ARCHAEOLOGY AND SOLAR FARMS

GOOD PRACTICE GUIDE

Advice for developers, archaeological advisors, consultants and contractors

THIS GUIDE HAS BEEN PREPARED BY

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PART 1 PRINCIPLES FOR GOOD PRACTICE

Credit: Low Carbon

1 INTRODUCTION

1.1 ABOUT THIS GUIDE

1.1.1 This guide on archaeology and solar farms sets out good practice to promote consistent approaches to the process and timing of archaeological work on large-scale solar farms only.[1]

1.1.2 The guide considers the evaluation and significance of above- and below-ground archaeological remains and the potential for direct impacts[2] from the preparation for and construction, operation and decommissioning of solar farms. It does not cover the setting of heritage assets or impacts upon historic landscapes. These are covered by other guidance.[3]

1.1.3 The guide has relevance across England, Northern Ireland and Wales only. The differences in the planning and infrastructure regimes in each nation mean that the precise language used in this guide may vary from the language used in each nation. However, the concepts and principles are similar.

1.1.4 This guide is for developers, archaeological advisors, planning case officers, archaeological consultants, and contractors. Without prejudice to planning policy, the guide provides a framework for assessing and evaluating impact and design mitigation for the effects of solar farm development on the archaeological resource.

1.1.5 This guide will be reviewed within 3 years of publication to assess its effectiveness.

1.1.6 The guide is in two parts:

- **PART 1** outlines the shared principles that stakeholders across both sectors are encouraged to adopt. It explains the importance of collaborative working practices, which balance the need for efficient and timely project delivery with the requirement to uphold policies that protect the historic environment. It also highlights the close relationship between the applicants providing detailed information on design and the ability of archaeological advisors to provide informed advice.
- **PART 2** offers practical tools and useful information on the context for solar farm development and archaeology on solar farms. It defines the main elements of solar farm development, explains key roles, outlines when specific actions should be taken and explores the range of techniques available for assessing archaeological potential and mitigating impacts on the cultural significance of heritage assets. Part 2 also includes a model checklist for the applicant to complete and provide to the archaeological advisor, identifying the location and possible impact of all aspects of the solar farm development.

[1] This guide is not intended to apply to small-scale installation of ground-mounted solar panels

[2] This guide defines impact as 'a scaled measure of the degree to which a change would impact the cultural significance of an asset' (see IEMA, IHBC, CIfA 2021 *Principles of Cultural Heritage Impact Assessment in the UK*)

[3] Historic England 2017 *The Setting of Heritage Assets*. Historic Environment Good Practice Guide in Planning Note 3 (Second Edition); Department for Communities, Historic Environment Division 2018 Guidance on Setting and the Historic Environment; Cadw 2017 Setting of Historic Assets in Wales;

1.2 SUMMARY OF AGREED PRINCIPLES

1. Solar farm development plays an important role in delivering Government renewable energy targets
2. Archaeological remains are a valued cultural resource worthy of protection
3. Consultation should occur early and be integrated into solar farm planning processes
4. Design flexibility can be utilised to protect the significance of archaeological remains
5. Defining ground disturbance and sensitivity zones provides opportunities to streamline archaeological management
6. Archaeological methodologies should be aligned to specific site conditions and project impacts
7. High-quality non-intrusive evaluation is critical to developing an understanding of archaeological potential at a landscape scale
8. A pragmatic approach to trial trenching will enhance confidence while enabling development
9. Mitigation options: balancing archaeological sensitivity with relative impact
10. Public engagement and knowledge dissemination should be integrated into the delivery of solar farms

1.2.1 These principles describe a suggested approach for undertaking archaeological investigation where this required as part of solar farm developments. The approach seeks to satisfy policy requirements for the historic environment, while also ensuring delivery of solar farm development in line with Government goals for clean energy. This approach will ensure that there is sufficient information available to make decisions about the balance of impacts against benefits of a scheme.

1.2.2 Developers need to integrate archaeological considerations into their approaches to scheme preparation and programming. This will help ensure an appropriate level of information about archaeological remains and their significance is provided to enable informed advice to be given and decisions to be made. Pre-application discussions should identify where archaeological impacts are likely to arise.

1.2.3 Developers, in communication with archaeologists, may be able to use the flexibility of solar schemes to make the case for adjusting the timing of certain archaeological evaluation methods, such as trial trenching. Zoning of areas of ground disturbance and understanding the variable sensitivity of remains should enable pragmatic solutions if enough detail to inform decisions has been provided. If seeking to delay pre-determination archaeological evaluation trial trenching, developers should consider their approach to risk management, as early evaluation may benefit scheme delivery where it reduces the likelihood of more costly delays at later phases of the development.

1.2.4 This guide does not remove the need for careful negotiation of site-specific requirements for archaeology, reflecting the specific conditions of archaeological remains and local constraints. However, it should provide a framework for negotiation to ensure consistent application of the principles.

2 PRINCIPLES FOR GOOD PRACTICE

2.1 PRINCIPLE 1 SOLAR FARM DEVELOPMENT PLAYS AN IMPORTANT ROLE IN DELIVERING GOVERNMENT RENEWABLE ENERGY TARGETS

2.1.1 The UK and devolved governments have set ambitious targets for renewable energy generation. These targets will require a trebling of solar capacity by 2030 and ground-mounted solar will play a key role in reaching that target. Solar power is one of the cheapest forms of renewable energy; this guide supports efforts to reach Net Zero and acknowledges how archaeology should be appropriately managed while enabling that goal to be reached.

2.2 PRINCIPLE 2 ARCHAEOLOGICAL REMAINS ARE A VALUED CULTURAL RESOURCE WORTHY OF PROTECTION

2.2.1 The IEMA, CIfA, and IHBC Principles of Cultural Heritage Impact Assessment state that 'Our valued cultural heritage is a resource worthy of protection. This is recognised in government policy and legislation that seeks to safeguard and maintain the most important cultural heritage assets. Safeguarding the cultural significance of places and objects need not prevent change.'[4]

2.2.2 Solar farm developers, as well as archaeologists, are committed to ensuring that the projects they design and deliver achieve this aim. Any solar farm application could have implications for below-ground or above-ground (earthwork) archaeological remains. Conservation (including preservation in situ/by design) and, where necessary, the appropriate assessment, investigation and recording of archaeological remains impacted by development should be proportionate to the importance of the remains in question and the proposed impact upon them. The purpose of archaeological investigation is to yield information about the past to advance our understanding of the human story – this core purpose of archaeological work is a public benefit.

2.3 PRINCIPLE 3 CONSULTATION SHOULD OCCUR EARLY AND BE INTEGRATED INTO SOLAR FARM PLANNING PROCESSES

2.3.1 Communication between solar farm developers, local authority planners and archaeological advisors (and other statutory heritage consultees) should take place early, at a pre-application stage. The precise timing of consultation is likely to depend on various non-archaeological factors/risks and should be decided on a case-by-case basis but should be as early as possible and informed by appropriate/sufficient information.

2.3.2 As an application progresses, the consultation should include the exchange of assessment reports and draft proposals. In due course it will include the exchange of project designs/written schemes of investigation (WSI) and, eventually, mitigation proposals.

2.3.3 Communication should continue throughout the application process, as the exchange of emerging data about design, proposed impact and the archaeological potential of the land will improve risk management and decision making. Further detail may also be required in response to planning conditions (see Section 8).

[4] IEMA, CIfA, and IHBC 2021 *Principles of Cultural Heritage Impact Assessment in the UK*. Page 5, Section 1.3

2.3.4 It is important to exchange detailed construction information, including plans, elevations and proposed development impacts, as well as information on archaeological potential, as soon as it becomes available, to inform discussions.

2.4 **PRINCIPLE 4** DESIGN FLEXIBILITY CAN BE UTILITISED TO PROTECT THE SIGNIFICANCE OF ARCHAEOLOGICAL REMAINS

2.4.1 Solar farms typically retain a relatively high level of flexibility in terms of the design and location of infrastructure.[5] The precise location of infrastructure with higher-ground disturbance can often be moved away from zones of high archaeological sensitivity. This flexibility should inform the development of the archaeological data-gathering strategy for a specific site.

2.4.2 Sharing the details of proposals as early as possible allows archaeologists to identify those locations where layout adjustments (ie micrositing) may avoid significant archaeological impacts.

2.4.3 Identifying areas of lower or higher ground disturbance can influence investigation methods, timing and subsequent mitigation options. For example, in parts of a proposed solar farm where there will be sufficient flexibility in the location of infrastructure with higher ground disturbance, consultees are likely to have increased confidence that trial trenching could take place post-determination, as part of the scope of an agreed mitigation strategy secured by pre-commencement condition.

2.4.4 Where a full mitigation scheme cannot be drawn up at the time of application submission, it will need to be secured by planning conditions/Development Consent Order[6] (DCO) Requirements. Where assessment and design work is continuing post-determination, that work should inform the final scheme of mitigation via conditions/Requirements. It is recommended that at least an outline approach to mitigation is set out at application submission. This is needed both for the confidence of the decision maker and so that there is a reference point against which post-determination submissions for discharge of conditions/Requirements for mitigation can be judged.

2.4.5 In cases where archaeological data-gathering (evaluation) is to continue post-determination, planning conditions/DCO Requirements should secure a process whereby such work is carried out (see Section 8) as part of an agreed evaluation and mitigation strategy. The scope of such works would be defined within approved written scheme of investigation(s) (WSI). Results should iteratively inform an updated mitigation strategy.

2.4.6 Planning conditions/DCO Requirements should recognise the specific flexibility of design factors and differential impacts of solar farm schemes. Such conditions have an important role to play in ensuring the sustainable management of the finite archaeological resource, while accounting for the needs of solar farm development and the delivery of nationally set clean energy targets (see Section 8).

[5] Solar farm 'infrastructure' in this document is understood to include any construction element which has a potential to impact upon below-ground archaeological assets. See the checklist in Section 7 for a non-exhaustive list.

[6] DCO process applies to certain nationally significant infrastructure projects in England and Wales only

2.5 **PRINCIPLE 5** DEFINING GROUND DISTURBANCE ZONES AND SENSITIVITY AREAS PROVIDES OPPORTUNITIES TO STREAMLINE ARCHAEOLOGICAL MANAGEMENT

2.5.1 The difference in levels of anticipated ground disturbance across a solar farm lends itself to the zoning of distinct areas. A solar farm will often contain large areas of land subject to a low level of ground-disturbance (ie panel supports), with smaller areas which will have consistently higher levels of ground disturbance. Higher-disturbance areas can include slabs for substations, transformers and other electrical infrastructure, cable routes, drainage swales, balancing ponds, areas of planting for landscape reasons and changes agreed for ecological mitigation. These different areas can be spatially defined as low- and high-ground disturbance zones, which can aid archaeological decision making.

2.5.2 Archaeological sensitivity will also vary across a site for a variety of reasons, including the type of archaeological remains and the relative depth at which they occur. When the presence and type of archaeological remains is understood, it is possible to map areas of higher and lower sensitivity, based upon the potential relative significance and character of archaeological assets and their sensitivity to change.

