



Glöyn Byw | Butterfly Solar Farm

Environmental Statement - Volume 2

Chapter 7.0 – Historic Environment

Prepared for

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7.0 HISTORIC ENVIRONMENT

7.1 Introduction

This Chapter of the Environmental Statement presents the findings of an assessment of the likely significant impacts on the historic environment occurring as a result of the Proposed Development.

7.1.1 The Proposed Development comprises a new solar energy generating station and associated on-site Battery Energy Storage Systems (BESS) on land to the north of the B5426, Wrexham ('the Site'). The Proposed Development also includes a
7.1.2 substation and 15m tall communications mast which would be permanent features. The Proposed Development also includes the associated infrastructure and connection route options to the Legacy National Grid substation. For a detailed description of the Proposed Development, refer to **ES Chapter 4: Scheme Description**.

7.1.3 The Proposed Development would enable the export of up to 99.9 megawatts (MW) of electricity, as well as the storage of electricity in the BESS.

7.1.4 The solar array is divided into three principal areas referred to as the Western, Central and Eastern Array Areas (the WAA, CAA and EAA respectively). The development areas are shown on Figure 1-1 and are described in detail within **ES Chapter 4: Scheme Description**.
7.1.5

This chapter is accompanied by the following appendices:

- i) Appendix 7.1 – Asset and Event Gazetteer
- ii) Appendix 7.2 – Settings Assessment
- iii) Appendix 7.3 - Photographic Plates
- iv) Appendix 7.4 – Archaeological Desk-Based Assessment
- 7.1.6 v) Appendix 7.5 – Archaeological Geophysical Survey
- vi) Appendix 7.6 – Legislation, Policy and Guidance
- vii) Appendix 7.7 - Written Scheme of Investigation

This chapter is also accompanied by the following figures:

- i) Figure 7.1: Site Location Plan
- ii) Figure 7.2: Designated Heritage Assets within 5 km Study Area and ZTV Data



- iii) Figure 7.3: Non-Designated Heritage Assets and Events within 1 km Study Area (West)
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7.1.7

The following sections of this chapter include:

- i) a description of relevant legislation, planning policy and guidance which has informed the assessment;
- ii) a summary of consultation with stakeholders;
- iii) a description of the methodology for the assessment, including details of the study area and the approach to the assessment of effects;
- iv) a review of baseline conditions;
- v) details of the measures to avoid or reduce environmental effects, including mitigation and design measures that form part of the Proposed Development;
- vi) an assessment of the likely significant impacts upon the historic environment occurring during the construction, operation and decommissioning phases of the



Proposed Development, taking into account the measures proposed to avoid or reduce effects;

- vii) identification of any additional mitigation measures or monitoring required in relation to likely significant effects;
- viii) a summary of the residual effects of the Proposed Development from implementation of any additional mitigation; and
- ix) assessment of any cumulative effects with other proposed developments.

Competence

7.1.8 The assessment has been carried out by Alan Whitaker (BSc) and Lynne Roy BA (hons) MSc, MCIfA. of AOC Archaeology Group. Alan is a Project Officer at AOC Archaeology Group with over 15 years of experience working in the commercial archaeology sectors in Britain as a field archaeologist and latterly as a consultant. Field work experience includes large infrastructure projects such as HS2, and within consultancy Alan has worked on a range of desk-based assessments and large walkover survey projects. Lynne is a Senior Project Manager at AOC Archaeology Group with extensive experience in the renewable energy sector gained over the past 19 years. Lynne has been the principal heritage consultant for over 40 wind farm and 20 solar projects in the United Kingdom and has also provided feasibility and optioneering advice for numerous renewable developments. Lynne is also experienced in the design and management of mitigation works during the construction phase of renewable developments and is experienced in the provision of expert witness services for planning appeals and public inquiries.

7.2.1

7.2 Legislation, Planning Policy and Guidance

7.2.2

This ES chapter has been prepared in accordance with relevant national and local legislation, policy, and guidance on the historic environment as summarised in the following sections and outlined in Appendix 9. 6: Legislation, Policy and Guidance. .

Legislative Framework

Parliamentary legislation for the management and protection of the Welsh historic environment is provided by The Historic Environment (Wales) Act 2023 (enacted on



4th November 2024)¹, the Town and County Planning Act 1990², the Planning (Wales) Act 2015³ and the Well-being of Future Generations (Wales) Act 2015⁴.

Future Wales: The National Plan 2040

Future Wales: The National Plan 2024 constitutes the highest tier of the development plan against which the Proposed Development will be determined. It sets out a strategy for addressing key national priorities through the planning system, including achieving decarbonisation, climate-resilience and achieving net zero.

Planning Policy Wales

7.2.3

National Planning Policy is provided in Planning Policy Wales (PPW) Edition 12⁵. PPW 12 sets out the Government's planning policies for Wales and how these should be applied and is supplemented by guidance contained in TAN 24: The Historic Environment. Chapter 6 of PPW 12 is concerned with 'Conserving and Enhancing the Historic Environment and its Assets'. It identifies heritage assets as "*central to Wales's culture and its character*"⁶ and that "*it is important that the planning system looks to protect, conserve and enhance the significance of heritage assets*"⁷. Details regarding the relevant policies in PPW and TAN24 against which the Proposed Development has been assessed can be found in Appendix 9.6

7.2.4

Cadw Guidance

Cadw is the historic environment service for the Welsh Government. They have a wide-ranging role in the care and promotion of the Welsh historic environment. They provide statutory advice on planning applications.

¹ *Historic Environment (Wales) Act 2023*. Acts of Senedd Cymru. Available at: <https://www.legislation.gov.uk/asc/2023/3/contents/enacted> [Accessed 05/02/2025]

² *Town and Country Planning Act 1990*, c.8. London: UK Government. Available at: <https://www.legislation.gov.uk/ukpga/1990/8/contents> [Accessed 05/02/2025]

³ *Planning (Wales) Act 2015*. National Assembly for Wales. Available at: <https://www.legislation.gov.uk/anaw/2015/4/contents> [Accessed 05/02/2025]

⁴ *The Well-being of Future Generations (Wales) Act 2015* Available at: <https://www.gov.wales/sites/default/files/pdf-versions/2025/2/2/1740501518/well-being-future-generations-act-essentials.pdf> [Accessed 23/04/2025]

⁵ *Welsh Government (2024)*

⁶ *Ibid.*, 129: para 6.1.1

⁷ *Ibid.*, 130: para 6.1.7

7.2.5 Cadw’s best practice guidance series ‘Managing Change’ currently contains 15 guidance documents focused on a variety of topics from specific asset types to best practice in impact assessment. The most relevant in the context of this assessment is Cadw’s setting guidance which defines setting as “the surroundings in which it is understood, experienced and appreciated, embracing present and past relationships to the surrounding landscape”⁸. The guidance sets out a four-stage approach to assessing the potential for impacts upon the setting of heritage assets. Details of this staged approach and other guidance documents are provided in Appendix 9.6.

Local Planning Policy

7.2.6 The Proposed Development Site lies primarily within the administrative area of the Wrexham County Borough Council. The development plan for Wrexham comprises Future Wales: the national plan 2040 and the Wrexham Unitary Development Plan 1996-2011, adopted 2005 – in order of legal hierarchy. The topic specific policies relevant to this chapter are Policies EC7 (Conservation Areas), EC9 (Listed Buildings of Special Architectural or Historic Interest) and EC11 (Archaeology) : and further details are provided in Appendix 7.6.

7.2.7 Assessment Methodology

Study Area

7.2.8 In order to assess the potential for significant effects resulting from the Proposed Development on archaeological and cultural heritage assets, the following concentric study areas have been employed (as shown on Figures 7.2-7.5):

- i) The Site: all land within the Site formed the core study area, which was subject to assessment for potential direct effects. This area was subject to walkover survey, geophysical survey and desk-based study in order to identify cultural heritage assets which may be directly or indirectly impacted by the Proposed Development.
- ii) 1 km Study Area: all known heritage assets and previous archaeological interventions within a 1 km radius of the Site were identified in order to help

⁸ Cadw (2017) *Managing Setting of Historic Assets in Wales* [online]. Available at: <https://cadw.gov.wales/sites/default/files/2019-05/Setting%20of%20Historic%20Assets%20in%20Wales%20EN.pdf> [Accessed 05/02/2025], 2



predict whether similar, hitherto unknown archaeological remains are likely to survive within the Site and be impacted by the Proposed Development.

- iii) 5 km Study Area: a 5 km radius set around the Site was employed for the assessment of potential effects on the settings of all designated heritage assets, including Scheduled Monuments, Listed Buildings (all grades), Registered Parks and Gardens (RPGs) (all grades), Registered Historic Landscapes and Conservation Areas.

Scope of Assessment

7.2.9 The scope of the baseline data gathering, including study areas and sources, was agreed in a Written Scheme of Investigation (WSI)⁹ with Cadw and Heneb, and the assessment adheres to relevant policy and guidance for undertaking assessment of archaeological and cultural effects. The identification of the historic environment baseline provides an appropriate level of interrogation of known heritage assets and allows for a robust assessment of potential impacts. The scope of the assessment has been informed by consultation responses summarised in **Table 7.1** and the policies and guidelines described in **Section 7.2** above.

7.2.10 The following data sources were consulted during preparation of this assessment:

- i) Cadw and Historic Wales (<https://historic-wales-rcahmw.hub.arcgis.com/>) for Designated asset data.
- ii) Heneb (formerly Clwyd-Powys Archaeological Trust) for Historic Environment Record (HER) data; records of previous archaeological investigations (Events);
- iii) Historic Landscape Characterisation (HLC);
- iv) Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) via Data Map Wales for Information in the National Monuments Record of Wales (NMRW); online accessible historic aerial photographs and reference aerial photographs available for copying.
- v) British Geological Survey (BGS) for bedrock and superficial deposit data and historic boreholes information.
- vi) National Library of Scotland for DTM 1m/50m multi hillshade LiDAR layer.

⁹ AOC Archaeology Group (2025) *Glöyn byn Butterfly Solar Farm: Land to the North of the B5426, Wrexham. Written Scheme of Investigation for a Desk-Based Assessment and Walkover Survey. Unpublished report*

- vii) DataMapWales for WOM21 Ancient Woodland Inventory; APU Welsh Government Aerial Photography from 2013 and 1969;
- viii) LANDMAP for historic landscape characterisation; and modern landscape information.

References for all sources consulted during the assessment are listed in Section 7 of the accompanying Archaeological Desk-Based Assessment (**Appendix 7.4**).

7.2.11 A walkover survey of the Site was undertaken in order to identify any hitherto unrecorded visible remains and to establish the survival, extent, significance and interrelationships of previously recorded assets.

7.2.12 Setting assessment site visits were carried out to designated assets (as detailed below) in order to establish their current settings and any potential impact the Proposed Development may have on them.

7.2.13 This chapter has been supported by a detailed zone of theoretical visibility (ZTV), which has been used to identify assets intervisible with the Proposed Development and/or where the Proposed Development would appear in key views to and from assets. The methodology for the preparation of the ZTVs is provided in Chapter 6.0.

7.2.14 The chapter also assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments, which are the subject of a valid planning application. Operational, under construction, and consented developments are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

7.2.15 AOC Archaeology Group conforms to the standards of professional conduct outlined in ClfA's Code of Conduct¹⁰, the ClfA Standards and Guidance for Historic Environment Desk-Based Assessments¹¹, the ClfA Standard and Guidance for

¹⁰ ClfA (2022) Code of Conduct: Professional Ethics in Archaeology [online]. Available at: <https://www.archaeologists.net/sites/default/files/Code%20of%20conduct%20revOct2022.pdf> [Accessed 05/02/2025]

¹¹ ClfA (2020a) Standards and Guidance for Historic Environment Desk-Based Assessment [online]. Available at: https://www.archaeologists.net/sites/default/files/ClfAS%26GDBA_4.pdf [Accessed 05/02/2025]



Commissioning Work or Providing Consultancy Advice on Archaeology and the Historic Environment¹², and the ClfA Regulations for Professional Conduct¹³.

AOC Archaeology Group is a Registered Organisation of ClfA. This status ensures that there is regular monitoring and approval by external peers of our internal systems, standards, and skills development.

7.2.17 AOC is ISO 9001:2015 accredited, in recognition of the Company's Quality Management System.

7.2.18 ***Assessment of Significance / Assessment Criteria***

7.2.19 This section sets out the methodology for assessing effects upon heritage assets both direct physical and setting effects. It takes account of the PPW 12¹⁴, TAN 24¹⁵, and Cadw's guidance on setting¹⁶.

7.2.20 The assessment distinguishes between the terms 'impact' and 'effect'. An impact is defined as a physical change to a heritage asset or its setting, whereas an effect refers to the significance of this impact. The first stage of the assessment involves establishing the importance of the heritage asset and assessing the sensitivity of the asset to change (impact). Using the proposed design for the Proposed Development, an assessment of the impact magnitude is made and a judgement regarding the level and significance of effect is arrived at.

