

Chapter 3: Cultural Heritage

CULTURAL HERITAGE	
AUTHOR	Oxford Archaeology
SUPPORTING APPENDIX	ES Volume 3, Appendix: Cultural Heritage: Annex 1: Archaeological Desk-Based Assessment; Annex 2: Geophysical Survey Report 2022; Annex 3: Geophysical Survey Report 2023; and Annex 4: Written Scheme of Investigation for Archaeological Trial Trenching.
KEY CONSIDERATIONS	This ES chapter assesses the likely significant effects of the Proposed Development upon cultural heritage assets on and near the site and on the settings of any cultural heritage assets proximate to the site. This includes both above ground (built heritage) and below ground (archaeological) assets. The ES chapter sets out the assessment methodology and baseline conditions, examines potential effects, and presents mitigation measures to prevent, reduce or offset (where possible) any significant adverse effects to heritage assets. The likely residual effects once these mitigation measures have been implemented are presented and their significance assessed.
CONSULTATION	<p>An EIA Scoping Report was submitted to South Oxfordshire District Council (SODC) on 16th December 2022 and is provided within ES Volume 3, Appendix: EIA Methodology – Annex 4. An EIA Scoping Opinion was received from SODC on 30th January 2023 and is provided within ES Volume 3, Appendix: EIA Methodology – Annex 5.</p> <p>The Scoping Opinion stated the following pertinent points with regards to archaeology and built heritage. Responses are provided below each point raised:</p> <ul style="list-style-type: none"><i>The scoping report submitted acknowledges the archaeological interest and potential of the site and sets out that the EIA will contain a chapter on Archaeology (buried heritage), this to be informed by a desk-based assessment and the results of a geophysical survey, previous written schemes of investigation for the implementation of which in line with the Chartered Institute for Archaeologist standards and guidance have been submitted and agreed. It is not however agreed that this approach as scoped will allow for a suitably informed assessment of the potential archaeological resource within the site, an understanding as to its significance, and the likely effects of proposed development on that significance, to enable its appropriate determination. It is therefore recommended that the Archaeology (buried heritage) chapter of the EIA for the proposed development should be informed by the desk based assessment and geophysical survey as scoped, but also include the results of a programme of trenched evaluation.</i><ul style="list-style-type: none">Although the results of the trial trench evaluation are not available to inform this document, the work is due to be carried out in the near future and the results submitted as a supporting document in due course. The evaluation will be undertaken in accordance with standards and guidance issued by the Chartered Institute for Archaeologist and in consultation with the South Oxfordshire County Council Archaeological Advisor.<i>In respect of built heritage, this development could, potentially, have an impact upon designated heritage assets and their settings in the area around the site. The application site lies in part within the Grade I Registered Park and Garden of Nuneham House. Impacts to this and other nearby designated and non-designated heritage assets including, but not limited to, Nuneham House and the garden structures within, Nuneham Courtenay Conservation Area, Thame Lane Bridge and the buildings of Culham Station should be scoped in to the Heritage Chapter of the ES.</i><ul style="list-style-type: none">This ES chapter considers and assesses the potential effects (see the ‘<i>Potential Effects</i>’ section of this ES chapter) as a result of the Proposed Development upon the relevant designated and non-designated heritage assets, including the Registered Park and Garden of Nuneham House, Thame Lane Bridge and the buildings of Culham Station. With regards to Nuneham House (and the garden structures within), as set out within paragraph 3.62 of this ES chapter, the asset lies within the Registered Park and Garden, approximately 2km north-east of the site. Due to the topography, and the distance between the site and the house, the Proposed Development is not considered to have the potential to impact, either direct or indirect, on Nuneham House, and is therefore not considered further within this ES.<i>As submitted, the report only refers to below ground archaeology and has overlooked all other forms of heritage asset. Although the RPG is rightly mentioned within the Landscape Chapter, it is a heritage asset as well as an important landscape feature and must also be included within a Heritage Chapter. This is regardless of whether built form will be constructed within the RPG boundary or not as development within its setting and new proposed landscaping will alter the current experience and condition of the asset.</i><ul style="list-style-type: none">This ES chapter considers and assesses the potential effects (see the ‘<i>Potential Effects</i>’ section of this ES chapter) upon the Registered Park and Garden of Nuneham House as a result of the Proposed Development.

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	<ul style="list-style-type: none"><i>It is vital that the heritage significance of these heritage assets (and all others scoped into the ES) are considered in the round and more broadly than simply as landscape features. Their significance as heritage assets should be clearly set out within the ES followed by an assessment the impact of the proposal would have upon that significance. How the assets are seen within the wider landscape may add to their significance but their value is far broader than that. To that end, it would make more sense to include assessment of them in the Heritage chapter. Where needed, their role within the wider landscape can also be included in the Landscape chapter.</i><ul style="list-style-type: none">This ES chapter considers and assesses the potential effects as a result of the Proposed Development (see the ‘<i>Potential Effects</i>’ section of this ES chapter) upon the heritage significance of relevant designated and non-designated heritage assets.<i>It is also expected the ES will consider the potential impacts on non-designated features of historic, architectural, archaeological or artistic interest, since these can also be of national importance and make an important contribution to the character and local distinctiveness of an area and its sense of place. This information is available via the local authority Historic Environment Record (www.heritagegateway.org.uk) and relevant local authority staff.</i><ul style="list-style-type: none">This ES chapter considers and assesses, as relevant, the potential effects as a result of the Proposed Development (see the ‘<i>Potential Effects</i>’ section of this ES chapter) upon non-designated features of historic, architectural, archaeological or artistic interest.<i>It is important that the assessment is designed to ensure that all impacts are fully understood. Section drawings and techniques such as photomontages are a useful part of this. The assessment should also take account of the potential impact which associated activities (such as construction, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. The assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits, and can also lead to subsidence of buildings and monuments.</i><ul style="list-style-type: none">The assessment of potential effects as a result of the Proposed Development (see the ‘<i>Potential Effects</i>’ section of this ES chapter) upon heritage and archaeological assets within this ES chapter considers (as relevant): the visualisations presented within the Landscape and Visual Impact Assessment (LVIA), as provided within ES Volume 2, construction and operational phase activities associated with the Proposed Development, and potential alterations to drainage patterns as a mechanism of effect.

ASSESSMENT METHODOLOGY

Defining the Baseline

- 3.1
- The study area for both archaeology and built heritage comprises the site and a 1km radius around the site. This radius includes all built heritage assets identified through the scoping and assessment process that may be affected by the Proposed Development. The study area is shown on Figure 3.1, which also includes all designated and non-designated heritage assets relevant to this assessment.
- 3.2
- No standard EIA methodologies exist for heritage and archaeological assessment. However, assessment methodology has been guided by various published documents including: Historic England’s Conservation Principles, Policy and Guidance¹, the Historic Environment Good Practice Advice Planning Advice Note 3² and the Design Manual for Roads and Bridges 2019³. Although the latter was designed as best-practice for road schemes in particular, it is accepted as best-practice for the assessment of cultural heritage in relation to archaeology, listed buildings and historic landscapes.
- 3.3
- The assessment is a qualitative one, and the evaluation of significance is ultimately a matter of professional judgement.
- 3.4
- The three-stage approach presented below is adopted to reach an understanding of the significance of any effect that the Proposed Development may have on a heritage asset. It is necessary to understand the importance / significance of the asset and the proposed impact and impact magnitude on the asset to assess the overall scale of effect on identified assets and effect significance.
- 3.5
- Using a matrix that measures both asset importance (significance in the context of the National Policy Planning Framework (NPPF⁴) terminology) and impact magnitude produces an assessment of the scale of the effect of

¹ English Heritage, (2008). Conservation Principles, Policy and Guidance.
² Historic England, (2017). Good Practice Advice Note 3: The Setting of Heritage Assets.

³ Design Manual for Roads and Highways, (2019).
⁴ Ministry of Housing, Communities and Local Government, (2021). National Planning Policy Framework. December 2023.

the Proposed Development on identified assets. This approach, including the matrices themselves, is set out below in Table 3.1 – Table 3.3.

- 3.6** This ES chapter has been prepared in accordance with the standards and guidance issued by the Chartered Institute for Archaeologists (CIfA), the requirements of the EIA Regulations⁵, guidance in NPPF and the National Planning Practice Guidance (NPPG), Historic England guidance (Good Practice Advice Documents 2015 & 2017), and current best practice. Relevant planning legislation and policy is outlined at **ES Volume 3, Appendix: Cultural Heritage – Annex 1**.
- 3.7** Heritage assets are recorded in national and/or local historic environment databases, in this instance the National Monuments Record (NMR), National Heritage List held by Historic England (HE), and the Oxfordshire Historic Environment Record (HER). These data sources have been used in the preparation of this ES chapter and to inform the approach towards heritage at the site.

Archaeology

- 3.8** The archaeological baseline for the site has been established by the production of an Archaeological Desk-Based Assessment (DBA) (**ES Volume 3, Appendix: Cultural Heritage – Annex 1**) which has been supported by two phases of geophysical survey (**ES Volume 3, Appendix: Cultural Heritage – Annexes 2 and 3**) a programme of evaluation trial trenching (TT) is proposed and will be undertaken in due course. The TT scope is outlined in a Written Scheme of Investigation (**ES Volume 3, Appendix: Cultural Heritage – Annex 4**).