2.5.3 As archaeological data is collected during the course of the development, understanding of sensitivity across the site may change, so an iterative approach is needed. Developers and archaeologists should anticipate the potential for change in the boundaries and number of archaeological areas as more detailed information is gathered.

2.6 **PRINCIPLE 6** ARCHAEOLOGICAL METHODOLOGIES SHOULD BE ALIGNED TO SPECIFIC SITE CONDITIONS AND PROJECT IMPACTS

2.6.1 Identifying buried archaeological remains and their survival, significance, extent, depth and distribution across the landscape may require different forms of archaeological assessment. The precise methodologies applied to gather the data needed will depend on the types of archaeological remains, the land in question and the types of impacts proposed. This means a variety of archaeological techniques will be used to obtain a sufficient level of information, proportionate to the impact, with which to make well-informed decisions.

2.6.2 Archaeological remains range from dispersed, early prehistoric artefact scatters to dense and complex features such as well-preserved Roman or medieval settlements. Remains may comprise artefacts, features such as pits, ditches and walls, human remains and standing structures. The context in which the archaeological remains are present is also important, as some environments preserve ancient remains better than others, so buried remains may be reliant on a wider environment for their preservation.

2.6.3 As archaeological remains differ in character and sensitivity, they will be impacted in different ways by ground disturbance. For example, inserting panel supports along sections of large ditches may cause only minimal disturbance. However, a buried mosaic floor would experience a greater impact as a result of the same panel support being put through part of it. Therefore, it is important to consider the sensitivity of archaeological remains in relation to the proposed ground disturbance.

2.6.4 Developers should expect a consistent approach to the application of successive phases of archaeological work between projects. This will involve gathering non-intrusive data, followed by targeting of additional phases of survey to answer remaining questions at specific locations of impact. The types of survey may vary based on the likely type of archaeology, the type of geology present and the potential for impacts from preparation, construction and decommissioning, with different methodologies being best suited dependent on these factors. Consultants and archaeological officers can provide more detailed advice on individual projects and the reasons behind the methodology being applied in each case.

2.7 PRINCIPLE 7 HIGH QUALITY NON-INTRUSIVE EVALUATION IS CRITICAL TO DEVELOPING UNDERSTANDING OF ARCHAEOLOGICAL POTENTIAL

2.7.1 The approach to understanding archaeological remains present in solar farm areas should begin with a broad historic environment appraisal at site selection stage to identify key constraints presented by known heritage assets.

2.7.2 Subsequently, an understanding of the site should be formulated at a landscape scale, bringing together information on the known resources into a desk-based assessment (DBA) report. The DBA will draw on information from the Historic Environment Record (HER) and other existing data on geology, topography, aerial photography, cartography, documentary material and find spot data (eg, Portable Antiquities Scheme, Scottish Treasure Trove). There is sector guidance on how such assessment should take place.[7]

2.7.3 In some areas a high level of archaeological investigation has already taken place, meaning a relatively high level of knowledge already exists. The reverse is true elsewhere. The pre-existing level of knowledge influences what types of additional data-gathering are needed to effectively assess the archaeological potential within an area of land. Areas of the site where no ground disturbance will occur can, in all but exceptional circumstances, be scoped out of further evaluation at this stage.

2.7.4 Following the completion and discussion of the desk-based assessment (DBA) with the determining authority and their archaeological advisors, the applicant should commission a range of evaluation techniques, such as geoarchaeology and deposit modelling, geophysical survey and airborne remote sensing (see Section 5 for more details). The results of these surveys should be synthesised and professional judgement (and if possible, predictive modelling) used to create the best understanding of where archaeological remains are likely to be located on a site, including for those areas which are at that point lacking definitive evidence.

2.7.5 There may be cases where this non-intrusive or minimally intrusive work will provide sufficiently detailed information about the impacts of the scheme on the significance of archaeological remains for planning and for viability decisions to be made.

2.7.6 Where the results of this work are inconclusive, or if an insufficient range of non-intrusive techniques have been used to give confidence in the results, or further information is required to determine the effect and mitigation of localised impacts upon significance (for example, for fixed assets in areas of high archaeological potential), more intrusive assessment techniques may be necessary.

2.7.7 There may be solar sites where a full suite of non-intrusive survey techniques cannot provide sufficient clarity about the archaeological potential of the site (for example where much of the site is covered by green waste, rendering geophysical survey methods less effective, and other approaches like fieldwalking, test pitting,

[7] CIfA 2020 *Standard and guidance for historic environment desk-based assessment*. Note: there are other CIfA standards and guidance documents covering specific techniques such as geophysical survey.

geoarchaeological assessment or additional remote sensing have added little further information), where trial trenching may be required to inform determination.

2.8 PRINCIPLE 8 A PRAGMATIC APPROACH TO TRIAL TRENCHING WILL ENHANCE CONFIDENCE WHILE ENABLING DEVELOPMENT

2.8.1 Trial trenching is a valuable technique that helps to test for the presence or absence of archaeological evidence and clarify the results of non-intrusive surveys. The data it can provide gives a high level of confidence on archaeological impacts, enabling an understanding of the significance, depth, date, character, state of preservation and relative complexity of archaeological remains, enhancing evidence collected via non-intrusive methods.

2.8.2 The timing of trial trenching should be carefully considered. Solar farm developers often cite reasons why it is challenging to undertake extensive trial trenching pre-determination (see Section 3.8). Archaeologists should consider whether it is reasonable to move any or all trial trenching requirements to the post-determination stage.

2.8.3 For this to happen, four key pre-requisites should be met:

- the flexibility for design changes and relocation of specific solar farm assets to avoid archaeological sites and features identified after determination needs to be demonstrated
- the solar farm developer ideally would have undertaken an effective range of non-intrusive surveys at the pre-application stage, or at least as soon as possible prior to the determination stage and ensure that the results are properly synthesised
- in any area of inflexibility or high disturbance, the information provided should be sufficient to demonstrate the presence/absence of important archaeological remains. For areas of high flexibility or low disturbance, sufficient information should be provided to demonstrate that impacts can be managed through design flexibility and archaeological mitigation secured by condition.
- there needs to be an agreed written scheme of investigation (WSI) secured by planning condition/DCO Requirement that sets out a post-determination programme for design development and targeted trial trenching to devise an appropriate mitigation strategy.

2.8.4 Where these pre-requisites cannot be met, archaeological advisors may require that a greater proportion of the trial trenching needs to happen prior to determination. Where this is the case, planning archaeologists should be able to provide reasoning why pre-determination trial trenching of any low ground disturbance areas is required to come to a planning decision. Any pre-determination trenching requirements for zones of low disturbance should be made with specific reference to their likely archaeological sensitivity, and be the minimum required to establish an acceptable characterisation of the historic environment to proceed to determination.

2.8.5 Managing archaeology alongside multiple risks on development projects is complicated and solar farm developers will balance this in full understanding of these risks. However, there are also advantages to solar farm developers in undertaking a proportion of trial trenching prior to determination. In considering their approach to risk management, they will need to balance the potential benefits of maximising information collection as early as possible with the chance of delays if this is left until later phases of pre-construction.

2.8.6 It is often the case that infrastructure that requires higher ground disturbance such as cable trenches, connectors and transformers can be relocated, even post-determination. However, where their location is fixed or where developers have been unable to provide sufficient detail on the proposed development and location of ground disturbance, targeted pre-determination trenching of these fixed aspects of the scheme may be required.

2.8.7 Whenever trial trenching is taking place, the quantity of trial trenches should be based on answering specific questions, either resulting from previous non-intrusive work or which can only be addressed via intrusive survey. Untargeted trenching across large areas should be avoided, provided that a wide range of other non-intrusive techniques have been used, the techniques used are considered reliable in that context and the results have not indicated the potential for important archaeological remains. The use and precise layout of trenching is best defined at the point when the applicant can provide archaeological advisors with an acceptable level of information about the specifics and layout of the solar scheme and clarity around the degree of flexibility of specific parts of the site.

2.8.8 Given the potential for low levels of ground disturbance associated with large parts of a solar farm scheme, it is also appropriate to consider the environmental sustainability of trial trenches and other ground disturbance impacts associated with trial trenching (for example to soil health, biodiversity, soil carbon and on farming operations – see section 3.9). These include carbon emissions from the use of plant and the release of soil carbon during trenching (in particular on permanent pasture and areas of peatland). To support Net Zero and carbon reduction targets, those planning archaeological work should be confident that every trench has a clear and proportionate purpose.

2.9 PRINCIPLE 9 MITIGATION OPTIONS SHOULD BALANCE ARCHAEOLOGICAL SENSITIVITY WITH RELATIVE IMPACT

2.9.1 Where evaluation results indicate the presence of archaeological remains within the area of development, archaeological mitigation will need to be considered and an appropriate strategy agreed. There is a mitigation hierarchy which places avoidance of harm and preservation by design above the more destructive solution (for archaeology) of investigation and recording. Given the flexibility of solar farms, preservation of these remains within the solar scheme should be the first consideration. The lowest impact option and one that is commonly used on solar farm developments is avoidance, through exclusion from the development area or inclusion as an area of open grassland. Where these options are chosen, such areas need to be protected during the construction programme, require methodologies for any habitat creation (to avoid potential impacts from activities such as soil inversion) and will benefit from management plans to ensure their long-term preservation. Where these options are chosen, Management Plans should be submitted to the Local Authority for agreement detailing how these aims will be achieved during the life of the project from construction through to decommissioning.

2.9.2 Depending upon the relative significance of the archaeological remains, it may be acceptable to install panel arrays directly over an archaeological site where the impact from panel supports will not affect the ability to understand the site in the future, thus substantially preserving it beneath the panel arrays. If remains are considered to be of such sensitivity that this level of disturbance is not appropriate, and avoidance is not possible, then alternative methods of construction could be considered (eg, non-penetrative panel supports and cable trays). Where such solutions are implemented, consideration should be given to the formation depth for pads and/or need for ground levelling in order to implement such non-penetrative solutions. All of the above considerations rely upon a sufficiently detailed dataset existing for a proposed development area. This should contain information on the spatial extent, character, depth and importance of the archaeological remains in question to determine whether the form of mitigation is appropriate.

2.9.3 The use of above-ground panel support solutions (concrete feet or ballast) to preserve remains should be carefully considered. These solutions have sometimes been considered as a standard precautionary measure, however their use should be balanced with the sustainability considerations of bringing additional materials to site. These materials may also affect the potential of land to be smoothly returned to agricultural use upon decommissioning. For example, where gravel is used below concrete feet and/or in the form of ballast, this introduces new materials which were not formerly part of the topsoil. These above-ground panel support solutions remain viable in high sensitivity areas but should be used only when expressly necessary. Careful consideration of these solutions is required to ensure that they would successfully achieve the desired effect of preservation in situ. Further innovation is needed to find more sustainable non-penetrative solutions.

