

The West Midlands Rail Freight Interchange Order 201X
ES - Vol 1 - Chapter 8: Archaeology (Below Ground Heritage)
Regulation 5(2)(a)
Wessex Archaeology - July 2018

8 Archaeology (Below Ground Heritage)

Introduction

- 8.1 This chapter of the Environmental Statement (ES) evaluates the effects of the Proposed Development on the archaeological resource of the Site. The assessment is confined to consideration of 'direct' effects (i.e., physical impacts arising from the construction and operation of the Proposed Development) only. No consideration has been given to settings of heritage assets; this is addressed in Chapter 9: Cultural Heritage of this ES. Archaeological resources can include designated heritage assets, such as World Heritage Sites, Scheduled Monuments, Registered Battlefields, Protected Wrecks as well as also include previously unknown archaeological features or remains considered to be of potential significance. In addition, non-designated monuments, sites, places, areas or landscapes as indicated by the Staffordshire Historic Environment Record (HER) have been considered.
- 8.2 This chapter describes the relevant legislation and archaeology policy context; the methods used for assessment and details of the criteria used to determine significance; and the baseline archaeological conditions at and surrounding the Site.
- 8.3 The archaeological assessment has been based on a consideration of desk-based records, as well as consideration of LiDAR data and the results of geophysical surveys carried out on the Site as part of this process. No intrusive investigation has been carried out, in part due to a desire to minimise disturbance in the absence of specific and detailed development proposals as this stage. Furthermore, large areas of the Site are in active agricultural use and large scale intrusive investigation would significantly affect Site users. Following consultation with Staffordshire County Council (SCC), it has been agreed that, although intrusive investigation may be required in due course with respect of detailed design layouts, when these are brought forward, such investigations can be carried out after the approval of the DCO for this project. An outline Written Scheme of Investigation (WSI) setting out indicative proposals for further works in response to detailed plans has been prepared to accompany this ES and is appended to this chapter.
- 8.4 This chapter is supported by the following technical appendices presented in Volume 2: *Technical Appendices* of this ES:
- Technical Appendix 8.1: Historic Environment Desk-Based Assessment;
 - Technical Appendix 8.2: Addendum to Historic Environment Desk-based Assessment;
 - Technical Appendix 8.3: LiDAR Data Assessment;
 - Technical Appendix 8.4: Detailed Gradiometer Survey Report; and
 - Technical Appendix 8.5: Outline Written Scheme of Investigation.
- 8.5 This chapter is written by Wessex Archaeology.

Legislation and Policy Context

National Legislation and Policy

National Policy Statement for National Networks, 2014¹

- 8.6 The relevant National Policy Statement for the Proposed Development is the National Policy Statement for National Networks 2015 (the 'NPS').

- 8.7 The NPS recognises that the construction and operation of national networks infrastructure has the potential to result in adverse impacts on the historic environment. It outlines the importance of the historic environment as a resource; how that resource should be assessed during the EIA process; and how decisions in determining the significance of heritage assets and the potential impact of the development upon those assets are determined.
- 8.8 Paragraph 5.124 of the NPS states; '*Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments, should be considered subject to the policies for designated heritage assets. The absence of designation for such heritage assets does not indicate lower significance.*'
- 8.9 Paragraph 5.125 states '*The Secretary of State should also consider the impacts on other non-designated heritage assets (as identified either through the development plan process by local authorities, including 'local listing', or through the nationally significant infrastructure project examination and decision making process) on the basis of clear evidence that the assets have a significance that merit consideration in that process, even though those assets are of lesser value than designated heritage assets.*'
- 8.10 Paragraph 5.127 states '*The applicant should describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the asset's importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant Historic Environment Record should have been consulted and the heritage assets assessed using appropriate expertise. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, the applicant should include an appropriate desk-based assessment and, where necessary, a field evaluation.*'
- 8.11 Paragraph 5.130 states '*The Secretary of State should take into account the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution that their conservation can make to sustainable communities – including their economic vitality...*'
- 8.12 Paragraph 5.140 states '*Where the loss of the whole or part of a heritage asset's significance is justified, the Secretary of State should require the applicant to record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part). The extent of the requirement should be proportionate to the importance and the impact. Applicants should be required to deposit copies of the reports with the relevant Historic Environment Record. They should also be required to deposit the archive generated in a local museum or other public depository willing to receive it.*'

National Planning Policy Framework, 2012²

- 8.13 Paragraph 3 of the National Planning Policy Framework (NPPF) states that: '*This Framework does not contain specific policies for nationally significant infrastructure projects for which particular considerations apply. These are determined in accordance with the decision-making framework set out in the Planning Act 2008 and relevant national policy statements for major infrastructure, as well as any other matters that are considered both important and relevant (which may include the National Planning Policy Framework). National policy statements form part of the overall framework of national planning policy, and are a material consideration in decisions on planning applications.*'
- 8.14 Consideration has also been given to the content of paragraphs 126 – 141 of the NPPF, which set out specific policies for the protection and conservation of archaeological remains and

¹ Department for Transport, December 2014. National Policy Statement for National Networks.

² Department for Communities and Local Government, March 2012. National Planning Policy Framework.

other heritage assets, in particular where these policies require the understanding of the significance on any asset (para. 128). It follows from this that significance of an asset is the key factor, and the methodology this assessment uses is designed to assess whether potential changes occasioned by the proposal will affect various attributes that contribute to an asset's significance so that the significance of that asset is diminished or harmed.

Ancient Monuments and Archaeological Areas Act 1979³

- 8.15 The main legislation pertaining to archaeological sites is the Ancient Monuments and Archaeological Areas Act 1979 (as amended), which builds on previous Acts in confirming legal protection for nationally important archaeological remains through their addition to a centrally maintained 'schedule'. In most instances, the consent of the Secretary of State (Department of Culture, Media and Sport), as advised by Historic England, is required for certain works within a Scheduled area.
- 8.16 For archaeological sites that are not covered by the Act, protection is afforded through the overall framework of national and local planning policy, including national policy statements for major infrastructure.

Regional Policy

- 8.17 There are no relevant, adopted regional policies that direct the assessment of archaeology away from the approach outlined in the national and local policies set out here.

Local Policy

South Staffordshire Core Strategy DPD, 2012⁴

- 8.18 The South Staffordshire Core Strategy 2012 sets out general policies in relation to the protection of the historic environment.
- 8.19 Policy EQ3: Conservation, Preservation and Protection of Heritage Assets, reads as follows:

'The conservation and enhancement of South Staffordshire's historic environment will be achieved by a number of means:

The council will establish, review and maintain records of known heritage assets including:

- *Listed Buildings*
- *Scheduled Ancient Monuments*
- *Conservation Areas*
- *Registered Parks and Gardens*
- *Buildings of Special Local Interest (a 'local list')*
- *Undesignated heritage assets*
- *Other historic landscapes*

and will support and encourage ever greater appreciation, knowledge and enjoyment of the District's historic environment and heritage assets through:

- *Joint working with local communities and interest groups such as civic and historical societies;*
- *The continual development and refinement of the Local List; and*
- *Interaction with the County Council's Historic Environment Record (HER).*

The Council will support and encourage measures which secure the improved maintenance, management and sustainable reuse of heritage assets, particularly those which are identified nationally or locally as being at risk. Where necessary an assessment will be made of whether the benefits of a proposal for enabling development, which would otherwise conflict with

planning policies but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies.

The Council will ensure that development which affects a heritage asset of its setting will be informed by a proportionate assessment of the significance of the asset, including its setting, which is likely to be affected by the proposals. These will be judged by considering the extent to which an asset's archaeological, architectural, historic or artistic interest will be harmed, including its conversation, in the interest of present and future generations.

In the case of development a conservation area proposals will be considered against any management plan and appraisal adopted for that area.

