A66 Northern Trans-Pennine Project
TR010062

3.2 Environmental Statement
Chapter 8 Cultural Heritage

APFP Regulations 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Volume 3

June 2022

Infrastructure Planning

Planning Act 2008

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

A66 Northern Trans-Pennine Project Development Consent Order 202x

3.2 ENVIRONEMENTAL STATEMENT CHAPTER 8 CULTURAL HERITAGE

Regulation Number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010062
Application Document Reference	3.2
Author:	A66 Northern Trans-Pennine Project Team, National Highways

Version	Date	Status of Version
Rev 1	13 June 2022	DCO Application

CONTENTS

FIGURES (VOLUME 2)

TECHNICAL APPENDICES (VOLUME 3)

8 Cultural Heritage

8.1 Introduction

8.1.1 This chapter assesses the likely significant Cultural Heritage effects of the construction and operation of the Project, following the methodology set out in the *Design Manual for Roads and Bridges (DMRB) LA 106 Cultural Heritage Assessment* (Highways England, 2020)[1] and any other relevant guidance. It details the methodology followed, summarises the legislation and policy framework relevant to the Cultural Heritage assessment and describes the existing environment in the area surrounding the Project. It then considers the design, mitigation and residual effects of the Project, including taking account of relevant characteristics of the future baseline environment. Any key assumptions and limitations applicable to the assessment are also identified.

8.1.2 Any Cultural Heritage effects predicted to be significant are identified in section 8.9: Assessment of likely significant effects, of this chapter. Effects identified in the course of the assessment but not predicted to be significant are presented in Environmental Statement (ES) Appendix 8.10: Impact Assessment Table (Application Document 3.4).

8.1.3 The Cultural Heritage assessment is supported by seven figures (Environmental Statement Volume 2) and 11 Technical Appendices (Environmental Statement Volume 3) as listed on the contents page.

8.1.4 This Environmental Impact Assessment (EIA) has been undertaken by competent experts with the relevant and appropriate experience in their respective topics. The lead author of this chapter has:

- BA (Hons) (Dunelm) Latin and Archaeology.
- Membership of the Chartered Institute for Archaeologists at Member level (MCIfA).
- Forty years of experience in professional practice.
- Membership of the International Council on Monuments and Sites (ICOMOS).

8.2 Key assessment parameters

8.2.1 The key assessment parameters shown in Table 8-1: Key assessment parameters have been used in order to enable flexibility in the assessment and to ensure that a reasonable worst case has been assessed.

[1] Highways England (2020) Design Manual for Roads and Bridges LA 106 Cultural Heritage Assessment

Table 8-1: Key assessment parameters

Key Assessment Parameters
Any Cultural Heritage resources within the Order Limits will be affected by the construction of the Project The Zone of Visual Influence (ZVI) within which effects on the setting of Cultural Heritage assets are assessed is derived from the preliminary design.

8.3 Legislation

8.3.1 The following key legislation is applicable to the assessment:

- Ancient Monuments and Archaeological Areas Act 1979.
- Planning (Listed Buildings and Conservation Areas) Act 1990.

Ancient Monuments and Archaeological Areas Act 1979

8.3.2 The Ancient Monuments and Archaeological Areas Act is the key legislation protecting historic monuments in Britain. It defines sites that warrant protection due to their being of national importance as 'ancient monuments'. These can be either Scheduled Monuments (previously, Scheduled Ancient Monuments) or any other monument that is of public interest by reason of the historic, architectural, traditional, artistic or archaeological interest attaching to it.

8.3.3 For the purposes of the relevant statutory duty, the relevant legislation is The Infrastructure (Decisions) Regulations 2010 which sets out the duties of the Secretary of State in the DCO process which include having regard to the desirability of preserving the Scheduled Monument or its setting.

Planning (Listed Buildings and Conservation Areas) Act 1990

8.3.4 The Planning (Listed Buildings and Conservation Areas) Act 1990 (excluding normal planning procedures, which are disapplied by the DCO, which if granted, would encompass all of the normal consents) requires the Secretary of State to hold a list of buildings of special architectural or historical interest, which are accorded statutory protection. In addition, it expects local planning authorities to designate conservations which are parts of their area considered to be *"areas of special architectural or historic interest, the character or appearance of which is desirable to preserve or enhance and design."*

8.3.5 For the purposes of the relevant statutory duty, the relevant legislation is The Infrastructure (Decisions) Regulations 2010 which sets out the duties of the Secretary of State in the DCO process which include having regard to the desirability of: preserving listed buildings, their setting or any features of special architectural or historic interest which they possess; preserving or enhancing the character or appearance of conservation areas; and preserving Scheduled Monuments and their settings).

8.3.6 The act gives local planning authorities the power to designate Conservation Areas which reflect and preserve townscapes or

landscapes of special architectural or historic interest. Planning consent is required for demolition of any building within a Conservation Area.

National level policy

National Policy Statement for National Networks

8.3.7 The primary basis for the Secretary of State deciding whether or not to grant a Development Consent Order (DCO) for the Project is the *National Policy Statement for National Networks (NPSNN)* (Department for Transport, 2014)[2]. The *NPSNN* sets out policies to guide how DCO applications will be decided, and how the effects of national networks infrastructure should be considered. Paragraphs 5.122 and 5.124 of the *NPSNN* state, in respect of conservation of the historic environment:

"Those elements of the historic environment that hold value to this and future generations because of their historic, archaeological, architectural or artistic interest are called 'heritage assets'. Heritage assets may be buildings, monuments, sites, places, areas or landscapes. The sum of the heritage interests that a heritage asset holds, or its value, is referred to as its significance. Significance derives not only from a heritage asset's physical presence, but also from its setting […] Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments, should be considered subject to the policies for designated heritage assets. The absence of designation for such heritage assets does not indicate lower significance."

8.3.8 Table 8-2: Relevant *NPSNN* policies identifies the policies relevant to the Cultural Heritage assessment and references where in this ES information addressing each policy is provided.

Table 8-2: Relevant *NPSNN* policies

NPSNN paragraph reference	Requirement	Applicant response	Where addressed?
5.124	Non-designated assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments should be considered subject to the policies for designated heritage assets.	The assessment considers non-designated assets of potentially national significance in the same way as designated assets	Section 8.4: Assessment methodology below
5.125	Impacts on non-designated heritage assets (as identified either through the development plan process by local	Local authorities along the route have not identified non-designated assets through	ES Appendix 8.8: Gazetteer and Appendix 8.10: Impact Assessment Table (Application Document 3.4)

[2] Department for Transport (2014) National Policy Statement for National Networks]

NPSNN paragraph reference	Requirement	Applicant response	Where addressed?
	authorities, including 'local listing', or through the nationally significant infrastructure project examination and decision making process) should be considered on the basis of clear evidence that the assets have a significance that merit consideration in that process, even though those assets are of lesser value than designated heritage assets.	local listing (although this process has started and is ongoing in Cumbria). Assets which fall into this category have been identified in the assessment process and the impacts upon them considered.	
5.125	Impacts on non-designated heritage assets (as identified either through the development plan process by local authorities, including 'local listing', or through the nationally significant infrastructure project examination and decision making process) should be considered on the basis of clear evidence that the assets have a significance that merit consideration in that process, even though those assets are of lesser value than designated heritage assets.	Local authorities along the route have not identified non-designated assets through local listing (although this process has started and is ongoing in Cumbria). Assets which fall into this category have been identified in the assessment process and the impacts upon them considered.	ES Appendix 8.8: Gazetteer and ES Appendix 8.10: Impact Assessment Table (Application Document 3.4)
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.	Likely significant effects are assessed	Section 8.9: Assessment of likely significant effects below and ES Appendix 8.10: Impact Assessment Table (Application Document 3.4)
5.127	The applicant should describe the significance of any heritage assets	Heritage assets have been identified using the	ES Appendix 8.3: Geoarchaeological Desk Based Assessment, ES Appendix 8.4:

NPSNN paragraph reference	Requirement	Applicant response	Where addressed?
	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.	Historic Environment records for Cumbria, Durham and N Yorks as well as a suite of intrusive and non-intrusive survey techniques. The heritage value of all assets within the study area is laid out in the Routewide Gazetteer. These assets are set within their wider context in the Archaeological & Historical Background appendix and their potential to regional research agendas is set out in the Research Framework.	AP & LiDAR Assessment, ES Appendix 8.5: Geophysical Survey, ES Appendix 8.6: Trenching Reports, Appendix 8.8: Gazetteer, ES Appendix 8.1: Archaeological & Historical Background and ES Appendix 8.9: Research Framework, ES Appendix 8.10: Impact ES Assessment Table (Application Document 3.4)
5.140	Where the loss of the whole or part of a heritage asset's significance is justified, the Secretary of State should require the applicant to record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part)	Where all or part of the significance of a heritage asset will be lost as a result of the project the asset will be suitably recorded,	Historic Environment Mitigation Strategy within the EMP (Application Document 2.7)
5.142	Consider requirements to ensure that appropriate procedures are in place for the identification and treatment of yet undiscovered heritage assets with archaeological interest discovered during construction.	Procedures for identification and treatment of undiscovered heritage assets are in place	Historic Environment Mitigation Strategy within the EMP (Application Document 2.7)

National Planning Policy Framework

8.3.9 In accordance with the *NPPF* the *NPSNN* policies relating to assessment are the primary source of guidance in this document.