7.2.21 ***Assessing Cultural Significance & Importance***

The definition of cultural significance is readily accepted by heritage professionals both in the UK and internationally and was first fully outlined in the International Council on Monuments and Sites (ICOMOS) Burra Charter, Article One of which identifies that 'cultural significance' or 'cultural heritage value' means aesthetic,

¹² ClfA (2020b) *Standards and Guidance for Commissioning Work or Providing Consultancy Advice on the Historic Environment* [online]. Available at: https://www.archaeologists.net/sites/default/files/ClfA%26GCommissioning_2.pdf [Accessed 05/02/2025]

¹³ ClfA (2021b) *Regulations for Professional Conduct* [online]. Available at:

<https://www.archaeologists.net/sites/default/files/Regulations%20for%20professional%20conduct.pdf> [Accessed 05/02/2025]

¹⁴ Welsh Government (2024)

¹⁵ Welsh Government (2017)

¹⁶ Cadw (2017e)

historic, scientific, social, or spiritual value for past, present or future generations¹⁷. This definition has since been adopted by heritage organisations around the world.

PPW 12 and Cadw state that “*the significance of an historic asset embraces all of the cultural heritage values that people associate with it, or which prompt them to respond to it*”¹⁸, and that to assess the significance of a heritage asset, the four cultural heritage values need to be considered, which briefly comprise:

7.2.22

Evidential Value: *the physical remains or surviving fabric of an historic asset, and the contribution of documentary sources, pictorial records and museum collections to forming an understanding of an historic asset;*

Historical Value: *how historic assets through illustrative or associative values can connect the past with the present;*

Aesthetic Value: *the way in which people draw sensory and intellectual stimulation from an historic asset through its form, external appearance or setting; and*

Communal Value: *the social and economic values, and spiritual meanings, that an historic asset has for the people who relate to it*¹⁹.

7.2.23

All heritage assets have some significance however, some assets are judged to be more important than others. The level of that importance is, from a cultural resource management perspective, determined by establishing the asset’s capacity to inform present or future generations about the past. In the case of many heritage assets their importance has already been established through the designation (i.e. scheduling, listing, and register) processes applied by PPW 12 and Cadw.

7.2.24

The rating of importance of heritage assets is first and foremost made in reference to their designation. For non-designated assets, importance will be assigned based on professional judgement and guided by the criteria presented in **Table 7.1** below,

¹⁷ ICOMOS (2013). Burra Charter Article 1.2 [online]. Available at: <https://australia.icomos.org/publications/burra-charter-practice-notes/> [Accessed 05/02/2025]

¹⁸ Cadw (2011), 10

¹⁹ Ibid.

which itself relates to the criteria for designations as drawn from the guidance provided by Cadw^{20,21,22,23}.

Table 7.1: Criteria for Establishing Importance of Heritage Assets

Importance	Criteria
Very High	World Heritage Sites; Other designated or non-designated assets with demonstrable Outstanding Universal Value.
High	Scheduled Monuments (Actual and Potential) ²⁴ ; Grade I and II* Listed Buildings ²⁵ ; Registered Historic Parks and Gardens ²⁶ ; Outstanding examples of some period, style or type; or Non-Designated assets considered to meet the criteria for the designation as per the types and grades of designation noted above.
Medium	Grade II Listed Buildings; Registered Historic Landscapes; Conservation Areas ²⁷ ; Major or representative examples of some period, style, or type; or Non-designated assets considered to meet the criteria for the designations as set out above.
Low	Examples of any period, style or type which contribute to our understanding of the historic environment at the local level; or Non-designated heritage assets identified by local historic environment records protected by PPW 12 ²⁸ .
Negligible	Relatively numerous types of remains; Findspots or artefacts that have no definite archaeological remains known in their context; or Non-designated heritage assets of lesser heritage significance.

7.2.25

While determining the relative cultural significance of a heritage asset is essential for establishing its importance, it is widely recognised that the importance of a heritage

²⁰ Cadw (2011)

²¹ Cadw (2017a-f)

²² Cadw (2018a-b)

²³ Cadw (2019)

²⁴ Ancient Monuments and Archaeological Areas Act 1979

²⁵ Planning (Listed Buildings and Conservation Areas) Act 1990

²⁶ Historic Buildings and Ancient Monuments Act 1953

²⁷ Planning (Listed Buildings and Conservation Areas) Act 1990

²⁸ Welsh Government (2024)



asset is not the same as its sensitivity to changes to its setting²⁹. Thus, in determining impacts upon the setting of assets by the Proposed Development, both importance and sensitivity to changes to setting need to be considered.

7.2.26

The Xi'an Declaration³⁰ set out the first internationally accepted definition of setting regarding heritage assets and features, indicating that setting is important where it forms part of or contributes to the significance of a heritage asset. Cadw defines the setting of a historic asset as "*the surroundings in which it is understood, experienced and appreciated, embracing present and past relationships to the surrounding landscape*"³¹. Cadw also notes that a number of factors may contribute to setting and that elements of setting may make a positive, neutral, or negative contribution to the significance of an asset.

Criteria for Assessing Relative Sensitivity

7.2.27

Setting is a key issue in the case of some, but by no means all assets. An asset of Very High or High importance does not necessarily have high sensitivity to changes to its setting (e.g. does not necessarily have a high relative sensitivity). An asset's relative sensitivity to alterations to its setting refers to its capacity to retain its ability to contribute to our understanding and appreciation of the past in the face of changes to its setting. The ability of an asset's setting to contribute to an understanding, appreciation and experience of it and its significance also has a bearing on the sensitivity of that asset to changes to its setting. Assets with high sensitivity may be vulnerable to changes that affect their settings, and even slight changes may reduce their significance or the ability of setting to contribute to the understanding, appreciation, and experience of them. Less sensitive assets will be able to accommodate greater changes to their settings without a reduction in their significance and, in spite of such changes, the relationship between the asset and its setting will still be legible.

7.2.28

In establishing the relative sensitivity of an asset to changes to its setting, the setting must first be identified. This assessment outlines a range of factors, through qualitative written narrative, which will be considered when establishing the setting

²⁹ Cadw (2017e), 2

³⁰ ICOMOS (2005) *Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas* [online]. Available at: <https://www.icomos.org/images/DOCUMENTS/Charters/xian-declaration.pdf> [Accessed 05/02/2025]

³¹ Cadw (2017e), 2

of an asset and therefore determining its sensitivity. The factors will be assessed from known records and in the field. In defining these criteria, emphasis has been placed on establishing the current setting of each asset, how this contributes to the significance of the asset and how the Proposed Development would affect it.

The criteria for establishing an asset's relative sensitivity are outlined in **Table 7.2**. This has been developed based on AOC's professional judgement and experience in assessing setting effects. It has been developed with reference to the policy and guidance noted above including PPW 12³², TAN 24³³, the Xi'an Declaration³⁴, and Cadw's guidance on the setting of heritage assets³⁵.

7.2.29

Table 7.2: Criteria for Establishing Relative Sensitivity of a Heritage Asset to Changes to its Setting

Sensitivity	Criteria
Very High	An asset, the setting of which, is critical to an understanding, appreciation, and experience of it should be thought of as having Very High Sensitivity to changes to its setting. This is particularly relevant for assets whose settings, or elements thereof, make an essential direct contribution to their cultural significance.
High	An asset, the setting, of which, makes a major contribution to an understanding, appreciation, and experience of it should be thought of as having High Sensitivity to changes to its setting. This is particularly relevant for assets whose settings, or elements thereof, contribute directly to their cultural significance.
Medium	An asset, the setting of which, makes a moderate contribution to an understanding, appreciation, and experience of it should be thought of as having Medium Sensitivity to changes to its setting. This could be an asset for which setting makes a contribution to significance but whereby its value is derived mainly from its other characteristics.
Low	An asset, the setting of which, makes some contribution to an understanding, appreciation, and experience of it should generally be thought of as having Low Sensitivity to changes to its setting. This may be an asset whose value is predominantly derived from its other characteristics.
Negligible	An asset whose setting makes minimal contribution to an understanding, appreciation and experience of it should generally be thought of as having Negligible Sensitivity to changes to its setting.

7.2.30

Criteria for Assessing Magnitude of Impact

Potential impacts, that is the physical change to known heritage assets, and unknown buried archaeological remains, or changes to their settings, in the case of the Proposed Development largely relate to the possibility of disturbing, removing,

³² Welsh Government (2024)

³³ Welsh Government (2017)

³⁴ ICOMOS (2005)

³⁵ Cadw (2017e)



or destroying in situ remains and artefacts during the construction phase or the placement of new features within their setting during the operational phase.

The magnitude of the impacts upon heritage assets caused by the Proposed Development is rated using the classifications and criteria outlined in **Table 7.3**.

Table 7.3: Criteria for Assessing Magnitude of Impact

Magnitude of Impact	Criteria
High	<p>Substantial loss of information content resulting from total or large-scale removal of deposits from an asset;</p> <p>Major alteration of an asset's baseline setting, which materially compromises the ability to understand, appreciate and experience the contribution that setting makes to the significance of the asset and erodes the key characteristics of the setting.</p>
Medium	<p>Loss of information content resulting from material alteration of the baseline conditions by removal of part of an asset;</p> <p>Alteration of an asset's baseline setting that effects the ability to understand, appreciate and experience the contribution that setting makes to the significance of the asset to a degree but whereby the cultural significance of the monument in its current setting remains legible. The key characteristics of the setting are not eroded.</p>
Low	<p>Detectable impacts leading to minor loss of information content;</p> <p>Alterations to the asset's baseline setting, which do not affect the ability to understand, appreciate or experience the contribution that setting makes to the asset's overall significance.</p>
Negligible	<p>Loss of a small percentage of the area of an asset's peripheral deposits;</p> <p>A reversible alteration to the fabric of the asset;</p> <p>A marginal alteration to the asset's baseline setting.</p>
None	No effect anticipated.

7.2.32 *Assessment of Harm*

PPW 12 states that “it is important that the planning system looks to protect, conserve and enhance the significance of historic assets” and that “any change that impacts on an historic asset or its setting should be managed in a sensitive and sustainable way”³⁶.

7.2.33

Cadw’s Conservation Principles defines ‘harm’ as a “change for the worse, here primarily referring to the effect of inappropriate interventions on the heritage values

³⁶ Welsh Government (2024), 130: para 6.1.7



of an historic asset³⁷, and states that changes which cause harm to the heritage values of an historic asset will be unacceptable unless:

a. the changes are demonstrably necessary either to make that asset sustainable, or to meet an overriding public policy objective or need; and

b. there is no reasonably practicable alternative means of doing so without harm; and

c. that harm has been reduced to the minimum consistent with achieving the objective; and

d. it has been demonstrated that the predicted benefit decisively outweighs the harm to the values of the asset, considering:

- its comparative significance;*
- the impact on that significance; and*
- the benefits to the asset itself and/or the wider community or society as a whole³⁸.*

7.2.34 The final section of the Conservation Principles identifies how consideration can be given to how the historic environment can be accommodated alongside other interests and where enabling development may be acceptable to secure the future of an important historic asset. This part of the document provides tests against which different aspects of a development proposal can be judged³⁹.

7.2.35

Assessment of harm resulting from impacts upon the setting of designated heritage assets will relate to whether a change would seriously adversely affect those attributes or elements of the setting of a designated asset that contribute to, or give it, its significance resulting in change for the worse. This will be considered in line with the criteria for magnitude of impact. However, it should be noted that change will not always lead to harm and that there is potential for beneficial as well as neutral impacts. Where there are beneficial, neutral or no impacts there will be no harm.

³⁷ Cadw (2011), 36

³⁸ Ibid., 30

³⁹ Ibid., 21-34

Criteria for Assessing Cumulative Effects

7.2.36 The assessment of cumulative effects will be undertaken in a similar manner to that of the potential effects but will take into consideration other developments as agreed with the planning authority, including those which are operational, under construction, consented or proposed. Cumulative effects relating to cultural heritage are for the most part limited to effects upon the settings of heritage assets.

7.2.37 The cumulative assessment will have regard to the guidance on cumulative impacts upon heritage assets and will utilise the criteria for assessing setting effects as set out in **Tables 7.2 to 7.4**. The assessment of cumulative effects will consider whether there would be an increased impact, either additive or synergistic, upon the setting of heritage assets as a result of adding the Proposed Development to a baseline, which may include operational, under construction, consented or proposed developments. In line with Cadw setting guidance, consideration will be given as to whether the additional change which would result from the Proposed Development will further harm the significance of the asset⁴⁰.

7.2.38 In determining the degree to which a cumulative effect may occur as a result of the addition of the Proposed Development into the cumulative baseline, a number of factors are taken into consideration including:

- the distance between cumulative developments;
- the interrelationship between their ZTVs (i.e. theoretical visibility);
- the overall character of the asset and its sensitivity;
- the siting, scale and design of the cumulative developments themselves;
- the way in which the asset is experienced;
- the placing of the cumulative development(s) in relation to both the Proposed Development being assessed and the heritage asset under consideration; and
- the contribution of the cumulative baseline schemes to the significance of the effect, excluding the individual proposal being assessed, upon the setting of the heritage asset under consideration.

⁴⁰ Cadw (2017e)



7.2.39

The cumulative assessment is based upon a list of operational, under construction or consented developments, along with developments where planning permission has been applied for. Cumulative developments are shown on **ES Figure 2.1**. While all have been considered, only those which contribute to, or have the possibility to contribute to, cumulative effects on specific heritage assets are discussed in detail in the text. Additionally, cumulative effects have been considered in detail for those assets where the Proposed Development has been judged to have an impact on their setting. Where No Impact has been predicted for the Proposed Development, there will be no cumulative effect.

