

11. Archaeology

Purpose of the Assessment

- 11.1 This chapter considers the potential impacts and effects of the construction, operation and decommissioning of the Proposed Development within the proposed Order Limits on archaeological sites and features (the archaeological resource).
- 11.2 The assessment of the effects of the Proposed Development on the settings of above ground heritage assets, including scheduled monuments; listed buildings and other historic buildings; historic parks and gardens; conservation areas; and battlefields is presented in **Chapter 12: Built Heritage**.
- 11.3 This chapter identifies the legislative and policy context for the assessment; summarises the extent of the Study Area; summarises relevant consultation; describes the baseline surveys and data, and baseline conditions; describes the methods used to assess the effects of the Proposed Development; identifies relevant embedded mitigation; provides an assessment of likely significant effects during construction, operation and decommissioning, and provides a cumulative assessment (inter and intra project). The chapter also identifies the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted. Monitoring is identified where necessary, and a summary of the assumptions and limitations of the assessment is also provided.
- 11.4 The chapter also considers the potential impact of climate change upon the archaeological resource in accordance with the future climatic conditions; however, a full assessment of climate change is provided at **Chapter 23**.
- 11.5 The specific objectives of the study were to:
- Identify the archaeological baseline within and in the vicinity of the of the Proposed Development;
 - Assess the Proposed Development in terms of its archaeological potential;
 - Consider the effects of the construction of the Proposed Development on archaeological sites and features within the context of the relevant legislation and planning guidance;
 - Consider whether the future impacts of climate change may impact upon any archaeological sites and features;
 - Propose mitigation measures to reduce or offset any predicted significant effects, where appropriate.
- 11.6 The study area consists of three parts:
- Main SRFI Site: A study area that covers the area in which it is proposed to site the Rail Central facilities and other infrastructure, including access from the A43 and all rail infrastructure (**Figures 11.2, 11.3 and 11.4**), including an area extending to 1km from the Main SRFI Site boundary (**Figure 11.5**); and,
 - M1 J15a (**Figure 11.6**)

- Other minor highways works (**Figure 11.1**), including specifically the A43/A5 Tove Roundabout (**Figure 11.7**).

11.7 The chapter is supported by Appendices 11.1-11.9 and Figures 11.1-11.7.

11.8 Appendices:

- **Appendix 11.1:** Archaeological Sites, Features and Find-spots recorded by the HER within the Main SRFI Site.
- **Appendix 11.2:** Archaeological Sites within the Main SRFI Site revealed by Geophysical Survey.
- **Appendix 11.3:** Archaeological Sites within the Main SRFI Site revealed by Trial Trenching Evaluation.
- **Appendix 11.4:** Archaeological Sites and Features within 1km of the Main SRFI Site.
- **Appendix 11.5:** M1 J15a Site: Archaeological Sites, Features and Find-spots.
- **Appendix 11.6:** A43/A5 Tove Roundabout: Archaeological Sites, Features and Find-spots.
- **Appendix 11.7:** The Hedgerows Regulations – Archaeology and History.
- **Appendix 11.8:** Geophysical Survey report (Sumo Services 2017).
- **Appendix 11.9:** Archaeological Evaluation summary report (CFA 2017)

11.9 Figures:

- **Figure 11.1:** Overall Archaeology Plan.
- **Figure 11.2:** Archaeological Sites, Features and Find-spots within the Main SRFI Site.
- **Figure 11.3:** Archaeological Sites within the Main SRFI Site derived from Geophysical Survey and Aerial Photography.
- **Figure 11.4:** Archaeological Sites within the Main SRFI Site identified by Trial Trenching Evaluation.
- **Figure 11.5:** Archaeological Sites and Features within 1km of the Main SRFI Site.
- **Figure 11.6:** J15a Site: Archaeological Sites, Features and Find-spots.
- **Figure 11.7:** A5 Tove Roundabout: Archaeological Sites, Features and Find-spots.

Legislation, Policy and Best Practice

Table 11.1: Relevant legislation, policy and guidance

Legislation / policy / guidance	Key provisions	Relevant section of chapter where key provisions are addressed
The Ancient Monuments and Archaeological Areas Act; 1979	Under the Ancient Monuments and Archaeological Areas Act 1979 (1979 Act) the Secretary of State for Culture, Media and Sport has a duty to compile and maintain a schedule of	The Act is not relevant and the Secretary of State’s consent is not required, as no Scheduled Monuments would be directly affected by the Proposed Development.

	<p>monuments. Monuments on the schedule are afforded statutory protection. The statutory consent of the Secretary of State is required before any works are carried out which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up a Scheduled Monument.</p>	<p>Effects on the settings of Scheduled Monuments are addressed in Chapter 12.</p>
<p>Planning (Listed Buildings and Conservation Areas) Act 1990</p>	<p>Under Part I Section 1 (1) of the Act the Secretary of State is required to “compile lists of such buildings, or approve, with or without modifications, such lists compiled by the Historic Buildings and Monuments Commission for England (in this Act referred to as “the Commission”) or by other persons or bodies of persons, and may amend any list so compiled or approved”.</p>	<p>No Listed Buildings would be directly affected by the Proposed Development.</p> <p>Chapter 11: Baseline Section (M1 J15a Site).</p> <p>Effects on the settings of Listed Buildings are addressed in Chapter 12.</p>
<p>Planning (Listed Buildings and Conservation Areas) Act 1990</p>	<p>Under section 66 (1) of the Act “In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses”.</p>	<p>The Listed Buildings present within the M1 J15a Site would be avoided and would not be directly affected by any works.</p> <p>Chapter 11: Baseline Section (M1 J15a Site).</p>
<p>Planning (Listed Buildings and Conservation Areas) Act 1990</p>	<p>Section 69 of the Act requires that “Every local planning authority (a) shall from time to time determine which parts of their area are areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance, and (b) shall designate those areas as conservation areas”.</p>	<p>No Conservation Areas would be directly affected by the Proposed Development.</p> <p>Effects on the settings of Conservation Areas are addressed in Chapter 12.</p>

<p>Planning (Listed Buildings and Conservation Areas) Act 1990</p>	<p>Section 72 of the Act requires that: “In the exercise, with respect to any buildings or other land in a conservation area, of any powers under any of the provisions mentioned in subsection (2), special attention shall be paid to the desirability of conservation preserving or enhancing the character or appearance of that area”.</p>	<p>Effects on the settings of Conservation Areas are addressed in Chapter 12.</p>
<p>National Planning Statement (NPS) – National Policy Statement for National Networks 2014</p>	<p>Paragraphs 5.120 – 142 apply. Specifically relevant to the archaeology assessment are paragraphs 5.128 and 5.142. Paragraph 5.128 requires that “in determining applications, the Secretary of State should seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development (including by development affecting the setting of a heritage asset), taking account of the available evidence and any necessary expertise from: relevant information provided with the application and, where applicable, relevant information submitted during examination of the application; any designation records; the relevant Historic Environment Record(s), and similar sources of information; representations made by interested parties during the examination; and expert advice, where appropriate, and when the need to understand the significance of the heritage asset demands it”.</p>	<p>Chapter 11: Baseline Section. Additional investigations have been carried out in the form of Geophysical Survey (Appendix 11.8) and Archaeological Evaluation (Appendix 11.9).</p>
	<p>Specifically relevant to the archaeology assessment, paragraph 5.142 requires that “where there is a high</p>	<p>Chapter 11: Baseline Section. Additional investigations have</p>

	<p>probability that a development site may include as yet undiscovered heritage assets with archaeological interest, the Secretary of State should consider requirements to ensure that appropriate procedures are in place for the identification and treatment of such assets discovered during construction”.</p>	<p>been carried out in the form of Geophysical Survey (Appendix 11.8) and Archaeological Evaluation (Appendix 11.9).</p> <p>Chapter 11: Mitigation Section</p>
<p>The National Planning Policy Framework (NPPF) 2012</p>	<p>Conserving heritage assets is a core planning principle of the NPPF and plan-making and decision-taking should inter-alia (paragraph 17) “conserve heritage assets in a manner appropriate to their [heritage] significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations”.</p> <p>Paragraphs 126-141 apply.</p>	<p>Chapter 11: Mitigation Section</p>
<p>The National Planning Policy Framework (NPPF) 2012</p>	<p>Paragraph 128 advises that: “In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance”</p>	<p>Chapter 11: Baseline Section.</p>
<p>The National Planning Policy Framework (NPPF) 2012</p>	<p>Paragraph 129 advises that: “Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a</p>	<p>Chapter 11: Baseline Section.</p> <p>Additional investigations have been carried out in the form of Geophysical Survey (Appendix 11.8) and Archaeological Evaluation (Appendix 11.9).</p>

	proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal".	
The National Planning Policy Framework (NPPF) 2012	Paragraph 135 requires that: "The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset".	Chapter 11: Baseline Section (significance assessment and Appendices 11.3, 11.5 and 11.6)
Planning Practice Guidance: Conserving and enhancing the historic environment (2014)	Whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the policy in the National Planning Policy Framework. In general terms, substantial harm is a high test, so it may not arise in many cases.	Chapter 11: Baseline, assessment and Mitigation Sections
Historic England (2016) GPA 2 Managing significance in decision taking in the Historic Environment	Paragraph 16 states that "archaeological interest, as defined in the NPPF, differs from historic interest because it is the prospects for a future expert archaeological investigation to reveal more about our past that need protecting".	Chapter 11: Baseline, Assessment and Mitigation Sections. Additional investigations have been carried out in the form of Geophysical Survey (Appendix 11.8) and Archaeological Evaluation (Appendix 11.9).
Historic England (2016) GPA 2 Managing significance in decision taking in the Historic Environment	Paragraph 17 states that "Where a heritage asset is thought to have archaeological interest, the potential knowledge which may be unlocked by investigation may occasionally be harmed by even minor disturbance, thus damaging the significance of the	Chapter 11: Baseline Section. Additional investigations have been carried out in the form of Geophysical Survey (Appendix 11.8) and Archaeological Evaluation

	<p>asset. This can make some assets, or parts of them, very sensitive to change. Expert advice will be needed to identify these sensitivities and assess whether and how they can be worked around (see paragraphs 20 - 23). A proportionate approach should be maintained however. It has been estimated that disturbance would have an adverse impact in less than 3% of all planning applications currently”.</p>	<p>(Appendix 11.9).</p> <p>Chapter 11: Mitigation Section.</p>
<p>The West Northamptonshire Joint Core Strategy Local Plan (Part 1) (December 2014)</p>	<p>Policy BN5 - the historic environment and landscape states: “Designated and non-designated heritage assets and their settings and landscapes will be conserved and enhanced in recognition of their individual and cumulative significance and contribution to West Northamptonshire’s local distinctiveness and sense of place. In environments where valued heritage assets are at risk, the asset and its setting will be appropriately conserved and managed.</p> <p>In order to secure and enhance the significance of the area's heritage assets and their settings and landscapes, development in areas of landscape sensitivity and/ or known historic or heritage significance will be required to:</p> <ol style="list-style-type: none"> 1. Sustain and enhance the heritage and landscape features which contribute to the character of the area including: <ul style="list-style-type: none"> A) conservation areas; B) significant historic landscapes including historic parkland, battlefields and ridge and furrow; C) the skyline and landscape 	<p>Chapter 11: Baseline Section.</p> <p>Additional investigations have been carried out in the form of Geophysical Survey (Appendix 11.8) and Archaeological Evaluation (Appendix 11.9).</p> <p>Chapter 11: Mitigation Section.</p> <p>Effects on the settings of heritage assets are addressed in Chapter 12</p>

settings of towns and villages;
 D) sites of known or potential heritage or historic significance;
 E) locally and nationally important buildings, structures and monuments

2. Demonstrate an appreciation and understanding of the impact of development on surrounding heritage assets and their setting in order to minimise harm to these assets; where loss of historic features or archaeological remains is unavoidable and justified, provision should be made for recording and the production of a suitable archive and report

3. Be sympathetic to locally distinctive landscape features, design styles and materials in order to contribute to a sense of place.