Regional and local level policy

8.3.10 Regional and local level policies have been considered as part of the Cultural Heritage assessment where these have informed the identification of receptors (heritage resources) and their sensitivity, the assessment methodology, the potential for likely significant environmental effects and required mitigation. These policies comprise:

- *Eden Local Plan 2014-2032* (Eden District Council, 2018)[3] Policy ENV10 - The Historic Environment.
- County Durham Development Plan (Durham County Council, 2020)[4] Policy 44 - The Historic Environment.
- *Richmondshire Local Plan 2012-2028* (Richmondshire District Council, 2014)[5] *Core Policy CP12: Conserving and Enhancing Environmental and Historic Assets*.

8.3.11 Table 8-3: Regional and local level policies references where in this ES each policy is addressed.

Table 8-3: Regional and local level policies

Policy document	Policy wording	Applicant response	Where addressed?
Eden Local Plan 2014-2032 ENV 10	The Council will require all proposals for development to conserve and where appropriate, enhance the significance of Eden's heritage assets and their setting. The Council will support proposals that would better reveal the significance of the asset, in particular those heritage assets identified as being most at risk. Opportunities for promotion, interpretation and increasing understanding should also be explored.	A strategy for mitigating effects on the heritage resources with opportunities for increasing understanding has been developed.	Historic Environment Mitigation Strategy within the EMP (Application Document 2.7)
Eden Local Plan 2014-2032 ENV 10	The Council will require proposals to protect and where appropriate, enhance the significance and setting of Eden's non-designated heritage assets, including	A strategy for mitigating effects on the heritage resources with opportunities for increasing	Historic Environment Mitigation Strategy (Application Document 2.7)

[3] Eden District Council (2018) Eden Local Plan 2014-2032]
[4] Durham County Council (2020) County Durham Plan
[5] Richmondshire District Council (2014) Richmondshire Local Plan 2012-2028.

Policy document	Policy wording	Applicant response	Where addressed?
	buildings, archaeological sites, parks, landscapes and gardens. Where the harm is outweighed by the public benefits of the proposals, the Council will require an appropriate level of survey and recording, the results of which should be deposited with the Cumbria Historic Environment Record.	understanding has been developed. These resources include non-designated archaeological sites.	
Eden Local Plan 2014-2032 ENV 10	Where a development proposal affecting an archaeological site is acceptable in principle, the Council will ensure preservation of the remains in situ as a preferred solution. Where in situ preservation is not justified, the development will be required to make adequate provision for excavation and recording before or during development.	A strategy for mitigating effects on the heritage resources including provision for excavation and recording has been developed.	Historic Environment Mitigation Strategy (Application Document 2.7)
Eden Local Plan 2014-2032 ENV 10	All development proposals affecting the historic environment, heritage assets and their settings (including where there is the potential of unknown archaeological assets) will need to be accompanied by an assessment of the significance of the asset and its setting and how it will be affected by the proposed development.	The significance of all assets within the study area is assessed.	ES Appendix 8.10: Impact Assessment Table, ES Appendix 8.8: Gazetteer of Heritage Resources, ES Appendix 8.3: Geoarchaeological Desk Based Assessment, ES Appendix 8.4: AP & LiDAR Assessment, ES Appendix 8.5: Geophysical Survey, ES Appendix 8.6: Trenching Reports (Application Document 3.4)
County Durham *Development Plan Policy 44*	Great weight will be given to the conservation of all designated assets and their settings (and non-designated heritage assets of archaeological interest that are	The Project seeks to conserve designated assets and their settings. Where this is not possible the design has been	Project Design Principles (Application Document 5.11), Historic Environment

Policy document	Policy wording	Applicant response	Where addressed?
	demonstrably of equivalent significance to Scheduled Monuments). Such assets should be conserved in a manner appropriate to their significance, irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance. Development which leads to less than substantial harm to a designated heritage asset will be weighed against the public benefits of the proposal. Development which leads to substantial harm to, or total loss of, the significance of a designated heritage asset will only be acceptable where it can be demonstrated that it is necessary to achieve substantial public benefits that outweigh that harm or loss, or where all of the following apply: the nature of the heritage asset prevents all reasonable uses of the site; no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and the harm or loss is outweighed by the benefit of bringing the site back into use.	developed with the intent to reduce the severity of any impacts. The resulting impacts will be mitigated where possible	Mitigation Strategy with the EMP (Application Document 2.7), Case for the Project (Application Document 2.2) and EMP (Application Document 2.7)
Richmondshire Local Plan 2012-2028 Core Policy CP12	Those elements which contribute to the significance of the heritage assets across the Plan area will be conserved and, where appropriate, enhanced. Particular attention	The impacts from the Project on both designated and undesignated heritage assets have been assessed.	Section 8.9: Assessment of likely significant effects below and ES Appendix 8.8: Gazetteer and ES

Policy document	Policy wording	Applicant response	Where addressed?
	will be paid to those assets referred to in Paragraph 4.12.16 which make a particularly important contribution to the character and sense of place of Richmondshire. 2. Where a proposal is likely to result in harm to the significance of a designated heritage asset and there are compelling reasons for allowing that development, opportunities will be sought to offset this harm by ensuring that other elements which contribute to the significance of that particular asset are enhanced or their significance better revealed. 3. Consideration of development proposals will also need to take into account the objective of securing the long term existence of the heritage asset. This is particularly the case for those assets which have been identified as being at risk. Enabling development may be considered acceptable in the particular location (site or buildings), where all other alternatives have been explored, and the development or use proposed is the only practical means of securing the future conservation of a heritage asset.		Appendix 8.10: Impact Assessment Table (Application Document 3.4)

Other relevant policy and guidance

8.3.12 In addition to compliance with the *NPSNN* and *NPPF*, this Cultural Heritage assessment has been compiled in accordance with professional standards and guidance from the Chartered Institute for Archaeologists (CIfA), Historic England and the Department for Levelling Up, Housing and Communities as follows:

- Standard and guidance for historic environment desk-based assessment (Charted Institute for Archaeologists, 2020)[6].
- *Code of conduct: professional ethics in archaeology* (Charted Institute for Archaeologists, 2021)[7].
- Good Practice Advice in Planning Note 2 (GPA2) *Managing Significance in Decision-Taking in the Historic Environment* (Historic England, 2015)[8].
- *Good Practice Advice in Planning Note 3 (Second Edition) The Setting of Heritage Assets* (Historic England 2017)[9].
- *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* (English Heritage, 2008)[10].
- Planning Practice Guidance: Historic Environment[11].

8.4 Assessment methodology

8.4.1 The methodology for the Cultural Heritage assessment follows the guidance set out within *Design Manual for Roads and Bridges (DMRB) LA 106 Cultural Heritage Assessment (DMRB LA 106) (Highways England, 2020)*[12] and the CIfA's *Standard and guidance for historic environment desk-based assessment* (Chartered Institute for Archaeologists, 2020)[13].

8.4.2 Both of those documents establish that the environmental value (sensitivity) (commonly referred to as 'significance' outside of the DMRB) of heritage resources is the sum of their archaeological, architectural, historic and artistic interest. They recommend that desk-based assessments (DBAs) should make appropriate consideration of the setting(s) of heritage resources and the contribution this makes, if any, to their environmental value (sensitivity). Environmental value (sensitivity) must be judged in a local, regional, national or international context as appropriate.