The Council will consider the significance and setting of all proposed works to heritage assets, informed by relevant guidance that is supported by English Heritage [now Historic England]. In addition the following principles will be adhered to:

- *Minimising the loss of disturbance of historic materials*
- *Using appropriate materials, and*
- *Ensuring alterations are reversible*

The Council will require all works proposed to heritage assets, or sites with the potential to include assets, to be informed by a level of historical, architectural and archaeological evidence proportionate to their significance. Where appropriate, the Council may also require historical research and archaeological recording to be undertaken before works to a heritage asset commence.

Heritage assets including Listed Buildings (and those on a local list) Registered Parks and Gardens (and other historic landscapes)'.

Consultation

- 8.20 The Scoping Opinion was issued by the Secretary of State in October 2016 in response to the Scoping Report. Comments made by the Secretary of State and other consultation bodies in the Scoping Opinion that are relevant to the topic assessed in this chapter are summarised in Table 8.1.

| Table 8.1: Comments in the Scoping Opinion | | |
|--|--|---|
| Consultee | Comments Raised | Response to Comments |
| Secretary of State | Para. 3.42 <i>'The Secretary of State is satisfied with the general approach to assessment, which is based on the Chartered Institute for Archaeologists (CIFA) methodologies. However, in light of the number of identified archaeological features within the study area, including potential Neolithic features within the site, the Secretary of State considers that a review of LIDAR data should be undertaken, supported by geophysical survey and selective trial trenching where appropriate. Where intrusive ground investigations are carried out, a targeted watching</i> | A LiDAR assessment and geophysical survey of priority areas as determined by desk-based assessment have been undertaken and are reported on in this ES. The results of these investigations have informed this assessment, and consideration of whether subsequent archaeological investigation may be required. It is agreed with SCC (see paragraph 8.21 below) that intrusive investigation is not required at this stage, but where needed can be carried out in response to detailed design layouts once these are brought |

³ Ancient Monuments and Archaeological Areas Act 1979

⁴ South Staffordshire Council, ND. South Staffordshire Core Strategy DPD (Adopted 11th December 2012).

| Table 8.1: Comments in the Scoping Opinion | | |
|---|---|---|
| Consultee | Comments Raised | Response to Comments |
| | <i>brief should be applied to support the assessment. The approach to the assessment should be agreed with the County Archaeologist and the Applicant's attention is drawn to Staffordshire County Council's comments in this respect.'</i> | forward. This is set out in an outline written scheme of investigation (WSI) to be secured as a DCO Requirement. Further intrusive ground investigation post-determination (for example for geotechnical purposes) will, where relevant, include archaeological monitoring which will be defined in a written scheme of investigation (WSI) to be secured as a DCO Requirement. It has been agreed that specific intrusive investigation is not required at this stage (see paragraph 8.21 below). However, investigations may be subsequently agreed in relation to detailed design layouts brought forward in respect of individual plots as these are brought forward. |
| | Para 3.43 <i>'The Secretary of State notes that Figure 7 of the Scoping Report omits the ring ditch (PRN 04542) on the eastern edge of the site and an area of undated crop-marks close to Gravelly Way House (PRN 01797). Furthermore it is noted that Figure 7 is based on an earlier version of the proposed development boundary excluding the development land south of Vicarage Road. Figures submitted in the ES should include all identified heritage features.'</i> | PRN 04542 and PRN 01797 were omitted from Figure 7 in error. The illustrations have now been updated to ensure all heritage features have been illustrated and the Site boundary updated in Figure 7 of Technical Appendix 8.1 (included in Volume 2). |
| | Para 3.44 <i>'The length of 'important' hedgerows (as defined in the Hedgerows Regulations 1997) to be retained/ removed by the proposals should be quantified and measures to protect retained hedgerows during construction works should be clearly described. The impact of such hedgerow loss on historic landscape character should be considered.'</i> | This matter is addressed in Chapter 9: - Cultural Heritage and Chapter 10: Ecology and Nature Conservation. |
| | Para 3.47 <i>'The Secretary of State agrees that the potential effects on</i> | Effects to archaeological receptors are assessed in this chapter. |

| Table 8.1: Comments in the Scoping Opinion | | |
|---|---|---|
| Consultee | Comments Raised | Response to Comments |
| | <i>designated and non-designated cultural heritage resources should be addressed in the ES, including the likelihood of loss or harm and effects resulting from changes to setting. In terms of the potential effects on the setting of cultural heritage resources, cross reference should be made to the landscape and visual impact chapter/ volume of the ES.'</i> | Effects on the settings of heritage assets are addressed in Chapter 9: Cultural Heritage. |
| Highways Agency | <i>'Archaeology and Cultural Heritage – the study to be undertaken for this topic within the final ES should consider the impacts on the SRN [Strategic Road Network] of the removal of buried archaeological features and historically 'important' hedgerows.'</i> | The impact assessment presented in this chapter accounts for all individual elements of the Proposed Development on archaeological receptors, including associated off-site highway works. The potential effects on 'important' hedgerows are addressed in Chapter 9: Cultural Heritage and Chapter 10: Ecology and Nature Conservation. |
| Staffordshire County Council 13 October 2016 | <i>Historic Environment 'The initial assessment contained within the scoping opinion document does provide a broad overview of all aspects of the historic environment (built heritage, below ground archaeology (and archaeological potential) and the broader historic landscape character of the area). The scope of the 1km buffer around the scheme would also appear in general to be appropriate bearing in mind the topography of the site and surrounding landscape.' 'The scoping opinion also identifies the need for a full and detailed Historic Environment Desk-Based Assessment (HEDBA) and clearly states that it will conform with the Chartered Institute for Archaeologists (CIfA) standard and guidance for 'Historic environment desk-based assessments' (2014). As such the Historic Environment element of this document is broadly to be supported.'</i> | The Historic Environment Desk-Based Assessment (HEDBA) has been completed in accordance with the Scoping Opinion and the Scoping Report. This is included as Technical Appendix 8.1. The '1km buffer around the scheme' (the 'Study Area'), has been used to establish the existing baseline conditions within the Site throughout the preparation of the HEDBA. |
| | <i>S6.4.10. This section references the presence of a ring ditch (PRN</i> | PRN 04542 and PRN 01797 were omitted from Figure 7 in error. |

| Table 8.1: Comments in the Scoping Opinion | | |
|--|---|---|
| Consultee | Comments Raised | Response to Comments |
| | <i>04542) on the eastern edge of the site and an area of undated (although potentially late prehistoric in date) cropmarks close to Gravelly Way House (PRN 01797). These features appear to be missing from Figure 7 which identifies prehistoric and Romano-British sites and find spots recorded on Historic England and SHER records.</i> | The illustrations have now been updated to ensure all heritage features have been illustrated and the Site boundary updated in Figure 7 of Technical Appendix 8.1 (included in Volume 2). |
| | <i>S6.4.41. In addition to fully consulting historic map and aerial photographic resources the HEDBA should also review all available lidar for the site and the surrounding area. The results of this work may allow broader modelling of below ground archaeological potential across the site.</i> | A LiDAR survey has been initiated and the results have been included in the final ES and are presented at Technical Appendix 8.3 (included in Volume 2). |
| | <i>S.6.4.42. The HEDBA indicates the range of published and unpublished sources which will be consulted during research. The HEDBA should also consider the results of any historic Site Investigation (for geotechnical or environmental purposes) as such evidence could inform understanding regarding the nature of subsurface deposits across the site. If early Site Investigation is currently being proposed for this scheme (either window samples or coring) then these results should also be made available to the schemes historic environment consultant and this may inform the preparation of an initial deposit model across the site.</i> | Further intrusive ground investigation (for example for geotechnical purposes or as part of planned mitigation for detailed development proposals) will, where relevant, include archaeological monitoring. Indicative proposals have been set out in an outline written scheme of investigation (WSI) to be secured as a DCO Requirement (see Technical Appendix 8.5, included in Volume 2). |
| | <i>The results of the HEDBA will be used to inform discussions regarding the need for and scope of subsequent archaeological interventions across the site. It is acknowledged that details regarding staged investigations across the site would be best discussed once the full HEDBA is finalised, however the historic environment consultants should bear</i> | The HEDBA has been used to inform this ES chapter. Further evaluation work in the form of a LiDAR assessment and targeted geophysical survey of areas identified as being of potential archaeological interest has been undertaken and is used to |