The retention and sensitive re-use of disused or underused heritage assets and structures is encouraged in order to retain and reflect the distinctiveness of the environment, contribute to the sense of place and promote the sustainable and prudent use of natural resources.

Proposals to sustain and enhance the area's understanding of heritage assets, for tourism and historic interest as part of cultural, leisure and green networks will be supported”.

South Northamptonshire Local Plan (1998-2006) ‘Saved’ Policies (December 2014)

Policy G3 states that: “planning permission will normally be granted where the development: (k) will not adversely affect sites of nature conservation value or sites of geological, geomorphological or archaeological importance”.

Chapter 11: Baseline Section.

Additional investigations have been carried out in the form of Geophysical Survey (**Appendix 11.8**) and Archaeological Evaluation (**Appendix 11.9**).

	Policies EV32 – EV34 (Archaeology) deleted	Chapter 11: Mitigation Section.
Adopted West Northamptonshire Joint Core Strategy Local Plan Part 1 adopted December 2014	<p>Policy BN5 – The Historic Environment and Landscapes states that “Designated and non-designated heritage assets and their settings and landscapes will be conserved and enhanced in recognition of their individual and cumulative significance and contribution to west Northamptonshire’s local distinctiveness and sense of place.</p> <p>In environments where valued heritage assets are at risk, the asset and its setting will be appropriately conserved and managed.</p> <p>In order to secure and enhance the significance of the area’s heritage assets and their settings and landscapes, development in areas of landscape sensitivity and / or known historic or heritage significance will be required to:</p> <p>2. Demonstrate an appreciation and understanding of the impact of the development on surrounding heritage assets and their setting in order to minimise harm to these assets; where loss of historic features of archaeological remains is unavoidable and justified, provision should be made for recording and the production of a suitable archive and report.</p>	<p>Chapter 11: Baseline Section</p> <p>Chapter 11: Mitigation Section</p>
The Hedgerow Regulations 1997	Under the Regulations it is against the law to remove or destroy certain hedgerows without permission from the LPA. Permission is normally required before removing a hedge that is at least 20 metres in length, more than 30 years old; has certain plant species;	Chapter 16: Ecology and Nature Conservation

marks an archaeological site;
and/or marks the boundary of a
pre-1600 estate or manor or a
field system pre-dating the
Enclosure Acts.

Consultation and Scoping

- 11.10 A Scoping Opinion, which addresses cultural heritage issues, was received from The Planning Inspectorate, dated January 2016. A summary of the consultation responses relevant to this assessment is set out in **Table 11.2**.
- 11.11 Following from the Scoping Opinion, further consultation was carried out (by telephone and a face-to-face meeting) with the Northamptonshire County Council (NCC) Archaeology Team, to discuss the requirement for further evaluation works. A summary of those consultation responses is provided in **Table 11.3**.

Table 11.2: Summary of Scoping Opinion

Scoping Opinion Section/paragraph	Summary of issues raised	Where in the ES is this addressed?
Paragraph 3.41	Requested that, where the assessment identified the need for detailed evaluations prior to, or during construction, a draft Written Scheme of Investigation (WSI) should be submitted with the ES.	Table 11.3: Summary of Consultations Chapter 11: Baseline Section Archaeological Evaluation has been carried out to the terms of agreed WSI, as described in the Archaeological Evaluation summary report (Appendix 11.9).
Paragraph 3.43	Requested that cumulative impacts on heritage assets should be considered as part of the ES.	Chapter 11: Cumulative Assessment Section
Appendix 3 (page 167) (South Northamptonshire Council Response, 7 January 2016)	Stated that important trees and hedgerows have a cultural and heritage value and must be assessed as part of the ES.	Chapter 11: Baseline Section Chapter 16: Ecology and Nature Conservation
Appendix 3 (page 167) (South Northamptonshire Council Response)	Requested that cumulative impacts on heritage assets should be considered as part of the ES.	Chapter 11: Cumulative Assessment Section Chapter 12: Built Heritage
Appendix 3 (page 167) (South	Confirmed that NCC Archaeology is generally happy with the	Table 11.3: Summary of Consultations

Northamptonshire Council Response)	approach to the assessment.	Chapter 11: Baseline Section Chapter 11: Mitigation Section
Appendix 3 (page 167) (South Northamptonshire Council Response)	Requested that consultation be carried out with NCC Archaeology to agree any further evaluation works (geophysical survey, targeted trial trenching) which may be required as part of the assessment.	Table 11.3: Summary of Consultations Chapter 11: Baseline Section Chapter 11: Mitigation Section

Table 11.3: Summary of Consultations Undertaken

Consultation and date	Summary of consultation	Where in the ES is this addressed?
NCC Archaeology Team (15 February 2016, telephone conversation)	Advised that further evaluation works would be required as part of the assessment and requested that a meeting be set up between NCC Archaeology Team and CFA Archaeology to discuss the required scope of works.	Chapter 11: Baseline Section The required scope of works was agreed with the NCC Archaeology Team at a meeting on 18 May 2016.
NCC Archaeology Team (18 May 2016, meeting)	Advised that there are known archaeological sites within the Main SRFI Site and that there is a potential for further as yet unknown archaeological sites.	Chapter 11: Baseline Section
NCC Archaeology Team (18 May 2016, meeting)	Required that geophysical survey should be carried out across the entire Main SRFI Site.	Chapter 11: Baseline Section – Geophysical Survey (Figure 11.3 and Appendix 11.2) Appendix 11.8: Geophysical Survey Report
NCC Archaeology Team (18 May 2016, meeting)	Advised that it was contrary to current guidance to undertake the trial trenching by condition and required that a trial trench evaluation of the Main SRFI Site be carried out following the geophysical survey in advance of planning determination.	Chapter 11: Baseline Section – Trial Trenching Evaluation (Figure 11.4 and Appendix 11.3) Appendix 11.9: Archaeological Evaluation summary report
NCC Archaeology Team (16 August 2016, email correspondence)	Confirmed that they were content with the baseline archaeological information provided.	Chapter 11: Baseline Section
NCC Archaeology Team (16 August 2016, email)	Emphasised that the ES chapter should include the results of	Chapter 11: Baseline Section – Trial Trenching Evaluation

correspondence)	field evaluation to inform the assessment of extent, preservation and significance of any archaeological assets within the Main SRFI Site.	(Figure 11.4 and Appendix 11.3) Appendix 11.9: Trial Trenching Summary Report
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Study Area

11.12 The study areas are:

- Main SRFI Site: A study area that covers the area in which it is proposed to site the Rail Central facilities and other infrastructure plus a buffer zone, encompassing the area within 1km of the boundary of the Main SRFI Site (Figures 11.2-11.5). The buffer zone has been included to gather data on the archaeological resource in the wider vicinity of the Main SRFI Site (Figure 11.5) and aid in the consideration of its archaeological potential. The extent of this buffer zone was determined on the basis of professional judgement as being adequate for the purposes of identifying the archaeological resource of the area surrounding the Main SRFI Site and was set out in the Scoping Report (Section 10.2). The scope of works set out in the Scoping Report was accepted as satisfactory by NCC Archaeology Team.
- M1 J15a (Figure 11.6), where areas of new land uptake are proposed including a large ecological enhancement area. A buffer zone of 500m has been included to gather data on the archaeological resource in the wider vicinity to aid in the consideration of archaeological potential; the smaller buffer zone to that used for the SRFI Site was selected on the basis of profession judgement and reflects the smaller development footprint of these road improvement works areas. Where other proposed minor highways works are limited to the existing highway corridor and would therefore not affect any archaeological remains in the surrounding area they have not been included at this stage of the assessment.
- Other minor highways works (Figure 11.1), most of which are limited to the existing highway corridor and would not affect any archaeological remains in the surrounding area and have not, therefore been included in the assessment. The exception to this is the A43/A5 Tove Roundabout (Figure 11.7), where limited areas of new land uptake are proposed. A buffer zone of 500m has been included to gather data on the archaeological resource in the wider vicinity to aid in the consideration of archaeological potential; the smaller buffer zone to that used for the SRFI Site was selected on the basis of profession judgement and reflects the smaller development footprint of these road improvement works areas.

Baseline Surveys and Data

11.13 The assessment was conducted in accordance with the Chartered Institute for Archaeologists' 'Code of Conduct' (Ref 11.1) and 'Standard and Guidance for Historic Environment Desk-based Assessment' (Ref 11.2). The principal methods of data collection included archival and documentary research, data request from Northamptonshire Council Historic Environment Record (HER), reconnaissance field survey, geophysical survey and trial trench evaluation.

Desk-based Assessment

11.14 Up-to-date information was obtained from appropriate sources (below) on the locations of heritage assets with statutory protection and non-statutory heritage designations within, or within 1km of, the Main SRFI Site (**Figures 11.2 and 11.4**).

11.15 Up-to-date information was obtained from appropriate sources on the locations of heritage assets (including archaeological remains) with statutory protection and non-statutory designations within or within 500m of the M1 Junction 15a (**Figure 11.6**) and A43/A5 Tove Roundabout (**Figure 11.7**).

11.16 The desk-based sources consulted were:

- Details of the locations and extents of Scheduled Monuments and Historic Battlefields were downloaded from the Historic England Designation Data Download Area.
- Information on known heritage assets was obtained from the Northamptonshire Council Historic Environment Record (HER).
- Additional information on heritage assets was gathered from a number of sources including: Heritage Gateway, Pastscape and Images of England.
- Ordnance Survey 6" to 1 mile map coverage (1884 to 1953) was examined to provide information on sites and features of potential archaeological interest and on historic land-use development.
- Historic maps held in the Northamptonshire Archives were examined to obtain information on historic land-use development.
- Available on-line modern aerial photography was examined to provide information on current land-use.
- Bibliographic, documentary and internet sources (including Chadwick 1999 (Ref 11.3) & Morris 2008 (ref 11.4)) were consulted to provide general historic background information.
- Rail Central: Hedge Survey Report (Carter 2016) (Ref 11.5) was consulted to provide information on important hedgerows, under The Hedgerows Regulations 1997 (Ref 11.6).

11.17 References for all resources consulted appear at the end of the chapter.

Reconnaissance Field Survey

11.18 A reconnaissance site survey of the Main SRFI Site was undertaken in March 2015 to assess the information obtained through desk-based assessment; to identify the extent and condition of any visible archaeological sites or features; to inform an assessment of archaeological potential; and to assess the topography and geomorphology.