Criteria for Assessing Significance

7.2.40

Error! Reference source not found.**5**, illustrates how residual effects are determined by comparison of the sensitivity of receptors with the magnitude of predicted change. For the purposes of this assessment significant effects are **Moderate** or **Major**.

Table 7.5: Level of Effect based on Inter-Relationship between the Importance and/or Relative Sensitivity of a Heritage Asset and/or its Setting and the Magnitude of Impact

Sensitivity	Magnitude of Impact				
	Negligible	Low	Medium	High	Very High
High	Minor	Moderate	Moderate	Major	Major
Medium	Negligible/ Neutral	Minor	Moderate	Moderate	Major
Low	Negligible/ Neutral	Negligible/ Neutral	Minor	Minor	Moderate
Negligible	Negligible/ Neutral	Negligible/ Neutral	Negligible/ Neutral	Minor	Minor

7.2.41

The level of effect is judged to be the interaction of the asset’s importance and / or relative sensitivity (**Tables 7.2 and 7.3**) and the magnitude of the impact (**Table 7.4**). In order to provide a level of consistency, the assessment of importance and relative sensitivity, the prediction of magnitude of impact and the assessment of level of effect is guided by pre-defined criteria. However, a qualitative descriptive narrative is also provided for each asset to summarise and explain each of the professional value judgements that have been made in establishing sensitivity and magnitude of impact for each individual asset.

7.2.42

A Neutral effect is judged to be a change to the asset or its setting which does not result in harm or benefit. This may occur where there is a perceptible change, but that change does not diminish or enhance the significance of the asset or the ability to appreciate its significance.



Using professional judgement and with reference to the Guidelines for Environmental Impact Assessment provided by the Institute of Environmental Management and Assessment (IEMA)⁴¹, the assessment considers moderate and greater effects to be significant (bold in **Table 7.5**), while minor and lesser effects are considered not significant.

7.2.43

Assumptions and Limitations

Information relating to designated heritage assets was downloaded from Cadw in February 2025. Data from the Heneb HER was obtained in August 2024. The information presented in the gazetteer (**Appendix 7.1**) regarding known heritage assets is current to this date.

7.2.44

This assessment is based upon data obtained from publicly accessible archives as described in the methodology section and a walkover and geophysical survey. The settings and intervisibility of designated assets have been assessed from publicly accessible land.

7.2.45

This assessment deals with known and potential archaeological deposits. All identified archaeological heritage assets within 1 km of the Site have been included as they contribute to an understanding of the historic environment baseline. As set out in the methodology, Study Areas of a 3 km and 5 km radius around the Site have been used for the assessment of effects on the settings of designated assets. These Study Areas are considered suitable to enable sound conclusions to be drawn, based on the nature of the Proposed Development, the Site, and its surroundings.

7.2.46

7.2.47

The geophysical survey successfully identified a range of natural and possible archaeological features. Responses within the WAA and CAA were clear, likely reflecting the clear contrast between the soils and underlying geology in these areas of the Site. Within these responses the geophysicists were able to pick out some potential archaeological features, which provide confidence that the data is of good quality and reflects clearly the below-ground conditions. In the EAA the survey detected some anomalies of likely archaeological origin but there was also variation in data clarity which may have occurred as a consequence of agricultural

⁴¹ IEMA (2024) *Institute of Environmental Management and Assessment (IEMA) Impact Assessment Guidelines: Implementing the Mitigation Hierarchy from Concept to Construction*



response/approach to land management, when compared to the land to the west and therefore may be masking archaeological signal. On balance it is considered that the geophysical survey and desk-based assessment undertaken to inform this assessment provide sufficient information to allow an understanding of the impact of the proposal on the significance of known remains.

It is acknowledged that despite the walkover and geophysical surveys undertaken to inform this assessment, there may be further previously unrecorded subtle archaeological features within the Site or hitherto unknown buried remains.

7.2.48

7.3 Consultation and Engagement

A scoping exercise was undertaken to establish the content, approach and methods to be followed within this ES.

7.3.1

A Scoping Report (Appendix 2.1) was submitted to Planning and Environment Decisions Wales (Pedw) on the 03 February 2025. The report sets out the findings of the scoping exercise and details the technical guidance, standards, best practice and criteria to be applied in the assessment to identify and evaluate the likely significant effects of the Proposed Development on ecology.

7.3.3

A Scoping Direction was received on 03 April 2025 (Appendix 2.2). The feedback received from Pedw, WCBC and stakeholders within the Scoping Direction, and the Applicant's responses are presented in Appendix 2.3. The points relating to this

7.3.4

Chapter are summarised in Table 7.6 below.

Other engagement and consultation undertaken in relation to this chapter is summarised in Table 7.6 below.

Table 7.6 – Scoping Responses

Consultee	Comment	Response
Cadw: Scoping Direction	The contents of the chapter in regard to the proposed assessment methodology are agreed.	Noted and scoping methodology followed through into this ES Chapter
Cadw: Scoping Direction	The Historic Environment (Wales) Act 2023 was enacted on the 4 November 2024. This has replaced The Ancient Monuments and Archaeological Areas Act 1979; The Historic Environment (Wales) Act 2016 and The Planning (Listed Building and Conservation Areas) Act 1990.	Noted and Legislation section updated accordingly in ES Chapter and Appendix 9.6

Consultee	Comment	Response
Cadw: Scoping Direction	The Levelling Up and Regeneration Act 2023 and the Public Services (Social Value) Act, 2012 are not relevant in regard to the historic environment in Wales: However, similar provisions are made in the Well-being of Future Generations (Wales) Act 2015	Noted and Legislation section updated accordingly in ES Chapter and Appendix 9.
Cadw: Scoping direction	Note that geophysical surveys are being conducted on the site. It may be necessary for archaeological evaluations to be carried out in order to establish to verify the extent, and significance of possible archaeological features that have been identified. These evaluations would need to be carried out prior to the completion of the EIA so that their results can be incorporated into that document and the impact of the proposed development on the historic environment can be fully considered.	Geophysical survey has been completed. The results are summarised in Section 9.5 and the report is produced in full I Appendix 9.5
Heneb (via email 6 th February 2025)	Email was written in response to draft WSI submitted by AOC for review on 5 th February 2025. A request was made to updated the document with reference to the geophysical survey and NLS LiDAR. The WSI was updated and subsequently approved.	The Archaeological Desk-Based Assessment at Appendix 9.4 has been undertaken in accordance with the approved WSI.

Table 7.7 – Other Engagement Activities

Consultee	Comment	Response
Heneb	Noted that a geophysical survey has been done to inform the scope and it would be useful to see the results and archaeological interpretation included within the DBA as this will inform potential pre-determination evaluation. If the geophysical survey is in any way incomplete, then that should be addressed now at the pre-determination stage with additional survey. The WSI otherwise includes the methodology and full set of sources we would normally expect to see included. With regard to the NRW lidar coverage on their online portal the pseudocolour hillshade on that link is very poor resolution, particularly when zoomed in	Geophysical survey results are included in the Archaeological Desk-Based Assessment at Appendix 9-4 and cross referenced in the ES Chapter. The geophysical survey included all accessible areas of the Site and results are included in Appendix 9-5. WSI updated to reference the National Library of Scotland DTM 1m/50m multi hillshade layer and this has been used in undertaking the assessment

	<p>where it becomes pixellated. It would be better to use the National Library of Scotland DTM 1m/50m multi hillshade layer</p> <p>WSI subsequently approved</p>	
Cadw	<p>Agree that the impact of the Proposed Development on the settings of the historic assets should be assessed using the methodology given in “The Setting of Historic Assets in Wales”.</p> <p>We would expect a search zone of 5 km around the development area to be used for a stage 1 assessment of all designated historic assets (these include all scheduled monuments, registered historic parks and gardens, registered historic landscapes and listed buildings of any grade). The results of this stage 1 assessment should identify those designated historic assets that will require more detailed assessments to be produced. We would expect the results of the stage 1 assessment to be included as an appendix to the DBA to show that the setting of all designated historic assets have been considered in the study.</p>	<p>All designated assets within 5 km of the Proposed Development were initially identified for assessment as outlined in Appendix 9-4. A ZTV and assessment of relative sensitivity were used to identify those carried forward for full assessment.</p>
Cadw (email correspondence 27 th March 2025).	<p>Email was written in response to draft Geophysical Survey report submitted by AOC for review on 25th March 2025 and noted that the proposed programme of archaeological works which would initially constitute a targeted trial trench evaluation targeting the identified geophysical anomalies (possible enclosure, ring ditch and rectilinear features) to ascertain if they are archaeological in nature would be appropriate. Section 6.1.26 of Planning Policy Wales clearly explains that “<i>Where archaeological remains are known to exist or there is a potential for them to survive, an application should be accompanied by sufficient information, through desk-based assessment and/or field evaluation, to allow a full understanding of the impact of the proposal on the significance of the remains</i>” so Cadw would expect the archaeological evaluation work to be</p>	<p>Noted. A draft trench plan for the works and associated Written Scheme of Investigation is appended to the application at Appendix 7-7.</p> <p>In accordance with the draft Archaeology and Solar Farms: Good Practice Guide recently published by CIfA⁴² the location and quantity of trial trenches has been designed to answer specific questions from the non-intrusive geophysical work.</p>

⁴² CIfA 2025 Archaeology and Solar Farms: Good Practice Guide A toolkit for developers, archaeological advisors, consultants and contractors. Consultation Draft: Available at: [A Tool-Kit for Developers, Archaeological Advisors, Consultants and Contractors](#)



	<p>caried out prior to the submission of the application so that sufficient information to understand the archaeological resource is available and any mitigation measures can be included in the layout of the proposed development.</p>	
<p>Heneb (via email 25th March 2025</p>	<p>Email was written in response to draft Geophysical Survey report submitted by AOC for review on 25th March 2025 and noted that they would be interested in trenches across all 'Possible Archaeology' and 'Unclear Origin' anomalies as well as 'Spreads' that may have an archaeological origin. If any of the 'Historic' features also require further clarity on their origin or function these should be targeted too. Apparently blank areas between anomalies should also be tested to ascertain whether the geophysics is missing features in these areas and a normal sample rate of 2% minimum may be appropriate. Requested that a trench location plan WSI be issued for approval.</p> <p>Confirmed that all evaluation trenching will need to be done and reported on at the pre-determination stage in accordance with the assessment advice in TAN 24 (May 2017) and Planning Policy Wales (Edn 12, Feb 2024 6.1.26). Some areas may be required to be excluded from the final layout to preserve important archaeology and discussions about this can only happen at the pre-determination stage.</p>	<p>Noted. A draft trench plan for the works and associated Written Scheme of Investigation is appended to the application (see Appendix 7-7).</p> <p>In accordance with the draft Archaeology and Solar Farms: Good Practice Guide recently published by ClfA⁴³ the location and quantity of trial trenches has been designed to answer specific questions from the non-intrusive geophysical work.</p>

7.4.1

7.4 Baseline

This section sets out the salient findings of a detailed synthesis of information obtained from the consulted sources listed in Section 7.3, along with a walkover and geophysical survey of the Site. This has been undertaken to identify any known heritage assets and to understand the character and context of the archaeological resource and historic environment of the Site and its surroundings. The findings are provided in full in **Appendix 7.4** Archaeological Desk-Based Assessment and

⁴³ ClfA 2025 Archaeology and Solar Farms: Good Practice Guide A toolkit for developers, archaeological advisors, consultants and contractors. Consultation Draft: Available at: [A Tool-Kit for Developers, Archaeological Advisors, Consultants and Contractors](#)



Appendix 7.5 Geophysical Survey report and have been used to identify sensitive receptors that may require further evaluation.

The following text is accompanied by **Appendix 7.4** and Figures 7.1 to 7.22. Each heritage asset or previous archaeological investigation referred to in the text has been assigned an 'Asset/Event No.' unique to this assessment (as plotted on the accompanying figures); the appended Gazetteer of Heritage Assets (**Appendix 7.1**) contains further information on individual assets.

7.4.2

Prehistoric (500,000 BC-AD 43)

The earliest prehistoric activity recorded within the Study Area in the HER dates to the Neolithic period and is represented by a stone hand axe (Asset 378) found 92m to the southwest of the WAA. Vertical aerial photography taken in 2006 revealed cropmark evidence of two roughly parallel ditches hypothesised to represent the ditches of a potential cursus monument south of the Site⁴⁴. However, the cropmarks were subsequently investigated through which did not identify any ditched features which could be associated with a possible cursus⁴⁵.

7.4.3

The Bronze Age period is well represented within the 5 km Study Area, with 11 Scheduled Monuments dating to this period. These include nine round barrows (Assets 4, 11, 17, 20, 33, 39, 40, 54, and 55), and two round cairns (Assets 10 and 16).

7.4.4

7.4.5

The HER also records several enclosures identified as cropmarks in the Royston area (Assets 647-650), southeast of the EAA, and a findspot, located southwest of the WAA, comprising a blade fragment of a late Bronze Age small, socketed axe (Asset 654).