| Table 8.1: Comments in the Scoping Opinion | | |
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| Consultee | Comments Raised | Response to Comments |
| | <i>such potential for fieldwork in mind when addressing the HEDBA. Beyond the broad requirements of the HEDBA (as detailed in the relevant ClfA standard and guidance), a number of site-specific considerations should also be addressed within this document:-</i> <ul style="list-style-type: none"> <i>It is strongly advised that the results of the HEDBA inform the landscape and visual assessment (and vice versa) and in particular the development of any landscape masterplan for the scheme. It is also noted that the landscape and visual assessment references the production of a 'Zone of Theoretical Visibility' (ZVI) study, no such study is identified within the historic environment section. The ZVI will be important in considering potential impacts upon the setting of designated heritage assets on and beyond the scheme, as such a detailed consideration of the ZVI and potential impacts on heritage assets should be included within the HEDBA. Where appropriate, designated heritage assets beyond the 1km buffer may therefore need to be considered within the HEDBA.</i> <i>Related to the point regarding s6.4.42, the historic environment consultants should have a role in discussions regarding the scope and location of Site Investigations across the site. Any window sampling (particularly in areas of demonstrable archaeological potential) should be the focus of a targeted archaeological watching brief. This work would be carried out by appropriately experienced archaeologists operating in accordance with the ClfA standard and guidance for 'archaeological watching briefs' (2014) and with a Written Scheme of Investigation prepared in advance and agreed with the LPA's archaeological advisor. This work would represent</i> | inform this ES. These are presented in Technical Appendices 8.3 and 8.4 (Volume 2 of this ES). The results of these investigations have also informed the outline mitigation presented in the written scheme of investigation (WSI) to be secured as a DCO Requirement (see Technical Appendix 8.5). The scope of the HEDBA did not cover the potential effects of the Proposed Development on the settings of heritage assets, as these matters were addressed separately. Effects on the settings of all heritage assets including setting effects on archaeological receptors are addressed in Chapter 9: Cultural Heritage, of this ES. |

| Table 8.1: Comments in the Scoping Opinion | | |
|--|---|---|
| Consultee | Comments Raised | Response to Comments |
| | <i>an initial phase of archaeological intervention upon the site.</i> | |
| Staffordshire County Council 22 July 2016 | <p><i>Historic Environment ... The potential late prehistoric remains that have been identified within the baseline data section (sections 4.20 and 4.21) of the Environmental Report are not flagged as sensitive receptors within section 4.48, while the potential for 'unidentified buried archaeological remains...' is considered here. It is argued that these cropmark remains have demonstrable potential and should be considered as 'sensitive receptors'. Notably, Historic England does not appear to have been consulted in the preparation of the Environmental Report regarding potential impacts upon Scheduled Monuments. If this has not happened to date it is strongly advised that it take place at the earliest opportunity.</i></p> | <p>Potential archaeological remains identified on the basis of cropmark evidence have been assessed as potential sensitive receptors within this chapter of the ES.</p> <p>Although Historic England were consulted as part of the Scoping exercise, no comments were received.</p> |
| | <p><i>The early nature of the Environmental report is noted and it is advised that a formal Historic Environment Desk-Based Assessment (HEDBA) be undertaken to inform the EIA process. The HEDBA should consider the full range of historic and archaeological data (whose format is detailed in the Chartered Institute for Archaeologists (CIfA) standards and guidance for 'Historic Environment Desk-Based Assessment' (2014)) and should include reference to all available historic mapping sources, historic illustrations/engravings, aerial photos (vertical and oblique) and lidar for the study area. This work should be undertaken by an appropriately experienced individual/organisation working to the standard and guidance.</i></p> | <p>Further evaluation work in the form of a LiDAR assessment has been undertaken and is used to inform this ES. These are presented in Technical Appendices 8.3 and 8.4 (Volume 2 of this ES).</p> <p>The results of these investigations have also informed the outline mitigation presented in the outline written scheme of investigation (WSI) to be secured as a DCO Requirement (see Technical Appendix 8.5).</p> |
| | <p><i>The Environmental Report identifies important hedgerows under the amended Hedgerow Regulations criteria (2002) but does not consider</i></p> | <p>Effects on the historically 'important' hedgerows are assessed in Chapter 9: Cultural Heritage.</p> |

| Table 8.1: Comments in the Scoping Opinion | | |
|--|--|---|
| Consultee | Comments Raised | Response to Comments |
| | <p><i>field boundary loss as a function of the sites historic landscape character or link aspects of historic landscape character to other heritage assets within the study area (i.e. parkland, farmsteads); the HEDBA should also address these issues. It is also strongly advised that the Historic Environment Consultants liaise closely with the applicant's other specialist consultants (in particular where the Landscape and Visual Assessment is concerned). This liaison on landscape issues should continue, where appropriate, into the design of the detailed landscape design for the scheme.</i></p> | |
| | <p><i>The historic environment consultants should also address the potential for palaeoenvironmental and geoarchaeological remains across the site. As such they should liaise with the applicants Site Investigations (SI) consultants to inform the location of boreholes and window samples to maximise the potential for the recovery of data which will also be of use in developing an understanding of the palaeoenvironmental and geoarchaeological potential for the site. Where appropriate, an archaeological watching brief should be conducted in concert with SI works; these results of this may form part of the HEDBA or may be submitted for consideration as a separate document. The results of this initial work will inform early discussions regarding the potential for preservation in situ of sensitive heritage assets, the role of considered design in protecting and (where possible) enhancing historic landscape character as well as the scope and staging of archaeological evaluation/mitigation across the area of the scheme.</i></p> | <p>Further investigation post-determination will include geo-archaeological monitoring which will be defined in a written scheme of investigation (WSI) to be secured as a DCO Requirement. An indicative scheme of further investigation is set out in an outline written scheme of investigation presented as Technical Appendix 8.5.</p> |

8.21 Subsequent consultation was undertaken with SCC in November 2017 on the Outline Written Scheme of Investigation (Technical Appendix 8.5) and it was agreed with SCC that this represented a satisfactory basis on which to base the pre-construction mitigation strategy. Minor amendments were requested, highlighting the need to seek preservation *in situ* where possible, as well as the requirement for consultation with SCC on the detailed mitigation proposals (trench numbers, locations etc., need to test areas seemingly “blank” in the geophysics surveys etc.) which have been made in the version appended to this ES.

Assessment Methodology

Baseline Characterisation

8.22 The environmental baseline described in this chapter is based on the results of four assessments or surveys which are included as technical appendices. The purpose was to identify the known archaeological resource (through desk-based research), and to identify previously unrecorded assets to add to the baseline (through walkover inspection, examination of LiDAR dataset, and the commissioning of specific gradiometer surveys). The study area used for the desk-based assessment covered the entirety of the Site, as well as a 1 km area around it to inform on the potential for further unknown and buried (or otherwise unrecorded or un-surveyed) archaeological assets to survive within the Site that may be impacted by the Proposed Development.

The Historic Environment Desk-based Assessment

8.23 The Historic Environment Desk-based Assessment (hereafter, the HEDBA) (presented within Technical Appendix 8.1 of this ES), was researched and compiled in 2016 and updated in 2017, in accordance with relevant industry guidance and best practise⁵. The requirement for, and general scope of the HEDBA were set out in the Scoping Report. The subsequent Scoping Opinion response issued by Staffordshire County Council (SCC) broadly supported this approach.

