significance of the Impact of Development On Historic Landscapes Rev 2). An ASIDOHL2 report was submitted as part of the Previous Application, with the contents and approach agreed with Cadw prior to submission. It was agreed that report would focus on that part of HLCA009 Green Moor that is within the proposal site. The report did not consider impacts on any of the other HLCAs that make up the Gwent Levels LOHI.

Scope of the Assessment

- 8.3.16 An assessment will be undertaken on all designated assets located within 1 km of the project site boundary and within the ZTV, and on buried archaeology within the project site. The assessment will consider both construction and operation phases of the project.

Issues Scoped Out of the Assessment

- 8.3.17 The scope will not include the physical loss of any designated historic assets as none are located within the project site.
- 8.3.18 Effects on designated historic assets located more than 1 km from the boundary of the project site will not be assessed due to the low likelihood of significant effects being received, except where the asset includes a designed view towards the project site.

9.0 HYDROLOGY AND FLOOD RISK

9.1 Introduction

9.1.1 This section presents information related to surface water (hydrology), flood risk and drainage and provides recommendations of the likely content of the ES in relation to Hydrology and Flood Risk.

9.1.2 Further assessment will be accompanied by a Flood Consequences Assessment (FCA), itself informed by a site-specific hydraulic modelling exercise. The FCA investigates the likely flood risk posed to the Site from all sources and recommend proportionate mitigation to reduce such risks. It will also recommend measures to manage the risk of surface water flooding

9.2 Baseline

9.2.1 The land slopes from north to south from an elevation of approximately 40mAOD at Waltwood Hill in the north to approximately 5mAOD in the south. The southern part of the Site is bounded by the South Wales Main Line. A separate railway runs parallel to the South Wales Main Line in the south, assumed to service the Spencer Steelworks. Both railway lines are raised above ground levels to levels generally ranging between 6 and 7mAOD.

9.2.2 The lower lying parts of the Site is located within the Caldicot and Wentlooge Internal Drainage District (IDD), a low-lying area characterised by a network of watercourses and reens.

9.2.3 There are three principal watercourses local to the Site. The Monks Ditch flows to the west of the Site draining approximately 18 km² of land upstream of the railway lines. The watercourse referred to as the Waltwood Brook commences at a reservoir on Waltwood Hill and flows through part of the western portion of the Site. The Wilcrick Brook drains approximately 7km² of land upstream of the railway lines and flows through the eastern portion of the Site.

9.2.4 With regard to Water Framework Directive classification, the Site lies within the 'Monks Ditch – Wainbridge to Source' waterbody, which is part of the Usk Management Catchment area of the Severn River Basin District. The Monks Ditch has an overall status of Moderate.



- 9.2.5 In addition to the above, the Site contains a network of reens and ditches, particularly in lower lying parts of the Site.
- 9.2.6 Water quality conditions within the local watercourses, particularly the reens, are likely to be impacted by the local land management and agricultural activities.
- 9.2.7 The Development Advice Map (DAM) Zones classify low-lying parts of the Site to be in within Zone C1 - Areas of the floodplain which are developed and served by significant infrastructure, including flood defences (s). This classification includes the risk of tidal flooding and flooding from watercourses.
- 9.2.8 The area, particularly the IDD, is sensitive in terms of water level management, increased surface water runoff, siltation, erosion and soil compaction. The presence of flood zones also demonstrates a potential risk of flooding to the proposed development. Therefore, the Environmental Statement will address any potential impact on the watercourses during development, operation and de-commissioning phases of the project.

9.3 Potential Effects

Construction effects

- 9.3.1 During construction of the solar farm and associated infrastructure there is potential for soil compaction and erosion through vehicular movement. Soil compaction can lead to reduced soil porosity, soil water storage and infiltration and as a result, increase surface water runoff and reduce water quality. The removal of vegetation and proximity of the watercourses can compound these effects. These changes have the potential to increase downstream flood risk, erosion and pollution of surface water bodies.
- 9.3.2 Accidental spills from machinery and the dispersion of construction materials and debris also have the potential to cause pollution of water resources. Trenching for the cables could also impact watercourses or increase the rate of runoff from the Site

Operation effects

- 9.3.3 Across the Site, the cessation of intensive agricultural activities, will have beneficial effects in terms of runoff rates and water quality. Stocking densities of grazing animals as well as the use of machinery will be reduced leading to less compaction.



