

A46 Newark Bypass

Scheme Number: TR010065

6.1 Environmental Statement

Chapter 6 Cultural Heritage

APFP Regulation 5(2)(a)

Planning Act 2008

**Infrastructure Planning (Applications: Prescribed Forms
and Procedure) Rules 2009**

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Infrastructure Planning

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**The Infrastructure Planning
(Applications: Prescribed Forms and
Procedure) Rules 2009**

The A46 Newark Bypass
Development Consent Order 202[#]

**6.1 Environmental Statement
Chapter 6 Cultural Heritage**

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6 Cultural Heritage

6.1 Introduction

- 6.1.1 This Chapter presents the information required by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) to be provided in the Environmental Statement (ES) to enable the identification and assessment of likely significant effects on heritage assets.
- 6.1.2 Cultural heritage and historic environment are interchangeable terms used to describe all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.¹
- 6.1.3 Heritage assets are buildings, monuments, sites, places, areas, or landscapes identified as having a degree of significance (termed heritage value in this chapter meriting consideration in planning decisions, because of their heritage interest.² These assets include:
- Designated heritage assets which are afforded statutory protection, such as scheduled monuments, listed buildings, registered park and gardens, registered battlefields and conservation areas.
 - Non-designated heritage assets including archaeological remains, historic buildings and historic landscapes identified by plan-making bodies as having a degree of heritage significance meriting consideration in planning decisions, but which do not meet the criteria for designated heritage assets.
- 6.1.4 This assessment considers both construction and operational phase effects and has been prepared in accordance with the Design Manual for Roads and Bridges (DMRB) LA104 Environmental assessment and monitoring³ and LA 106 Cultural heritage assessment.⁴
- 6.1.5 This Chapter has been undertaken in compliance with the Planning Inspectorate's Scoping Opinion [APP-189]. Appendix 4.1 (Scoping Opinion Schedule of Comments and Responses) of the ES

¹ Historic England (2023) Heritage Definitions [online] available at: [National Planning Policy Framework - Annex 2: Glossary - Guidance - GOV.UK \(www.gov.uk\)](#) (last accessed December 2023).

² Historic England (2023) Heritage Definitions [online] available at: [National Planning Policy Framework - Annex 2: Glossary - Guidance - GOV.UK \(www.gov.uk\)](#) (last accessed December 2023).

³ National Highways (2020) DMRB LA 104 – Environmental Assessment and Monitoring, Revision 1 [online] available at: [LA 104 - Environmental assessment and monitoring \(standardsforhighways.co.uk\)](#) (last accessed July 2024).

⁴ National Highways (2020) DMRB LA 106 – Cultural Heritage Assessment, Revision 1 [online] available at: [LA 106 - Cultural heritage assessment \(standardsforhighways.co.uk\)](#) (last accessed July 2024).

Appendices [APP-125] contains further information on how each of the matters raised in the Scoping Opinion have been addressed.

- 6.1.6 Chapter 2 (The Scheme) of this ES contains a detailed description of the Scheme. The drawings referenced in this Chapter can be found in the ES Figures [contained within Volume 6.2 of the ES], and the technical appendices referred to in this Chapter are presented in the ES Appendices [contained within Volume 6.3 of the ES].

6.2 Competent expert evidence

- 6.2.1 The competent archaeological expert holds a bachelor's degree in Archaeology, a post graduate diploma in Archaeological Field Practice and has a Member grade accreditation of the Chartered Institute for Archaeologists (CIfA). The competent expert has over 15 years' professional experience within the heritage sector and 4 years' experience in the production of cultural heritage impact assessments for Nationally Significant Infrastructure Projects (NSIPs).
- 6.2.2 The competent built heritage expert holds a bachelor's degree in Archaeology, and a Master's degree in Conservation of the Historic Environment. The competent expert has over 17 years' professional experience within the heritage sector, principally as a Local Authority Conservation Officer.

6.3 Legislative and policy framework

- 6.3.1 The principal legislative and planning context for the assessment of the effects of the Scheme on heritage assets is presented below. The relevant legislation and policies listed below have been taken account of in the assessment.

Legislation

Ancient Monuments and Archaeological Areas Act, 1979

- 6.3.2 This act⁵ sets out the protection given to ancient monuments, also referred to as Scheduled Monuments. The act relates to the investigation, preservation and recording of matters of archaeological and historic interest. The Secretary of State for Culture, Media and Sport compiles the Schedule of these monuments.
- 6.3.3 The effects of the Scheme on scheduled monuments and their settings have been considered as part of the assessment of archaeological effects reported in this chapter.

⁵ UK Government (1979) Ancient Monuments and Archaeological Areas Act 1979 [online] available at: [Ancient Monuments and Archaeological Areas Act 1979 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1979/43/contents) (last accessed December 2023).

Planning (Listed Buildings and Conservation Areas Act) 1990

- 6.3.4 This act⁶ sets out the protection given to buildings of special architectural or historic interest through listing. The Secretary of State for Culture, Media and Sport compiles this list and buildings can be conferred with one of three grades.
- Grade I buildings are of exceptional interest and only 2.5% of listed buildings are conferred with this status
 - Grade II* buildings are particularly important buildings of more than special interest and only 5.8% of listed buildings have this designation
 - Grade II buildings are of special interest and 91.7% of all listed buildings are in this class
- 6.3.5 It also sets out the process for designation of conservation areas. Conservation areas are designated by local planning authorities. They are considered to be areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance.
- 6.3.6 The effects of the Scheme on conservation areas, Listed Buildings and their settings have been considered as part of the assessment of built heritage effects reported in this chapter.

The Infrastructure Planning (Decisions) Regulations Act, 2010

- 6.3.7 This act⁷ sets out a list of matters to which the Secretary of State must have regard when taking decisions on applications for certain types of nationally significant infrastructure projects. Relevant to cultural heritage is Section 3 (listed buildings, conservation areas and scheduled monuments) which states:
- When deciding an application which affects a listed building or its setting, the decision-maker must have regard to the desirability of preserving the listed building or its setting or any features of special architectural or historic interest which it possesses.
 - When deciding an application relating to a conservation area, the decision-maker must have regard to the desirability of preserving or enhancing the character or appearance of that area.
 - When deciding an application for development consent which affects or is likely to affect a scheduled monument or its setting, the decision-maker must have regard to the desirability of preserving the scheduled monument or its setting.

⁶ UK Government (1990) Planning (Listed Building and Conservation Areas) Act 1990 [online] available at: [Planning \(Listed Buildings and Conservation Areas\) Act 1990 \(legislation.gov.uk\)](#) (last accessed December 2023).

⁷ UK Government (2010) The Infrastructure Planning (Decisions) Regulations Act 2010 [online] available at: [The Infrastructure Planning \(Decisions\) Regulations 2010 \(legislation.gov.uk\)](#) (last accessed December 2023).

- 6.3.8 The effects of the Scheme on listed buildings, conservation areas and scheduled monuments have been considered as part of the assessment, with information provided in relation to their setting.

National policy

National Policy Statement for National Networks

- 6.3.9 The National Policy Statement for National Networks (NPSNN) sets out the policy which the Scheme should comply with. It is also the basis for informing a judgement on the impacts of a Scheme, for example whether the Scheme is consistent with the needs of the NPSNN. Compliance of the Scheme with the 2015 NPSNN is detailed within the NPSNN (2015) Accordance Table [REP6-016].
- 6.3.10 At the time of the DCO application submission in April 2024, a Draft NPSNN (2024) Accordance Table [APP-192] was submitted with the application which summarised compliance of the Scheme with the draft NPSNN. This was because, even though the NPSNN 2024 was still in draft at that time (having been published for consultation in March 2023), it was still capable of constituting a material consideration in the Secretary of State's decision on the Application. As the 2024 NPSNN was designated on 24 May 2024, the Draft NPSNN (2024) Accordance Table [APP-192] has been superseded by the NPSNN (2024) Accordance Table [REP5-032], which assesses the Scheme against the designated 2024 NPSNN. The application for development consent for the Scheme was accepted for examination on 23 May 2024. As set out in the transitional provisions of the 2024 NPSNN (paragraphs 1.16 and 1.17), the 2015 NPSNN has effect for any application for development consent accepted for examination prior to 24 May 2024 and will inform decisions made by the Secretary of State in relation to those applications. However, it is noted that the 2024 NPSNN may still be an important consideration for the Secretary of State for Transport when determining whether to consent the DCO for this Scheme. Therefore, the NPSNN (2024) Accordance Tables [REP5-032] summarised compliance of the Scheme with the 2024 NPSNN.
- 6.3.11 The policies of relevance to cultural heritage within the 2015 NPSNN and detail on how they have been addressed in the assessment are provided below.
- 6.3.12 Chapter 5, paragraphs 5.120 to 5.142 (The Historic Environment) of the 2015 NPSNN sets out the Government's approach for impact assessment, decision making and recording for the historic

environment.⁸ Most relevant to this assessment are paragraph's 5.126 and 5.127 outlined below:

- Paragraph 5.126 - *Where the development is subject to EIA the applicant should undertake an assessment of any likely significant heritage impacts of the proposed project as part of the Environmental Impact Assessment and describe these in the environmental statement.*
- Paragraph 5.127 - *The applicant should describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the asset's importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant Historic Environment Record should have been consulted and the heritage assets assessed using appropriate expertise. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, the applicant should include an appropriate desk-based assessment and, where necessary, a field evaluation.*

6.3.13 Chapter 5, paragraphs 5.131 to 5.135 of the 2015 NPSNN set out the approach for considering the impacts to designated heritage assets. It specifically states:

- Paragraph 5.131 – *When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State should give great weight to the asset's conservation. The more important the asset, the greater the weight should be.*
- Paragraph 5.1.132 – *Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss.*
- Paragraph 5.1.134 – *Where the proposed development will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.*

6.3.14 The requirements of the 2015 NPSNN in relation to identifying the significance of heritage assets, and assessing and mitigating the effects of the Scheme on such assets have been taken account of in the assessment, in order to identify the likely significant effects that the Secretary of State needs to give due regard to in their decision-making.

⁸ All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora [online] available at: [National Planning Policy Framework - Annex 2: Glossary - Guidance - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/671112/National_Planning_Policy_Framework_-_Annex_2_-_Glossary_-_Guidance_-_GOV.UK.pdf) (last accessed December 2023).

National Planning Policy Framework, 2024

- 6.3.15 The National Planning Policy Framework (NPPF)⁹ sets out the Government's planning policy framework for the whole of England, including the Government's expectation for content and quality of planning applications and local plan policy. The overall strategic aims of the NPSNN and NPPF are consistent. The NPPF may be an important and relevant matter but does not form the basis for a decision on an NSIP.
- 6.3.16 Chapter 16 (paragraphs 202-221) of the NPPF sets out a framework for the management of the historic environment and provides guidance for proposals affecting heritage assets.
- 6.3.17 The Scheme has the potential to effect both designated and non-designated heritage assets and as such the following policy paragraphs have been taken into account as part of this assessment:
- Paragraph 207 – *'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.'*
 - Paragraph 210 – *'In determining applications, local planning authorities should take account of:*
 - a) *The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation.*
 - b) *The positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality.*
 - c) *The desirability of new development making a positive contribution to local character and distinctiveness.'*
 - Paragraph 212: *'When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.'*
 - Paragraph 213: *'Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:*
 - *Grade II listed buildings, or grade II registered parks or gardens, should be exceptional*
 - *Assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed*

⁹ Ministry of Housing, Communities and Local Government (December 2024) National Planning Policy Framework [online] available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf (last accessed March 2025)

buildings, grade I and grade II registered parks and gardens, and World Heritage Sites, should be wholly exceptional.'*

- Paragraph 215: *'Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.'*
- Paragraph 216: *'The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighting applications that directly or indirectly affect 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.'*

6.3.18 The requirements of the NPPF have been accounted for in the assessment, with particular regard given to establishing the significance of designated and non-designated assets and their settings to inform decision making.

25 Year Environment Plan, 2018 and updated 2023

- 6.3.19 The Department for Environment, Food & Rural Affairs (Defra) 25 Year Environment Plan (2018)¹⁰ is a policy paper setting out what the Government will do to improve the environment, including restoring and safeguarding wildlife habitats. This plan is being treated as the first Environmental Improvement Plan required under the Environment Act 2021. The first revision of the 25 year plan 'Environmental Improvement Plan' was published in February 2023.¹¹
- 6.3.20 The plan sets out aims to conserve and enhance the natural beauty, heritage and engagement of our natural environment, and make sure it can be enjoyed, used and cared for by everyone. One of the ways the plan does this through safeguarding and improving environmental value while being sensitive to considerations of its cultural heritage.
- 6.3.21 The plan has been accounted for in the assessment, with particular regard given to identifying the significance of heritage assets, and assessing and mitigating the effects of the Scheme on such assets.

¹⁰ HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment [online] available at: [25 Year Environment Plan - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/25-year-environment-plan) (last accessed December 2023).

¹¹ HM Government (2023) Environment Improvement Plan 2023; First revision of the 25 Year Environment Plan.[online] available at: [Environmental Improvement Plan \(publishing.service.gov.uk\)](https://www.gov.uk/government/publications/environmental-improvement-plan) (www.gov.uk) (last accessed December 2023).

Local Policy

Nottinghamshire County Council – The Nottinghamshire Plan, 2021-2031

- 6.3.22 The Nottinghamshire Plan 2021-2031 presents the Nottinghamshire County Council's ten-year vision for Nottinghamshire and a summary of what will be done over the next four years from 2021 to bring that vision to life.
- 6.3.23 Cultural heritage protection and enhancement is addressed within Ambition 5 (Strengthening businesses and creating more good-quality jobs) and Ambition 6 (Making Nottinghamshire somewhere people love to live, work and visit) of the plan. These ambitions are further detailed in the Nottinghamshire County Council's Annual Delivery Plan for 2022/23¹².
- 6.3.24 To achieve these ambitions the council will deliver the following actions in relation to cultural heritage:
- Action 5.4 - *Review the Visitor Economy Strategy, to support and grow the heritage and tourism sector, making Nottinghamshire a destination of choice and bringing investment into the County.*
 - Action 6.4 - *Work to achieve 'favourable management' status for heritage sites, meaning that important sites are conserved for the future.*
 - Action 6.10 - *Work with partners on the County's special landscapes and heritage buildings, to attract investment and protect them from neglect, decay, or from unsuitable or unsympathetic developments.*
 - Action 6.11 - *Use libraries and heritage buildings to share art and local heritage, so that residents and visitors can learn about and enjoy Nottinghamshire's unique stories.*
- 6.3.25 The plan has been accounted for in the assessment and has informed stakeholder engagement and the recommendations and mitigation measures set out in this chapter.

Newark & Sherwood District Council – Newark & Sherwood Plan Review – Amended Core Strategy, 2019

- 6.3.26 The Amended Core Strategy¹³ sets out Newark & Sherwood District Council's spatial policy framework for delivering the development and change needed to realise the District Council's vision for the district up to 2033. The document sets out spatial and core strategies for the protection of heritage assets.

¹² Nottinghamshire County Council (2021) Annual Delivery Plan 2022/23 [online] available at: [\(nottinghamshire.gov.uk\)](https://www.nottinghamshire.gov.uk/Document.ashx(nottinghamshire.gov.uk)) (last accessed December 2023).

¹³ Newark & Sherwood District Council (2019) Amended Core Strategy [online] available at: [\(amended-core-strategy-DPD.pdf \(newark-sherwooddc.gov.uk\)\)](https://www.newark-sherwooddc.gov.uk/amended-core-strategy-DPD.pdf(newark-sherwooddc.gov.uk)) (last accessed December 2023).

- 6.3.27 Of particular relevance to the cultural heritage is Core Policy 14 (Historic Environment), which sets out how the District Council will work with partners and developers in order to:
- *‘secure the continued conservation and enhancement of the character, appearance and setting of the District’s heritage assets and historic environment, in line with their identified significance as required in national policy.*
 - *preserve and enhance the special character of Conservation Areas and important open spaces and features identified through the Conservation Area Appraisal process through allocation in the Allocations & Development Management DPD.*
 - *positive action for those heritage assets at risk through neglect, decay, vacancy or other threats where appropriate.*
 - *protection of Historic Landscapes by working in partnership with the Court Leet, the Crown Estates and the Parish Council. Appropriate new development which facilitates these aims will be supported.’*
- 6.3.28 Within the Amended Core Strategy further consideration is given to cultural heritage within Core Policies 5, 7 and 14 and Spatial Policies 3 and 9.
- 6.3.29 The strategy has been accounted for in the assessment and has informed stakeholder engagement and the recommendations and mitigation measures set out in this chapter.

National Highways Policy

- 6.3.30 Cultural heritage is one of the environmental topic areas where the six strategic levers of National Highways’ Environment Strategy¹⁴ will be applied. These strategic levers include:
- leadership and culture
 - health, safety and wellbeing
 - engaging stakeholders
 - design quality
 - asset knowledge
 - *appraisal*, evaluation and performance
- 6.3.31 The strategic levers have been developed in consultation with historic environment stakeholders and are relevant to this assessment as they make a contribution towards National Highways’ environmental vision to protect and improve the environment during the operation, maintenance and improvement of their roads.

¹⁴ Highways England (2017) Environment Strategy, Revision 1 [online] available at: [Environment Strategy 21 .pdf \(publishing.service.gov.uk\)](#) (last accessed December 2023).

Standards and Guidance

6.3.32 The method for determining and appraising the cultural heritage resource has involved both desk study and baseline survey. The assessment has been undertaken in accordance with the published standards and guidance set out below:

- National Highways' 'People, Places and Processes: A guide to good design at National Highways'¹⁵ sets out a vision, which aims to put people at the *heart* of National Highways' work, by designing an inclusive, resilient and sustainable road network. This road network should be appreciated for its usefulness but also its elegance, reflecting in its design the beauty of the natural, built and historic environment through which it passes, and enhancing it where possible. The accompanying set of principles for good road design follow the themes of people, places and processes. The focus on good design seeks to make a difference to both road users and the communities through which the roads pass, while being sensitive to the context of a road's surroundings. The road should contribute to higher quality of life, greater economic vitality and a more efficient use of resources.
- National Highways DMRB, LA 104 'Environmental assessment and monitoring'¹⁶ and LA 106 'Cultural Heritage' (updated 2020)¹⁷. These standards set out the requirements for environmental assessment of schemes, including reporting and monitoring of significant adverse environmental effects. LA106 sets out the standard with specific reference to the cultural heritage resource.
- Transport Analysis Guidance (TAG) Environmental Impact Appraisal (TAG Unit A3).¹⁸ This sets out guidance for appraising the impact of transport proposals on the environmental resource. The method for appraising cultural heritage is addressed within Chapter 8 'Impacts on the Historic Environment' of this guidance.
- Chartered Institute for Archaeologists (CIfA), Standards and Guidance for historic desk-based assessments (updated 2020).¹⁹ This document defines good practice for the execution and reporting of DBAs. It sets out the requirements to determine, as far as reasonably possible, the

¹⁵ National Highways (2022) People, places and processes: A guide to good design at National Highways [online] available at: [People, places and processes \(nationalhighways.co.uk\)](https://www.nationalhighways.co.uk/people-places-and-processes) (last accessed December 2023).

¹⁶ National Highways (2020) DMRB LA 104 – Environmental Assessment and Monitoring, Revision 1 [online] available at: [LA 104 - Environmental assessment and monitoring \(standardsforhighways.co.uk\)](https://standardsforhighways.co.uk/la-104-environmental-assessment-and-monitoring) (last accessed December 2023).

¹⁷ National Highways (2020) DMRB LA 106 – Cultural Heritage Assessment, Revision 1 [online] available at: [LA 106 - Cultural heritage assessment \(standardsforhighways.co.uk\)](https://standardsforhighways.co.uk/la-106-cultural-heritage-assessment) (last accessed December 2023).

¹⁸ Department for Transport (2022) Environmental Impact Appraisal [online] available at: [TAG UNIT A3 Environmental Impact Appraisal \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/115444/TAG_UNIT_A3_Environmental_Impact_Appraisal.pdf) (last accessed December 2023).

¹⁹ Chartered Institute for Archaeologists (2014, updated 2017) Standard and Guidance for desk-based assessment [online] available at: <https://www.archaeologists.net/codes/cifa> (last accessed December 2023).

nature, extent and significance of the historic environment within a specified area.

- ClfA, Institute of Historic Building Conservation (IHBC) and Institute of Environmental Management and Assessment (IEMA) (2021) Principles of Cultural Heritage Impact Assessment.²⁰ This document sets out guidance for understanding heritage assets and evaluating the consequence of change, through understanding change, assessing impact and weighting the effect.
- Historic England, Conservation Principles (2008).²¹ This document provides a framework and guidance for sustainable management of the historic environment.
- Historic England, Good Practice Advice in Planning Note 2: Managing Significance in the Decision-Taking in the Historic Environment (2015).²² This document outlines information to implement historic environment policy, including assessing the significance of heritage assets.
- Historic England, Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2017).²³ This document outlines information to implement historic environment policy, specifically related to the assessment of setting and its contribution to the value of heritage assets.
- Historic England Statements of Heritage Significance: Note 12 Analysing Significance in Heritage Assets (2019).²⁴ This advice note provides information on the analysis and assessment of heritage significance, in line with the NPPF.