8.4.3 ES Appendix 8.1: Archaeological and Historical Background to Appendix 8.3: Geoarchaeological Desk Based Assessment (Application Document 3.3) provide the archaeological, geoarchaeological and historic landscape context of the Cultural Heritage resources within the study area. ES Appendix 8.4: AP and LiDAR Assessment to ES Appendix 8.7:

[6] Charted Institute for Archaeologists (2020) Standard and Guidance for Historic Environment Desk-Based Assessment]
[7] Charted Institute for Archaeologists (2021) Code of conduct: professional ethics in archaeology
[8] Historic England (2015) Managing Significance in Decision - Taking in the Historic Environment]
[9] Historic England (2017) Good Practice Advice in Planning Note 3 (Second Edition) The Setting of Heritage Assets
[10] English Heritage (2008) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment
[11] Ministry for Housing, Communities and Local Government (2014) Planning Practice Guidance: Historic Environment
[12] Highways England (2020) Design Manual for Roads and Bridges LA 106 Cultural Heritage Assessment
[13] Charted Institute for Archaeologists (2020) Standard and Guidance for Historic Environment Desk-Based Assessment

Geochemcial Survey Report (Application Document 3.4) discuss the resources identified during surveys undertaken in connection with the Project. All resources identified in the study area are described in ES Appendix 8.8: Gazetteer (Application Document 3.4). The environmental value (including the contribution made by setting) of the resources which are affected by the Project described in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4) where an assessment of the effects upon them may also be found.

Baseline conditions

Study area

8.4.4 The study area is defined according to the sensitivity of the receiving environment and the potential impacts of the Project.

Designated heritage resources

8.4.5 The study area considered in this chapter comprises a buffer that extends 1km from the Order Limits. This buffer was selected on the basis of professional judgement and experience and reflects the fact that, by their nature, linear road schemes would sit within a landscape and are likely to be visible for short stretches of their overall length. As such, they are highly unlikely to alter the setting of heritage resources to a degree that would result in either a significant adverse or beneficial effect beyond 1km. The design of the Project was reviewed, and it was concluded that it shared these characteristics, and therefore fitted within the expectations of professional judgement.

8.4.6 All designated heritage resources within the 1km study area are considered within the Cultural Heritage assessment. In addition, where designated resources such as registered park and gardens (RPG) straddle the limit of the study area, any designated heritage resources that are associated within them that could experience effects are also included in the assessment.

Conservation Areas

8.4.7 The following Conservation Area Appraisals and related documents were consulted:

- Penrith Conservation Area Character Appraisal;
- Temple Sowerby Conservation Area Character Appraisal and Management Plan;
- Appleby-In-Westmorland Conservation Area Historic Area Assessment;
- Settle to Carlisle Conservation Area Railway buildings descriptions;
- Management of Conservation Areas in Eden Supplementary Planning Document; and
- North Pennines AONB Management Plan 2019-2024.

Zone of Visual Influence

8.4.8 The noise model and the 2m Digital Surface Model (DSM) Zone of Visual Influence (ZVI) model have been reviewed against known designated heritage resources of very high and high value (see

8.4.9 Table 8-4: Value (importance) criteria for heritage resources) in order to identify any such resources where visual or noise changes may result in a significant effect on their environmental value (sensitivity).

8.4.10 The designated heritage resources located within the 2km ZVI (and incorporated into ES Appendix 8.8: Gazetteer (Application Document 3.4)) were determined spatially by overlaying their locations on the 2m DSM 4.7m offset viewshed areas described in Chapter 10: Landscape and Visual Effects and shown in ES Figure 8.8.1: Designated Heritage Resources (Application Document 3.3).

Non-designated heritage resources

8.4.11 The Cultural Heritage assessment considers non-designated heritage resources within 300m of the Order Limits. This study area is based upon professional judgement and that non-designated resources are less likely to experience significant adverse effects as a result of changes to their settings beyond this distance, because of their lower environmental value (sensitivity). This does not mean that non-designated heritage resources cannot be of greater than a low environmental value (sensitivity), just that this is less common.

Historic landscape character areas

8.4.12 The Historic Landscape Character (HLC) of a region is not, itself, a heritage resource. It is, however, part of the living landscape where the time-depth of past use is still visibly legible and/or archaeologically identifiable. It is these elements of the landscape that give it its character, and it is this character that holds heritage interest(s) and can therefore be affected by change.

8.4.13 In order to account for the fact that the character of the landscape surrounding each Scheme could experience change(s), the HLC of the region has been divided into eight Historic Landscape Character Area's (HLCA) through the process described in Appendix 8.2: Historic Landscape Baseline Report (Application Document 3.4). The eight individual HLCA's are areas with similar characteristics and heritage interest(s) which, as a group, can be quantified; thus, enabling an assessment of the change(s) to the character of the landscape which may be brought about by the Project (see ES Appendix 8.10: Impact Assessment Tables).

8.4.14 The HLCA's have been buffered to a distance of 2km from the Order Limits as this distance provides an appropriately large area to be considered at a landscape scale. As receptors of change, the eight HLCA's are considered to be heritage resources and have therefore been incorporated into Appendix 8.5: Gazetteer (Application Document

3.4). Impacts to the HLCA's are assessed in ES Appendix 8.10: Impact Assessment Tables.

Data sources

8.4.15 The key sources of data used to identify baseline conditions are:

- Historic England's *National Heritage List for England* (NHLE) (Historic England, 2021)[14] - which contains information on all designated sites and buildings in England and additional information on Conservation Areas.
- *Cumbria County Council's Historic Environment Record* (HER) (Cumbria County Council)[15] data - which lists all non-designated sites and buildings of archaeological or historical interest within Cumbria (excluding Lake District National Park) - and Eden District Council's (EDC) Conservation Area data.
- *Durham County Council's HER* (Durham County Council)[16] data - which lists all sites and buildings of archaeological or historical interest within Durham - and Conservation Area data.
- *North Yorkshire County Council's HER* (North Yorkshire County Council)[17] - which lists all sites and buildings of archaeological or historical interest within North Yorkshire - and Conservation Area data.

Additional sources

8.4.16 A desk-based historic map survey was undertaken using historic Ordnance Survey (OS) maps, Tithe Maps and Apportionments, and estate maps obtained from the following repositories:

- Cumbria Archive Service - Carlisle Archive Centre and Kendal Archive Centre.
- Durham County Record Office.
- North Yorkshire County Record Office.
- Landmark Solutions (Historical Map Data) - for Historic OS maps only.

8.4.17 Buildings and structures marked on any map source dating from 1890 or earlier and located within the 300m study area for non-designated heritage resources, are considered to hold possible heritage interest(s). Provided that they are not already entered onto the NHLE and/or HER, and are not located within an established town, village, or other large settlement, any such buildings and structures have been recorded as new non-designated heritage resources. These newly identified non-designated heritage resources have been incorporated into ES Appendix 8.5: Routewide Gazetteer of Heritage Resources (Application Document 3.4).

[14] Historic England (2021), National Heritage List for England
[15] Cumbria County Council (n.d.) Historic Environment Record
[16] Durham County Council (n.d.) Historic Environment Record
[17] North Yorkshire County Council (n.d.) Historic Environment Record

8.4.18 Further desk-based research building on the outcomes of engagement with the Roman Roads Research Association (RRRA) and the Milestone Society, as well as investigations using a range of published and unpublished sources (comprising books, archaeological reports, and journals) has led to the identification of several possible archaeological sites and built heritage resources which hold heritage interest(s); all of which are located within the 300m study area for non-designated heritage resources but are not entered onto the HER. As such, these archaeological sites and built heritage resources have been recorded as non-designated heritage resources and incorporated into ES Appendix 8.5: Gazetteer (Application Document 3.4).

Non-intrusive surveys and assessments

8.4.19 A Geoarchaeological Desk Based Assessment (GDBA) of the Project route has been undertaken. The GDBA can be found at ES Appendix 8.3: Geoarchaeological Desk Based Assessment (Application Document 3.4).

8.4.20 A study and analysis of aerial photographic (AP) and Light Detection and Ranging (LiDAR) archives was also undertaken to inform the assessment. This includes searches of the following sources:

- Environment Agency LiDAR data (Environment Agency, 2021)[18] at the highest available resolution.
- Historic England Archive, Swindon.
- The Cambridge University *Collection of Aerial Photography* (CUCAP) (Cambridge University, 2021)[19].
- Publicly available satellite imagery from Google Earth and Bing.
- National Mapping Programme data.
- Ortho-rectified images from an appropriate recent year(s) when conditions have been known to be favourable for aerial photography.

8.4.21 The results of the AP and LiDAR study are presented in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4). This report updates that initially presented in 2021.