8.24 The principal aims of the HEDBA were to assess, as far as was possible from existing information, the nature, extent and significance of the buried historic environment resource within the HEDBA assessment area and its environs, and to provide an initial assessment of the potential impact of development on that resource.

8.25 The study area assessed within the HEDBA (see Figure 2, Technical Appendix 8.1) was established within a 1 km radius of the HEDBA assessment area boundary. The recorded historic environment resource within the study area was considered in order to provide a context for the discussion and interpretation of the known and potential resource within the Site. The response provided by SCC and set out in the Scoping Opinion issued by the Planning Inspectorate⁶ stated that the ‘*scope of the 1km buffer around the scheme would also appear in general to be appropriate bearing in mind the topography of the site and surrounding landscape*’.

8.26 A number of publicly accessible sources of primary and synthesised information were consulted during the preparation of the HEDBA. These sources are detailed in full in Technical Appendix 8.1, and summarised below:

- The National Heritage List for England (NHLE);
- The Staffordshire Historic Environment Record (SHER);
- National heritage datasets including the Archaeological Data Service (ADS), Heritage Gateway, OASIS, PastScape and the National Record of the Historic Environment (NRHE) Excavation Index;
- Historic manuscripts, surveyed maps, and Ordnance Survey maps held at the Staffordshire Record Office, Lichfield Record Office and William Salt Library; and

- Relevant primary and secondary sources held at the Staffordshire Record Office, Lichfield Record Office and William Salt Library and in Wessex Archaeology’s own library. Both published and unpublished archaeological reports relating to excavations and observations in the vicinity of the Site were studied.

8.27 A walkover survey of the Site was carried out by Wessex Archaeology on 10th March 2016, 23rd March 2016 and the 16th February 2017. The aims of the walkover surveys were to assess the general aspect, character, condition and setting of the Site. The walkover survey also sought to ascertain if the Site contains any previously unidentified features of archaeological, architectural or historic interest, and to identify any evidence of previous impacts which were not evident from secondary sources.

8.28 Following changes to the Site boundary in November 2017 an addendum to the HEDBA was required in order to include two new areas of land which were encompassed by the Site. This is presented within Volume 2, Technical Appendix 8.2 of this ES.

LiDAR Data Assessment

8.29 A LiDAR data assessment was carried out across the Site in order to establish the location of archaeological features present within the Site that are identifiable through the interrogation of visualisations derived from the LiDAR data.

8.30 The assessment supports the HEDBA in determining, as far as is possible from existing information, the nature, extent and significance of the historic environment resource within the Site and to provide an initial assessment of the potential impact of development on the heritage assets that embody that significance.

8.31 The data was acquired in pre-filtered ASCII raster format with a 1 m horizontal resolution and a vertical accuracy of ±5 cm from the Environment Agency. A number of processing tools were used to create visualisations used for interpretation of potential archaeological features. A full description of the methodology employed is included within Technical Appendix 8.3, Section 2.

Detailed Gradiometer Survey

8.32 A detailed gradiometer survey was carried out across the Site with the aim of establishing the presence of detectable anomalies which may be archaeological in nature. Seven areas considered to be of high potential for archaeological remains due to their proximity to known features or cropmarks were surveyed, encompassing 37 ha of the approximately 297 ha Site.

8.33 The survey was conducted using Bartington Grad601-2 fluxgate gradiometers with data collected at 0.25 m intervals along transects spaced 1 m apart. A full description of the methodology employed is included within Volume 2, Technical Appendix 8.4 Section 3, of this ES.

Method of Assessment

8.34 The assessment presented in this ES is concerned only with potential direct impacts upon the known and unknown (buried) archaeological resource within the Site where these are in danger of being disturbed or destroyed. Physical effects are likely to occur during the construction and decommissioning phases of the Development, and are permanent and irreversible.

Significance Criteria

8.35 This assessment sets the sensitivity/value of an asset (its *significance*) as identified in the baseline, and considers this against the likely magnitude of the effect of the Proposed Development to derive the significance of any potential effect.

⁵ Chartered Institute for Archaeologists, 2014. Standards and Guidance for historic environment desk-based assessment.

⁶ The Planning Inspectorate, October 2016. Scoping Opinion. Proposed West Midlands Interchange. Planning Inspectorate Reference: TR050005.

Sensitivity/Value of Receptors

- 8.36 The assessment of effects is based on the Proposed Development as described in Chapter 4 of this ES. This assessment proceeds from a consideration of the sensitivity of a cultural heritage feature against the magnitude of any potential effect, to arrive at the significance of the effect.
- 8.37 Sensitivity for the purposes of this assessment has been linked directly with designation status, or importance, as shown in Table 8.2. However, in accordance with paragraph 5.126 of the National Policy Statement for National Networks and the NPPF (paragraph 135), consideration has been given to non-designated archaeological remains, including sites recorded in the Historic Environment Record maintained by SCC, and the lack of formal designation does not automatically equate to low significance.

| Level of Sensitivity | Designation Status |
|----------------------|--|
| Very High | World Heritage Sites, which are internationally important. |
| High | Scheduled Monuments, Listed Buildings, Registered Battlefields, Registered Historic Parks and Gardens, and non-designated assets of equivalent significance which are considered to be nationally important. |
| Medium | Regionally important archaeological features and areas (as defined in the Historic Environment Record). Conservation Areas, which are considered regionally important. |
| Low | Sites and features noted as locally important in the Historic Environment Record. Other, non-designated features of cultural heritage significance. |
| Negligible | Badly preserved / damaged or very common archaeological features / buildings of little or no value at local or other scale. |

Magnitude

- 8.38 Magnitude is a measure of the nature of the predicted effect. It has been broken down as shown in Table 8.3.
- 8.39 Direct impacts are permanent, as the loss of or damage to archaeological receptors cannot be repaired, replaced or recreated. No temporary or indirect effects (such as effects on settings of heritage assets) are considered in this assessment; archaeological impacts are assumed to be permanent (and treated as such in this assessment), and indirect, visual effects on the settings of designated heritage (such as Scheduled Monuments) beyond the Site boundary are considered in Chapter 9: Cultural Heritage of this ES. The magnitude of direct impacts will vary across the Site, being higher in areas where built development is proposed and low to negligible in other areas (i.e. Primary Green Infrastructure, as shown on the Parameters Plans Document 2.5 and 2.7). For the purpose of this assessment, all archaeological and historic landscape features that fall within the Site boundary are viewed as being potentially subject to direct effects.

| Level of Magnitude | Definition |
|--------------------|---|
| Very High | Total loss of or major alteration to a site, building or other feature (e.g., destruction of archaeological feature, demolition of a building). |
| High | Major physical damage to or significant alteration to a site, building or other feature. |
| Medium | Damage or alteration to a site, building or other feature. Encroachment on an area considered to have a high archaeological potential. |
| Low | Minor damage or alteration to a site, building or other feature. Encroachment on an area where it is considered that low archaeological potential exists. |
| Negligible | No physical effect. |

Significance of effect

- 8.40 The significance of any potential effect can be arrived at by matching sensitivity against magnitude as shown in Table 8.4.

| Magnitude Sensitivity | Very High | High | Medium | Low | Negligible |
|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Very High | Major | Major | Moderate | Moderate | Minor |
| High | Major | Major | Moderate | Minor | Not significant |
| Medium | Moderate | Moderate | Moderate | Minor | Not significant |
| Low | Moderate | Moderate | Minor | Not significant | Not significant |
| Negligible | Not significant | Not significant | Not significant | Not significant | Not significant |

- 8.41 Potential effects that are assessed as "minor" or "not significant" are both considered to be "not significant" in terms of the EIA Regulations.

8.42 The assessment of the sensitivity/value of identified archaeological receptors is necessarily a qualitative and subjective process, which relies upon the application of professional judgement. This is particularly the case where identified receptors have no current national or local designation. Following effective mitigation, the residual significance of effect is determined. Where no mitigation is proposed, the predicted significance of effect will remain unchanged.