7.4.6

Geophysical survey within the EAA (**Appendix 7.5**) revealed a possible ring ditch (Asset 809) with a diameter of around 15m, suggesting it is funerary in nature rather than settlement. The feature remains undated but its size and form are consistent with ring ditches elsewhere in the study area (see above). A range of linear and

⁴⁴ Jones, N. W., 2009. *Potential Cursus Monuments in Mid and North-east Wales. Geophysical Survey and Excavation 2008-09. CPAT Report No. 981.*

⁴⁵ Grant I 2011 *A Potential Cursus at Gerwyn Fechan, near Wrexham Trial Excavation 2011. CPAT Report No 1081* Available at: <https://walesher1974.org/herumd.php?group=CPAT&level=3&docid=301365261> [Accessed 04/03/2025]

curvilinear anomalies of uncertain date and form that are also possibly of archaeological interest were found in close association with the possible ring ditch.

Roman (AD 43-410)

The only known evidence for Roman activity within the 1 km Study Area is in the form of 11 findspots recorded within the HER. The finds are suggestive of a Roman site in the near locality.

7.4.7 *Medieval (AD410-1540)*

Offa's Dyke (Asset 536) and Wat's Dyke (Asset 694) together form the largest archaeological monument complex in Britain⁴⁶. Offa's Dyke is widely considered to be an eighth-century work associated with Offa, King of Mercia (AD 757–796)⁴⁷. Wat's Dyke has traditionally been dated by analogy to roughly the same period; with excavations at Gobowen indicating that Wat's Dyke was contemporary with, or later than, Offa's Dyke⁴⁸. However, recent arguments⁴⁹ have suggested that although early 9th century in date, Wat's Dyke may have partly enshrined an earlier boundary from the 7th century AD.

7.4.8

7.4.9 The line of Wat's Dyke (Asset 694) crosses the Site, running north-south across the connection route east of the WAA. Sections of this monument are Scheduled, including the section extending from Middle Sontley to Black Brook Bridge (Asset 35), which extends c. 4m into the Site boundary on the northern side of the connection route. The HER records Wat's Dyke through several sections, each section has been individually Scheduled (Assets 2, 3, 5, 25, 26, 35, 42, and 53), additionally there are three non-designated HER entries relating to linear earthworks associated with Wat's Dyke (Assets 694, 696, and 697) and the supposed site of a beacon (Asset 695), apparently associated with the dyke⁵⁰.

⁴⁶ Hill, D 2020 *Offa's and Wat's Dykes. Offa's Dyke Journal volume 2 2020*

⁴⁷ Hill, D. and M. Worthington. 2003. *Offa's Dyke: History and Guide*. Stroud: Tempus.

⁴⁸ Malim, T. and L. Hayes. 2008. *The date and nature of Wat's Dyke: a reassessment in the light of recent investigations at Gobowen, Shropshire*, in S. Crawford and H. Hamerow (eds) *Anglo-Saxon Studies in Archaeology and History 15: 147–79*. Oxford: Oxbow

⁴⁹ Malim, T. 2020. *Wat's Dyke and its relationship to Old Oswestry hillfort*, in T. Malim and G. Nash (eds) *Old Oswestry Hillfort and its Landscape: 145–158*. Oxford: Archaeopress.

⁵⁰ Brown, Hannah., 2024. *Butterfly Solar Farm, Land to the North of the B5426, Wrexham: Environmental Impact Assessment Scoping Report* [Accessed 13/08/2024].

7.4.10 The line of Offa's Dyke (Asset 536) also crosses the Site, running north-south across the western end of the connection route. This earthwork is considered to be early medieval and survives as a substantial bank and ditch along much of its length. No surface remains of the dyke are recorded within the Site itself, although the Pentre-Bychan Hall Section, extending 540m south from Bron-Wylfa (Asset 9) is Scheduled and extends to within c. 9m of the Site boundary. The HER records Offa's Dyke through several sections, each section has been Individually Scheduled (Assets 9, 12-14, 22-24, 28-31, 34, 44-46, and 50-52). The HER also records eight non-designated assets which relate to the linear earthwork of Offa's Dyke (Assets 536-543), and several Saxon coins (Asset 577) which were recovered from the dyke in 1821 when part of the feature was levelled, located c. 165m north of the WAA.

7.4.11 Geophysical survey within land parcel W2 within the WAA revealed an oval enclosure with internal features (Asset 805) on a local high spur overlooking Black Brook and the course of Wat's Dyke to the east of the survey area. North and west of this probable enclosure linear anomalies were identified which are consistent with boundaries or field systems of undetermined date. Their relationship to the enclosure is unclear and ultimately these features remain undated but the clear visible relationship with Wat's Dyke raises the possibility that they are of medieval origin.

7.4.12 The pattern of rural settlement around the Site is primarily characterised by dispersed farmsteads with few nucleated medieval settlements; villages tend to mostly be post-medieval and linear in form⁵¹. A possible Deserted Rural Settlement site is recorded through aerial photography located c.380m north of the CAA (Asset 545).

7.4.13 Further evidence of medieval settlement in the 1 km Study Area is most notably represented by a concentration of moated sites. These include the remains of a motte and ditch at Cadwgan Hall Mound (Asset 8; DE131), Erddig Mound & Bailey Castle (Asset 19; DE017), and a moated Site near Groesfoel Farm (Asset 32)., Additional evidence of settlement within the 1 km Study Area include a possible moat (Asset 524), Plassey moated residence (Asset 604), Bersham Grange (Asset 275), representing the possible site of the grange of Valle Crucis abbey, and Cadwgan Hall

⁵¹ Dyfed Archaeology, 2004. *Historic Landscapes: Events that have helped shaped the Historic Landscape of Carmarthenshire*. Available at: <https://dyfedarchaeology.org.uk/HLC/theme.htm> [Accessed 13/08/2024]



(Asset 286), a now largely demolished 14th century interior hall. The Scheduled Medieval Bangor Bridge (Asset 41), is located southeast of the EAA.

7.4.14 The region around the Site supports a diverse range of agrarian landscapes evidencing successive episodes of land use, the creation and subsequent modification of fields, of enclosures, of boundaries, of tracks, of watercourses and of buildings⁵². Many of these landscapes are of, or at least have their origins in, the medieval era. This agrarian land use is evident within the 1 km Study Area with 15 assets relating to ridge and furrow cultivation of medieval, or likely medieval origin (Assets 271, 287, 296, 307, 312, 313, 337, 385, 589, 606, 663, 676-678, 681, and 682).

7.4.15 Additional assets recorded in the HER which relate to the medieval period include a complete cast copper alloy pedestal / pendant seal matrix (Asset 268), , three clay extraction pits (Assets 346-348) of possible medieval date, two being located within the EAA Site boundary (Assets 346 and 348), , a bell pit (Asset 619) used for the extraction of ironstone, , Rosemead pond (Asset 64), a clay pit, and a former well feature (Asset 656). Place-name evidence indicates two sites in which crosses once stood, including a field name, 'Caer Groes' (Asset 293), and a house named 'Croes Foe' (Asset 303).

7.4.16 *Post-Medieval (AD 1540-1900)*

7.4.17 There is abundant evidence for post-medieval activity across the 1 km Study Area; 344 of the heritage assets recorded in the HER are recorded as post-medieval in date. A large portion of these assets are related to the agricultural use of the landscape and further details can be found in **Appendix 7.1**.

Early pre-Ordnance Survey maps of the Site tend to be schematic and lacking in detail, although they do give some idea of the nature of settlement in the surrounding area. An extract from Blaeu's 1644 map (Figure 9.5) shows the approximate location of the Site, Wrexham is shown as an enclosed settlement with smaller satellite settlements to the south such as 'Bers', now Bersham located to the northwest of the Site, and 'Markwiell', now Marchwiel, located to the northeast of the Site. Later maps

⁵² Silvester, Bob., 2003. *A Research Framework for the Archaeology of Wales East and Northeast Wales – Medieval* [Accessed 13/08/2024].



produced between the late 17th and early 19th centuries show a similar level of detail of the Site and surrounding landscape.

The Tithe map of 1840 (Figure 7.6) and its accompanying records (see **Appendix 7.4**); indicate that the WAA was largely occupied by mixed agricultural land, composed of arable and pastureland in the mid-19th century.

7.4.18 Several of the placenames recorded in the tithe apportionments may indicate the location of possible features such as 'Level Pit Field' (Field 219; WAA) which may indicate the presence of a pit. Within the CAA Field 623 is named 'Well Field', and
7.4.19 Field 605 is named 'Kiln Field', although there is no indication of these features on subsequent OS maps.

7.4.20 The Ordnance Survey (OS) maps of the late 19th century show the Site and surrounding landscape in more detail. The southwest extent of the WAA (Figure 7.9) shows the field boundaries lined with trees and a large pond feature (Asset 789). The 1879 OS map shows little change to the field parcels which cover the CAA (Figure 7.10), except one field boundary which has been removed from land adjacent to the 'The Groves' farm buildings (Asset 671) are shown to the northwest of the area. An area of plantation located centrally within the CAA is shown to extend partially within the Site. Across the CAA 15 pond features are also depicted (Assets 790-804). Ponds are also well represented in the HER across the 1 km Study Area with 154 entries (Assets 311, 376, 377, 400-520, 532, 533, 548-573, 657 and 658), additionally there
7.4.21 are two fishponds (Assets 278 and 582), and a millpond (Asset 321).

7.4.22 The 1879 OS map shows little change within the EAA (Figure 7.11).

The area around the Site is defined by its fieldscapes, and dispersed farms of medieval and later origin which are set within an irregular field system with ancient and more recent hedged boundaries. The area is dominated by a larger number of small farm complexes and minor country houses of late medieval or post medieval date (LANDMAP 2017), and this is reflected in the HER as both the designated and non-designated assets reflect the agricultural nature of the region, with nine farmsteads (Assets 294, 375, 640, 652, 665, 679, 683, 686, and 687), 61 farm buildings/houses (Assets 69, 72, 87, 99, 110, 121, 156, 204, 207, 214, 270, 281-83, 289, 291, 297, 298, 306, 315, 319, 336-339, 341, 343, 345, 350, 352, 354, 363, 366, 367, 383, 398, 399, 523, 530, 534, 544, 578, 585, 587-92, 623-25, 645, 646, 662, 664, 668, 671, 673, 680, 684, and 699-701), five barns (Assets 118, 153, 157, 706



and 707), two areas of ridge and furrow (Assets 301 and 380), two field systems (Asset 35 and 666), a stable courtyard range (Asset 73), and two orchards (Assets 295 and 547). While representative of the ground conditions in a very small proportion of the overall Site it is notable that archaeological excavation undertaken in 2011 within land parcel E3 recorded successive ploughsoils from the post-medieval period to the present day and noted that the '*almost complete lack of ceramic artefacts within these deposits may suggest long periods of continual pasture or unmanured arable*'⁵³

7.4.23 Industrial activity recorded in the HER and within the 1 km Study Area includes four blacksmith workshops (Assets 302, 379, 660, 667, and 698), seven brickworks (Assets 280, 340, 358, 365, 395, 396, and 620), a lime kiln (Asset 292), two corn mills (Assets 320 and 388), a paper mill (Asset 322), Ponciau Ironworks (Asset 617) and associated furnace (Asset 616), Ruabon Furnace (Asset 691), two marl clay pits (Assets 309 and 674), Sontley Mill (Asset 659), and two well features (Assets 672 and 688).

7.4.24 Overall, the historic maps and HER data show that the Site remained in agricultural use throughout the post-medieval period.

Modern (AD 1900-present day)

7.4.25 The maps of the 20th century (Figures 7.12-7.17) show very little change within the
7.4.26 Site.

7.4.27 An aircraft crash site (Asset 626), is located within land parcel E4 the EAA. Archaeological remains associated with the loss of this aircraft are not confirmed as present at this location and no evidence was visible during the walkover survey. However remains may be present in the vicinity. The remains of this aircraft are designated as a Controlled Site under the Protection of Military Remains Act 1986. The Act makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft without a licence.

There are 22 modern heritage assets recorded within the 1 km Study Area. These include GWR Rhos Branch railway (Asset 349), two churches (Assets 630 and 632),

⁵³ Grant I 2011 A Potential Cursus at Gerwyn Fechan, near Wrexham Trial Excavation 2011. CPAT Report No 1081 Available at: <https://walesher1974.org/herumd.php?group=CPAT&level=3&docid=301365261> [Accessed 04/03/2025]

a quarry (Asset 364), a water tower (Asset 394), Ponciau Banks park (Asset 613), and 11 clay pits (Assets 586, 593-603). Four Assets relate to WWI and WWII and include three War Memorials (Asset 277, Asset 637 and Asset 382), and an air raid shelter (Asset 586).

