

11 CULTURAL HERITAGE AND ARCHAEOLOGY

11.1 INTRODUCTION

This Chapter of the Environmental Statement (ES) evaluates the effects of the Retford Circular Economy Project ("The Proposed Development") on cultural heritage and archaeology. This assessment was undertaken by Ecus Limited (Ecus).

This Chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Development Design mitigation;
- Assessment of likely Effects;
- Mitigation measures and Residual Effects;
- Cumulative Effect Assessment;
- Summary of likely Effects; and
- Statement of Significance.

This Chapter of the EIA Report is supported by the figures of the Historic Environment Desk Based Assessment in **Volume 3 Appendix 11.1**.

11.2 LEGISLATION, POLICY AND GUIDANCE

There is national legislation, planning policy and guidance relating to the protection of, and development on, or near, important archaeological sites or historical buildings. This is within planning regulations as defined under the provisions of the Town and Country Planning Act 1990. In addition, local authorities are responsible for the protection of the historic environment within the planning system.

Shaping the assessment, full details of each of the individual policies and guidance documents is provided as part of the Historic Environment Desk Based Assessment in **Volume 3 Appendix 11.1** and summarised below:

- Ancient Monuments and Archaeological Areas Act 1979;¹
- Planning (Listed Buildings and Conservation Areas) Act 1990²;
- National Planning Policy Framework (2021)³ ; and
- Core Strategy & Development Management Policies DPD (2010)⁴

11.2.1 Guidance

The following documents have been considered for the assessment of potential effects of the Proposed Development on cultural heritage and archaeology:

This assessment is undertaken in accordance with:

- Department for Digital, Culture, Media and Sport, Principles of Selection for Scheduled Monuments (2013)⁵ and Listed Buildings (2018)⁶ ;
- Planning Practice Guidance – Historic Environment (2019) - Planning Practice Guidance – Historic Environment, maintained by the Ministry of Housing,

1 Ancient Monuments and Archaeological Areas Act 1979. <https://www.legislation.gov.uk/ukpga/1979/46>

2 Planning (Listed Buildings and Conservation Areas) Act 1990. <https://www.legislation.gov.uk/ukpga/1990/9/contents>

3 Ministry of Housing, Communities and Local Government. (2021). National Planning Policy Framework (NPPF); revised July 2021.

<https://www.gov.uk/government/publications/national-planning-policy-framework--2>

4 Bassetlaw District Council. (2011). Publication Core Strategy And Development Management Policies . <https://www.bassetlaw.gov.uk/media/1556/cs10publication.pdf>

5 Department for Digital, Culture, Media, and Sport (DCMS). (2013). Scheduled Monuments & nationally important but non-scheduled monuments

6 Department for Digital, Culture, Media, and Sport (DCMS). (2018). Principles of selection for listed buildings

Communities & Local Government (MHCLG) as web-based resource since November 2016 provides guidance on the application of policy contained in the NPPF⁷;

- Historic England’s Historic Environment Good Practice Advice in Planning Notes (2015a⁸ -b⁹ and 2017a¹⁰).
- Historic England’s Understanding Place – Historic Area Assessments (2017b)¹¹;
- Historic England’s Advice Notes (2019a¹² -b¹³ and 2021a¹⁴ -b¹⁵); and
- The Chartered Institute for Archaeologists’ Code of Conduct (CIfA 2019¹⁶) and Standard and guidance for historic environment desk-based assessment (2020¹⁷).

11.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

11.3.1 Scoping Responses and Consultations

Consultation for this EIA Report topic was undertaken with the organisations shown in Table 11.1.

Table 11.1: Scoping and Consultation Response

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee
Nottinghamshire County Council	06/12/22 Preapplication	<ul style="list-style-type: none"> • Scope of Built Heritage sufficient • Detailed Archaeological Desk Based Assessment required, possibly supported by GI and other intrusive works 	Detailed DBA has been undertaken and is included at Appendix 11,1. This includes a review of the GI data and recommendations based on the review.
Historic England	10/11/22 Preapplication	<ul style="list-style-type: none"> • Reference to Historic England Guidance and deferring archaeological advice to the Local Planning Authority 	None required. Historical England has referred comment back to the LPA

11.3.2 Scope of Assessment

This historic environment assessment deals with the effects of the planned on-site development activities for the Site during the construction, operational and restoration phases.