Built Heritage

- 3.9** The DBA (**ES Volume 3, Appendix: Cultural Heritage – Annex 1**) considers both the potential impact to below ground remains within the site and above ground heritage assets, including Listed Buildings, Conservation Areas and Registered Parks and Gardens.
- 3.10** Listed below are the main data sources consulted during the compilation of the baseline:
- The National Heritage List for England (NHLE) for designated heritage assets;
 - Oxfordshire County Council Historic Environment Record (OCCHER) for non-designated heritage assets, archaeological events and Historic Landscape Characterisation (HLC);
 - Oxfordshire County Council's digitized collections and Picture Oxon website, for historic maps, photographs, documentary sources and manuscripts;
 - The Oxfordshire History Centre for historic maps, photographs, documentary sources and manuscripts;
 - Groundsure Mapping for Historic Ordnance Survey Maps;
 - National Mapping Project (NMP) data held by Historic England;
 - Aerial Photographs held by Historic England;
 - LiDAR data as held by the Environment Agency;
 - Portable Antiquities Scheme (PAS) data;
 - Geotechnical data as held by the client and the British Geological Survey; and
 - Other relevant primary and secondary sources including published and unpublished works as held by Oxford Archaeology (OA) and relevant libraries.

Evolution of the Baseline

Archaeology

- 3.11** The evolution of the baseline is not relevant to the assessment of archaeology, as there would be no change expected to the below ground conditions on site prior to the Proposed Development commencing, and therefore any archaeological remains would remain as per the existing baseline condition.

- 3.12** In relation to the wider understanding of archaeology in the area, should new information come to light in the course of archaeological works associated with the cumulative schemes, this may enhance the understanding of the baseline conditions at the site.

Built Heritage

- 3.13** The baseline related to built heritage is also unlikely to change due to the nature of the surroundings and receptors that are addressed.

Impact Assessment Methodology

Enabling and Construction

- 3.14** This assessment considers the nature, scale and significance of the effects to archaeological and heritage assets that will arise during enabling and construction of the Proposed Development, with the effects defined on the basis of any changes compared to the baseline (i.e., the conditions which would exist if the Proposed Development did not go ahead). There are known archaeological assets within the site as identified by on-site survey work. The scale of the Proposed Development indicates that any buried archaeological remains which may be present within the site, specifically within construction footprints, would be negatively impacted by the construction process.
- 3.15** With the exception of Grade I Nuneham Courtenay Registered Park and Garden, no built heritage assets lie within the site, however several are located nearby. No development is proposed within the extent of the Registered Park and Garden but development is proposed immediately adjacent and within the setting of the nearby built heritage assets.
- 3.16** Accordingly, this assessment has considered the following potential effects:
- Direct effects on buried archaeological remains; and
 - Indirect effects on the settings of heritage assets both within and outside the site boundary.
- 3.17** The identification of physical impacts on archaeological remains within a site takes into account any activity which would entail ground disturbance, for example site set up works, landscaping and the construction of foundations (if required).
- 3.18** The effects to built heritage receptors experienced during enabling and construction activities will be temporary in nature and will relate to changes within the settings of the heritage assets.

Completed Development

Archaeology

- 3.19** Any potential impacts and effects to buried archaeological remains will occur during the enabling and construction works. Following appropriate pre-construction mitigation, no impacts/effects will occur to buried archaeological remains on completion of the Proposed Development.

Built Heritage

- 3.20** This assessment considers the nature, scale and significance of the effects to built heritage assets that will arise once the Proposed Development is complete and operational, with the effects defined on the basis of any changes compared to the baseline (i.e., the conditions which would exist if the Proposed Development did not go ahead).
- 3.21** Designated built heritage assets comprise (see table 3.5 for more information):
- Nuneham Courtenay Registered Park and Garden: NHLE 1000122 (Grade 1);
 - Nuneham Courtenay Conservation Area
 - Culham Station Ticket Office: NHLE 1059789 (Grade II*) listed building;

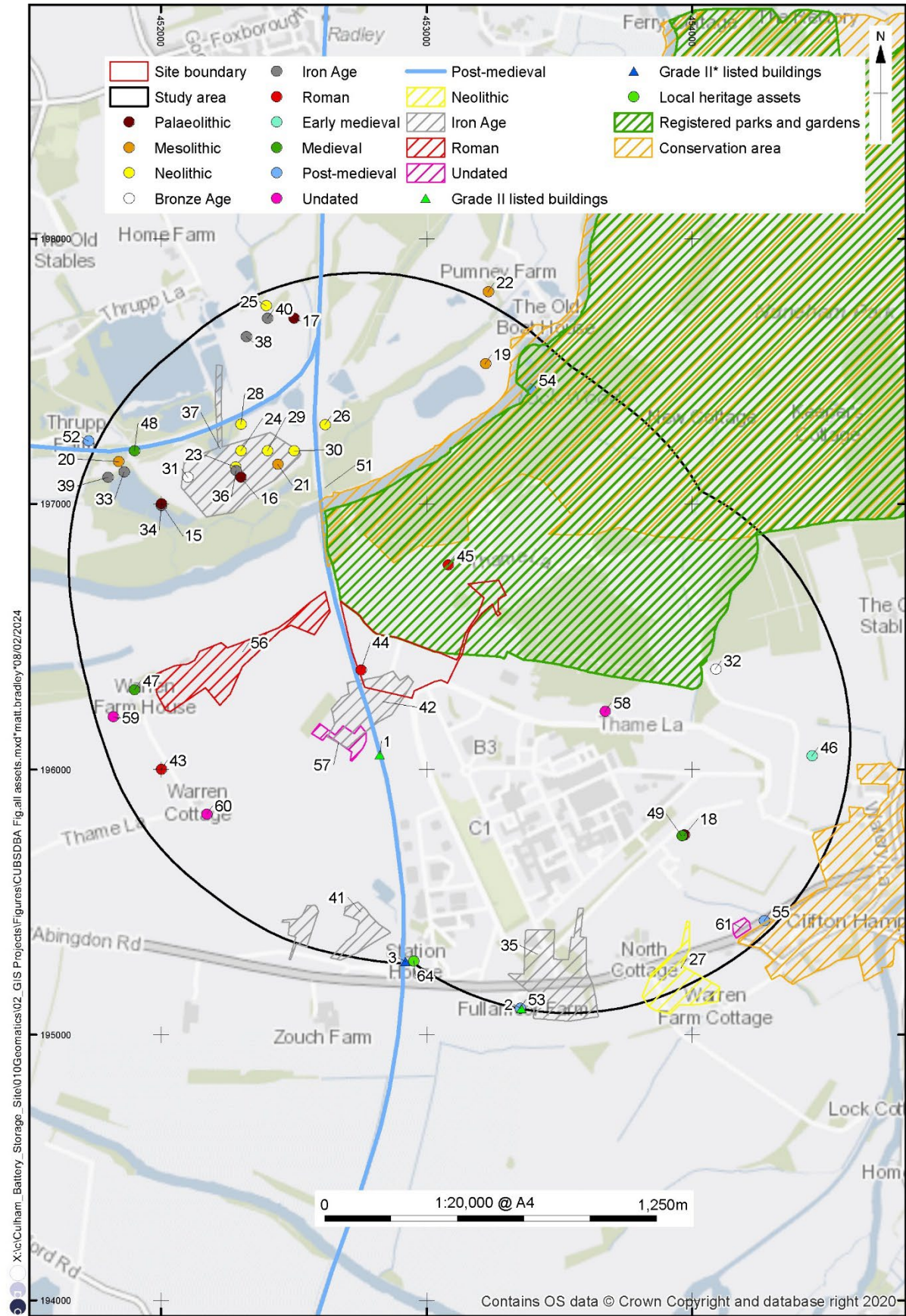
⁵ Her Majesty's Stationery Office (HMSO) 2017. *The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (amended in 2018 and 2020)*.

- Thame Lane Bridge: NHLE 1409238 (Grade II) listed building;
 - Fullamoor Farmhouse: NHLE 1449039 (Grade II) listed building.
- 3.22 Effects to built heritage assets will arise from changes within the setting of these assets, but these will be temporary in nature.
- 3.23 A number of embedded mitigation measures have been identified and included within the design of the completed development to minimise potential effects to built heritage receptors. These are set out within **ES Volume 1, Chapter 2: Alternatives, Design Evolution and the Proposed Development**, and this include the planting of new hedge lines around the Proposed Development and establishment of new woodland and scrubland creating a visual barrier between the Proposed Development and Nuneham Courtenay Registered Park and Garden. Furthermore, the landscaping design seeks to re-establish a historic tree belt along the south-west boundary of the Registered Park and Garden in order to enhance this area of the Registered Park and Garden within the site. These measures are discussed further in the *'Embedded Mitigation'* section of this ES chapter.

Decommissioning

- 3.24 As set out in **ES Volume 1, Chapter 2: Alternatives, Design Evolution and the Proposed Development**, the Proposed Development is intended to function for a maximum of 40 years. Following this 40-year lifespan, the development (with the exception of the connection tower at the north-eastern extent of the site and landscaping) will be dismantled and the land will be returned to its original state for agricultural purposes.
- 3.25 As noted above, any potential impacts and effects to buried archaeological remains will occur during the enabling and construction works. There is therefore no need to consider any further the decommissioning of the Proposed Development in respect of buried archaeological remains within this ES chapter.
- 3.26 With the exception of the permanent landscaping and connection tower proposed as part of the Proposed Development within the Nuneham Courtenay Registered Park and Garden (as discussed in **ES Volume 1, Chapter 2: Alternatives, Design Evolution and the Proposed Development**), following the decommissioning the Proposed Development, given that the majority of the site will be returned to its existing agricultural use, there will be a negligible effect on the setting of built heritage assets. Landscaping within the park will not be removed during decommissioning, and therefore no consideration is needed beyond the impacts considered during the enabling and construction and the completed and operational Proposed Development phases.
- 3.27 As during the construction process, the decommissioning process associated with the removal of the battery storage facility will introduce additional noise, vibration, vehicle movements and dust into the landscape. These impacts during the decommissioning of the site are considered on a case by case basis within the *'Potential Effects'* section of this ES chapter, whereby the effects following the decommissioning of the site are considered negligible, and are therefore not considered further within this ES chapter.