- 9.3.4 The proposals could impact on access to the watercourses which could impact maintenance activities.
- 9.3.5 Subject to a full assessment of the flood risk posed to the Site, during operation, infrastructure could require mitigation to ensure it manages the potential risk of flooding. Proposed infrastructure and identified mitigation will need to ensure that the risk posed to third parties is minimised. For example, substations or similar would be located outside areas of mapped flood risk, wherever possible. Panels and their string inverters would be located above design levels.

Assessment Methodology

- 9.3.6 This chapter considers the hydrology and flood risk effects of the Proposed Development.
- 9.3.7 In accordance with national planning policy, the Proposed Development must be shown to be safe from all sources of flooding, not increase flood risk elsewhere and where possible improve water quality.
- 9.3.8 Accordingly, this hydrology and flood risk chapter considers the following potential effects:
- i) Construction Phase – rate of surface water runoff and infiltration
 - ii) Construction Phase – floodplain storage and offsite flood risk
 - iii) Construction Phase – pollution of water resources
 - iv) Operation Phase – rate of surface water runoff and infiltration
 - v) Operation Phase – floodplain storage and offsite flood risk
 - vi) Operation Phase – pollution of water resources
 - vii) Decommissioning Phase – rate of surface water runoff and infiltration
 - viii) Decommissioning Phase – floodplain storage and offsite flood risk
 - ix) Decommissioning Phase – pollution of water resources
 - x) Cumulative and in-combination effects
- 9.3.9 To assess the significance of the effects of the Proposed Development on the water environment a set of threshold criteria will be established based on the interaction between the value and sensitivity of the receptor and the magnitude of change. The threshold criteria set out below have been determined based on planning policy and legislation, industry best practice and professional judgement.

Assessment of Significance

9.3.10 The significance criteria used to assess the potential effects of the Proposed Development are set out below. There are three stages to the assessment of the effect on water resources are as follows:

- i) The sensitivity of the receptor (High to Negligible) based on a number of attributes such as local flood risk and water resource quality (Table 9.1).
- ii) The magnitude of change on the receptor, which is determined based on Table 9.2 and the assessor's knowledge of the project.
- iii) An overall Significance of Effect, as set out in Table 9.3.

9.3.11 The sensitivity of receptor criteria has been derived accounting for: flood risk function; relevant statutory and non-statutory habitat designations; ecological and chemical status of surface waterbodies, as defined by the Water Framework Directive (WFD) and the groundwater aquifer classifications and source protection zones. The sensitivity has been defined to range from High to Negligible, the criteria and examples of which are set out in Table 9.1.

Table 9.1 Deprivation of Sensitivity of Receptor

Sensitivity of Receptor	Criteria	Example
High	Receptor has very limited capacity to tolerate changes to hydrology, water quality or flood risk. Water resource with a high quality and rarity at a national or regional level with high sensitivity to hydrological change and limited potential for substitution.	Waterbody or associated defences which serve a defined flood risk function Sites of Special Scientific Interest (SSSIs), Ramsar sites, Special Areas of Conservation (SAC), Special Protection Areas (SPA). Surface water bodies with a High overall status as defined by the WFD. Principal Aquifers within Groundwater Source Protection Zones 1.
Medium	Receptor has limited capacity to tolerate changes to hydrology, water quality or flood risk. Water resource with a high quality and rarity at a local scale or water resource with a medium quality and rarity at a regional or national scale.	Waterbody that serves and important flood risk function or is upstream of areas at high risk of flooding. Local Nature Reserves (LNR), Sites of Nature Conservation Interest (SNCI). Surface water bodies with a WFD Good ecological status and Good chemical status.

Sensitivity of Receptor	Criteria	Example
		Principal Aquifers within Groundwater Source Protection Zones 2-4. Secondary aquifers within Groundwater Source Protection Zones.
Low	Receptor has moderate capacity to tolerate changes to hydrology, water quality of flood risk. Water resource with a low quality and rarity at a local scale.	Waterbody that serves limited flood risk function. Surface water bodies with a WFD ecological status ranging from Poor to Moderate and/or a Good chemical status. Areas defined by BGS as Low Productivity Aquifer.
Negligible	Receptor is generally not sensitive to changes to hydrology, water quality of flood risk. Water resource with very low quality and rarity at a local scale.	Surface Water bodies with a WFD Bad ecological status and/or Fail chemical status. Ground defined by BGS as 'rocks with essentially no groundwater'.