7 Ministry Housing, Communities and Local Government. (2019). Historic Environment. <https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment>

8 Historic England. (2015a). Historic Environment Good Practice Advice in Planning Note 1 – The Historic Environment in Local Plans. <https://historicengland.org.uk/advice/planning/planning-system/>

9 Historic England. (2015b). Historic Environment Good Practice Advice in Planning Note 2 – Managing Significance in Decision-Taking in the Historic Environment. <https://historicengland.org.uk/advice/planning/planning-system/>

10 Historic England. (2017a). Historic Environment Good Practice Advice in Planning Note 3 – The Setting of Heritage Assets. <https://historicengland.org.uk/advice/planning/planning-system/>

11 Historic England. (2017b). Understanding Place: Historic Area Assessments. <https://historicengland.org.uk/images-books/publications/understanding-place-historic-area-assessments/>

12 Historic England. (2019a). Historic England Advice Note 1: Conservation Area Appraisal, Designation and Management. <https://historicengland.org.uk/advice/planning/planning-system/>

13 Historic England. (2019b). Historic England Advice Note 12: Statements of Heritage Significance: Analysing Significance in Heritage Assets. <https://historicengland.org.uk/advice/planning/planning-system/>

14 Historic England. (2021a). Advice Note 7 (Second Edition): Local Heritage Listing: Identifying and Conserving Local Heritage. <https://historicengland.org.uk/images-books/publications/local-heritage-listing-advice-note-7/>

15 Historic England. (2021b). Advice Note 15: Commercial Renewable Energy Development and the Historic Environment. <https://historicengland.org.uk/images-books/publications/local-heritage-listing-advice-note-7/>

16 Chartered Institute for Archaeologists (CIfA). (2019). Code of Conduct. <https://www.archaeologists.net/codes/cifa>

17 Chartered Institute for Archaeologists (CIfA). (2020). Standard and Guidance for historic environment desk-based assessment. <https://www.archaeologists.net/codes/cifa>

A direct effect is an impact upon features of cultural heritage interest, where sites or potential sites / buried archaeology are in danger of being disturbed or destroyed. Given the nature of the historic environment resource, any significant direct adverse effect would be permanent and irreversible.

An indirect effect is any change to the setting of a heritage asset that affects its cultural significance or the way in which it is valued by both specialists and the wider public.

The potential effects from the Proposed Development to cultural heritage assets through indirect effects would be:

- Temporary indirect effects arising from the construction phase, such as noise and higher vehicular and pedestrian activity, which may cause reduced access to and/or reduced appreciation of the historical environment; and
- Changes to the settings of cultural heritage assets, which may affect cultural significance. These are largely visual effects and are likely to occur as a consequence of the height and breadth of the Proposed Development. They are likely to occur on cultural heritage assets located on high ground where their historical significance lies in the wider landscape setting including long-distance views to and from the asset.

11.3.3 Study Area / Survey Area

The following Study Areas were utilised for the historic environment assessment:

- 1 km buffer around the Site for archaeology.
- 1 km buffer around the Site for Grade II listed buildings and conservation areas.
- 5km buffer around the site for remaining built heritage.

This included both direct impacts on designated and non-designated heritage assets and impacts upon setting.

Cumulative effects: Cumulative effects related to land-use, socio-economics and tourism are assessed in the context of other developments within 5 km of the Site. Cumulative effects in this context are generally related to visibility of multiple schemes, or effects such as multiple developments being constructed within proximity to one another. 5 km is therefore considered to be the conceivable maximum distance over which these effects may occur.

11.3.4 Baseline Survey Methodology

The following sources of information have been used to inform the baseline description set out in this Chapter:

- National Heritage List for England
- Nottinghamshire Historic Environment Record

Baseline conditions have been established through desktop studies and consultation, including the Scoping Opinion (January 2020), see **Table 11.1**. No surveys specific to the Proposed Development and in support of this assessment have been carried out. However, information has been gathered where relevant from surveys undertaken in respect of other related disciplines, such as landscape and visual.

11.3.5 Methodology for the Assessment of Effects

Effects on the historic environment can be described as direct, indirect or cumulative. The assessment predicts the likely effects (both beneficial and adverse) arising from the Proposed Development. Social and economic effects are divided into:

- Direct effects: opportunities that can be created as an immediate effect of the Proposed Development;

- Indirect effects: opportunities that would be created by the Proposed Development further down the supply chain, for example, companies providing services to the Proposed Development;
- Induced effects: for example, employment opportunities created by the additional spend of wages into the local economy and the purchasing of basic materials, equipment and office space for staff; and
- Cumulative Effects: where the combined effect of two or more developments are of greater significance than those of the Proposed Development itself.

Detailed methodologies for all aspects of the baseline assessment are contained in the baseline assessment reports as follows:

- Lound Ash Quarry, Retford – Historic Environment Desk-Based Assessment (HEDBA; Appendix 11.1)

The significance of the potential effects of the Proposed Development has been classified by professional consideration of the sensitivity of the receptor and the magnitude of the potential effect.

11.3.5.1 Sensitivity of Receptors

There is no single accepted or standard guidance for the assessment of the likely effects of development on the historic environment resource. Although developed for use on trunk road schemes, the Design Manual for Roads and Bridges (DMRB; January 2020¹⁸ and August 2020¹⁹) sets out a detailed methodology for considering the historic environment which, to date, represents the most comprehensive published guidance and has informed this assessment.

Baseline conditions are established through desk-based review of existing sources of information, supported where appropriate by the use of field survey. The significance of effect of a proposed development on these baseline conditions is assessed through a process combining an evaluation of the importance of the historic environment and the scale of impact (magnitude of change) that would arise due to the construction and operation of the Proposed Development, taking into account mitigation measures incorporated into the design proposals, or during the construction and post construction stages.