2.9.4 In areas of higher ground disturbance (substations, construction compounds, cable routes) where archaeological remains are present and avoidance is impossible, archaeological investigation during or in advance of groundworks would usually be required.

2.9.5 Arriving at the correct mitigation option (and different options are likely to be required across any large solar farm development site) will require discussion and consultation between the applicant, their consultants and the local authority/determining authority.

2.10 PRINCIPLE 10 PUBLIC BENEFIT AND KNOWLEDGE DISSEMINATION SHOULD BE INTEGRATED INTO THE DELIVERY OF SOLAR FARMS

2.10.1 Developers and their consultants and local planning authority archaeologists should consider how to maximise public benefits from archaeology undertaken as part of solar farm development from the beginning of the scheme, and where appropriate secure these through planning conditions.

2.10.2 Dissemination of knowledge gained through investigation should be woven into proposals. Information produced by any archaeological evaluation or investigation should be fully analysed and reported on, the results placed in the public domain and the material curated in an appropriate archive.

2.10.3 Opportunities to engage local communities and improve public understanding of the landscape should also be considered. For example, public rights of way located within or on the edges of solar farms may present options to disseminate archaeological information to the public.

PART 2 PRACTICAL ADVICE

Credit: Wessex Archaeology

3 UNDERSTANDING HOW SOLAR FARMS ARE DESIGNED AND CONSTRUCTED

3.1.1 Solar farms differ in some ways from many traditional forms of built development, and this distinction has direct implications for how archaeological risk should be understood and managed. Unlike housing estates, transport infrastructure, commercial buildings and other forms of energy-generating stations which typically involve intensive ground disturbance across much of the scheme area, solar farms are typically characterised by often larger areas of dispersed, relatively low-intensity ground disturbance (eg, vertical panel supports), flexibility in layout, and a fixed lifespan. The scale of solar farms, in spatial area, is often larger than many other types of development (eg, an industrial estate). These characteristics can sometimes enable adaption that accounts for archaeological sensitivity, including areas of lower ground disturbance or complete avoidance of remains, where required.

3.1.2 Solar farm developments include areas of more conventional (higher) ground disturbance (eg, substations and cable runs) and while solar farms have a fixed lifespan, the physical impacts of these types of construction activities on archaeological remains are permanent.

3.1.3 Allowing time for an iterative approach to collecting and sharing archaeological and design information is critical. Some archaeological areas can be more sensitive to disturbance than others and will demand an archaeological and design approach specifically adapted to these circumstances; this should be understood and prepared as early as possible.

3.2 GRID CONNECTION AND HOW IT AFFECTS THE PROGRAMME

3.2.1 Solar farm sites are selected partly on the basis of the grid connection that they offer. The grid connection is of critical importance to a solar farm development, so developers cannot select land only to avoid certain qualities (eg, archaeological potential). Other factors then influence whether that land is appropriate for an application; this can include heritage setting, archaeological potential, landscape and visual matters, ecological concerns, hydrology, topography and various other technical matters.

3.2.2 While securing a grid connection is a fundamental part of the project lifecycle, the process of delivering that connection is currently subject to widely publicised delays. These delays are often due to the need for broader grid reinforcement works that are outside the control of the developer of any particular solar project.

3.2.3 These delays can significantly influence the implementation timeline of solar projects. In particular, long lead times between planning consent and construction start are becoming increasingly common. As a result, it is often necessary for land to remain in agricultural use for several years after consent is granted, simply because the connection infrastructure is not yet in place. In contrast, sites subject to an accelerated build programme also exist, where requirements will be different.

3.2.4 The extended timeline associated with arranging grid connection has practical and financial implications for how and when certain preparatory activities, such as intrusive archaeological investigations, are carried out. The timing of their implementation, if required, should align with the anticipated grid delivery schedule to minimise disruption to land earlier than necessary.

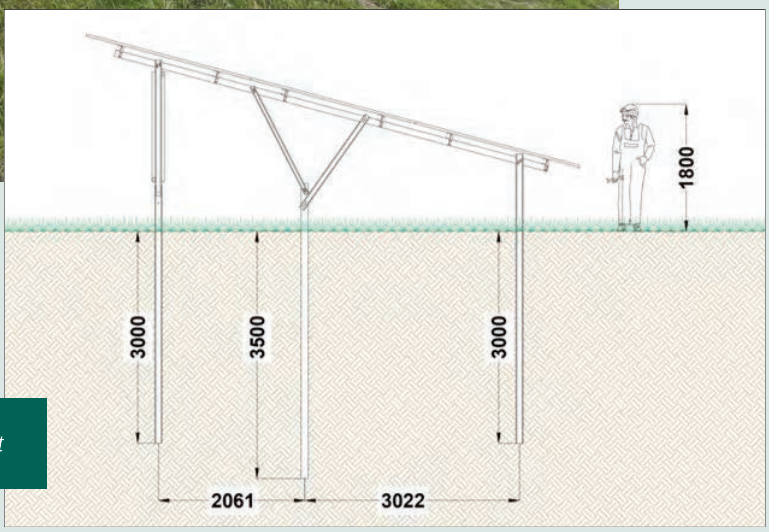
3.3 LIMITED GROUND DISTURBANCE WITHIN SOLAR PANEL ARRAYS

3.3.1 The potential impacts of large parts of solar farms on either below-ground or above-ground (earthwork) archaeological remains can often be minimised (see Section 4). This is because much of a solar farm consists of solar panel arrays mounted on narrow steel supports that are driven vertically into the ground, rather than requiring extensive groundworks. These supports affect only small cross-sectional areas, and the spatial arrangement of the arrays, usually with several metres between each row, results in limited disturbance to below-ground deposits.

3.3.2 The panel supports needed within these arrays are often the focus of attention as they are driven into the ground, with a fairly obvious potential impact upon buried archaeological remains. Some classes of features (such as burials and buildings) may still be highly sensitive to these impacts.

3.3.3 When seeking to understand these impacts, it is important to note that the overall impact in these areas (which form the largest portion of a solar farm) relies upon other aspects of the proposals being implemented in ways which preserve archaeological remains. Therefore, activities such as stripping topsoil and managing the movement of heavy plant during construction, or running cables above ground instead of below ground, are also important considerations.

What we see above the ground – a row of solar panels. Credit: Statkraft

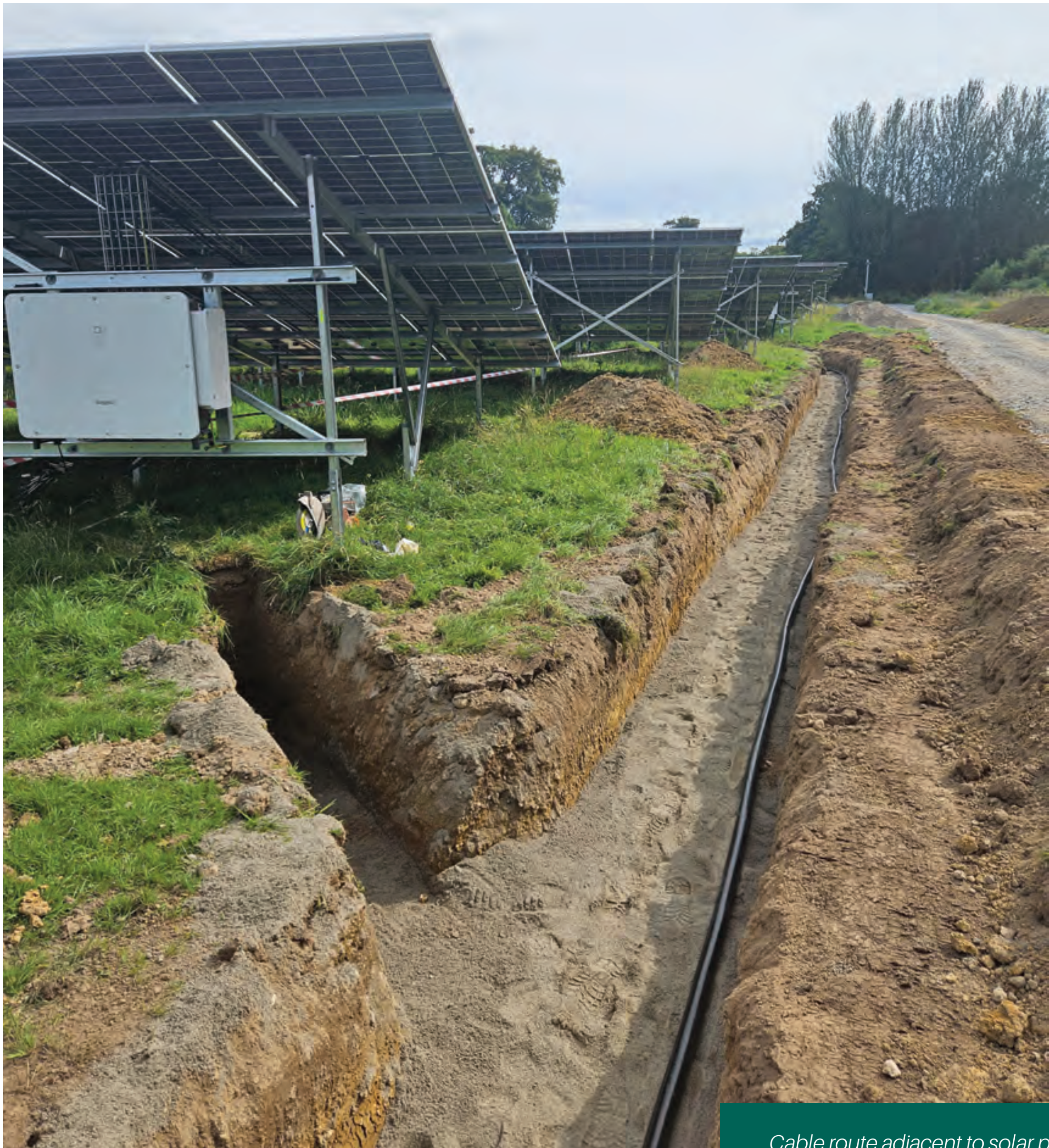


The below part of a solar panel array. Credit: Statkraft

3.4 HIGHER GROUND DISTURBANCE ASSOCIATED WITH INFRASTRUCTURE

3.4.1 There are a variety of other types of ground disturbance associated with solar farm developments. These include, but are not limited to, the main cable routes to the point of connection, cable routes which run adjacent to solar panel arrays on some solar farms (in other cases they are held above ground and run between panels), temporary and permanent access tracks, construction compounds and substations (see more detail in Section 4). These parts of a solar farm may have a higher potential to impact on below ground archaeological assets, although in spatial terms these higher ground disturbance areas take up a small part of the solar farm (see Section 7 for a checklist of the range of development elements associated with solar farms).