Historic Hedgerows

11.19 Hedgerow data, collected during the Hedge Survey (Ref 11.5) by RSK for the Main SRFI Site, were checked against the criteria presented in **Appendix 11.7** (The Hedgerows Regulations – Archaeology and History) using data from the Northamptonshire Historic Environment Record, National Heritage List and historic maps, including Inclosure Maps, dated 1808 and 1845, and Ordnance Survey 1st edition mapping (1884-1885). Hedgerows identified as important under the Hedgerows Regulations are presented in **Table 11.6** and shown on **Figure 3** of the Hedge Survey Report (Ref 11.5).

Geophysical Survey

11.20 Geophysical survey of the Main SRFI Site began in December 2016 and was completed in August 2017. The purpose of the survey work was to test for the presence of anomalies of possible archaeological interest within the proposed Order Limits. The work was carried out in accordance with a WSI agreed by the NCC Archaeology Team.

11.21 A full report on the results of the geophysical survey is presented as **Appendix 11.8** and the findings are summarised below. A gazetteer, providing a summary assessment of the character of the features identified by the survey is presented as **Appendix 11.2**.

11.22 Geophysical survey was not carried out at the location of M1 J15a or at the A43/A5 Tove Roundabout, due to the small size of the areas of land that would potentially be affected at these locations.

Archaeological Trial Trench Evaluation

11.23 A programme of archaeological trial trenching evaluation was carried out in the Main SRFI Site in accordance with a WSI agreed with NCC Archaeologists. The work commenced in February 2017 and was completed in October 2017. The aims of the field evaluation were:

- to determine the date, character, condition and significance of features identified through desk-based assessment and recorded by geophysical survey (**Appendix 11.7**);
- to determine the location, extent, date, character, significance and quality of other surviving archaeological remains liable to be threatened by the Proposed Development.

11.24 Detailed results of the trial trench evaluation are presented as **Appendix 11.9**. A gazetteer, providing a summary assessment of the character of the features identified by the evaluation is presented as **Appendix 11.3**.

11.25 Trial trenching evaluation was not carried out at the location of M1 J15a or at the A43/A5 Tove Roundabout, due to the small size of the areas of land that would potentially be affected at these locations.

Baseline Conditions

Main SRFI Site (Appendices 11.1-11.4; Figures 11.2-11.5)

Introduction

11.26 The baseline within the Main SRFI Site was established by desk-based assessment followed by a programme of geophysical survey and archaeological trial trenching evaluation. The results of the desk-based assessment, including for the 1km buffer zone around the Main SRFI Site, are presented below, followed by a summary of the results of geophysical survey and archaeological evaluation. The most accurate record of the archaeological resource of the Main SRFI Site has been provided by the archaeological trial trenching evaluation and to a lesser extent the geophysical survey. The results from this work should be viewed as superseding the desk-based assessment, the results of which are included here largely to provide the archaeological context as it was understood prior to intrusive investigation.

Desk-Based Assessment

Mesolithic, Neolithic and Bronze Age

11.27 Two flint blades (MNN168301), which were discovered during field-walking (Morris 2008) within the southern half of the Main SRFI Site, are of possible Mesolithic date. A flint scraper (MNN149088) and worked flint flakes (MNN16287-300 and MNN168302), also discovered during field-walking, are of possible late Neolithic/early Bronze Age date (Ref 11.4). The locations of these Prehistoric find-spots are shown as yellow point data on **Figure 11.2**.

Iron Age and Romano-British

11.28 Two cropmark sites (MNN129366 and MNN129367: **Figure 11.2**) of possible Iron Age/Romano-British enclosed settlement lie to the northwest and southwest, respectively, of Deveron House.

11.29 Several Iron Age and Roman artefacts (shown as purple point data on **Figure 11.2**) have been recovered from the Main SRFI Site:

- Roman pottery and kiln bars (MNN6131) were discovered during extraction works at Asplins Gravel Pit in 1947, on the southern edge of Milton Malsor, and the Northamptonshire HER records that these finds suggest the possible presence of a pottery kiln in this area;
- Pottery scatters (MNN168304, MNN168308, MNN168314-315, and MNN168316) of both Iron Age and Romano-British date were discovered during field-walking (Ref 11.4); and,
- Unstratified finds of Roman 'tegula' tile fragments (MNN168309) and quern fragments (MNN16305-307) have also been discovered.
- An unspecified find (MNN150168) has also been recovered and reported under the Portable Antiquities Scheme.
- Two areas of possible prehistoric settlement (MNN136070 and MNN129366) have been identified through examination of aerial photography carried out as part of the National Mapping Programme.

11.30 The HER records that a spread of Roman material, uncovered between the former railway station at Towcester and the Roman building at Gayton to the northeast, suggests that a Roman road (MNN138333 and MNN136709) ran from Towcester to Duston; its former route

passing the western edge of the Main SRFI Site, along the line of the modern A43 public road.

- 11.31 Geophysical Survey within the Main SRFI Site has identified three areas (GS01, GS04 and GS05) that are potentially remains of Romano-British settlement and fields systems.

Saxon

- 11.32 The Northamptonshire HER records that in 1947 two 4th to 5th century pottery vessels (MNN12821; shown as blue point data on **Figure 11.2**) were recovered during sand extraction works at Asplins Gravel Pit on the outskirts of Milton Malsor, to the north of Deveron House, suggesting the possible presence of a Saxon cemetery in this area.

Medieval

- 11.33 The Main SRFI Site lies between the villages of Milton Malsor (MNN6130) and Blisworth (MNN6161) (**Figure 11.4**). The village of Milton Malsor is recorded in the Domesday Book (1086) as 'Midleton'. The Domesday Book Online (Ref 11.7) records that there were two manors at Milton held by William Peveral and GoiSRFid Alselin and that the parish contained a mix of arable, meadow and woodland. The village's name is from the Old English 'middel' for Middle and 'tun' meaning farm or settlement and the second part of the name appears to be from 'Malsoures', the name of a prominent local family. The Domesday book also notes that William Perveral held 'hides' (an old land measurement equivalent to 60 to 120 old acres (approximately 30 modern acres (120,000 m²)) at Blisworth indicating at least a medieval origin for the village.
- 11.34 No settlement is recorded within the Main SRFI Site dating to the medieval period.
- 11.35 The remains of ridge and furrow cultivation (shown as areas of dark and light green crosshatching on **Figure 11.2**) are visible on modern vertical aerial photography (Googleearth) and in Lidar data obtained from the Environment Agency (Ref 11.8). Much of the surface relief of the former ridge and furrow cultivation within the Main SRFI Site has been removed by later land improvement and ploughing, although the faint outline of some relict ridge and furrow remains (areas highlighted in light green on **Figure 11.2**) are preserved overlain by the later 19th century enclosed field layout. Geophysical survey (**Figure 11.3** and **Appendix 11.8**) has revealed the extent of former cultivation; which can be seen to have been extensive over most of the Main SRFI Site.
- 11.36 Scatters of medieval pottery (MNN168318-319 and MNN168321-326) (extent of scatter defined by blue hatched area on **Figure 11.2**) have been discovered during field-walking (Ref 11.4). The majority of the pottery was identified as local Potterspury Ware, which dates to between the late-13th and 15th centuries. It has been suggested that the pottery distribution probably represents a by-product of manure spreading, typical of the medieval period (Ref 11.4, p7). The relict ridge and furrow remains and the pottery scatters suggest that the Main SRFI Site was being used as arable land during the medieval period.
- 11.37 Higher concentrations of medieval pottery were recorded during the field-walking (Ref 11.4) particularly adjacent to the old Towcester Road (A43) and c. 500m north of Blisworth, and it is considered possible that they indicate the location of a small medieval sites (Ref 11.4, p 6

& 9); although, Morris does not discount the possibility that the pottery concentrations simply reflect greater manuring in these areas.

- 11.38 An unspecified find (MNN148976) has also been recovered and reported under the Portable Antiquities Scheme.

Post-medieval and Modern

- 11.39 The Northamptonshire Historic Landscape Character and HER entries record that the majority of the fields were enclosed under parliamentary act in 1799. Historic maps from the 18th and 19th century (Byrant's Map of Northamptonshire 1791, Ordnance Survey 1st Edition 1884) show that the same field pattern survives today, defined now by mature hedges. Geophysical survey (**Figure 11.3** and **Appendix 11.8**) has revealed the extent of former cultivation; which can be seen to have been extensive over most of the Main SRFI Site and which broadly accords with the enclosed field pattern.
- 11.40 An unnamed farmstead (location shown as a brown square on **Figure 11.2**) is depicted on the Ordnance Survey 1st Edition map (1884) within the Main SRFI Site. The farmstead, now known as 'Lodge Farm', continues to be occupied today as a working farm. The HER also records the presence of a former farmstead (MNN29611) within the Main SRFI Site. The farmstead, which once consisted of a rectangular building and associated enclosure, is depicted on the Ordnance Survey 1st Edition map, but no upstanding remains survive; the area in which it was located now forms part of a ploughed arable field. Post-medieval activity (MNN168337) is also recorded that corresponds with an area within which a variety of unstratified finds have been recovered.
- 11.41 Thirteen isolated buildings, probably farm barns, some with small associated enclosures, are depicted on the Ordnance Survey 1st Edition map (1884) within the Main SRFI Site (locations indicated as triangles on **Figure 11.2**). Some of these buildings continue to be shown on the 1952 map, although most are no longer depicted, suggesting that they were out of use by this period. Field survey indicated that upstanding remains survive of only one of these buildings (location shown by a red triangle on **Figure 11.2**).
- 11.42 Several ponds (former locations indicated by blue diamonds on **Figure 11.2**) are depicted on the Ordnance 1st Edition map (1884) principally at the edges of field boundaries and within the eastern half of the Main SRFI Site. None of these survive today; the areas in which they were previously recorded are now part of improved arable fields. Given the number and distribution of these ponds, it is considered most likely that they were 'dew ponds', constructed to collect rainfall to water livestock, and, if so, indicate that the area was pastureland during this period.
- 11.43 The Northamptonshire HER records that a 17th or 18th century lead badge (MNN151506) and silver cufflink (MNN152601) were discovered by metal detecting. Field-walking (Ref 11.4) uncovered a spread of post-medieval/modern pottery (MNN168339: extent of scatter defined by black hatched area on **Figure 11.2**) just east of the old Towcester Road between Milton Malsor and Blisworth (MNN102926: **Figure 11.5**). The assemblage included pottery dating from the 16th to the 19th century, with the bulk of the artefacts dating to the 19th century, and the material is interpreted as possibly being the remnants of 'Victorian' rubbish tipping (Ref 11.4).

- 11.44 Quarrying was carried out during the 19th and 20th centuries. The HER records that a quarry site (MNN29611) was formerly located in the northwest corner of the Main SRFI Site, and a former sand pit (extent shown in grey tone on **Figure 11.2**) is depicted on the Ordnance Survey 1952 map within a field just west of Barn Lane. Neither quarry survives today, the land having been reinstated to arable farmland. Other industrial activity (unspecified) is also recorded (MNN2504) in the same area as the former quarry (MNN29611).
- 11.45 Four HER entries record the presence of modern communication routes. Three of these (the London & North Western Railway (MNN13441) which opened in 1838 and which is still in use, the Blisworth to Peterborough railway (MNN2343) and the former Northampton to Roadway Railway Line (MNN137364)) clip the edges of the Main SRFI Site. The fourth is a turnpike road (MNN101326) that follows the line of Northampton Road, south to north, through the centre of the Main SRFI Site.