6.4 Consultation

6.4.1 This assessment has been undertaken in consultation with the following cultural heritage stakeholders:

- Nottinghamshire County Council's Senior Practitioner Archaeology and Senior Practitioner Historic Buildings

²⁰ Chartered Institute for Archaeologists (ClfA), Institute of Historic Building Conservation (IHBC) & Institute of Environmental Management and Assessment (IEMA) (2021) Principles of Cultural Heritage Impact Assessment in the UK [online] available at: [Principles-of-CHIA-V2\[4\].pdf \(ihbc.org.uk\)](#) (last accessed December 2023).

²¹ Historic England (2008) Conservation Principles, Policies and Guidance [online] available at: [Conservation Principles, Policies and Guidance \(historicengland.org.uk\)](#) (last accessed December 2023).

²² Historic England (2015) Managing Significance in Decision-Taking in the Historic Environment [online] available at: [Managing Significance in Decision-Taking in the Historic Environment \(historicengland.org.uk\)](#) (last accessed December 2023).

²³ Historic England (2017) The Setting of Heritage Assets [online] available at: [The Setting of Heritage Assets \(historicengland.org.uk\)](#) (last accessed December 2023).

²⁴ Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets [online] available at: [Statements of Heritage Significance: Analysing Significance in Heritage Assets \(historicengland.org.uk\)](#) (last accessed December 2023).

- Newark & Sherwood District Council's Historic Environment Officer and Senior Conservation Officer
- Historic England's Inspector of Ancient Monuments and Development Advice Team Leader (North) Midlands
- Historic England's Science Advisor (East Midlands)

6.4.2 Consultation during the Options Appraisal stage (which is further detailed in Chapter 3 (Assessment of Alternatives) of this ES) took place as best practice to inform the options, including consultation with Historic England and the Nottinghamshire County Council Senior Practitioner Archaeology. Consultation meetings in early 2021 between National Highways and the Nottinghamshire County Council Senior Practitioner Archaeology identified the need for continuity in the treatment of any new archaeological remains associated with the early prehistoric remains previously recorded at Farndon, as well as a need to understand the contributions of setting to the heritage value of the scheduled monuments pertinent to the Scheme, particularly as relating to the English Civil War.²⁵ This includes understanding how the scheduled monuments relate to the non-designated heritage assets from the same era, all of which combine to create a distinctive heritage for Newark associated with the English Civil War.

6.4.3 Following the preferred route announcement in February 2022, engagement continued with the Nottinghamshire County Council Senior Practitioner Archaeology. Previous consultation in early 2021 identified the need for an Archaeological Management Plan (AMP) to be produced for the selected route option. The aim of the document would be to act as an over-arching Written Scheme of Investigation (WSI) to guide the identification, evaluation, recording and preservation of archaeological remains impacted by the selected route option during construction and operation. On 2 March 2022 a meeting with the Nottinghamshire County Council Senior Practitioner Archaeology took place to discuss the scope of works to be covered by the AMP. During the meeting it was agreed that a programme of geophysical, metal detector and field walking surveys alongside a geoarchaeological desk-based assessment (referred to within the AMP [REP5-026] as Phase 1 works) would be undertaken to inform the baseline set out within the Cultural Heritage ES chapter. This would be followed by a programme of site-based geoarchaeological coring and trial trenching (referred to within the AMP [REP5-026] as Phase 2 works) to enhance the baseline and inform the preparation of the archaeological mitigation strategy (referred to within the AMP [REP5-026] as Phase 3 works) for post consent investigations required during the pre-commencement and construction stages of the Scheme. The agreed scope for each completed phase of the

²⁵ The English Civil Wars comprised three wars, which were fought between Charles I and Parliament between 1642 and 1651. The wars were part of a wider conflict involving Wales, Scotland and Ireland, known as the Wars of the Three Kingdoms.

investigations is documented within Chapters 4 and 5 of the AMP [REP5-026]. The aims, objectives and methodology for these investigations are set out within the task specific WSI's contained as Appendix B, C, D, E, F and G of the AMP [REP5-026].

- 6.4.4 Subsequent to the March 2022 meeting with Nottinghamshire County Council, the Applicant was informed that the principal historic environment stakeholder for the Scheme would be Newark & Sherwood District Council. On 20 July 2022 the Applicant held an online introduction meeting with the Newark & Sherwood District Council Historic Environment Officer to discuss the work undertaken to date and to present the scope for the metal detector, fieldwalking and geophysical surveys. Following this meeting the task specific WSIs for the Phase 1 preliminary surveys were issued to the Nottinghamshire County Council Senior Practitioner Archaeology and the Newark & Sherwood District Council Historic Environment Officer for approval. The WSI's were accepted prior to the commencement of the surveys and are contained within Appendix B, C and D of the AMP [REP5-026].
- 6.4.5 On 21 July 2022 an online meeting was held with Historic England and the Newark & Sherwood District Council Senior Conservation Officer to discuss the proposed visual receptors. The inclusion of additional receptors was discussed, and agreement reached on the visual receptors to inform the assessment.
- 6.4.6 On 5 August 2022 further engagement with the Newark & Sherwood District Council Senior Conservation Officer was undertaken to discuss the direct impacts to built heritage assets anticipated as a result of the Scheme, specifically two sections of the Grade II listed Causeway Arches (known locally as Smeaton's Arches) and the Averham, Kelham, Newark, and Winthorpe Conservation Areas. In this meeting the impact of the Scheme upon the wider setting of Newark-on-Trent as approached from the Great North Road was identified as requiring assessment. The potential impacts to the Causeway Arches were accepted and the modern repair work from vehicle crashes on the western parapet were noted. It was advised by the Newark & Sherwood District Council Conservation Officer that impacts should be restricted to the western side where possible.
- 6.4.7 As part of the Environmental Technical Working Group meeting on the 18 January 2023, further engagement took place with the Nottinghamshire County Council Senior Practitioner Archaeology and the Newark & Sherwood District Council Historic Environment Officer to present the results of the metal detector surveys, fieldwalking, and geophysical surveys undertaken in September 2022 and January and February 2023 and to present the scope for the proposed geoarchaeological assessment and subsequent trial trenching. It was noted by the Newark & Sherwood District Council Historic Environment Officer that the sparsity of metal finds from the Civil War period may be due to previous undeclared metal detecting in these

areas. The Nottinghamshire County Council Senior Practitioner Archaeology also raised questions regarding the scope of the geoarchaeological assessment and agreement was made that a dedicated geoarchaeological session would be beneficial. Subsequent to this meeting a dedicated geoarchaeological session was arranged for February 2023.

- 6.4.8 On 9 February 2023 an online geoarchaeological review session took place, attended by the Nottinghamshire County Council Senior Practitioner Archaeology, the Newark & Sherwood District Council Historic Environment Officer, and Historic England Inspector of Ancient Monuments for (North) Midlands. The aim of the session was to discuss the desk-based geoarchaeological assessment work undertaken to date, the scope for further site based geoarchaeological assessment and the proposed next steps. The conclusion of the meeting was that further site based geoarchaeological assessment would be required in order to fully understand the geoarchaeological potential of the Order Limits of the Scheme and to inform the impact assessment.
- 6.4.9 In February 2023 additional telephone conversations were had with the Newark & Sherwood District Council Senior Conservation Officer to understand the potential impacts of the Scheme on the Heritage at Risk Status of Newark Conservation Area and Newark Castle. The assets are deemed to be at risk from neglect and decay (the castle) and economic downturn (the Conservation Area). It was the opinion of the Newark & Sherwood District Council Conservation Officer that better connectivity to Newark-on-Trent could improve the economic resilience of the area, and lead to regeneration for historic sites. However, these assets were not assessed as having significant effects as a result of the current Scheme.
- 6.4.10 In response to several emails from the Nottinghamshire County Council Senior Practitioner Archaeology, an online geoarchaeological update session was held on 20 April 2023. The meeting was attended by the Nottinghamshire County Council Senior Practitioner Archaeology, the Newark & Sherwood District Council Historic Environment Officer, and Historic England Inspector of Ancient Monuments and Science Advisor for (North) Midlands. The aim of the session was to discuss the methodology for a programme of geoarchaeological coring to inform the cultural heritage assessment. The stakeholders raised concerns that the proposed number of cores was not sufficient to inform the assessment and that it would be beneficial to seek guidance from locally experienced geoarchaeologists based at York Archaeological Trust (YAT). Following the meeting, engagement with YAT was undertaken by the Applicant and a detailed WSI was produced for the geoarchaeological coring, which is contained within Appendix F of the AMP [REP5-026]. This WSI was issued to the Nottinghamshire County Council Senior Practitioner Archaeology and Newark & Sherwood District Council

Historic Environment Officer for approval on 27 April 2023. The WSI was subsequently updated to take into account stakeholder review comments and was reissued and approved on 3 May 2023. Between 4 and 22 May 2023 a programme of geoarchaeological coring was undertaken to understand the geoarchaeological potential of the land within the Order Limits and inform the assessment of effects. The results of this investigation are detailed within Appendix K of Appendix 6.1 Cultural Heritage Desk-Based Assessment (DBA) of the ES Appendices [AS-099] and are summarised in Section 6.8 below.

- 6.4.11 On 3 May 2023, a further consultation was held with the Newark & Sherwood District Council Senior Conservation Officer. The purpose of the meeting was to confirm the assessment methodology and discuss assessed impacts and effects with stakeholders. Apologies were received from Historic England and the Nottinghamshire County Council Senior Practitioner Historic Buildings who were unable to attend the meeting. However, the meeting minutes and presentation were emailed to Historic England and the Nottinghamshire County Council Senior Practitioner Historic Buildings for comment. The conclusion of the meeting was that the Newark & Sherwood District Council Senior Conservation Officer agreed in principle with the assessment of effects on built heritage and the Nottinghamshire County Council Senior Practitioner Historic Buildings, confirmed via email on 22 June 2023 that they were in agreement with Newark & Sherwood District Council Senior Conservation Officer and had no further comments to add.
- 6.4.12 On 8 June 2023 a further online consultation session was led by the Applicant and attended by the Nottinghamshire County Council Senior Practitioner Archaeology, the Newark & Sherwood District Council Historic Environment Officer, and Historic England Inspector of Ancient Monuments and Science Advisor for (North) Midlands. The aim of the session was to discuss the results of the geoarchaeological coring and the methodology and programming for the trial trenching and test pitting proposed for Autumn/Winter 2023. The stakeholders were happy with the progress made on the geoarchaeological investigations and agreed with the proposed methodology and programme for the trial trenching and test pitting as set out in Chapter 5 of the AMP [REP5-026]. The stakeholders asked for assurances that the trial trenching would be undertaken by suitably qualified and experienced archaeologists, that geoarchaeologists should be present during any excavation in areas of potential palaeolithic remains/deposits, and that field walking and hand dug test pits should be undertaken prior to trenching in areas of palaeolithic potential. This was accepted and assurances secured within the task specific WSI contained within Appendix G of the AMP [REP5-026]. It was accepted that the results of the trial trenching, test pitting and palaeoenvironmental analysis and radiocarbon dating of samples taken during the geoarchaeological coring would be provided to stakeholders as part of the preparation of the Phase 3 archaeological

mitigation strategy which will form Chapter 6 of the AMP [REP5-026]. The final issue raised during the meeting concerned the location of the temporary satellite compound at Farndon. The stakeholders revealed that significant palaeolithic deposits of national importance may be present at this location and their preference would be to relocate the compound to a different location. Agreement was made to set up another meeting to discuss this issue further and assurances were made that the importance of these deposits and the potential impacts which may affect them, had been assessed within this chapter.

- 6.4.13 On 30 June 2023 an online archaeological session, focused on the Late Upper Palaeolithic (LUP) site at Farndon Fields, was led by the Applicant and attended by a representative for the Nottinghamshire County Council Senior Practitioner Archaeology, the Newark & Sherwood District Council Historic Environment Officer, and Historic England Inspector of Ancient Monuments for (North) Midlands. The aim of the session was to discuss the location of the temporary satellite compound at Farndon and to understand the archaeological mitigation requirements for this section of the Scheme. The stakeholders confirmed that as part of the 2009 Newark to Widmerpool Improvement Scheme, areas of 'preservation in-situ' had been established at Farndon Fields and as such there was potential for significant archaeological remains in the form of nationally important LUP flint scatters to be present in topsoil and subsoil deposits within the compound area. These areas of 'preservation in-situ' are not currently recorded within the Nottinghamshire HER and a review of the technical reports and Environmental Statement produced for the Widmerpool Improvement Scheme, do not illustrate these areas, as such it is unclear if the compound site falls within an area of 'preservation in situ'. The conclusion of the meeting was that the stakeholders' preferred option would be for the compound site to be relocated to avoid disturbing archaeological remains which may be present in this location. Agreement was made for the Applicant to take some time to look into possible alternatives and to set up a second online session to discuss this before DCO submission. The Farndon satellite compound has now been relocated to the centre of Farndon Roundabout based on the heritage concerns and as such there will no longer be any impact upon the Late Upper Palaeolithic (LUP) site at Farndon Fields; this change has been described further in Chapter 3 (Assessment of Alternatives) of this ES.
- 6.4.14 On 20 September 2023 further consultation was undertaken with the Newark & Sherwood District Council Senior Conservation Officer and the Nottinghamshire County Council Senior Practitioner Historic Buildings to discuss building recording, structural monitoring and proposed rebuild for the Causeway Arches 500m north-west of the Level Crossing (MM228), known locally as Smeaton's Arches. All parties were in agreement with the requirements identified and the approach discussed as set out in paragraph 6.10.11 of this chapter. It

was also agreed that, due to a further understanding of the engineering works, such measures are no longer required for or applied to the Causeway Arches 650m north-west of the Level Crossing (MM141) and this is reflected in the impact assessment presented in this chapter.

6.5 Assessment methodology

- 6.5.1 This section describes the methodology which has been used for the assessment of the heritage assets which may be affected by the construction and operation of the Scheme.
- 6.5.2 For assessing construction phase effects, the baseline year should be chosen to represent the conditions prior to construction starting. For the historic environment this includes direct physical impacts on heritage assets and archaeology during the construction phase and the physical presence of the Scheme, including what structures may look like in the landscape and changes arising to the setting of cultural heritage assets.
- 6.5.3 For assessing operation phase effects, the baseline year should be chosen to represent the situation prior to any effect arising from opening the project to traffic. For the historic environment this includes those effects such as the presence, noise and emissions of traffic and presence of lighting and changes to the setting of cultural heritage assets.
- 6.5.4 The methodology was presented within Chapter 7 of the EIA Environmental Scoping Report²⁶ issued to the Planning Inspectorate in September 2022. The EIA Scoping Opinion [APP-189] was published in October 2022. A schedule of responses detailing how each of the Scoping Opinion comments has been considered as part of this chapter is contained within Appendix 4.1 (Schedule of Scoping Opinion Comments and Responses) of the ES Appendices [APP-125]. No amendments to the methodology as presented within the EIA Scoping Report have been necessary, however some new clarification text has been added to paragraphs 6.5.6, 6.5.10 and 6.5.11 of this chapter.
- 6.5.5 For the purpose of this assessment, both designated and non-designated heritage assets identified within the Order Limits of the Scheme and associated study areas detailed in Section 6.7 of this Chapter have been divided into three types of heritage asset:
- Archaeological remains, which include scheduled monuments, and non-designated archaeological remains

²⁶ National Highways (2022) Regional Delivery Partnership A46 Newark Bypass: Environmental Scoping Report, August 2022, (Document Reference: HE551478-MOTG-EGN-CONWI_CONW-RP-LE-00015) [online] available at: [TR010065-000002-A46N - Scoping Report.pdf \(planninginspectorate.gov.uk\)](https://www.planninginspectorate.gov.uk/tr010065-000002-A46N-Scoping-Report.pdf).

- Historic buildings, which include listed and non-designated buildings and conservation areas
 - Historic landscapes, which includes registered battlefields and registered parks and gardens and non-designated landscapes such as parkland
- 6.5.6 This assessment has been undertaken in accordance with DMRB: LA104 Environmental assessment and monitoring;²⁷ and LA 106 Cultural heritage assessment.²⁸

Baseline and surveys

- 6.5.7 In consultation with the cultural heritage stakeholders identified in Section 6.4 of this chapter, the following steps have been undertaken to develop an understanding of the heritage assets within the Order Limits of the Scheme and associated study areas, and the impacts upon them during both construction and operation:
- Production of a detailed Cultural Heritage DBA in line with DMRB LA 106,²⁹ Paragraphs 3.8 to 3.91, to determine the nature, extent, and significance of the historic environment within an appropriate study area. The study areas for the Scheme are defined in Section 6.7 of this Chapter and the DBA is presented within Appendix 6.1 Cultural Heritage DBA of the ES Appendices [AS-099].
 - Undertaking of a site walkover survey to ground truth above ground features identified through the DBA, and to understand the setting of the key heritage assets along the route. The results of this walkover are presented Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].
 - Undertaking of archaeological surveys to further determine the potential for and extent of any unknown archaeological features and palaeoenvironmental deposits. These include metal detector, fieldwalking and geophysical surveys, a programme of geoarchaeological assessment in the form of coring and archaeological monitoring undertaken during Ground Investigations at the Kelham and Averham Floodplain Compensation Area. The technical reports produced for these surveys are presented within Appendices D to K of Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].
- 6.5.8 Further in-depth analysis of the design of the Scheme has been undertaken in order to understand the potential impacts on

²⁷ National Highways (2020) DMRB LA 104 – Environmental Assessment and Monitoring, Revision 1 [online] available at: [LA 104 - Environmental assessment and monitoring \(standardsforhighways.co.uk\)](https://standardsforhighways.co.uk/la104/) (last accessed December 2023).

²⁸ National Highways (2020) DMRB LA 106 – Cultural Heritage Assessment, Revision 1 [online] available at: [LA 106 - Cultural heritage assessment \(standardsforhighways.co.uk\)](https://standardsforhighways.co.uk/la106/) (last accessed December 2023).

²⁹ National Highways (2020) DMRB LA 106 – Cultural Heritage Assessment, Revision 1 [online] available at: [LA 106 - Cultural heritage assessment \(standardsforhighways.co.uk\)](https://standardsforhighways.co.uk/la106/) (last accessed December 2023).

archaeological remains, historic buildings and historic landscapes. This has included quarterly Environmental Technical Working Group sessions with stakeholders (as described within Appendix 4.3 (Record of Environmental Engagement) of the ES Appendices [APP-127]), weekly internal environmental design calls, and focused, internal topic specific workshops, consulting the landscape, road drainage and water environment, biodiversity and noise teams to ensure that the proposed construction of the Scheme does not cause adverse impact or effect on heritage assets. Outcomes included improved planting to the west of Lowwood (MM053) and Winthorpe Conservation Area (MM432), an understanding of the approach of the field drain so as not to impact on the curtilage wall to the Church of St Wilfrid, Kelham (MM024) and discussions and understanding on noise assessments and need for noise mitigation at Lowwood (MM053) and Winthorpe Conservation Area (MM32) in particular. Further details are contained within Section 2.5 of Chapter 2 (The Scheme) of this ES.

Assessment of value/sensitivity

- 6.5.9 Within national planning policy and guidance, the value attributed to a heritage asset is referred to as its 'significance'. To prevent confusion with EIA terminology regarding 'significance of effect' this assessment will use the phrase 'heritage value' in place of 'significance' when referring to heritage assets. The definition attributed to 'heritage value' remains unchanged from that attributed to 'significance' in national planning policy and guidance.
- 6.5.10 The assessment of heritage value has been based on professional judgement informed by the criteria outlined in Table 6-1 below. It takes into account the Secretary of State's non-statutory criteria for the scheduling of ancient monuments and principles of selection criteria for listed buildings, alongside Historic England Good Practice Advice: Note 2 Managing Significance in Decision-Taking in the Historic Environment³⁰ and Note 12 Statements of Heritage Significance: Analysing Significance in Heritage Assets.³¹
- 6.5.11 The contribution of the setting to the value of heritage assets was assessed in accordance with Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets.³²
- 6.5.12 The assessment has also considered that occasionally some heritage assets have a lower or higher than normal heritage value within a

³⁰ Historic England (2015) Historic Environment Good Practice Advice in Planning Note 2 Managing Significance in Decision Taking in the Historic Environment [online] available at: [Managing Significance in Decision-Taking in the Historic Environment \(historicengland.org.uk\)](https://historicengland.org.uk/images-books/publications/managing-significance-in-decision-taking-in-the-historic-environment/) (last accessed December 2023).

³¹ Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets [online] available at <https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/>

³² Historic Environment (2017) *Historic Environment Good Practice Advice in Planning Note 3 The Setting of Heritage Assets 2nd ed.* [online] [The Setting of Heritage Assets | Historic England](https://historicengland.org.uk/images-books/publications/the-setting-of-heritage-assets/) (last accessed December 2023).

local context. The assessment of heritage value therefore needs to take into account the part of the heritage asset that is being affected and the ability of the heritage asset to absorb change without compromising the understanding or appreciation of the historic environment.