3.4.2 Other impacts to consider include the way land is treated prior to remains being preserved by either design solutions (eg, non-penetrating panel supports) or by avoidance. Such land must not experience other ground disturbances prior to preservation, or that preservation may be nullified. The way solar farms are decommissioned also needs consideration and careful management to ensure that minimal impacts during construction are not followed by large impacts when the solar farm is taken out of use.



Cable route adjacent to solar panel arrays. Credit: Statkraft

3.4.3 Upgrading works or large-scale repair/replacement of parts during the lifetime of a solar farm could also involve ground disturbance. Planning conditions should consider the construction, use and decommissioning periods of a solar farm in relation to archaeological matters (see Section 8).

3.5 WHY ASPECTS OF SOLAR FARM DESIGN MAY NOT BE FIXED AT THE PLANNING APPLICATION STAGE

3.5.1 The more information available on design, the better able an archaeologist is to design targeted assessment and thereby help remove risk earlier in the project lifecycle. A best-case scenario would be to have detailed information about proposed design/s and detailed information on the spatial extent, depth and character of archaeological remains. That would allow officers to give the optimum level of advice to decision makers.

3.5.2 The reason that precise information is often unavailable early in the application process lies in the staged and responsive nature of solar farm project design. Prior to an application being made, the layout is necessarily indicative or conceptual. It shows general equipment zones, access and infrastructure, sufficient for assessment purposes, but it may not reflect detailed engineering design. This is because detailed design depends on post-determination work, including:

- topographic and geotechnical surveys
- contractor input on construction methods
- refined drainage, landscape and cable routing strategies

3.5.3 All of these are informed by site-specific conditions and evolve in tandem. For instance, final drainage design depends on detailed levels and contractor methodology, and landscape mitigation depends on where final equipment is sited. Information resulting from further archaeological assessment, which may take the form of trial trenching, should also be considered when finalising the design.

3.5.4 Substations needed for a solar farm may come under a separate application. These are not always built by the solar farm developer but may fall under the remit of a Distribution Network Operator (DNO). On occasion, cable routes, which run offsite to link to the grid, also fall under a separate application.

3.6 DESIGN FLEXIBILITY

3.6.1 Most large-scale solar farms benefit from a high degree of design flexibility. Infrastructure such as inverters, substations, cable runs within the solar farm, and access roads can usually be repositioned within the site boundary to avoid areas of known archaeological sensitivity.

3.6.2 Certain design elements will be less flexible. For example, the main cable corridor (route) to connect the solar farm to the external grid may be substantially inflexible at certain points. Furthermore, the location of some items may also be constrained by other factors, such as the setting of a heritage asset or ecological considerations. Main cable routes are often shown as a corridor at the proposal stage. The exact cable route, including any associated easement, within the corridor can often be moved to follow an optimal route that, for example, avoiding known archaeological remains.

3.6.3 The deployment of this elasticity in design, especially on larger schemes, should be informed by archaeological assessment and the evolving relationship, both pre- and post-determination, between archaeological understanding and scheme design. Landscapes with complex depositional processes may be more likely to conceal large or highly sensitive features and may require a broader range of assessment techniques to be used to better understand them.

3.6.4 While presence of archaeological remains may influence the layout or impose additional mitigation costs, it is unlikely to render a project unviable, provided sufficient archaeological investigation has been undertaken. This is particularly the case for larger projects, where layouts are more flexible. The relatively large scale of many solar farms means that there is an opportunity to conserve archaeological remains if flexibility is upheld within the design process.

3.7 CONSTRAINTS AT THE PRE-DETERMINATION STAGE

3.7.1 There are challenges that constrain solar farm developers at the pre-determination phase of solar farm developments. The amount of land which many solar farms occupy is larger than many other forms of development. Often, much of that land is in active (eg arable) agricultural use prior to becoming part of a proposed solar farm. This means crop compensation and disruption to the agricultural cycle are amplified on solar farm applications. In comparison, it may also be the case that other forms of development, for example quarry sites, are phased over many years, meaning the effect of trial trenching is experienced over a longer timeframe along with the disruption and costs associated with it.

3.7.2 Projects can take several years to progress from site identification to planning application submission, during which access to land is often limited because of ongoing agricultural use. Intrusive evaluation (trial trenching) can disrupt cropping schedules and/or livestock management.

3.7.3 The challenges associated with early-stage and large-scale intrusive archaeological investigation should be considered carefully by decision makers. Conversely, the need to allow for sufficient characterisation of a site’s archaeological remains should be considered at an early stage. Where complicated archaeological issues are likely, this process should start as soon as possible, in suitable agricultural windows for access, and not left to the final months before an application.

3.8 LIFESPAN OF A SOLAR FARM

3.8.1 Most solar farms are consented for a lifespan of 40 or 60 years, after which the consent will expire and the land will revert to its former use, unless further planning/development consent order (DCO) applications are made. The relatively fixed-term lifespan of such development contrasts with permanent developments like industrial or housing estates. Repowering/upgrading of a solar farm during or at the end of its proposed lifespan may also occur, but this would need to be subject to a separate consent so does not need to be considered in detail. This could, potentially, introduce new impacts upon archaeology. The implications of repowering should be considered when conditions are attached to a planning permission/DCO. (see Section 8).

3.8.2 A fixed-term use does not equate to a temporary harm of archaeological remains. Impacts on below-ground archaeological remains will be permanent where they take place.

3.8.3 In cases where solar farm construction leads to archaeological remains being wholly or partially preserved because they have been taken out of regular mechanical ploughing, that preservation may also come to an end when the solar farm is decommissioned. To ensure that these benefits are not lost at the end of the scheme, the decommissioning/reinstatement strategy will need to consider how land restoration/recultivation can take place without damage to these preserved remains. For example, sub-soiling in response to concerns about compaction and pan formation could directly negate the scheme's preservation of remains by design up to that point.

3.8.4 Specific methods for decommissioning works cannot be determined at the application stage. While an application could outline potential mitigation methods for decommissioning, these should remain flexible and would ultimately be secured through a decommissioning Environmental Management Plan, to be approved by the Local Planning Authority prior to works taking place.

3.9 TIMING AND COSTS OF EVALUATION WORKS

3.9.1 Desk-based assessment, which includes walkover survey and analysis of a range of data sources (eg, Local Authority HER, aerial photographic and lidar survey), can take place at various points in the project cycle including at the land acquisition stage, or later when the design of proposals is being considered along with other disciplines such as landscape and ecology. It is recommended that this is undertaken as early as is reasonable.

3.9.2 Site-based archaeological surveys do not usually take place until grid connection and land acquisition are well advanced, which can be several years after site selection. Geophysical survey is a core part of the evaluation process. This requires access rights from landowners; having surveyors on land which may have crops and/or livestock on it is disruptive to the farming cycle so this should be well planned. These surveys should not be left until late on, as that reduces the ability to fit around the farming cycle and reduces the opportunity to plan further targeted work around cropping and cultivation. It also means that data which may be useful for design/redesign purposes may not be available in a timely way. That also has potential impacts on timescales and costs, albeit at the delivery point of a project rather than at the application stage.

3.9.3 Intrusive trial trenching involves disturbance of the soil and potential damage to crops/pastureland. This is more disruptive to a working farm than non-intrusive surveys. The physical effects on soil, which can affect future crop yields, and the potential strain on landowner relationships is notable. In addition to the archaeological costs of trial trenching, additional payments in relation to crop loss/compensation and damage to/repair of agricultural land drains will increase the financial cost of these surveys. Because of the specific characteristics of solar farm development sites, extensive trial trenching can be experienced by applicants as disproportionately costly and disruptive pre-determination (relative to the costs of other pre-application surveys). For this reason, solar farm developers usually prefer intrusive evaluation to be conducted post-determination, secured by condition, once project risk is reduced and design details are sufficiently advanced to allow the trenching to be as targeted as possible. The costs are still present once permission/consent is granted (subject to conditions), but a degree of uncertainty over the project has then been removed, and this is a significant turning point in the management of project risk. However, it should be recognised that this approach may carry associated risks for delivery which will need to be managed in accordance with planning policy.

4 DEFINING THE ARCHAEOLOGICAL IMPACT OF SOLAR FARMS

4.1 ELEMENTS OF A SOLAR FARM

4.1.1 A solar farm scheme often consists of the following elements (not an exhaustive list):

- solar arrays
- cabling trenches
- roads and site vehicles
- substations, inverters, transformers and battery storage
- fencing
- landscaping and drainage
- temporary construction infrastructure
- habitat creation

4.1.2 The following paragraphs describe the potential impacts on archaeological remains from each design element (based on common solar farm construction practices) and consider possible future impacts during operation and decommissioning.

Access road, cable route and panels. Credit: Statkraft

4.1.3 An example checklist identifying all potential construction activities and their possible archaeological impacts, which should be completed by the solar farm developer and their consultants, is provided in Section 7. Use of this checklist would allow any impacts resulting from activities not identified below, or relating to slightly different construction methods, to be captured and assessed more fully.

4.2 ARRAYS

4.2.1 Large parts of a solar farm development consist of the panels, mounted on frames which usually have one to three (galvanised) steel supports that are driven into the ground. The depths will vary with ground conditions but typically range from 1m to 3m below ground level. These supports have a range of profile designs (depending on the manufacturer but a flanged C or U shape is common) and usually measure about 200mm by 100mm. The metal sheeting is usually 3–5mm thick. They are pushed/driven into the ground on a standard grid layout by small track-mounted rigs which cause minimal disturbance to the topsoil.

4.2.2 The physical impact of these supports on archaeological remains has not been directly investigated but based on available guidance on piling and archaeology,[8] the impact of any individual support would be like a sheet pile, albeit with a different profile. In most ground conditions the support is pushed into the ground with limited vibration. The area that is disrupted by the installation would usually be limited to the cross-section of the support, and soil either side of the metal support would rarely be disturbed or disrupted.

[8] Historic England 2019 *Piling and Archaeology: Guidance and Good Practice*. Swindon: Historic England. (accessed 17 June 2025)

Solar array under construction. Credit: Statkraft

4.2.3 A typical array layout has supports at 2–3m intervals along a set of panels, and a gap of 3–4m to the next set of panels. Usually, the area disturbed by the supports is far less than 1 per cent of the land parcel. Archaeologically, the impact of one metal support is limited and unlikely to harm the archaeological interest of most archaeological features either singularly or cumulatively (ie, make it hard for the future investigation of the site to take place once the solar array is removed).

4.2.4 There are some types of archaeological remains, such as burials/graves, that it would not be acceptable to install supports into, and others – such as ancient masonry, earthen structures or large pieces of waterlogged wood – where the impact could be larger than just the cross-section of the support if they cause an obstruction and are dragged downwards, so installation of supports in these areas would not be recommended.

4.2.5 Other panel support systems may have slightly different impacts which should be considered on a case-by-case basis using the checklist in Section 8. Nonetheless, the cross-section of ground disturbance for most support systems is limited compared with other construction infrastructure elements.