Miscellaneous

- 11.46 The HER records that, what maybe the outline of a ditch of unknown date and function (MNN129368: **Figure 11.2**), is visible as a cropmark on aerial photographs. The cropmark is visible just southwest of another cropmark site of a possible Iron Age/Romano-British enclosed settlement (MNN129367) and the two sites may be associated.
- 11.47 PastScape records the find-spot of a stone axe (343303: **Figure 11.2**), but the exact location of the discovery is unknown and no further information is provided in the record entry.

Historic Hedgerows

- 11.48 A hedge survey of 160 field boundaries was carried out in July 2016 within the Main SRFI Site (Ref 11.5). After dismissing boundaries with no hedges (woody vegetation not amounting to a hedge) and hedges that do not qualify for consideration under The Hedgerow Regulations 1997 (Ref 11.6), the remainder were mostly found to be relatively species-poor hedges (Ref 11.5). In total seven hedges were found to qualify as Important Hedges under the Regulations and five were found to be close to qualifying. **Table 11.4** lists the hedges considered important and these are shown on **Figure 3** of the Hedge Survey Report (Ref 11.5).

Table 11.4: Important Hedges

Hedge no (set out in Hedge Survey Report)	No of plant species	Additional features	Hedge type
Important Hedgerows			
6b	7	External ditch, 0.5m wide at base	Parliamentary Inclosure Boundary – internal field hedge
37	10	External ditch, 0.5-1m wide at base	Parliamentary Inclosure Boundary – roadside hedge
38	8	External ditch, 0.5-1m wide at base	Parliamentary Inclosure Boundary – roadside hedge

44	9	External ditch, 0.5-1m wide at base	Parliamentary Inclosure Boundary – internal field hedge
74	8	Internal, 0.5-1m wide at base	Parliamentary Inclosure Boundary – roadside hedge
77	9	Internal, 0.5-1m wide at base	Follows alignment of Rural District Boundary
93	12	Internal, 0.5-1m wide at base	Follows alignment of Rural District Boundary
Borderline Hedgerows			
22	6	Hedge bank, earth	Parliamentary Inclosure Boundary – bounding canal towpath
91	8	Half bank, earth; External ditch, <0.5m wide at base	Follows alignment of Rural District Boundary
104	5	None	Parliamentary Inclosure Boundary – roadside hedge
121	6	Internal ditch, <0.5m wide at base	Parliamentary Inclosure Boundary
132	3	None	Parliamentary Inclosure Boundary – roadside hedge

11.49 Examination of historic maps indicated that the majority of the hedges (6b, 22, 37, 38, 44, 74, 91, 104, 121 and 132) identified by the hedge survey as being of important, or closely qualifying as important were relicts of hedges marking Parliamentary Inclosure boundaries; these boundaries are shown on the Blisworth Draft Inclosure Map of 1808 and the Blisworth Tithe Map (1845) indicating that they date from the early 19th century. The remaining hedges (77, 91 and 93) define the route of the Rural District Boundary between North and South Hampton, with approximately a quarter of the boundary, where it crosses the Proposed Development, defined by important (or closely qualifying) hedges. The ages of the hedges that define the Rural District Boundary are not known; but, as the boundary follows the route of a stream it may be that the boundary is of some antiquity.

Geophysical Survey and Trial Trenching Evaluation

11.50 The results of the desk-based study were tested by a programme of geophysical survey and trial trenching evaluation. Whilst the presence of ridge and furrow cultivation was detected over much of the Main SRFI Site by geophysical survey (**Figure 11.3**), only one of the settlement remains proposed by desk-based assessment was discovered (MNN129366) by geophysical survey or trial trenching.

11.51 Seventeen discrete suites of anomalies were identified as potential archaeological sites by geophysical survey (**Appendix 11.2**). All of these sites were tested by the trial trenching

evaluation programme and six were discovered to reflect the presence of buried archaeological remains. A further nine archaeological sites, which were not recorded from any other sources were also revealed during the trial trenching evaluation. The fifteen sites discovered by trial trenching evaluation include settlement remains, enclosures and field systems that are predominantly of Romano-British date, although some remains are of Iron Age and medieval date (**Appendix 11.3**). The locations and extents of the sites revealed by trial trenching evaluation are shown on **Figure 11.4**.

M1 J15a Site (Appendix 11.5; Figure 11.6)

Prehistoric

- 11.52 The HER records that archaeological investigations in 1989 revealed remains of a prehistoric enclosure (MNN1924) and other earthworks of a possible Iron Age settlement in grassland in the vicinity of Firs Avenue. Evidence for earlier prehistoric settlement in the area, is indicated by the remains of a probable cremation cemetery (MNN168700) discovered in 2008, which included a group of pits; several of which contained cremated human bone which was dated to the Neolithic period. The HER records that several prehistoric settlement and funerary sites, dating from the Neolithic to the Iron Age (for instance MNN6592, MNN13065, MNN28403, MNN6138, MNN1923, MNN23903 and MNN143364), have been discovered in the immediate surrounding area. Programmes of fieldwalking have recorded flint scatters (MNN24562) and an Iron Age pot sherd (MNN24561). These may be the surface indicators of buried archaeological sites.

Romano-British

- 11.53 The earliest evidence for activity on the site dates to the late-2nd/early-3rd centuries AD and comprised a number of small gullies, possibly forming a series of livestock pens, and a small oven.
- 11.54 Archaeological investigations in 2002 (Carlyle 2008) (Ref 11.9) uncovered the remains of extensive Romano-British enclosures, including the remains of a 'ladder' enclosure, (MNN160731 & MNN160733) at Milton Ham. The 'ladder' enclosure consists of a large sub-rectangular enclosure aligned north to south and divided into a number of small sub-enclosures. It has been suggested that the settlement was probably primarily used to hold livestock. There was no clear evidence for habitation within the enclosure, although pottery, glass and building material recovered at the site suggests that there was a building, possibly a small villa, nearby.
- 11.55 The HER records that a spread of Roman material uncovered from the former railway station at Towcester to the Roman building at Gayton in the northeast would suggest that a Roman road (MNN136709) ran from Towcester to Duston; its route potentially crossing the M1 J15a Site.
- 11.56 A cluster of Roman artefacts, including two coins (MNN156296 and 297) and a weight (MNN155404), have also been discovered close to Rothersthorpe. Fieldwalking has recorded flint Romano-British pot sherds and a quern (MNN24561). These may be the surface indicators of a buried archaeological site.

Saxon

- 11.57 No sites, features or find-spots dating to the Saxon period have been recorded within the M1 J15a Site.
- 11.58 The HER does however record the presence of what may be an early Saxon settlement (MNN136073) on the eastern edge of Rothersthorpe and, at the centre of Rothersthorpe c.500m to the southwest of the M1 J15a Site, are the scheduled Berry Ringworks, a fortification settlement site which was built and occupied from the late Saxon period to the later 12th century.

Medieval

- 11.59 The HER records an area of relict ridge and furrow cultivation present within the M1 J15a Site (MNN160728). However, no remains of the ridge and furrow are visible in the area on modern aerial photography (Googleearth).

Post-medieval and Modern

- 11.60 The Northampton Arm of the Grand Union Canal (MNN132204/06) runs south from the edge of Northampton to Gayton. This section of the canal, which was completed in 1815, is designated as a Conservation Area and there are a number of Grade II Listed locks and bridges (1249266, 1040375, 1191798 and 1189379) present along its length.
- 11.61 A farmstead, annotated 'Ham Farm' (100) is depicted on the Ordnance Survey 1st Edition map (1884) within the M1 J15a Site. The farmstead, comprising of a square courtyard steading and an L-shaped building, is shown on subsequent maps until 1952, annotated 'Milton Ham' on the later maps. The partly demolished ruins of the farmstead are visible on modern aerial photography (Googleearth).
- 11.62 The modern M1 motorway (MNN14383) passes through the M1 J15a Site.

Miscellaneous

- 11.63 The HER notes that geophysical survey has recorded the presence of several possible ditches and pits (MNN160729 & MNN160732) and a further possible ditch has been recorded from aerial photographs within the M1 J15a Site. No dates have been attributed to these features, although given their close proximity to prehistoric and Romano-British settlement remains it is possible that they are of a similar date.

Archaeological Potential

- 11.64 The potential for buried archaeological remains to survive within the footprint of the current road junction is considered to be negligible as the construction of the modern road infrastructure is likely to have destroyed any archaeological remains which may formerly have been present.
- 11.65 There is a higher (moderate) potential for buried archaeology to survive within the arable farmland, although a site visit and walkover of the farmland areas found no visible evidence of any hitherto unrecorded archaeological remains.

A43/A5 Tove Roundabout (Appendix 11.6; Figure 11.7)

Prehistoric

- 11.66 No prehistoric sites, features or find-spots are recorded at this location. However, a later prehistoric origin for Towcester has been suggested by the recovery of scattered finds of Iron Age pottery (including MNN37001) from the vicinity, although these appear to be largely confined to the east of the present town and generally away from this location.

Romano -British

- 11.67 The A43/A5 Tove Roundabout is located on the edge of Towcester in the location of the site of the Roman town of 'Lactodorum' (MNN3659). The town was located alongside Watling Street (MNN3501 & MNN11430), between the settlement of 'Bannaventa' and 'Magiovium'. The majority of the known settlement lay to the west of Watling Street, occupying a spur of land surrounded on three sides by the floodplains of the River Tove and Silverstone Brook. The earliest occupation of 'Lactodorum' dates to the 1st century AD and there is evidence for occupation continuing into the late-4th century. The town grew up along Watling Street, now the modern A5 trunk road, which crosses this location. Several archaeological investigations have been carried out within the area and these have uncovered substantial Romano-British settlement remains, including footings for tenement buildings (for instance MNN140797) along Watling Street, iron working sites (such as MNN115875) and a possible Romano-British cemetery (MNN8517/MNN19115).

Saxon

- 11.68 There are no Saxon sites, features or find-spots at this location. The HER records that there is a general absence of evidence for activity in the area during the early to middle Saxon periods and finds from the area suggests that occupation at Towcester may have shifted away from the town by the early-6th century.

Medieval

- 11.69 There are no medieval sites, features or find-spots at this location.
- 11.70 The Domesday Book (Ref 11.7) records that Towcester was, at that time (1086), a rural manor and the entry suggests that it was a centre of local administration in the 11th century while British History Online (Ref 11.10) records that a market and fair are recorded in the 14th century. Pottery scatters (MNN34861) have been discovered in the immediate vicinity of the A43/A5 Tove Roundabout, and the HER suggests that the pottery may be the by-product of manure spreading, suggesting that the area was being farmed during the medieval period.

Post-medieval and Modern

- 11.71 The HER record several post-medieval and modern features that are located at the A43/A5 Tove Roundabout. These include:
- The remains of a 17th to 18th century avenue of trees (MNN116296), comprising a raised earthwork flanked by a double line of trees which formed a great avenue running from Easton Neston House.