Table 6-1: Criteria for assessing heritage value

Value	Typical criteria
Very High	Very high importance and rarity, international scale. These include world heritage sites, heritage assets of acknowledged international importance and heritage assets that can contribute significantly to acknowledged international research objectives.
High	High importance and rarity, national scale. Scheduled monuments, grade I, II* and II listed buildings, registered parks and gardens, conservation areas and registered battlefields where the heritage asset and its setting retain archaeological, architectural, artistic and historic interest which contributes to their value. Non-designated monuments, sites or landscapes that can be shown to have specific nationally important qualities and heritage assets that can contribute significantly to national research objectives.
Medium	Medium importance and rarity, regional scale. Registered parks and gardens, conservation areas and registered battlefields where the heritage asset and its setting retain less archaeological, architectural, artistic and/or historic interest which contributes to a lesser extent of their value. Non-designated sites of regional importance identified through research or survey, monuments or sites that can be shown to have important qualities in their fabric or historical association.
Low	Low or medium importance and rarity, local scale. Non-designated assets – buildings, structures, monuments, or archaeological sites with a local importance for education or cultural appreciation, and which add to local archaeological and historic research. Very badly damaged assets that are of such poor quality that they cannot be classed as high or medium, parks and gardens of local interest
Negligible	Very low importance and rarity, local scale. Heritage resources identified as being of little archaeological, architectural, artistic or historic interest, heritage assets whose importance is compromised by poor preservation or survival or by contextual associations to justify inclusion into a higher grade.

Source: DMRB LA 104³³

Assessment of magnitude of impact

- 6.5.13 The magnitude of impact on heritage assets from the Scheme has been assessed in accordance with the criteria presented in Table 6-2 below.
- 6.5.14 The terminology set out in the NPSNN and NPPF lacks sufficient detail to enable in-depth consideration of the magnitude of impact on all heritage assets. Therefore, the application of a scale of impact (major, moderate, minor, negligible or none) which can be both harmful and beneficial, can be considered a suitable framework with

³³ National Highways (2020) DMRB LA 104 – Environmental Assessment and Monitoring, Revision 1 [online] available at: [LA 104 - Environmental assessment and monitoring \(standardsforhighways.co.uk\)](https://standardsforhighways.co.uk/LA_104_-_Environmental_assessment_and_monitoring) (last accessed December 2023).

which the magnitude of impact can be assessed, as outlined below in Table 6-2. This is in line with standard EIA methodologies and best practice as presented in DMRB, LA104.

- 6.5.15 This methodology has been applied within this assessment to determine the level of impact on each individual heritage asset.

Table 6-2: Criteria for assessing the magnitude of impact

Magnitude		Criteria
Major	Adverse	Total loss or fundamental alteration to a heritage asset's value or setting. Addition of new features that substantially and detrimentally alter the setting of a heritage asset.
	Beneficial	Changes that are extremely beneficial to the heritage value of the asset. Comprehensive changes to the setting of the asset which greatly reveal and enhance its heritage value.
Moderate	Adverse	Partial loss or alteration to a heritage asset or its setting. Addition of new features that form largely inconspicuous elements in the setting of a heritage asset to the extent that its significance is slightly impacted.
	Beneficial	Changes that are beneficial to the heritage value of the asset. Changes that result in the setting of the asset being noticeably enhanced and improving the ability to understand the asset and its historic context and setting.
Minor	Adverse	Minor loss of an element of a heritage asset or its setting. Addition of new features that form largely inconspicuous elements in the setting of a heritage asset to the extent that its significance is slightly impacted.
	Beneficial	Changes that have a limited benefit to the heritage value of the asset. Changes to the setting of the asset which have a slight beneficial impact on heritage value and enhance the ability to understand the asset its historic context and setting.
Negligible	Adverse	Very minor loss of elements of a heritage asset or its setting. Addition of new features that do not alter the setting of a heritage asset.
	Beneficial	Very minor enhancements to the heritage asset or its setting that help slightly to better reveal the asset's heritage value.
No change		No change to the heritage asset.

Source: DMRB (2020), LA 104 –Environmental assessment and monitoring Revision 1: Table 3.4N.

Assessment of Significance of effect

6.5.16 The significance of effect has been established by combining the assessment of both the heritage value of a heritage asset, with the magnitude of the impact. This allows the prediction of the significance of the effect, as shown in Table 6-3 below, where there are two potential outcomes, professional judgement is used to determine which is the more appropriate. These effects can be direct or indirect, beneficial or adverse, and temporary or permanent, depending on the nature of the development, mitigation measures, and any enhancement measures proposed. In accordance with DMRB guidance, moderate, large, or very large effects are considered significant in terms of EIA.

Table 6-3: Criteria for assessing significance of effect

Magnitude of impact						
Value / sensitivity		No Change	Negligible	Minor	Moderate	Major
	Very High	Neutral	Slight	Moderate / Large	Large / Very Large	Very Large
	High	Neutral	Slight	Moderate / Slight	Moderate / Large	Large / Very Large
	Medium	Neutral	Neutral / Slight	Slight	Moderate	Moderate / Large
	Low	Neutral	Neutral / Slight	Neutral / Slight	Slight	Slight / Moderate
	Negligible	Neutral	Neutral	Neutral / Slight	Neutral / Slight	Slight

Source: DMRB LA 104 - Section Environmental assessment and monitoring Revision 1: Table 3.8.1

Total loss, substantial harm and less than substantial harm

- 6.5.17 Paragraphs 5.128 to 5.136 of the 2015 NPSNN and paragraphs 212-216 of the NPPF outline the process of decision-making that should be considered by the Secretary of State when determining an application.
- 6.5.18 Paragraph 5.1.132 of the 2015 NPSNN requires that *“any harmful impacts on the value of heritage assets should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss”*.
- 6.5.19 Paragraph 5.1.133 of the 2015 NPSNN states *“where the proposed development will lead to “substantial harm” to, or total loss of significance of a designated heritage asset, consent should be refused unless it can be demonstrated that the substantial harm or loss of value is necessary in order to deliver substantial public benefits that outweigh that loss or harm”*.
- 6.5.20 Paragraph 5.1.134 of the 2015 NPSNN states *“where the proposed development will lead to “less than substantial harm” to the value of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use”*.
- 6.5.21 Paragraph 216 of the NPPF states that when *“weighing applications that directly or indirectly affect 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”*. In line with paragraph 5.124 of the 2015 NPSNN, non-designated heritage assets

of archaeological interest that are demonstrably of equivalent significance (heritage value) to scheduled monuments, should be considered subject to the policies for designated heritage assets, and should be protected. Those of lower heritage value that are removed or partially removed will be recorded in line with paragraphs 5.139 to 5.142 of the 2015 NPSNN.

- 6.5.22 The assessment criteria, described above, considers the significance of effect caused by an impact to a heritage asset. A significant effect to a designated heritage asset may not always result in substantial harm and there is not a direct correlation between the two assessments. The measure of substantial harm is high. This can include significant physical impacts or alteration to setting, such that its heritage value is substantially altered. Professional judgement based on experience has been used to determine whether the development proposes substantial or less than substantial harm to relevant designated assets. This is defined during the assessment.

6.6 Assessment assumptions and limitations

- 6.6.1 The assessment has been based on the Scheme description and construction strategy presented in Chapter 2 (The Scheme) of this ES and has taken into account the lateral limits of deviation illustrated on the Works Plans [REP3-002] and vertical limits of deviation secured under Article 10 of the draft DCO [REP6-004] to establish a realistic worst case assessment scenario.
- 6.6.2 The assessment is reliant on available data. Designated heritage asset data taken from the National Heritage List for England (NHLE) as maintained by Historic England and is up to date as of June 2023. Non-designated heritage asset data is taken from Nottinghamshire Historic Environment Record (HER), which was acquired in August 2022. This data has been used to provide a background to the surveys undertaken and to inform the Scheme development. A continuous process of stakeholder consultation has been undertaken which has highlighted additional archaeological assets and survey work.
- 6.6.3 Data has been gathered from a series of non-intrusive and intrusive archaeological surveys undertaken by the appointed archaeological contractor. These surveys conformed to the scope set out in Phase 1 (Non-Intrusive Survey) and Phase 2 (Intrusive Survey) of the AMP [REP5-026]. The surveys included a programme of metal detector, fieldwalking and geophysical survey and geoarchaeological assessment. The surveys were conducted according to specific WSIs created for each survey by the appointed archaeological contractor and approved by the Stakeholders prior to the commencement of work. The results of these surveys are summarised in Section 6.8 of this Chapter and the technical reports produced for these surveys are

presented in Appendices D to K of the Cultural Heritage DBA, which itself forms Appendix 6.1 of the ES Appendices [AS-099].

- 6.6.4 An assessment of the potential for unknown archaeology based on available information has been undertaken as part of this ES chapter. The conclusions of the ES are based on this assessment, which presents the most likely worst case scenario in the event that buried archaeology is unearthed. However, a programme of archaeological trial trenching and test pitting investigations will be undertaken as part of the Phase 2 (Intrusive Survey) works outlined within the AMP [REP5-026]. The results will help to develop specific post consent mitigation measures to be detailed within the Phase 3 archaeological mitigation strategy, which will form Chapter 6 of the AMP, which is secured by requirement 9 of the draft DCO [REP6-004]. This approach has been accepted by heritage stakeholders including Nottinghamshire County Council, Newark & Sherwood District Council and Historic England (see Section 6.4 of this chapter for further details).
- 6.6.5 At the time of writing this assessment there was no local heritage list for Newark & Sherwood District Council.³⁴ As there are no locally listed heritage assets they have not been considered within this assessment.
- 6.6.6 The assessment has noted that the grade II listed Causeway Culvert 420 metres north-west of Level Crossing (MM389) was located in the wrong place on Historic England mapping. This was agreed during a meeting with the Newark & Sherwood District Council Conservation Officer in July 2022. It is noted that the most recent online Historic England mapping now shows the culvert in the correct location.
- 6.6.7 The results of the geophysical survey have been processed and reviewed by experienced geophysicists. The patterns and signal strengths are used to interpret the data using professional judgement and experience alongside the archaeological background. As per European Archaeological Council (EAC) guidelines a level of confidence is given alongside these interpretations.
- 6.6.8 Previous undeclared metal detecting across the Scheme study areas may have removed significant finds without record; this potential source of bias in interpreting the results of these surveys has been considered within this assessment. As such the sparsity of finds is not interpreted as a direct indicator of lessened potential for archaeological survival.
- 6.6.9 The Civil War Landscape (MM964) has been considered as a non-designated historic landscape for the purposes of the assessment. The assessment considers the setting and interconnectivity of the separate scheduled monuments that form the English Civil War

³⁴ Newark & Sherwood District Council (2023) Local heritage assets [online] available at: <https://www.newark-sherwooddc.gov.uk/localheritageassets/> (last accessed December 2023)

earthworks around Newark. The scheduled monuments where relevant have been considered separately.

6.7 Study area

- 6.7.1 The study areas for cultural heritage have been defined in accordance with DMRB LA 106 Cultural heritage assessment³⁵ which states that the assessment shall define a study area according to the sensitivity of the environment and the potential impacts of the Scheme. Where a new road or road improvement is proposed, the study area shall include the footprint of the Scheme plus any land outside that footprint which includes any heritage assets which could be physically affected. The study area should also include the settings of any designated or other heritage assets in the footprint of the Scheme or within the zone of visual influence. The study areas are based on professional judgement and have been agreed as sufficient by the Nottinghamshire County Council Senior Practitioner Archaeology and the Newark & Sherwood District Council Historic Environment Officer to provide a comprehensive cultural heritage baseline for the Scheme. The study areas are depicted within Figure 6.1 (Heritage Study Areas) of the ES Figures [AS-034] as well as Appendix B of Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].
- 6.7.2 Due to the range of potential impacts, as well as the variety of heritage assets expected to be affected by the Scheme, the following study areas have been defined:
- An initial study area: 500 metre buffer from the Order Limits of the Scheme has been defined to enable an understanding of all known non-designated heritage assets including archaeological remains, historic buildings and historic landscapes. It also informs the understanding for potentially as yet unknown buried archaeological remains. This study area includes the extent of any land take required by the Scheme for construction activities.
- 6.7.3 An additional study area: 1 kilometre buffer from the Order Limits of the Scheme has been defined to assess potential changes to the setting of designated heritage assets including scheduled monuments, listed buildings, registered parks and gardens and conservation areas.³⁶ While the Zone of Theoretical Visibility (ZTV) produced to support Chapter 7 (Landscape and Visual Effects) of this ES notes extensive views across the River Trent floodplain to and from the Scheme, it has been considered unlikely that heritage assets beyond 1 kilometre would have prominent or dominating views of the

³⁵ National Highways (2020) DMRB LA 106 – Cultural Heritage Assessment, Revision 1 [online] available at: [LA 106 - Cultural heritage assessment \(standardsforhighways.co.uk\)](https://standardsforhighways.co.uk/la106-cultural-heritage-assessment) (last accessed December 2023).

³⁶ No world heritage sites or registered battlefields are recorded within the Scheme study areas.

Scheme due to distance and nature of these assets, leading to the decision for a 1 kilometre study area.

6.8 Baseline conditions

- 6.8.1 Detailed baseline conditions can be found in Chapter 4 of Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099]. The location of all heritage assets contained within the Scheme study areas are illustrated in Appendix B of the Cultural Heritage DBA (which itself is contained in Appendix 6.1 of the ES Appendices, [AS-099]).
- 6.8.2 All heritage assets within the Scheme study areas have been assigned a unique identification number prefixed by MM (Mott MacDonald). This is for ease of identification and cross reference.
- 6.8.3 A full gazetteer of all heritage assets within the Scheme study areas are located within Appendix A of the Cultural Heritage DBA (which itself is contained in Appendix 6.1 of the ES Appendices, [AS-099]).
- 6.8.4 This section provides a summary of the full baseline conditions reported in Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099]. The heritage assets described here are not exhaustive, but instead this section is designed to provide an indication of the nature and likelihood of historic human occupation across the study areas.

Sources of information

- 6.8.5 The following actions were undertaken to produce the baseline that has informed this assessment:
- An examination of local, regional and national planning policies in relation to the historic environment
 - A search of the NHLE maintained by Historic England, for world heritage sites, scheduled monuments, listed buildings, registered parks and gardens and registered historic battlefields³⁷
 - A search of the Nottinghamshire HER database for both designated and non-designated heritage assets, Historic Landscape Characterisation (HLC) data and grey literature reports detailing results of previous archaeological investigations
 - An examination of the Archaeological Data Service (ADS)³⁸ digital repository for historic environment data

³⁷ Historic England (2023) The National Heritage List for England (NHLE): Search the List [online]. Available at: <https://historicengland.org.uk/listing/the-list> (last accessed December 2023).

³⁸ Archaeological Data Service (2023) Search data, [online] available at: <https://archaeologydataservice.ac.uk/search-data/> (last accessed December 2023).

- An examination of Historic England's Heritage at Risk, Midlands Register³⁹ for historic buildings and sites in Newark & Sherwood which are at risk of loss through neglect, decay or development, or are vulnerable to becoming so
- An examination of local authority plans and documentation regarding conservation areas and archaeological priority areas
- An examination of relevant published and unpublished archaeological and historic sources for example journals and historic records
- A visit to Nottinghamshire Archives to inspect historic cartographic sources to understand the historic land use history of the study areas, including Ordnance Survey, Tithe and earlier maps
- A review of geological data for the study areas including British Geological Survey (BGS) mapping,⁴⁰ GI factual data⁴¹ and geoarchaeological monitoring results⁴² gathered during Options Appraisal, and the geoarchaeological DBA produced during Preliminary Design⁴³
- Examination of available aerial photographs (vertical and oblique)
- An examination of Environment Agency LiDAR data⁴⁴
- A review of archaeological survey results undertaken during the Preliminary Design by the archaeological contractor appointed for the Scheme. These surveys included metal detector,⁴⁵ fieldwalking,⁴⁶ and geophysical survey⁴⁷
- A site walkover survey to ground truth above ground features identified through the LiDAR and aerial survey, and to understand the setting of the key heritage assets along the route

³⁹ Historic England (2022) Heritage at Risk: Midlands Register, [online] available at <https://historicengland.org.uk/images-books/publications/har-2022-registers/mid-har-register2022/> (last accessed December 2023).

⁴⁰ BGS (2023) BGS Geology Viewer. Available at: <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/> .

⁴¹ Tetra Tech (2022) A46 North Newark Bypass: Factual Ground Investigation Report, March 2022

⁴² York Archaeological Trust (2022) A46 Newark North Bypass Nottinghamshire: Archaeological and geoarchaeological monitoring of Ground Investigations, February 2022.

⁴³ AMS (2023) Regional Delivery Partnership A46 Newark Bypass, Geoarchaeological Desk Based Assessment, February 2023 (Ref: J3063-A).

⁴⁴ Environment Agency (2021) National LIDAR Programme [online] available at: <https://www.data.gov.uk/dataset/f0db0249-f17b-4036-9e65-309148c97ce4/national-lidar-programme> (last accessed December 2023).

⁴⁵ AMS (2023). Metal Detecting Survey Report of Lands along the A46 Newark Northern Bypass. February 2023.

⁴⁶ AMS (2023). Fieldwalking Survey Report of Lands along the A46 Newark Northern Bypass. February 2023.

⁴⁷ AMS (2022) Geophysical Survey Report of Lands along the A46 Newark Bypass. October 2022; AMS (2023) Addendum to Geophysical Survey Report of Lands along the A46 Bypass. March 2023.

Archaeological and historical background

6.8.6 Baseline research using the sources of information outlined in paragraph 6.8.5 has identified 422 designated heritage assets and 370 non-designated heritage assets within the Scheme study areas (1 kilometre study area for designated heritage assets and the 500 metres study area for non-designated heritage assets). These assets are summarised in Table 6-4 below.

Table 6-4: Summary of assets identified within the Scheme study areas

Asset Type	Number	Heritage Value
Scheduled monuments (designated)	15	High
Grade I listed buildings (designated)	7	High
Grade II* listed buildings (designated)	15	High
Grade II listed buildings (designated)	379	High
Conservation areas (designated)	5	Medium – High
Registered parks and gardens (designated)	1	High
Non-designated archaeological remains	242	Negligible - High
Non-designated historic buildings	123	Low -Medium
Non-designated historic landscapes	5	Low - Medium

Source: NHLE (2023) and Nottinghamshire HER (2022).

6.8.7 There are no known world heritage sites or registered historic battlefields within the study areas, however, the non-designated Civil War landscape surrounding Newark is considered within the assessment as a non-designated historic landscape.

Palaeolithic (500,000 to 9,500 BC)

6.8.8 During the Palaeolithic periods, cold conditions meant human occupation likely occurred on the margins of ice sheets during warmer interstadials. The raised sand and gravel terraces of the River Trent within Newark were deposited during the Ice Age and provided free-draining soils, easy access to water and a vital communication route for people during the Palaeolithic.

6.8.9 Evidence of human activity is located within the southern end of the 500 metre Scheme study area and comprises the suggested late Upper Palaeolithic open-air site at Farndon Fields (MM503). Hundreds of struck flints have been recorded within ploughsoil/topsoil and subsoil horizons within an area totaling approximately 15 hectares in extent, including evidence of in-situ Late Upper Palaeolithic worked flints, attributed to the Creswellian culture (c.12,600–12,250 BC), and the Federmesser type (12,000-11,000 BC). These flints were discovered primarily during fieldwalking, test pitting and hand augering exercises. Later fluvial activity associated with the River Trent and modern ploughing has reworked the original layers the flints were deposited within, although analysis showed that they have not been redeposited far from their original place of deposition. Analysis of artefacts recovered from Farndon suggests a

number of discrete areas of occupation and industrial activity, such as flint knapping, around possible hearths.

Mesolithic (9,500 to 4,000 BC)

- 6.8.10 Hunting and gathering of natural resources prevailed during the Mesolithic period. Climatic amelioration initiated widespread changes to vegetation during the Mesolithic period, which attracted a range of fauna species, such as red deer, aurochs, boar and elk. The well-draining soils on the raised river terraces of the River Trent remained a favourable location for human occupation on a seasonal basis.
- 6.8.11 Small communities of hunter gatherers continued to occupy the River Trent's raised river terraces on a seasonal basis. Evidence for this occupation in the form of surface lithic scatters, was recovered within the 500 metre Scheme study area, specifically Northgate (MM501) and Farndon Fields (MM502).

Neolithic or Early Bronze Age (4,000 to 1500 BC)

- 6.8.12 Communities were still living nomadic lifestyles and occupying sites on a seasonal basis during the Neolithic period, which is again recorded at Farndon Fields (MM502). However, woodland clearance as evidenced by previous archaeological studies, across this part of the Trent Valley suggests that communities began to settle more permanently and for long periods of time. Permanent settlement (MM505) was identified within the Order Limits of the Scheme, to the north-east of Winthorpe Roundabout. Evidence of structures consisted of a series of pits and postholes, producing evidence for domestic activity, including cooking and crop processing. Pottery recovered indicated that the site was lived at throughout the Neolithic and into the early Bronze Age periods.
- 6.8.13 Neolithic communities left their mark more permanently on the landscape through burying their dead in highly visible monuments, although individual burials were more common. No round barrows have been confirmed within the Order Limits of the Scheme however, two potential barrow sites have been identified through geophysical survey. These potential barrow sites include (MM937) located to the north of Winthorpe roundabout and (MM938) located to the north-west of Newark Showground.

Later Bronze Age and Iron Age (1,150 BC to AD 43)

- 6.8.14 The late Bronze Age and Iron Age periods are characterised by a major shift in landscape organisation across the 500 metre Scheme study area. Burial monuments virtually disappear across the wider landscape and occupation evidence during the earlier part of this period is largely absent. However, open settlement was likely and the start of large-scale enclosure of the landscape. From around 450 BC, there is evidence that the 500 metre Scheme study area was densely occupied, with enclosures, field systems and roundhouses across the

area. Archaeological evidence recorded within the Order Limits of the Scheme includes cropmarks and geophysical features suggestive of extensive enclosure complexes at Kelham (MM859 and MM945), Averham (MM869), Newark (MM876 and MM896) and Winthorpe (MM934).