This methodology has been adapted to match the particular circumstances of the Proposed Development, following current best practice.

The differences in the nature and scale of archaeological and built heritage features necessitate, within a comparable framework, the use of different methodologies to assess the significance of effect resulting from a proposed development. In order to arrive at a judgement on the significance of effect, the assessment needs to consider the relative importance of the individual elements of a heritage asset and how these are likely to be affected. To achieve this outcome a three-step process has been applied to each of the two topic areas (archaeology and built heritage). This involves assessments of the relative significance of heritage assets, the likely magnitude of impact on the assets and the significance of the effect on these assets.

18 Design Manual for Roads and Bridges (DMRB). (2020). LA106 – Cultural Heritage Assessment. <https://standardsforhighways.co.uk/dmrb/search/8c51c51b-579b-405b-b583-9b584e996c80>

19 Design Manual for Roads and Bridges (DMRB). (2020). LA104 – Environmental Assessment and Monitoring. <https://standardsforhighways.co.uk/dmrb/search/78a69059-3177-43dc-94bd-465992cfda82>

Step 1: Assessment of heritage significance, contribution of setting and sensitivity to change

The importance of some heritage assets is formally recognised through designation. Where assets have not been statutorily designated, they have been considered using professional judgement with reference to national published guidance (including Highways England 2020, the Department for Digital, Culture, Media and Sport Principles of Selection for Scheduled Monuments and Listed Buildings, and Historic England's Designation Listing Selection Guides) and in accordance with the policies stated within NPPF (Ministry of Housing, Communities and Local Government 2021).

Within this assessment, heritage significance is defined in terms of their value to this and future generations because of their heritage interest. For planning purposes, the NPPF (Ministry of Housing, Communities and Local Government 2021²⁰) defines that this interest may be archaeological, architectural and/or artistic or historic:

- **Archaeological interest:** As defined in the Glossary to the National Planning Policy Framework, there will be archaeological interest in a heritage asset if it holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point.
- **Architectural and artistic interest:** These are interests in the design and general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skill, such as sculpture.
- **Historic interest:** An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with past lives and events. Heritage assets with historic interest not only provide a material record of our nation's history but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity.

The overall significance of a heritage asset is the sum value of its interest expressed within this report on a six-point scale of Very High, High, Medium, Low, Negligible and Unknown, as presented in Table 11.2.

Table 11.2: Framework for Determining Significance of Receptors

Significance	Criteria
Very High	World Heritage Sites; Assets of acknowledged international importance; Other buildings of recognised international importance; and Historic landscapes of international significance, whether designated or not
High	Scheduled Monuments; Listed Buildings (Grade I, II*, II), Conservation Areas; Registered Historic Parks and Gardens (Grade I, II*, II); Registered Battlefields; Protect Wreck Sites; Undesignated sites/features of schedulable quality and importance; Undesignated structures of clear national importance; and Designated & undesignated historic landscapes of outstanding interest.
Medium	Sites/features that contribute to regional research objectives; Unlisted buildings that can be shown to have exceptional qualities in their fabric or historical association; Historic townscape or built-up areas with historic integrity in their buildings or built settings; and Designated

²⁰ Ministry of Housing, Communities and Local Government. (2021). National Planning Policy Framework (NPPF); revised July 2021. <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Significance	Criteria
	special historic landscapes and undesignated historic landscapes of regional significance.
Low	Sites/features that are of limited heritage and local interest; 'Locally Listed' buildings and unlisted buildings of modest quality in their fabric or historical association; and Historic landscapes whose significance is limited by poor preservation and/or poor survival of contextual associations or with specific and substantial importance to local interest groups.
Negligible	Assets with very little or no surviving archaeological interest; Buildings of limited architectural or historical note; buildings of an intrusive character; and Landscapes with little or no significant historical interest.

Heritage significance can derive not only from a heritage asset's physical presence, but also from its setting. Consequently, in determining the significance of any heritage assets, the contribution made by their setting is also assessed in line with the approach presented in Historic England's Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2017a²¹). Elements of a setting may make a positive or negative contribution to the significance of the asset and that asset's associative attributes.

Table 11.3: Criteria for Grading the Contribution of Setting to Heritage Significance

Contribution of Setting to Heritage Significance	Criteria
High	A setting which possesses key attributes that make a strong positive contribution to the understanding and/or appreciation of the interests that define the significance of a heritage asset.
Medium	A setting which possesses attributes that make some positive contribution to the understanding and/or appreciation of the interests that define the significance of a heritage asset.
Low	A setting which makes a low contribution to the understanding and/or appreciation of the interests that define the significance of a heritage asset.
Neutral	A setting which does not contribute to the understanding and/or appreciation of the interests that embodies a heritage assets significance.
Negative	A setting which detracts from the understanding and/or appreciation of the interests that define the significance of a heritage asset.