- A Cold War telephone repeater station (MNN143181) which formed part of the 1950s hardened trunk cable linking the deep underground exchanges in London, Birmingham and Manchester.
- The former route of the Old Stratford to Dunchurch Turnpike which appears to be routed along Watling Street and now the A5 trunk road.
- A former racecourse (200) shown on the Ordnance Survey 1st and 2nd Edition maps (1884 & 1901); no upstanding remains of the racecourse are now visible on modern aerial photography (Googleearth).
- Two former buildings (201 & 202) both depicted on the Ordnance Survey 2nd Edition map (1901). The first building (201) is not shown on the 1952 Ordnance Survey map indicating that it had been abandoned by this period. Neither structure is visible on modern aerial photography (Googleearth).

Archaeological Potential

11.72 The potential for buried archaeological remains to survive within the footprint of the current road junction is considered to be negligible, as construction of the modern road infrastructure is likely to have destroyed any remains that may formerly have been present. However, it is considered that there is a moderate to high potential for buried archaeology, particularly of Roman or Romano-British remains, to survive in undeveloped farmland.

The predicted future baseline scenario

11.73 There are no committed developments that, in the period between the completion of the EIA and the anticipated date of commencement of construction, would alter the archaeological baseline. The approved Cl.31 overhead power line upgrade would have only a minimal potential impact on the archaeological resource within the Main SRFI site (see Cumulative Assessment below).

The climate change influenced baseline conditions

11.74 Qualitatively, future baseline climatic conditions within the East Midlands may result in the following within the Proposed Development region:

- An increase in annual average temperature;
- More very hot days, particularly over the longer term operational period;
- More intense downpours of rain;
- Increase in winter rainfall; and,
- An increase in dry spells, particularly in summer months.

11.75 With regards to the archaeological resource present within the study areas, there are not thought to be any additional significant environmental effects upon archaeological remains resulting from the change in future climate baseline. The potential effects due to climate change have been considered qualitatively and, in the context of the UKCPO9 high emission/low likelihood of occurrence scenario in this area, can be summarised as follows;

- Any archaeological remains present below ground, but which will remain 'in situ' and undisturbed as a result of the development, are unlikely to be negatively

affected by the projected changes in ambient temperature, increased rainfall or prolonged dry spells;

- The archaeological remains present below ground that may be affected by the construction and operation of the Proposed Development are considered in this ES, with identified impacts subject to appropriate mitigation. The projected changes in ambient temperature, increased rainfall or prolonged dry spells associated with potential future climate change will not require additional mitigation; and,
- Any archaeological remains present outside the study area and unaffected by the Proposed Development will continue to exist within the environment.

11.76 Based on the qualitative assessment above and in combination with professional judgement, there are likely to be no significant effects upon the archaeological resource identified within the study areas from the changes to the future climate baseline. It is therefore not considered necessary to assess this issue further within this chapter.

All Order limits

11.77 The baseline assessment set out above has identified that there are buried archaeological remains within the Nene valley landscape that relate to settlement in the later prehistoric and Romano-British periods and to later post-medieval periods. The archaeological potential of land previously undeveloped and surviving in the present day as agricultural farmland has been shown by geophysical survey and trial trenching evaluation to be high and new discoveries can be expected within undeveloped farmland that would both enhance the archaeological record and further the aims of Regional Research Frameworks (e.g. Knight et al 2012 (Ref 11.11)). The trial trenching evaluation has been instrumental in demonstrating that this high archaeological potential translates into a series of discrete archaeological sites; much of the landscape has been demonstrated by this exercise to be free of archaeological remains, other than the ubiquitous traces of ridge and furrow.

Method of Assessment

11.78 This section presents the methodology for the assessment of effects on the archaeological resource; assessment of effects of the Proposed Development on other cultural heritage assets (Built Heritage) is presented in **Chapter 12: Built Heritage**. The methodology was set out in the Scoping Report in November 2015 and NCC Archaeology Team confirmed, in the Scoping Opinion of January 2016, that they were content with the approach.

11.79 Effects on the archaeological resource may occur where surviving earthworks or buried remains are known to be, or could potentially be, present in areas where ground may be directly disturbed as a result either of construction of the Proposed Development or during preparatory ground works. Other construction activities such as vehicle movements, soil and overburden storage and landscaping also have the potential to cause permanent and irreversible effects on archaeological remains.

11.80 Whilst effects can vary in their nature (beneficial, neutral or adverse) and longevity (reversible, short-term, medium-term or long-term; irreversible, permanent), in practice direct effects on archaeological remains arise only during the construction phase; are almost invariably adverse in nature; and are normally irreversible and permanent in duration.

Construction operations required to construct the Proposed Development (**Chapter 5: The Proposed Development**) would require phased and extensive ground disturbance requiring modification of the existing topography (site levelling and creation of the zoned development plateaus). Other anticipated work would require the creation of construction compounds, excavation of trenches for building foundations and service runs, and topsoil stripping for construction of new access road and rail-sidings. These operations would damage or remove the surviving buried archaeological remains known or suspected to be present.

- 11.81 Further effects on archaeological remains could arise during the operation and decommissioning phases only if areas that had remained unaffected during the construction phase were to be affected during the operational period or during decommissioning.
- 11.82 In general, inter-project cumulative effects on the archaeological resource cannot arise except where developments (existing or proposed) would occupy the same footprint as the Proposed Development. There are occasions, however, where archaeological features may extend outside of the Proposed Development site boundary and potentially continue into land that may be affected by another development. Other examples may occur where a linear feature (for example, a Roman road or an old, infilled canal) passes through more than one proposed development area.
- 11.83 Intra-project cumulative direct effects can arise where one or more aspect of the proposed development could impact on archaeological remains either separately or in combination (for example, where site levelling and site dewatering combine to lower the water-table, resulting in drying out of waterlogged deposits. Soft landscaping, that might involve topographic remodelling to create screening bunds or water features can also have direct cumulative effects in combination with the Proposed Development that could affect buried archaeological deposits.
- 11.84 The heritage significance of an asset is dependent upon a variety of perceived heritage values as set out in 'Conservation Principles: Policies and Guidance (Ref 11.12) and the asset's statutory designations. Factors that contribute to heritage significance include: evidential, historical, aesthetic and communal values (ibid p25-32). **Table 11.5** provides a summary statement of the heritage significance of terrestrial heritage assets (excluding marine resources) in accordance with these principles and with the industry-wide approach set out in Design Manual for Roads and Bridges: Volume 11 (Ref 11.13, Table 5.1). Heritage significance is distinct from significance of impact as defined in the EIA Regulations 2017 (Ref 11.15).

Table 11.5: Definition of Significance of Heritage Assets

Heritage Significance	Asset Type
Very High	Assets recognisably of international importance, including: Inscribed World Heritage Sites (including candidate sites) Internationally recognisable scheduled archaeological sites and listed buildings Extremely well-preserved historic landscapes with exceptional coherence, time-depth, or other critical factors.

High	Assets recognisably of national importance, including: Scheduled Monuments, sites proposed for scheduling and sites of demonstrable scheduled quality (including buried archaeological remains, potentially of schedulable quality) Grade I & Grade II* Listed Buildings Conservation Areas containing many listed buildings Grade I & II* Registered Parks & Gardens Well-preserved historic landscapes, exhibiting considerable coherence, time-depth or other critical factors.
Medium	Assets of regional importance, including: Archaeological sites and areas of distinctive regional importance (including buried archaeological remains) Grade II Listed Buildings Grade II Registered Parks & Gardens Conservation Areas
Low	Assets of local importance Archaeological sites and areas of local importance (including buried archaeological remains) Unlisted buildings and townscapes of some historic or architectural interest
Negligible	Other archaeological remains or historic landscape features, including: Sites of former archaeological features (including formerly buried archaeological remains that have been excavated) Unlisted buildings of little or no historic or architectural interest Poorly preserved examples of particular types of feature (including buried archaeological remains) Artefact find-spots
Unknown	Applies to archaeological sites and features, the importance of which has not been more fully ascertained

11.85 Using these principles and definitions, **Appendices 11.4, 11.6 and 11.7** contain an attribution of the heritage significance of each of the heritage assets considered in this assessment. Where a significance level of unknown is referenced, a provisional attribution, using professional judgement, is provided in parentheses in the tables in the appendices. The attributed significance level is then used to inform the further assessment of the potential magnitude and significance of any predicted effect.

11.86 Criteria for assessing the magnitude of a direct effect, which measures the degree of change to the baseline condition of a heritage asset that will result from the construction of one or more elements of the Proposed Development, are classified in **Table 11.6**. The definitions adopted are in accordance with the principles and definitions set out in Design Manual for Roads and Bridges: Volume 11 (Ref 11.13, Table 5.3).

Table 11.6: Magnitude of Effects

Magnitude of effect	Definition
High	A fundamental change to the baseline condition of the asset, leading to total loss or major alteration of character.
Medium	A material change to the baseline condition of the asset, leading to partial alteration of character.
Low	A slight, detectable alteration to the baseline condition of the asset.
Negligible	A barely distinguishable change from baseline conditions.

11.87 The relative heritage significance of the asset and the magnitude of the effect are then used, along with professional judgement, to determine the likely significance of the resultant effect.

11.88 **Table 11.7** summarises the criteria for assessing the significance of effects. The definitions adopted are in accordance with the principles set out in Design Manual for Roads and Bridges: Volume 11 (Ref 11.13, Table 5.4).

Table 11.7: Matrix for Determining Significance of Effects

Magnitude of effect	Relative heritage significance of asset (sensitivity of receptor)				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Major	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

11.89 Major (equivalent to ‘substantial harm’ employed in NPPF (Ref 11.14: Section 12; paragraphs 132-134)) and moderate effects are considered to be significant. Minor and negligible effects are considered to be not significant for the purposes of the EIA Regulations 2017 (Ref 11.15).

11.90 In the assessment, the significance of effects takes account the proposed embedded mitigation.

Significance of Archaeological Assets

Main SRFI Site (Appendix 11.3; Figures 11.2-11.4)

11.91 **Appendices 11.1 and 11.2** summarise the archaeological assets, identified within the HER and by geophysical survey within the Main SRFI Site. The nature of these assets was tested by a programme of archaeological trial trenching evaluation, which has provided the most

reliable picture of the archaeological resource within the Main SRFI Site and effectively supersedes the results of the desk-based assessment and geophysical survey. The trial trenching evaluation demonstrated that fifteen discrete archaeological sites are present within the Main SRFI Site (**Appendix 11.3**). All but four of these sites are judged to be of medium heritage significance; a level of heritage significance attributed to each of the archaeological assets identified by the study reflects the value of the remains in contributing to the aims of the East Midlands Archaeological Research Framework (Cooper 2006) (Ref 11.16) and East Midlands Heritage: An Updated Research Agenda and Strategy for the Historic Environment (Ref 11.11). The remaining four sites (EV10, EV11, EV13 and EV14) are considered to be of low heritage significance.

Significance of Archaeological Assets within the Proposed Off-Site Infrastructure Areas

11.92 **Appendices 11.5 and 11.6** give an indication of the heritage significance of each of the archaeological assets identified at M1 J15a and A43/A5 Tove Roundabout, based on the parameters set out in **Table 11.5**. The level of heritage significance attributed to each of the identified by the study reflects the value of the archaeological remains in contributing to the aims of the East Midlands Archaeological Research Framework (Ref 11.16) and East Midlands Heritage: An Updated Research Agenda and Strategy for the Historic Environment (Ref 11.11).