Romano-British period (AD 43 – 410)

- 6.8.15 Much of Britain came under Roman control after AD 43 and the Roman influence is well recorded within the archaeological record of the 500 metre Scheme study area. The Fosse Way (MM507), now located beneath the route of the A46/B6166 road, was constructed in the second half of the first century AD by the Roman army and connected the legionary fortresses of Exeter (Isca) and Lincoln (Lindum).
- 6.8.16 The close proximity to a major communication route led to the establishment of a number of forts and settlements along the Fosse Way, including Ad Pontem to the south-west of Farndon, Crococalana at Brough (MM002) and a small Roman town at Newark (MM512). Excavations here have revealed that the town was occupied between the 1st and 4th centuries AD.
- 6.8.17 The tradition of rural settlement in the Iron Age continues into the Roman period. Geophysical survey undertaken within the Order Limits of the Scheme in 2022 and 2023 has identified four possible enclosure sites (MM930), (MM931), (MM932) and (MM933) located to the north of the existing A46 between its junctions with the A1 and A1133.

Early Medieval (Anglo-Saxon, AD 410 – 1066)

- 6.8.18 Following the withdrawal of Roman rule in AD 410, the region gradually fragmented into small kingdoms and large-scale immigration from the middle of the 5th century changed the political organisation of the region. The main political power that emerged in the East Midlands was the kingdom of Mercia. However, by the 9th century, East Midlands came under Danish control after Viking incursions during this period. The Scheme study areas were administered and defended from the burh (a fortified settlement) at Nottingham, however this power shifted to Newark with the establishment of a new burh in the 10th century.
- 6.8.19 There is evidence for Newark becoming a focal point for production and commerce as part of its role as a burh. Industrial activity within early medieval Newark is recorded at Kirkgate, in the form of pottery manufacturing.
- 6.8.20 Documentary and archaeological evidence is poor within the Scheme study areas for this period outside of Newark itself. Place name studies can provide an insight into settlement patterns. Place names with ‘-ham’ suffixes suggest early foci for settlement, whilst those with

'-thorp' suffixes, indicate the Scandinavian influence. The Domesday Survey of 1086 often recorded settlements that were established during the early medieval period. Both Kelham and Averham are recorded, as well as Winthorpe indicating a degree of potential for evidence of early medieval occupation in these areas.

High medieval (1066 - 1485)

- 6.8.21 Newark was a densely and permanently occupied centre of trade and industry during the medieval period, specifically for wool and cloth. The place name Newark derives from Old English for 'new work' and was created as a means to distinguish itself from an unidentified site nearby known as 'The Aldwark', recorded in 1316. Aldwark may refer to the early medieval burh at Newark.
- 6.8.22 The first Newark Castle (MM001) was built shortly after the Norman Conquest of 1066. The second Newark castle was built under the authority of the lord of the manor, Bishop Alexander of Lincoln between 1123 to 1148. Under the license granted by Henry I, permission was also granted to divert Castle Gate and build a bridge over the River Trent.
- 6.8.23 St Leonard's Hospital (MM562) was founded in around 1130, outside the walls of Newark. It was founded as a leper hospital on North Gate, close to where the East Coast mainline runs. Excavations throughout the 20th century have found traces of the hospital and the extensive cemetery which accompanied it. Around 200 burials have been recorded through 20th century salvage excavations.
- 6.8.24 A survey of the years 1225-31 reveals that the town had extended beyond the defences and suburbs had grown along the roads approaching the town.⁴⁸ This includes suburbs at North Gate and Osmundthorpe (MM558), which were focused along the western side of North Gate to the north of the town. Excavations show that properties fronted the North Gate and were defined by boundary ditches.⁴⁹ A medieval settlement is recorded at Langford (MM017) and both Averham and Kelham were occupied at this time.
- 6.8.25 There are very few areas which demonstrate surviving evidence for medieval farming practices and there are very few ridge and furrow cropmarks. Land surrounding the villages like Kelham and Averham was portioned into large open fields, which were then divided into strips. Ridge and furrow dominated the surrounding landscape during this period as it was the best practice of agricultural regime. This is evidenced in the results of geophysical survey (event reference MM1261) undertaken within the Order Limits of the Scheme at Kelham, Averham and Winthorpe which shows traces of former ridge

⁴⁸ Nicholson n. d. Newark-on-Trent. Available at: [The Nottinghamshire Heritage Gateway > Places > Newark-on-Trent > Overview \(nottsheritagegateway.org.uk\)](https://www.nottsheritagegateway.org.uk/Places/Newark-on-Trent/Overview)

⁴⁹ TPAT 2001 Romano-British and Medieval Settlement at Northgate Retail Park, Newark, Nottinghamshire.

and furrow within existing agricultural fields to the north of the A46 and A617. Possible relict field boundaries also identified during geophysical survey, may date from this period, including (MM938), (MM942) and (MM944).

Post Medieval (1485 - 1750)

- 6.8.26 During the post-medieval period, Newark became the county's second town. By 1549, its population had grown to 2,700 and derived its wealth from trade in a variety of goods, brought along the well-connected road and river network. Documentary evidence recorded corn mills and a fulling mill during this period.⁵⁰
- 6.8.27 This strategic position meant that Newark played a pivotal role during the English Civil War (1642-1646).⁵¹ The town controlled the river crossing that linked York and the north with London and King Charles I headquarters in Oxford. Newark was a Royalist stronghold and was besieged on three separate occasions in 1643, 1644 and 1646.
- 6.8.28 Newark is surrounded by the below ground and earthwork remains of offensive and defensive fieldworks which were raised during the Civil War. The Royalists anticipated attack during the earlier part of the war, by constructing a new defensive circuit beyond the medieval walls (MM595) in the winter of 1642. Following the 1644 siege, a number of defence works, known as sconces were also raised in defence of the town. This includes the Queen's Sconce (MM013) to the south of the town, the King's Sconce (MM639) which lay to the north of the town and Sandhills Sconce (MM015), which lay to the west.
- 6.8.29 The Parliamentary siegeworks were focused along and around two lines of circumvallation (MM660; MM624). The first line crosses the A46 Newark Bypass area to the south of Farndon and around the A46 where it crosses Winthorpe Road. The second line joins the first but was located to the north of Farndon. These were used in conjunction with fortifications in the surrounding villages to blockade Newark, such as those recorded at Winthorpe (MM640). These circumvallations were strengthened at intervals with supplementary fortifications, known as redoubts or bulwarks, and include the Civil War redoubt 680 metres north-west of Dairy Farm (MM009), Civil War redoubt 580 metres east-north-east of sugar refinery (MM014) and the Civil War redoubt on Crankley Point (MM011).
- 6.8.30 The fieldworks also included defences and offensive works along the River Trent. A number of offensive redoubts (such as MM011;

⁵⁰ National Archives, Articles of enquiry about the mills at Newark; the ways of bringing water again to the... SP 46/49/fo122, 1593.

⁵¹ The English Civil Wars comprised three wars, which were fought between Charles I and Parliament between 1642 and 1651. The wars were part of a wider conflict involving Wales, Scotland and Ireland, known as the Wars of the Three Kingdoms.

MM014) are located along the banks of the Trent. There are also a series of dams recorded, two of which are Royalist defences (MM646; MM647) and another which was constructed by the Parliamentarians (MM648). The Parliamentarian dam was intended to cut off the water supply to the mills of Newark, especially as some were utilised for gunpowder manufacture.

- 6.8.31 After the surrender of the King in 1646, many of the Civil War defences were demolished, except for Queen's Sconce. Newark Castle (MM001) was also largely demolished.
- 6.8.32 The Civil War Landscape (MM964) consists of the aforementioned assets and the surrounding land which remains in a broadly similar condition to how it was during the Civil War era. The Scheme crosses this landscape along the route of the existing A46.

Modern (1750 - present)

- 6.8.33 The Nottinghamshire HER identifies the modern period as post-dating 1750. Typically for this period the developments between the late post-medieval period and the modern period are difficult to discern. However, events leading to industrialisation of Newark and the Second World War stand out more significantly.
- 6.8.34 Industry continued to develop in Newark. Cartographic evidence illustrates increased development of warehouses and wharfs, multiple mills, malthouses and breweries along the River Trent and even windmills. The grade II listed Farndon Windmill (MM139) is a disused windmill dating originally to 1823, and likely produced flour like the other late 18th and early 19th century windmills in the Scheme study areas.
- 6.8.35 During the Second World War several RAF stations were constructed in the surrounding area, including RAF Winthorpe (MM848). The base opened in 1940 as a satellite for RAF Swinderby and incorporated Coddington Hall which was requisitioned by the British army in 1917. Although inactive by 1959, the accommodation quarters were still in use until the 1960s. The site is now the location of Newark Air Museum. Second World War FW3/22 pillboxes are located within the Scheme study areas, both of which are located at Kelham (MM835; MM836).
- 6.8.36 During the 20th century the area underwent extensive sand and gravel quarrying, the aftermath of which can be seen through current aerial imagery⁵² which now depicts large open excavated areas filled with water.

⁵² Google Earth Pro (2023).

Archaeological investigations

- 6.8.37 Between September 2022 and March 2023 the appointed archaeological contractor was commissioned by the Applicant to undertake a programme of archaeological survey including metal detector, fieldwalking, geophysical surveys alongside the production of a geoarchaeological DBA. This was followed by a programme of site based geoarchaeological coring undertaken in May 2023.
- 6.8.38 The aim of the surveys was to inform and support the assessment set out within this Chapter. The scope of these surveys is set out within the AMP [REP5-026]. The technical reports associated with these surveys/investigations are presented in Appendices D to I of Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].
- 6.8.39 For ease of description the Order Limits of the Scheme were divided into survey areas numbered Area 1 through to Area 51. The location of these areas are illustrated in Figure 6.3 (Survey Areas) of the ES Figures [AS-036].

Metal detector survey

- 6.8.40 Between September 2022 and January 2023, a metal detector survey (event reference MM1262) was undertaken by the appointed archaeological contractor. The survey was undertaken within the Order Limits of the Scheme, specifically targeting Areas 2 to 4, 6, and 7 to 18. The full survey report is available as Appendix E (Metal Detecting Survey Report of Lands along the A46 Newark Bypass) contained within Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].
- 6.8.41 The objectives of these surveys were to provide information about the archaeological resource within the Order Limits, including its presence/absence, character, extent, date, integrity, state of preservation and quality.
- 6.8.42 A total of 115 significant metal finds were retrieved, the earliest of which was identified as a possible Roman copper alloy bracelet or bangle and a possible end of a second bracelet which may also be of Roman date. The majority of finds discovered dated to the post-medieval period and are most likely associated with the English Civil War and the sieges of Newark between 1642 and 1646. These finds comprised of multiple musket-calibre balls, a single pistol ball, lead shot, gunflint, as well as other items such as belt buckles, several fragments from copper alloy vessels and decorative fittings. The remainder of finds largely date to the post-medieval period, comprising of coins and buttons of the 18th to 19th century.
- 6.8.43 Based on the results of this survey, only limited inferences can be drawn to the military actions involved with the various sieges of Newark during the English Civil War. It may be that previous metal detecting may have removed significant finds without record,

specifically finds relating to Civil War activity. Therefore, in interpreting the results of these surveys, it is important that these potential sources of bias are considered as a lack of metal finds may not prove conclusively that activity or settlement at a particular period is not present.

Fieldwalking survey

- 6.8.44 In January 2023, fieldwalking survey (event reference MM1263) was undertaken by the appointed archaeological contractor. The survey was undertaken within the Order Limits of the Scheme, specifically targeting Areas 2 to 4, 6 and 7. However, access to Areas 2, 3 and 7 was not available, and approximately only one third of Area 4 was not in crop. With the results of the metal detecting survey and the general paucity of significant finds from the other areas of fieldwalking it is not considered that results from these fields would have altered the assessment of this area. The full survey report including associated assumptions and limitations are available as Appendix D (Fieldwalking Survey Report of Lands along the A46 Newark Bypass) contained within Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].
- 6.8.45 The fieldwalking survey recorded 172 items, mostly pottery sherds and a few fragments of clay tobacco pipe. No prehistoric, Roman or early medieval finds were noted. The earliest finds were three sherds of medieval pottery with a date range from the 13th to 14th century. The bulk of pottery had a date range from the late eighteenth to the early twentieth century. The largest group consisted of white glazed wares, some with traces of blue transfer printed decoration, followed by Nottinghamshire stonewares and Black glazed earthenwares.
- 6.8.46 The finds assemblage did not indicate the presence of any early underlying archaeological sites, nor did it have any great concentration of finds dating to the English Civil War period. In general, the results seemed of low archaeological significance.
- 6.8.47 Subsequent to undertaking the survey, Area 4 was removed from the Order Limits of the Scheme.

Geophysical survey

- 6.8.48 Geophysical survey (event reference MM1261), comprising high-resolution magnetic gradiometry, was undertaken within the Order Limits of the Scheme by the appointed archaeological contractor between September 2022 and March 2023. The full survey reports are available as Appendix F (Phase 1 Geophysical Survey Report of Lands along the A46 Newark Northern Bypass) and Appendix G (Phase 2 Geophysical Survey Report of Lands along the A46 Newark Northern Bypass) contained within Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].

- 6.8.49 The survey was divided into two phases. Phase 1 targeted the route of the Scheme (Areas 20 to 24 and 28 to 32) and Phase 2 targeted the remaining areas along the route of the Scheme (Areas 25 to 27) and the floodplain compensation area within Kelham and Averham (Areas 48 to 51).
- 6.8.50 For ease of description each geophysical survey area has been assigned an individual MM number and the possible archaeological features within each area have been grouped under this number.

Phase 1

- 6.8.51 Within Area 20 (MM930) multiple linear features were identified, interpreted as possible Iron Age or Roman settlement enclosures and associated relict field systems. These included a network of overlapping and interconnected ditches which corresponds to cropmark monument (MM541), the footprint of several possible circular structures, as well as other discrete features comprising ditches and pits.
- 6.8.52 Within Area 21 (MM931) multiple linear features were identified, which included: a rectilinear network of ditches suggestive of possible Iron Age or Roman settlement enclosures and relict field systems associated with features identified in Area 20 (MM930); possible small circular enclosure/structure and a possible paleochannel or artificial watercourse.
- 6.8.53 Within Area 22 (MM932) a possible archaeological feature was identified, which comprised an undated flat-bottomed, 'U shaped' feature, perhaps defined by narrow ditches. The precise nature, and significance of this feature is uncertain.
- 6.8.54 Within Area 24 (MM933) possible archaeological features were identified, which included a network of 'ditch type' features, indicative of former Iron Age or Roman enclosures and/or field systems, and an undated possible bank of relict field boundary.
- 6.8.55 Within Area 28 (MM935) possible archaeological features included undated pits/spreads, possibly containing burnt or fired material.
- 6.8.56 Within Area 29 (MM936) possible archaeological features included possible pits/spreads similar to those identified in Area 29 (MM935), and a possible quarry pit not marked on historic Ordnance Survey (OS) mapping.
- 6.8.57 Within Area 30 (MM937) possible archaeological features included a ring-ditch or circular structure, and two possible circular enclosures measuring interpreted as Neolithic or Early Bronze Age in origin. A number of undated ditches and/or drains were also recorded.
- 6.8.58 Within Area 32 (MM938) possible archaeological features included two possible ditches and/or relict field boundaries assumed to be modern in origin and related to RAF Winthorpe.

Phase 2

- 6.8.59 Within Area 25 (MM942), possible archaeological features were identified, which comprised of linear ditches. The precise nature and date of these features is uncertain, however they have been interpreted as former field boundaries.
- 6.8.60 Within Area 26 (MM943), possible archaeological features were identified, which comprised of ditches which corresponded to cropmarks mapped through aerial survey and possible pits which may contain burnt material. The precise nature and date of these features is uncertain.
- 6.8.61 Within Area 27 (MM944), possible archaeological features were identified, which comprise linear ditches and possible pits. The linear features have been interpreted as former field boundaries and the pits are thought to be archaeological in origin.
- 6.8.62 Within Area 48 (MM945), possible archaeological features were identified, including a network of interconnected small enclosures, with associated pit like features. This has been interpreted as a possible enclosure or relict field system. Although undated, the morphology is similar to other identified enclosure cropmarks within the area and is likely Iron Age/Roman in date.
- 6.8.63 Within Area 49 (MM946), possible archaeological features were identified, which comprise linear ditches. The precise nature and date of these features is uncertain, however they have been interpreted as former field boundaries.
- 6.8.64 Within Area 51 (MM946), possible archaeological features were identified, which comprise a possible ditch/drainage channel or levelled bank, two narrow ditches and possible natural iron deposits. The possible ditch could derive from floodplain sediments.

Geoarchaeological monitoring

- 6.8.65 Between March 2021 and July 2021 YAT carried out monitoring on ground investigations (GI) along the route of the Scheme (event reference MM1266). The full GI monitoring report is available as Appendix H (Archaeological and Geoarchaeological Monitoring of Ground Investigations along the A46 Newark North Bypass) contained within Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099]. In addition to providing the results of the archaeological monitoring of ground investigation, the final report also includes initial deposit modelling for the Scheme Order Limits.
- 6.8.66 The original design of the works comprised the archaeological monitoring of 22 boreholes, 72 window samples, 18 machine pits, and 30 hand test pits, modified slightly on-site due to fieldwork constraints.
- 6.8.67 The basal unit of most boreholes was the mudstone bedrock, partially weathered towards the upper boundary. This weathered horizon was thickest near the Winthorpe Roundabout, adjacent to the River Trent

floodplain. This area of weathered bedrock has been identified by the archaeological monitoring report as being a potential area for dryland archaeology close to the marshy deposits of the floodplain. The only area of the Scheme where mudstone bedrock was not recorded was the area where Balderton Sands and Gravels were identified east of the A1.

- 6.8.68 Balderton Sand and Gravel was recorded exclusively east of the A1, continuing from the south through to the east of Winthorpe. This Pleistocene (MIS67/7) sequence represents some 7.00- 8.50m of deposits infilling a 1.50-3.0 kilometre-wide palaeovalley representing a former course of the River Trent between Newark and Lincoln.
- 6.8.69 Elsewhere on the Scheme the mudstone bedrock was overlain by sands and gravels which likely represent either the Pleistocene outwash deposit of the Holme Pierrepont Sands and Gravels or the Holocene Hemington Sands and Gravels which represent early Holocene reworking of the earlier sands and gravels. However, until observations can be made that demonstrate the reworking, it is to be assumed that the sands and gravels represent the earlier Pleistocene Holme Pierrepont Sands and Gravels. The high likelihood of reworking could mask former land surfaces from which archaeological features and artefacts can be preserved.
- 6.8.70 A number of boreholes, particularly in the south of the Scheme, produced evidence of waterlogged organic sediment. Subsequent comparison with lidar imagery demonstrated that these boreholes were often associated with mapped paleochannels. The formation of organic silts within these features suggests low energy or stagnant channel conditions which allowed for the gradual accumulation and preservation of organic matter. This part of the Trent Valley is characterised by lateral migration and/or avulsion (with the numerous incised paleochannels providing waterlogged natural depressions for the accumulation and preservation of organic matter. Samples were obtained from these waterlogged deposits during the monitoring work. These samples will be processed to obtain dates for when the deposits formed and to understand the vegetation history of the area. This data will be used to inform the WSI's for mitigation in areas of geoarchaeological interest as covered in Section 6.8 of the AMP [REP5-026].
- 6.8.71 Overlying the sands and gravels and the organic deposits was a fine grained minerogenic alluvial deposit, which would have formed from overbank flooding of the migrating channels of the River Trent. For the most part these deposits were highly oxidised and have low potential to preserve palaeoenvironmental remains. The highly mobile Trent Channel at this location also derives an increased possibility of sediment reworking, which can result in the movement and reburial of archaeological remains with the alluvium.

Geoarchaeological coring

- 6.8.72 Geoarchaeological coring (event reference MM1265) was carried out within the Order Limits of the Scheme by the appointed archaeological contractor between September 2022 and March 2023. This consisted of 38 purposive geoarchaeological boreholes targeting known paleochannels or floodplain alluvium. The full survey report is available as Appendix K (A46 Newark Bypass Geoarchaeological Coring Report) contained within Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].
- 6.8.73 Six boreholes (BH 9, 14, 17, 25, 35, 38) which were designed to target known paleochannels produced organic sediments, albeit organic material mixed with minerogenic sediments. However, nine other boreholes targeting paleochannels failed to produce any organic material. In contrast seven organic deposits were in borehole locations not indicated as being in paleochannels (BH 2, 4, 10, 18, 23, 24, 27).
- 6.8.74 Only one borehole (BH 31) located within the Kelham and Averham FCA produced a humified peat deposit, however this proved difficult to sample. The remaining boreholes at Kelham either produced no organic material or were shown to be in the Holme Pierrepont sands and gravels indicating that the paleochannels were further west than originally thought and unlikely to be impacted by the Scheme.
- 6.8.75 Palaeoenvironmental work and radiocarbon dating has been recommended on organic samples collected as part of this work. The methodology for this analysis is documented within the AMP [REP5-026]. The results of this analysis will be used to confirm the age, significance and level of preservation of the deposits to enhance our current understanding of the evolution of floodplain and alluvial terrace within Newark. The results will also inform the archaeological mitigation strategy for the pre-commencement and construction stages of the Scheme, which will be set out within Chapter 6 of the AMP [REP5-026]. Preparation and approval of the archaeological mitigation strategy is secured by Requirement 9 of the draft Development Consent Order [REP6-004].