Figure 3.1 Study Area



Assumptions and Limitations

- 3.28 Data used to compile this ES chapter consists of secondary information derived from a variety of sources. The assumption is made that this data, as well as that derived from other secondary sources, is reasonably accurate.
- 3.29 The assessment assumes the accuracy of the available datasets (see paragraph 3.10) reviewed. The records held by the Oxfordshire HER are not a record of all surviving heritage assets, but a record of the discovery of a wide range of archaeological and historical components of the historic environment. The information held within it is not complete and does not preclude the subsequent discovery of further heritage assets that are, at present, unknown. As such, the information presented in this ES chapter and the technical appendices provide an indication of below ground archaeological assets present or likely to be present, rather than a definitive list of all assets which are present.
- 3.30 The principal limitation to the assessment of effects upon below ground heritage assets is the nature of the archaeological resource, which is buried and therefore not visible. This means it can be difficult to accurately predict the presence and likely importance of below ground heritage assets, and the likely impact (and resultant effects) of development upon such assets. This limitation has been reduced through the implementation of a programme of geophysical survey supported by a forthcoming programme of trial trench evaluation (**ES Volume 3, Appendix: Cultural Heritage – Annexes 2, 3 and 4**).
- 3.31 The assessment of effects to built heritage assets is based on the details of the Proposed Development sought for approval, including the site layout and design details as presented in **ES Volume 1, Chapter 2: Alternatives, Design Evolution and the Proposed Development**. The assessment of the scale of effects, and so effect significance, is based on extensive professional experience.

Methodology for Defining Effects

Receptors and Receptor Importance

- 3.32 Receptors are either known designated or non-designated heritage assets (which applies to both archaeological and built heritage receptors) or a perceived potential for archaeological heritage assets.
- 3.33 Determination of the importance of a heritage asset is based on existing statutory designations and, for undesignated assets, the Secretary of State's non-statutory criteria for Scheduling Monuments⁶, Historic England's Conservation Principles⁷, the heritage interests defined by the NPPG⁸ and professional judgement. The NPPF and the NPPG introduce criteria for the assessment of the significance (importance) of heritage assets and these have been factored into this assessment.
- 3.34 The importance of a heritage asset can be defined as of Very High, High, Medium, Low or Negligible. The criteria to establish the importance of heritage assets are described in Table 3.1.

Table 3.1 Criteria Used to Determine Importance of the Heritage Asset

Importance	Description of Heritage Asset
Very High	<ul style="list-style-type: none">Sites or monuments of international importance, including World Heritage Sites.Structures and buildings inscribed as of universal importance as World Heritage Sites.Other buildings or structures of recognised international importance.
High	<ul style="list-style-type: none">Monuments scheduled under the Ancient Monuments and Archaeological Areas Act 1979.Archaeological sites and remains of comparable quality, assessed with reference to the Secretary of State's non-statutory criteria.Undesignated structures of national importance.Grade I and Grade II* listed buildings.Other listed buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade.Conservation Areas containing very important buildings.
Medium	<ul style="list-style-type: none">Archaeological sites and remains which, while not of national importance, score well against most of the Secretary of State's criteria.Grade II listed buildings.

⁶ Department for Culture, Media and Sport, (2013). Scheduled Monuments and Nationally Important Non-Scheduled Monuments.
⁷ English Heritage, (2008). Conservation Principles, Policy and Guidance.

Importance	Description of Heritage Asset
	<ul style="list-style-type: none">Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations.Conservation Areas containing buildings that contribute significantly to its historic character.Historic Townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).
Low	<ul style="list-style-type: none">Archaeological sites that score less well against the Secretary of State's criteria.Locally listed buildings.Historic (unlisted) buildings of modest quality in their fabric or historical association.Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).
Negligible	<ul style="list-style-type: none">Sites or buildings of very limited architectural or historic interest, insufficient to warrant consideration as a non-designated heritage asset.Areas in which investigative techniques have produced no or only minimal evidence for archaeological remains, or where previous large-scale disturbance or removal of deposits can be demonstrated.

Direct and Indirect

- 3.35 Impacts can be direct and indirect:
- Direct impacts:** are defined as an impact caused by an action, which generally occurs at the same time and place as that action. They are generally associated with the construction, operation or maintenance of a facility or activity and are usually obvious or quantifiable; and
 - Indirect impacts:** are defined as changes resulting from primary impacts. These changes include impacts to the setting of assets; effects can be short or long term depending on their persistence or duration.
- 3.36 As set out above, this assessment has considered the following potential effects:
- Direct effects on buried archaeological remains and heritage assets; and
 - Indirect effects on the settings of heritage assets outside the site boundary.

Magnitude of Impact

- 3.37 The magnitude of impact is assessed without regard to the importance of the asset. In terms of the judgment of the magnitude of impact, this is based on the principle (established in the NPPF) that preservation of the asset and / or maintenance of its setting is preferred, and that total physical loss of the asset is the least preferred. Determining the magnitude of impact is based on an understanding of how, and to what extent, the Proposed Development would impact on the buried archaeological assets, and / or on the setting of the heritage assets.
- 3.38 The magnitude of impact is rated as High, Medium, Low and Negligible. High, Medium or Low impacts can be either adverse or beneficial.
- 3.39 The survival of archaeological remains is often uncertain without archaeological evaluation and in these circumstances the magnitude of impact can only be estimated or stated as unknown. The magnitude of change resulting from the impact may vary depending on the nature of past development or management effects (e.g., extent of truncation and made ground and the various forms of impact).
- 3.40 The criteria for assessing the magnitude of impact are set out in Table 3.2.

Table 3.2 Criteria for Assessing the Magnitude of Impact

Magnitude of Impact	Direct Impacts	Indirect Impacts
High	Adverse: Complete removal of an archaeological site or built heritage asset.	Adverse: Comprehensive transformation of the setting of an archaeological site or heritage asset such that the ability to appreciate its importance is reduced.

⁸ Paragraph 006 Reference ID: 18a-006-20190723

Magnitude of Impact	Direct Impacts	Indirect Impacts
	Beneficial: Arrest of physical damage or decay to archaeological remains, building or structure.	Beneficial: Exceptional enhancement of a building or archaeological site, its cultural heritage amenity and access or use
Medium	Adverse: Removal of a major part of an archaeological site and loss of research potential. Partial demolition or loss of a built heritage asset such that its architectural or historic interest is much diminished.	Adverse: Partial transformation of the setting of an archaeological site e.g. the introduction of significant noise or vibration levels to an archaeological monument leading to changes to amenity use, accessibility or appreciation of an archaeological site or heritage asset such that the ability to appreciate its importance is reduced. Alteration to part of a built heritage asset's setting, such that the ability to appreciate its importance is reduced.
	Beneficial: Land use change resulting in improved conditions for the protection of archaeological remains plus interpretation measures (heritage trails, etc). Removal of obstructing features or changes in land use to allow greater views and appreciation of a built heritage asset.	Beneficial: Significant reduction or removal of visual or noise intrusion on the setting of a building, archaeological site or monument. Improvement of the wider landscape setting of a building, archaeological site or monument. Improvement of the cultural heritage amenity, access or use of a building, archaeological site or monument.
Low	Adverse: Removal of an archaeological site where a minor part of its total area is removed but the site retains a significant future research potential.	Adverse: Minor change to the setting of an archaeological site or heritage asset, such that the ability to appreciate its importance is reduced.
	Beneficial: Land use change resulting in improved conditions for the protection of archaeological remains.	Beneficial: Decrease in visual or noise intrusion on the setting of a building, archaeological site or monument. Improvement of the wider landscape setting of a building, archaeological site or monument.
Negligible	No impact from changes in use, amenity or access. No change in the ability to understand and appreciate the resource and its historical context and setting.	No perceptible change in the setting of a building or feature.

Geographic Extent of Effect

- 3.41 The geographic extent of the effects is also identified. At a spatial level, ‘site’ or ‘local’ effects are those affecting the site and neighbouring assets – effects to archaeological assets are typically limited to the area of the physical impact, i.e., the site area. Depending on the importance of an archaeological asset identified on site, the effects upon archaeological resources could result in a wider geographic extent, i.e., at a ‘district / borough’ level (South Oxfordshire); at a ‘regional/county’ level (Oxfordshire); whilst those which affect different parts of the country, or England, are considered being at a ‘national’ level.
- 3.42 Effects to built heritage assets are typically limited to those visual, physical or environmental changes within its setting. The setting of a heritage asset can be limited, or can be vast. Depending on the importance of a built heritage assets within, or proximate to the site, and the extent of its setting, the effects could result in a wider geographic extent, i.e., at a ‘district / borough’ level (South Oxfordshire); at a ‘regional/county’ level (Oxfordshire); whilst those which affect different parts of the country, or England, are considered being at a ‘national’ level.

Effect Duration

- 3.43 Effects to archaeological receptors will typically be permanent and long term.
- 3.44 For built heritage receptors, the nature of effects will change depending on the stage of the Proposed Development. Construction effects are typically short-term and temporary. Changes arising from the completed Proposed Development, including changes to land use and visual changes, are typically permanent and long term, although given that the facility will be decommissioned after 40 years and returned to agricultural use, effects may be considered temporary, albeit long-term. Effects following the decommissioning works are considered long-term, permanent.