M1 J15a Site (Appendix 11.4; Figure 11.5)

- A probable cremation cemetery (MNN168700), possibly of Neolithic date, and probable Romano-British settlement remains (MNN160731 and MNN160733) are present in the northern part. The A43, running north to south, follows the line of a possible Roman road (MNN136709). On the basis of the contribution that these archaeological assets could make to regional research into settlement and occupation in the later prehistoric and Romano-British periods they are assessed as being of **medium** heritage significance.
- Part of the Grand Union Canal (MNN132204 and MNN132206) passes through the central part running roughly parallel with the A43. There are three canal locks (1040375, 1191798 and 118379) and two bridges (1249266 and MNN105265) that are constituent parts of the canal infrastructure. The canal is a Conservation Area and the locks and one of the bridges are Grade II Listed Buildings. As parts of a major 19th century arterial transport route between London and Birmingham, all of the recorded elements of the canal are assessed as being of **medium** heritage significance.
- Three areas where short and fragmentary remains of possible ditches and possible pits have been identified by geophysical surveys or on aerial photographs (MNN160729, MNN160730, MNN160732) in proximity to other archaeological remains of possible or probable prehistoric or Romano-British date and they may be associated with those sites. On the basis of their fragmentary condition they are assessed as being of **low** heritage significance; although they could be parts of those other more archaeologically significant sites.
- A modern farmstead (100) identified from historic maps and now in ruins and partly demolished are assessed as being of low heritage significance and the

modern M1 motorway is also assessed as being of **low** heritage significance on the basis that it has little or no archaeological value, but does have historical value.

- An area of former ridge and furrow (MNN160728), which no longer survives as visible earthwork remains and which has been identified, by geophysical survey, as having only relatively poor buried survival, is assessed as being of **negligible** heritage significance. Six unstratified artefact find-spots are also assessed as being of **negligible** heritage significance.

A43/A5 Tove Roundabout (Appendix 11.5; Figure 11.6)

- The Roman town of 'Lactodorum' Towcester (MNN3659) lies to the southeast. Watling Street (MNN3501 and MNN11430), the modern A5, runs through on a roughly north-south alignment. The northern suburbs of the Roman town (MNN31402) may have extended as far as the modern A43. A possible Roman cemetery (MNN8517, MNN19115) is recorded close to the site of the present roundabout. Other remains of possible Roman date (MNN140797 and MNN115875) have also been recorded close to the roundabout. These remains are collectively evidence for Roman settlement, domestic and industrial activity, and possibly for funerary activity in the area around the junction of the A5 and A43. These assets are assessed as being of **medium** heritage significance for the contribution that they could make to further understanding settlement pattern and domestic activities and the economy of the Roman occupation at Towcester.
- The remains of the building (MNN143182) that was a component of a Cold War communication site are assessed as being of **low** heritage significance. The site is a small derelict modern building with no architectural merit and little archaeological value, although it does have some historic value.
- Four other identified sites are assessed as being of **negligible** heritage significance. There are no surviving visible remains of a small former racecourse (200), that is now largely built over and of remains of two late 19th century buildings (201 and 202). A former avenue of trees (MNN116296) associated with Eastor Neston House, which formerly framed a vista from the House towards the northwest, no longer survives and the turnpike road (MNN101325) is now the modern A5.

Other minor highways works

- 11.93 The other minor highways works areas have not been assessed for their baseline using data derived from the HER as proposed minor highways works (Figure 11.1) are limited to a wayleave within the existing highway corridor and would therefore not affect any archaeological remains in the surrounding area. Due to the likely disturbance that would have occurred on any buried archaeological remains that may formerly have been present at those locations it is assessed that any surviving fragmentary deposits that may survive below the carriageways or in roadside verges are likely to be of no more than **negligible** heritage significance.

Embedded Mitigation

11.94 Embedded mitigation measures are those ‘designed in’ to the scheme and which are certain to be delivered. The preferred option for mitigation of potential impacts on heritage assets, required by planning policy, is for the preservation of important remains in situ wherever practicable and by record where preservation is not possible.

Main SRFI site (including A43 access and all rail infrastructure)

11.95 Delivery of the Proposed Development would require extensive topographic remodelling and bulk earthworks levelling. Site preparation work (ground reduction and levelling) for the zoned development, excavations for building foundations and services installation would result in the loss of all of the archaeological deposits that have been identified by the assessment as being present in those areas. Drainage works and landscaping works (for example: SUDS delivery and tree planting) and the construction of the road and rail infrastructure would also adversely affect any the archaeological deposits that may be present in those areas. As a consequence, the Proposed Development does not have the possibility of embedded mitigation that would prevent or reduce the predicted effects on the archaeological resource that would arise during the construction phase.

11.96 Therefore, based on the findings of the geophysical survey and archaeological evaluation, a programme of further mitigation would be devised in consultation with NCC’s Archaeology Team that would deliver mitigation acceptable to the Council.

M1 J15a Site (Appendix 11.5; Figure 11.6)

11.97 The M1 J15a Site includes areas of undeveloped farmland to the north and to the south of the M1 corridor where archaeological remains are known; or where there is potential for further, hitherto unidentified buried remains.

11.98 However, the land-take required for the proposed reconfiguration of the junction includes a large area for ecological mitigation, which would remain undeveloped. The works required for the highways works lies almost entirely within the existing highways corridors and no embedded mitigation is required as there are unlikely to be any archaeological deposits present that could be affected by the proposed works.

A43/A5 Tove Roundabout (Appendix 11.6; Figure 11.7)

11.99 The A43/A5 Tove Roundabout includes small areas of undeveloped farmland to the west of the roundabout and there is a moderate to high potential for the survival of archaeological at that location; particularly for finds of Roman or Romano-British date.

11.100 The land-take required for the proposed reconfiguration of the northbound access to the A5 north and the Towcester Road realignment would necessitate development on a small section of the undeveloped farmland that has not yet been evaluated by geophysical survey or trial trenching. However, it is unlikely that embedded mitigation through avoidance of disturbance to any buried archaeological remains that may be present at this location can be accommodated by the proposed development. Therefore, based on the findings of the desk-based assessment, a programme of further mitigation would be devised in consultation with NCC’s Archaeology Team that would deliver mitigation acceptable to the Council.

Mitigation measures

- 11.101 As opportunities for preservation in situ are limited, and In order to comply with National and Local Plan Policies, a programme of archaeological mitigation works would be carried out to offset the predicted direct impacts on archaeological assets at the Main SRFI Site and at A43/A5 Tove Roundabout.
- 11.102 The mitigation measures to be adopted would consist of identifying, investigating and recording the archaeological resource identified by geophysical survey and archaeological evaluation within the Main SRFI Site and by desk-based assessment at A43/A5 Tove Roundabout, providing an enhancement of the archaeological record. The work would be conducted to the relevant Chartered Institute for Archaeologists Standard and Guidance Documents (Archaeological Field Evaluation, Archaeological Excavation and Archaeological Watching Brief). The mitigation proposals would be set out in one or more Written Schemes of Investigation (WSI) prepared in consultation with the NCC Archaeology Team and designed to satisfy any archaeological planning condition placed on the proposed development.
- 11.103 Whilst the predicted effects on archaeological remains would not be avoided or reduced by the proposed mitigation, they would be offset through preservation by record of the archaeological resource and the dissemination of archaeological knowledge, resulting in enhancement of the archaeological record. Taking the embedded mitigation into account, no significant residual effects would be anticipated in relation to the archaeological resource and the development proposals would conform to the aims and requirements of national, regional and local planning policy as regards heritage.

Other minor highways works

- 11.104 Other minor highways works areas (**Figure 11.1**) do not require construction works outside of the existing highways corridors. In these locations, no embedded mitigation is required as there are unlikely to be any archaeological deposits present that could be affected by the proposed works.

Assessment of Construction Phase Effects

Main SRFI Site (including A43 access and all rail infrastructure)

- 11.105 As a consequence of the topographic remodelling and bulk earthworks levelling that would be required to deliver the Proposed Development, permanent adverse effects of high magnitude are predicted for all of the archaeological remains known or suspected to survive as buried features and deposits within the Main SRFI Site. Site preparation work (ground reduction and levelling) for the zoned development, excavations for building foundations and services installation would result in the loss of those surviving archaeological deposits. Drainage works and landscaping works (for example: SUDS delivery and tree planting) and the construction of the road and rail infrastructure would also adversely affect any surviving buried archaeological remains that may be present in those areas.
- 11.106 Using the criteria detailed in **Tables 11.5-11.7**, **Table 11.8** summarises the predicted construction effects on the archaeological remains within the Main SRFI site, taking account of the embedded mitigation proposals.

Table 11.8: Predicted construction (direct) effects on Archaeological Sites within the Main SRFI Site (shown on Figure 11.3)

Site Id No.	Site type	Period	Heritage Significance	Magnitude of effect	Significance of effect (excluding embedded mitigation)	Significance of effect (including embedded mitigation)
EV 1	Enclosures and possible settlement	Iron Age and Medieval	Medium (buried remains of former Iron Age stock enclosure or settlement)	High	Moderate	Minor
EV 2	Settlement	Romano-British	Medium (buried remains of a Romano-British settlement)	High	Moderate	Minor
EV 3	Settlement or agricultural remains	Romano-British	Medium (buried remains, Romano-British settlement or agriculture)	High	Moderate	Minor
EV 4	Agricultural remains	Undated	Medium (buried early agricultural remains)	High	Moderate	Minor
EV 5	Settlement	Iron Age / Romano-British	Medium (buried remains of a Romano-British settlement)	High	Moderate	Minor
EV 6	Field system	Romano-British	Medium (buried remains relating to settlement or agriculture, Roman)	High	Moderate	Minor
EV 7	Settlement	Middle Iron Age / Romano-British	Medium (buried remains relating to Middle Iron Age settlement)	High	Moderate	Minor
EV 8	Settlement	Romano-British	Medium (buried remains relating to Romano-British)	High	Moderate	Minor

			settlement, possibly of high status)			
EV 9	Settlement	Middle Iron Age / Romano- British	Medium (remains relating to Middle Iron Age and Romano-British settlement including burial)	High	Moderate	Minor
EV 10	Agricultural remains	Romano- British	Low (sparse buried remains, Romano- British agriculture)	High	Moderate	Minor
EV11	Settlement or agricultural remains	Undated	Low (buried remains, undated)	High	Moderate	Minor
EV12	Pond / palaeochan- nel	Undated	Medium (potential early waterlogged remains)	High	Moderate	Minor
EV13	Field ditches	Romano- British	Low (sparse buried remains, Romano- British agriculture)	High	Moderate	Minor
EV14	Field ditch	Undated	Low (sparse buried remains, undated agriculture)	High	Moderate	Minor
EV15	Settlement remains	Undated	Medium (buried undated settlement activity)	High	Moderate	Minor

M1 J15a Site (Appendix 11.4; Figure 11.5)

11.107 The M1 J15a Site) includes areas of undeveloped farmland to the north and to the south of the M1 corridor. However, the land-take required for the proposed reconfiguration of the junction includes a large area for ecological enhancement to the south-west of the existing roundabouts, which would remain undeveloped. The area required for the highways works lies almost entirely within the existing highways corridors and it is likely that construction of the existing modern road layout, including associated topographic remodelling and landscaping work, has significantly affected any archaeological remains that may have been present at those locations. No intelligible archaeological deposits are likely to survive as hitherto unknown buried remains at those locations; any remains that may survive are

therefore unlikely to be of more than **low** heritage significance (**Table 11.5**). Consequently the Proposed Development would have a **negligible** magnitude of impact (**Table 11.6**) on archaeology, resulting in effects of **Negligible** significance (**Table 11.7**).