Walkover Survey

7.4.28 A walkover survey of the Site was undertaken from the 17th to the 21st of February 2025. The weather throughout the walkover was overcast with periods of rain but overall good visibility. All of the non-designated assets recorded within the array area and any potential features noted from LiDAR and aerial photographic assessment were visited and the area photographed. The survey revealed that a large number of the previously recorded assets had no visible evidence of their presence or former presence above ground. Where non-designated assets were visible, they are noted and will be discussed below. For ease of cross-reference the land parcel numbers referred to below correspond with those assigned during the Archaeological Geophysical Survey (**Appendix 7.5**)

Western Array Area

7.4.29 The WAA comprises seven land parcels (W1-W7), all of which are bounded by a combination of trees and/or hedgerow and were all grass covered at the time of the visit. The southern most parcel (W7) is the largest in the WAA, a previously unrecorded pond feature was noted in its boundary. At the southeast corner of parcel W7 (where a cable route will enter WAA) it is possible to observe part of Wat's Dyke (Asset 35), located to the east of the area (**Appendix 7.3**; Plate 11).

7.4.30 Running centrally across the WAA are three smaller parcels (W4-W6) set on a south facing slope. Ridge and furrow, aligned northwest-southeast, was observed within parcel W5 (**Appendix 7.3**; Plate 12), and this is also visible on LiDAR imagery (Figure 7.21). Manhole covers were observed within of land parcel W5 and W6 and are indicative of below ground utilities and/or services.

7.4.31 A bog or water-retained area is located centrally within the W2 (**Appendix 7.3**; Plate 13) and corresponds with a depression visible on LiDAR and an area of wet ground visible on satellite imagery. A small band of trees extends only a few meters at right angles from the main east-west boundaries (**Appendix 7.3**; Plate 14), marking the northern and southern extents of parcel W2. This suggests that a former north-south



boundary may have run through this area. Ridge and furrow features were observed, towards the eastern area of land parcel W2 (**Appendix 7.3**; Plate 15; Figure 7.21). A manhole cover was recorded near the northern edge of W2 indicating the presence of below ground services within this land parcel. Two waterlogged areas were noted in the southeast and southwest corners of the land parcel W1 (Plate 16), along with a manhole cover near the eastern edge and pylons running across the field.

Central Array Area

7.4.32 The CAA comprises 16 land parcels (C1-C16), all of which are bounded by a combination of trees and/or hedgerow. Land parcels C1-C3 define the southwestern extent of the CAA and were under grass at the time of the survey. A line of telegraph poles crosses C1-C3 on a northeast-southwest alignment. Land parcel C3 has a southeast facing downward slope and a pond feature (Asset 791; **Appendix 7.3**; Plate 17) was observed towards its western edge. Land Parcels C1 and C2 are aligned roughly north south. A newly excavated irrigation ditch was observed within C2, and a depression in the ground was observed towards the north end of C1, which appeared to be natural in origin (Appendix 9-5; Plate 18).

7.4.33 The southern portion of the CAA consists of six parcels (C11-C16), four of which were in arable use and two were grass-covered at the time of the visit. The Grade II Listed Buildings of The Groves (Asset 79) and Former House at The Groves (Asset 208) were observed from five of these parcels, with only land parcel C16 having
7.4.34 visibility obstructed by a southeast-facing downward slope.

Land parcel C15 is undulating, with a large depression noted towards the northern end (Appendix 9-5; Plate 19). A further depression was recorded towards the southern end of land parcel C16 (**Appendix 7.3**; Plate 20); in both cases these depressions appear to be natural features and do not accord with features recorded from historic maps and thus have not been assigned an asset number. The eastern boundary of the land parcel C16 is demarcated by a wooded area and was wet underfoot and waterlogged in places. Land parcel C13 is bordered on the northern edge by a trackway which runs parallel to an area of woodland. On satellite imagery, this area appears densely wooded, but a large portion had been cleared by the time of the visit, allowing for wider visibility of The Groves assets (Assets 79 and 208 (**Appendix 7.3**; Plate 21)). The ground in land parcel C14 rises towards the centre, allowing for views of Assets 78 and 208, albeit with only the upper portions of the



buildings visible. Land parcel C14 parcel is bordered by woodlands to the north and south, and a golf course is visible just beyond the eastern boundary. Land parcel C11 has a southeastern slope from where the chimney of Asset 79 can be seen (**Appendix 7.3**; Plate 22). The northwest edge of land parcel C11 is afforded open views across the landscape to the southeast.

7.4.35 The northern portion of the CAA consists of six parcels (C5-C10), four of which were in arable use and two of which were grass-covered at the time of the visit. The Grove, Asset 79 was partially visible through trees on the western boundary land parcel C10. Land parcel C9, immediately to the north, has an east-facing slope which is afforded open views of the landscape to the east and northeast. Asset 79 is also partially visible from the western edge of land parcel C9. Land parcel C7 features a sharp rise from its southwestern entry point, but the land drops to the east providing clear views in that direction. Land parcels C8 and C9 have east-facing slopes whereas land parcel C6 slopes to the northeast, west, and south, with the highest point located centrally. From the high point within land parcel C6, there are clear views of The Grove Assets (Assets 79 and 208 (**Appendix 7.3**; Plate 23)).

7.4.36 Land parcel C5 was grass covered at the time of the site visit and is relatively level, although some undulations were observed towards the centre of the field. Standing at the southern portion of land parcel C5 the upper elements of Assets 79 and 208 could be viewed (**Appendix 7.3**; Plate 24), the southern portions being obscured by a hedgerow. The assets become screened when moving to the north of land parcel C5 as intervening outbuildings partially obscure the view. A line of telegraph poles runs across the south of land parcel C5.

7.4.37

Eastern Array Area

7.4.38 The EAA comprises six land parcels (E1-E6), all of which were in agricultural use at the time of the visit. All of the land parcels are bounded by a combination of trees, hedgerow, and/or a fence line, with a thin band of woodland separating land parcels E2 and E3.

Land parcel E6 has a south-westerly facing slope, becoming steeper towards the northwest corner. A drainage ditch was observed along the southern boundary, pylons run across the land parcel on an east-west alignment, and a line of telegraph poles run along the eastern boundary. From the northeast corner of land parcel E6 there are open views to the southwest (**Appendix 7.3**; Plate 25), although low cloud



obscured any potential intervisibility with designated assets. Towards the northwest corner a large animal burrow was recorded within the Site boundary (**Appendix 7.3**; Plate 26).

7.4.39

Land parcel E5 forms part of the northeastern extent of the EAA. The southern section of the field is on south-facing land, which gradually slopes to the north as it reaches the northern edge. Bangor-On-Dee racecourse is clearly visible, and there may be some visibility with Asset 88 (Appendix 9-5; Plate 27). Views to the southeast are also relatively unobstructed, with the spire of the Parish Church of Saint Dunawd in view, located within the Bangor-is-y-Coed Conservation Area (Asset 58; **Appendix 7-3**; Plate 28). These views are also accessible from land parcel E4, which is relatively flat, though the land rises toward its northwest corner. Pylons run across land parcel E4 in an east-west direction. A large spoil heap was observed in the southwest corner of land parcel E4, and a sizable machine-dug ditch had recently been created along the northern boundary, presumably for irrigation purposes. Land parcel E3 is located in the centre of the EAA and is formed of a long, relatively narrow field oriented roughly north-south, bordered on the west by a mature narrow belt of woodland which contains two ponds (Assets 348 and 461). From the southern part of land parcel E3, the spire of the Parish Church of Saint Dunawd is visible. Land parcel E2 has a south-facing slope, which allows for open views across the landscape to the south. Two ponds (Assets 346 and 460), defined by a tree line, are located in the northern part of land parcel E2. Land parcel E1 forms the northern limit of the EAA and was observed to be largely flat and featureless excepting a line of telegraph poles running north-south along its eastern edge.

7.4.40

Geophysical Survey

AOC Archaeology carried out a geophysical survey between July and November 2024 (see **Appendix 7.5**). The survey was commenced on 5th July 2024 for a period of two weeks in the western and central survey blocks. Work in the eastern survey block commenced on 29th October 2024 and was completed on 27th November 2024. The planned survey area was 136ha, of which 134.74 ha was completed, c.1.3ha was unsuitable for survey due to ground conditions. The 1.3ha that could not be surveyed were areas where ground conditions at the time of survey meant work could not be safely completed due to deep mud, standing water and tractor ruts.



7.4.41 The geology of the survey area has produced strong anomalies in response to human activity, as evidenced by the strong anomalies related to ploughing in the western part of the survey area. This tendency combined with noise related to green waste in the central and eastern parts of the survey area has reduced confidence in the interpretation of the data as it is likely that weaker anomalies have been masked by these stronger enhancements. However, as the survey has successfully identified anomalies of archaeological interest in all three survey blocks, as well as known features attested on historic maps, it is unlikely that substantial archaeological remains have gone undetected by the surveys.

7.4.42 In the WAA a probable oval enclosure of roughly 95m by 75m (Asset 805) has been identified on a spur of higher ground overlooking Black Brook and the course of Wat's Dyke, which pass this survey block to the east. Anomalies interpreted as possible field systems or further enclosures have been identified to the north and west of this feature. There are also potential internal features within the hilltop enclosure.

7.4.43 In the CAA, there are isolated linear anomalies interpreted as possible portions of boundaries or enclosures of uncertain date.

7.4.44 In the EAA, a possible ring ditch (Asset 809) has been identified with a diameter of around 15m, suggesting it is funerary in nature rather than settlement. There are linear and curvilinear anomalies of uncertain date and form that are also possibly of archaeological interest in close association with this anomaly.

7.4.45
7.4.46 Historical features such as former boundaries and tracks have also been identified in all three survey blocks, and in the central and eastern areas there are a high number of former ponds as also identified by the walkover survey and historic map regression exercise and likely to be related to marl pits, throughout the survey area. Ridge and furrow cultivation marks are also present in all three areas, but especially prominent in the WAA; this is likely to be a result of differential survival due to differences in subsequent land use, rather than a reflection of the actual distribution of medieval arable fields.

Generally speaking, the results are consistent with the known archaeological background of the area which suggests little in the way of prehistoric activity (though the ring ditch, if actually present, is likely prehistoric in date), with the area coming into agricultural use in the medieval period, continuing to the present day, albeit with different uses of the enclosed land over time. The presence of the hilltop enclosure



overlooking the Wat's Dyke boundary work hints that this feature may date to the early medieval period, but this is not possible to ascertain solely on the geophysical data.

LiDAR and Aerial Photography

7.4.47 A search of the online aerial photographs held by the Britain from Above website, the National Collection of Aerial Photography (NCAP) website and the Cambridge Collection of Aerial Photography (CUCAP) website was undertaken on the 20th of August 2024, no aerial photographs were observed that covered the Site. The RCAHMW Archives were also commissioned to search for any available aerial photographs of the Site and digital copies of photographs were received in April 2025. APU Welsh Government Aerial Photography dating from 1969 and 2013 show the Site to be in use variously as arable and pasture with field boundaries largely unchanged from the configuration observed during the walkover survey.

7.4.48 Satellite imagery of the Site shows the area as it appears in the first quarter of the 21st century (Figures 9.18-20). Google Earth Pro imagery from 2006 to shows an area which looks like a large pond, or an area of waterlogging located centrally within the WAA, the outline of which can still be seen in 2021 and was also observed during the walkover survey.. The CAA is shown as a mixture of arable and agricultural use with areas of ridge and furrow, and at least four of the pond features identified through historic mapping can still be seen, marked by pockets of trees. There are no changes in the EAA from the 1957 OS map.

7.4.49 LiDAR data from natural resources Wales (Figures 7.21-7.23) for the Site is patchy and does not extend across the whole area. The quality of the LiDAR is also grainy. LiDAR data was accordingly also assessed from NLS. The LiDAR data shows a range of natural topographical anomalies and areas of ridge and furrow. An oval anomaly (Asset 805) (Figure 7.21) visible as a large sunken depression with ridge and furrow features traversing across the feature on a north-south orientation accords with a feature identified on geophysical survey and a curvilinear feature (Figure 7.22) accords with (Asset 808) identified during geophysical survey. No other potential features identified from the geophysical survey can be identified from the LiDAR data. Although it should be noted that the LIDAR imagery does not cover the area of Asset 809, located towards the north extent of the EAA.



Future Baseline

7.4.50 Without the Proposed Development the archaeological baseline would be stable and the condition of any buried remains unlikely to substantially change. It is recognised that for above ground heritage assets, there may be some decay over time in the absence of the Proposed Development as they near the natural end of their design lifespan. The setting of designated heritage assets is also unlikely to substantially change. It is recognised that there may be other future developments that may occur within the Study Areas that could have the potential to alter the setting of assets; however, the potential impacts of any such future development cannot be predicted or assessed fully where details are not currently available. Where details of future developments are known these will be assessed as part of the cumulative baseline in the cumulative effects assessment.

7.5 Initial Development Design and Impact Avoidance/Reduction Measures

7.5.1 General design measures to avoid or minimise the potential for significant effects are described in **ES Chapter 4.0 (Scheme Description)**.

7.5.2 Initial development design and impact avoidance/reduction measures can be broken down into three types as follows:

- i) Primary Mitigation: measures which form an inherent part of the project design.
- ii) Secondary Mitigation: measures that require further activity to achieve the anticipated outcome (e.g. details provided via planning condition).
- 7.5.3 iii) Tertiary Mitigation: measures required by legislation or typical best practice.

7.5.4 Initial mitigation measures relevant to the consideration of cultural heritage impacts have included retention of all areas of Ancient Woodland which also avoided impacts upon many of the assets identified during this assessment which are identified close to areas of retained woodland and boundaries. As these mitigation measures have been embedded into the design, and are standard practices that will be implemented, the assessment of likely significant effects assumes that they are in place.