8.4.22 Geophysical survey (magnetometer and earth resistance) has been undertaken within the Order Limits with the exception of the area surrounding the A1M Scotch Corner scheme where survey was impractical. The results of the survey are reported on in ES Appendix 8.5: Geophysical Survey Report (Application Document 3.4).

8.4.23 Geochemical survey was undertaken within the Order Limits of the Temple Sowerby to Appleby Scheme in order to provide a more robust baseline in an area where trenching could not be undertaken. The results of the survey are reported on in ES Appendix 8.7: Geochemical Survey Report (Application Document 3.4).

[18] Environment Agency (2021) National LiDAR Programme]
[19] Cambridge University (2021) Collection of Aerial Photography

8.4.24 Setting assessments have been undertaken where a preliminary review of the ZVI suggested that an impact was possible. The results have been incorporated into ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

Archaeological evaluation (trial trenching)

8.4.25 Archaeological evaluation by trial trenching has been undertaken within the Order Limits of all with the exception of the A1M Scotch Corner scheme where the Limits fall entirely within the existing highway. It was undertaken in three lots:

- Lot 1- M6 J40 to Kemplay Bank and Penrith to Temple Sowerby (Center Parcs).
- Lot 2 - Temple Sowerby to Appleby and Appleby to Brough (Warcop).
- Lot 3 - Bowes Bypass, Cross Lanes to Greta Bridge and Stephen Bank to Carkin Moor.

8.4.26 The results of the trenching are reported on in ES Appendix 8.6: Trenching Reports (Application Document 3.4).

Assessment of value

8.4.27 The methodology for assessing effects is based on the principle that the environmental effects of the Project, in relation to a single heritage resource, should be determined by identifying the resource's value, assessing the magnitude of change the Project would have on the resource's significance (where significance is defined as the attributes that give the resource its value) and then combining these two elements to identify the significance of effect. The following Tables provide further detail on the process for assessing effects.

8.4.28 The value (or importance) of each heritage resource within the study area was determined according to the DMRB criteria set out in *DMRB LA 104 Environmental Assessment and Monitoring (DMRB LA 104)* (Highways England, 2020)[20].Table 3.2N.

8.4.29 Table 8-4: Value (importance) criteria for heritage resources, below, is a factor-specific adaptation which has been designed to clarify the generic terms of *DMRB LA 104* Table 3.2N.

8.4.30 Non-designated assets of archaeological interest that are demonstrably of equivalent value to Scheduled Monuments will be identified as such and subject to the policies for designated heritage assets.

Table 8-4: Value (importance) criteria for heritage resources

Value	Typical Descriptors
Very High	Very high importance and rarity, international scale and very limited potential for substitution. Includes World Heritage Sites and nominated sites.

[20] National Highways (2020) Design Manual for Roads and Bridges LA 104 Environmental Assessment and Monitoring

Value	Typical Descriptors
High	High importance and rarity, national scale, and limited potential for substitution. Includes Scheduled Monuments, listed buildings (all grades), Grade I registered parks and gardens, conservation areas containing very important buildings, undesignated structures of clear national importance, undesignated resources of schedulable quality and importance.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution. Includes conservation areas containing buildings that contribute significantly to historic character, Grade II registered parks and gardens, and non-designated archaeological remains.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

Magnitude of impacts

8.4.31 The approach used to assess magnitude of impacts on heritage resources considers the change upon the receptor. This takes into account the severity of impact of the Project, together with the vulnerability of the receptor to change. The approach used is based on professional judgment and experience. It also reflects guidance on 'substantial harm' and 'less than substantial harm' in the *NPPF* and established methodologies in the DMRB.

8.4.32 The types of impact and magnitude used in the assessment have been adapted from *DMRB LA 104* Table 3.4N and are shown in Table 8-5: Broad criteria for assessing the magnitude of change/impact. This table is a factor-specific adaptation which has been designed to mitigate against the generic terms of *DMRB LA 104* Table 3.4N.

Table 8-5: Broad criteria for assessing the magnitude of change/impact

Magnitude of Impact (change)		Description and nature of change/impact
Major	Adverse	Loss of heritage resource and/or quality and integrity of heritage resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of heritage resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse	Loss of heritage resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial

Magnitude of Impact (change)		Description and nature of change/impact
		impact on attribute or a reduced risk of negative impact occurring
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No Change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Significance of effect

8.4.33 By combining the magnitude of impact (or change) and the value (or importance) of each heritage resource, an assessment has been made of the significance of effect, taking into account the possibility and nature of mitigation. The resultant effects may be either negative (adverse) or positive (beneficial) or neutral, depending on the nature of the impact.

8.4.34 Significance of effect upon heritage resources is assessed in accordance with *DMRB LA 104* Table 3.8.1 Significance Matrix (see Chapter 4 Table 4.6).

8.4.35 Where the matrix suggests more than one likely outcome, for instance slight or moderate, professional judgement has been used in conjunction with the descriptors to arrive at a robust conclusion.

8.4.36 Table 8-6, below is based upon *DMRB LA 104* Table 3.7, with factor-specific examples of effect replacing the generic statement contained in *DMRB LA 104* Table 3.7.

8.4.37 Effects are defined on a nine-point scale (very large beneficial, large beneficial, moderate beneficial, slight beneficial, neutral, slight adverse, moderate adverse, large adverse or very large adverse). A significant effect for the purposes of this assessment is one which is determined as moderate, large or very large.

Table 8-6: Assessment criteria

Significance of effect	Descriptor
Very large adverse	Partial or total loss of a resource of the highest value. Effects at this level are material in the decision-making process. Be in conflict with national policies for the protection of the heritage resource.
Large adverse	Result in the total, or almost total, loss of heritage resources. Be highly intrusive and would seriously damage the setting of the heritage resource such that its significance is totally or almost totally degraded. Potentially be in conflict with national policies for the protection of the heritage resource. Effects at this level are likely to be material in the decision-making process.
Moderate adverse	Be highly intrusive in the setting and as a result adversely affect the significance of the resource.

Significance of effect	Descriptor
	Result in loss of features such that the integrity of the heritage resource is compromised, but not destroyed. Effects at this level can be considered to be material decision-making factors.
Slight adverse	Have a detrimental impact on the setting of a heritage resource such that its significance is diminished. Effects at this level are not material in the decision-making process.
Neutral	Maintain existing historic features in the townscape. Have no appreciable impacts either beneficial or adverse on any known or potential heritage resources. Result in a balance of beneficial and adverse impacts. Not result in severance or loss of integrity context or understanding within a historic landscape. Not be in conflict with and do not contribute to policies for the protection or enhancement of the heritage. No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.
Slight beneficial	Restore or enhance the sense of place of a heritage feature through good design and mitigation. Remove or mitigate visual intrusion (or other indirect impacts) into the setting of heritage features such as that appreciation and understanding of them is improved. Marginally enhance the integrity understanding and sense of place of a site or group of sites. Effects at this level are not material in the decision-making process.
Moderate beneficial	Provide potential for significant restoration of characteristic features or their setting through the removal, relocation or mitigation of existing damaging or discordant impacts on the heritage resource. Contribute to regional or local policies for the protection or enhancement of the heritage resource. Enhance the integrity, understanding and sense of place of a site or group. Effects at this level can be considered to be material decision-making factors.
Large beneficial	Result in the removal, relocation or substantial mitigation of very damaging or discordant existing impacts (direct or indirect) on the heritage resource. Result in extensive restoration or enhancement of characteristic features or their setting. Form a major contribution to government policies for the protection or enhancement of the heritage resource. Remove or successfully mitigate existing visual intrusion such as that the integrity, understanding and sense of place of a site or group of sites is re-established. Effects at this level are likely to be material in the decision-making process.
Very large beneficial	As ‘large beneficial’ where the effect would be upon a site of Very High Importance. Effects at this level are material in the decision-making process.

Stakeholder engagement

8.4.38 Consultation is being undertaken with Historic England, Conservation Officers and Archaeological Officers in Cumbria, Durham and North Yorkshire to inform the project design. Engagement is ongoing and will be documented in a Statement of Common Ground (Application Document 4.5).

8.4.39 Consultation has also taken place with the RRRA, the Milestone Society and the Churches Conservation Trust.

Scoping

8.4.40 Table 8-7: Summary of scoping opinion and response sets out the key points from the Planning Inspectorate Scoping Opinion relevant to the Cultural Heritage assessment. The full Scoping Opinion is provided in ES Appendix 4.1: EIA Scoping Opinion (Application Document 3.4).

8.4.41 Where assessment has been undertaken in accordance with the Scoping Opinion, the wording of each point raised with a response and reference to the relevant ES section is provided. Where further discussion and/or an alternative approach has been agreed with the relevant stakeholders and the Planning Inspectorate (PINS), an explanation is provided.