4.2.6 Where solar schemes are constructed in areas of previous wetlands (such as fens, or in river valleys), installing panel supports into existing waterlogged deposits (like burial peats) will be very unlikely to lead to any changes to either the water levels or the buried environment more generally.[9]

4.3 FENCING

4.3.1 Most sites will have an exterior fence around their perimeter. The impacts of fencing will depend on the installation method. This can range from driven posts through to more substantial foundations requiring excavation of holes or trenches into which concrete is poured. It is thus important that the fencing methodology is clearly specified alongside other design documentation, as some areas may need appropriate archaeological mitigation.

[9] Based on general hydrogeological and geochemical principles, as set out in Historic England 2016 _Preserving Archaeological Remains_ – main guidance and Appendix 3. The risk of dewatering is marginally higher in areas with perched water tables, which rarely occur in these environments.

Perimeter fencing with CCTV cable trench running alongside it. Credit: Pre-Construct Archaeology

4.4 CABLE TRENCHES

4.4.1 Cables that connect the solar panels to each other are usually attached to the back of the panels. These are connected to cables from the other rows of panels at one end of the array (usually at the edge of the field) and run in cable trenches to transformers and other electrical infrastructure.

4.4.2 Cable trenches are usually about 1m deep and about 1m wide, and their excavation would physically impact any archaeological remains within the trench through their removal or truncation, requiring appropriate levels of archaeological mitigation. Cable trenches cause ground disturbance similar to other development types (such as footings and utilities needed for housing). Further impacts could arise from topsoil stripping and storage for any cable trench working easement; identifying early on the lowest impact location and method for cable trench excavation will help manage impacts and focus evaluation efforts on areas of highest risk.

4.4.3 The amount and depth of cable trenching are important considerations that should be clarified at the earliest stage to inform assessment and mitigation options. Where cable configuration differs from that described above, this should be assessed for any additional impacts (using the checklist in Section 7).

4.5 ROADS AND SITE VEHICLES

4.5.1 Permanent roads are constructed into and around the site to facilitate construction and maintenance of the solar arrays. These can be designed to sit on the topsoil or may require the removal of topsoil and subsoil to build a more solid base prior to surface treatment. The archaeological impact of soil removal for roads could include compaction and the loss or truncation of archaeological features, requiring appropriate levels of archaeological mitigation.

4.5.2 Unintentional impacts can occur from vehicle rutting and uncontrolled site stripping/preparation works. Working in appropriate weather/soil conditions and using track mats can reduce these impacts.

Cable trench. Credit: Statkraft

4.6 SUBSTATIONS, INVERTERS, TRANSFORMERS AND BATTERY STORAGE

4.6.1 Given the substantial weight of these facilities, they usually require foundations, which involve the removal of soil from the area under the structure. This may impact any archaeological remains in that location, requiring appropriate levels of archaeological mitigation.

4.7 LANDSCAPING AND DRAINAGE

4.7.1 Schemes may include landscaping and levelling or require areas to be excavated for drainage (such as swales and attenuation ponds). Landscaping that requires groundworks, ie, pond creation, or that removes archaeological earthworks could have impacts, requiring appropriate levels of archaeological mitigation.

4.8 TEMPORARY CONSTRUCTION INFRASTRUCTURE

4.8.1 Topsoil will normally be stripped prior to building construction compounds and temporary roads and or may cause soil compaction. Where compounds are initially located in an area of archaeological sensitivity, the most effective mitigation option is to move the compound to a less sensitive location (as there is usually more flexibility at this stage of the project). Temporary roads can be constructed by building up from the topsoil (laying protective matting or appropriate geotextile separator materials and imported fill) if these need to cross areas of archaeological sensitivity (or to protect tree roots, for example). Consideration should be given to temporary construction methods to ensure they do not result in settlement of the topsoil/subsoil, which would then require subsequent loosening/ripping to improve soil texture, as this could damage any archaeological remains that the mitigation measures were designed to protect (eg artifacts within topsoil and buried remains).

4.8.2 Where topsoil or subsoil is removed prior to the construction of temporary infrastructure, the archaeological impact could include the loss or truncation of archaeological features, requiring appropriate levels of archaeological mitigation.

4.9 HABITAT CREATION

4.9.1 The creation of new and improved habitat (including Biodiversity Net Gain) can provide great public benefits, particularly where natural and historic environment plans are designed collaboratively – for example, placing areas of appropriate habitat over areas of archaeological preservation. Careful specification is needed to ensure that construction methods do not impact negatively on archaeological remains. For example, new ponds should be located away from areas of archaeological remains; similarly, woodland creation or screening planting should avoid these too. The creation of wildflower meadows can involve the turning of soil, and depending upon the depth of this, there is the potential for impacts on below-ground remains, requiring appropriate levels of archaeological mitigation. Such activities should be considered on a case-by-case basis, through the use of the checklist in Section 7, to avoid the situation where ecological mitigation affects archaeological remains. Cross-reference between Ecological Management Plans and Archaeological Management Plans can be beneficial. Notably, habitat creation is sometimes required early in the scheme construction process (so that the new habitat is established prior to any species translocation), so in terms of timing this may require early assessment.

4.10 OPERATION AND DECOMMISSIONING

4.10.1 During the operation of the solar farm, possible impacts on any archaeological remains preserved within the site boundary should be controlled by fencing, signage and site briefings. Consideration should be given within the archaeological management plan/mitigation strategy to any risks from future maintenance (repair of cabling; emerging drainage issues; replacement of damaged arrays) or upgrades.

4.10.2 Solar farm developments are consented for a fixed duration, after which they will be decommissioned. As very few solar farms have yet been decommissioned it is not possible to list every potential impact here. However, uninstalling panel supports, removing cabling or re-landscaping drainage features (for example) could all have potential archaeological impacts in the future. Each should be carefully considered within decommissioning documentation that is submitted with applications or developed during the lifetime/at the end of life of these schemes. How these are secured through planning conditions/agreements will require discussion between the applicant and the determining authority, and is beyond the scope of this document.

4.10.3 Following decommissioning, it is likely that the construction, use and removal of a solar farm will have a negative impact on the effectiveness of any future geophysical survey (particularly magnetometry) as a result of ground disturbance and the unavoidable presence of metal fragments (wire, screws, etc) in the soil. While this will not influence the decision-making process, archaeological advisors would usually be expected to have requested appropriate geophysical survey be completed and appropriately archived as part of the suite of non-intrusive survey methods in the application for a solar scheme, as it would be reasonably anticipated that its efficiency post decommissioning will be reduced.

Solar farm in operation. Credit: Low Carbon

5 EVALUATING THE SIGNIFICANCE OF ARCHAEOLOGICAL REMAINS WITHIN SOLAR FARM SITES

5.1 THE PURPOSE OF ARCHAEOLOGICAL DATA-GATHERING (EVALUATION)

5.1.1 In a planning and development context, archaeological investigations are undertaken to determine the presence or absence of archaeological remains within a particular site, and if present to understand the nature, spatial extent, preservation and significance of those remains. These types of archaeological investigations are referred to as archaeological evaluations and their function is to determine the archaeological potential of a site.

Desk-based assessment

5.1.2 The purpose of a desk-based assessment (DBA), is to determine, as far as is reasonably possible from existing records, the nature, extent and significance of the historic environment within a specified area.[10]

Non-/minimally intrusive surveys (subsequently termed non-intrusive)

5.1.3 Non-intrusive surveys either use sensors to analyse the properties of the soil to help detect archaeological features (eg, geophysical survey, airborne remote sensing) or record extant features (eg, topographical/walkover survey). Minimally intrusive surveys involve the retrieval of a small sample of physical evidence to help clarify the archaeological potential of a site, such as boreholes to collect geoarchaeological information for deposit modelling, archaeological metal detecting, fieldwalking, or test-pitting.

Archaeological field evaluation (trial trenches)

5.1.4 Trial trenching will seek to determine, record and report on the nature, extent, preservation, depth and significance of archaeological remains within a defined area.[11] These will vary in size due to site and aims but commonly comprise trenches of 50m length and 1.8m/2m width, excavated across an area, targeted on features identified through non-intrusive surveys and/or to explore areas of unknown potential.

5.2 TIMING OF ARCHAEOLOGICAL EVALUATION WORK

5.2.1 It is standard practice to start with desk-based work, which summarises known information and draws conclusions about the presence of known remains and potential of the application area based on existing data and archaeological experience. Some of this information may have been collected at the feasibility stage during site selection (see project lifecycle, Section 6), but once a site has been identified, a detailed desk-based assessment (DBA) should be completed, informed by discussion and consultation with relevant LPA archaeologists. Where a project was scoped into an EIA process, assessment and subsequent data-gathering would be drawn into Environmental Statement preparation.

[10] CIfA 2020 *Standard and guidance for historic environment desk-based assessment*

[11] CIfA 2023 *Standard for archaeological field evaluation*

5.2.2 A key consideration in the DBA should be understanding the geology/geoarchaeology of the area (including assessment of past geotechnical/ground investigation (GI) work or GI undertaken for the project). This helps to refine subsequent geoarchaeological investigation and provides information for those designing and undertaking geophysical surveys, for example by identifying the presence of deep deposits (such as alluvium/colluvium covering older archaeological remains) or indicating areas where previous development/mineral extraction has already removed archaeological remains.

5.2.3 Geophysical survey can provide large-area coverage, ideal given the scale of solar farms, and is likely to identify a wide range of archaeological remains present in an area. It works in most situations (see below for more details) and is well-suited to being one of the first non-intrusive survey methods used on a site.

5.2.4 The information assembled can be augmented and further refined by collecting more remote sensing and field survey data. This additional work may be useful to better define areas of significance or to test blank areas. This can provide greater confidence for decision makers and reduce the risk to the historic environment and for developers that large areas of significant archaeological remains will be identified after the scheme has been consented.

5.2.5 Trial trenching is the most effective method to verify the interpretation of the preceding desk-based and survey work, to characterise the form, function, date, depth and state of preservation, and to assess the significance of the remains. It can be a useful tool to investigate areas where previous work has not identified archaeological remains.

5.2.6 When presenting evaluation information from multiple techniques as part of the development submission, it is advantageous for the individual specialist reports on this material to be fully synthesised at a landscape scale to provide sufficient characterisation of the potential archaeological resource within an application area and make this clear to the reader (rather than separate and disparate reports being submitted without further integration).

5.2.7 There is a preference from solar farm developers to move most or all trial trenching to the post-determination stage. This is on the basis that an appropriate level of information to inform decisions has been provided – for example, on the presence and significance of any archaeological remains present within the application area and the flexibility within the scheme to move elements if subsequent evaluation identifies more features/sites. There may be cases where it is possible to move the majority of trial trenching to post-determination, equally, there might be some locations of likely high sensitivity and/or design inflexibility that need targeted pre-determination archaeological evaluation trenching.