Further Mitigation, Monitoring and Enhancement

Any further mitigation identified to address the initial environmental effects of the Proposed Development are described at Section 7.10 of this chapter.



7.6 Assessment of Effects

Construction Phase

7.6.1

Construction impacts associated with the Proposed Development include construction works for the solar array, substation site tracks and other infrastructure. Other construction activities, such as vehicle movements, soil and overburden storage and landscaping also have the potential to cause direct permanent and irreversible impacts to cultural heritage assets. As such the construction of the Proposed Development has the potential to disturb, damage or destroy features or buried remains of historic environment interest.

Direct Impacts.

7.6.2

The Proposed Development avoids direct impacts on many of the known archaeological remains identified within the Site. **Table 7-8** provides a list of assets which may be subject to direct effects and summarises the expected magnitude of impact and level of effect.

Table 7-8 – Potential Receptors (Direct Impacts) within the Site Identified for Further Evaluation

Potential Receptor	Asset Number	Importance*	Summary Description	Magnitude of Impact	Predicted Level of Effect
Offa's Dyke: Pentre-Bychan Hall Section, extending 540m S from Bron-Wylfa	9	High	A stretch of Offa's Dyke, a boundary earthwork, believed to be of early medieval date. The scheduled area is within the wooded grounds of Pentreebychan Crematorium and survives as a ditch and sizeable tree covered bank.	None	None
Wat's Dyke: Section extending from Middle Sontley to Black Brook Bridge	35	High	A stretch of Wat's Dyke, an early historic boundary marker probably associated with the border of the kingdom of Mercia. For the most part, Wat's dyke consists of an earthen bank, often utilising local topography and fronted, where it survives, by a ditch to the west. The size of the	None	None

Potential Receptor	Asset Number	Importance*	Summary Description	Magnitude of Impact	Predicted Level of Effect
			surviving earthworks varies considerably, reflecting differences in preservation and probably also in the original scale of construction.		
Gerwyn-Fechan pond	346	Low	A small irregular pond in the centre of the land parcel E2 within the EAA. Located outside the footprint of physical development works and, as such, there would be no direct impact.	None	None
Gerwyn-Fechan, The Belt, pond	348	Low	A sub-rectangle pond within a belt of trees between land parcels E2 and E3 within the EAA, possibly associated with a game cover noted on the OS 6" 1964 (SJ34NE) map and other subsequent maps. Located outside the footprint of physical development works and, as such, there would be no direct impact.	None	None
Maelor Saesneg pond 344	460	Low	Pond recorded by Maelor Saesneg Historic Landscape Characterisation Project. Located outside the footprint of physical development works and, as such, there would be no direct impact.	None	None
Maelor Saesneg pond 345	461	Low	Pond recorded by Maelor Saesneg Historic Landscape Characterisation Project. Located outside the footprint of physical development works and, as such, there would be no direct impact.	None	None
Air Crash Site	626	Medium	The report compiled of the incident noted that the P-47C was assigned to the 8 AFCC, 8 Air Force, 495 Fighter Training, 522nd SEFT and stationed at AAF Station 342. Located within area of proposed solar development.	Low	Negligible

Potential Receptor	Asset Number	Importance*	Summary Description	Magnitude of Impact	Predicted Level of Effect
			<p>Archaeological remains associated with the loss of this aircraft are not confirmed as present at this location, but may be in the vicinity. There was no evidence for the crash observed during the walkover survey.</p> <p>The remains of this aircraft are designated as a Controlled Site under the Protection of Military Remains Act 1986. The Act makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft without a licence.</p>		
Ridge and Furrow	786	Low	<p>An area of ridge and furrow located within land parcel C2 of the CAA.</p> <p>Located within area of proposed solar development. The ridge and furrow does not show well on aerial or satellite imagery and was visible as earthwork features during the walkover survey. However subsurface remains may survive.</p>	Medium	Minor
Ridge and Furrow	787	Low	<p>An area of ridge and furrow located within land parcel C6 within the CAA.</p> <p>Located within area of proposed solar development. The ridge and furrow does not show well on aerial or satellite imagery and was visible as earthwork features during the walkover survey. However subsurface remains may survive.</p>	Medium	Minor
Cottage and Garden	788	Medium	<p>A cottage and garden identified from an 1840 Tithe map located within land parcel; C3 within the CAA.</p> <p>Located outside the footprint of physical development</p>	None	None

Potential Receptor	Asset Number	Importance*	Summary Description	Magnitude of Impact	Predicted Level of Effect
			works and, as such, there would be no direct impact.		
Pond	789	Low	<p>A pond feature identified within land parcel W2 in the WAA, depicted on an 1879 OS map.</p> <p>Located outside the footprint of physical development works and, as such, there would be no direct impact.</p>	None	None
Pond	790	Low	<p>A pond feature identified at southwest extent of the CAA, depicted on an 1879 OS map.</p> <p>Located just to the south of a proposed road, although outside the footprint of physical development works and, as such, there would be no direct impact.</p>	None	None
Pond	791	Low	<p>A pond feature identified at edge of land parcel C2 in the CAA, depicted on an 1879 OS map.</p> <p>Located outside the footprint of physical development works and, as such, there would be no direct impact.</p>	None	None
Pond	792	Low	<p>A pond feature identified at within land parcel C3 within the CAA, depicted on an 1879 OS map.</p> <p>Located within area of proposed solar development.</p> <p>Does not appear to be well preserved and no remain noted on the walkover survey but subsurface remains may survive.</p>	High	Minor
Pond	793	Low	<p>A pond feature identified within land parcel C15 in the CAA, depicted on an 1879 OS map.</p> <p>Located within area of proposed solar development.</p>	Medium	Minor

Potential Receptor	Asset Number	Importance*	Summary Description	Magnitude of Impact	Predicted Level of Effect
			Does not appear to be well preserved but subsurface remains may survive.		
Pond	794	Low	A pond feature identified at boundary between land parcels C15 and C16 in the CAA, depicted on an 1879 OS map. Located outside the footprint of physical development works and, as such, there would be no direct impact.	None	None
Pond	795	Low	A pond feature identified at boundary between land parcels C15 and C16 in the CAA, depicted on an 1879 OS map. Located outside the footprint of physical development works and, as such, there would be no direct impact.	None	None
Pond	797	Low	A pond feature identified in land parcel C14 in the CAA, depicted on an 1879 OS map. Located within area of proposed solar development. Does not appear to be well preserved but subsurface remains may survive.	Medium	Minor
Pond	798	Low	A pond feature identified in land parcel C8 of the CAA, depicted on an 1879 OS map. Located outside the footprint of physical development works and, as such, there would be no direct impact.	None	None
Pond	799	Low	A pond feature identified at the boundary of land parcel C10 of the CAA, depicted on an 1879 OS map. Located outside the footprint of physical development works and, as such, there would be no direct impact.	None	None



Potential Receptor	Asset Number	Importance*	Summary Description	Magnitude of Impact	Predicted Level of Effect
Pond	800	Low	<p>A pond feature identified at the boundary of land parcel C10 of the CAA of the CAA, depicted on an 1879 OS map.</p> <p>Located within area of a proposed road.</p> <p>Does not appear to be well preserved but subsurface remains may survive.</p>	Medium	Minor
Pond	801	Low	<p>A pond feature identified within land parcel C8 in the CAA, depicted on an 1879 OS map.</p> <p>Located within area of proposed solar development.</p> <p>Does not appear to be well preserved but subsurface remains may survive.</p>	Medium	Minor
Pond	802	Low	<p>A pond feature identified at edge of land parcel C6 in the CAA, depicted on an 1879 OS map.</p> <p>Located outside the footprint of physical development works and, as such, there would be no direct impact.</p>	None	None
Pond	803	Low	<p>A pond feature identified in land parcel C6 the CAA, depicted on an 1879 OS map.</p> <p>Located within area of proposed solar development.</p> <p>Does not appear to be well preserved but subsurface remains may survive.</p>	Medium	Minor
Pond	804	Low	<p>A pond feature identified on the western boundary of land parcel C6 in the CAA, depicted on an 1879 OS map.</p> <p>Located outside the footprint of physical development works and, as such, there would be no direct impact.</p>	None	None

Potential Receptor	Asset Number	Importance*	Summary Description	Magnitude of Impact	Predicted Level of Effect
Hafod	805	Unknown, potentially High	<p>Geophysical survey undertaken by AOC Archaeology Group in 2024 detected a probable oval enclosure measuring roughly 95m by 75m on a spur of higher ground overlooking Black Brook and the course of Wat's Dyke.</p> <p>Located within land parcel W2 within the WAA. There may be potential impact on this asset depending on the depth of works in this area.</p>	Medium	Moderate
Hafod	806	Unknown, potentially Medium	<p>Geophysical survey undertaken in by AOC Archaeology Group in 2024 detected a strongly positive linear anomaly running east-west that makes a right-angled turn to the south out of land parcel W4. This is characteristic of a boundary or sub-enclosure but does not match those depicted on available maps and so may predate them.</p> <p>Located within area of a proposed road within the WAA. There may be potential impact on this asset depending on the depth of works in this area.</p>	Medium	Minor
The Graves	807	Unknown, potentially High	<p>Geophysical survey undertaken by AOC Archaeology Group in 2024 detected a group of strong linear positive trends in land parcel C4, that form a small rectangular anomaly which appears to continue beyond the survey margin. This is interpreted as a possible enclosure or similar feature of uncertain date, with extensions to the north possible</p> <p>Located within area of proposed solar development within the WAA, albeit on the</p>	Medium	Moderate

Potential Receptor	Asset Number	Importance*	Summary Description	Magnitude of Impact	Predicted Level of Effect
			edge of the array. There may be potential impact on this asset depending on the depth of works in this area.		
Yorke's Dingle	808	Unknown, potentially Medium	<p>Geophysical survey undertaken by AOC Archaeology Group in 2024 detected are a pair of orthogonal positive linear anomalies characteristic of ditches of some sort within land parcel C8. This pair, occur in relative isolation so it is not possible to suggest a further date or function for them, but they appear to be boundary ditches of some sort. A curvilinear positive anomaly to their west may relate to the boundary or may be a separate feature.</p> <p>Located within area of proposed solar development within the WAA. There may be potential impact on this asset depending on the depth of works in this area.</p>	Medium	Minor
Kiln Lane	809	Unknown, potentially High	<p>Geophysical survey undertaken by AOC Archaeology Group in 2024 detected a circular anomaly in land parcel E1 consisting of intermittent strongly positive discrete anomalies. This overall has the morphology of a ring ditch of approximately 15m in diameter.</p> <p>Located within area of proposed solar development within the WAA. There may be potential impact on this asset depending on the depth of works in this area.</p>	Medium	Moderate

7.6.1

The Proposed Development would not directly impact upon many of the identified heritage assets within its extent due to the assets being located outside of the proposed footprint of the Proposed Development.



7.6.2 Potential moderate and significant effects have been predicted on three features identified during geophysical survey undertaken by AOC in 2024. These features comprise the remains of a probable oval enclosure (Asset 805) in land parcel W2, linear features (Asset 807) in land parcel C4 and a possible ring ditch (Asset 809) in land parcel E1. The date and importance of these features is currently unknown but they are recognised as potentially of High importance as their morphology suggest that they may be prehistoric in origin and have the potential to preserve evidence relating to past settlement and/or land management within the Site. The identified potential moderate effect is significant in EIA terms.

7.6.3 Minor and not significant effects have been predicted on two further features (Assets 806 and 808) identified from geophysical survey. These features are also undated but have the morphology of boundary features and may relate to past management of land within the Site and thus are judged to be of potential medium importance. A minor effect has also been predicted upon two ridge and furrow areas (Asset 786 and 787), five ponds (792, 793, 797, 800, and 803). These assets are either located with an array area or proposed road area. The piling and internal cabling required for the solar arrays is predicted to have a medium magnitude of impact on these assets, depending on depths

7.6.4 A potential negligible and not significant adverse effect has been predicted upon the sub surface remains of an Air Crash Site (Asset 626). The remains of this aircraft are designated as a Controlled Site under the Protection of Military Remains Act 1986.

7.6.5 The Act makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft without a licence.

No impacts are predicted on the Scheduled Asset 35 (Section 35 of Wat's Dyke) or Asset 34 (Section 9 of Offa's Dyke). However, it is noted that the proposed cable routes pass in very close proximity to the boundary of these monuments. It is assumed that any groundbreaking works required for the cable would be within the existing road corridor and would thus not impact the scheduled remains. If any works extend outside of this corridor. Scheduled Monuments are afforded statutory protection under the provisions of the Ancient Monuments and Archaeological Areas Act 1979, and any works within the boundary of the Scheduled Monument would require Scheduled Monument Consent (SMC) from Cadw.

Indirect impacts

7.6.6 The Proposed Development would not result in any indirect effects on known heritage assets within the Site. The potential for indirect effects upon hitherto unknown buried archaeological remains is considered to be limited to the potential effects of any changes to the ground conditions within the Site which might be caused by the Proposed Development that could affect the preservation of any preserved organic deposits. As noted within **Appendix 7.4** the deposits underlying the Site are silty clays and sands derived from underlying Devensian till and are not conducive to the preservation of organic remains and as such the Proposed Development is not anticipated to indirectly effect the potential for survival of hitherto unknown archaeological remains beyond the Proposed Development footprint.