Archaeological monitoring

- 6.8.76 An Archaeological Watching Brief (MM1264) was undertaken within the Order Limits of the Kelham and Averham FCA, by the appointed archaeological contractor between 9 May 2023 and 11 May 2023. The full survey report is available as Appendix J (A46 Newark Bypass GI Watching Brief Report) contained in Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099].
- 6.8.77 The work involved archaeological monitoring of seven GI trial pits, each measuring between 3.1 metres and 4.0 metres in length and 0.5 metres wide and attaining depths of between 2.2 metres and 3.0 metres. While no archaeological features were observed in any of the

pits, the work enabled observations to be made regarding the character of underlying deposits and the depth of recent overburden sealing potential archaeological layers and features.

- 6.8.78 Six of the pits were characterised by geological natural deposits of sand and gravel, likely comprising river terrace deposits, or possibly former gravel islands. Such deposits were generally first revealed around 0.5–0.7m below current ground level, being sealed beneath a simple sequence of subsoil and modern ploughsoil/topsoil; however, in S3TP38, an interface layer was recorded between the gravel and the subsoil comprising frequent small to medium-sized sub-angular stones in a reddish brown coarse sandy silt matrix. Such material may be the product of in-situ pedogenesis and could represent a relatively undisturbed soil layer that has the potential to contain archaeological artefacts. GI pit S3TP36 in Survey Area 49 was also notable for the thickness of overburden sealing natural sand and gravel with up to 1.2 metres of modern turf, topsoil and subsoil recorded.
- 6.8.79 One pit (S3TP42) in area 20 was significant for revealing over 2.0m of alluvial silts and clays overlying coarse gravel within which a small fragment of probable waterlogged wood was noted. The pit was located in an obvious low point in the landscape with pit S3TP43 to the east being higher and characterised by sand and gravel deposits beneath the subsoil and topsoil. Consequently, S3TP42 was likely excavated through a paleochannel of the River Trent. While the dates of the channel's formation and abandonment are not currently known, such deposits have the potential to produce long records of vegetation and land-use change/development as well as providing good conditions for the preservation of waterlogged remains, such as fish traps, revetments and river craft.

Designated heritage assets with the potential for likely significant effects

- 6.8.80 The route of the Scheme crosses through a landscape dense in heritage assets. Within the 1 kilometre study area the NHLE alongside the Nottinghamshire HER records 422 designated heritage assets. These assets include 15 scheduled monuments, 401 listed buildings, five conservation areas and one registered park and garden. No World Heritage Sites, Protected Wrecks, or Registered Historic Battlefields are recorded within the Scheme study areas. The locations of each individual designated heritage asset are illustrated in Appendix B, Drawing B.2, Sheets 1 to 15 of the Cultural heritage DBA, which itself forms Appendix 6.1 of the ES Appendices [AS-099].
- 6.8.81 An assessment of the potential for direct physical impacts and changes to the setting of each individual designated asset was undertaken to inform this chapter. The results of this assessment are contained within Appendix C of the Cultural heritage DBA, which itself forms Appendix 6.1 of the ES Appendices [AS-099].

6.8.82 A total of 37 designated heritage assets were identified through the assessment process as having the potential to be impacted by the Scheme. These assets are referred to as 'key heritage assets' and are listed in Table 6-5 below.

Table 6-5: Summary of key designated heritage assets identified within the Scheme study areas

Asset type	MM no.	Asset name
Scheduled Monument	MM001	Newark Castle (MM001)
	MM007	Civil War redoubt 550m south-east of Valley Farm
	MM009	Civil War redoubt 680m north-west of Dairy Farm
	MM012	Moated site 750m north-west of Dairy Farm
Grade I listed building	MM018	Kelham Hall
	MM019	Church Of St Michael
	MM024	Church Of St Wilfrid
Grade II* listed building	MM025	Gazebo And Garden Wall at Kelham Hall
	MM026	Langford Hall
	MM030	Kiln Warehouse
	MM038	Concrete footbridge across River Trent
	MM039	Winthorpe Bridge Carrying Bypass Over River Trent
Grade II listed building	MM043	Former Monastic buildings adjoining Kelham Hall
	MM045	Garden Boundary Wall at Kelham Hall
	MM049	Kelham Bridge
	MM053	Lowwood
	MM062	The Grove
	MM063	Church of All Saints
	MM139	Farndon Windmill
	MM141	Causeway Arches 650 metres north-west of level crossing (Smeaton's Arches)
	MM142	The Clock Tower
	MM226	Castle Railway Station
	MM227	Former Station Master's House at Castle Station

Asset type	MM no.	Asset name
	MM228	Causeway Arches 500 metres north-west of level crossing (Smeaton's Arches)
	MM230	Causeway Arches and Embankment Walling 50 Metres north-west of Trent Bridge (Smeaton's Arches)
	MM231	Causeway Culvert 135 Metres north-west of Level Crossing
	MM232	Goods Warehouse 150 Metres north-east of Castle Station
	MM233	North Malt Warehouse
	MM332	Trent Bridge
	MM387	The Firs
	MM389	Causeway Culvert 420 Metres north-west of Level Crossing
Grade II Registered Park and Garden	MM427	Newark Castle Gardens
Conservation Area	MM428	Averham Conservation Area
	MM429	Farndon Conservation Area
	MM430	Kelham Conservation Area
	MM431	Newark Conservation Area
	MM432	Winthorpe Conservation Area

6.8.83 The key heritage assets outlined in Table 6-5 were subject to further assessment of heritage value and potential effects during construction and operation of the Scheme; see Appendix 6.2 (Assessment of Heritage Value) [APP-133], Appendix 6.3 (Assessment of Cultural Heritage Effects During Construction of the Scheme) [APP-134] and Appendix 6.4 (Assessment of Cultural Heritage Effects During Operation of the Scheme) of the ES Appendices [APP-135].

6.8.84 This further assessment established that no scheduled monuments or registered parks and gardens are predicted to experience significant effects from the Scheme. However, two grade II* listed buildings, six grade II listed buildings and one conservation area are predicted to experience significant effects in accordance with the methodology set out in Section 6.5 of this Chapter. The designated assets with predicted significant effects are described below and illustrated in Figure 6.3 (Heritage Assets with Significant Effects, Sheets 1 to 5) of the ES Figures [AS-036].

Langford Hall (MM026)

- 6.8.85 The asset lies approximately 45 metres north of the Order Limits of the Scheme. It is a grade II* listed building of high heritage value, comprising a double pile country house with associated grade II listed Coach House (MM059) and Stables (MM061), situated in its own park and grounds. The value of the asset is derived from its historic and architectural interest, as an example of a substantial country house.
- 6.8.86 The setting of the asset is within its own grounds with associated outbuildings on the edge of Winthorpe settlement and Conservation Area. It is situated within a rural landscape (now partially eroded by modern road infrastructure), but which formed the aesthetic, economic and social context for the Hall. Both the park and wider agricultural context make a key contribution to understanding the historic interest. This setting therefore makes a positive contribution to the value of the asset.

Concrete footbridge across River Trent (MM038)

- 6.8.87 The asset lies within the Order Limits of the Scheme. It is a grade II* listed structure of high heritage value, comprising of an early 20th century reinforced concrete bridge. The value of the asset is derived from its architectural interest, as an early example of the use of reinforced concrete. The asset also holds historic interest, as an example of early 20th century transport infrastructure.
- 6.8.88 The asset spans the River Trent, which is key to understanding its special interest, and areas of open grass, scrubland and mature trees, contribute to a countryside character in a predominately urban setting, with key transport networks or road, rail and river. This setting therefore makes a positive contribution to the value of the asset.

Lowwood (MM053)

- 6.8.89 The asset sits on the edge of Winthorpe settlement and lies approximately 35 metres north of the Order Limits of the Scheme. A grade II listed building of high heritage value, comprising of a small, late 18th century country house. The asset derives its value from its historic and architectural interest, as an example of a small country house.
- 6.8.90 The asset is located within a small, designed garden at the edge of Winthorpe Conservation Area (MM432) and the wider rural setting provides positive context. These elements of its setting make a positive contribution to the value of the heritage asset. However, this setting has been somewhat eroded and adversely impacted by road widening and 20th century residential development.

The Grove (MM062)

- 6.8.91 The asset lies approximately 110 metres north of the Order Limits of the Scheme. It is a grade II listed building of high heritage value,

comprising a small, late 18th century country house located within the Winthorpe Conservation Area (MM432). The asset derives its value from its historic and architectural interest, as an example of a small country house.

- 6.8.92 The asset is located within a designed garden, with a conservatory (MM052) to the south-west with which it shares group value, and wider grounds comprising its curtilage. The wider rural setting has been eroded by road widening and 20th century residential development. However, despite the later development, the designed garden remains legible and makes a key contribution to understanding the historic interest. This setting therefore makes a positive contribution to the value of the asset.

Church of All Saints (MM063)

- 6.8.93 The asset lies approximately 135 metres north-east of the Scheme. It is a grade II listed building of high heritage value, comprising the 19th century parish church of Winthorpe. The value of the asset is derived from its historic and architectural interest, as an example of a rural parish church.
- 6.8.94 The asset is located in the village of Winthorpe and within its own churchyard, surrounded by a low boundary wall and trees. The village setting is key to understanding the historic interest and together, these provide the setting to the church which makes a positive contribution to the value of the asset. The noise of the adjacent A1 is intrusive and detracts from this setting, as it contrasts with the contemplative character of a church and churchyard.

Farndon Windmill (MM139)

- 6.8.95 The asset lies approximately 10 metres north of the Order Limits of the Scheme. It is a grade II listed building of high heritage value, comprising an early 19th century former windmill. The asset derives its value from its historic and architectural interest, as an example of the local corn milling industry.
- 6.8.96 The asset is located within secluded woodland beyond which lies agricultural land. The location in woodland reduces the ability to understand the historic interest of the asset by limiting views to and from it and creating a landscape different from that within which it was constructed. Therefore, the setting makes a neutral contribution to the heritage value of the asset.

Causeway Arches 650 metres north-west of level crossing (MM141) and Causeway Arches 500 metres north-west of level crossing (MM228)

- 6.8.97 These assets lie within the Order Limits of the Scheme. They comprise two grade II listed causeway arches (known locally as Smeaton's Arches) of high heritage value, which form part of an 18th century causeway carrying the Great North Road over the River Trent

floodplain. The value of the assets is derived from their historic and architectural value, as an example of 18th century transport architecture. The assets also derive value through their association with the noted engineer, John Smeaton.

- 6.8.98 The assets form part of the Great North Road and are located across the floodplain, to the north of the River Trent. The setting is key to understanding the historic interest and makes a positive contribution to the value of the assets.

Winthorpe Conservation Area (MM432)

- 6.8.99 The Conservation Area at Winthorpe lies immediately adjacent to the Order Limits of the Scheme. It is of high heritage value and is focused on the rural village, which is first documented in the Domesday Survey of 1086. The Winthorpe Conservation Area includes the 18th century grade II* listed Winthorpe Hall (MM027) and a further 15 grade II listed buildings dating to the 18th and 19th centuries, which include Lowwood (MM053), The Grove (MM062) and Church of All Saints (MM063).
- 6.8.100 The heritage value of the Winthorpe Conservation Area is derived from its historic and architectural interest, as a good example of a rural village with attractive country houses, associated parkland features and estate cottages, as well as examples of typical 18th and 19th century vernacular architecture to the area. The asset also holds archaeological interest, connected with the presence of undated below ground archaeological remains indicating the presence of settlement activity (MM541) and (MM875) to the west of the historic core of the village.
- 6.8.101 The Conservation Area boundary defines the historic village and is set within a secluded, rural landscape and characterised by strong tree and hedgerow boundaries. Nineteen-sixties road infrastructure, such as the A1 realignment and the A46 has not affected the legibility of the Conservation Area. This setting therefore makes a positive contribution to the value of the asset.

Non-designated heritage assets with the potential for likely significant effects

- 6.8.102 The Nottinghamshire HER alongside the results of research and archaeological survey undertaken as part of the Preliminary Design for the Scheme, records 370 non-designated heritage assets within the 500m study area for non-designated heritage assets. These include 242 archaeological remains, 123 historic buildings and five historic landscapes. The locations of each individual non-designated heritage asset are illustrated in Appendix B, Drawing B.3 (Non-Designated Assets Sheets 1 to 18) of the Cultural Heritage DBA, which itself forms Appendix 6.1 of the ES Appendices [AS-099].

- 6.8.103 An assessment of the potential for direct physical impacts and changes to the setting of each individual non-designated asset was undertaken to inform this chapter. The results of this assessment are contained within Appendix C of the Cultural Heritage DBA, which itself forms Appendix 6.1 of the ES Appendices [AS-099].
- 6.8.104 A total of 95 non-designated heritage assets were identified through assessment as having the potential to be impacted by the Scheme. These assets are referred to as 'key heritage assets' and these are listed in Table 6-6 below.

Table 6-6: Summary of key non-designated heritage assets identified within the 500 metre Scheme study area

Asset Type	MM no.	Asset Name
Non-designated archaeological remains	MM502	Mesolithic - Late Neolithic Site at Farndon
	MM503	Palaeolithic Site at Farndon
	MM505	Neolithic / Early Bronze Age Settlement at Langford
	MM506	IA or Romano-British Settlement at Farndon
	MM507	Roman Agger, Fosse Way, Langford
	MM541	Settlement at Winthorpe
	MM559	Medieval Road at Newark
	MM602	Well at Newark
	MM624	Second Line of Circumvallation At Newark
	MM633	Well at Averham
	MM642	Well at Newark
	MM648	Civil War Dam at Newark
	MM649	Civil War Redoubt at Newark
	MM655	Moll's Hornwork at Winthorpe
	MM660	First Line of Circumvallation at Newark
	MM661	Civil War Redoubt at Newark
	MM662	Supposed Site of Redoubt at Newark
	MM740	Malt Kiln Terrace at Newark
	MM807	Bleaching House at Winthorpe
	MM812	Two Mile House at Langford
	MM848	RAF Winthorpe
	MM849	Pit Alignment at Newark
	MM850	Ditch at Newark
	MM851	Linear Features at Lincoln Road, Newark
	MM852	Linear Features at Lincoln Road, Newark
	MM858	Earthworks at Newark Kiln Marina, Newark
	MM859	Enclosures at Kelham
	MM865	Linear Features at Farndon
	MM869	Linear Features & Enclosure at Averham
	MM872	Spring at Newark
	MM875	Cropmark Complex at Winthorpe

Asset Type	MM no.	Asset Name
	MM876	Cropmark Complex at Newar
	MM893	Enclosure at Farndon
	MM896	Linear Feature at Newark
	MM903	Enclosure & Pits at Newark
	MM911	Old Trent Dyke
	MM912	Paleochannel Associated With The Old Trent Dyke
	MM930	Possible enclosure sites and associated archaeological features
	MM931	Possible enclosure site, paleochannel and relict field system
	MM932	Possible archaeological feature
	MM933	Possible enclosure site and/or relict field system
	MM934	Enclosure Cropmarks
	MM935	Possible archaeological features
	MM936	Possible archaeological features
	MM937	Possible ring ditch, barrows and ditches
	MM938	Possible ditches/field boundaries
	MM939	Brick Culvert
	MM940	Former Parish Boundary
	MM942	Possible ditches/field boundaries
	MM943	Possible ditches and pits
	MM944	Possible ditches/field boundaries/pits
	MM945	Possible enclosure site and/or relict field system
	MM946	Possible ditches/field boundaries/drains
	MM947	Possible ditches
	MM948	Paleochannel on route of ditch
	MM949	Organic deposit
	MM950	Paleochannel
	MM951	Paleochannel
	MM952	Paleochannel
	MM953	Paleochannel/Organic deposits
	MM954	Organic deposits
	MM955	Paleochannel
	MM956	Paleochannel
	MM957	Paleochannel
	MM958	Paleochannel
	MM959	Paleochannel
	MM960	Paleochannel
	MM961	Paleochannel
	MM962	Paleochannel
	MM963	Organic Deposits
Non-designated historic buildings	MM672	Clapper Gate
	MM674	Clapper Gate 5

Asset Type	MM no.	Asset Name
	MM675	Clapper Gate 6
	MM678	Clapper Gate 9
	MM679	Clapper Gate 10
	MM687	Sluice at Winthorpe
	MM688	Weir at Newark (Nether Weir)
	MM714	Malthouse Workers Houses at Farndon Road, Newark
	MM715	Works; Windsor & Stephenson at Newark
	MM719	Terraced Houses at Newark
	MM736	Flour Mill at Newark
	MM747	Railway Bridge at Newark
	MM748	Railway Bridge at Newark
	MM749	Railway Bridge at Newark
	MM813	Former Chemical Works at Newark
	MM814	Newark Crossing
	MM840	Webb Woollies Ltd at Newark
Non-designated historic landscapes	MM827	Grounds at Averham Parsonage
	MM828	Park at Kelham Hall
	MM829	Grounds at Langford Hall
	MM830	Park at Winthorpe Hall
	MM964	Newark Civil War Landscape

6.8.105 The key non-designated heritage assets outlined in Table 6-6 were subject to further assessment of heritage value and assessment of potential effects during construction and operation of the Scheme; see Appendix 6.2 (Assessment of Heritage Value) [APP-133], Appendix 6.3 (Assessment of Cultural Heritage Effects During Construction of the Scheme) [APP-134] and Appendix 6.4 (Assessment of Cultural Heritage Effects During Operation of the Scheme) of the ES Appendices [APP-135].

6.8.106 This further assessment established that no non-designated historic buildings or historic landscapes are predicted to experience significant effects due to the Scheme. However, 29 non-designated archaeological remains are predicted to experience significant effects in accordance with the methodology set out in Section 6.5 of this Chapter. The non-designated assets with predicted significant effects are described below and illustrated in Figure 6.3 (Heritage Assets with Significant Effects) (Sheets 1 to 5) of the ES Figures [AS-036].

Pit alignment at Newark (MM849)

6.8.107 Undated pit alignment of low value, located within the Order Limits of the Scheme. The asset derives value from its archaeological interest, as an example of past land organisation practices. The asset also provides an opportunity for the enhancement of the archaeological record through further research and investigation. Setting does not contribute to the heritage value of the asset.

[Enclosures at Kelham \(MM859\) and \(MM945\), Averham \(MM869\), Newark \(MM876\) and \(MM896\) and Winthorpe \(MM930\), \(MM931\), \(MM933\) and \(MM934\)](#)

- 6.8.108 The assets comprise of a series of enclosures located within the Order Limits of the Scheme at Kelham, Averham, Newark and Winthorpe. The assets were identified through aerial survey recorded in the HER and geophysical survey (event reference MM1261) undertaken in September 2022 to inform the Scheme. The enclosures have been interpreted as being Iron Age or Roman in origin with potential for continued use during the early medieval period. These assets are considered to be of medium heritage value owing to their regional importance.
- 6.8.109 The value of these assets is derived from their archaeological interest, as evidence for past settlement activity and landscape organisation. They also provide an opportunity for the enhancement of the archaeological record through further research and investigation. The setting of these assets does not contribute to their heritage value.

[Possible Ring Ditch and Barrows \(MM937\)](#)

- 6.8.110 A possible ring ditch c.10 metres in diameter and two possible barrows c.20 metres in diameter of Neolithic or Early Bronze Age origin identified in Area 30 (MM937). The assets were identified during geophysical survey undertaken in September 2022 (event reference MM1261) and are considered to be of medium heritage value. The asset derives its value from its archaeological interest as evidence of historic funerary activity. They also provide an opportunity for the enhancement of the archaeological record of through further research and investigation. Setting does not contribute to the heritage value of this asset.

[Paleochannels \(MM910\) to \(MM912\), \(MM931\), \(MM948\), \(MM950\) to \(MM953\) and \(MM955\) to \(MM962\),](#)

- 6.8.111 The assets comprise of a series of known and potential paleochannels of medium heritage value recorded through Lidar and aerial survey, in addition to geophysical survey (event reference MM1261), geoarchaeological and archaeological monitoring (event reference MM1266) and geoarchaeological coring (event reference MM1265) undertaken to inform the Scheme.
- 6.8.112 The heritage value of the assets is derived from their archaeological and geoarchaeological interest associated with their potential to mask and preserve early prehistoric activity. The assets also provide an opportunity for the enhancement of the archaeological record through further research and investigation concentrating on the spatial relationships between these paleochannels and other prehistoric remains within the 500 metre study area. Setting does not contribute to the heritage value of the asset.

Organic Deposits (MM949), (MM953), (MM954) and (MM963)

- 6.8.113 Waterlogged organic deposits (MM949), (MM953), (MM954) and (MM963) of medium heritage value encountered recorded during archaeological and geoarchaeological monitoring (event reference MM1266) and geoarchaeological coring (event reference MM1265). The sediments are preserved in low lying consistently waterlogged conditions, predominantly within paleochannels.
- 6.8.114 The heritage value of the deposits is derived from their archaeological and geoarchaeological interest associated with their potential to preserve multi-period waterlogged palaeoenvironmental organic matter and archaeological remains. Setting does not contribute to the heritage value of the asset.