Table 8-7: Summary of scoping opinion and response

Scoping comment	Applicant response	Where addressed?
The Inspectorate considers that efforts should be made to complete trial trenching prior to the making of an application. Where available the results of trial trenching must inform the baseline assessment. Should complete trial trenching not be possible, the ES should identify the limitations to any intrusive investigation and explain the information that has been used and any key assumptions made so as to inform the worst-case assessment. The worst-case assessment approach should be agreed with relevant consultation bodies, where possible	Trial trenching has been undertaken and is supported by a range of other survey techniques in order to provide a robust assessment of the effects from the Project. Limitations on individual survey results are addressed within the ES	Section 8.5: Assumptions and Limitations, ES Appendix 8.4 AP and LiDAR, Survey, ES Appendix 8.5: Geophysical Survey Report, ES Appendix 8.6: Trenching Reports and ES Appendix 8.7 Geochemical Survey Report (Application Document 3.4)
Historic Landscape Characterisation (HLC) data available held by the local authorities along the route is	Historic Landscape Character date along the route has been accessed and a route wide baseline prepared.	ES Appendix 8.2: Historic Landscape Character Baseline (Application Document 3.4)

Scoping comment	Applicant response	Where addressed?
not referenced in the Scoping Report. The ES should include the HLC data in the Cultural Heritage aspect chapter. This information should also inform the Landscape and Visual aspect chapter as appropriate		
The ES should consider the potential public benefits of the archaeological research, evaluation and mitigation in the overall assessment of significance of residual effects. This should be embedded within the scheme with clear outcomes for public participation and for legacy interpretation of the heritage of the route and its environs.	The potential for archaeological research, evaluation and mitigation to provide public benefits has been considered and a draft strategy to achieve these benefits has been produced	ES Appendix 8.9 Historic Environment Research Framework and Historic Environment Mitigation Strategy within the EMP (Application Document 2.7)
The ES should consider the overall combined effect(s) of the individual schemes on the historic landscape character.	The effects of individual schemes on historic landscape character is considered to be an over-arching effect from the Project rather than an in combination effect. The scale at which the historic landscape character areas are drawn means that effects from more than one scheme on any one character area are limited.	ES Appendix 8.10: Impact Assessment Tables (Application Document 3.4)
Flood risk and hydrological mitigation measures have potential to impact on buried archaeology for example, locating settlement ponds and any alterations to embankments. Impacts on buried archaeology as a result of hydrological alterations should be assessed, where significant effects are likely to occur.	Liaison with the Road Drainage and Water Environment Team confirmed that there are no dewatering effects predicted in areas with potentially sensitive archaeological deposits	Not addressed further

Consultation

8.4.42 All consultation comments and the relevant responses can be found at in the Consultation Report (Application Document 4.4). Table 8-8: Summary of key consultation comments received below summarises the major themes raised by statutory consultees.

Table 8-8: Summary of key consultation comments received

Consultee/ respondent	Comment	Applicant response	Where addressed?
Historic England	Concern that permanent physical effects from compound construction be assessed as well as setting effects	Setting and physical effects have been assessed in the ES chapter and mitigated by measures laid out in EMP (Application Document 2.7)	Chapter 8: Cultural Heritage, ES Appendix 8.10: Impact Assessment Table (Application Document 3.4) and EMP (Application Document 2.7)
Historic England	Concern that impact from ecological mitigation is clearly addressed	PEI Report identified a worst case scenario. Design development with heritage input has refined the requirement for ecological mitigation. Remaining impacts are assessed in the ES and mitigation measures laid out in EMP (Application Document 2.7)	Project Design Principles Report (Application Document 5.11), Chapter 8: Cultural Heritage, ES Appendix 8.10: Impact Assessment Table (Application Document 3.4), EMP (Application Document 2.7)
Historic England	The PEI Report identifies significant adverse impacts on NHLE 1019208 (Warcop Roman camp and length of Roman road, 285m south west of Moor House). Mitigation of these impacts, as far as possible, by design or failing this, through preservation by record.	Design development with heritage input has refined the area within the Order Limits at this location. However, a significant effect remains and mitigation measures are laid out in EMP (Application Document 2.7).	Project Design Principles Report (Application Document 5.11) Chapter 8: Cultural Heritage, ES Appendix 8.10: Impact Assessment Table (Application Document 3.4) and EMP (Application Document 2.7
Historic England	Historic England support the alignment of the route to be online through the existing cutting at Carkin Moor as it enables a continuity of the historic route. An ‘on-line’ option with an appropriately	Continued engagement with Historic England through the design process has limited the impact from the proposals at this location although a	Project Design Principles Report (Application Document 5.11) Chapter 8: Cultural Heritage, ES Appendix 8.10: Impact Assessment Table

Consultee/ respondent	Comment	Applicant response	Where addressed?
	considered engineering solution has the potential to limit further impact on Cultural Heritage on this section of the route than an off-line option.	significant effect remains.	(Application Document 3.4) and EMP (Application Document 2.7)
Cumbria County Council	At Crackenthorpe Roman camp the design boundary appears to extend into the currently Scheduled area and there is a strong potential for additional associated features.	Design development at Crackenthorpe Roman camp has repositioned the main carriageway so that it does not impact upon the camp. Subsequent survey in and around Crackenthorpe Roman camp has not indicated the presence of associated features.	Chapter 8: Cultural Heritage, ES Appendix 8.4: AP & LiDAR Assessment, ES Appendix 8.5: Geophysical Survey Report and ES Appendix 8.6: Trenching Reports (Application Document 3.4)
Cumbria County Council	Previous works on the A66 have identified archaeological deposits beneath the carriageway (specifically Roman burials). At present the impacts section states that "Where the Project is contained within the existing road corridor and alongside areas of prior disturbance, the potential for the presence of as-yet unknown archaeological remains would have been previously removed". Given the previous work, this should be revised to acknowledge the (albeit limited) potential that some remains are present. Cumbria County Council can provide the Applicant with further details of this work if required.	Noted	ES Chapter 8 Section 8.7 and Historic Environment Mitigation Strategy within the EMP (Application Document 2.7)
Durham County Council	Impact on Listed Buildings and Conservation Area Policy 44 (Historic Environment) states that development will be	Design development in the Bowes Bypass has minimised impacts on the Conservation Area although significant	Chapter 8: Cultural Heritage and ES Appendix 8.10: Impact Assessment Table

Consultee/ respondent	Comment	Applicant response	Where addressed?
	expected to sustain the significance of designated and non-designated heritage assets, including any contribution made by their setting. Much of Bowes is covered by a conservation area. The layout of the development should be careful to avoid harm to the setting or significance of these heritage assets.	effects will occur at the group of listed buildings at Stone Bridge Farm	(Application Document 3.4)
Eden District Council	Previous works on the A66 have identified archaeological deposits beneath the carriageway (specifically Roman burials). Cumbria County Council can provide the Applicant with further details of this work if required.	The PEI Report assumption about survival of remains beneath the existing carriageway has been amended to reflect the advice from Cumbria County Council.	Section 8.5: Assumptions and limitations and section 8.7: Potential impacts
Eden District Council	Highways England has presented the context of the Project relative to the constraints of the historic environment to a high level and limited degree. No intrusive investigation has been presented and therefore there is considerable uncertainty as to the nature of the archaeological resource that is present within the Project's construction footprint. There is very little information available on the nature of the assets affected. There is a considerable risk of archaeological assets of significant interest and value being present that have not been adequately identified at this stage.	This Chapter 8: Cultural Heritage sets out the details of the Cultural Heritage assessment. It documents the baseline environmental conditions and outlines mitigation measures that may be required to mitigate potential effects on heritage resources. Potential environmental opportunities relating to the Cultural Heritage resources are also identified where appropriate. Technical stakeholder consultation has taken place with Historic England and the Planning Archaeologists at Durham County Council, Cumbria County Council and North Yorkshire County	Chapter 8: Cultural Heritage, ES Appendix 8.4: AP & LiDAR Assessment, ES Appendix 8.5: Geophysical Survey Report, ES Appendix 8.6: Trenching Reports and ES Appendix 8.6 Geochemical Survey Report (Application Document 3.4)