Assumptions and Limitations

8.43 The following assumptions are relevant to this chapter:

- Data used to compile this assessment includes secondary information derived from a variety of sources. The assumption is made that this data is reasonably accurate.

8.44 The following limitations are relevant to this chapter:

- This assessment draws upon the records held within the SHER. Data held by the SHER is not a full record of all surviving archaeological receptors, 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 elements of the historic environment that are, at present, unknown.
- The assessment has been undertaken in the absence of any prior archaeological investigation within the Site. As such, the archaeological potential of the Site and the sensitivity/value of archaeological receptors is not fully understood at this stage. An overview of the strategy that is proposed to overcome this limitation is set out below. However, some assumptions on sensitivity and value are attempted, based principally on assumed date, form and function of the identified assets.
- This assessment is concerned only with potential direct (and permanent) effects on the known and unknown (buried) archaeological resources within the Site. Indirect (and temporary/long-term) effects on the settings of heritage assets are considered in Chapter 9: Cultural Heritage of this ES.

Baseline Conditions

8.45 The following section presents a summary of the archaeological and historical development of the Site (and as informed by the wider Study Area) with references to individual assets made using a unique 'WA' number which corresponds to identified assets listed in the gazetteer within Technical Appendix 8.1, or to features discussed in the LiDAR data assessment report and Gradiometer survey reports. It is not proposed to repeat the substance of those reports here and further detail relating to the archaeological and historical background is also presented in Technical Appendix 8.1.

Site description

- 8.46 The Site is located approximately 10 km north of Wolverhampton and lies immediately west of Junction 12 of the M6. It comprises an area of land totalling approximately 297 ha.
- 8.47 The Site is situated within a relatively flat area of land at an elevation of approximately 116-118 m above Ordnance Datum (AOD). Local topography falls gently to the south towards the Saredon Brook.
- 8.48 The majority of the Site is currently under arable cultivation, and consists of numerous fields enclosed by hedgerows, with one area of woodland and a large section which is used for sand and gravel extraction.

8.49 With regards to the minerals extraction, the current permission (Ref No. SS.12/08/681) allows the phased extraction of sand and gravel to a depth of 4 metres and subsequent restoration of approximately 38 hectares of land in the north-east of the Site.

8.50 The underlying bedrock geology throughout the Site is mapped by the British Geological Survey as sandstone of the Wildmoor Sandstone Formation and the Bromsgrove Sandstone Formation, with areas of superficial Glaciofluvial deposits of sand and gravel, laid down during the Devensian period. ⁷Previous Archaeological Investigation.

8.51 No previous intrusive archaeological investigation is known to have been carried out within the Site. However, a trial trench evaluation was undertaken on undisturbed land at the site of a former chemical works located immediately to the west of the Site boundary and north of Vicarage Road in March 2016. The evaluation identified no significant archaeological remains from any period, and the only remains identified appeared to relate to modern landscaping and possible 19th century drainage and boundary features of limited archaeological interest.⁸

Archaeological features within the Development

8.52 There is relatively little direct archaeological evidence from within the Site boundary, with much of the evidence coming from isolated finds spots, historic data and interpretation of aerial photographic and other sources.

8.53 Nevertheless, the record indicates that all principal archaeological periods are represented, with the exception of the Palaeolithic and Mesolithic. The superficial deposits of Devensian glaciofluvial sands and gravels within the Site and its proximity to the River Penk suggest a general potential for remains dating to these earlier prehistoric periods to be present, albeit possibly deeply buried.

8.54 The earliest archaeological evidence within the Site consists of cropmarks identified from aerial photographs; these indicate the presence of a ring ditch and linear feature (WA 88; Technical Appendix 8.1: Figure 2) which have been provisionally dated to the Neolithic period. Also, within the eastern part of the Site, lies a possible Bronze Age ring ditch identified from aerial photographs (WA 89; Technical Appendix 8.1: Figure 2). As this dating is tentative (and unconfirmed by archaeological investigation), they have been shown as 'Undated' on the figure referred to above.

8.55 Two barrows (WA 1; Technical Appendix 8.1: Figure 1), located approximately 440m south of the Site, were noted by antiquarians in the 17th and 18th centuries. However, sand and gravel quarrying in the area appears to have removed any remains associated with these features. Cropmarks identified from aerial photographs approximately 660m north-west of the Site (WA 2; Technical Appendix: Figure 2) form two contemporary enclosures, one of which contains two sub-circular enclosures and linear features; these features probably date to the Iron Age.

8.56 The potential that further prehistoric remains exist within the Site is considered to be moderate to low, but remains of these periods could be found anywhere within the Site.

Romano-British

8.57 Only one isolated find of Roman date is present within the Site, this being a complete silver republican denarius minted in 82 BC (WA 17). Watling Street runs under the A5, along the northern edge of the Site. The Study Area contains significant evidence for the Romano-British period (some in close proximity), including four Scheduled Monuments (WA 3-6; Technical Appendix 8.1: Figure 1). These are mainly clustered approximately 750m north-west of the Site, and are described in one of the National Heritage List entries as occupying a '*strategic location and a nodal point in the Roman road system, with roads leaving Watling Street for Chester, Wroxeter, Greensforge, and perhaps Metchley*'.

⁷ British Geological Survey, Geology of Britain Viewer. Accessed on 14th December 2016 at: <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>

⁸ Oxford Archaeology, 2016. Land off Gravelly Way, Four Ashes, Staffordshire. Evaluation Report. Unpublished Client Report.

- 8.58 Other evidence in the wider area includes roads, finds spots of ceramics and coins and assorted linear features.
- 8.59 The potential for unknown Roman archaeological remains to survive within the Site is considered to be high within the northern part of the Site (adjacent to the course of Watling Street), and moderate to low elsewhere.

Anglo-Saxon and medieval

- 8.60 Two settlements recorded within the Study area are documented in the Domesday Survey of 1086, and are therefore likely to have originated in the Anglo-Saxon period. Gailey, or Gragelie (WA 26; Technical Appendix 8.1: Figure 2), located within the Site, is recorded as having one villager, while the settlement at Rodbaston, or Redbaldeson (WA 27; Technical Appendix 8.1: Figure 2), located approximately 540 m north of the Site, comprised four smallholders at the time of the survey. At Rodbaston the earthwork remains of at least three house platforms have been identified. Water Eaton comprised ten households, also suggesting its establishment during the Anglo-Saxon period.
- 8.61 One findspot from the Anglo-Saxon period consisting of a copper alloy strap end and stirrup strap mount with an animal's head (WA 25; Technical Appendix 8.1: Figure 2) was recovered within the Site. A medieval seal matrix (WA 38) was recovered on the line of the railway.
- 8.62 There is considerable evidence for medieval settlement in the study area, including a series of upstanding earthworks (WA 34; Technical Appendix 8.1: Figure 2) located approximately 300 m south of the Site have been interpreted as the possible remains of a medieval moat, while a rectangular feature interpreted as a ploughed-out moat (WA 30; Technical Appendix 8.1: Figure 2) is located approximately 1 km north-west of the Site. In addition, there are numerous features within the Study Area relating to medieval agricultural practices, which include areas of ridge and furrow (WA 31 & 35-37; Technical Appendix 8.1: Figure 2) and earthworks associated with former field boundaries and drainage systems (W32-33; Technical Appendix 8.1: Figure 2).
- 8.63 The Study Area is likely to have been characterised as an agricultural landscape during the Anglo-Saxon and medieval periods, as evidenced by the presence of numerous remains relating to agricultural practices and the scattered nature of the settlements within the Study Area at this time. Such remains may be encountered anywhere across the Site, and if related to agricultural exploitation (ditches etc.) are likely to be of moderate to low sensitivity.