11.3.5.2 Magnitude of Effect

The assessment of the magnitude of change is the identification of the degree of change from the Proposed Development upon elements of the historic environment. There is no

²¹ Historic England. (2017a). Historic Environment Good Practice Advice in Planning Note 3 – The Setting of Heritage Assets. <https://historicengland.org.uk/advice/planning/planning-system/>

standard scale of comparison against which the severity of effects on the historic environment may be judged, because of the great variety of resources and receptors. The assignment of a magnitude of impact is a matter of professional judgement.

Where it has been identified that there is no risk of physical effects to a heritage asset, and where its setting is such that there is no potential for it to be affected by the presence of the proposed development, that asset is not considered further in the assessment.

Change may be adverse, neutral or beneficial. The magnitude of impacts (summation of direct and impacts on setting) on heritage assets has been assigned a value of high, medium, low, negligible, or no change as shown in Table 11.4.

Table 11.4: Framework for Determining Magnitude of Effect

Magnitude of Effect	Physical	Settings
High	Complete destruction or a fundamental, substantial change of an asset or historic environment feature. Change to most or all key elements of the historic environment, such that the resource is totally altered.	A comprehensive and fundamental change to the key attributes of a heritage asset's setting, such that the setting is substantially or totally altered. This change can be positive or negative.
Medium	A considerable change or appreciable difference to the existing baseline. Changes to many key elements of the historic environment, such that the resource is clearly modified.	A considerable change to the key positive attributes of a heritage asset's setting such that its contribution to the importance of the asset is appreciably reduced/enhanced.
Low	A minor change to the baseline condition of a heritage asset. Changes to the key elements of the historic environment, such that the asset is slightly altered.	A limited change to the key positive attributes of a heritage asset's setting resulting in a slight but discernible reduction/enhancement to its contribution to the asset's importance.
Negligible	A barely distinguishable change to the historic environment baseline.	A very slight change to the key positive attributes of a heritage asset's setting such that the change is barely distinguishable.

11.3.5.3 Significance of Effects

The significance of effect has been derived from a consideration of the importance/potential of the asset, the contribution of its setting to that importance and the degree of impact upon it as a result of the Proposed Development.

Professional judgement is applied to arrive at a statement of significance in accordance with the EIA Regulations. This would take into account the significance of the heritage asset, and all relevant aspects of the predicted change, including: the susceptibility to change of the nature and magnitude predicted; the proportion and importance of the asset or its setting that will be affected; the duration of the effect; and whether the effect is direct or indirect.

The significance of effect is expressed as major, moderate, minor or negligible. For the purposes of this report a "significant impact" under the EIA Regulations is considered to comprise a moderate or major effect unless alternatively defined. Minor effects are

considered to be 'not significant', although they may be a matter of local concern and negligible effects are considered to be 'not significant'.

Table 11.5: Framework for Assessment of the Significance of Effects

Magnitude of Effect	Sensitivity of Resource or Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations and are shaded in light grey in the above table.

Effects can be beneficial or adverse and these are specified where applicable in the assessment within this Chapter.

For assessing significance, consideration is given to the national, regional and local baseline situation. The magnitude of the impact is determined in proportion to the area of impact relevant to each receptor.

11.3.6 Assessment Limitations

This report is compiled using secondary information derived from a variety of sources, only some of which have been directly examined. The assumption is made that this data as well as that derived from other secondary sources, is reasonably accurate. In addition, the records held by Nottinghamshire Historic Environment Record (NHER) represent a record of a wide range of information derived from historical sources and previous archaeological discoveries and does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown.

Whilst there may be material held in private collections, local repositories, and the National Archives, it was not possible to view these as part of the assessment.

Historic England's Archives were not visited as part of this assessment for either documentary material or aerial photographs.

Aerial photography, where available online, was utilised to fully understand the historic development. No aerial photographs which illustrate the Site clearly were available via the sources listed above and imagery on the National Collection of Aerial Photography (NCAP) for the area has not yet been digitised.

Although the Defence of Britain Archives was consulted as part of this assessment, no data records were recorded within the Site or study area.

Whilst sources were reviewed in order to determine and provide geological context for the Site, this has included borehole data from the Site which provides a review of the sequence of deposits.

A geotechnical survey was carried out by SLR (see Chapter 10. Ground Conditions) which consisted of 23 boreholes to a maximum depth of 18m (BGL). A number of Test Pits were excavated to a maximum depth of 4.5m (BGL). The British Geological Survey (BGS) for

this area has indicated that occasional bands of sand and gravel were observed overlying the bedrock sandstone which was considered to be unworked River Terrace Deposits.

11.4 BASELINE CONDITIONS

The land within the Site covers an area of 113.55 hectares (ha), centred approximately on National Grid Reference SK 69404 84864.

11.4.1 Archaeological and Historical Baseline

Prehistoric activity is well represented in proximity to the River Idle, which passes as close as 100 m to the east of the Site. To the south of the Site, there are two recorded areas of possible Prehistoric settlement. Following the course of the river there are seventeen other recorded areas of Prehistoric activity, ranging from individual findspots, to linear cropmarks, and a Mesolithic flint-working site.

Similarly, to the prehistoric period, Romano-British activity is recorded along the River Idle to the east of the Site. Three areas along the river are recorded as settlement sites, one at Tiln, one at Hayton, and one at Chainbridge.