Setting Impacts

7.6.7 Whilst there is some limited potential for impacts upon the setting of designated heritage assets to occur during the construction phase, any such effects would be temporary and this assessment has found that there would be no or neutral effects upon the settings of the majority of designated heritage assets during the Construction Phase (see **Appendix 7.2**). This is typically due to the fact that the construction traffic would not pass by in the immediate vicinity of the assets and that, largely due to intervening distance and other busy roads, there would not be any potential for noise or visual impacts such that the ability to understand, appreciate or experience the contribution that the asset's setting makes to its overall cultural significance would be damaged.

7.6.8

Temporary minor effects have been predicted upon the settings of the following assets during the Construction Phase (see **Appendix 7.2**):

- 7.6.9
- i) The Scheduled Monument of Offa's Dyke (Asset 9);
 - ii) The Scheduled Monument of Wat's Dyke (Asset 3 and 35); and
 - iii) The Grade II Listed Buildings of The Groves (Asset 79) and Former House at The Groves (Asset 208).

A temporary negligible effect has been identified the settings of the following assets during the Construction Phase (see **Appendix 7.2**)

- i) The Grade II Listed Buildings of Hafod House (Asset 76) and Hafod House Farmhouse (Asset 77);



7.6.10 The Grade II Listed Buildings of Hafod House (Asset 76) and Hafod House Farmhouse (Asset 77) are located approximately 250m west of the WAA and it is not anticipated that any of the construction traffic would pass these Listed Building and at the distances involved it is not anticipated that there would be any potential for noise from the construction of the solar array. However the buildings are located to the immediate east of the proposed cable route which runs along Hafod Road. Therefore, it is considered that there may be a temporary increase in traffic, noise and potentially visible construction works which could temporarily detract from the setting of the assets during the cable route construction. The magnitude of impact here is assessed as being temporary and Low with the overall effect being Negligible.

7.6.11 Where this assessment has predicted temporary minor and negligible effects upon the settings of heritage assets during the Construction Phase (see **Appendix 7.2**) it is acknowledged that the construction works may introduce a temporary change (via traffic, visual or noise impact) that, although noticeable, would not materially affect any elements of these assets' settings which are considered to make a contribution to their cultural value. These levels of effect are not significant in EIA terms and will not result in harm. There is, therefore, no mitigation recommended in relation to these temporary levels of effect.

Operational Phase

7.6.12 *Direct Effects: Archaeological Remains*

7.6.13 Once operational, it is predicted that the Proposed Development would not require any below ground works beyond occasional maintenance of the solar panels and other infrastructure within the previously impacted footprint. Therefore, no additional direct effects are predicted. Potential operational phase effects include effects upon the settings or character of designated assets such as Listed Buildings, Scheduled Monuments, Conservation Areas, RHLs and RHPGs (note there are no World Heritage Sites located within the study areas).

Impacts on setting

Where accessible, site visits were undertaken for designated and non-designated heritage assets which the ZTV suggested would have intervisibility with the Proposed Development. Consideration was also given to designated assets located outside of the ZTV, where key views towards these assets would include the Proposed

Development. Heritage assets which had no potential intervisibility with the Proposed Development or did not include the Proposed Development within key views towards such assets, were scoped out of further assessment. The assessment has been informed by ZTV modelling, site visits and photomontages (detailed in **ES Chapter 6: Landscape and Visual Impact Assessment**) as appropriate.

7.6.14 ZTV analysis and mapping have been used to identify those assets that could potentially be affected by changes to their settings during the operational phase of the Proposed Development. The ZTV is based on a viewing height of 2 m above ground level. In addition to the ZTV, all the designated heritage assets within the 5 km study area were subject to an assessment of their key characteristics and key views.

7.6.15 The assets that have been carried forward for detailed setting assessment are presented in **Appendix 7.2 Setting Assessment**. The detailed assessment includes a brief review of the contextual characteristics of each asset using information drawn from their designation documentation, supplemented by observations on the morphology, condition and character of each asset and the nature of their settings made during site visits undertaken in February 2025.

7.6.16 This assessment has found that there would be **no, neutral, minor and moderate** adverse effects upon the settings of designated heritage assets during the Operational Phase.

7.6.17 ***No Effects***

7.6.18 For a large proportion of the designated heritage assets considered in this assessment no effects upon their settings during the Operational Phase have been predicted (see Appendix 9.2). This is typically due to the fact that there would be no or extremely limited intervisibility with the Proposed Development. Where limited visibility has been identified it has been assessed, in each case, that the identified partial distant views would not affect any viewers ability to understand, appreciate or experience the contribution that the asset's setting makes to its overall cultural value.

Where this assessment has predicted no effects upon the settings of heritage assets during the Operational Phase (see **Appendix 7.2**), there would be no harm. There is, therefore, no mitigation required with regard to these effects.

Neutral Effects



Neutral effects have been predicted upon the settings of the following assets during the Operational Phase (see **Appendix 7.2**):

- 7.6.19
- i) Scheduled Monument and Grade II* Listed Building Bersham Colliery (Assets 7, 125 and 152)
 - ii) Marchwiel Conservation Area (Asset 61)
 - iii) Penycae Conservation Area (Asset 62)
 - iv) Bersham Conservation Area (Asset 57)
 - v) The Grade II Listed Ddol Farmhouse (Asset 72)
 - vi) The Grade II Listed Asney Park Farmhouse (Asset 110); and
 - vii) The Grade II Listed Moreton Farmhouse (Asset 121).

7.6.20

Where this assessment has predicted neutral effects (neither adverse or beneficial) upon the settings of heritage assets during the Operational Phase (see Appendix 9.2) it is acknowledged that although elements of the Proposed Development may be intervisible, or appear in wider views containing heritage assets, that these visual intrusions would be very limited and not materially affect any elements of these assets settings which are considered to make a contribution to their cultural value. These levels of effect are not significant and will not result in harm. There is, therefore, no mitigation recommended in relation to these levels of effect.

7.6.21

Negligible Effects

Negligible effects have been predicted upon the settings of the following assets during the Operational Phase (see **Appendix 7.2**):

- i) Bangor-is-y-Coed Conservation Area (Asset 58) and the Scheduled Monument of Bangor Bridge (Asset 41);
- ii) The Grade II Listed Llannerchrugog Hall (Asset 81)
- iii) The Grade II Listed Gwaylod House (Asset 105)
- iv) The Grade II Listed White House (Asset 112)
- v) The Grade II Listed Marchwiel Hall (Asset 169)
- vi) The Grade II Listed Ivydale (Asset 174)
- vii) The Grade II Listed Marchwiel Old Hall (Asset 176)
- viii) The Grade II Listed Kiln Farmhouse including former Malthouse to rear (Asset 207)
- ix) The Grade II Listed Graig Cottage (Asset 216)

- x) Maelor Registered Historic Landscape (Asset 255)

Minor Effects

Minor adverse effects have been predicted upon the settings of the following asset during the Operational Phase (see **Appendix 7.2**):

- 7.6.22 i) The Scheduled Monument of Wat's Dyke (Assets 3, 25, 35, and 42)
- ii) The Scheduled Monument of Offa's Dyke (24, 31, 9, 46, 51, 22, 14)
- iii) The Grade II Listed Wood House (Asset 177)
- iv) The Scheduled Monument of Gardden Camp (Asset 21).

Moderate Effects

7.6.23 **Moderate adverse effects** have been predicted upon the settings of the following assets during the Operational Phase (see **Appendix 7.2**):

- i) The Grade II Listed Buildings of The Groves (Asset 79)
- ii) Former House at The Groves (Asset 208).

7.6.24 The setting assessments undertaken for the assets with **Moderate** effects are provided below. All other assets are discussed in **Appendix 7.2**.

7.6.25 [The Grade II Listed Buildings of The Groves \(Asset 79\) and Former House at The Groves \(Asset 208\).](#)

The Groves (Asset 79) is a brick built structure with slate roof. It is thought to have been built in the late 17th century although later alterations and additions to the windows and roof are evident and were likely made in the 19th and 20th centuries. The proportions of the building suggest that it may have had a third storey which was altered when a new roof was inserted. There are small windows in the gable ends on the north and south elevations indicating the presence of attic rooms. East of the house are the remains of a walled garden enclosed by a brick built garden wall. Directly to the north of The Groves is the Former House at The Groves (Asset 208), which is also thought to have built in the early 17th century. The roof structure has been altered and the interior largely removed, with further alterations in the 19th century including insertion of openings for agricultural purposes. It is now in a state of disrepair with some slates missing from the roof and vegetation growing from and

obscuring the western elevation of a small lean-to building attached to the main western elevation. The building has not been used as a house for some time and is part of a range of agricultural buildings at The Groves.

7.6.26

The Listed Buildings at The Groves are set within an agricultural yard to the immediate east of a lane that runs north to Stryt-yr-wych lane. Historic maps record the setting of the farmhouse within a rural, agrarian environment. The Tithe maps showing land ownership and tenant farmers in 1840 (Figure 7.7) show that the majority of land within the CAA including the land associated with 'The Groves' was owned by Simon Yorks Esquire and was occupied/farmed by Thomas Jones who also occupied the farmhouse at that time. Land allocated to The Groves included the areas of ancient woodland within the CAA and fields 605, 616 and 618 (as annotated on the Tithe map) immediately surrounding the farm which were farmed as pasture. North-east of the farm and within areas proposed for the solar array, fields 607 and 609 were farmed as pasture and also part of The Groves landholding. Within the eastern part of the CAA fields, 610, 612, 613 and 614 were also allocated as part of The Groves and were in use as arable land. Land to the west of The Groves is shown to have been owned by Lord Kenyon and associated with Street y Rwch and appears to have no direct associated with the farm. An examination of the pattern of landownership thus suggests historical ownership of parts of the north-eastern area of the CAA with The Groves. Ordnance Survey maps from 1879 (Figure 7.10) and 1914 (Figure 7.13) show the layout of fields to be largely unchanged from that shown on the Tithe Map.

7.6.27

Ordnance Survey maps from 1879 (Figure 7.10) show The Groves (Asset 79) to be set within a small formal tree and wall lined garden with a range of buildings which incorporate the Former House at The Groves (Asset 208) set to its north. Two ponds are shown in the yard to the rear (east) of the range of farm buildings. A visit to the buildings revealed that that the small walled garden area to the east of The Groves remains in situ albeit somewhat overgrown. The ponds to the east of the range of the farm buildings (including Asset 208) have been removed and replaced with marge modern agricultural sheds.

7.6.28

The wider setting of both buildings at The Grove is characterised by woodland, open fields, hedgerows, and other farm buildings in the landscape. This environment contributes to the historical context of both buildings, highlighting their agricultural past and they are judged to be of Medium sensitivity to changes in their settings.



7.6.29

The Groves have relatively open views to the south, east and north, and are surrounded by agricultural land and woodland, reflecting their origin within a working farm. A single storey modern residential property is set to their south and wooden telegraph poles and wires are set to their west. A visit to the properties established that although not located within the Site boundary, these two Listed Buildings sit within the heart of the CAA. From both properties views west, towards the northwest extent of the array area, were found to be obscured by a prominent hedgerow, although this is at ground level (see Figure 6.3e ii Viewpoint 5 Minor road through CAA for the hedgerow context). Views of the solar array on the western part of the CAA will be possible from the first storey windows of The Groves (see **Appendix 7.3**; Plate 24). It is also likely that the 15m communications mast in the WAA would be visible from The Groves although it would be seen at a distance and beyond telegraph poles which already exist as relatively prominent vertical features in close views from both buildings. Views to the south of the CAA were also established from the property. While the nature of views to the north and east could not easily be established during the site visit owing to limited access to the east side of the buildings, a review of satellite imagery shows that immediate views east from the Former House at The Groves (Asset 208) are dominated by large agricultural sheds which sit in the farm yard and would block views of the solar array in this direction. Views east and south-east from The Groves are more open and would potentially feature the solar array although such views would be framed and limited by the woodland plantations located on the boundary of the CAA. A walkover survey across the CAA established views towards The Grove from the majority of the field parcels which cover the CAA. Therefore, due to the close proximity to the CAA, it can be surmised that the Proposed Development would be visible in some views out from the Groves and that it would be located within fields historically associated with the farm complex.

7.6.30

It is acknowledged that there would be a change in the wider character of the setting of the two Listed Buildings at The Groves as a consequence of the introduction of new built solar panels and infrastructure into land historically connected with the agricultural activity at the farm. The impact will be moderated by the design of the Proposed Development which includes an offset between the Proposed Development and the farm to the north-east, east and south-east creating clear separation between the land immediately adjacent to The Groves and the Proposed



Development. The increase of hedgerow heights and planting to provide further screening will further limit this impact.

7.6.31 The Proposed Development would have no impact on the historical and architectural interest for which The Groves Listed Buildings are designated. Whilst the wider agricultural hinterland contributes to the setting of The Groves, it is maintained that the Proposed Development would allow for the continued ability to appreciate the modern rural setting. As such, the open wider agricultural landscape setting, would remain clearly legible. It is, therefore, assessed that there would only be a limited effect on a viewer's ability to understand, appreciate or experience the contribution that the farmhouses' setting makes to their overall cultural significance.