Unknown archaeological remains

- 6.8.115 The results of previous archaeological investigations alongside a programme of survey and assessment undertaken to inform the Scheme (event references: MM1261 to MM1266) have identified archaeological remains and palaeoenvironmental deposits dating to the Prehistoric, Roman, early medieval, high medieval, post medieval and modern periods within the Order Limits of the Scheme.
- 6.8.116 As such there is high potential for unknown archaeological remains/deposits dating to these periods, to be encountered within Areas 20 to 30, 33, 34 and 48 to 51 of the Order Limits of the Scheme. A detailed assessment of archaeological potential can be found in Chapter 5 of Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099]. This potential will be further explored by a programme of test pitting and trial trenching evaluation which will be undertaken in Autumn 2023, as detailed within Appendix F of the AMP [REP5-026]. The results of the test pitting and trial trenching evaluation will be used to inform the archaeological mitigation strategy for the pre-commencement and construction stages of the Scheme. The scope of the archaeological mitigation strategy will be agreed with Cultural Heritage stakeholders on completion of the test pitting and trial trenching evaluation. The agreed scope has been set out within Chapter 6 of the AMP [REP5-026]. Preparation and completion of the archaeological mitigation strategy is secured by Requirement 9 of the draft Development Consent Order [REP6-004].
- 6.8.117 The archaeological investigations detailed within this scope will be undertaken through the means of appropriate task specific WSI's produced by the appointed Archaeological Contractor and as required by Requirement 9 of the draft Development Consent Order [REP6-004]. The WSI's will detail the scope and methodology for archaeological recording and reporting of these investigations, deposition of the report with the relevant Historic Environment Record and deposition the archive with a suitable public depository willing to receive it.

- 6.8.118 Unknown archaeological remains dating to the prehistoric, Roman and medieval periods are considered of medium to high heritage value due to their rarity or possible associations with scheduled monuments within the landscape. Remains dating to the early and higher medieval periods are considered to be of medium value because of their regional importance. Remains dating to the post medieval period are considered to be of low heritage value owing to their importance on a local scale. The exception to this is Civil War related assets which may have medium heritage value through their association with related scheduled monuments. Assets dating to the modern period are considered to be of low heritage value. This is generally due to their higher representation across the UK landscape and predicted low concentration within the Scheme study areas.
- 6.8.119 Impacts on unknown archaeological remains of low and negligible value are not likely to result in significant effects and as such are not discussed in this chapter. Details of the assessment of these assets can be found in Appendix 6.1 (Cultural Heritage DBA) [AS-099], Appendix 6.3 (Assessment of Cultural Heritage Effects During Construction of the Scheme) [APP-134] and Appendix 6.4 (Assessment of Cultural Heritage Effects During Operation of the Scheme) of the ES Appendices [APP-135].

6.9 Potential impacts

- 6.9.1 The following potential impacts from the Scheme have been identified for both the construction and operational stages.

Construction impacts

Temporary construction impacts

- 6.9.2 Temporary construction impacts would last for all or part of the construction period. These impacts include:
- Changes to the setting of heritage assets and/or alteration of historic views due to the presence of construction machinery, and construction work compounds including lighting
 - Changes to the setting of heritage assets due to increased noise, vibration, and dust generated during construction
 - Changes to the setting of heritage assets as a result of increased traffic movement associated with the siting of haul routes and traffic diversions
 - Changes to the setting of heritage assets due to the diversion or alteration of existing utility services and installation of new utility services

Permanent construction impacts

6.9.3 Permanent impacts are works carried out during the construction period which would result in a direct or indirect permanent impact. Permanent construction impacts are likely to include:

- Permanent changes to the setting of heritage assets and/or alteration of historic views due to the construction of new road infrastructure and/or the modification of existing road infrastructure
- Permanent changes to the setting of heritage assets associated with the construction of earthworks such as embankments, cuttings and earth bunds along the route of the Scheme
- Permanent physical changes to heritage assets as a result of increased vibration associated with changes in the volume and movement of construction machinery
- Permanent changes to the setting of heritage assets and/or alteration of historic views due to the creation of floodplain compensation areas
- Removal or truncation of heritage assets as a result of excavation, ground disturbance, and compaction associated with the construction of the Scheme
- Removal or truncation of heritage assets as a result of excavation associated with the creation of floodplain compensation areas and borrow pits
- Dewatering of assets due to a change in drainage and water flow, impacting preservation levels of archaeological deposits and artefacts

6.9.4 Potential beneficial impacts on the heritage value of heritage assets may result from:

- The advancement of knowledge and understanding of known and unknown heritage assets through discovery and recording

Operation

6.9.5 Operational impacts would arise for heritage assets from the operation of the Scheme. Operational impacts are likely to include:

- Permanent changes to the setting of heritage assets as a result of increased traffic noise, movement and lighting
- Depreciation in the heritage value of below ground heritage assets as a result of damage caused by compaction, vibration, and dewatering associated with the operation of the Scheme
- Depreciation in the heritage value of below ground heritage assets as a result of damage caused by changes in hydrology associated with the operation of the floodplain compensation areas

6.9.6 Potential beneficial impacts on the heritage value of heritage assets may result from:

- A potential reduction in traffic noise, would have a positive beneficial impact on the heritage value of an asset due to the enhancement of its setting

- Landscape design and planting that, once established, would enhance the setting of assets

6.10 Design, mitigation and enhancement measures

Design measures

- 6.10.1 The development of the Scheme design has been an iterative process undertaken through an integrated design team to adhere to the principles of the design and mitigation hierarchy outlined in DMRB LA 104. The first principle being to avoid potential adverse effects, if at all possible, before seeking to minimise or mitigate for any unavoidable impacts through a well-developed mitigation strategy.
- 6.10.2 Embedded mitigation for the Scheme are reported in Chapter 2 (The Scheme) of the ES and are summarised below:
- The Scheme has been designed to avoid nationally designated buildings or monuments where possible. Where these impacts are inevitable, continuous engagement with the relevant stakeholders and considerate design have been undertaken to minimise the impact and integrate the design of the proposed grade-separated Cattle Market Junction as much as possible into the context the Grade II listed Causeway Arches (also known as Smeaton's Arches).
 - Archaeological surveys undertaken for the Scheme have revealed previously unknown archaeology sites; discussions with both the local authorities and Historic England have been undertaken to preserve such sites in situ where possible. This has included the reduction and movement of floodplain compensation areas, compounds and soil storage areas to preserve archaeological sites such as settlement sites south of Winthorpe (MM875) and at Kelham (MM514).
 - Undertaking archaeological surveys and excavation to understand and record the heritage encountered along the route creating a greater knowledge of the area's heritage.
 - Consultation with the hydrology teams to identify the potential for changes to the water table for sensitive sites and seek to minimise any change which could impact preservation levels and/or stability. As well as ensuring the locations of any ponds or flood compensation/storage areas do not unnecessarily impact heritage sites. These discussions have resulted in avoiding impacts north of Cattle Market Roundabout, preserving vegetation south of the Civil War Redoubt (MM007), as well as reductions to floodplain compensation areas in Kelham and around Winthorpe to preserve archaeological sites.
 - Geoarchaeological works have been undertaken to identify important deposits, further works will be undertaken as part of the archaeological mitigation, this will include sampling deposits for pollen

sampling, Optically Stimulated Luminescence (OSL) and radiocarbon dating.

- Planting design has been used to further minimise any impacts on setting as well as reinforcing the existing landscape character and provision of noise fencing has been designed to manage noise and vibration in the vicinity of heritage assets. Increased planting west of Lowwood (MM053) and Winthorpe Conservation Area (MM432) is intended to reinforce the scrub and parkland character of planting in the area, and to screen the assets from the Scheme. Details are shown on Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026].
- The use of design to lessen the impact of new structures within the setting of heritage assets. Design of the proposed Cattle Market Junction is intended to indicate inspiration from, but not compete stylistically with, the Smeaton's Arches.
- Maintenance of access routes to heritage assets to maintain their viability. Design around Winthorpe is intended to maintain and improve access to the Conservation Area and associated listed buildings. Access to Langford Hall has been provided via a new access from the A1133, following the proposed closure of the existing southern access off the existing A46 due to safety reasons.
- Using land immediately adjacent to Winthorpe Conservation Area (MM432), which is included in the Order Limits, to lessen the visual impact of the road and mitigate against the impact of the Scheme on the character and appearance of the Conservation Area as well as reduction of land take to avoid encroachment on the Conservation Area as much as possible.
- Limiting the increase of vertical alignments of new routes including junctions, structures and associated infrastructure as far as practicable to minimise landscape and visual impacts to the historic environment and its setting, including avoiding the location of fence lines at the top of any embankment slopes where they could dominate the skyline.
- Ensuring lighting columns are kept to a minimum height and are directional to minimise impact of light spill into the setting of heritage assets, whilst still meeting operational safety requirements.

Mitigation – construction

- 6.10.3 DMRB LA 106 'Cultural heritage assessment' defines mitigation as "measures intended to avoid, reduce and, where possible, remedy significant adverse environmental effects".
- 6.10.4 In accordance with paragraph 5.129 of the 2015 NPSNN, in considering the impact of a proposed development on any heritage assets, the Secretary of State should take into account the particular nature of the significance of the heritage asset and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any

aspect of the proposal. Where there is the potential for impacts to heritage assets mitigation in the form of monitoring and protection will be undertaken.

6.10.5 Mitigation measures of relevance during construction are included within:

- Table 3-2 Register of Environmental Actions and Commitments (REAC) of the First Iteration Environmental Management Plan (EMP) [REP6-012] which will be developed into a Second Iteration EMP for implementation during construction of the Scheme in accordance with Requirement 3 of the draft Development Consent Order [REP6-004].
- Phase 3 of the AMP which is secured by Requirement 9 of the draft DCO [REP6-004].

6.10.6 Details of the First and Second Iteration EMPs, including how mitigation is secured within the draft DCO [REP6-004], is provided within Section 4.4 of Chapter 4 (Environmental Assessment Methodology) of the ES.

6.10.7 Those mitigation measures of relevance to cultural heritage include the following:

- The protection of built heritage assets and archaeological sites during construction, for example through the demarcation of buffer zones and signage around such interests with fencing and signage; installation of physical protection measures; or temporary removal of heritage assets for reinstatement following the completion of construction works. This should be undertaken at the Scheduled Monument Civil War redoubt 550m south east of Valley Farm (MM007), listed buildings Smeaton's Causeway Arches (MM228) and Farndon Windmill (MM139), the early medieval settlement at Winthorpe (MM876), the Prehistoric site south of Farndon Roundabout (MM503) and any other areas where archaeology has been identified but does not need to be removed during construction.
- Provision of a Protocol of Archaeological Discoveries and toolbox talks for construction workers and operatives to highlight reporting procedures to be followed, should archaeological deposits be encountered during the works.
- Planning of construction access routes to minimise impacts on the setting of heritage assets.
- The use of noise fencing or maintenance of access routes to a heritage asset to maintain its viability during construction.
- Management of noise and vibration in the vicinity of heritage assets during construction (see Section 11.10 of Chapter 11 (Noise and Vibration) of this ES).
- Use of structural monitoring systems to vulnerable assets before during and after construction phases for vibration impacts, to enable remedial repair works to be undertaken as mitigation should any structural impacts be identified. Specifically, this should be undertaken for grade II Farndon Windmill (MM139), grade II* Concrete Footbridge

- (MM038) and the grade II section of Smeaton's Arches designated as Causeway Arches 500 meters north-west of level crossing (MM228).
- A structural and condition survey on the eastern, 18th century, side of the Causeway Arches 500 meters north-west of level crossing (MM228) prior to the works commencing. This will provide an assessment of the current condition and construction. This will help inform a design and methodology for the western, 20th century, section of the causeway arches which will be demolished and subsequently rebuilt in an appropriate and sensitive manner and materials, the details of which will be subject to further consultation with stakeholders.
 - Monitoring for dewatering will be undertaken according to the relevant specialist's specification.
 - The use of appropriate planting or landscaping to mitigate against the impact of new structures within the setting of heritage assets.
- 6.10.8 Paragraph 5.139 of the 2015 NPSNN states that '*the ability to record evidence of the asset should not be a factor in deciding whether consent should be given*' whilst paragraph 218 of the NPPF states that '*the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted*'. Archaeological investigation is included as a mitigation measure, however, this mitigation does not reduce the significance of effect to heritage assets.
- 6.10.9 However, in line with paragraph 5.140 to 5.142 of the 2015 NPSNN and paragraph 218 of the NPPF, where the loss of the whole or part of a heritage asset's significance is justified, the Applicant should record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part). Requirements may be added to the development consent order to ensure that this is undertaken in a timely manner in accordance with a WSI that has been agreed in writing with the relevant Local Authority and that the completion of the exercise is properly secured. This will ensure that undiscovered heritage assets with archaeological interest, are identified and recorded prior to and during construction. The archaeological mitigation strategy outlining the details of how this will be achieved is detailed in the AMP [REP5-026]. As secured by Requirement 9 of the draft Development Consent Order [REP6-004], the full AMP will detail:
- The scope, guiding principles and methods for the planning and implementation of archaeological work in relation to the Scheme.
 - Any proposed investigation (excavation, monitoring or recording) set out in the AMP will be agreed with the relevant cultural heritage stakeholders through consultation. This will be formalised through appropriate task specific WSIs, which will require stakeholder approval in advance of undertaking the investigations.
 - The AMP will be updated following completion of the Phase 2 (Intrusive Investigations) to ensure best practice and limit impacts on heritage assets. This update will comprise Phase 3 (Archaeological

Mitigation Strategy)⁵³ and will be developed in consultation with relevant stakeholders. This will set out the archaeological mitigation requirements prior to and during construction of the Scheme, as well as a generic scope of works for the different techniques required. It is anticipated that Phase 3 of the AMP will be implemented following consent and prior to construction as part of the mitigation process.

- Where possible, results of any desk and field-based investigations will provide social value through enhancing the public knowledge and understanding of heritage assets, through the dissemination of results as part of the archaeological process outlined in the AMP.

Mitigation – operation

6.10.10 The operational impact of the Scheme will have limited impacts on cultural heritage assets and embedded mitigation against these impacts is detailed in Chapter 2 (The Scheme) of this ES.

Enhancement measures

6.10.11 There are opportunities for additional enhancements and increased social value that will be considered during the detailed design of the Scheme and the development of the heritage assessment and associated works. These may include:

- Continued multi-disciplinary consultation during detailed design to identify the potential for removing areas of known archaeology from the construction plan, identify the requirement for and extent of building recording and avoid changes to the water table for sensitive sites and seek to minimise any change which could impact preservation levels and/or stability for both archaeological and built heritage assets.
- Use of minimal or sympathetic design to reduce changes within the settings of heritage assets
- Use of additional noise mitigation measures to enhance the setting of impacted heritage assets
- The production of appropriate academic Monograph and/or other popular publications
- The dissemination of results to the public through the creation of information panels or digital methods such as project blog
- Public outreach through various in person and/or online activities such as workshops/talks/educational activities
- Public open days either as active participation or live demonstration and presentation

⁵³ The third phase of programmed archaeological mitigation following Phase 1 non-intrusive surveys and Phase 2 intrusive archaeological evaluation.

- Enhancement of the HER with the submission of the project survey data, which would otherwise have been undiscovered
- 6.10.12 However, these enhancement measures have not been taken into account when determining significance of effects because they are over and above what is required to mitigate the adverse effects of the Scheme.

6.11 Assessment of likely significant effects

- 6.11.1 The assessment of likely significant effects considers effects on heritage assets, during construction and operation (as defined in Section 6.5). These effects are determined following the incorporation of the both embedded and essential mitigation measures outlined in Section 6.10 of this Chapter.
- 6.11.2 For an assessment of all heritage assets scoped into the detailed assessment, including those where no likely significant effects have been predicted, refer to Appendix 6.2 (Assessment of Heritage Value) [APP-133], Appendix 6.3 (Assessment of Cultural Heritage Effects During Construction of the Scheme) [APP-134] and Appendix 6.4 (Assessment of Cultural Heritage Effects During Operation of the Scheme) of the ES Appendices [APP-135]. The locations of heritage assets subject to significant effects are depicted within Figure 6.3 (Heritage assets with the potential for likely significant effects) of the ES Figures [AS-036].

Construction

- 6.11.3 The following section provides a description of the likely significant effects upon heritage assets within the Scheme study areas as a result of construction (the direct physical impacts on heritage assets and archaeology during the construction phase and the physical presence of the Scheme after construction). These effects are summarised in Table 6-7. The location and extent of each asset identified as having significant effects can be found in Figure 6.2 (Heritage assets with the potential for likely significant effects) of the ES Figures [AS-035]. Assets identified as having non-significant construction effects can be found in Appendix 6.3 (Assessment of Cultural Heritage Effects During Construction of the Scheme) of the ES Appendices [APP-134].

Designated assets

- 6.11.4 The Order Limits of the Scheme extend into the grounds of Langford Hall so as to link a new access road for the asset with the existing historic driveway. There would be an impact on the heritage value of the grade II Langford Hall (MM026), through changes in its setting due to the presence and movement of construction machinery and

spoil storage within the neighbouring field just beyond the tree belt screening of Langford Hall (MM026). The presence of construction machinery, traffic, compound and construction works, including lighting, increased noise, vibration and dust generated during construction will reduce the ability to appreciate the historic interest of the wider agricultural setting. This would result in a temporary Moderate Adverse effect on the asset. Furthermore, landscape planting would ensure, that once constructed, the permanent presence of the Scheme would amount to permanent Slight Adverse and is therefore not considered as a significant effect. Due to both the temporary and minor permanent changes to setting, this is considered to result in less than substantial harm.

- 6.11.5 Temporary construction impacts are anticipated to the grade II* Concrete Footbridge across the River Trent (MM038). The asset lies within the Order Limits of the Scheme, and it is considered that the presence of construction machinery within the immediate vicinity of the asset will give rise to potential vibration issues that could affect the structural integrity of the asset. There will be additional impacts of light, dust, movement and noise, which will adversely alter the riverside setting of the asset. The asset will also be closed during construction and will not be accessible. This will reduce the ability to appreciate the heritage value of the asset and therefore will result in a temporary Moderate Adverse effect on the heritage value of the asset. The permanent construction will result in an additional section of flyover immediately adjacent to and in the context of the existing road network. This permanent construction impact is therefore considered to result in a Neutral effect. Due to both the temporary and minor permanent changes to setting this is considered as less than substantial harm.
- 6.11.6 While the grade II Lowwood (MM053) lies outside the Order Limits, given its proximity to the Scheme, temporary construction impacts are anticipated due to the presence of construction machinery increasing the level of noise, dust and light pollution which may affect the ability to appreciate the private garden setting of the asset and contrast with the rural and wooded nature of its immediate surroundings. This is in spite of the existing presence of the A1 and would result in a temporary Moderate Adverse effect on the heritage value of the asset. It is considered that there may be glimpse views of the new road infrastructure and the A46 flyover from Lowwood (MM053), affecting the ability to appreciate the secluded garden setting of the asset, but this is only felt to be a slight impact, due to the landscape design. Therefore, the permanent construction of the Scheme is considered to have a Slight Adverse effect and not to result in a significant effect. Due to the temporary and minor permanent change to setting this is considered to result in less than substantial harm.
- 6.11.7 The grade II Church of All Saints, Winthorpe (MM063) also lies outside the Order Limits of the Scheme, but due to its raised situation

and peaceful qualities, despite the proximity of the A1 and existing road noise, it is considered that temporary construction impacts including the presence of construction machinery, and increased levels of noise, dust and light pollution may affect the ability to appreciate the contemplative and peaceful character of the graveyard, which contribute to the heritage value of the church. This will result in a temporary Moderate Adverse effect on the heritage value of the asset. It is considered that any possible glimpse views of the new road infrastructure will be well screened by the landscape design, and therefore permanent construction impacts are considered as Slight Adverse and not a significant effect. Due to the temporary and minor permanent change to setting this is considered to result in less than substantial harm.

- 6.11.8 Farndon Windmill (MM139) is grade II listed and situated immediately adjacent to the Order Limits and will be impacted by the close proximity of a construction compound and machinery, which raises the possibility of ground vibration or ground settlement issues, which could in turn affect the structural integrity of the asset. This is in addition to the construction noise, dust and lighting impacts. The proximity and concentration of construction activity so close to the mill will reduce the ability to appreciate the heritage value of the mill and result in a temporary Large Adverse effect on the heritage value of the asset. In the context of the existing A46 flyover, it is not considered that the additional structure will alter the setting of the asset. However, the creation of floodplain compensation areas, with the ponds, grazing marsh and reedbed, will alter part of the setting of the asset, from agricultural to artificial water-management and slightly reduce the contribution the setting makes to the significance of the mill. This will therefore result in a permanent Slight Adverse effect. Due to the temporary and minor permanent change to setting this is considered to result in less than substantial harm.
- 6.11.9 The grade II section of Causeway Arches 650m north-west of the level crossing (MM141) (also known as Smeaton's Arches) lies within the Order Limits and will be impacted by the presence of construction machinery within close proximity of the asset which will give rise to noise, movement, dust and light pollution, arising from the works proposed to the Cattle Market Roundabout, and the rebuilding of the adjacent section of arches, will adversely impact on the heritage value of the asset. This will result in temporary Moderate Adverse effects on the value of the asset. In addition to the temporary effect, a permanent construction impact will arise from an alteration to the linear character and setting of the asset arising from the realignment of the Causeway Arches (MM228) and the presence of the new Cattle Market flyover. This will result in a permanent Large Adverse effect on the value of the heritage asset. As the asset is not directly physically altered, this effect is considered as less than substantial harm. The asset is not directly physically altered. Although changes to the setting of the asset will occur, notably altering how it can be appreciated, it

will still fundamentally be apparent that this is a structure spanning the flood plain to the River Trent. For these reasons this equates to less than substantial harm.