Defining the Effect

- 3.45 The scale of the effect of the Proposed Development on heritage assets is determined by:
 - The importance of the asset as per Table 3.1; and
 - The magnitude of impact to the asset as per Table 3.2.
- 3.46 Effects can be adverse or beneficial. Adverse effects are those that create or amplify existing or new impacts upon the importance/sensitivity of heritage assets or their setting and remove or limit the ability to understand and appreciate the importance of the heritage asset. Beneficial effects are those that mitigate existing impacts and help to restore or enhance the importance / sensitivity of heritage assets or their setting, therefore allowing for greater understanding and appreciation of it.
- 3.47 Table 3.3 presents a matrix that demonstrates how the scale of effect has been assessed.

Table 3.3 Effect Scale

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

Categorising Likely Significant Effects

- 3.48 Generally, effects that are identified as Moderate or Major Adverse / Beneficial are considered to be significant effects, whilst those that are identified as Negligible or Minor Adverse / Beneficial are considered to be not significant effects. That said, professional judgement has been used to determine whether an effect is significant or not – for example, where mitigation such as archaeological evaluation works may reduce the scale of an effect, the effect significance may not reduce.

BASELINE CONDITIONS

Archaeology

- 3.49 The current archaeological baseline conditions are set-out in the DBA (ES Volume 3, Appendix: Cultural Heritage – Annex 1) and Geophysical Survey (ES Volume 3, Appendix: Cultural Heritage – Annex 2 and 3). This will be supplemented by the result of trial trench evaluation in due course (ES Volume 3, Appendix: Cultural Heritage – Annex 4). The relevant receptors and their importance/sensitivity are set out in Table 3.4 below.
- 3.50 There are no World Heritage Sites, Scheduled Monuments, Historic Wreck or Historic Battlefield sites located within 1km of the site boundary.

Geophysical Survey

- 3.51 The site was subject to geophysical survey in 2015. The survey was undertaken in support of a residential development on land surrounding the site. Updated surveys were undertaken in 2022 and 2023 (ES Volume 3, Appendix: Cultural Heritage – Annexes 2 and 3).
- 3.52 The surveys identified an area of archaeological activity within the southern part of the site. The anomalies identified are indicative of rectilinear enclosures and a drove way. Other potential ditches indicative of field systems were also noted, along with areas of magnetic disturbance likely associated with modern and historic land use.
- 3.53 These anomalies were interpreted as being the continuation of Romano-British field systems identified immediately to the west of the site.

Table 3.4 Archaeological Potential at the Site

Past Period	Identified Archaeological Potential and Likely Importance
Early Prehistoric (Palaeolithic & Mesolithic)	Moderate potential, Medium (Regional) importance. As outlined in the DBA, activity associated with this period appears focused to north along the gravel terraces of the River Thames. The site is located south of these terraces, reducing the likelihood that remains of this date are present.
Neolithic	Moderate potential, Medium (Regional) importance. As outlined in the DBA, activity associated with this period appears focused to north along the gravel terraces of the River Thames. The site is located south of the terraces, reducing the likelihood that remains of this date are present.
Bronze Age & Iron Age	Moderate to High potential of Medium (Regional) importance. The results of geophysical survey identify remains extending into the site that are characteristic of late Iron Age activity. Recent evaluation undertaken immediately west of the site suggests a later Roman date for this activity but an Iron Age origin cannot be ruled out.
Roman	High potential within the south-west part of the site with a generally Low to Moderate potential across remaining areas, likely to be of Medium (Regional) importance. Roman enclosure systems are known immediately to the west of the site, and the results of geophysical surveys suggests these remains extend into the site boundary.
Early Medieval	Low potential (any remains present most likely to comprise agricultural features), Low (Local) importance.
Medieval	Low potential (any remains present most likely to comprise agricultural features), Low (Local) importance.
Post Medieval & Modern	Low to Moderate potential (any remains present most likely to comprise agricultural features), Negligible to Low (Local) importance.

3.54 Previous developments within the site, mostly notably the use of the site during the Second World War, are likely to have negatively impacted the survival of archaeological remains and deposits. However, this development appears to have been limited to the northern and eastern parts of the site. This suggests there is a higher potential for undisturbed archaeological deposits to be present in the south and west, a conclusion supported by the results of the geophysical surveys (**ES Volume 3, Appendix: Cultural Heritage – Annex 2 and 3**).

Built Heritage

3.55 The current baseline conditions are set out in the DBA (**ES Volume 3, Appendix: Cultural Heritage – Annex 1**). The relevant receptors and their importance/sensitivity are set out in Table 3.5 below. A 1km search radius from the site boundary was used to identify those built heritage assets with the potential to be altered by the Proposed Development. Historic research and site visits, held in 2022, were subsequently undertaken to identify which heritage assets would be affected by the Proposed Development, due to either sharing a historic, functional or visual relationship with the site.

3.56 These heritage assets comprise (see Figure 3.1):

- Nuneham Courtenay Registered Park and Garden: NHLE 1000122 (Grade I);
- Nuneham Courtenay Conservation Area;
- Culham Station Ticket Office: NHLE 1059789 (Grade II*) listed building;
- Thame Lane Bridge: NHLE 1409238 (Grade II) listed building;
- Fullamoor Farmhouse: NHLE 1449039 (Grade II) listed building; and
- Station House: a locally listed building.

RECEPTORS AND RECEPTOR SENSITIVITY

Existing

Archaeology

3.57 Table 3.5 below details the known archaeological assets, and potential archaeological assets identified within the site from the HER, the DBA (**ES Volume 3, Appendix: Cultural Heritage – Annex 1**) and two phases of geophysical survey (GS) (**ES Volume 3, Appendix: Cultural Heritage – Annexes 2 and 3**). Known heritage assets are shown on Figure 3.1.

Table 3.5 Archaeological Heritage Resources and their Importance

Baseline Evidence	Description of Receptor and Potential	Designation	Importance
DBA	Moderate Potential for Early Prehistoric Flintwork	Non-Designated Asset	High
DBA	Moderate Potential for Neolithic artefact finds and features	Non-Designated Asset	High
DBA	Low to Moderate Later Prehistoric (Bronze Age) activity within the site of Regional Importance	Non-Designated Asset	Medium
DBA, GS	Identified Later Prehistoric (Iron Age) activity within the site of Regional Importance	Non-Designated Asset	Medium
DBA, GS	Identified Roman activity within the site of Regional Importance	Non-Designated Asset	Medium
DBA	Low Potential for Early Medieval remains	Non-Designated Asset	Low
DBA	Low Potential for Medieval remains	Non-Designated Asset	Low
DBA	Low to Moderate Potential for Post Medieval remains	Non-Designated Asset	Low

Built Heritage

3.58 Table 3.6 below details the known built heritage assets that may be adversely affected by the Proposed Development. It also identifies the importance of each of these assets (see Figure 3.1 for more information).

Table 3.6 Built Heritage Resources and their Importance

Baseline Evidence	Description of Receptor	Designation	Importance
DBA	Nuneham Courtenay	Grade I Registered Park and Garden	High
DBA	Nuneham Courtenay	Conservation Area	High
DBA	Culham Station Ticket Office	Grade II* listed building	Medium
DBA	Thame Lane Bridge	Grade II listed building	Medium
DBA	Fullamoor Farmhouse	Grade II listed building	Medium
DBA	Station House	Local listed building	Low

Nuneham Courtenay Registered Park and Garden

3.59 The Proposed Development encompasses the south-west corner of Nuneham Courtenay Registered Park and Garden. These landscaped park and pleasure grounds extend south around the Grade II* Nuneham House and form its landscape setting.

3.60 The park is considered nationally important because of its architectural, historic, and artistic elements which are derived from the topography of the park, its association with prominent historical figures such as Capability Brown, England’s most influential and best-known designer of the ‘informal landscapes’, of which this park is an early example, and the views over the river and Oxford’s spires.

3.61 Although the northern limit of the site lies within the extent of the gardens, the main landscaped park is located behind a ridge in the topography, meaning the main park is not visible from the site.

3.62 Nuneham House (and the garden structures within) lies within the Nuneham Courtenay Registered Park and Garden, approximately 2km north-east of the site. Due to the topography, and the distance between the site and the house, the Proposed Development is not considered to have the potential to impact, either direct or indirect, on Nuneham House and is therefore not considered further within this ES.

Nuneham Courtenay Conservation Area

3.63 The Conservation Area of Nuneham Courtenay overlaps the Registered Park and Garden in the vicinity of the site.

3.64 The Conservation Area includes both the park and the village of Nuneham Courtenay. In 1756, the village was moved from its original location by the first Earl Harcourt. It was deliberately designed, probably by the Earl

himself, on a symmetrical plan combining classical formality with elements of picturesque in the design and materials of the semi-detached cottages. The village was designed by Harcourt to complement his landscaped park and his classical house. Its architectural integrity is a deliberate statement of the taste and the power of the landed aristocracy and its visual relationship to the adjacent park remains intact. It is one of only two examples in the country of a completely planned estate village.

- 3.65** The village and its environs, meaning the landscaped park, are considered nationally important because of their unique architectural, historic, and artistic elements.
- 3.66** Unlike the Registered Park and Garden, the northern limit of the site does not lie within the Conservation Area, and instead immediately abuts it. However, like the Registered Park and Garden, the village and hence the main focus of the Conservation Area is located behind the northern ridge, and it is not visible from the site due to the geomorphology of the area.