A43/A5 Tove Roundabout) (Appendix 11.5 Figure 11.6)

11.108 The A43/A5 Tove Roundabout includes areas of undeveloped farmland to the west of the roundabout. There is a moderate to high potential for the survival of archaeological remains in the undeveloped farmland; particularly perhaps for finds of Roman or Romano-British date, as the area is close to the location of the northern suburbs of the Roman town MNN3659). It is therefore possible that remains of at least **medium** heritage significance (**Table 11.5**) could survive as hitherto unknown buried remains within the undeveloped farmland. In the absence of the proposed embedded mitigation, the anticipated **high** magnitude of impact (**Table 11.6**), leading to the loss of any such remains, would result in effects of **Moderate** significance (**Table 11.7**). Taking the embedded mitigation into account, no significant residual effects would be anticipated, and the effect would be judged to be of no more than minor significance (**Table 11.7**).

Other minor highways works

11.109 Other minor highways works areas (**Figure 11.1**) do not require construction works outside of the existing highways corridors and it is likely that construction of the existing modern road layouts, including associated topographic remodelling and landscaping work, has significantly affected any archaeological remains that may have been present at those locations. It is therefore probable that no intelligible archaeological deposits survive as hitherto unknown buried remains at those locations; any remains that may survive are therefore unlikely to be of more than **low** heritage significance (**Table 11.5**). Consequently it is likely that the Proposed Development would have a **negligible** magnitude of impact (**Table 11.6**) on archaeology, resulting in effects of **Negligible** significance (**Table 11.7**).

Assessment of Operational Phase Effects

11.110 Operational phase effects on the archaeological resource could arise only if areas that had remained unaffected during the initial construction phase were to be affected by subsequent construction works required by the Proposed Development during the lifetime of the Proposed Development.

11.111 Redevelopment within the footprint of areas subject to works during the initial construction phase would not result in any additional effects on archaeological deposits in those areas; mitigation during the construction phase would have ensured that any effects on the archaeological resource in those areas had been fully mitigated.

Main SRFI site (including A43 access and all rail infrastructure)

11.112 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, it is very unlikely that any operational requirements of the Proposed Development in the Main SRFI site would have an effect on the archaeological resource.

M1 J15a Site (Appendix 11.5; Figure 11.6)

11.113 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, it is very unlikely that any operational requirements at the M1 J15a would have an effect on the archaeological resource.

A43/A5 Tove Roundabout (Appendix 11.6; Figure 11.7)

11.114 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, it is very unlikely that any operational requirements at the A43/A5 Tove Roundabout would have an effect on the archaeological resource.

Other minor highways works

11.115 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, it is very unlikely that any operational requirements at the locations of the other minor highway works would have an effect on the archaeological resource.

All proposed development works

11.116 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, it is very unlikely that any operational requirements would have an effect on the archaeological resource.

Assessment of Decommissioning Phase Effects

11.117 It is not known when there will no longer be a need for the Proposed Development and many elements of the development are unlikely to be decommissioned at all. The design life of the warehousing buildings will be in the order of 60+ years (approximately), and the rail infrastructure and civil engineering works will be significantly longer than this. Once the warehouses reach their design life, it is entirely feasible that they will be re-provided in a modern form. Should that occur it would be subject to its own assessment of effects at the relevant time.

11.118 Decommissioning phase effects could arise only if parts that had remained unaffected during the construction and operational phases were to be affected to facilitate any decommissioning procedures required by the Proposed Development. It is likely that any effects on the archaeological resource arising from decommissioning would be similar to, or less than, those experienced during the construction phase.

Main SRFI site (including A43 access and all rail infrastructure)

11.119 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, decommissioning of the Proposed Development would have no effect on the archaeological resource.

M1 J15a Site (Appendix 11.5; Figure 11.6)

11.120 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, decommissioning of the Proposed Development would have no

effect on the archaeological resource. The road improvements required to facilitate the Proposed Development are likely to be retained and no decommissioning of the road improvements is likely.

A43/A5 Tove Roundabout) (Appendix 11.6; Figure 11.7)

11.121 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, decommissioning of the Proposed Development would have no effect on the archaeological resource. The road improvements required to facilitate the Proposed Development are likely to be retained and no decommissioning of the road improvements is likely.

Other minor highways works

11.122 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, decommissioning of the Proposed Development would have no effect on the archaeological resource. The road improvements required to facilitate the Proposed Development are likely to be retained and no decommissioning of the road improvements is likely.

All proposed development works

11.123 The effects of the Proposed Development on the archaeological resource will have been mitigated during the construction phase through an agreed programme of archaeological investigation. As a result, decommissioning of the Proposed Development would have no effect on the archaeological resource.

Cumulative Effects

Intra-project effects

11.124 Intra-project cumulative effects are those that might arise between the different environmental topics being assessed in the EIA.

11.125 In specific regard to effects of the Proposed Development on archaeological remains, potential interactions may arise from hydrogeological changes and with structural landscaping. The hydrogeological aspects of the Proposed Development are described in **Chapter 13: Ground Conditions** and **Chapter 14: Hydrology, Drainage and Flood Risk**. The landscaping aspects are described in **Chapter 17: Landscape and Visual**. Ecological enhancement proposals, which also require some soft landscaping, are set out in **Chapter 16: Biodiversity**.

11.126 The Hydrology, Drainage and Flood Risk assessment proposes minimal lowering of the water table and the lifting of site slab levels to minimise flood risk. Consequently it is likely that there would be a **negligible** magnitude (**Table 11.6**) cumulative effect on the archaeological resource.

11.127 Potential intra-project effects on cultural heritage more widely (built heritage and effects on the settings of designated heritage assets) are addressed in **Chapter 12: Built Heritage**.

Inter-project cumulative effects

11.128 Inter-project cumulative effects are those that might arise as a result of the Proposed Development interacting with other projects in the vicinity. The following proposed developments have been identified as having potential cumulative effects when considered in combination with the Proposed Development.

Main SRFI Site

11.129 CL.31 is a proposal, approved in 2013, to upgrade an overhead powerline that crosses the Main SRFI site. The work requires the dismantlement of 1.8km of an existing wood pole mounted 11kV overhead electricity line and rebuilding to modern standards in the same location including spur lines. The existing line runs between Milton Malsor and Blisworth on a roughly northeast to south alignment through the Main SRFI Site, to the east of Towcester Road through proposed development zones 3 and 4. South Northamptonshire Council's Archaeology Advisors provided the following advice in the Delegated Report (Ref 11.17):

“The proposed routes run in part through areas of archaeological sensitivity. Overhead lines are difficult to mitigate archaeologically as the groundworks are not normally carried out in a way which can be monitored. Advise that care should be taken where possible to minimise new disturbance and if any queries the applicant should contact the County Council's Archaeology team”.

11.130 The Council's Archaeology Advisors response makes it clear that the approved overhead powerline upgrade works are expected to have only a minimal impact on the archaeological resource at any locations that might be affected by any requirement for groundworks; for example, at pole locations where reinforcement or replacement may be required. The Proposed Development of zones 3 and 4 would affect three areas of archaeological sensitivity (GS01, GS03 and GS 04), the effect arising from ground levelling works to create the necessary development plateaus. Mitigation would be put in place to offset the predicted effect from the Proposed Development, and the cumulative effect of the Proposed Development in combination with the approved CL.31 overhead line upgrade would therefore be of **negligible** magnitude (**Table 11.6**) and **negligible** significance (**Table 11.7**).

Rail Central and Northampton Gateway

11.131 CL.2 is a proposal to create a separate Strategic Rail Freight Interchange (SRFI) providing up to 468,000 sq. m (gross internal area) of warehousing and ancillary buildings on the plot of land west of M1 Junction 15 and west of the A508, south of Collingtree. This proposal would lie directly to the east of the Main SRFI Site, between it and the M1 motorway. The Scoping Report for the proposed development (Ref 11.18) records (para 3.1.156) that:

“The proposed development site contains some limited former medieval ridge and furrow cultivation, but no other non-recorded heritage assets have been identified from the work to date. The 2014 assessment included a geophysical survey of much of the main site which recorded a number of potential enclosed settlements and associated activity, the importance of which remains uncertain”.

11.132 The archaeological baseline suggested by the limited information that is provided in the Northampton Gateway Scoping Report indicates that there are archaeological remains present within that site that are comparable in nature and importance to those identified through the study undertaken for the Main SRFI Site. It may be the case that the remains are similar in character and date and that collectively they form a wider landscape of later prehistoric and Romano-British settlement in the Nene valley; although the results of the geophysical survey and trial trenching evaluation undertaken for Rail Central (Figure 11.3 and Appendix 11.7) indicate that they are separate components of a wider landscape and that they do not form a single archaeological site. Mitigation would be put in place to offset the predicted effect from Rail Central Site; however, the cumulative effect of rail Central in combination with the proposed Northampton Gateway development would result in potential direct impacts on a group of likely associated archaeological remains of broadly comparable date and character. Taking into account the embedded mitigation, the cumulative effect on the archaeological resource is judged to be of **minor** significance.

M1 J15a Site

11.133 Cl.15 was a proposal for a new distribution centre within the M1 J15a Site, to the northeast of the M1 corridor, and was refused at planning appeal in February 2017. Effects of the proposed new distribution centre on archaeology formed no part of the grounds for appeal or of the decision (Ref 11.19).

11.134 The fact that the Cl.15 proposal has been refused planning consent at appeal means that there would be no cumulative effect on the archaeological resource from Rail Central in combination with the Cl.15 proposal.

A43/A5 Tove Roundabout (Appendix 11.5 Figure 11.6)

11.135 There are no other committed developments at this location and there would therefore be no cumulative effect on archaeology.

Other minor highway works

11.136 There are no other committed developments at any of the minor highways works sites and here would therefore be no cumulative effect on archaeology.

Mitigation

11.137 In order to comply with National and Local Plan Policies a programme of archaeological mitigation works would be carried out to offset the predicted direct impacts on archaeological assets. All such work would be conducted to the relevant Chartered Institute for Archaeologists Standard and Guidance Documents (Archaeological Field Evaluation, Archaeological Excavation and Archaeological Watching Brief). The mitigation proposals would be set out in one or more Written Schemes of Investigation (WSI) prepared in consultation with the NCC Archaeology Team and designed to satisfy any archaeological planning condition placed on the proposed development. The commitment to construction phase archaeological mitigation acceptable to the NCC Archaeology Team, and set out in the WSI(s), would include provision for post-excavation analyses and dissemination of the results of the mitigation works, as well as for archiving of the project materials and records, as appropriate.