Consultee/ respondent	Comment	Applicant response	Where addressed?
		Council. Substantial survey work has been undertaken to inform the ES, including geophysical survey, trial trenching and geochemical survey, the details of which are set out in this Chapter and its appendices.	
Eden District Council	Consistency and correlation between the DCO boundary and study areas needs addressing.	The relationship between the Order Limits and the study area is set out in the methodology section of this Chapter	Chapter 8: Cultural Heritage section 8.4: Assessment methodology
Eden District Council	Views to and from conservation areas, even where they are assessed of as medium value should be considered. Eden District Council guidance relation to CA should be cited, and particular attention paid to matters relating to views and impacts on setting	Noted and relevant guidance consulted.	ES Appendix 8.10: Impact Assessment Table (Application Document 3.4)
Eden District Council	The Applicant should consider and include reference to opportunities for enhancement, with particular reference to the Eden Local Plan and Historic England Guidance.	Noted	Section 8.8: Essential mitigation and enhancement measures
Eden District Council	The Applicant is advised to consult the following: Penrith Conservation Area Character Appraisal; Temple Sowerby Conservation Area Character Appraisal and Management Plan; Appleby-In-Westmorland Conservation Area Historic Area Assessment; Settle to Carlisle Conservation Area Railway buildings descriptions; Management of Conservation Areas in	Noted and applied in the assessment	ES Appendix 8.8: Gazetteer and ES Appendix 8.10: Impact Assessment Tables (Application Document 3.4)

Consultee/ respondent	Comment	Applicant response	Where addressed?
	Eden Supplementary Planning Document; and North Pennines AONB Management Plan 2019-2024.		
Eden District Council	The Applicant should consider and outline an appropriate strategy for the assessment of historic hedgerows	The Biodiversity Chapter contains the ecological assessment of hedgerows, and the Landscape and Visual Chapter contains the consideration of hedgerows as an important historic landscape feature.	See Chapter 6: Biodiversity Appendix 6.4: Hedgerows (Application Document 3.4) and Figure 6.4 Hedgerow and National Vegetation Classification (Application Document 3.3) Chapter 10: Landscape and Visual Effects and Appendix 10.4: Landscape Character Assessments (Application Document 3.4)
Eden District Council	The Applicant should also include the strategy for air photography, LiDAR and geophysical survey, and for deposit modelling.	Set out in relevant reports	ES Appendix 8.3: Geoarchaeological Desk based Assessment, ES Appendix 8.4: AP & LiDAR Assessment and ES Appendix 8.5: Geophysical Survey Report (Application Document 3.4)
Eden District Council	Clarity is needed in how the Environmental Management Plan (EMP) will be prepared so that activities at specific sensitive locations can be recognised and understood.	General principles will be laid out in the EMP and specific controls will be included in the Mitigation Strategy which forms an Appendix to the EMP.	EMP (Application Document 2.7) and Historic Environment Mitigation Strategy within the EMP (Application Document 2.7)
Eden District Council	The Applicant should consider as stated in Paragraph 5.124 of the NPSNN “Non-designated heritage assets of archaeological interest that are demonstrably of	Noted	Section 8.4: Assessment methodology above

Consultee/ respondent	Comment	Applicant response	Where addressed?
	equivalent significance to Scheduled Monuments, should be considered subject to the policies for designated heritage assets		
Eden District Council	Inter-relationships with other disciplines should be carefully considered by the Applicant. This will be especially important when assessing temporary construction impacts – for example where it is predicted that traffic will re-route through conservation areas – and where proposed ecological mitigation may impact directly upon archaeology and/or result in a change to the setting of an asset.	Weekly design development workshops for all schemes were attended by topic leads to allow design refinement and ensure that inter-relationships were carefully considered.	Section 8.7: Potential impacts and ES Appendix 8.10: Impact Assessment Tables (Application Document 3.4)
Eden District Council	It is noted that a scheme numbering system has been used which assigned new Project IDs to all assets based on their classification (e.g. SM01 – Scheduled Monument) and a gazetteer providing concordance information is proposed to accompany the Preliminary Environmental Information (PEI) Report. It is suggested that the Applicant use the existing historic environment identification numbers (e.g. HER number) to reduce the chance of error or omission within the ES, but it is an acceptable system providing the concordance information is accurate and sufficient to enable identification of assets.	Noted. Gazetteer includes concordance with existing identification numbers	ES Appendix 8.8: Gazetteer (Application Document 3.4)
Eden District Council	The ES should also consider that cumulative loss of contemporaneous	Noted	Section 8.7: Potential impacts and ES Appendix 8.10: Impact

Consultee/ respondent	Comment	Applicant response	Where addressed?
	assets within the setting of those assets of high value, may result in loss of context and significance.		Assessment Table (Application Document 3.4)

In-combination climate change impact

8.4.43 An in-combination climate change assessment has been conducted to assess likely changes to the significance of effects when considering the combined impact of the Project in a future changed climate on Cultural Heritage resources in the surrounding environment (see section 8.7: Potential impacts below).

8.4.44 The assessment considers whether climate change could impact the likelihood and magnitude of the effects of the Project on the Cultural Heritage resources, or affect the susceptibility, vulnerability, value or importance of the resources themselves. The assessment has been based on the latest UK Climate Change Projections and considers a range of climatic hazards including rising temperatures, higher and lower rainfall, and the increased frequency and magnitude of extreme events such as heat waves and flooding.

8.5 Assumptions and limitations

8.5.1 It is assumed that data provided by third parties is complete and correct.

8.5.2 It is also assumed that any Cultural Heritage resources within the Order Limits will be affected by the construction of the Project.

8.5.3 The limitations on surveys noted in the PEI Report have been addressed as detailed below:

- Geophysical survey data has been gathered for most areas within the Order Limits. Where land within the Order Limits was not suitable for survey[21], access was denied or the land parcel was brought in to the Order Limits after statutory consultation[22] it has not been subject to geophysical survey. In these areas, the assessment has been limited to AP and LiDAR survey.
- Trial trenching has been undertaken in all schemes except A1M Scotch Corner (which was excluded from survey on the basis that the design lay entirely within the current highway boundary). A total of 1337 trenches were excavated. Two hundred and fifteen trenches

[21] Land covered by trees, scrub or crop standing above knee height or land parcels less than 0.25 hectares, up to 0.5 it was a long thin strip adjacent to the road or a boundary were deemed unsuitable for survey.
[22] Note to effect that it is proposed to undertake additional survey on the land brought into the RLB in S4/5 post stat con

were removed from scope because of ecological constraints, denial of access or for health and safety reasons[23].

- Setting assessment have been made at all relevant sites within the study area. This is reported in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).
- The AP & LiDAR Assessment has been revised as relevant libraries have re-opened.

8.5.4 Geochemical survey has been undertaken to supplement geophysical survey and trenching in the Temple Sowerby to Appleby Scheme. In total 72ha have been surveyed. A further 5ha could not be surveyed because access was obstructed.

8.5.5 ZVI modelling based on the preliminary design has replaced the preliminary modelling used to inform the PEI Report allowing more robust assessment. The modelling does not however allow impacts which might be introduced through design changes within the limits of deviation to be assessed. Preliminary sensitivity assessment has indicated that changes within the limits of deviation will not introduce elevated effects.

8.5.6 The limitations of individual survey techniques are stated above, however, taken altogether all areas within the Order Limits have been suitably investigated. The information gathered is therefore considered sufficient to provide the basis for the assessment set out in this chapter.

8.6 Baseline conditions

8.6.1 The baseline conditions for each scheme are discussed below. For more detailed discussion of geological conditions refer to Chapter 9: Geology and Soils. For Geoarchaeological baseline data see ES Appendix 8.3: Geoarchaeological Desk-based Assessment (Application Document 3.4).

8.6.2 A consolidated route wide Historic Landscape Character Assessment can be found at ES Appendix 8.2: Historic Landscape Character Assessment (Application Document 3.4).

8.6.3 Maps showing heritage resources and Historic Landscape Character Areas can be found at Figures 8.1: Designated Assets within 1km, ES Figure 8.2 Non-designated Assets and Figure 8.3: Historic Landscape Character Areas (Application Document 3.3).

8.6.4 The periods and date ranges used in the discussion of the baseline conditions are set out in Table 8-9: Definition of archaeological time

[23] Approximately 140 trenches were removed from scope because they lay within exclusion zones protecting badger setts, great crested newt sites and other protected habitats and could not be reasonably re-sited. Thirty trenches in the Penrith to Temple Sowerby scheme could not be excavated as access was denied; a further thirty trenches in the Temple Sowerby to Appleby area could not be excavated for similar reasons. Three trenches were dropped from scope in the Stephen Bank to Carkin Moor scheme because of Avian Flu restrictions.

periods. This table is derived from data provided by the Forum on Information Standards in Heritage (FISH) (Historic England, 2015)[24].