5.2.8 In considering the timing of intrusive archaeological investigations, a key consideration is whether the likely archaeological sensitivity and complexity of the site would be compatible with undertaking trial trenching post-determination. Key factors include the flexibility of the scheme to address archaeological sensitivity and still deliver the proposed energy output across the scheme. Crucially, build-out and connection timescales should allow both for the necessary investigations to be done post-determination and for the results of that work to inform design of the scheme, such that the balance of impact to public benefit as envisaged by the decision maker is reflected in the actual outcome. If timescales are tight or archaeological risks are high across large areas, then greater front-loading of trial trenching pre-determination is likely to be necessary.

5.3 METHODS/TECHNIQUES

Desk-based assessment (DBA)

5.3.1 DBAs collate known evidence from a site and the surrounding area to provide an assessment of the potential for the application area to contain archaeological remains. Evidence reviewed includes records from the Historic Environment Record (HER)[12], Portable Antiquities Scheme/Portable Antiquities Scheme (Cymru)/Scottish Treasure Trove data, previous archaeological investigations, aerial photographs, Lidar data, historic mapping, documentary evidence and details of local topography and geology. A walkover of the proposed development site is carried out to assess the presence of earthworks and other elements of the historic landscape such as hedgerows and historic footpaths (where applicable). Walkovers can also help to spot land use which may have truncated remains (eg, terracing or mineral extraction) or verify previous observations of disturbance identified from the desk-based work.

Geoarchaeological prospection and deposit models

5.3.2 The purpose of geoarchaeological prospection is to characterise sediments, identify any major palaeoenvironmental deposits or ancient land surfaces, and to assess how landscape evolution may have impacted on archaeological visibility, eg, burial and/or erosion of remains. Data can be used to construct deposit models that can provide an understanding of geomorphological processes and soil variation across a site. This is particularly useful in areas with complex environmental histories, such as the Fens.

Geophysical survey

5.3.3 Geophysical survey measures small variations in the earth's natural properties. These measurements work most effectively at close range; increasing the distance between the sensor and the feature reduces the effective resolution and sensitivity. Effective survey requires relatively clear and stable ground conditions (so site preparation in advance of survey may be required).

- **Magnetometry** is the ideal technique to use on the majority of sites; it is fast and cheap, works across most geologies and detects a sufficiently wide range of archaeological and other features to provide a preliminary level of confidence as to the archaeological potential of the site. The clarity of the results can be adversely affected by green waste, modern construction materials or the level of detectable contrast between any features and the background. The detectability of features can be increased by reducing distance between sensor and feature, using a more sensitive instrument, increasing the stability of the survey platform and by collecting more data over the survey area. Magnetometer systems can be deployed in different configurations – hand carried (< about 10ha per day), pedestrian cart-mounted (< about 12ha per day), or towed behind an all-terrain vehicle (ATV) (< about 20ha per day).

- Beyond magnetometry, additional complementary geophysical surveys provide greater confidence and can be used to further define detected features and/or validate areas of apparently low potential:

  - **Ground-penetrating radar** (GPR) is effective for defining edges and/or depths of features. Unlike most other non-invasive techniques, it can produce fully 3D representations of the subsurface and may enable phasing of superimposed features. Depth penetration can be adversely affected by certain geologies and soil moisture

[12] National Monuments Record for Wales (NMRW) in Wales

content. Speed and cost implications mean it is typically only used over targeted areas where additional information is desired.

- **Electromagnetic** (EM) **survey** measures complementary properties and can detect different features to magnetometry, and provide greater confidence where features are detected (or not detected) by both techniques. Most electromagnetic systems collect multiple depth measurements, allowing for the determination of coarse depth information. EM can be conducted over large areas, and when deployed simultaneously with magnetometry (ie, if mounted on the same platform), it can save time and money.

Other surveys

5.3.4 Developing a thorough understanding of the site through non-intrusive methods can help better target trial trenching at whatever stage it takes place. The techniques outlined below can provide additional information on the presence of archaeological remains.

- Topographical models can be created from **ground-based surveys**, **Lidar** or **aerial photography**. These can identify variations across the surface indicating the presence of extant archaeological remains, providing accurate measured data which can be used in GIS/topographic modelling. Observations from drone-acquired Lidar or photogrammetry can be combined with analytical earthwork survey to provide a more nuanced understanding of any archaeological earthworks present in the application area.
- **Multi-spectral** and/or **thermal imaging** can complement aerial photography and are used as tools to identify buried remains. They work by examining reflectance properties of vegetation and thermal properties of soils from an aerial or orbital platform. The effectiveness of these imaging techniques is dependent on the type of vegetation, soil moisture, seasonality and crop type/cover.
- The presence of archaeological materials in the topsoil may need to be assessed if topsoil is to be removed prior to construction. This can be undertaken through **fieldwalking**, which requires a site to be ploughed and harrowed to be effective. This method can identify evidence of ephemeral archaeological material such as

Drone used to capture aerial survey data. Credit: Wessex Archaeology

Geophysical survey being carried out. Credit: Magnitude Survey lithic scatters or other early prehistoric activity. **Archaeological metal detecting** of topsoil can be used where appropriate, for instance if the presence of early medieval cemeteries, military camps/engagements, etc, is suspected. Both methods can be augmented by hand- or machine-dug test pits to better understand the volume and concentration of this material.

Trial trenching

5.3.5 Although these other techniques can provide information to build up a picture of the significance and potential of any archaeological remains sufficient to inform the decision-making process, it is likely that some level of trial trenching will be required to fully verify these results and provide information where other non-intrusive techniques don't work. This will provide a deeper understanding of date, depth and survival of the remains and assist with the final design process, so that areas containing archaeological material can be avoided or appropriately mitigated according to their significance.

Of particular importance in the case of solar farm development is to differentiate between those remains which are likely to be sensitive to only the more disruptive components of the scheme and those whose significance would be harmed by more localised ground disturbance such as that caused by panel supports. While some sensitive features such as buildings and ditches tend to be relatively easy to identify through geophysical survey, others such as burials may need to be inferred from metal detecting finds, landscape context or potential association with burial mounds etc. In these instances, intrusive work to test target areas will be required.

Some features such as enclosure ditches may be clearly visible on geophysical survey but the importance and sensitivity of the feature (and of associated features) may be unclear without intrusive investigation. Where features sit on the margins of former wetland, lapped by peat or alluvium which may have been a focus of activity such as fishing, salt making, burial or ritual deposition, these areas can have high preservation potential and sensitivity and should be a particular focus for intrusive investigations. Such cases are illustrative of the importance of deposit modelling and preservation assessment.

Trial trenching can also be used to test the presence of archaeology in areas where it has not been identified in previous non-intrusive surveys. It is not advisable to use this in all blank areas. There should be good reasons to have low confidence in the effectiveness of those previous methods and a high confidence that the frequency and distribution of trial trenches is sufficient to identify the types of features that an archaeological advisor believes may be present; trial trenching may be no more likely to identify small ephemeral sites or features than many of the non-intrusive methods outlined above.

Excavating an archaeological trial trench. Credit: Wessex Archaeology

6 MANAGING A SOLAR PROJECT LIFECYCLE

6.1 PREPARING FOR A DYNAMIC PROCESS

6.1.1 The following stages in the project lifecycle of a solar scheme have been identified and are explained as an aid to solar farm developers, archaeology advisors, planners, archaeological consultants and contractors. There will be variations to the lifecycle of different projects and there is no expectation that the following pathway will always be replicated. The series of steps is designed to indicate when a developer may seek advice from an archaeologist and when an archaeologist can expect certain data from a developer. The process is dynamic and the path from site selection through to an application being made has various points where a project could be dropped, paused or pursued.

6.2 SITE SELECTION

6.2.1 Developers identify sites based on grid capacity and availability, solar resource, landowner willingness, suitability of land and known planning or environmental constraints. Site identification may also be informed by policy. At this stage, various methods of ascertaining archaeological potential may be used (preliminary rapid appraisal). Grid connection applications are submitted and, if feasible, land rights are secured. These are key milestones: both are highly competitive and time-sensitive, often requiring significant early investment.

Site selection . Creditt: Statkraft

6.3 PRE-APPLICATION

6.3.1 **Step 1:** Land for a possible solar farm is identified as described in paragraph 6.2.1. Archaeological advice (from an archaeological consultant to the solar farm developer) at this stage may be provided in confidence and will be aimed at advising on feasibility. The intensity of research and advice will vary by project; the aim is to assess archaeological potential and identify risk, to enable an applicant to make informed decisions about whether to include/exclude particular pieces of land.

6.3.2 **Step 2:** An indicative plan showing the possible layout of a proposal may be created and shared. Even at this early stage it is often possible to identify and label parts of the site which may be considered low or high disturbance:

- low disturbance: solar panel areas
- high disturbance: substations and cable routes

6.3.3 At this stage, communication may be within the applicant's technical team however it is recommended that early contact is made with the local authority archaeology advisor and to discuss potential impacts and mitigation

6.3.4 **Step 3:** It will usually be necessary to carry out a full desk-based archaeological assessment. Findings can inform a proposal and it may be that certain areas are now included/excluded on the basis of these findings. Communication with consultees should take place at this stage (prior to the start of the desk-based assessment (DBA)). This will ensure that appropriate methods of archaeological data-gathering are agreed and carried out. Often, the consultee will be the local planning authority archaeological advisor. This early collaboration helps improve the project and builds a good working relationship.

6.3.5 **Step 4:** The results from the DBA and further design development enable initially identified areas of archaeological remains to be avoided and for non-intrusive surveys to be scoped, approved and carried out.

6.3.6 **Step 5:** Combining the advice from the local planning authority archaeological advisor with archaeological data gathered via assessment and evaluation, and viewing both against the emerging proposals, ensures those proposals take account of all known archaeological data. This can be with a view to avoiding such remains and/or ensuring that they are located within lower-disturbance parts of the solar farm.

6.4 DETERMINATION

6.4.1 The applicant should provide the determining authority with information about the archaeological resource in the application area, the identified zones of sensitivity and the actions that will be taken to avoid or mitigate the archaeological impact of the development. This will be required to show that the archaeology, which is a material consideration in the determination of the application, has been fully considered and appropriate measures to avoid or mitigate the impact are included in the application.

6.4.2 The flexibility of solar farms creates opportunities for careful phrasing of planning conditions/DCO Requirements. This process could be best achieved through dialogue between the applicant and the relevant planning authority. Section 8 considers the types of information that it may be appropriate for the determining authority to include in conditions/Requirements – information that best captures the flexibility which solar farms have in terms of design, and the need for careful conservation of and/or mitigation of impact to archaeological remains.

6.5 PRE-COMMENCEMENT

6.5.1 Consent for the scheme is issued subject to conditions including 'pre-commencement', ie, those which must be met before development can begin, ensuring that the details of certain aspects of works are addressed and approved before being implemented. Such conditions can include further non-intrusive and intrusive archaeological evaluations. They will also generally stipulate an appropriate methodology for mitigation (often based on the outcome of evaluation works). Procurement and construction sequencing should allow sufficient time for pre-commencement trial trenching to take place, be reported on, and the results reviewed by the advisors; and for any results to then inform design changes and other forms of avoidance or mitigation.