11.138 If required, following the adoption of other proposed and agreed mitigation measures, written guidelines would be issued for adoption by all construction contractors, which would be included in a Construction Environmental Management Plan outlining the need to avoid causing unnecessary damage to archaeological sites. That document would contain arrangements for calling upon retained professional support on the event that buried remains of potential archaeological interest (such as building remains, human remains and artefacts) should be discovered in areas not subject to archaeological monitoring. The guidance would make clear the legal responsibilities placed upon those who disturbed artefacts or human remains.

11.139 The proposed mitigation is described below and summarised in **Table 11.10**.

Main SRFI site (including A43 access and all rail infrastructure)

11.140 Archaeological investigation work across the Main SRFI Site, the scope of which has been agreed with NCC Archaeology Team, has been completed and fifteen discrete archaeological sites have been identified, together with a sizeable coverage of relict ridge and furrow cultivation. A programme of mitigation would be devised, in consultation with NCC's Archaeology Team that would deliver mitigation acceptable to the Council.

M1 J15a Site (Appendix 11.4; Figure 11.5)

11.141 Based on the findings of the desk-based assessment, a programme of mitigation would be devised, in consultation with NCC's Archaeology Team that would deliver mitigation acceptable to the Council.

A43/A5 Tove Roundabout (Appendix 11.5 Figure 11.6)

11.142 Based on the findings of the desk-based assessment, a programme of mitigation would be devised, in consultation with NCC's Archaeology Team that would deliver mitigation acceptable to the Council.

Table 11.10: Proposed Mitigation Measures

Potential effect	Proposed mitigation	Means of implementation	Mechanism for securing mitigation
Construction			
Direct effects on buried archaeological deposits and features within the Main SRFI Site	Implementation of an agreed programme of archaeological set-piece excavations at locations to be determined through consultation with NCC Archaeology Team.	Implementation of CEMP	The DCO would contain a commitment via an outline management plan to ensure that the agreed programme of works are properly controlled and implemented.
J15a Site	Implementation of an agreed programme of archaeological investigations to be agreed	Implementation of CEMP	The DCO would contain a commitment via an outline management plan to ensure that the

	with NCC Archaeology Team.		agreed programme of works are properly controlled and implemented
A43/A5 Tove Roundabout	Implementation of an agreed programme of archaeological investigations to be agreed with NCC Archaeology Team.	Implementation of CEMP	The DCO would contain a commitment via an outline management plan to ensure that the agreed programme of works are properly controlled and implemented
Other minor highway works	None required	None required	None required
Operation			
None	None required	None required	None required
Decommissioning			
None	None required	None required	None required
Cumulative			
Cumulative intra-project effects on buried archaeological deposits and features within the Main SRFI Site.	Implementation of an agreed programme of archaeological set-piece excavations at locations to be determined through consultation with NCC Archaeology Team.	Implementation of CEMP	The DCO would contain a commitment via an outline management plan to ensure that the agreed programme of works are properly controlled and implemented
Cumulative inter-project effects on buried archaeological deposits and features within the Main SRFI Site	Implementation of an agreed programme of archaeological set-piece excavations at locations to be determined through consultation with NCC Archaeology Team.	Implementation of CEMP	The DCO would contain a commitment via an outline management plan to ensure that the agreed programme of works are properly controlled and implemented

Residual Effects

11.143 It is considered that the completion of an agreed programme of archaeological mitigation works, devised in consultation with NCC Archaeology Team, would offset the loss of archaeological resources that would occur as a result of the construction of the Proposed Development.

11.144 Whilst the predicted effects on archaeological remains would not be avoided or reduced by the proposed mitigation, they would be offset through preservation by record of the archaeological resource and the dissemination of archaeological knowledge, resulting in enhancement of the archaeological record. Taking the mitigation into account, no significant residual effects are anticipated in relation to the archaeological resource and the development proposals are considered to conform to the aims and requirements of national, regional and local planning policy as regards heritage.

Table 11.11: Summary of Residual Effects

Description of impact	Significance of effect	Possible mitigation measures	Residual effect
Construction			
Loss of archaeological resource across the Main SRFI Site	Moderate, adverse	Implementation of an agreed programme of archaeological set-piece excavations offset effect through recording archaeological assets in advance of construction and enhancing the archaeological record	Minor, adverse
M1 J15a Site	Moderate, adverse	Implementation of an agreed programme of archaeological set-piece excavations offset effect through recording archaeological assets in advance of construction and enhancing the archaeological record	Minor, adverse
A43/A5 Tove Roundabout	Moderate, adverse	Implementation of an agreed programme of archaeological set-piece excavations offset effect through recording archaeological assets in advance of construction and enhancing the archaeological record	Minor, adverse
Other minor highway works	None	None required	None required
Operation			
None	None	None required	None required
Decommissioning			
None	None	None required	None required
Cumulative			

Cumulative intra-project effects on buried archaeological deposits and features within the Main SRFI Site	Minor, adverse	Implementation of an agreed programme of archaeological set-piece excavations offset effect through recording archaeological assets in advance of construction and enhancing the archaeological record	Minor, adverse
Cumulative inter-project effects on buried archaeological deposits and features within the Main SRFI Site	Moderate, adverse	Implementation of an agreed programme of archaeological set-piece excavations offset effect through recording archaeological assets in advance of construction and enhancing the archaeological record	Minor, adverse

Monitoring

11.145 The completion of an agreed programme of archaeological mitigation works, devised in consultation with NCC Archaeology Team, would offset the loss of archaeological resources that would occur as a result of the construction of the Proposed Development. This would ensure that the archaeological effects are fully addressed prior to or during the construction phase and it is considered that no post-construction monitoring is required in relation to consideration of the archaeological resource.

Limitations and Assumptions

11.146 Identification of the baseline archaeological resource of the M1 J15a Site and the A43/A5 Tove Roundabout Site has been derived principally from the existing HER data and other sources (historic maps, aerial photography, Lidar). It is assumed that, at the time of the acquisition of the data from the HER, the information provided was accurate and up-to-date.

11.147 At the present time no HER data has been obtained to inform the assessment for the other minor highways works junction (except for the M1 J15a and the A43/A5 Tove Roundabout sites). The locations of these junction improvements all fall within existing highways wayleave corridors and it is therefore considered that any formerly present buried archaeological remains will have been lost during the creation of the existing junctions. It is considered that the absence of the HER data for these locations does not affect the overall assessment of the predicted effects of the proposed highways enhancement works at those locations.

11.148 Notwithstanding the identified limitations and assumptions, it is considered that the data obtained is sufficient to provide a reliable assessment of the archaeological baseline and that that information has been sufficient to allow a proper assessment of the potential effects of the Proposed Development on the archaeological resource.

References

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- Ref 11.2 Chartered Institute for Archaeologists' (2014) '*Standard and Guidance for Historic Environment Desk-based Assessment*' Chartered Institute for Archaeologists, London
- Ref 11.3 Chadwick, P (1999) '*A43/Milton Malsor SDA: Archaeological Desk-based Assessment*'
- Ref 11.4 Morris, S (2008) '*Archaeological Fieldwalking Survey on Land at Milton Malsor, South of Northampton, November 2007*'. Northamptonshire Archaeology Fieldwork Reports.
- Ref 11.5 Carter, R (2016) '*Rail Central: Hedge Survey*' Report, no 855950 RSK
- Ref 11.6 UK Government (1997) the Hedgerows Regulations 1997. The Stationary Office, London
- Ref 11.7 Domesday Book Online - <http://www.domesdaybook.co.uk/northamptonshire.html>
- Ref 11.8 Environment Agency (2017) LIDAR Composite DSM - 1m <https://data.gov.uk/dataset/lidar-composite-dsm-1m1>
- Ref 11.9 Caryle, S (2008) '*A Romano-British 'Ladder' Enclosure at Milton Ham, Northampton: Assessment Report and Updated Project Design*'. Northamptonshire Archaeology, Report 08/118
- Ref 11.10 British History Online (2017) <http://www.british-history.ac.uk/rchme/northants/vol4/pp149-160>
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- Ref 11.12 English Heritage (2008) *Conservation Principles. Policies and Guidance for the Sustainable Management of the Historic Environment*. English Heritage, London
- Ref 11.13 The Highways Agency (2017) '*Design Manual for Roads and Bridges: Volume 11*' The Stationary Office, London
- Ref 11.14 Department for Communities and Local Government (2012) *National Planning Policy Framework (March 2012)*,
- Ref 11.15 UK Government (2017) *Town and Country Planning (Environmental Impact Assessment) Regulations 2017*
- Ref 11.16 Cooper, N ed (2006) '*The Archaeology of the East Midlands An Archaeological Resource Assessment and Research Agenda*' Leicester Archaeology Monograph 13

- Ref 11.17 South Northamptonshire Council – Delegated Report Application Ref S/2013/1123/PE Land between Rectory Lane Milton Malsor to Northampton road Blisworth
- Ref 11.18 Roxhill (Junction 15) Ltd (2016) Northampton Gateway SRFI Scoping Report
- Ref 11.19 The Planning Inspectorate (2016) Appeal Ref: APP/V2825/W/15/3138580 Land at Milton Ham, Towcester Road, Northampton

Other Sources Consulted

Blisworth Draft Inclosure Map of 1808

Blisworth Tithe Map (1845)

Google maps [online], available at: <http://www.google.com/intl/en/earth/index.html> Byrant's Map of Heritage Gateway (2017) <http://www.heritagegateway.org.uk/gateway/>

Historic England (2016) 'Designation Data Download Area' <https://historicengland.org.uk/listing/the-list/data-downloads/>

Historic England (2017) Pastscape <http://pastscape.org.uk/>

Historic England (2014) Images of England <http://www.imagesofengland.org.uk/>

Northamptonshire 1791

Ordnance Survey (1884) Northamptonshire, Sheet LI.NE, 6 inches to 1 mile.

Ordnance Survey (1884) Northamptonshire, Sheet LI.SE 6 inches to 1 mile.

Ordnance Survey (1884) Northamptonshire, Sheet LII.SW, 6 inches to 1 mile

Ordnance Survey (1884) Northamptonshire, Sheet LII.NW, 6 inches to 1 mile.

Ordnance Survey (1884) Northamptonshire, Sheet LVI.NW, 6 inches to 1 mile.

Ordnance Survey (1900) Northamptonshire, Sheet LI.NE, 6 inches to 1 mile.

Ordnance Survey (1900) Northamptonshire, Sheet LI.SE, 6 inches to 1 mile.

Ordnance Survey (1900) Northamptonshire, Sheet LII.SW, 6 inches to 1 mile

Ordnance Survey (1901) Northamptonshire, Sheet LII.NW, 6 inches to 1 mile.

Ordnance Survey (1901) Northamptonshire, Sheet LVI.NW, 6 inches to 1 mile.

Ordnance Survey (1952) Northamptonshire, Sheet LI.NE, 6 inches to 1 mile.

Ordnance Survey (1952) Northamptonshire, Sheet LI.SE, 6 inches to 1 mile.

Ordnance Survey (1952) Northamptonshire, Sheet LII.SW, 6 inches to 1 mile

Ordnance Survey (1952) Northamptonshire, Sheet LII.NW, 6 inches to 1 mile.

Ordnance Survey (1952) Northamptonshire, Sheet LVI.NW, 6 inches to 1 mile.