Post-medieval, 19th century and modern

- 8.64 The rural character of the landscape surrounding the Site changed little between the end of the medieval period and the early post-medieval period and the Study Area is occupied by numerous isolated farms and farmsteads (WA 53, 58, 60-62 & 66; Technical Appendix 8.1: Figure 2). Linear earthworks (WA 49; Technical Appendix 8.1: Figure 2) identified within the Site from aerial photographs are likely to represent former post-medieval field systems. A series of linear features located immediately south of the canal beyond the southern Site boundary are recorded as undated by the Staffordshire Historic Environment Record (SHER), although it is likely the features relate to post-medieval agricultural activity (WA 92; Technical Appendix 8.1: Figure 2).
- 8.65 The most significant change in the landscape at the start of this period was the construction of the Staffordshire and Worcestershire Canal in 1772 (WA 44; Technical Appendix 8.1: Figure 2). The canal was designed by James Brindley, the engineer responsible for the Trent and Mersey Canal, as part of his wider plan to link the cities of Hull, Bristol and Liverpool with waterways. There is potential that unknown archaeological remains associated with the construction of the canal (work camps, temporary structures etc., if any) may be affected (such as by the construction of proposed new bridges across it).
- 8.66 The Grand Junction Railway (WA 83; Technical Appendix 8.1: Figure 2) was constructed in 1833 and ran between Newton Junction near Warrington to Birmingham. The route of the railway still runs through the Site (West Coast Main Line). Gailey Railway Station (WA 75; Technical Appendix 8.1: Figure 2) was located between two of the land parcels west of Gailey

along the northern edge of the Site, although the corresponding entry in the SHER indicates that the building has been demolished since 2004. It was built in 1837 along the Grand Junction Railway Line which runs through the Site, although is not located within any of the constituent parcels. The Proposed Development includes proposals to link into the railway system with a series of sidings to the west of the existing track. Works associated with this may have the potential to affect surviving 19th century railway infrastructure (if any).

- 8.67 The Site contains two farm complexes, which are likely to have been established during the 19th century. The first of these, Heath Farm (WA 81; Technical Appendix 8.1: Figure 2), is an isolated farmstead laid out around a regular, courtyard with detached farmhouse and is locally listed (Grade B). The corresponding SHER entry relates that the farmstead was probably established in the early 19th century following the enclosure of Calf Heath through an 1813 Act of Parliament. The second farm complex, Woodside Farm (WA 58; Technical Appendix 8.1: Figure 2), is an isolated farmstead laid out around a regular L-plan courtyard with a detached farmhouse and additional detached elements. The farmstead appears to have been established in the late 18th or early 19th century and the original ranges still appear to be extant. Demolition of these structures may reveal earlier buildings phases or unknown structures associated with the use of these farms.
- 8.68 One site within the Study Area dates to the modern period and comprises a finger post (WA 86; Technical Appendix 8.1: Figure 2). It is located approximately 35 m south-east of the Site.

Undated

- 8.69 Five features within the Study Area are recorded as being of unknown date, four of which are identified from aerial photographs and thus have yet to have their date confirmed. As discussed above, two circular cropmarks located within the Site (WA 88-89), although undated, are believed to be of prehistoric (Neolithic/Bronze Age) date. Linear features identified approximately 700 m north and immediately south of the Site are possible remains of former field boundaries or drainage features (WA 90 & 92; Technical Appendix 8.1: Figure 2). A small silver ring (WA 91; Technical Appendix 8.1: Figure 2), located approximately 800 m north-west of the Site, is also undated.
- 8.70 Numerous linear features interpreted as boundaries and ditches were identified in the LiDAR data assessment (see Technical Appendix 8.3 for full detail). These are likely to be medieval or post-medieval in date and relate to agricultural exploitation of the Site. They are likely to be of local importance and of low sensitivity. There is the possibility that features in the northern and north-western areas of the Site may relate to earlier periods, and if so are likely to be of more sensitivity, if proved to be of direct occupation activity as opposed to being field boundaries.
- 8.71 A number of anomalies detected during the specific gradiometer surveys (see Technical Appendix 8.4 for full detail) were interpreted as possibly archaeological in origin. This includes a possible sub-circular structure which may be identified with the feature recorded as a ring ditch from aerial photos (WA 89). Other anomalies may represent former field boundaries visible on mapping, as well as traces of possible medieval or later ridge and furrow and other agricultural activities.

Statement of Potential

- 8.72 Archaeological remains of all periods may be found anywhere across the site, although it is considered that the potential is greater (for some periods) in the north and north-west, and decreases to the south and south-east. Typically, these remains are anticipated to be found immediately below modern topsoil and hence are likely to be affected by any ground works (including topsoil stripping and de-vegetation works).
- 8.73 The majority of remains are likely to relate to medieval and later agricultural use of the Site, in the form of field boundaries and ditches, with traces of ridge and furrow. These are considered to be of local importance and generally low significance.

- 8.74 There are areas within the Site where a higher archaeological potential exists. Roman remains are considered more likely to exist in the northern and north-western part of the Site, adjacent to the course of Watling Street (under the A5), where road side settlement or other activity may be located, and closer to the concentration of known Roman sites including the scheduled monuments to the north-west of the Site boundary.
- 8.75 Medieval settlement remains (and possible Anglo-Saxon precursors) may exist in the vicinity of Gailey, but agricultural remains of the medieval periods may be found across the Site (but possibly more likely in and around Gailey in the north-west of the Site).
- 8.76 In general, archaeological potential is considered higher in the north and north-west of the Site, and lower towards the south and south-east.