Further Romano-British settlement areas are recorded to the west of the Site, most noticeably the Sutton settlement, which crosses into the Site's southern end. The settlement is predominantly recorded from aerial photographs, which show areas of enclosure and linear features forming part of a wider brickwork field system. The NHER records that the feature is partly destroyed through quarrying.

Two other areas of settlement are located on the edge of study area: Babworth and Barnby Moor. The amount of settlements recorded in the vicinity of the Site, along with its proximity to known Romano-British sites along the River Idle indicate that the landscape within which the Site is located was well-used in the Romano-British period.

Sutton-cum-Lound was a settlement recorded in the Domesday Book (Open Domesday 2016²²), with 6.7 households recorded in 1086. The perpendicular structure of St Bartholomew's Church in Sutton-cum-Lound is recorded as having been built between 1350 and 1485. Lound is also recorded in the Domesday Book (written in 1086) as having 14.2 households.

The trend of settlement along the river valley appears to continue into the early medieval and medieval periods, with earthworks located in a similar position to the settlement evidence from the Prehistoric and Romano-British periods. This would represent a continuation of occupation over millennia along the river valley.

In the post-medieval period settlement partly converged on the two villages of Sutton-cum-Lound, and Lound. There are buildings in both settlements which are dated from the post-medieval period, including 'The Hall' in Lound which is recorded as dating from as early as 1735, and the gate to Sutton Manor Grounds in Sutton-cum-Lound, both of which are Grade II designated buildings.

Throughout the medieval and post-medieval periods, the villages of Sutton-cum-Lound and Loud predominantly relied on agricultural exploitation of the lowlands west of the River Idle. Evidence is provided by the surviving post-medieval farms in the villages, field patterns as shown on the 19th century mapping, and surviving post-medieval field divisions.

In the 1885-1900 OS map the land around Sutton-cum-Lound and Lound is shown as agricultural land, with a farmstead called Bellmoor Farm that the NHER records as having been built c. 1780.

²² Open Domesday. (2011). Open Domesday. Available at: <https://opendomesday.org/>

There are two features from World War Two recorded to the south of the study area, one of which is a bomb crater, and the other is an aircraft crash site. Due to the lack of other World War Two features, it is unlikely there will be further remains relating to this period.

The northern parts of the Site, comprising Area A (the vast majority of the Site), were subject to extensive gravel extraction and subsequent infilling with pulverised fuel ash during the second half of the 20th century. It is notable that Area C has also been subject to some historic quarrying activity, was previously used as a quarry plant site, and now forms part of the (predominantly hardstanding) Bellmoor Industrial Estate. Area B is the only part of the Site that is thought to be relatively undisturbed, although this has been subject to intensive agricultural use.

To the south and south west of the study area there are multiple groups of undated linear features. To the west there is a cropmark enclosure recorded.

There are multiple undated features recorded to the north and west, including one area which overlaps with the Site, described as comprising linear features and possible enclosures. To the north of the study area there is also revealed evidence for a partial rectangular enclosure.

Along the River Idle, there are further undated features, including an enclosure complex at Hayton, and a group of small rectilinear enclosures to the south east.

Although these records are undated, they demonstrate long-term use of the area prior to the 20th century, and likely relate to Prehistoric, Romano-British or medieval land use.

11.5 DEVELOPMENT DESIGN MITIGATION

11.5.1 Embedded Mitigation

11.5.1.1 Built Heritage

No mitigation measures are proposed for built heritage during the construction phase, although it is proposed that management of construction traffic and appropriate housekeeping on-site is undertaken in accordance with the OCEMP (**Volume 3, Appendix 5.3**).

The Proposed Development would result in impacts to the setting of a number of built heritage assets during the operational phase within the vicinity of the Site. Whilst the impact of the Proposed Development cannot be removed entirely, mitigation measures comprising a landscape strategy which utilises planting (retaining and proposed) would balance the presence of the infrastructure in the surrounding landscape and offset visual effects. These methods would reduce the visual effects of the Proposed Development on the built heritage over time as landscape planting matures.

11.5.1.2 Archaeology

No embedded mitigation is included for archaeology. However, other mitigation measures (not embedded) are proposed later in this Chapter.

11.6 ASSESSMENT OF LIKELY EFFECTS

It should be noted that the Area A of the proposed development has been subject to extensive 20th century gravel extraction. Whilst the level of disturbance across Area A is likely to be very high, there remains potential for small pockets of undisturbed gravel deposits to survive, which may include archaeological remains.

11.6.1 Construction Effects

Physical Impacts

The potential for direct physical impacts from the construction phase relates primarily to the potential for excavations and groundworks to affect any below ground archaeological remains that may be present within the footprint of the Proposed Development.

The following activities have theoretical potential to result in direct impacts on buried archaeological remains:

- Pre-construction impacts and site preparation works;
- Installation of perimeter fencing;
- Stripping and excavations for access route and site compound;
- Excavation of any service/cabling trenches including the underground connection from site to point of connection;
- Excavation of drainage/swales; and
- Removal of existing vegetation and proposed landscaping.