Culham Station Ticket Office

- 3.67** Culham Station Ticket Office is a Grade II* Listed Building designed by Brunel for the Great Western Railways, probably at the same time as the Thame Lane Bridge. Built as 'Abingdon Road Station', it was renamed 'Culham Station' in 1856. This station is considered to be significant due to its architectural and historic interest which are derived from the fact that it is reputed to be the unique survival out of four of this station design known as the domestic Tudor style, and more broadly one of the few Brunel-designed stations surviving.
- 3.68** Culham Station Ticket Office is located 1km to the south of the site. Due to intervening distance and surrounding planting and development, there is no intervisibility between either the site or this listed building.

Thame Lane Bridge

- 3.69** Thame Lane Bridge is the Grade II Listed Building built in 1843-4 by Isambard Brunel for the Didcot-Oxford line. The flying segmental arch road bridge is a rare architectural feature, opposed to the more common larger triple arches. Its historic interest lies in the fact that it was an early subsidiary line, built under Brunel, giving Great Western Railways access to the Midlands in rivalry to the London and Birmingham railway. This bridge is considered to be significant due to its architectural and historic interest which are derived by its unusual architectural features, its surviving without major works or alterations, its connection to such an important historic figure as Isambard Brunel, and the Didcot-Oxford line's role in the Great Western Railway history. The company, founded in 1833, ran from London to Bristol, and in the 1840s decided to open an access to the Midlands through Didcot and Oxford, in open rivalry to the London & Birmingham Railway.
- 3.70** The site is located approximately 170m to the east of the Thame Lane Bridge. Due to the intervening distance and surrounding planting and development in the form of an electricity pylon, there is little intervisibility between the site and this listed building.

Fullamoor Farmhouse

- 3.71** The 18th-century Fullamoor Farmhouse is a Grade II Listed Building that plausibly originated in the 17th century, and it was named Clifton Farm in the 1st edition (1830) Ordnance Survey (OS) maps. The high-quality construction of the east-west range may reflect the prosperity of the farm during the mid to late 18th century. This building is considered to be significant because of its architectural and historical interest which are derived from its architectural features, its age, and the survival of the historic fabric within the building. It also provides insight into the changing needs and social aspirations of its owners.
- 3.72** The site is located at approximately 1.2km to the north of this listed building. Due to intervening distance and surrounding planting and development, there is no intervisibility between the site or this listed building.

Station House

- 3.73** Station House is the only locally listed building within a 1km radius of the site. It was thought to have been possibly designed by Brunel. It is built in red brick with English bond brickwork. The 1901 census records the then Station Master, George William Townsend and his wife Louise, as boarding with Charles Lewis and family at 'Station House'. Its historical interest is due to the possible connection with historical figures such as Isambard Brunel.
- 3.74** The site is located approximately 1km to the north of this locally listed building. Due to intervening distance and surrounding planting and development, there is no intervisibility between the site or this locally listed building.

Introduced

Archaeology

- 3.75** No archaeological receptors are being introduced as part of the Proposed Development.

Built Heritage

- 3.76** No built heritage receptors are being introduced as part of the Proposed Development.

EMBEDDED MITIGATION MEASURES

- 3.77** The Proposed Development includes the following design mitigation measures to minimise or remove the adverse impacts to surrounding heritage assets including:
- Establishment of new hedgerows immediately around the battery storage facility to shield the site from public view;
 - Wider landscaping including the establishment of new scrubland and woodland to the north of the battery storage facility along the limit of Nuneham Courtenay Registered Park and Garden, and re-establishing a historic tree belt along the south-west boundary of the Registered Park and Garden, enhancing this part of the park;
 - Establishment of new permissive paths for the duration of the planning application to enable greater enjoyment of previously inaccessible part of the Nuneham Courtenay Registered Park and Garden; and
 - Considerate design of infrastructure as to blend into the surrounding landscape.
- 3.78** Furthermore, pre-construction mitigation in the form of a programme of archaeological evaluation and mitigation to manage impacts on below ground archaeological remains and deposits through preservation in record will be undertaken if required. As noted previously, the Applicant will be undertaking evaluation TT, whereby the WSI sets out that further work may be undertaken in remains are identified during the evaluation TT. The TT scope is outlined in a Written Scheme of Investigation (**ES Volume 3, Appendix: Cultural Heritage – Annex 4**).
- 3.79** The following '*Potential Effects*' section describes effects to archaeological receptors prior to the implementation of the above pre-construction programme of archaeological evaluation and mitigation during enabling and construction. The potential effects to built heritage receptors are assessed with the embedded mitigation described in this section in place.

POTENTIAL EFFECTS

Enabling and Construction

Archaeology

- 3.80** There are no World Heritage Sites, Scheduled Monuments, Historic Wreck or Historic Battlefield sites located within 1km of the site boundary. Any effects on known below ground archaeological remains (non-designated) outside of the site will be Negligible (Not Significant), as all works will be confined to the site, and are therefore not considered further.
- 3.81** Site works involving ground establishment works and construction activities associated with the installation of the battery storage units and associated infrastructure, will have a direct, and significant impact on known and potential below ground archaeological remains and deposits. This may also include changes to drainage patterns within the site or immediate area as a result of construction works. All relevant construction activities have been considered and a worst-case scenario is assumed as part of this assessment of potential effects, comprising the complete loss of archaeological remains during these works.
- 3.82** An evaluation of the predicted impacts prior to mitigation and subsequent nature, scale and significance of effects is provided in Table 3.7.

Table 3.7 Evaluation of Predicted Impacts and Effects to Archaeological Resources Prior to Mitigation

Receptor Description	Importance	Magnitude of Impact	Scale of Effect (Significance)
Moderate Potential for Early Prehistoric Flintwork	High	High Adverse Direct	Major Adverse (Significant)
Moderate Potential for Neolithic artefact finds and features	High	High Adverse Direct	Major Adverse (Significant)
Low to Moderate Later Prehistoric (Bronze Age) activity within the site of Regional Importance	Medium	High Adverse Direct	Moderate Adverse (Significant)
Identified Later Prehistoric (Iron Age) activity within the site of Regional Importance	Medium	High Adverse Direct	Moderate Adverse (Significant)
Identified Roman activity within the site of Regional Importance	Medium	High Adverse Direct	Moderate Adverse (Significant)
Low Potential for Early Medieval remains	Low	High Adverse Direct	Minor Adverse (Not Significant)
Low Potential for Medieval remains	Low	High Adverse Direct	Minor Adverse (Not Significant)
Low to Moderate Potential for Post Medieval remains	Low	High Adverse Direct	Minor Adverse (Not Significant)

3.83 The above effects would be permanent as direct impacts on archaeology cannot be reversed. Those effects identified as Moderate or Major Adverse would be considered to be **Significant**, whilst those identified as Minor Adverse or Negligible would be considered to be Not Significant. All effects would be as a result of the removal or disturbance of archaeological remains during construction groundworks and/or excavation activities.

Built Heritage

3.84 Some of the built heritage assets will experience additional noise, dust and visual disturbances⁹ throughout the duration of enabling and construction activities, given the proximity of these assets to the Proposed Development. All access routes to the site that will be utilised to bring goods and equipment into the Proposed Development do not interact / pass the identified designated heritage assets, with the exception of Thame Lane Bridge which is located to the west of the site access described in **ES Volume 1, Chapter 2: Design Evolution, Alternatives and the Proposed Development**, whereby access to the site will utilise existing access routes that run through an area of industrial units to the south, passing 140m east of Thame Lane Bridge. In all cases, these affects will be temporary in nature and will not fundamentally alter the settings or importance of the heritage assets. The effects during enabling and construction upon built heritage assets are summarised in Table 3.8 below.

Table 3.8 Evaluation of Predicted Impacts and Effects to Built Heritage Resources at Enabling and Construction Stage Prior to Mitigation

Receptor Description	Importance	Magnitude of Impact	Scale of Effect (Significance)
Nuneham Courtenay Registered Park and Garden	High	Medium Adverse Direct	Moderate Adverse (Significant)
Nuneham Courtenay Conservation Area	High	Medium Adverse Indirect	Moderate Adverse (Significant)

⁹ Refer to **ES Volume 2: Landscape and Visual Impact Assessment**.

Receptor Description	Importance	Magnitude of Impact	Scale of Effect (Significance)
Culham Station Ticket Office	Medium	Negligible Indirect	Negligible (Not Significant)
Thame Lane Bridge	Medium	Low Adverse Indirect	Minor Adverse (Not Significant)
Fullamoor Farmhouse	Medium	Negligible Indirect	Negligible (Not Significant)
Station House	Low	Negligible Indirect	Negligible (Not Significant)

Nuneham Courtenay Registered Park and Garden

- 3.85 Construction activities will introduce visual changes along with additional noise and vibration within the Registered Park and Garden. This will alter the ability to appreciate the importance of this heritage asset. However, the focus of the heritage asset lies to the north of the Proposed Development and will be shielded from the main construction impacts due to the topography.
- 3.86 The magnitude of change will result in medium adverse direct impact to an asset of high importance, resulting in a temporary Moderate Adverse effect (**Significant**).

Nuneham Courtenay Conservation Area

- 3.87 Construction activities will introduce visual changes along with additional noise and vibration immediately adjacent to the Conservation Area. This will alter the ability to appreciate the importance of this heritage asset. However, the focus of the heritage asset lies to the north of the Proposed Development and will be shielded from the main construction impacts due to the topography.
- 3.88 The magnitude of change will result in medium adverse indirect impact to an asset of high importance, resulting in a temporary Moderate Adverse effect (**Significant**).