Potential Effects

Demolition and Construction

- 8.77 The demolition and construction stage of the Proposed Development has the potential to generate significant direct impacts to archaeological receptors, with permanent adverse effects. Any such loss or damage to archaeological receptors would be permanent and irreversible. Specific impacts on known archaeological assets/receptors are indicated below, followed by a general statement regarding potential effects on unknown, buried archaeological remains (if present).
- 8.78 A Ring ditch and linear feature (WA 88), is provisionally dated to the Neolithic period, identified from aerial photographs. The dating, form, extent, fragility etc. of this asset (and any related remains) is unconfirmed. However, if confirmed in type and date, have the potential to be of high or medium sensitivity/value. They are located in an area of proposed built development and are likely to be damaged or destroyed by the construction works. The loss of this feature, is considered to be of **moderate to major** significance.
- 8.79 A ring ditch of possible Bronze Age date (WA 89), also identified from aerial photographs, and this may be backed up by geophysical survey evidence. The dating, form, extent, fragility etc. of this asset (and any related remains) is unconfirmed. However, if confirmed in type and date, this has the potential to be of high or medium sensitivity/value. This feature is located in an area of proposed built development and is likely to be damaged or destroyed by the construction works. The loss of this feature is considered to be of **moderate to major** significance.
- 8.80 Due to the proximity of the Site to known historic features from the Romano-British period, including four Scheduled sites, associated with the Roman Road network hub located to the north-west of the Site and the route of Watling Street (WA 21) running adjacent to the northern edge of the Site, there is a likelihood of encountering Romano-British remains within the Site (especially within the northern and north-western zones). The sensitivity/value of any corresponding buried remains is currently unknown at this stage of assessment. However, any such remains, if present, have the potential to be of high or medium sensitivity/value, depending on their character and state of preservation. Destruction or damage to such remains is likely to result in an effect of **moderate to major** significance. However, there is some possibility that parts of this area (especially closer to the main road, and between Gailey Bridge and the north-western extremity of the Site), could be preserved under proposed green infrastructure.
- 8.81 Buried remains associated with the Anglo-Saxon and medieval occupation of Gailey, which is documented by the Domesday survey (WA 29) may be located in the northern part of the Site. The sensitivity/value of any corresponding buried remains is currently unknown at this stage of assessment. However, any such remains, if present, have the potential to be of high or medium sensitivity/value, depending on their character and state of preservation (and especially if proved to be Anglo-Saxon). Destruction or damage to such remains is likely to result in an effect of **moderate to major** significance. However, there is some possibility that
- parts of this area (especially closer to the main road, and between Gailey Bridge and the north-western extremity of the Site), could be preserved under proposed green infrastructure.
- 8.82 There is the potential for the presence of buried remains derived from medieval cultivation associated with Gailey and neighbouring settlements (WA 26 etc.). The sensitivity/value of any corresponding buried remains is currently unknown at this stage of assessment. However, any such remains, if present, are anticipated to be of low sensitivity/value, and part of a much wider resource at the regional level. Not all of the resource within the Site would be destroyed, as some will be preserved in areas of green infrastructure. Partial loss of (considered across the Site) or damage to these remains within the Site would represent an impact of medium magnitude and result in an effect of **minor** significance.
- 8.83 The known history of the Site, as well as features recorded by the SHER, indicate that there is a high potential for features associated with post-medieval agricultural practices, such as former field boundaries, to be present within the Site. Any such remains, if present, are anticipated to be of negligible sensitivity/value, and part of a much wider resource at the regional level. Not all of the resource within the Site would be destroyed, as some will be preserved in areas of green infrastructure. Partial loss of (considered across the Site) or damage to these remains within the Site would represent an impact of medium magnitude and any resulting effect is therefore considered **not significant**.
- 8.84 The route of the Staffordshire and Worcestershire Canal Conservation Area and the Grand Junction Railway run through the Site. There is a potential for the presence of buried archaeological remains associated with the construction of the canal and the railway to survive within the Site. Any such remains, if present, are anticipated to be of low sensitivity/value. Partial loss of (considered across the Site) or damage to these remains within the Site would represent an impact of medium magnitude and result in an effect of **minor** significance.
- 8.85 A large curved feature identified from assessment of LiDAR data which is located within the Site. The provenience of this feature is currently unknown and could represent either an archaeological or a natural feature. The sensitivity/value of any corresponding buried remains is currently unknown at this stage of assessment, however if related to post-medieval agricultural use of the landscape may be of lower sensitivity. If earlier in period and depending on function, this may be of higher sensitivity. From a precautionary basis, it is assumed that this may be archaeological in origin and of medium sensitivity. There is potential to preserve some of this feature in areas of green infrastructure on the north-western part of the Site. Partial loss or damage to this feature (if archaeological in origin) is unlikely to be of more than low in magnitude upon a feature of possibly medium sensitivity, giving an effect of **minor** significance. It has been included here in order to ensure that it is covered in mitigation proposals as appropriate.
- 8.86 Seven anomalies identified during a detailed gradiometer across seven high priority areas within the Site which have been interpreted as representing possible archaeology. The sensitivity/value of any corresponding buried remains is currently unknown at this stage of assessment. If related to post-medieval and later agricultural use of the area (as seems likely) then they may be of lower sensitivity, and any effect of **minor** significance. There is the potential to preserve such features where these lie within areas proposed for green infrastructure.
- 8.87 In general, the risk and severity of direct, physical impacts to buried archaeological remains would be greatest within all built development areas (i.e. Zones A1-A7, Zone B, Zone C and new road infrastructure), where construction activities may result in widespread ground disturbance. The scope and extent of this disturbance will be related to the specific design proposals brought forward in respect of each development phase or development plot, subsequent to the granting of the DCO. Nevertheless, it is anticipated that, where impacted by construction related activities, any surviving archaeological remains are likely to be damaged or destroyed.
- 8.88 Damage to archaeological remains within areas allocated for green infrastructure may be less severe and less extensive, although this would be dependent upon the nature and location of

development-related activities (planting and other hard or soft landscaping) undertaken within these areas of the Site during the construction phase. Conversely, it may be possible to preserve archaeological remains within areas of green infrastructure where no intrusive works are envisaged.

- 8.89 As the sensitivity/value of any other as-yet unrecorded or poorly characterised archaeological receptors within the Site cannot be definitively established at this stage, the resulting significance of effect of any direct, physical impact on these potential receptors is currently **Unknown**. However, the work carried out to support this assessment has allowed the Site to be categorised in broad terms of potential, as set out in the outline WSI presented as Technical Appendix 8.5. Further assessment will be carried out in line with the outline WSI will provide further information to allow verification of sensitivity/value of the receptors to be undertaken.

Operational Development

- 8.90 Following the cessation of construction activities, it is expected that no additional direct impacts to archaeological receptors would occur during the operation of the Proposed Development.

Mitigation and Residual Effects

- 8.91 The mitigation measures outlined in this assessment have been developed in line with the relevant legislative and planning framework, and with regard to current best practice and industry guidance.
- 8.92 On the basis on the information available, the Site has been categorised for purposes of mitigation in to three broad categories of potential for survival of archaeological remains. In essence, the potential for remains to survive is higher in the north, and decreases to the south.
- 8.93 An indicative mitigation proposal is set out in the Outline WSI presented at Technical Appendix 8.5 (Volume 2). This sets out a range of measures appropriate to the broad categorisation of the Site referred to above. It is anticipated that more detailed mitigation proposals would be agreed in relation to detailed design layouts for specific phases of development and/or individual development plots as these are brought forward after granting of the DCO.

Construction

- 8.94 Archaeological remains may be impacted during construction, as a result of any groundworks including excavation, cable-laying, de-vegetation, topsoil removal, haul-road operation and so on.
- 8.95 Impacts upon the archaeological resource can be mitigated by preservation in situ, where remains of particularly high importance and sensitivity are identified, and/or where the development affords the opportunity in provision of areas of green infrastructure. No archaeological remains have been identified at this stage as requiring preservation in situ.
- 8.96 Where assets of lesser importance have been identified, then preservation by record will be appropriate. Preservation by record of archaeological receptors will be delivered via a range of conventional archaeological techniques. These may include detailed area excavation and/or strip, map and sample excavation undertaken in advance of construction, or an archaeological watching brief maintained during construction works. The individual techniques selected to enable preservation by record of archaeological remains within specific areas of the Site will be dependent on the sensitivity/value and nature of the remains, and the likely risk and severity of impact to those remains as a result of construction activities.
- 8.97 An indicative design and methodology to be employed for archaeological mitigation is presented in the outline WSI (Technical Appendix 8.5). This outlines proposals for post-

excavation assessment, reporting and dissemination of the results of the works. Further specific WSIs will be submitted to and approved by SCC. Further detailed proposals will be presented (as WSIs) in respect of detailed design proposals that may be subsequently brought forward for specific phases/plots as these are brought forward. All required archaeological mitigation will be completed in accordance with relevant industry standards and guidance on best practise, including the Standards and Guidance published by the Chartered Institute for Archaeologists.^{9 10}

- 8.98 It is envisaged that the implementation of the programme of archaeological mitigation detailed above would be secured as a DCO Requirement.
- 8.99 The conventional archaeological mitigation works may, depending on the results of the works, be supplemented by a programme of public outreach aimed at promoting local history and archaeology in schools and local communities. This could be delivered in a number of ways, including the provision of public exhibitions and/or talks, which would communicate the results of the archaeological investigations carried out in association with the Proposed Development. Public outreach has been outlined in an outline WSI appended to this ES (Technical Appendix 8.5) and can be secured as a DCO Requirement.
- 8.100 Mitigation achieved through preservation by record would reduce the significance of effects on archaeological receptors by partially offsetting their loss through increased knowledge of past human activity. However, it should be noted that archaeological mitigation through preservation by record cannot be considered to entirely mitigate the effects of development, as the archaeological resource, considered to be irreplaceable by national planning policy, will still be permanently removed. As such, some adverse effect will remain, albeit considerably reduced.

Operational Development

- 8.101 Following the implementation of a mitigation strategy by design and/or during the construction phase, no additional mitigation will be necessary during the operational phase of the Proposed Development.