In the event of archaeological remains being present, the effects upon the archaeological resource resulting from the preparation and construction, and in the absence of mitigation, would be direct, adverse and irreversible. The magnitude of change varies depending on the work proposed.

Specifically in Areas A and C, construction activities are either not taking place, as they are extraction areas, or are located on existing hardstanding at the Bellmoor Industrial Estate. In these areas construction related activity would not impact underlying deposits and are not be discussed further in this section.

In Area B, construction related activities include the construction of a haul road and conveyor system.

If present, the predicted magnitude of change on any potential archaeological remains in Area B through their removal or truncation, and in the absence of mitigation, would be a high adverse change. Construction activities which would result in a high permanent and irreversible magnitude of change are associated with pre-construction impacts and site preparations works. On archaeological remains, if present, considered to be of medium heritage significance this would result in a high significance of effect. This effect is potentially significant under the EIA Regulations even though the potential for archaeological remains would be low.

No physical impacts on built heritage would occur during the Construction Phase. Consequently, these are not discussed further in this section.

Non-Physical Impacts

During the construction period, the Proposed Development would introduce plant alongside increased noise levels and have a potential impact upon the setting of heritage assets of high heritage significance within the local area. This would include Lound Conservation Area and Listed Buildings within it; the Grade I Listed Building Church of St Bartholomew (NHLE 1239776) in Sutton-cum-Lound, and the Grade II Babworth Hall Registered Park and Garden (NHLE 1001078) and listed buildings within it.

The potential construction impacts are considered to derive from the following factors:

- conspicuousness through site hoarding;
- competition with or distraction from the asset through presence of vehicles, cranes and machinery;
- introduction of movement, light or activity; and
- noise vibration and dust.

Whilst the impacts caused during the construction phase would have some potential to be negative, they would be subject to a significant suite of mitigation measures and have a temporary negligible adverse impact resulting in a minor significance of effect; this is not considered significant under the EIA Regulations.

11.6.2 Operational Effects

Physical Impacts

The potential for direct physical impacts to arise during the operation phase relates primarily to the potential for excavations to affect any surviving pockets of below ground archaeological remains that may survive in previously quarried areas of the Site. This relates specifically to Area A, which covers the previous quarry area, subsequently infilled with pulverised fuel ash. Areas B and C would not be impacted upon and such not discussed further in this section. The extent that archaeological remains survive across Area A is unclear. It follows that further mitigation works are proposed, as set out earlier in this Chapter, including a data examination and watching brief, to be detailed in a WSI.

In the event of archaeological remains being present, the effects thereupon as a result of the operation would be direct, adverse and irreversible.

The predicted magnitude of impact on any potential archaeological remains through their removal or extensive truncation, would be a high adverse impact. On archaeological remains, if present, considered to be of medium heritage significance this would result in a moderate significance of effect. However, the potential for impacting archaeological deposits is considered low. This effect is significant under the EIA Regulations.

No physical impacts on built heritage would occur during the Operational Phase. Consequently, these are not discussed further in this section.

Non-Physical Impact

The main potential for effects on heritage assets of high heritage significance arising from the completion of the Proposed Development relates to its introduction within the landscape which has the potential to impact upon the setting of these assets. Effects could also arise from:

- position in relation to views;
- conspicuousness;
- competition with or distraction from the asset
- change in landscape character; and
- introduction of movement, noise, activity and light spill.

The HEDBA (Appendix 11.1) assessed the potential impacts of the introduction of the Proposed Development on the setting of heritage assets. A summary is provided below.

Lound Conservation Area and associated Listed Buildings

The Site lies approximately 550m south of Lound Conservation Area. Within the conservation area there are four Grade II Listed Buildings, three of which are evaluated as part of this assessment, and to the south of the Conservation lies the Grade II listed building Yew Tree Farmhouse (NHLE 1239187). These assets are evaluated as a single group due to their shared architectural and historical interests. Historically, the Site formed part of the wider rural hinterland to the village of Lound; any historical association with the village has since been heavily eroded through 20th century gravel extraction and subsequent restoration works. The present landscape consists of a post-industrial reclaimed quarry landscape currently in pastoral agricultural use. Whilst completion of the Proposed Development would result in change to the land which makes today a low positive contribution to the setting. Thus, regarding the significance of these heritage

assets, the Proposed Development would be reversible as evidenced in the Indicative Restoration Landscape masterplan (Volume 3 Figure 7.12). It would not therefore, result in a permanent irreversible impact.

The Proposed Development would not prevent the experience and appreciation of the immediate historic agricultural landscape surrounding Lound, or key attributes of the setting, i.e., position in the landscape, overlooking the River Idle and surrounding brooks. The change posed to the landscape through the Proposed Development would result in a low adverse magnitude of impact on heritage assets of high heritage significance. This would result in a minor negative reversible significance of effect. This effect is not significant under the EIA Regulations.