6.5.2 The scope of archaeological works is often stipulated in a brief issued by the archaeology advisor to the relevant planning authority. A project design will be required to respond to the scope of archaeological works stipulated, setting out the methodology for undertaking them. The project design should be approved by the planning authority advisors prior to commencement. Briefs may set out further evaluation and/or mitigation options. Specific arrangements should be made with the relevant planning authority to ensure the condition of consent is correctly fulfilled and making reference to relevant national and regional research frameworks.

6.6 CONSTRUCTION

6.6.1 Construction may proceed with archaeological mitigation (if needed). Mitigation may be secured as part of a wider archaeological management plan and be overseen by an archaeological clerk of works, as appropriate. In other cases, archaeological fieldwork will have been completed by this stage.

Panel supports and framing, during construction . Credit: Statkraft

6.7 OPERATION

6.7.1 Future innovation of generating infrastructure or repair and maintenance work may necessitate changes during the operational lifetime of a solar farm. On sites where conservation of archaeological remains has been secured through avoidance of their location beneath an area of solar panels, their presence should be recorded (for example within an archaeological management plan). Mechanisms for ensuring that any future maintenance/upgrading work does not impact these remains should be included in relevant approved management plans and project documentation.

6.7.2 The main public benefit of solar farm construction is the supply of clean, renewable energy. However, the dissemination of archaeological information (eg through the publication of archaeological fieldwork results and public engagement) is also a public benefit. There are various ways such information can reach the public. For example, where public access around sites is facilitated by footpaths, these footpaths could be utilised to provide informative signage describing archaeological findings, and using these to contextualise the history of energy transitions and the landscape.

6.7.3 There are many other opportunities for increasing the public benefit of solar farms and these are explored in more detail in relevant sector guidance.[13]

[13] CIfA 2023 *Toolkit for Public Engagement* (accessed 28 October 2025)

Solar panels after installation. Credit: Statkraft

6.8 DECOMMISSIONING

6.8.1 There are currently no reliable, accessible studies on the impact of the decommissioning of a solar farm upon buried archaeology. As this document is prepared, studies are being supported related to projects which may provide the first reliable data in the UK on this topic. This will be invaluable, as decommissioning is clearly of vital importance to ensuring that remains subject to low impact at the construction stage do not experience greater impacts at the decommissioning stage. These studies should inform future iterations of this guidance.

6.9 BEYOND THE PROJECT LIFECYCLE – KNOWLEDGE SHARING

6.9.1 Knowledge sharing between parties in the process of solar farm development is important because solar farms remain an emerging and rapidly developing type of development. Sharing knowledge on a regular cycle, to help ensure good practice is continually shared and understandings evolve, may be best achieved through a website dedicated to collecting and sharing case studies which illustrate different aspects of good practice. Through the application of the good practice described in this guide and through the evolution of new solar farm designs and new archaeological techniques, we can look forward to the development of even better solutions in the future.

6.9.2 To further build rapport and deepen understanding, it may be beneficial for site developers or operators to offer site tours to archaeological advisors so they can, for example, observe the process of construction. Solar farm developers, equally, could be offered opportunities to visit archaeological sites during investigation, to observe the archaeological process.

6.10 BEYOND THE PROJECT LIFECYCLE – DESIGN AND INNOVATION

6.10.1 The solar energy sector is maturing in a dynamic environment, with new technology and new approaches likely to develop. Those new technologies will feed back into the cycle as new sites are searched for and scoped for development.

6.10.2 There are opportunities for both sectors to work together to design more effective investigation, mitigation, construction and decommissioning methods. Additionally, innovation and design changes may evolve during the construction of the current generation of consented and in-progress schemes. It is vital that developers and their consultants can adequately explain the possible impacts of any of these changes, with reference to the current understanding as set out in this guide and any scheme-specific documentation.

7 UNDERSTANDING THE KEY ELEMENTS OF SOLAR PROJECTS – PRE-DETERMINATION AND PRE-SUBMISSION CHECKLIST FOR APPLICATIONS

7.1 CHECKLIST (ILLUSTRATIVE EXAMPLE)

7.1.1 Information similar to the following should be provided to the archaeological advisor with a plan showing the location/s of the items listed. The earlier this is provided, the earlier the advisor can understand the level of impact a proposal may have upon archaeological significance, and advise accordingly. The number and type of rows and columns in this table will differ between projects.

7.1.2 If the location and dimensions of elements of the solar farm are not known/cannot be stated, as much detail as possible should be provided. Depth and spatial extent are particularly useful as these determine the size of proposed ground disturbance in physical terms, which is one of the key concerns with archaeological deposits. What matters most is clearly stating the depth and spatial extent of ground disturbance that could affect archaeological remains. Providing this key information early helps enable meaningful discussions with archaeological advisors. Additional details should be shared as they become available, as part of ongoing communication.

Indicative depth of a cable trench. Credit: Pre-Construct Archaeology

CCTV post installation. Credit: Pre-Construct Archaeology

Perimeter fence and CCTV cable trench. Credit: Pre-Construct Archaeology

Table 1 *Pre-determination and pre-submission checklist for applicants*

Function of infrastructure	**Construction activity of relevance to archaeology** *(text below is for reference only)*	**Depth of ground disturbance (mm) and description of work** *(text below is for reference only)*	**Location and description of flexibility** *(text below is for reference only)*
Temporary construction compound	Enabling works	There will be two construction compounds. One will be xx m by xx m and the other will be xx m by xx m. Both will bestripped to a depth of xxx mm.	Zone X, medium flexibility.
Temporary equipment storage area		Equipment will be stored within the construction compounds.	Zone X, low options for re-siting. No-dig options possible.
Solar farm	Solar farm (an array of ground-mounted solar panels)	Supports for the solar arrays will be inserted xxxx–xxxx mm into the ground. However, in identified archaeologically highly sensitive zones, panels could be surface mounted – ie, only non-intrusive array supports used and all cabling in cable trays above ground.	Solar arrays in zones X–Y highly flexible micro-siting options.
Battery energy storage system (BESS)	Battery energy storage system (BESS)	Containers to be placed on concrete slab/s. Formation depth likely to be xxx–xxx mm. Spatial extent xx m – xx m.	
Ancillary infrastructure	Substation	Concrete slab/s. Formation depth likely to be xxx –xxx mm. Spatial extent xx m x xx m.	
	Inverters (mounted behind the solar panels)	No impact as the inverters are mounted to the back of the panels and do not touch the ground.	
	Transformer units	Transformer, x.x m x x.x m. Built off xxx mm plinth, surface mounted. Some levelling of the surface may occur. This is likely to be up to xxx mm deep.	
Cables	Cable runs between rows of panels	These will be surface mounted in trays for the most part. There may be some cables (running to the transformers) which need undergrounding (tbc).	
Cable route to grid	Cable trench	We anticipate that it would be in the region of 800mm wide and xxx–xxxx mm deep.	
	Width and depth of easement of cable	We anticipate that there will be no easementin this case.	
	POC mast CSE compound	Variable but parts up to xxxx mm.	
	Point of connection	Variable but parts up to xxxx mm.	

Function of infrastructure	**Construction activity of relevance to archaeology** *(text below is for reference only)*	**Depth of ground disturbance (mm) and description of work** *(text below is for reference only)*	**Location and description of flexibility** *(text below is for reference only)*
Roads and tracks	Main access road	For the main road in/out, an allowance for xxx mm depth should be made = xxx mm of stone, xxx mm of tarmac.	
Roads and tracks	Maintenance track (construction- and maintenance-related tracks)	Where new, the track will be xxx mm deep, where existing, no change.	
Landscaping	There are stretches of new hedgerow being proposed	Cultivation to xxx mm below existing ground level, potential root penetration below xxx mm in due course.	Site edges. Low flexibility, but subject to design decisions.
	There are several separate (small) areas of tree planting being proposed	Cultivation to xxx mm below existing ground level, potential root penetration below xxx mm in due course.	
	There is a proposed area of scrub planting	Cultivation to xxx mm below existing ground level, potential root penetration below xxx mm in due course.	
	There are areas of proposed wildflower meadow	Cultivation xxx mm below EGL.	
Ecology	Habitat compensation or enhancement areas	Cultivation to xxx mm depth and potential root penetration, soil inversion and topsoil strip.	Unknown at this stage. Subject to ecological evaluation.
Drainage	There is a proposed drainage basin proposed in the south-western partof the site	The basin would be x.x m deep.	
	Swales	There are swales for drainage; these would be xxx –xxx mm deep.	
Fencing	Fencing around the solar farm	Posts would be xxx mm by xxx mm and the posts would be driven xxx mm deep. They would be spaced x.x m apart.	Site edges. Low flexibility.
	Fencing around the BESS	Posts would be xxx mm x xxx mm and the posts would be driven xxxx mm deep. They would be spaced x.x m apart.	
CCTV	Post	TBC – likely to be narrow poles (approx. xxx mm by xxx mm); would be inserted xxx mm deep.	
Satellite dish post	Post	TBC – likely to be narrow poles (approx. xx mm by xx mm); would be inserted xxx mm deep.	
Lighting	Post	TBC – spaced at intervals around fenced areas in substation.	

8 DEVELOPING APPROPRIATE PLANNING CONDITIONS/ DCO REQUIREMENTS

8.1 A NEED FOR APPROPRIATE CONDITIONS/DCO REQUIREMENTS

8.1.1 The decision maker needs to be confident that the planning balance struck at the point of decision can be secured through a process of archaeological understanding and appropriate mitigation and design. Because of the particular characteristics of solar schemes, decisions can often be made where investigations are on-going and design remains flexible. As such, the utilisation of planning conditions as part of a consent can be particularly important.

8.1.2 The following sections do not present 'model' conditions (or the equivalent). They instead include a diagram and associated text to help those drafting conditions to consider the process of framing conditions (or equivalent), their timing within the process, and some of the considerations that might need to be incorporated at each stage (eg, pre-commencement). For simplicity, the word 'conditions' has been used in this document to represent all such measures to secure the public interest in archaeological matters (eg, under the Planning Act 2008 these would be Requirements for a DCO).

8.1.3 Like many planning considerations, archaeology should be iterative, with each stage of work informing the next. Where a phase of post-determination investigation work discovers new archaeological information, this should inform any further work. This iterative process requires a mechanism in the condition to allow new information and understanding to supplement what was known at the time of consent, and conditions are a key tool to secure work post consent. The condition mechanism should enable staged investigation and mitigation linked to development phases.

8.1.4 These sections are not intended to be comprehensive (or prescriptive), rather they act as a guide to everyone involved in solar farm development. They should reinforce understanding of the type of archaeological works that are needed (and why) at each stage, and the effect that relevant information has on the type and number of conditions attached to any permission. Information provided pre-determination helps to increase confidence (and reduces risk) on all sides, reduces the number and complexity of conditions attached, and reduces the need for pre-commencement conditions. Conversely, some work may be more appropriately undertaken post-determination, to inform the final designs and scope of construction impacts.