9.3.12 The magnitude of change is based on the potential effects on water resource attributes as set out in Table 9.2.

Table 9.2 Deprivation of Magnitude of Change

Importance	Criteria	Example
High - Negative	Results in substantial negative effect on attributes of a water resource.	Increase in flood risk to highly vulnerable land uses (as defined by TAN15) or nationally significant infrastructure. Effects that would cause a change to WFD status of a waterbody or have a significant effect on groundwater resources.
Medium - Negative	Results in negative effect on attributes of a water resource.	Increase in flood risk to more vulnerable land use (as defined by TAN15) or locally significant infrastructure. Effects that may cause a change to WFD status of a waterbody or have a moderate effect on groundwater resources

Importance	Criteria	Example
Low - Negative	Results in minor negative effect on attributes of a water resource.	Increase in flood risk to less vulnerable or water compatible land uses (as defined by TAN15). Effects to a waterbody, but insufficient to change its WFD status.
Negligible	Results in an effect on attribute of a water resource but of insufficient magnitude to affect the use /integrity.	Effects that would have a negligible effect on water quality. Minor increase in flood risk to undeveloped land.
Low - Beneficial	Results in minor positive effect on attributes of a water resource.	Decrease in flood risk to less vulnerable or water compatible land uses (as defined by TAN15). Improvements to a waterbody, but insufficient to change its WFD status.
Medium – Beneficial	Results in positive effect on attributes of a water resource.	Decrease in flood risk to more vulnerable land use (as defined by TAN15) or locally significant infrastructure. Effects that may cause a change to WFD status of a waterbody or have a moderate effect on groundwater resources
High - Beneficial	Results in substantial positive effect on attributes of a water resource.	Significant decrease in flood risk to highly vulnerable land uses (as defined by TAN15) or nationally significant infrastructure. Effects that would cause an improvement to WFD status of a waterbody or have a significant effect on groundwater resources.

9.3.13 The Significance Scale that has been applied is included in 'Chapter 2: Assessment Scope and Methodology'. The scale includes 7 different classifications ranging from 'Major Beneficial' to 'Major Adverse'.

- 9.3.14 The scale of significance is derived from the interaction of the receptor sensitivity and the magnitude of change criteria. The shading on Table 9.3 indicates those significance ratings that are deemed to be 'significant' effects.

Table 9.3 Significance Matrix

	Sensitivity of Receptor				
		High	Medium	Low	Negligible
Magnitude of Changes	High - Negative	Major adverse	Major adverse	Moderate adverse	Negligible
	Medium - Negative	Major adverse	Moderate adverse	Minor to Moderate Adverse	Negligible
	Low – Negative	Moderate adverse	Minor to Moderate adverse	Minor adverse	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible
	Low – Beneficial	Moderate Beneficial	Minor to Moderate Beneficial	Minor Beneficial	Negligible
	Medium - Beneficial	Major Beneficial	Moderate Beneficial	Minor to Moderate Beneficial	Negligible

Mitigation

- 9.3.15 Recommended mitigation to reduce the impacts of the development to acceptable levels, where required, will be proposed. Two forms of mitigation will be proposed. The first will be mitigation by design; measures incorporated into the site proposals. The second will be additional mitigation; additional measures not included within the site design, such as the Construction Environmental Management Plan

10.0 PROPOSED CONTENTS OF THE ENVIRONMENTAL STATEMENT

10.1.1 The proposed contents and structure of the ES is shown below. It will be produced in four volumes: the first of which is a non-technical summary, the second the main report, the third illustrative figures and the fourth a series of technical appendices containing data and technical assessments undertaken for the ES chapters. Matters in relation to human health and amenity would be covered throughout the ES in various relevant chapters.

i) VOLUME 1: NON-TECHNICAL SUMMARY

ii) VOLUME 2: ENVIRONMENTAL STATEMENT (MAIN REPORT)

Chapter Number	Chapter Heading
1.0	Introduction and Background - Introducing the Proposed Development and EIA process - The applicant - Technical competence of the project team
2.0	Approach to the Environmental Impact Assessment - EIA methodology - Scoping process (the requirements of the scoping opinion and how they have been addressed in the ES)
3.0	Alternatives Considered - Review and assessment from site selection process - Discussion and assessment of the alternatives considered by the applicant
4.0	The Proposed Development - Description of the Scheme - Construction methodology - Design considerations (including climate change and Biodiversity Net Gain) - Embedded mitigation
5.0	Landscape and Visual Assessment
6.0	Biodiversity
7.0	Cultural Heritage
8.0	Hydrology and Flood Risk
9.0	Cumulative Effects - Cumulative assessment - In-combination assessment - Climate change assessment
10.0	Summary of Effects and Mitigation

i) VOLUME 3: FIGURES

ii) VOLUME 4: TECHNICAL APPENDICES