Grade I Listed Building Church of St Bartholomew

The Grade I Listed Building Church of St Bartholomew (NHLE 1239776) in Sutton-cum-Lound lies to the west of the Site and comprises a heritage asset of high significance. The church is located on high ground and forms a prominent landmark. It is likely that glimpsed views of the church spire would be possible from within the Site, and the operational phase of the Proposed Development would remove the ability to appreciate these views. It is considered that these views are amenity views, due to the nature of the Site as a reclaimed industrial landscape. The views have little historical integrity that would enable an appreciation of the assets. The Proposed Development would not be clearly visible from the church tower. Nevertheless completion of the Proposed Development would result in change to land which makes a low positive contribution to the setting. Thus, this slight change to significance of these heritage assets from the Proposed Development is reversible. It would not result in a permanent irreversible impact.

Completion of the Proposed Development would result in a low magnitude of effect on an asset of high heritage significance thus resulting in a minor negative reversible significance of effect. This effect is not significant under the EIA Regulations.

Babworth Hall Registered Park and Garden and Associated Listed Buildings

The Grade II Registered Park and Garden of Babworth Hall (NHLE 1001078), six associated Grade II Listed Buildings, and single Grade I Listed Building (Church Of All Saints, NHLE: 1370370) are heritage assets of high significance, which lie to the south of the Site and separated from it by the railway line and busy A638. Despite the church being located on a high point within the surrounding landscape, it is screened from view by existing plantation and does not act as a landmark feature. The Site shares no historical or functional association with these assets and does not contribute greatly to the ability to appreciate their heritage significance. Nevertheless, completion of the Proposed Development would result in change to land which makes a low positive contribution to the setting. Thus, this slight change to significance of these heritage assets from the Proposed Development is reversible. It would not result in a permanent irreversible impact.

Completion of the Proposed Development would result in a negligible magnitude of effect on an asset of high heritage significance thus resulting in a negligible reversible significance of effect. This effect is not significant under the EIA Regulations.

11.6.3 Restoration Effects

The extraction areas would be restored to a mixture of pastoral agricultural land and wetland areas.

As there would be no additional impact to any buried archaeological resource, subject to the impacts of the construction phase, no further mitigation is considered necessary during the de-commissioning phase.

Completion of the restoration works would reinstate a post-industrial landscape consisting of a mixture of pastoral farmland, wetland and tree planting. Consequently, it is considered there would be no effect on the built heritage (including conservation areas) through changes to their setting.

11.7 CUMULATIVE EFFECTS ASSESSMENT

The appropriate scale for considering cumulative development depends on the nature of the potential effect. These are considered in turn, for each category of potential effect.

There are a number of development sites, either consented or in the planning process, as set out in Table 11.6. All the below development sites are located at a distance where visibility is limited by topography and built and landscape features, therefore there are no cumulative effects (See section 11.9.2 below).

Table 11.6: Cumulative Sites

Development	Status	Approximate Distance and direction from the Site
17/01509/FUL	Approved - Mon 27 Apr 2020	1.09 km north of the Site
21/01666/RES	Approved - Tue 28 Jun 2022	5.28 km northwest of the Site
20/01405/FUL	Approved - Fri 19 Feb 2021	1.2km East of the Site
21/00508/VOC	Approved - Mon 05 Jul 2021	1.2km East of the Site
19/00157/SCR	Not EIA - Mon 25 Feb 2019	3.04 km south east of the Site
17/00931/FUL	Approved - Wed 04 Apr 2018	0.1 km west of the Site

11.8 MITIGATION AND RESIDUAL EFFECTS

11.8.1 Mitigation

11.8.1.1 Archaeology

Although the potential impact upon archaeological assets is minor, due to the majority of sand and gravel deposits having previously been removed, there is nevertheless some potential for removal of archaeological deposits within potential remaining sand and gravel lenses. Therefore, an outline design for limited staged archaeological mitigation produced in consultation with the local planning authority is proposed. This would comprise of a Written Scheme of Investigation (WSI) setting out the staged approach to target areas for mitigation, to be secured by a suitable planning condition.

Area A

A desk-based review of existing GI data would be required to form the baseline for a geoarchaeological deposit model across Area A. This would provide for targeted monitoring of any areas comprising unworked sand and gravel, River Terrace Deposits. Archaeological Watching Brief would suffice for target areas and would be outlined within the WSI. This would comply with best practice and reduce or avoid harm to potential below ground heritage assets.

Area B

Due to the low levels of impact upon the archaeological resource (haul road and conveyor construction), this area is proposed to be subject to an archaeological watching brief during construction groundworks. The scope of works would be outlined within the aforementioned WSI. This would comply with best practice and reduce or avoid harm to potential below ground heritage assets.

Area C

As any development would be undertaken on existing hardstanding no below ground archaeological deposits would be impacted. No further mitigation is proposed.

11.8.1.2 Built Heritage

No further mitigation beyond those set out in Section 11.5 are proposed for built heritage.

11.8.2 Residual Effects

Following the implementation of the mitigation measures outlined above, the magnitude of effect on potential archaeological remains through their removal or extensive truncation, would be a low adverse effect, due to their preservation by record. On archaeological remains, if present, considered to be of medium heritage significance this would result in a minor significance of effect. However, the potential for impacting archaeological deposits is considered low. This residual effect is not significant under the EIA Regulations.