Cullham Station Ticket Office

- 3.89 There is no intervisibility between the site and the Culham Station Ticket Office due to the distance between them and existing developments. As such, enabling and construction activities will have limited impact on the assets, restricted to the introduction of construction traffic into the area. This impact will be temporary in nature and in keeping with the existing environment of the railway line and industrial units.
- 3.90 The magnitude of change will result in a negligible indirect impact, due to the majority of the construction activities being separated from the asset. This negligible impact to a heritage asset of medium importance will result in a Negligible (not significant) effect.

Thame Lane Bridge

- 3.91 The setting of Thame Lane Bridge will be changed by the introduction of additional noise, vibration, vehicle and construction plant movements and visual changes. This will affect the current rural setting of the listed building, however, this impact is limited due to the industrial context of the bridge and its association with the railway
- 3.92 This will result in a low adverse impact to a heritage asset of medium importance, resulting in a temporary Minor Adverse (Not Significant) effect.

Fullamoor Farmhouse

- 3.93 Fullamoor Farmhouse is located at the southern limit of the study area and is separated from the stie by Culham Science Centre and the A415. There is no intervisibility between the site and the farmhouse. When considered in this context, the addition of construction traffic into the area resulting from the Proposed Development is considered to have a negligible impact.

3.94 This negligible impact will result in a Negligible (Not Significant) effect.

Station House

- 3.95 There is no intervisibility between the site and Station House. Impacts from construction activities will be limited to the introduction of additional construction traffic into the area. This impact will be temporary and in keeping with the existing environment of the railway line and industrial units.
- 3.96 This will result in a negligible impact to a heritage asset of low importance, resulting in a Negligible (Not Significant) effect.

Completed Development

Archaeology

- 3.97 Once completed, the Proposed Development will have no further impact on archaeological remains. Through a programme of archaeological mitigation (if required), below ground heritage assets within the site will have been preserved in recorded prior to the commencement of construction.
- 3.98 There is the potential for significant effects on archaeological remains of a possible Regional Importance as a result of the enabling and construction phase of the Proposed Development, as presented in Table 3.7. However, archaeological remains within the site will be preserved by record, prior to any adverse construction effects. Whilst the ability to undertake archaeological fieldwork does not reduce the adverse effect upon the archaeological remains during the enabling and construction phase, appropriate fieldwork followed by dissemination of the acquired data would be considered a residual beneficial effect during the operation of the Proposed Development, albeit a Negligible to Minor Beneficial effect and therefore Not Significant.

Built Heritage

- 3.99 The completed Proposed Development will lead to changes in land-use and character directly within the curtilage of and the wider settings of the built heritage assets. It will also lead to visual changes, and minor increases in noise and activity. The impacts to each of the heritage assets is described below and summarised in Table 3.9. With the exception of the Registered Park and Garden (given that landscaping and a connection tower associated with the Proposed Development is proposed within the Registered Park and Garden which will not be removed following site decommissioning), all impacts will be indirect and temporary in nature due to the life span of the Proposed Development (40 years).

Table 3.9 Evaluation of Predicted Impacts and Effects to Built Heritage Resources at Completed and Operational Stage

Receptor Description	Importance	Magnitude of Impact	Scale of Effect (Significance)
Nuneham Courtenay Registered Park and Garden	High	Low Adverse Direct	Minor Adverse (Not Significant)
Nuneham Courtenay Conservation Area	High	Low Adverse Indirect	Minor Adverse (Not Significant)
Culham Station Ticket Office	Medium	Negligible Indirect	Negligible (Not Significant)
Thame Lane Bridge	Medium	Negligible Indirect	Negligible (Not Significant)
Fullamoor Farmhouse	Medium	Negligible Indirect	Negligible (Not Significant)
Station House	Low	Negligible Indirect	Negligible (Not Significant)

Nuneham Courtenay Registered Park and Garden

- 3.100 Development impacts with the Registered Park and Garden are primarily limited to landscaping, however, a 14m high transmission tower is to be constructed in the south-east corner of the registered area. This

connection tower is a necessary piece of electrical infrastructure related to the upgrading of electrical provision to Culham Science Centre. The Proposed Development will introduce the tower, new battery storage units and associated infrastructure into the setting of the park, reducing the visible arable land. This will be done against a backdrop of Culham Science Centre, an existing industrial complex, and thus would not significantly alter the views looking south from the designated assets. This is also evidenced by the Landscape and Visual Impact Assessment (**ES Volume 2**) findings, whereby views 14-17 (views located within the Registered Park and Garden) do not establish significant adverse visual effects in Years 10 and 20 of operation (when landscaping has matured). Furthermore, proposed landscaping and creation of permissive paths would enhance the landscape within this part of the Registered Park and Garden.

- 3.101 Servicing and maintenance of the Proposed Development will increase traffic and movement in the area, but this increase would be negligible given the immediate proximity of the Proposed Development to an active railway line and Culham Science Centre and given that very minimal on-site activity will be required during the plant lifecycle – the facility will be unmanned and be remotely controlled / monitored, and operatives will only visit the site on an ad-hoc basis, as set out in **ES Volume 1, Chapter 2: Alternatives, Design Evolution and the Proposed Development**.
- 3.102 On balance, the changes will result in a low adverse impact to an asset of high importance, resulting in a Minor Adverse effect (Not Significant). The adverse effect relating to the battery storage facility will be temporary given that the battery storage infrastructure will be removed after 40 years, whereas the benefits associated with the enhancement of the landscape within the Registered Park and Garden will be permanent. It should be noted that the connection tower erected within the Registered Park and Garden will also not be decommissioned following the operation of the Proposed Development, however given that this tower will always be seen in context with the existing transmission line into which it will connect and within the setting of the Culham Science Centre, this is not considered to change the overall effect. It is also proposed to plant parkland trees and native shrubs around the tower and compound to reduce its visibility within the parkland, as noted in **ES Volume 2**, which will aid in reducing visual impact.

Nuneham Courtenay Conservation Area

- 3.103 The Proposed Development will introduce new battery storage units and associated infrastructure into the setting of the Conservation Area, reducing the visible arable land. This will be done against a backdrop of Culham Science Centre, an existing industrial complex, and thus would not significantly alter the views looking south from the designated assets. This impact is further reduced through embedded mitigation measures, including the introduction of landscaping aimed at reducing the visibility of the site from the Conservation Area and the considerate design of the battery storage units, as set out in **ES Volume 1, Chapter 2: Alternatives, Design Evolution and the Proposed Development**.
- 3.104 Servicing and maintenance of the Proposed Development will increase traffic and movement in the area, but this increase would be negligible given the immediate proximity of the Proposed Development to an active railway line and Culham Science Centre.
- 3.105 The changes will result in a low adverse impact to an asset of high importance, resulting in a temporary (albeit long-term) Minor Adverse effect (Not Significant).

Culham Station Ticket Office

- 3.106 Due to the distance between the Proposed Development and Culham Station Ticket Office, with modern development and planting between the two, there is no intervisibility between Culham Station Ticket Office and the Proposed Development. As such the impact of development within the vicinity of the listed building is very limited.
- 3.107 The changes will result in a negligible impact to an asset of medium importance, resulting in a Negligible effect (Not Significant).

Thame Lane Bridge

- 3.108 Due to the planting, the topography and development in the form of modern pylons there is limited intervisibility between Thame Lane Bridge and the Proposed Development. Thame Lane Bridge is associated with the railway and is industrial in nature. Therefore, the Proposed Development would be experienced against a background of existing industrial infrastructure and thus not significantly alter the character of the surrounding landscape.

3.109 The Proposed Development will result in a negligible impact to an asset of medium importance, resulting in a Negligible effect (Not Significant).

Fullamoor Farmhouse

3.110 There is no intervisibility between the Proposed Development and Fullamoor Farmhouse which lies some 1.2km to the south. As such, the changes will result in a negligible impact to an asset of medium importance, resulting in a Negligible effect (Not Significant).

Station House

3.111 There is no intervisibility between the Proposed Development and Station House which lies some 1.2km to the south. As such, the changes will result in a negligible impact to an asset of low importance, resulting in a Negligible effect (Not Significant).

Decommissioning

Built Heritage

3.112 As per the construction phase, some of the built heritage assets will experience additional noise, dust and visual disturbances throughout the duration of decommissioning process, given the proximity of these assets to the Proposed Development. In all cases, these affects will be temporary in nature and will not fundamentally alter the settings or importance of the heritage assets. The effects during decommissioning upon built heritage assets are summarised in Table 3.10 below, and will be no greater than the effects upon built heritage assets associated with the enabling and construction phase, as presented previously.

Table 3.10 Evaluation of Predicted Impacts and Effects to Built Heritage Resources at Decommissioning

Receptor Description	Importance	Magnitude of Impact	Scale of Effect (Significance)
Nuneham Courtenay Registered Park and Garden	High	Medium Adverse Indirect	Moderate Adverse (Significant)
Nuneham Courtenay Conservation Area	High	Medium Adverse Indirect	Moderate Adverse (Significant)
Culham Station Ticket Office	Medium	Negligible Indirect	Negligible (Not Significant)
Thame Lane Bridge	Medium	Low Adverse Indirect	Minor Adverse (Not Significant)
Fullamoor Farmhouse	Medium	Negligible Indirect	Negligible (Not Significant)
Station House	Low	Negligible Indirect	Negligible (Not Significant)

Nuneham Courtenay Registered Park and Garden

3.113 Decommissioning activities will introduce visual changes along with additional noise and vibration within the setting the Registered Park and Garden. This will alter the ability to appreciate the importance of this heritage asset. However, the focus of the heritage asset lies to the north of the Proposed Development and will be shielded from the main decommissioning activities due to the topography. Landscaping works undertaken as part of the Proposed Development will not be removed upon decommissioning.