8.1.5 This section does not cover the rationale for objection to consent, nor explicitly consider management during lifespan or decommissioning. Where these elements need to be addressed, we would expect this to be covered by relevant documents such as the Operational Environment Management Plan or a Decommissioning Environment Management Plan.

8.1.6 Where other types of work which might have an impact on archaeological remains are required post-determination (for instance for engineered or ecological solutions), the specifications or methodologies for these works should be informed by the results of the surveys carried out under the project designs (for example, ensuring that replacement badger setts are not located in areas of significant archaeological remains).

8.2 PROCESS FOR IDENTIFYING POSSIBLE CONDITIONS

8.2.1 This process figure (see below) contains decision points (diamonds) and actions (boxes) that contain the types of condition that may be required. Further explanation is given in the subsequent paragraphs. The process is designed to focus on what types of document and associated actions should be conditioned. It also groups the process into two parts, those actions/conditions that are likely to be 'pre-commencement', and those that are likely to be for 'implementation prior to coming into use' (which can also include other timescales, such as 'within XX years of completion of fieldwork'). This is an important distinction as pre-commencement conditions have a major impact on project timescales and should be agreed with an applicant in advance of consent and clearly understood by all sides.

8.2.2 The type and number of conditions, and the timing of their implementation, is dependent on the amount of information available at the point of consent. Conditions can also be designed to be actioned at different phases of development. It is good practice to ensure that relevant paragraphs of specific planning policy/guidance are referenced for each condition.

8.2.3 The suggestions made in this section are not exhaustive and there may be other types of condition and timescales that are necessary or useful. Those drafting these conditions should also be mindful of existing best practice advice on writing sound conditions.[14] [15]

[14] For example, Planning Advisory Service: Effective Use of Conditions

[15] In Northern Ireland, please see guidance on standard conditions included in *Development and Archaeology: Guidance on Archaeological Works in the Planning Process (DfC 2019).*

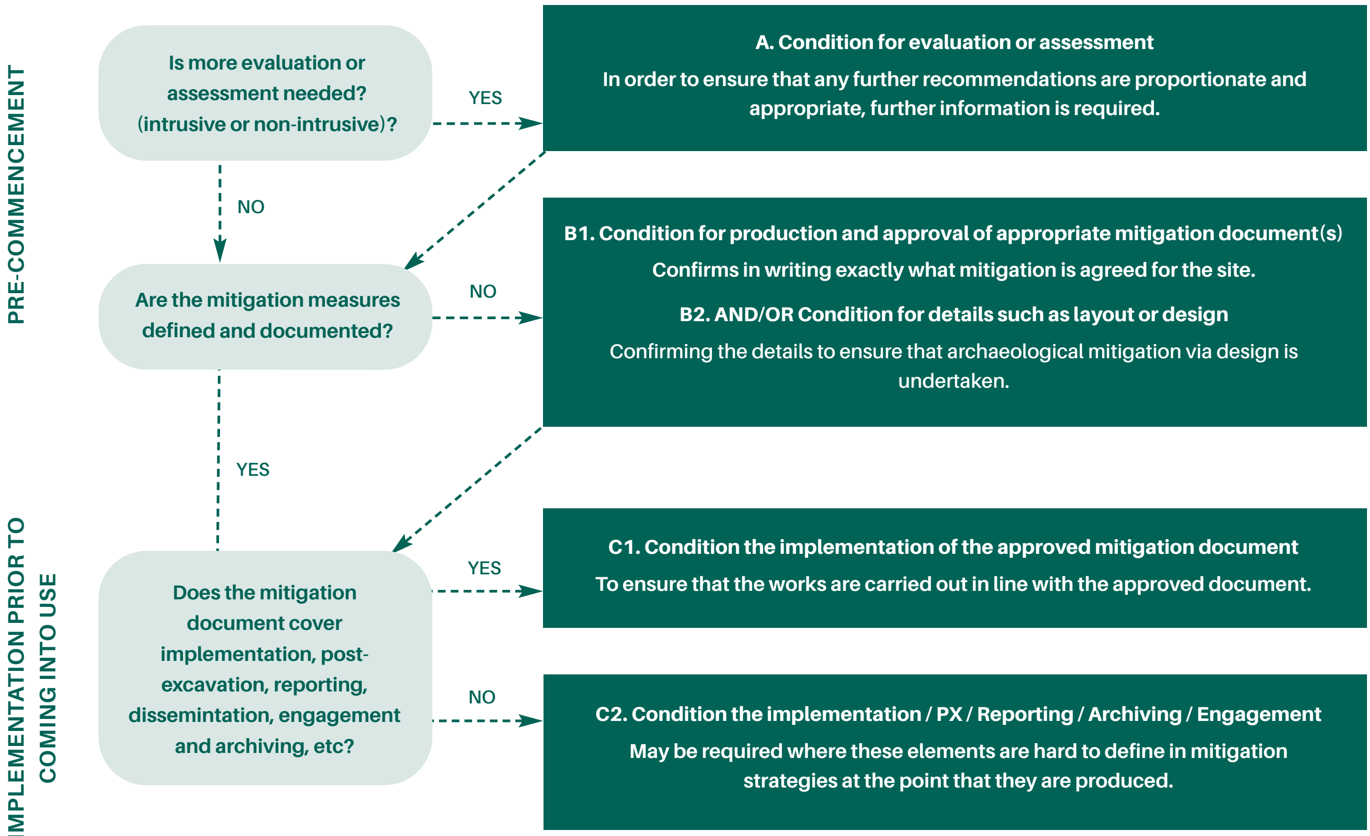


Figure 1 *Process for decision making when applying conditions (detailed information on conditions in subsequent pages)*

A. Condition for evaluation or assessment

The purpose of this pre-commencement condition is to ensure that requirements for further archaeological work to inform design refinement and detailed archaeological mitigation are secured. A condition might include the following points:

- the work should take place pre-commencement
- a draft written scheme of investigation (WSI) should be produced
- the WSI/Project Design will need to be approved (by archaeological advisor/statutory consultee and/or Planning Authority)
- all archaeological work should be undertaken in line with the approved WSI
- the work may need to be phased (eg, geophysical survey in previous no-access areas and then archaeological evaluation)
- post-excavation assessment and reporting should be undertaken after the fieldwork

Alongside this, separate condition(s) may be needed to cover further archaeological mitigation

B1. Condition for production of appropriate mitigation document(s)

The purpose of this condition is to confirm in writing exactly what mitigation is agreed for the site so that it can be approved. This needs to be pre-commencement to ensure that design of the development takes account of the results of the archaeology works, and that mitigation plans are properly designed prior to commencement of development. May include areas where impacts are managed through design, as well as those for archaeological investigation. A condition might include the following points:

- the work should take place pre-commencement
- a document should be produced (eg, archaeological mitigation strategy, WSI/Project Design, overarching WSI, ongoing management plan) and approved
- the document may require cross-referencing with other documents (eg, Construction Environmental Management Plan)
- the document should include an agreed process for updating the document(s)

B2. AND/OR condition for details such as layout or design

The purpose of this condition is to confirm the details to ensure that archaeological mitigation via scheme layout/design is undertaken as agreed. This needs to be pre-commencement to ensure that design of the development takes account of the results of the archaeology works, and that mitigation plans are properly designed and approved prior to commencement of development. A condition might include the following points:

- the archaeological work should take place pre-commencement

- detailed layout or design should be provided
- timescales may need to be phased as specific design elements are finalised
- it may be cross-referenced to other documents or a specific plan

C1. Condition the approved mitigation document

The purpose of this condition is to ensure that the works are carried out in line with the approved document and prior to the commencement of the development. It may require:

- a document (eg, archaeological mitigation strategy, WSI, overarching Project Design) to be implemented
- production of other WSIs (eg, for phases or areas)
- timescales to be PHASED; conditions could be worded to allow documents and archaeological works to be approved and undertaken in phases, without needing to cover the entire scheme at once
- sometimes to be combined with conditions in B (above)
- a timescale, (eg, before the development is brought into its intended use)
- cross-referencing with other documents
- inclusion of details on implementation, including post-excavation, reporting and archiving, but this is often a separate condition, see C2.

C2. Condition the implementation/post-excavation/reporting/archiving/engagement

This condition may be required where these elements are hard to define in mitigation strategies at the point that they are produced, and/or where the scope and extent of those activities and the information they will produce are difficult to predict.

- it requires a timescale, (eg, before the development is brought into its intended use or within XX years of fieldwork being completed, or in line with the timescales described in the post-excavation assessment and project design)
- it may be used in addition to any of the conditions above

9 FURTHER READING

9.1 POLICY BACKGROUND

Department for Energy Security & Net Zero, 2025 *Overarching National Policy Statement for energy (EN-1)*. March 2025

Department for Energy Security & Net Zero, 2025 *National Policy Statement for Renewable Energy Infrastructure (EN-3)*. March 2025

Llywodreath Cymru: Welsh Government, 2024 *Planning Policy Wales*. Edition 12. February 2024

Ministry of Housing, Communities and Local Government, 2024 *National Planning Policy Framework*

The Northern Ireland Executive, *2025 Strategic Planning Policy Statement*, Edition 2, December 2025

9.2 NATIONAL HERITAGE AGENCY GUIDANCE

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

9.3 CHARTERED INSTITUTE FOR ARCHAEOLOGISTS STANDARDS AND GUIDANCE

Standard and guidance for archaeological advice by historic environment services

Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives

Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment

Standard and guidance for the collection, documentation, conservation and research of archaeological materials

Standard and guidance for archaeological geophysical survey

Standard and guidance for the archaeological investigation and recording of standing buildings or structures

Standard and guidance for forensic archaeologists

Standard and guidance for historic environment desk-based assessment

Standard and guidance for nautical archaeological recording and reconstruction

Standard and guidance for stewardship for the historic environment

Standard and guidance: appendices

9.4 REPORTS FOCUSED ON ARCHAEOLOGICAL EVALUATION

Chartered Institute for Archaeologists, 2022 Evaluation Strategies (Evals 1): understanding current practice and encouraging sector engagement. Report and recommendations. August 2022. 70078423-ARC

9.5 PUBLIC BENEFIT OF ARCHAEOLOGY

CIfA, 2023 *Toolkit for Public Engagement*. Version 1.0 (September 2023).

9.6 CONSIDERING ARCHAEOLOGY IN A DEVELOPMENT CONTEXT

CIRIA. 2021 *Archaeology and Construction: good practice guidance* (C799D)

Department for Communities, 2019 *Development and Archaeology: Guidance on Archaeological Works in the Planning Process*.

Historic England, 2016 *Preserving Archaeological Remains. Decision-taking for sites under development*.

IEMA, CIfA and IHBC, 2021 *Principles of Cultural Heritage Impact Assessment.*

9.7 HERITAGE WITHIN THE PLANNING SYSTEM (RESEARCH)

DRP Archaeology, H Morel and D Phillips, 2021 *The Heritage Dimension of Commercial Renewable Energy Development in Planning*.

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