Summary of Mitigation Measures

| Table 8.5: Summary of Proposed Mitigation and Enhancement Measures | |
|--|--|
| Potential Effects Identified | Proposed Mitigation/Control & Enhancement Measures |
| Construction | |
| Disturbance or loss of archaeological remains | Outline Written Scheme of Investigation (WSI) (as presented as Technical Appendix 8.5) |
| Completed Development | |
| No effects predicted | No mitigation required |

⁹ Chartered Institute for Archaeologists, 2014a. Standards and guidance for an archaeological watching brief.

¹⁰ Chartered Institute for Archaeologists, 2014b. Standards and guidance for archaeological excavation.

Summary of Residual Effects

- 8.102 Where archaeological assets are preserved in situ within parts of the Site where the form of development which will not disturb them, no residual effect will occur.
- 8.103 Where archaeological assets are disturbed and are, therefore, preserved by record, there will still be a residual effect, in that the asset will have been damaged or destroyed (or otherwise suffered loss) as a result of the Proposed Development's construction. This residual effect is considered to be moderate to minor (depending on the sensitivity of the receptor and magnitude of the effect upon it), in that a record has been made.
- 8.104 The summary of residual effects is limited at this stage of the assessment due to the lack of definitive determination of the sensitivity/value of the potential archaeological receptors which could be impacted on by the Proposed Development. However, it is informed by current understanding of the Site, based on desk-based research and LiDAR and geophysical surveys. An anticipated level of effect is provided, based on the assumed level of sensitivity of the receptors (see Table 8.5). For purposes of the summary of residual effects it is assumed that preservation by record is in effect.

| Table 8.6 Summary of Residual Effects | | | | | | | |
|--|---|--|---|---|---|----|-------|
| Receptor | Description of Residual Effect | Nature of Residual Effect* | | | | | |
| | | Significance** | + | D | P | R | St |
| | | | - | I | T | IR | Mt Lt |
| Construction | | | | | | | |
| Possible Neolithic ring ditch and linear feature (WA 88) | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | If the feature is present, Moderate (on the basis the asset will have been removed or damaged, and given the assumed rarity value of remains of this period) | - | D | P | IR | LT |
| Possible Bronze Age ring ditch (WA 89) | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | If the feature is present, Moderate (on the basis the asset will have been removed or damaged) | - | D | P | IR | LT |
| Remains associated with Romano-British occupation and | Reduction in the significance of effect on the receptor through preservation by record, | Moderate or Minor depending on confirmed nature of asset | - | D | P | IR | LT |

| Table 8.6 Summary of Residual Effects | | | | | | | |
|---|---|--|---|---|---|----|-------|
| Receptor | Description of Residual Effect | Nature of Residual Effect* | | | | | |
| | | Significance** | + | D | P | R | St |
| | | | - | I | T | IR | Mt Lt |
| other forms of activity (WA 21 etc.) | partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | (on the basis the asset will have been removed or damaged) | | | | | |
| Remains associated with the Anglo-Saxon and medieval occupation of Gailey (WA 26 etc.) | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | Moderate (if Saxon) or Minor, depending on confirmed nature of asset (on the basis the asset will have been removed or damaged and given the assumed rarity of remains of this period) | - | D | P | IR | LT |
| Remains derived from medieval cultivation | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | Minor (on the basis the asset will have been removed or damaged) | - | D | P | IR | LT |
| Remains associated with post-medieval agricultural practices | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | Not significant | - | D | P | IR | LT |
| Remains associated with the construction and use of the Staffordshire and Worcestershire Canal (WA 44 etc.) and the Grand Junction Railway (WA 83 | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | Minor (on the basis that damage and loss may have occurred) | - | D | P | IR | LT |

| Table 8.6 Summary of Residual Effects | | | | | | | |
|--|---|--|---|---|---|----|----------|
| Receptor | Description of Residual Effect | Nature of Residual Effect* | | | | | |
| | | Significance** | + | D | P | R | St |
| | | | - | I | T | IR | Mt Lt |
| etc.) located within the Site | | | | | | | |
| Remains associated with the large curving ditch feature identified during LiDAR data assessment | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | Minor (on the basis the asset will still have suffered damage) | - | D | P | IR | LT |
| Remains associated with the linear ditch feature representing possible continuation of post-medieval, or earlier, track/routeway | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | Minor (on the basis that the asset will have suffered removal or damage) | - | D | P | IR | LT |
| Remains associated with the seven anomalies of possible archaeological origin identified during the detailed gradiometer survey | Reduction in the significance of effect on the receptor through preservation by record, partially offsetting the loss of archaeological remains through increased knowledge of past human activity. | Minor | - | D | P | IR | LT |
| Other as-yet unidentified buried archaeological remains | | To be determined | - | D | P | IR | LT |
| Completed Development | | | | | | | |
| No effects predicted | | | | | | | |

Notes:

* - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt –Medium term/ Lt –Long term.

**No effect/Negligible/Minor/Moderate/Major

Likely Significant Environmental Effects

8.105 Significant residual effects are anticipated on the possible Neolithic ring Ditch, the possible Bronze age ring ditch and on any remains of Saxon date, should they exist within the Site (and if their identification in terms of form and date are confirmed). This effect would be the result of damage or destruction of the remains from construction related activities. Assets of these periods are likely to be considered rare and sensitive. Mitigation in the form of preservation by record will reduce the anticipated effects from Major to Moderate adverse, but Moderate effects are still considered Significant for purposes of this assessment. Should it be possible to preserve these assets in situ, then no significant effect would occur. The presence and value/sensitivity of currently unknown archaeological receptors which could be impacted upon by the Proposed Development, particularly in areas where built development is proposed, will be further clarified by the results of the indicative fieldwork t, as laid out in the outline WSI for additional evaluation.

Decommissioning

8.106 The Proposed Development is expected to be operational indefinitely, as long as it is viable and fit for purpose.

8.107 In the long term, it may likely be re-developed or adapted on a piecemeal basis as operator requirements change and new occupiers move to the Site. Any such piecemeal redevelopments would be expected to be undertaken in accordance with current and future legislation and guidance in relation to Archaeology (Below Ground Heritage) and would be subject to separate planning applications and planning requirements and conditions.

8.108 On this basis the potential decommissioning effects on Archaeology (Below Ground Heritage) are considered to be negligible.

Cumulative Effects

8.109 Other developments within the defined 2 km zone of influence considered with regard to potential cumulative effects comprised the following:

- Land off Gravelly Way, Four Ashes, South Staffordshire – erection of industrial / distribution buildings (B1(c)/B2/B8) (Bericote Development);
- Saredon South Quarry – new allocation for Sand and Gravel, with anticipated duration of 13 years; and
- Calf Heath Quarry – new allocation for Sand and Gravel, with anticipated duration of 6-8 years. Calf Heath Quarry is currently operational, however should DCO consent be granted, no further minerals will be worked within the Site including the new allocation. The existing minerals infrastructure will be removed. Removal of the existing minerals infrastructure at Calf Heath Quarry would be expected to employ similar stringent mitigation measures similar to those that would be implemented during construction of the Proposed Development. As such, it is not anticipated that there will be any cumulative effects.

Construction

8.110 A minor cumulative effect is identified from the Proposed Development. This arises from further loss of or damage to the archaeological resource at the local and regional level, arising from construction activities at all of the other development sites. The resource may in fact be

relatively limited, as evaluation at Gravelly Way¹¹ did not identify any archaeological features, suggesting more limited potential for a significant cumulative impact between the developments listed.

8.111 This can be offset by the improved knowledge of the resource arising from reporting as part of mitigation applied at the Site (presumed to be preservation by record).

8.112 Following the implementation of the mitigation measures outlined above, no additional cumulative effects are anticipated in respect of archaeology during the construction phase.

Completed Development

8.113 No cumulative effects are anticipated in respect of archaeology during the completed development phase.

¹¹ Oxford Archaeology, 2016. Land off Gravelly Way, Four Ashes, Staffordshire. Evaluation Report. Unpublished Client Report