7.6.32 Overall, it is assessed that the Proposed Development would have a **Low** magnitude of adverse impact on the Listed Building's setting, and considering its sensitivity, a resulting **Moderate** level of effect is predicted. The identified adverse effect on the Listed Buildings would not equate or extend to an adverse effect on the character and special architectural and historic interest of the Listed Buildings.

Decommissioning Phase

7.6.33 The majority of the Proposed Development would be decommissioned at the end of the Operational Phase. At this time, all solar panels, inverters and transformers, mounting structures, fencing, and associated infrastructure would be removed from Site. The substation and communications mast in the WAA would remain in situ in

7.6.34 perpetuity.

7.6.35 Any future maintenance, decommissioning works or reinstatement works would be subject to prevailing legislation, guidance and permitting regimes. An outline Construction Environmental Management Plan (oCEMP) is provided with this DNS application [Appendix 4.1] and presents the outline approach to and the application of environmental management and mitigation for the construction of the Proposed Development. The Decommissioning phase will be supported by a Decommissioning Environmental Management Plan (DEMP) which will include measures similar to those proposed as part of the oCEMP.

The decommissioning phase will allow for the baseline land uses (i.e. arable agricultural production) to be restored.



A well-designed decommissioning process would not cause any ground disturbance beyond the already disturbed footprint of the Proposed Development. It is not, therefore, anticipated that decommissioning works would cause direct impacts upon any buried archaeological remains, deposits or features beyond the existing footprint of the Proposed Development.

7.6.36

It is assumed that all elements of the Proposed Development (excepting the aforementioned substation and communications mast) infrastructure would be removed during decommissioning using similar extents and methods to those used during their construction and that, therefore, any buried remains already removed during construction will not experience any further impacts.

7.6.37

It is considered that there is a potential for temporary effects upon the settings of heritage assets during the decommissioning phase, but it is not anticipated that these would cause a level of effect higher than those reported in this Chapter for Construction and Operation of the Proposed Development. Any decommissioning effects would be temporary and likely of a shorter duration than the assessed Construction effects.

7.6.38

7.6.39

Upon the completion of the decommissioning the long-term effects of the Operational Phase on the setting of assets would be removed, with the setting of those assets restored to the current baseline condition.

7.7.1 **7.7**

‘Inter-relationship of Potential Effects’

7.7.2

There is some potential for temporary effects upon the setting of designated heritage assets in the vicinity of the Site during the construction phase in the form of increased traffic and noise from construction. Full consideration of the potential for these impacts is set out in **Appendix 7.2**.

Increases in noise from the operation of the substation during the Operational Phase has the potential to have an effect on the setting of the heritage assets within close proximity to the Site namely the Grade II Listed Buildings of The Groves (Asset 79) and Former House at The Groves (Asset 208). However any associated increase in noise would not affect the ability to understand, appreciate and experience the setting’s contribution to the assets’ significance. Consideration of noise impacts is covered in **ES Chapter 8: Noise**. Visual impacts are also considered in **ES Chapter 6: Landscape and Visual Impact Assessment**.

7.8 Cumulative Effects

7.8.1

The cumulative assessment has had regard to the guidance on cumulative impacts upon heritage assets as set out in Environmental Impact Assessment Handbook V5⁵⁴ and has utilised the criteria for assessing setting effects as set out above. The assessment of cumulative effects considers whether there would be an increased impact, either additive or synergistic, upon the setting of heritage assets as a result of adding the Proposed Development to the cumulative development as agreed with consultees. The schemes considered in the cumulative assessment in this chapter are set out in Table 7-9 below and shown on ES Figure 2.1.

Table 7-9: Cumulative effects assessment

Reference on ES Figure 2.1	Application Reference	Project Description	Analysis of Potential Cumulative Effects
1.	DNS/3253253	Plas Power Estate Solar Farm	Located east of the Scheduled Monument Offa's Dyke. This solar farm has the potential to change the setting of Sections 8, 51 and 46. It is understood that the our project has already been refined following engagement with Cadw to reduce impacts on the setting of the monument. The sections of Offa's Dyke that are intervisible with Plaw Power Estate Solar Farm would not be intervisible with the Proposed Development. However there is potential for a minor synergistic cumulative effect to the way in which Offa's Dyke is appreciated and experienced owing to an increase in land occupied by solar development in its wider vicinity. No other cumulative effects are predicted
2.	P/2020/0363	Glasshouse with packing facility and offices, energy centre, recovery plant and reservoirs	The Glasshosue packing facility will be located north of the Marchwiel Conservation Area and may be intervisible with it. It was noted during the visit that there was no intervisibility towards the Site. Views towards the EAA were blocked by rising ground to the southeast, and views towards the CAA were blocked by topography, trees, and hedgerow. Overall, therefore, whilst there would be a increase in the land in the wider landscape that is occupied by modern development this would not affect the ability to understand, appreciate or experience the contribution that wider rural setting makes to the Conservation

⁵⁴ SNH & HES (2018). *Environmental Impact Assessment Handbook V5*. Available at: <https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf> [Last Accessed: 05 March 2025]

			Areas character and overall cultural value and negligible level of cumulative effect is considered likely. No other cumulative effects are predicted
3	P/2022/0541	Little Llwyn Onn 9.9MW Solar Farm	There are no designated assets in the vicinity of this solar farm that would be intervisible with the Proposed Development and thus no cumulative effects are predicted.

7.9 Further Mitigation

7.9.1 Desk-based assessment (**Appendix 7.4**) undertaken to inform this assessment indicate that there is for potential previously unrecorded archaeological remains to be present within the Site. Geophysical survey of the Site (**Appendix 7.5**) identified a concentration of anomalies of archaeological origin (Assets 805-809) which potentially date from later prehistory through to the medieval period.

7.9.2 Given the potential for archaeological remains that appear on the evidence of both the desk-based assessment and geophysical survey to be present on the Site, an archaeological programme of investigation will be required in advance of development.

7.9.3 The programme of archaeological works is outlined in the Written Scheme of Investigation at **Appendix 7.7** and will constitute a targeted trial trench evaluation focused on the identified geophysical anomalies (possible enclosure, ring ditch and rectilinear features) to ascertain if they are archaeological in nature and if so provide further evidence in relation to their possible date and form. Trial trenching investigation will also be undertaken across a proportion of those areas where the geophysical survey contrasts were less clear to better understand the nature of buried deposits. Finally the undertaking of a trial trench evaluation across a representative proportion of the remainder of the Site will also be undertaken to confirm the results of the geophysical survey.

7.9.4

In view of the extensive non intrusive survey work undertaken on this Site and in accordance with recently published draft good practice guidance on Archaeology and Solar Farms⁵⁵ the location and quantity of trial trenches has been designed to

⁵⁵ CfA 2025 Archaeology and Solar Farms: Good Practice Guide A toolkit for developers, archaeological advisors, consultants and contractors. Consultation Draft: Available at: [A Tool-Kit for Developers, Archaeological Advisors, Consultants and Contractors](#)



answer specific questions from the non-intrusive geophysical work. It is envisaged that the trial trench evaluation could be undertaken post-determination with the proviso that should significant remains be identified then further requirements for mitigation, either by preservation in situ or by record as appropriate, may be required.

7.9.5 If archaeological works revealed the presence of significant below ground features within the proposed footprint of the solar array that required preservation in situ, the remains would be preserved accordingly through the application of a 'no dig' design solution. This would involve installing the panels above ground on concrete shoes with associated cables laid in trays above ground to ensure that significant below ground remains are not damaged by the Proposed Development.

7.9.6 An archaeological watching brief will also be required to be carried out during ground-breaking works along the proposed cable route where the cable route crosses the paths of Wat's Dyke (Asset 694) and Offa's Dyke (Asset 536).

7.9.7 To mitigate against potential effects on the setting of the Grade II Listed Buildings of The Groves (Asset 79) and Former House at The Groves (Asset 208) it is proposed to increase hedgerow heights and planting to provide further along existing hedgerow boundaries in the west of the CAA. Over the short to medium term the proposed structure planting would become established and would serve to further limit visibility of the Proposed Development from ground level at The Groves and soften its profile when viewed from upper storey windows in the house.

7.10. **1.10 Residual Effects and Conclusions**

This Chapter provides an assessment of the effects of the Proposed Development upon archaeological and cultural heritage assets. This includes direct and indirect effects resulting from the construction, operation and decommissioning of the Proposed Development, and effects upon the settings of heritage assets which may arise during construction and operation of the Proposed Development.



Direct and Indirect Effects

7.10.2 Potential moderate and significant effects have been predicted on three features identified during geophysical survey undertaken by AOC in 2024. These features comprise the remains of a probable oval enclosure (Asset 805) in land parcel W2, linear features (Asset 807) in land parcel C4 and a possible ring ditch (Asset 809) in land parcel E1. The date and importance of these features is currently unknown but they are recognised as potentially of High importance as their morphology suggest that they may be prehistoric in origin and have the potential to preserve evidence relating to past settlement and/or land management within the Site. Implementation of the mitigation proposed in Section 7.10 would allow for the investigation of the features identified during the survey and preserve them either by record or in situ by design using no dig solutions. Accordingly the residual impact would be reduced to a minor and non EIA significant level.

7.10.3 Minor and not significant effects have been predicted on two further features identified from geophysical survey. These features are also undated but have the morphology of boundary features and may relate to past management of land within the Site and thus are judged to be of potential medium importance. A minor effect has also been predicted upon two ridge and furrow areas (Asset 786 and 787), five ponds (792, 793, 797, 800, and 803).

7.10.4 A potential negligible and not significant adverse effect has been predicted upon the sub surface remains of an Air Crash Site (Asset 626). The remains of this aircraft are designated as a Controlled Site under the Protection of Military Remains Act 1986.

7.10.5 The Act makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft without a licence.

7.10.6 It is assessed that the completion of any agreed archaeological mitigation works would result in direct impacts upon buried archaeological remains being mitigated via programmes of archaeological investigation allowing for any remains that were to be destroyed to be 'preserved by record' and for an enhancement of the current levels of knowledge regarding the survival and composition of the anomalies identified during geophysical survey.

The level of residual direct and indirect effects upon buried heritage assets would depend upon the mitigation employed following the initial archaeological investigations outlined above. Where significant remains are identified they would be



preserved in situ using no dig solutions and the residual effect would accordingly be reduced. Where remains are identified but not required to be preserved in situ the excavation and recording of the assets would ensure that impacts are offset by ensuring preservation by record.

Construction Phase – Setting Effects

The identified temporary effects upon the setting of designated heritage assets in the vicinity of the Site during the construction phase would not continue beyond the completion of the construction phase.

7.10.7

Operational Phase – Setting Effects

7.10.8

The assessed levels of residual effects from the Operational Phase upon heritage assets are predominantly related to the potential visual impact of the completed Proposed Development. Although it is acknowledged that there may also be noise and traffic (for maintenance etc.) impacts during the Operational Phase these are not considered to have the potential to exceed the levels assessed for the visual impacts, given the numbers involved (see the Transport Assessment).

7.10.9

This assessment has predicted that the Operational Phase of the Proposed Development would have **Moderate** adverse effects upon the settings of the Grade II Listed Buildings of The Groves (Asset 79) and the Former House at The Groves (Asset 208). The identified potential moderate effect is significant in EIA terms. The implementation of the proposed tree and hedgerow planting mitigation to create new hedgerows, increase hedgerow heights, provide infill tree planting and provide further screening along existing hedgerow boundaries in the west of the CAA as shown on **Figure 1.4b** would serve to limit views of Proposed Development infrastructure within land historically connected to the Listed Buildings at The Groves and reduce the magnitude of impact from Low to Negligible. The level of residual effect would be **Minor adverse** in each case.

7.10.10

Minor adverse effects have been predicted upon the settings of the following asset during the Operational Phase:

- i) The Scheduled Monument of Wat's Dyke (Assets 3, 25, 35, and 42)
- ii) The Scheduled Monument of Offa's Dyke (24, 31, 9, 46, 51, 22, 14)
- iii) The Grade II Listed Wood House (Asset 177)
- iv) The Scheduled Monument of Gardden Camp (Asset 21).

Negligible effects have been predicted upon the settings of the following assets during the Operational Phase (see Appendix 9-2):

7.10.11

- i) Bangor-is-y-Coed Conservation Area (Asset 58) and the Scheduled Monument of Bangor Bridge (Asset 41);
- ii) The Grade II Listed Llannerchrugog Hall (Asset 81)
- iii) The Grade II Listed Gwaylod House (Asset 105)
- iv) The Grade II Listed White House (Asset 112)
- v) The Grade II Listed Marchwiel Hall (Asset 169)
- vi) The Grade II Listed Ivydale (Asset 174)
- vii) The Grade II Listed Marchwiel Old Hall (Asset 176)
- viii) The Grade II Listed Kiln Farmhouse including former Malthouse to rear (Asset 207)
- ix) The Grade II Listed Graig Cottage (Asset 216)
- x) Maelor Registered Historic Landscape (Asset 255)