8.6.5 Reference numbers in brackets after resource names, for example (00-0001), give the ID number of the resource as it appears in ES Appendix 8.8: Gazetteer, ES Appendix 8.10: Impact Assessment Table (Application Document 3.4) and Figure 8.1: Designated Assets Within 1km and Figure 8.2: Non-Designated Assets Within 300m (Application Document 3.3).

Table 8-9: Definition of archaeological time periods

Period	Sub-Period	Description	Minimum Date	Maximum Date
Palaeolithic		The period once referred to as the Old Stone Age. It is defined by the practice of hunting and gathering and the use of chipped flint tools. This period is usually divided up into the Lower, Middle and Upper Palaeolithic.	-500000	-8000
	Lower Palaeolithic	The earliest subdivision of the Palaeolithic, or Old Stone Age; when the earliest use of flint tools appears in the current archaeological record. A hunter gatherer society is a defining characteristic.	-500000	-150000
	Middle Palaeolithic	The second subdivision of the Palaeolithic or Old Stone Age. Characterized by the fine flake tools of the Mousterian tradition and economically by a hunter gatherer society.	-150000	-40000
	Upper Palaeolithic	The third and last subdivision of the Palaeolithic or Old Stone Age; characterized by the development of projectile points made from bony materials and the development of fine blade flint tools.	-40000	-11000
	Late Upper Palaeolithic		-11000	-8000
Mesolithic		The Middle Stone Age, falling between the Palaeolithic and the Neolithic; marks the beginning of a move from a hunter gatherer society towards food producing society.	-8000	-4000
	Early Mesolithic	The earliest subdivision of the Mesolithic, or Middle Stone Age.	-10000	-7000

[24] Historic England (2015) Periods List

Period	Sub-Period	Description	Minimum Date	Maximum Date
	Late Mesolithic	The latest subdivision of the Mesolithic, or Middle Stone Age.	-7000	-4000
Early Prehistoric		For monuments which are characteristic of the Palaeolithic to Mesolithic but cannot be specifically assigned.	-500000	-4000
Neolithic		The New Stone Age, this period follows on from the Palaeolithic and the Mesolithic and is itself succeeded by the Bronze Age. This period is characterized by the practice of a farming economy and extensive monumental constructions	-4000	-2200
	Early Neolithic	The earliest subdivision of the Neolithic, or New Stone Age.	-4000	-3300
	Middle Neolithic	The second subdivision of the Neolithic, or New Stone Age.	-3300	-2900
	Late Neolithic	Conventionally the third and latest subdivision of the Neolithic, or New Stone Age.	-2900	-2200
Bronze Age		This period follows on from the Neolithic and is characterized by the increasing use of Bronzework. It is subdivided in the Early, Middle and Late Bronze Age.	-2600	-1600
	Early Bronze Age	The earliest subdivision of the Bronze Age.	-2600	-1600
	Middle Bronze Age	The second subdivision of the Bronze Age.	-1600	-1200
	Late Bronze Age	The third and latest subdivision of the Bronze Age.	-1200	-700
Iron Age		This period follows on from the Bronze Age and is characterized by the use of iron for making tools and monuments such as hillforts and oppida. The Iron Age is taken to end with the Roman invasion.	-800	43
	Early Iron Age	The earliest subdivision of the Iron Age.	-800	-300
	Middle Iron Age	The second subdivision of the Iron Age.	-300	-100
	Late Iron Age	The third and latest subdivision of the Iron Age.	-100	43

Period	Sub-Period	Description	Minimum Date	Maximum Date
Late Prehistoric		For monuments that can be identified only to a date range from Neolithic to Iron Age.	-4000	43
Roman		Traditionally begins with the Roman invasion in 43 AD and ends with the Emperor Honorius [allegedly] directing Britain to see to its own defence in 410 AD.	43	410
Early Medieval		This dates from the breakdown of Roman rule in Britain to the Norman invasion in 1066 and is to be used for monuments of post Roman, Saxon and Viking date.	410	1066
Medieval		The Medieval period or Middle Ages begins with the Norman invasion and ends with the dissolution of the monasteries.	1066	1540
Post Medieval		Begins with the dissolution of the monasteries and ends with the death of Queen Victoria.	1540	1901
	Victorian	Dating to the reign of Queen Victoria.	1837	1901
Twentieth Century		Previously described as 'Modern'	1901	2000
21st Century		Twenty-first century phases and events	2001	Present Day
Uncertain		'Catch all' for uncertain period allocations		

Preface to Baseline Conditions

8.6.6 The northern Pennines have been the site of human activity since the re-occupation of the British land mass at the end of the last Ice Age. The landform, climate and ecology of the area have influenced how the area has been settled and utilised. This has led to distinctive themes in the archaeological and historic record.

8.6.7 These themes are explored in ES Appendix 8.1: Archaeological and Historical Background (Application Document 3.4) which seeks to provide a wider context for the archaeological and historical background to the study area. ES Appendix 8.9: Historic Environment Research Framework (Application Document 3.4) develops these themes into a draft Research Framework for the Project which in turn has informed the Historic Environment Mitigation Strategy within the EMP (Application Document 2.7).

8.6.8 All resources within the study area (and 2km ZVI if appropriate) are described in ES Appendix 8.8: Gazetteer (Application Document 3.4).

8.6.9 Those resources which are affected by the Project, the significance of those resources and the degree to which their setting contributes to that significance are discussed in ES Appendix 8.10: Impact Assessment Tables (Application Document 3.4) and below.

Routewide

Identified heritage resources

8.6.10 Two Cultural Heritage resources are encountered consistently along the route of the A66. These are the Roman road running between Scotch Corner and Penrith (Brougham) via Bowes, identified by Margary as RR82 (00-0001) (Margary, 1957)[25], and its Post Medieval turnpiked successor (00-0002). As the routes of both the Roman road (00-0001) and the turnpike (00-0002) broadly follow the modern route of the A66, any surviving belowground ground remains - whether known or in situ but not yet located or recorded - fall within the Order Limits.

8.6.11 The Roman road has been observed in survey or excavation at many locations and inferred for most of its length (see ES Appendix 8.8 for details of individual sections on a scheme by scheme basis). At Warcop, where it runs in close proximity to a Scheduled Roman camp (06-0003), and at Frenchfield (02-0001) it is included in the scheduling elsewhere however it is not designated. Road improvement works on the current A66 at Kirkby Thore demonstrated that the road and associated features may survive beneath the current carriageway.

8.6.12 The basic road network of the north-east was, in terms of its main highways, recognisable during the Medieval (AD1055-AD1540) period. It was not until more detailed mapping of the region was undertaken during the Post Medieval period that the network began to expand. Between 1555 and 1835, the maintenance of roads was the responsibility of the local parish. By the later seventeenth century, however, many parishes were unable to maintain their roadways successfully because of the increased damage caused by larger volumes of wheeled traffic and greater use brought about by the changing economic profile of the country.

8.6.13 In order to address the issue, the responsibility for managing and maintaining many of the country's major roads was assumed by Turnpike Trusts. Turnpike Trusts were either established under the general Turnpike Act of AD1773 or under private Acts of Parliament to manage the nation’s growing network of major roads as private toll roads, known as turnpikes. The Turnpike Trusts were commonly based upon parish boundaries so a single road could be maintained by several trusts along its length or by a single entity which oversaw several parishes.

8.6.14 Turnpike roads were a dominant feature of the transport network until the arrival of the railway, with which they could not compete when it

[25] Margary, I. D. (1957) Roman Roads in Britain: II North of the Foss Way-Bristol Channel

came to moving volumes of material and people quickly over long distances. Gradually, the road network was 'dis-turnpiked' throughout the nineteenth century and the Turnpike Trusts wound up. The responsibility for maintaining the local road network then moved to local Highway Boards (created in 1835) and eventually to County Councils following their establishment in 1889 (Cumbria County Council)[26].

Historic landscape character areas

8.6.15 The route of the A66 also passes through all eight HLCA's with several of the Scheme's incorporating more than one HLCA. The majority of the M6 Junction 40 to Kemplay Bank Scheme is located in the western part of the Eden Valley HLCA (00-0003). The Eden Valley is a large, wide valley characterised by a mixture of Post Medieval enclosed fields and areas of former common arable with late Medieval or early Post Medieval field layouts fossilised within later enclosure boundaries. There are a number of nucleated settlements in the valley, the largest of which is Penrith.