3.114 As per the construction phase effects, the decommissioning works are considered to result in a medium adverse direct impact to an asset of high importance, resulting in a temporary Moderate Adverse effect (Significant).

3.115 The presence of landscaping and the connection tower within the Registered Park and Garden, which will remain following the decommissioning of the Proposed Development, is considered to have an overall Negligible effect, As noted above, the benefits associated with the landscaping proposals within the Registered

Park and Garden, including the creation of permissive paths, would enhance the landscape within this part of the Registered Park and Garden. The connection tower will always be seen in context with the existing transmission line and within the setting of the Culham Science Centre, where the planted parkland trees and native shrubs around the tower and compound will reduce visibility of the compound following 40 years of growth.

Nuneham Courtenay Conservation Area

3.116 Decommissioning activities will introduce visual changes along with additional noise and vibration immediately adjacent to the Conservation Area. This will alter the ability to appreciate the importance of this heritage asset. However, the focus of the heritage asset lies to the north of the Proposed Development and will be shielded from the main decommissioning activities due to the topography.

3.117 As per the construction phase effects, the decommissioning works are considered to result in a medium adverse indirect impact to an asset of high importance, resulting in a temporary Moderate Adverse effect (Significant).

Culham Station Ticket Office

3.118 There is no intervisibility between the site and the Culham Station Ticket Office due to the distance between them and existing developments. As such, decommissioning activities will have limited impact on the assets, restricted to the introduction of traffic into the area. This impact will be temporary in nature and in keeping with the existing environment of the railway line and industrial units.

3.119 As per the construction phase effects, the decommissioning works are considered to result in a negligible indirect impact, due to the majority of the decommissioning activities being separated from the asset. This negligible impact to a heritage asset of medium importance will result in a Negligible (Not Significant) effect.

Thame Lane Bridge

3.120 The setting of Thame Lane Bridge will be changed by the introduction of additional noise, vibration, vehicle and plant movements and visual changes. This will affect the current rural setting of the listed building, however, this impact is limited due to the industrial context of the bridge and its association with the railway

3.121 As per the construction phase effects, the decommissioning works are considered to result in a low adverse impact to a heritage asset of medium importance, resulting in a temporary Minor Adverse (Not Significant) effect.

Fullamoor Farmhouse

3.122 Fullamoor Farmhouse is located at the southern limit of the study area and is separated from the site by Culham Science Centre and the A415. There is no intervisibility between the site and the farmhouse. When considered in this context, the addition of traffic associated with decommissioning activities into the area is considered to have a negligible impact.

3.123 As per the construction phase effects, this negligible impact will result in a Negligible (Not Significant) effect.

Station House

3.124 There is no intervisibility between the site and Station House. Impact from decommissioning activities will be limited to the introduction of additional traffic into the area. This impact will be temporary and in keeping with the existing environment of the railway line and industrial units.

3.125 As per the construction phase effects, this will result in a negligible impact to a heritage asset of low importance, resulting in a Negligible (Not Significant) effect.

MITIGATION, MONITORING AND RESIDUAL EFFECTS

Enabling and Construction Mitigation

3.126 With regards to archaeological effects, as concluded in the DBA (ES Volume 1, Chapter 3: Cultural Heritage – Annex 1), it is recommended that the most appropriate way to offset the adverse effects of the Proposed

Development on further archaeological remains would be via a programme of archaeological work in advance of development. A programme of trial trench evaluation is proposed (**ES Volume 1, Chapter 3: Cultural Heritage – Annex 4**), the results of which would be used to inform the scope of a programme of archaeological mitigation (if required). Through targeted excavation, any archaeological remains within the site can be preserved in record in advance of the loss of any remains during construction groundworks.

- 3.127** Archaeological work required as a result of the trial trench evaluation would be carried out under the terms of a standard archaeological planning condition in consultation with the local authority’s archaeological advisor, and in accordance with an approved archaeological Written Scheme of Investigation (WSI).
- 3.128** Where archaeological remains will be preserved by record, the analysis and reporting of the results of the archaeological works will occur off site; however, the results will be published in a variety of technical and non-technical formats. The preservation by record of archaeological remains does not reduce the significance of effect upon those remains, as they will still be subject to loss. As such, given that this loss remains, the significance of the effect will remain, but the scale of the adverse effect is reduced where relevant through appropriate archaeological mitigation and publication.
- 3.129** With regards to the built heritage effects, given the short-term, temporary nature of the effects associated with this phase, no mitigation above and beyond standard construction related best practice measures (as set out and defined within a Construction Environmental Management Plan (CEMP), for example associated with minimising noise and construction traffic impacts, are considered applicable.

Completed Development Mitigation

- 3.130** Based on the current assessment of archaeological potential within the Proposed Development, no post construction mitigation is envisaged.
- 3.131** Opportunities for public outreach and heritage interpretation works at the completed Proposed Development stage will be explored. This may include programmes designed to inform the local community of any remains identified during the development. Such measures could also be secured by planning condition. The dissemination of information from archaeological fieldwork to the local community in order to enhance an understanding of the history of the local area would be considered a beneficial residual effect. This does not remove or negate the adverse effect from the loss of the archaeology.
- 3.132** The embedded mitigation described in the ‘*Embedded Mitigation Measures*’ section of this ES chapter and summarised within **ES Volume 1, Chapter 2: Alternatives, Design Evolution and the Proposed Development** have been devised to minimise or reduce adverse impacts to heritage assets described within the ‘*Potential Effects*’ section of this ES chapter and no further mitigation measures are therefore considered necessary or appropriate at this stage.

Decommissioning

- 3.133** As above with regards to enabling and construction phase built heritage mitigation, given the short-term, temporary nature of the effects associated with decommissioning activities, no mitigation above and beyond standard best practice measures (e.g., as set out and defined within a CEMP), are considered applicable.

Residual Effects

- 3.134** Residual effects are those that are predicted to remain after implementation of the mitigation measures described above. It is important to demonstrate that any measures included as part of the mitigation package to respond to adverse effects can be delivered in practice, the measures correspond with planning policy and therefore that there is confidence that they will be implemented. Mitigation measures are therefore secured through the implementation of the Proposed Development (i.e., as per the ‘*Embedded Mitigation Measures*’ section of this ES chapter) or additional measures which are to be secured via planning condition attached to the consent (if granted).
- 3.135** All residual effects resulting from the Proposed Development are presented in Table 3.11, identifying whether the effect is significant or not.

Table 3.11 Residual Effects

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Enabling and Construction							
Moderate Potential for Early Prehistoric Flintwork	Effect of ground establishment works and construction activities on known and potential below ground archaeological remains and deposits. To be safeguarded through a programme of archaeological mitigation works resulting in preservation in recorded. The results of a pre-determination evaluation as outlined in ES Volume 3, Appendix: Cultural Heritage – Annex 4 will be used to inform the scope of further archaeological works required. Any scope of works will be agreed with the Archaeological Advisor to South Oxfordshire District Council.	Moderate Adverse	Significant	R	D	P	Lt
Moderate Potential for Neolithic artefact finds and features		Moderate Adverse	Significant	R	D	P	Lt
Low to Moderate Later Prehistoric (Bronze Age) activity within the site of Regional Importance		Minor Adverse	Significant	R	D	P	Lt
Identified Later Prehistoric (Iron Age) activity within the site of Regional Importance		Minor Adverse	Significant	R	D	P	Lt
Identified Roman activity within the site of Regional Importance		Minor Adverse	Significant	R	D	P	Lt
Low Potential for Early Medieval remains		Negligible	Not Significant	L	D	P	Lt
Low Potential for Medieval remains		Negligible	Not Significant	L	D	P	Lt
Low to Moderate Potential for Post Medieval remains		Negligible	Not Significant	L	D	P	Lt
Nuneham Courtenay Registered Park and Garden		Moderate Adverse	Significant	N	D	T	St
Nuneham Courtenay Conservation Area		Moderate Adverse	Significant	N	I	T	St
Culham Station Ticket Office	Alteration to setting through construction works, including noise, dust, vehicle and construction plant movements and visual changes.	Negligible	Not Significant	N	I	T	St
Thame Lane Bridge		Minor Adverse	Not Significant	N	I	T	St
Fullamoor Farmhouse		Negligible	Not Significant	R	I	T	St
Station House		Negligible	Not Significant	L	I	T	St

Receptor	Description of the Residual Effect	Scale and Nature	Significant / Not Significant	Geo	D I	P T	St Mt Lt
Completed Development							
Archaeological Field Results	The preservation by record of archaeological remains provides archaeological knowledge of the site which may contribute towards relevant research objectives – this dissemination of knowledge comprises a beneficial residual effect.	Negligible to Minor Beneficial	Not Significant	L to R	D	P	Lt
Nuneham Courtenay Registered Park and Garden	Alteration to setting, including changes to land use, visual changes and introduction of additional activity.	Minor Adverse	Not Significant	N	D	T / P	Lt
Nuneham Courtenay Conservation Area		Minor Adverse	Not Significant	N	I	T	Lt
Culham Station Ticket Office		Negligible	Not Significant	N	I	T	Lt
Thame Lane Bridge		Negligible	Not Significant	N	I	T	Lt
Fullamoor Farmhouse		Negligible	Not Significant	R	I	T	Lt
Station House		Negligible	Not Significant	L	I	T	Lt
Decommissioning							
Nuneham Courtenay Registered Park and Garden	Alteration to setting through decommissioning works, including noise, dust, vehicle and plant movements and visual changes.	Moderate Adverse ¹⁰	Significant	N	D	T	St
Nuneham Courtenay Conservation Area		Moderate Adverse	Significant	N	I	T	St
Culham Station Ticket Office		Negligible	Not Significant	N	I	T	St
Thame Lane Bridge		Minor Adverse	Not Significant	N	I	T	St
Fullamoor Farmhouse		Negligible	Not Significant	R	I	T	St
Station House		Negligible	Not Significant	L	I	T	St
Notes: Residual Effect - Scale = Negligible / Minor / Moderate / Major - Nature = Beneficial or Adverse Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N) D = Direct / I = Indirect P = Permanent / T = Temporary St = Short Term / Mt = Medium Term / Lt = Long Term N/A = not applicable / not assessed							

3.136 There is the potential for significant adverse effects on archaeological remains of a possible Regional Importance as a result of the enabling and construction phase of the Proposed Development, as presented in Table 3.10 above. However, archaeological remains within the site will be preserved by record, prior to any adverse construction effects. Whilst the ability to undertake archaeological fieldwork does not reduce the significance of effect upon the archaeological remains during construction, appropriate fieldwork followed by dissemination of the acquired data would be considered a residual beneficial effect during the operation of the Proposed Development, albeit a Negligible to Minor Beneficial effect and therefore Not Significant.