11.9 SUMMARY OF EFFECTS

Table 11.7 provides a summary of likely/potential effects detailed within this chapter.

Table 11.7: Summary of Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Archaeological Resource	Removal or truncation of surviving archaeological remains, mitigated	High, negative	Archaeological watching brief on construction related groundworks in Area B, agreed through WSI. No works required in Areas A and C	Low, negative
Lound Conservation Area and associated Listed Buildings	<ul style="list-style-type: none"> conspicuousness through site hoarding; competition with or distraction from the asset through presence of cranes and machinery; introduction of movement, light or activity; and noise vibration and dust 	Negligible, negative	None proposed	Negligible, negative
Church of St Bartholomew	<ul style="list-style-type: none"> conspicuousness through site hoarding; competition with or distraction from the asset through presence of 	Negligible, negative	None proposed	Negligible, negative

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
	cranes and machinery; • introduction of movement, light or activity; and • noise vibration and dust			
Babworth Hall Registered Park and Garden and Associated Listed Buildings	• conspicuousness through site hoarding; competition with or distraction from the asset through presence of cranes and machinery; • introduction of movement, light or activity; and • noise vibration and dust	Negligible, negative	None proposed	Negligible, negative
Operational Phase				
Archaeological Resource	Removal or truncation of surviving archaeological remains	High, negative	The GI data suggests some potential of River Terrace Deposits situated above the sandstone bedrock of between 4m and 7m in thickness. Such deposits have the potential to contain prehistoric deposits of medium archaeological value, archaeological mitigation measures would therefore be required. The mitigation measures within Area A would require a staged approach to target archaeological potential. This would consist of a deskbased review of GI data to provide a geoarchaeological deposit model.	Low, negative

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
			The model would highlight insofar as reasonably possible areas of unworked sand and gravel deposits, including approx. depth (bgl). From this, if such deposits are encountered and are likely to be impacted, then a targeted scheme of mitigation would be devised, either avoidance or through a archaeological monitoring during works. This would be outlined within an agreed WSI in consultation with Nottinghamshire CC. See HEDBA.	
Lound Conservation Area and associated Listed Buildings	<ul style="list-style-type: none"> • position in relation to views • conspicuousness; • competition with or distraction from the asset • change in landscape character; • introduction of movement, noise, activity and light spill. 	Minor, negative	Landscape scheme	Negligible, negative
Church of St Bartholomew	<ul style="list-style-type: none"> • position in relation to views • conspicuousness; • competition with or distraction from the asset • change in landscape character; • introduction of movement, noise, activity and light spill. 	Minor, negative	Landscape scheme	Negligible, negative
Babworth Hall Registered Park and Garden and	<ul style="list-style-type: none"> • position in relation to views • conspicuousness; 	Negligible , negative	Landscape scheme	Negligible, negative

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Associated Listed Buildings	<ul style="list-style-type: none"> • competition with or distraction from the asset • change in landscape character; • introduction of movement, noise, activity and light spill. 			

11.9.1 Summary of Restoration Effects

There would be no additional impact to any buried archaeological resource, subject to the impacts of the construction phase.

There would be no further effect on the built heritage (including conservation areas) through changes to their setting.

11.9.2 Summary of Cumulative Effects

The methodology followed to assess the cumulative effects is the same as that applied to assessing the effects of the Proposed Development in isolation.

The Proposed Development and other committed development in the vicinity would continue to lead to the loss of buried archaeological remains, which are viewed as an irreplaceable resource. The majority of other developments are located at a distance, there would be no additional major impacts upon the archaeological resource within the footprint of the Proposed Development arising from the cumulative impact of these schemes.

Based on the sensitivity, natural screening and distance, it has been considered that no designated heritage assets have the potential to receive cumulative effects through changes to their setting.

11.10 STATEMENT OF SIGNIFICANCE

The Proposed Development would result in the potential for a high magnitude of impact on archaeological remains of medium heritage significance resulting in a moderate negative significance of effect. Following mitigation this effect would be reduced to minor negative significance of effect. However, please note that these effects are worst-case and only possible if any archaeological assets are identified, the potential for which is considered low given that the Site has been subject to significant modern disturbance. This effect is not significant under the EIA Regulations.

The Proposed Development would result in low adverse magnitude of impact on Lound Conservation Area and its associated Listed Buildings, identified as heritage assets of high heritage significance. This would result in a minor negative reversible significance of effect. This effect is not significant under the EIA Regulations.

The Proposed Development would result in low adverse magnitude of impact on the Grade I Listed Building Church of St Bartholomew, identified as a heritage asset of high heritage significance. This would result in a minor negative reversible significance of effect. This effect is also not significant under the EIA Regulations.

The Proposed Development would result in negligible adverse magnitude of impact on Babworth Hall Registered Park and Garden and Associated Listed Buildings, identified as

heritage assets of high heritage significance. This would result in a negligible negative reversible significance of effect. This effect is not significant under the EIA Regulations.