- 6.11.10 The grade II section of Causeway Arches 500m north-west of the level crossing (MM228) (also known as Smeatons' Arches) lies within the Order Limits and will be impacted by the presence of construction machinery within the immediate vicinity of the asset. This will give rise to potential vibration issues and could affect the structural integrity of the remaining 18th century elements of the asset. This will result in a temporary Large Adverse effect on the heritage value of the asset. In addition to this, it is proposed to demolish the west side of the asset (a section rebuilt in 1922) in order to widen the carriageway and accommodate the slip road off the Cattle Market roundabout. However, this affects only one side of one arch, specifically a rebuilt element dating from 1922, and is therefore of less historic significance than the remaining side and the surviving unaltered complex of arches. These works therefore amount to partial loss of relatively modern fabric only and though it amounts to a permanent Large Adverse effect on the value of the heritage asset it does not amount to total loss and is considered to be less than substantial harm.
- 6.11.11 Winthorpe Conservation Area lies immediately adjacent to the Order Limits of the Scheme. The presence of construction machinery close to the asset will increase the level of noise and alter the agricultural setting of the asset, therefore reducing the ability to appreciate the heritage value of the asset. This will result in a temporary Moderate Adverse effect on the heritage value of the asset. The widening of the A46 along the south boundary of the Conservation Area, and the construction of noise bunds will erode the buffer zone to the A46 provided by this part of the Conservation Area. Though the bunds are intended to mitigate against noise, they will be visually incongruous. However, planting in keeping with the character of this part of the Conservation Area will soften this impact as it matures and therefore result in a permanent Slight Adverse, non significant, effect to the Conservation Area. Due to the temporary and minor permanent change to setting this is considered to result in less than substantial harm.

Non-designated heritage assets

- 6.11.12 Where non-designated archaeological heritage assets are being truncated or removed, a programme of archaeological excavation and recording as part of a planned programme of archaeological works will be undertaken. The archaeological works will be aimed at recording and advancing the understanding of the heritage assets, and ensure the deposition of reports and archives in accordance with paragraph 5.140 of the 2015 NPSNN. Archaeological investigation is included as a mitigation measure but does not reduce the significance of effect. Details of the excavation, following the programme of trial trenching and test pitting will, in accordance with Requirement 9 of the

draft DCO [REP6-004], be outlined in the Phase 3 (Archaeological Mitigation Strategy) update of the AMP [REP5-026].

- 6.11.13 The pit alignment at Newark (MM849) is located within the Order Limits of the Scheme. Construction of the Brownhills Junction will result in the removal of below ground archaeological remains associated with the asset. This will result in a permanent Moderate Adverse effect on the heritage value of the asset due to its loss.
- 6.11.14 The enclosures at Kelham (MM859) and possible enclosure site and/or relict field system (MM945) are located within the Order Limits of the Scheme. Below ground archaeological remains associated with this asset will be removed during construction of the Kelham and Averham floodplain compensation area. This will result in a permanent Large Adverse effect on the heritage value of the asset due to its loss.
- 6.11.15 The linear features and enclosure at Averham (MM869) are located within the Order Limits of the Scheme. Below ground archaeological remains associated with this asset will be removed during construction of the Kelham and Averham floodplain compensation area. This will result in a permanent Moderate Adverse effect on the heritage value of the asset due to its loss.
- 6.11.16 The cropmark complex at Newark (MM876), linear feature at Newark (MM896), possible enclosure sites and associated archaeological features (MM930), and possible enclosure site, paleochannel and relict field system (MM931) all form an area of archaeological features to the south-west of Winthorpe which will be truncated or removed by construction of the Scheme. This will result in a permanent Large Adverse effect on the heritage value of these assets due to their loss.
- 6.11.17 The possible archaeological feature (MM932) and possible enclosure site and/or relict field system (MM933) are located within the Order Limits of the Scheme. Below ground archaeological remains associated with these assets will be removed during construction of Brownhills Junction. This will result in a permanent Large Adverse effect on the heritage value of these assets due to their loss.
- 6.11.18 The enclosure cropmarks (MM934) are located within the Order Limits of the Scheme, within land required for the construction of the access road and bunds east of Winthorpe. Below ground archaeological remains associated with the asset will be removed during construction. This will result in a permanent Large Adverse effect on the heritage value of the asset due to their loss.
- 6.11.19 The possible barrow, linear features/field boundaries (MM937) is located partially within the Order Limits of the Scheme. While the identified potential barrow is outside of the Order Limits some aspects of the below ground archaeological remains identified during geophysical survey will be completely removed during construction works at Winthorpe Roundabout including the new access track to

Langford Hall. This will result in a permanent Large Adverse effect on the heritage value of the asset due to their loss.

- 6.11.20 Unknown archaeological remains of low to medium value from the prehistoric through to modern periods may be encountered within Areas 20 to 30, 33, 34 and areas 48 to 51. The features are likely to be associated with the known features identified through crop marks recorded on the HER and the programme of survey and assessment undertaken to inform the Scheme (event references: MM1261 to MM1266). This will result in a permanent Moderate Adverse effect to the heritage value of these assets due to their loss.
- 6.11.21 Unknown archaeological remains of low to high value associated with the Civil War era may be encountered within Areas 10 to 18 of the Order Limits. These assets would be removed or truncated by the widening of the road around Cattle Market Roundabout, which would result in a permanent Moderate Adverse effect on the heritage value of the assets due to their loss.
- 6.11.22 Paleoenvironmental remains (MM949 – MM955) of medium value including paleochannels and deposits which include organic material have been identified within Areas 7 – 16 of the Order Limits, to the west of and immediately surrounding Cattle Market roundabout. It is considered that these remains would be truncated by the construction of the road and associated works, which will result in a permanent Moderate Adverse effect on the heritage value of these assets due to their partial loss.
- 6.11.23 Paleoenvironmental remains (MM956 – MM963) of medium value, including paleochannels and deposits including organic material have been identified, within Areas 2, 3 and 6 of the Order Limits, north of the River Trent at Farndon. It is considered that these remains would be completely or mostly removed within areas 2, 3 and 6 by the use of the area for borrow pits and flood alleviation. This will result in a permanent Large Adverse effect on the heritage value of these assets due to their loss.

Operation

- 6.11.24 The following section provides a description of the likely significant effects upon heritage assets within the Scheme study areas during operation (the period after opening the project to traffic which includes those effects such as the presence, noise and emissions of traffic, and presence of lighting which result in changes to the setting of cultural heritage assets). The location and extent of each asset identified as having a significant effect can be found in Figure 6.2 (Heritage assets with the potential for likely significant effects) of the ES Figures [AS-035]. Assets identified as having non-significant operation effects can be found in Appendix 6.4 (Assessment of Cultural Heritage Effects During Operation of the Scheme) of the ES Appendices [APP-135].

Designated assets

- 6.11.25 The proximity of the existing A1 and A46 intrudes audibly into the setting of grade II Lowwood House (MM053). The noise detracts substantially from a peaceful experience of the property within its setting in contrast with the rural and wooded nature of its surroundings. Though noise assessments show that due to the impact of the A1, any additional impacts from the A46 are considered to negligible in scientific terms, there may be a perception on the ground that noise impacts will significantly affect the heritage value of the asset. Consultation with the Conservation Officer raised the possibility of an application from the owners for replacement triple-glazed windows. This could result in a loss of historic fabric if such an application were approved.
- 6.11.26 Chapter 11 (Noise and Vibration) of this ES indicates that as a result of the Scheme earthworks design, as well as mitigation low noise running surfaces and noise barriers, the result will be a negligible decrease of noise impacts to this asset.
- 6.11.27 However, it is considered that the operational impacts of noise, perceived or real, additional light pollution and the possibility of loss of historic fabric, would result in a permanent Slight Adverse effect. Due to the indirect nature of the impact, and potential for only partial loss of fabric, this is considered to be less than substantial harm.

Non-designated assets

- 6.11.28 It is considered that there will be limited operational impacts for archaeology as any impacts will be incurred during construction.
- 6.11.29 The likely significant effects and mitigation requirements during construction of the Scheme are summarised below in Table 6-7.
- 6.11.30 Non-significant effects are also included in the below tables for those assets which are also assessed as having one or more Moderate or above impacts for the purposes of clarity across both temporary and permanent, construction and operation impacts.

Table 6-7: Summary of likely significant effects and mitigation requirements during construction of the Scheme

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
Langford Hall (MM026)	Grade II* Listed Building	High	<p>Temporary</p> <p>The Order Limits of the Scheme, extend into the grounds of Langford Hall so as to link a new access road for the asset with the existing historic driveway. The adjacent land has also been identified for use as a spoil storage area during the construction period for the Scheme. The existing setting will be altered by the presence of construction machinery within the agricultural fields beyond a belt of trees to the south of the asset. The presence of construction machinery, traffic, compound and construction works, including lighting, increased noise, vibration and dust generated during construction will reduce the ability to appreciate the historic interest of</p>	Working within the core working hours (subject to the exceptions) reduces the impacts of lights, noise, movement and dust; this is detailed in references G2 (working hours), AQ1 (dust), L1 (lighting), CH3 (noise fencing) and NV1 (noise) of Table 3-2 REAC of the First Iteration EMP [REP6-012] and measures for below ground archaeology will be identified in the Phase 3 Archaeological Management Plan (which will be based on Phase 2 of the Archaeological Management Plan [REP5-026]) with specific locations and methodologies detailed in the WSI's to be produced prior to the commencement of any archaeological works.	Temporary Moderate Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>the wider agricultural setting.</p> <p>The assessment of impact is therefore considered as moderate adverse, resulting in a temporary large adverse effect on the heritage value of the asset.</p>		
			<p>Permanent</p> <p>The new access road will be constructed within an adjacent field, cutting through the tree belt and foreshortening the existing driveway, which forms the original access to the asset. The entrance driveway had been designed as a gradual sweep from the lodge to the house, with the house cleverly screened by trees lining the drive, so that a sense of anticipation grows before the house is revealed. The new access will dilute this experience as well as sever the historic connection to the lodge</p>	<p>Planting design has resulted in a new tree-lined drive, in keeping with the character of a country house. This planting will soften the impact of an otherwise incongruous straight line across a field, and more carefully blend it into the character of the adjacent parkland. Details of planting are detailed in Figure 2.3 (Environmental Masterplan) of the ES [AS-026].</p>	<p>Permanent Slight Adverse (not significant)</p>

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>and reduce the legibility of the original historic parkland setting. The new access drive may allow glimpsed views into the historic parkland where previously there were none, and the proposed landscape bunds will introduce a conspicuous feature into the wider landscape.</p> <p>The assessment of impact is therefore considered as permanent moderate adverse, resulting in a moderate adverse effect on the heritage value of the asset.</p>		
Concrete Footbridge across River Trent (MM038)	Grade II* Listed Building	High	<p>Temporary</p> <p>The asset lies within the Order Limits of the Scheme. The riverside setting contributes to the significance of the bridge and the scrubland character of the towpath along this stretch provides a character to the area which complements the natural</p>	Structural monitoring for vibration impacts will enable remedial repair measures or change in construction methods to be undertaken as mitigation should any structural impacts be identified. Specific details of the monitoring are set out in reference CH2 in Table 3-2 REAC of the First Iteration EMP [REP6-012] and Section 3 of the Archaeological Management Plan [REP5-026].	Temporary Moderate Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>qualities of the river. The presence of construction machinery within the immediate vicinity of the asset will give rise to potential vibration issues and could affect the structural integrity of the asset. There will be significant additional impacts of light, dust and noise, which will alter the riverside setting of the asset. The asset will also be closed during construction and will not be accessible.</p> <p>The assessment of impact is therefore considered as moderate adverse, resulting in a temporary moderate adverse effect on the heritage value of the asset.</p>	<p>Measures to reduce impacts associated with light, dust and noise are set out in the Table 3-2 REAC of the First Iteration EMP [REP6-012] including references AQ1 (dust), L1 (lighting) and NV1 (noise), and within the Archaeological Management Plan [REP5-026].</p> <p>The essential mitigation measures described above and embedded mitigation measures built into the Scheme design (as detailed in Chapter 2 (The Scheme) of this ES) are not considered sufficient to counteract the unavoidable temporary construction impacts of light, dust, noise, etc, or the lack of access to or across the bridge, to such a degree that the effects could be considered as non-significant.</p>	Neutral (not significant)
			<p>Permanent The asset will be located approximately 75 metres east of new road infrastructure, including a raised embankment carrying the A46.</p>	<p>No mitigation required, bar remedial works to the structure of the bridge if deemed necessary following monitoring during the construction phase. The monitoring is secured in reference CH2 in Table 3-2 REAC of the First Iteration EMP [REP6-012] and in the</p>	

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>However, the new infrastructure will not affect the legibility of the asset's relationship with the river.</p> <p>Given the presence of the existing flyover within its setting, there will be no adverse impact on the heritage value of the asset arising from the permanent construction of a new section of road bridge within its setting, resulting in a neutral adverse effect on the heritage value of the asset.</p>	Archaeological Management Plan [REP5-026].	
Lowwood (MM053)	Grade II Listed Building	High	<p>Temporary</p> <p>Lowwood is situated on the edge of Winthorpe Settlement. The asset lies approximately 35m north of the Order Limits of the Scheme. The asset is already affected by noise and traffic, due to the presence of the A1, approximately 175m to the south-west. However, the presence</p>	<p>Measures to reduce impacts associated with light, dust and noise are set out in the Table 3-2 REAC of the First Iteration EMP [REP6-012] including references AQ1 (dust), L1 (lighting), CH3 (noise fencing) and NV1 (noise), and within the Archaeological Management Plan [REP5-026].</p> <p>The essential mitigation measures described above and embedded mitigation measures built into the Scheme design (as detailed in Chapter</p>	Temporary Moderate Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>of construction machinery close to the asset will increase the level of noise, dust and lighting and affect the ability to appreciate the private garden setting of the asset and contrast with the rural and wooded nature of its immediate surroundings.</p> <p>The assessment of impact is therefore considered as a moderate adverse impact, resulting in a temporary moderate adverse effect on the heritage value of the asset.</p>	2 (The Scheme) of this ES) are not considered sufficient to counteract the unavoidable temporary construction impacts of light, dust, noise, etc, to such a degree that the effects could be considered as non-significant.	
			<p>Permanent The asset will be located approximately 200 metres north-east of new road infrastructure, including a new flyover carrying the A46 over the A1. The presence of new infrastructure and lighting within glimpse views from the asset will further intrude into and</p>	Planting has been designed to extend the scrub and parkland character of nearby planting in the landscape. This will have the effect of creating an improved visual buffer between the heritage asset and the Scheme, thereby maintaining the setting of Lowwood. Details of this planting are secured in Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026].	Permanent Slight Adverse (not significant)

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>thereby affect the ability to appreciate, the private garden setting.</p> <p>The assessment of impact is therefore considered as a permanent moderate adverse impact, resulting in a moderate adverse effect on the heritage value of the asset.</p>		
Church of All Saints, Winthorpe (MM063)	Grade II Listed Building	High	<p>Temporary</p> <p>The asset lies approximately 135 metres north-east of the Order Limits of the Scheme. The church is situated on a raised area of ground at the edge of Winthorpe Conservation Area. The asset is already affected by noise and traffic, due to the presence of the A1, approximately 150m to the south-west. However, the presence of construction machinery, noise, movement, and light pollution, close to the</p>	<p>Measures to reduce impacts associated with light, dust and noise are set out in the Table 3-2 REAC of the First Iteration EMP [REP6-012] including references AQ1 (dust), L1 (lighting) and NV1 (noise), and within the Archaeological Management Plan [REP5-026].</p> <p>Working within the core working hours (subject to the exceptions) to reduce the impacts of lights, noise, movement and dust (detailed in references G2 (working hours), AQ1 (dust), L1 (lighting), CH3 (noise fencing) and NV1 (noise) of Table 3-2 REAC of the First Iteration EMP [REP6-012] are not considered sufficient to reduce the impact to a non-significant assessment.</p>	Temporary Moderate Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>asset will increase these impacts and thereby affect the ability to appreciate the quiet and contemplative churchyard setting of the asset.</p> <p>The assessment of impact is therefore considered as moderate adverse, resulting in a temporary moderate adverse effect on the heritage value of the asset.</p>		
			<p>Permanent The asset lies approximately 350m north-west of new road infrastructure, including a new flyover carrying the A46 over the A1. Glimpsed views of the new infrastructure and light pollution may be experienced from the asset.</p> <p>The assessment of impact is therefore considered as a permanent minor</p>	<p>The additional planting will have the effect of creating an improved visual buffer between the heritage asset and the Scheme, and directional lighting will ensure that any permanent construction impacts remain slight. Details of this are secured in Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026].</p>	<p>Permanent Slight Adverse (not significant)</p>

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			adverse impact, resulting in a slight adverse effect on the heritage value of the asset.		
Farndon Windmill (MM139)	Grade II Listed Building	High	<p>Temporary The asset lies approximately 10 metres from the Order Limits of the Scheme. The presence of construction machinery within close proximity of the asset will give rise to potential vibration or ground settlement issues and could affect the structural integrity of the asset.</p> <p>Furthermore, the mill will experience significant impacts from noise, dust, light and movement within the setting of the mill.</p> <p>Therefore, the assessment of impact is considered to be moderate adverse, resulting in a temporary large adverse effect on</p>	<p>Structural monitoring for vibration impacts will enable remedial repair measures or a change in construction methods to be undertaken as mitigation should any structural impacts be identified. Monitoring should be undertaken before construction commences to provide a baseline, during the construction phase, and use of the adjacent meadow as a compound, and for a period of 6 months after construction ceases to account for any ground settlement and seasonal changes. Monitoring will not alter the effect of construction impact. Specific details of the monitoring are set out in reference CH2 in Table 3-2 REAC of the First Iteration EMP [REP6-012] and Section 3 of the Archaeological Management Plan [REP5-026].</p> <p>Measures to reduce impacts associated with light, dust and noise are set out in the Table 3-2 REAC of the First Iteration EMP [REP6-012] including references AQ1 (dust), L1 (lighting), CH3 (noise fencing), CH4 (fencing and hoarding) and NV1 (noise) and within the</p>	Temporary Large Adverse.