3.137 There is potential for the enabling and construction, and decommissioning works to result in significant adverse effects at Nuneham Courtenay Registered Park and Garden and Nuneham Courtenay Conservation Area given the proximity of the Proposed Development to these receptors and associated introduction of visual changes along with additional noise and vibration altering the ability to appreciate the importance of the heritage assets.

3.138 The impact of the completed Proposed Development upon built heritage assets has been significantly reduced by embedded mitigation measures, primarily relating to proposed landscaping. The proposed improvements within the Registered Park and Garden will improve the landscape in the immediate vicinity while the introduction of the additional infrastructure into the surrounding landscape can be considered a minor adverse operational effect given the context of the existing adjoining Culham Science Centre.

ASSESSMENT OF THE FUTURE ENVIRONMENT

Evolution of the Baseline Scenario

3.139 There will be no change to the archaeological baseline of the site and the surrounding area in the absence of the Proposed Development. The archaeological baseline would remain as currently understood and as presented within this ES chapter.

3.140 It is, however, understood that new archaeological investigations in the surrounding area may produce information which enhances understanding of the likely archaeological conditions at the site.

3.141 There will be no change to the built heritage baseline of the site and the surrounding area in the absence of the Proposed Development. The built heritage baseline would remain as currently understood and as presented within this ES chapter.

Cumulative Effects Assessment

3.142 The cumulative impact assessment identifies any significant effects that the Proposed Development may have in combination with other nearby cumulative schemes.

3.143 As set out in **ES Volume 1, Chapter 1: Introduction and EIA Methodology**, the cumulative effects assessment considers the potential for cumulative effects to arise as a result of the Proposed Development in-combination with defined ‘Tier 1’ (i.e. schemes which meet the defined criteria with regards to scale and distance from the site and have full planning consent, a resolution to grant consent, or have been submitted but not yet consented where considered appropriate) and ‘Tier 2’ (i.e. strategic allocations as per the Local Plan, whereby a formal planning application (or applications) for development in relation to these strategic allocations has not yet been submitted) cumulative schemes.

3.144 The following schemes have been identified as potentially representing a cumulative effect upon built heritage assets and buried archaeological remains due to their proximity to the site:

- Land in the North East Corner of, Culham Science Centre, near Clifton Hampden for the “Erection of a Fusion Demonstration Plant with ancillary office space, parking, landscaping and associated infrastructure, including plant and machinery (P22/S1410/FUL) – Tier 1 Scheme; and
- STRAT9 – Strategic Allocation is for 217ha to be developed to deliver approximately 3,500 new homes, a net increase of at least 7.3ha of employment land in combination with the adjacent Science Centre and supporting services and facilities– Tier 2 Scheme.

¹⁰ Note, long-term effects associated with the permanent features (landscaping and the connection tower) within the Registered Park and Garden are considered to have an overall Negligible effect.

Archaeology

- 3.145** In general, the nature of the archaeological resource is such that the vicinity within which cumulative effects could occur is restricted to the immediate environs surrounding the site. In this instance, cumulative effects could occur where assets or deposits extend beyond the boundary of the site or are predicted to do so. As such the schemes within 500m of the site have been considered for the cumulative assessment for archaeological remains.

Enabling Works and Construction

- 3.146** There is potential that the above cumulative schemes could affect the same type of archaeological resource as that which would be affected by the Proposed Development. This is particularly relevant to known Roman remains that have been identified to the west of the Proposed Development and are indicated to continue into the site by geophysical survey (**ES Volume 3, Appendix: Cultural Heritage – Annexes 2 and 3**). The remains can be considered as a single archaeological site. The cumulative schemes could potentially impact remains of all periods in similar manner.
- 3.147** Overall, these incremental effects could be expected to have a Minor to Moderate Adverse (**Significant**) effect on the deposits, as per the effect identified for the Proposed Development in isolation presented in the '*Residual Effects*' section of this ES chapter. In addition, each site would be subject to assessment and mitigation by record or preservation in situ, should remains of high significance be found. This would reduce the effect to a minor adverse (not significant) residual effect on these types of deposits as a whole. Dissemination of the acquired data across the wider area of the cumulative schemes would be of greater residual benefit than isolated results from only partial investigation of what is likely to be one archaeological site.

Completed Development

- 3.148** No effects have been identified to buried archaeological remains as a result of the completed Proposed Development, and therefore cumulative effects within this phase cannot occur.

Built Heritage

- 3.149** The cumulative effect of development within the wider landscape is restricted to impacts associated with the setting of designated heritage assets. This is particularly relevant to both the Nuneham Courtenay Registered Park and Garden and the Nuneham Courtenay Conservation Area.

Enabling Works and Construction

- 3.150** During construction, the above cumulative schemes will introduce additional, noise, dust and visual disturbance to the setting of a number of designated assets. These affects are temporary in nature and will not ultimately alter the settings or importance of the heritage assets greater than that identified as a result of the Proposed Development in isolation.

Completed Development

- 3.151** The cumulative effects of the proposed schemes will introduce additional development into the landscape around the designated heritage assets and affect their setting. The Proposed Development along with the Fusion Demonstration Plant, located in the north-east corner of Culham Science Centre, are situated within the backdrop of the existing Culham Science Centre, and therefore will not significantly alter views from Nuneham Courtenay Park and Garden and Conservation Area and as such these developments can be considered to have a cumulative Minor Adverse effect (Not Significant), as per the effects identified for the Proposed Development in isolation presented in the '*Residual Effects*' section of this ES chapter.
- 3.152** The proposals for the construction of 3,500 new homes to the south-west of Nuneham Courtenay Registered Park and Garden and Nuneham Courtenay Conservation Area will have a moderate adverse indirect impact on the designated heritage assets. Embedded mitigation will be designed into any planning proposals, however given that the extent of this mitigation is unknown at this time, the cumulative effect of the Proposed Development in combination with this Tier 2 scheme is conservatively considered to be Moderate Adverse (**Significant**). It should be noted that this significant cumulative effect is related only to the development of the STRAT9 site.

Decommissioning

- 3.153** Of the cumulative schemes considered as part of the cumulative impact assessment, only the battery storage site is identified as being subject to decommissioning. As such, there are no additional cumulative effects beyond those identified for the Proposed Development when considered in isolation.

LIKELY SIGNIFICANT EFFECTS

Archaeology

- 3.154** The Proposed Development will have no impact on any nationally designated archaeological assets. The Proposed Development has been assessed as having a high potential to contain prehistoric and Roman deposits and low potential to contain post-Roman deposits.
- 3.155** The Proposed Development is considered to have the potential to result in **Significant** adverse effects on buried archaeological remains. Completion of further evaluation works (**ES Volume 3, Appendix: Cultural Heritage – Annex 4**) and implementation of a strategy for archaeological mitigation would not remove likely significant effects associated with the enabling and construction works given that there is the potential for the resource to be lost, however the scale of the effect would be reduced. Mitigation of the archaeological remains through excavation or similar strategy would ensure that any archaeological remains within the site are appropriately preserved by record prior to any adverse construction effects. Any strategy would be agreed with South Oxford District Council, Oxford County Council, and their archaeological advisor in advance of development.

Built Heritage

- 3.156** The Proposed Development has the potential to indirectly affect designated heritage assets in the surrounding area by changing their setting.
- 3.157** The two sensitive assets in the vicinity of the site are Nuneham Courtenay Registered Park and Garden and Nuneham Courtenay Conservation Area, which lie to the north of the site. The construction and decommissioning activities associated with the Proposed Development will introduce **Significant** adverse effects on the designated heritage assets within the landscape associated with the alteration to their setting via noise, dust, vehicle and plant movements and visual changes, however, these impacts will be temporary and short term.
- 3.158** When considering the Proposed Development in combination with the STRAT 9 Strategic Allocation cumulative scheme, it is considered that there is the potential for significant adverse cumulative effects upon the Nuneham Courtenay Registered Park and Garden and Nuneham Courtenay Conservation Area designated heritage assets during the operational phase. It should be noted that embedded mitigation will be designed into any planning proposals associated with the Strategic Allocation, however given that the extent of this mitigation is unknown at this time, the cumulative effect of the Proposed Development in combination with this Tier 2 scheme is conservatively considered to be **Significant**. It should be noted that this significant cumulative effect is related only to the development of the STRAT9 site.