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			the heritage value of the asset.	<p>Archaeological Management Plan [REP5-026].</p> <p>The essential mitigation measures described above and embedded mitigation measures built into the Scheme design (as detailed in Chapter 2 (The Scheme) of the ES) are not considered sufficient to counteract the unavoidable temporary construction impacts of presence of machinery, construction elements and materials, light, dust, noise, etc, to such a degree that the effects could be considered reduced by the mitigation.</p>	
			<p>Permanent</p> <p>The new section of flyover will not result in a cumulative impact on setting that would further detract from the significance of the mill. The slight alteration to the setting of the mill arising from the creation of floodplain compensation areas, reduces the agricultural character of the nearby landscape and will slightly reduce the contribution the setting</p>	<p>No mitigation required, bar remedial works to the structure of the mill if deemed necessary following monitoring during the construction phase. The monitoring is secured in reference CH2 in Table 3-2 REAC of the First Iteration EMP [REP6-012] and in the Archaeological Management Plan [REP5-026].</p>	Permanent Slight Adverse (not significant)

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>makes to the significance of the mill.</p> <p>The assessment of impact is therefore considered as a permanent minor adverse impact, resulting in a slight adverse effect on the heritage value of the asset.</p>		
Causeway Arches 650 meters north-west of level crossing (MM141) (known as Smeaton's Arches)	Grade II Listed Building	High	<p>Temporary</p> <p>The asset is located within the Order Limits of the Scheme. The presence of construction machinery within close proximity of the asset will give rise to noise, movement, dust and light pollution, arising from the works proposed to the Cattle Market Roundabout, and the demolition and rebuilding of the adjacent section of arches, will adversely impact on the setting and heritage value of the asset.</p>	<p>Measures to reduce impacts associated with light, dust and noise on the setting of the heritage asset are set out in the Table 3-2 REAC of the First Iteration EMP [REP6-012] including references AQ1 (dust), L1 (lighting) and NV1 (noise), and within the Archaeological Management Plan [REP5-026].</p> <p>The essential mitigation measures described above and embedded mitigation measures built into the Scheme design (as detailed in Chapter 2 (The Scheme) of this ES) are not considered sufficient to counteract the unavoidable temporary construction impacts of presence of machinery, construction elements and materials, light, dust, noise, etc, to such a degree that the effects could be considered reduced by the mitigation.</p>	Temporary Moderate Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			Therefore, the assessment of impact is considered to be moderate adverse, resulting in a temporary moderate adverse effect on the heritage value of the asset.		
			<p>Permanent The asset will be located approximately 170m north of a new grade separated junction at Cattle Market roundabout. The presence of the flyover at Cattle Market Roundabout and the realignment of the Causeway Arches (MM228) and road coming off the roundabout, will result in an alteration to the linear form of this asset and an impact on the setting of adjacent sections.</p> <p>Therefore the assessment of impact is moderate adverse, resulting a permanent large adverse effect on</p>	The design of the flyover includes a design that is intended to take inspiration from but not compete with, the Causeway Arches. However, due to the scale of the structure, the design will not reduce the significance of effect to this section of the Causeway Arches.	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			the heritage value of the asset.		
Causeway Arches 500 meters north-west of level crossing (MM228) (known as Smeaton's Arches)	Grade II Listed Building	High	<p>Temporary The asset lies within the Order Limits of the Scheme. It is proposed to demolish the south-west side of the asset which was previously rebuilt in 1922 and the presence of construction machinery within the immediate vicinity of the asset, will give rise to potential vibration issues and could affect the structural integrity of the remaining 18th century elements of the asset, in addition to the usual impacts of noise, dust, and light pollution.</p> <p>Therefore, the assessment of impact is moderate adverse, resulting in a temporary large adverse effect on the heritage value of the asset as a whole.</p>	<p>Structural monitoring for vibration impacts will enable remedial repair measures or change in construction methods to be undertaken as mitigation should any structural impacts be identified. Monitoring should be undertaken before construction commences to provide a baseline, during the construction phase, and use of the adjacent meadow as a compound, and for a period of 6 months after construction ceases to account for any ground settlement and seasonal changes. Monitoring will not alter the effect of construction impact. Specific details of the monitoring are set out in reference CH2 in Table 3-2 REAC of the First Iteration EMP [REP6-012] and Section 3 of the Archaeological Management Plan [REP5-026].</p> <p>Measures to reduce impacts associated with light, dust and noise are set out in the Table 3-2 REAC of the First Iteration EMP [REP6-012] references AQ1 (dust), L1 (lighting), CH4 (fencing and hoarding) and NV1 (noise) and within the Archaeological Management Plan [REP5-026].</p>	Temporary Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
				The essential mitigation measures described above and embedded mitigation measures built into the Scheme design (as detailed in Chapter 2 (The Scheme) of this ES) are not considered sufficient to counteract the unavoidable temporary construction impacts of presence of machinery, construction elements and materials, light, dust, noise, etc, to such a degree that the effects could be considered reduced by the mitigation.	
			<p>Permanent The asset will be located within the Order Limits of the Scheme. The demolition of part of the asset and widening of the road will result in the loss of historic (though not original) fabric and an alteration in its dimensions and strictly linear form and setting. This will affect the ability to appreciate its historic interest.</p> <p>In addition a new flyover is being constructed across the adjacent roundabout, reducing the visually linear</p>	<p>The asset should require building recording prior to its partial demolition. Archaeological building recording is included as a mitigation measure but does not reduce the significance of effect. This mitigation requirement is set out within the Archaeological Management Plan [REP5-026]. The design of the rebuilt section will ensure that the significance of the asset is considered.</p> <p>The design of the flyover includes a design that is intended to take inspiration from but not compete with, the Causeway Arches. However, due to the scale of the structure and permanent loss of fabric, the design will not reduce the significance of effect to this section of the Causeway Arches.</p>	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>connection along the Arches towards Newark.</p> <p>Therefore, the assessment of impact is moderate adverse, resulting in a permanent large adverse effect on the heritage value of the asset.</p>		
Winthorpe Conservation Area (MM432)	Conservation Area	High	<p>Temporary</p> <p>The asset lies immediately adjacent to the Order Limits of the Scheme. This part of the Conservation Area displays characteristics of former parkland with individual standard trees and meadow land providing a visual and acoustic buffer zone between the existing A46 and the settlement of Winthorpe. A footpath runs across this field and as the boundary is approached it is increasingly apparent how the asset is already affected by noise and traffic, due to the presence of the A1,</p>	<p>The impacts arising from the Scheme are somewhat diluted in that they will affect only part of the Conservation Area and its setting and not the whole. Working within the core working hours (subject to the exceptions) reduces the impacts of lights, noise, movement and dust; this is detailed in references G2 (working hours), AQ1 (dust), L1 (lighting), CH3 (noise fencing) and NV1 (noise) of Table 3-2 REAC of the First Iteration EMP [REP6-012]. These mitigation measures will reduce the level of effect across the whole asset.</p>	Temporary Moderate Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>immediately adjacent and the A46. However, the presence of construction machinery close to the asset will increase the level of noise and affect the ability to appreciate the agricultural setting of the asset.</p> <p>Therefore, the assessment of impact is moderate adverse, resulting in a temporary large adverse effect on the heritage value of the asset.</p>		
			<p>Permanent The asset lies immediately adjacent to the Order Limits of the Scheme. The asset is already affected by noise and traffic, due to the presence of the A1, immediately adjacent and the A46. The widening of the existing A46 will have the effect of partially eroding the buffer zone provided by this part of the</p>	<p>Landscape planting will soften the visual impact of the bund and road, by extending hedging and reinforcing the parkland character and appearance of this part of the Conservation Area. This is secured in Figure 2.3 (Environmental Masterplan) of the ES Figures [AS-026]. This will therefore reduce the level of effect.</p>	<p>Permanent Slight Adverse (not significant)</p>

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>conservation area, as well as reducing the quality and amenity value of this land and footpath. Proposed landscape bunds to mitigate against the noise will be visually incongruous.</p> <p>Therefore, the assessment of impacts is permanent moderate adverse resulting in permanent moderate adverse effect on the heritage value of the asset.</p>		
Pit alignment at Newark (MM849)	Non - designated	Low	<p>Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.</p>	N/A	Temporary Neutral (not significant)
			<p>Permanent The asset is located within the Order Limits of the Scheme. Construction of the Brownhills Junction will result in the removal of below ground archaeological remains</p>	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.	Permanent Moderate Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>associated with the asset.</p> <p>This will result in a permanent major adverse impact and a permanent moderate adverse effect on the heritage value of the asset.</p>	<p>Archaeological investigation is included as a mitigation measure as part of the essential mitigation but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP6-004].</p>	
Enclosures at Kelham (MM859)	Non - designated	Medium	<p>Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.</p>	N/A	Temporary Neutral (not significant)
			<p>Permanent The asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset will be removed during construction of the Kelham and Averham floodplain compensation area.</p>	<p>In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of</p>	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.	essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	
Linear features & enclosure at Averham (MM869)	Non - designated	Medium	Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.	N/A	Temporary Neutral (not significant)
			Permanent The asset is partially located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset will be removed during construction of the Kelham and Averham floodplain compensation area without total loss.	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3	Permanent Moderate Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			This will result in a permanent major adverse impact and a permanent moderate adverse effect on the heritage value of the asset.	of the AMP which will be produced following the completion of the trial trenching and test pitting. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	
Cropmark complex at Newark (MM876)	Non - designated	Medium	Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.	N/A	Temporary Neutral (not significant)
			Permanent The asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset will be removed or truncated during construction of the new alignment of the A46. This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
				pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	
Linear feature at Newark (MM896)	Non – designated	Medium	Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.	N/A	Temporary Neutral (not significant)
			Permanent The asset is located within the Order Limits of the Scheme. Potential removal of a substantial portion of the main area of the settlement through construction of the widened and new section of the A46 and the associated activities in this location. This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
				been submitted as part of the DCO application [REP5-026].	
Possible enclosure sites and associated archaeological features (MM930)	Non – designated	Medium	Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.	N/A	Temporary Neutral (not significant)
			Permanent The asset is located within the Order Limits of the Scheme. Potential removal of a substantial portion of the main area of the settlement through construction of the widened and new section of the A46 and associated activities in this location. This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
Possible enclosure site, paleochannel and relict field system (MM931)	Non – designated	Medium	Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.	N/A	Temporary Neutral (not significant)
			Permanent The asset is located within the Order Limits of the Scheme. Potential removal of a substantial portion of the main area of the settlement through construction of the widened and new section of the A46 and associated activities in this location. This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	Permanent Large Adverse
Possible archaeological feature (MM932)	Non - designated	Medium	Temporary No temporary impacts are predicted to this	N/A	Temporary Neutral (not significant)

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			asset during the construction phase of the Scheme.		
			<p>Permanent The asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset will be removed during construction of Brownhills Junction.</p> <p>This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.</p>	<p>In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].</p>	Permanent Large Adverse
Possible enclosure site and/or relict field system (MM933)	Non - designated	Medium	<p>Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.</p>	N/A	Temporary Neutral (not significant)

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>Permanent The asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset will be removed during construction of the A1 flyover and access road, east of Brownhills Junction.</p> <p>This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.</p>	<p>In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].</p>	Permanent Large Adverse
Enclosure cropmarks (MM934)	Non - designated	Medium	<p>Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.</p>	N/A	Temporary Neutral (not significant)
			<p>Permanent The asset is located within the Order Limits</p>	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>of the Scheme, the land will be required for the construction of the access road and bunds east of Winthorpe. Below ground archaeological remains associated with the asset will be removed during construction.</p> <p>This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.</p>	<p>and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].</p>	
Possible barrow, linear features/field boundaries (MM937)	Non - designated	Medium	<p>Temporary No temporary impacts are predicted to this asset during the construction phase of the Scheme.</p>	N/A	Temporary Neutral (not significant)
			<p>Permanent The asset is partially located within the Order Limits of the Scheme. While the identified barrow feature is outside</p>	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>of the Order Limits other below ground archaeological remains associated with the asset will be removed during construction works at Winthorpe Roundabout including the new access track to Langford Hall.</p> <p>This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.</p>	<p>understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026] .</p>	
Possible enclosure site and/or relict field system (MM945)	Non - designated	Medium	<p>Temporary</p> <p>No temporary impacts are predicted to this asset during the construction phase of the Scheme.</p>	N/A	Temporary Neutral (not significant)

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>Permanent The asset is located within the Order Limits of the Scheme. Ground level reduction associated with the construction of the Kelham and Averham FCA will result in the removal of below ground archaeological remains associated with the asset.</p> <p>This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.</p>	<p>In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].</p>	Permanent Large Adverse
Organic deposit (MM949)	Non - designated	Medium	<p>Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent</p>	N/A	Temporary Neutral (not significant)

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>Permanent This asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset may be further truncated by the widening of the A46 creation of ponds and the associated works.</p> <p>Considering the likely earlier truncation by previous works, this will result in a permanent moderate adverse impact and a permanent moderate adverse effect on the heritage value of the asset.</p>	<p>In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirements 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026] .</p>	Permanent Moderate Adverse
Paleochannel (MM956)	Non - designated	Medium	<p>Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent.</p>	N/A	Temporary Neutral (not significant)
			<p>Permanent This asset is located</p>	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset may be mostly removed by the construction of the road Scheme.</p> <p>This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.</p>	<p>and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].</p>	
Paleochannel (MM957)	Non - designated	Medium	<p>Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent.</p>	N/A	Temporary Neutral (not significant)
			<p>Permanent This asset is located within the Order Limits of the Scheme. Below ground archaeological</p>	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>remains associated with the asset may be mostly removed by the widening of the A46 and the ground reduction for the Farndon FCA.</p> <p>This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.</p>	<p>understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026] .</p>	
Paleochannel (MM958)	Non - designated	Medium	<p>Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent.</p>	N/A	Temporary Neutral (not significant)
			<p>Permanent This asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset may be mostly removed by the</p>	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			<p>widening of the A46 and the ground reduction for the Farndon borrow pit.</p> <p>This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.</p>	<p>Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].</p>	
Paleochannel (MM959)	Non - designated	Medium	<p>Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent.</p>	N/A	Temporary Neutral (not significant)
			<p>Permanent This asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset may be mostly removed by the widening of the A46 and the ground reduction for the Farndon borrow pit.</p>	<p>In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme.</p> <p>Archaeological investigation is included as a mitigation measure, as part of</p>	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.	essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	
Paleochannel (MM960)	Non - designated	Medium	Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent.	N/A	Temporary Neutral (not significant)
			Permanent This asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset may be mostly removed by the widening of the A46 and the ground reduction for the Farndon FCA. This will result in a permanent major	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			adverse impact and a permanent large adverse effect on the heritage value of the asset.	the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	
Paleochannel (MM961)	Non - designated	Medium	Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent.	N/A	Temporary Neutral (not significant)
			Permanent This asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset may be mostly removed by the widening of the A46 and the ground reduction for the Farndon borrow pit. This will result in a permanent major adverse impact and a permanent large adverse effect on the	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
			heritage value of the asset.	completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	
Paleochannel (MM962)	Non - designated	Medium	Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent.	N/A	Temporary Neutral (not significant)
			Permanent This asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset may be mostly removed by the widening of the A46 and the ground reduction for the Farndon FCA. This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has	Permanent Large Adverse

Receptor	Designation	Value	Description and magnitude of impact (pre-mitigation)	Description of mitigation	Residual effect
				been submitted as part of the DCO application [REP5-026].	
Paleochannel (MM963)	Non - designated	Medium	Temporary No temporary impact is assessed for this asset as any removal during construction will be permanent.	N/A	Temporary Neutral (not significant)
			Permanent This asset is located within the Order Limits of the Scheme. Below ground archaeological remains associated with the asset may be mostly removed by the widening of the A46 and the ground reduction for the Farndon FCA. This will result in a permanent major adverse impact and a permanent large adverse effect on the heritage value of the asset.	In accordance with paragraph 5.140 of the 2015 NPSNN the asset will be subject to archaeological excavation and recording as part of a planned programme of archaeological works aimed at recording and advancing the understanding of heritage assets that will be lost wholly or partially as a result of the Scheme. Archaeological investigation is included as a mitigation measure, as part of essential mitigation, but does not reduce the significance of effect. Details of the investigations will be outlined in Phase 3 (Archaeological Mitigation Strategy) of the AMP which, in accordance with Requirement 9 of the draft DCO [REP6-004], will be produced following the completion of the trial trenching and test pitting and prior to commencement of construction. Phase 2 of the AMP has been submitted as part of the DCO application [REP5-026].	Permanent Large Adverse

6.12 Monitoring

- 6.12.1 Due to proximity and/or longevity of works, certain heritage assets may be at risk from adverse effects arising from impacts of construction noise or vibration. These are: grade II Farndon Windmill (MM139), grade II* Concrete Footbridge (MM038) and the grade II section of Smeaton's Arches designated as Causeway Arches 500 meters north-west of level crossing (MM228).
- 6.12.2 Structural monitoring for vibration impacts for grade II Farndon Windmill (MM139), grade II* Concrete Footbridge (MM038) and the grade II section of Smeaton's Arches designated as Causeway Arches 500 meters north-west of level crossing (MM228) will enable remedial repair works to be undertaken as mitigation should any structural impacts be identified. Monitoring should be undertaken before construction commences to provide a baseline, during the construction phase, and for a period of 6 months after construction ceases to account for any ground settlement and seasonal changes. Monitoring will not alter the effect of construction impact but should prevent permanent significant effects. If adverse structural impacts arise, and are not rectified, these will be permanent adverse effects.
- 6.12.3 Details of these monitoring requirements will be secured through the Second Iteration EMP in accordance with Requirement 3 of the draft DCO [REP6-004], and Phase 3 of the Archaeological Mitigation Strategy (contained within the Archaeological Management Plan [REP5-026]) in accordance with Requirement 9 of the draft DCO [REP6-004].

6.13 Conclusions

Construction

Designated heritage assets

- 6.13.1 Eight designated built heritage assets are identified as likely to experience a total of ten significant adverse effects arising from the construction of the Scheme as a result of changes to their setting, including visual or noise intrusions, or from the potential for direct impact as a result of partial loss, alteration, vibration or ground settlement during construction. These are:
- Temporary Large Adverse Effect:
 - (MM139) Farndon Windmill. Grade II listed
 - (MM228) Causeway Arches 500m north-west of level crossing. Grade II listed (Smeaton's Arches)
 - Permanent Large Adverse Effect:

- (MM141) Causeway Arches 650m north-west of level crossing. Grade II listed (Smeaton's Arches)
 - (MM228) Causeway Arches 500m north-west of level crossing. Grade II listed (Smeaton's Arches)
 - Temporary Moderate Adverse Effect:
 - (MM026) Langford Hall. Grade II* listed
 - (MM038) Concrete Footbridge across the River Trent. Grade II* listed
 - (MM053) Lowwood. Grade II listed
 - (MM432) Winthorpe Conservation Area
 - (MM063) The Church of All Saints, Winthorpe. Grade II listed
 - (MM141) Causeway Arches 650m north-west of level crossing. Grade II listed (Smeaton's Arches)
- 6.13.2 Where possible the iterative development of the Scheme design has taken into account heritage assets identified through the assessment to date, including design adjustments to preserve these assets and their setting where possible (further details are contained in Section 2.5 of Chapter 2 (The Scheme) of this ES. Further refinement of the design measures may minimise or reduce adverse effect upon these assets or their settings, most notably the Causeway Arches 650 metres and 500 metres north-west of the railway crossing (known locally as Smeaton's Arches) and Winthorpe Conservation Area (MM141, MM228, MM432).
- 6.13.3 Those assets which have the potential to be impacted structurally during the construction phase have been noted. Monitoring of vibration on these assets will determine if there are any structural impacts arising, requiring mitigation through remedial repairs, and these monitoring requirements will be secured through the Archaeological Management Plan [REP5-026] and the First Iteration EMP [REP6-012]. Other temporary impacts are mitigated against through embedded design to minimise those impacts arising from the construction phase.
- 6.13.4 The significant effects on the grade II* and grade II designated assets identified above are not considered to result in substantial harm as defined in the NPPF and 2015 NPSNN. The impacts and effects described above do not result in substantial changes within the setting of, or direct physical impacts to, a designate asset, to a degree where the understanding of that heritage asset has been substantially altered.

Non-designated heritage assets

- 6.13.5 Construction of the Scheme is likely to result in permanent significant adverse effects on the heritage value of several low to medium value, and one high value non-designated archaeological remains dating to the prehistoric, Roman and or early medieval periods. Direct physical impacts associated with groundworks required for the construction of

new road infrastructure and/or floodplain compensation areas would result in the total loss or partial removal of below ground archaeological remains associated with these assets which would constitute a significant adverse effect. However, archaeological excavation and recording undertaken before the physical loss of the asset will advance our understanding of the significance of the asset and this retained information will form part of our collective cultural heritage that can be studied and enjoyed in the future.

6.13.6 A total of 21 non-designated archaeological assets are identified as likely to experience significant adverse effects as a result of the construction of the Scheme, following archaeological excavation and recording. These are:

- Large Adverse Effect:
 - (MM859) Enclosures at Kelham
 - (MM876) and (MM896) Cropmark complex and linear features south-west of Winthorpe
 - (MM930) and (MM931) Enclosure cropmarks and possible paleochannel south-west of Winthorpe
 - (MM932) Possible cropmark feature
 - (MM933) Enclosure cropmark, linear features and field boundaries
 - (MM934) Enclosure cropmarks.
 - (MM937) Possible barrow, linear features/field boundaries
 - (MM945) Possible enclosure site and/or relict field system
 - (MM956) Paleochannel
 - (MM957) Paleochannel
 - (MM958) Paleochannel
 - (MM959) Paleochannel
 - (MM960) Paleochannel
 - (MM961) Paleochannel
 - (MM962) Paleochannel
 - (MM963) Organic Deposits
- Moderate Adverse Effect:
 - (MM849) Pit alignment at Newark
 - (MM869) Linear features & enclosure at Averham
 - (MM949) Organic Deposit

6.13.7 It is noted that the remains of the settlement and paleochannel south-west of Winthorpe have been identified separately through several methods of investigation including aerial survey and geophysical survey. Although the remains make up two distinct assets, they have been assigned four unique identification numbers representing the areas identified by certain survey methods (MM876, MM896, MM930, MM931). As such four significant effects are reported where there are only two archaeological assets.

6.13.8 Paleochannels identified above may be part of the same feature but have been identified separately for the purpose of this document. As such the total number of significant impacts may be fewer.

- 6.13.9 It is further noted that the features already identified form an area of heritage value which have been considered together as well as individual assets. As such the removal of one part is considered to have a detrimental impact on other features within the area.
- 6.13.10 Further intrusive investigation began in Autumn 2023 (and planned to complete in Spring 2024), which includes a programme of trial trenching and test pitting developed in consultation with cultural heritage stakeholders. These investigations have the potential to identify additional unknown archaeological remains. As such this chapter has included an assessment of the value and potential effects of the Scheme upon potential unknown archaeological remains (see Appendix 6.2 (Assessment of Heritage Value) [APP-133], Appendix 6.3 (Assessment of Cultural Heritage Effects During Construction of the Scheme) [APP-134] and Appendix 6.4 (Assessment of Cultural Heritage Effects During Operation of the Scheme) of the ES Technical Appendices [APP-135]). The assessment is based upon professional judgement using the known baseline gathered for Appendix 6.1 (Cultural Heritage DBA) of the ES Appendices [AS-099] alongside the results of non-intrusive and intrusive archaeological investigations undertaken as part of the Scheme (Appendices D to K of the Cultural Heritage DBA [AS-099]). The assessment has predicted potential significant effects upon unknown archaeological remains and as such the completion of the trial trenching and test pitting will not change the effects predicted within this chapter.
- 6.13.11 Any heritage assets identified through the continuing archaeological investigations, which will be removed or truncated as per the First Iteration EMP [REP6-012] will be suitably excavated and recorded to compensate for their loss. The social value of the Scheme will be enhanced through community engagement which will be implemented throughout the Scheme. No significant permanent construction effects are expected upon the heritage value of any non-designated historic landscapes

Operation

Designated heritage assets

- 6.13.12 There are no predicted significant operational effects on designated built heritage assets, archaeological remains or historic landscapes expected as a result of the operation of the Scheme.

Non-designated heritage assets

- 6.13.13 There are no predicted significant operational effects on non-designated built heritage assets, archaeological remains or historic landscapes expected as a result of the operation of the Scheme.

6.14 References

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⁵⁰ [Clarification note]

⁵¹ [Clarification note]

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⁵³ [Clarification note]