8.6.16 The very eastern end of M6 Junction 40 to Kemplay Bank Scheme cross into the Lazonby Ridge HLCA (00-0004); the southern part of which also incorporates the Penrith to Temple Sowerby Scheme. The Lazonby Ridge HLCA (00-0004). Lazonby Ridge is an area of Post Medieval enclosed fields north of Penrith It covers an area of low fell which was enclosed in the nineteenth century. The southern part of the HLC area was formerly part of the Medieval deer park of Whinfell Park (03-0089), although there is limited survival of historic landscape elements pre-dating the later Post Medieval period.

8.6.17 Temple Sowerby to Appleby Scheme is also located in the Eden Valley HLCA (00-0003). Kirkby Thore, to the south of the scheme, is one of several nucleated settlements located in the valley. The western part of the scheme is in an area where there is considerable survival of former common arable and the gently curving field boundaries created by the enclosure of Medieval fields can be observed around the village. The eastern part of the scheme runs along an area of slightly higher ground, which has regular Post Medieval fields, possibly enclosed from former areas of common pasture.

8.6.18 In places, the Order Limits of the Appleby to Brough Scheme crosses into the Eden Valley HLCA (00-0003). Its western part of the runs along the edge of the Pennines HLCA (00-0006) while the eastern part is mostly within the Stainmore HLCA (00-0005). The Stainmore HLCA (00-0005) is an area on the western edge of the Pennines where there is considerable survival of ancient, enclosed fields, with a marked absence of the former common arable notable in the Eden Valley to the west. This reflects a historic land use of stock rearing rather than crop growing, with settlement dating almost entirely to the later Post Medieval and Modern period. The western part of the scheme crosses into the

[26] Cumbria County Council (n.d.) Turnpike Trusts

very edge of the Pennines HLCA (00-0006), in an area where Post Medieval enclosures cover former areas of moorland on the edge of the fells. The HLC area is an extensive upland area of open moorland and planned enclosures. The A66 follows the line of a Roman road, which crosses the fells at the Stainmore Pass. The Pass has been significant for many centuries as a crossing place over the Pennines.

8.6.19 The Bowes Bypass Scheme is at the western edge of a large area of enclosed fields along the Greta and Upper Tees valleys which have traces of Medieval strip fields fossilised within later boundaries (00-0008). Bowes, which is a conservation area (07-0033), is one of several Medieval settlements located in this landscape. The Medieval community who lived there would have farmed the fertile land along the valley-bottom. Several communication routes bisect the study area. These include the A66, which follows the line of the Roman Road, The Street (00-0001), the Penrith to Greta Bridge turnpike (00-0002) and a length of the dismantled railway near Bowes Railway Station (07-0052). The landscape to the west, on the eastern slopes of the Pennines, is characterised by larger, stone-walled Post Medieval fields which represent the expansion of agricultural land in the eighteenth and nineteenth centuries (00-0007). Beyond this is the open moorland of the Pennines (00-0006).

8.6.20 The majority of the Cross Lanes to Rokeby Scheme is located in the eastern part of a large area of enclosed fields along the Greta and Tees valleys (00-0008) with Rokeby Park (08-0048), which lies immediately to the north of the Scheme, forming part of this wider landscape area. It should be noted that while the parkland at Rokeby is Post Medieval, there are traces of Medieval land use within it. To the east of the Scheme the smaller strip fields give way to much larger Post Medieval fields which spread out towards the Vale of Mowbray and the Tees Lowlands to the east (00-0010). The A66 runs through the study area, following the line of the Roman Road, The Street (00-0001). The Street (00-0001) historically formed the southern boundary of Rokeby Park (08-0048) but, in the late twentieth century, the A66 was altered to bypass the village of Greta Bridge and now cuts through the southern part of the park. The original line of The Street (00-0001) still runs through Greta Bridge where it is presumed that there would have been a Roman river crossing over the River Greta.

8.6.21 The Stephen Bank to Carkin Moor Scheme runs along the western edge of an expansive area of lowland fields, characterised by very large Post Medieval and modern Twentieth Century fields, many of which have hawthorn hedge boundaries (00-0010). This is an intensively farmed landscape. To the south and south-west of the A66 there is a mixed, transitional landscape along the Pennine fringe (00-0009). Unlike the area to the north and east where there are many large, agglomerated fields, to the south-west there are a higher proportion of irregular field layouts reflecting piecemeal enclosure in the early Post Medieval period. This area of irregular fields along the Pennine fringe is a mixture of land

enclosed as part of the large-scale programme of Parliamentary enclosure on the higher ground and fields created through informal processes on the lower-lying ground closer to the scheme. This is piecemeal enclosure, where individual farms or communities enclosed a group of fields, with more being added later.

8.6.22 As it connects with the A1(M) at Scotch Corner, the A66 runs through an expansive area of lowland fields, characterised by very large Post Medieval and modern fields, many of which have hawthorne hedge boundaries (00-0010). This is an intensively farmed landscape. The A1 and the A66 are major communication routes through the historic landscape, and both follow the lines of the Roman roads Dere Street (11-0023) and The Street (00-0001), which is reflected in the way that later field boundaries respect the road in their layout.

M6 Junction 40 to Kemplay Bank

Geological summary

8.6.23 The bedrock beneath the M6 Junction 40 is formed of sedimentary rocks of the Stainmore Formation and Penrith Sandstone Formation aligned in bands orientated north-north-west to south-south-east. At the western end of this scheme, just west of J40 on the M6, the bedrock is comprised of bands of limestone interspersed with the Alston Formation of siltstones, mudstones and sandstones, both part of the Yoredale Group. Moving eastwards, the bedrock beneath J40 to the Kempley Bank Roundabout is also part of the Yoredale Group, and is comprised of the Stainmore Formation of mudstones, siltstones and sandstones. The east and north of the study area are on the Penrith Sandstone Formation.

8.6.24 The superficial geology is predominantly till deposits, which were formed by the action of glaciers and meltwaters in the last glacial era (Devensian period), approximately 70,000 to 10,000 years ago. Till, also known as boulder clay or diamicton, was formed when the area was covered in thick, glacial ice. It has no geoarchaeological potential. The soil formed above the till is a freely draining, slightly acidic, loamy soil, suitable for both arable and pastoral farming, although its fertility is relatively low.

8.6.25 The rivers Eamont and Lowther are associated with deposits of alluvium. Pockets of glaciofluvial deposits of sand and gravel, and river terrace gravels are also associated with these rivers.

Topographical summary

8.6.26 This section of the Order Limits is located in an area of relatively flat land just north of the rivers Eamont and Lowther. The A66 road surface in the west of the area within the Order Limits lies at 132-138m AOD and the land slopes gently downwards towards the rivers to the south, with a level of 124m AOD recorded on Skirsgill Lane. In the east the land slopes gently into a river basin reaching lows of 113m AOD.

Identified heritage resources

8.6.27 For a complete record of the heritage resources identified within the M6 Junction to Kemplay Bank study area, please refer to ES Appendix 8.8: Gazetteer.

Archaeological and historical background

Uncertain date

8.6.28 A number of heritage resources of an unknown date have been identified throughout the study area. Although it is not possible to confirm a period for these resources without further detailed archaeological investigation, it is possible to ascribe possible periods based on the interpretation of the available evidence.

8.6.29 Archaeological trenching undertaken in 2021 revealed two undated palaeochannels (01-0172, 01-0173), at least one of which was determined to be associated with the River Eamont.

Palaeolithic, Mesolithic and Neolithic (500,000BC – 2200BC)

8.6.30 Evidence of Prehistoric activity suggests that the scheme area was of considerable importance in the later part of the period. Within the study area, Scheduled Prehistoric remains affected by the Project consist of Mayburgh Henge (01-0002) and a standing stone at Skirsgill (01-0001).

8.6.31 Mayburgh Henge (01-0002) is an unusual example of a henge-type monument, due to its monumental enclosing bank. It is located on a low hill and is one of three henges located near the confluence of the rivers Eamont and Lowther.

Bronze Age (2,600BC – 700BC)

8.6.32 No heritage resources dating to the Bronze Age have been identified that will be affected by the Project.

8.6.33 For a wider discussion of the Bronze Age in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the M6 Junction to Kemplay Bank study area, please refer to ES Appendix 8.8: Gazetteer.

Iron Age (800BC – AD43)

8.6.34 No evidence for settlement or activity of Iron Age date has been identified within the scheme study area.

Romano-British (43AD – AD410)

8.6.35 During the occupation of northern England from circa AD72, a network of roads and forts was established. Penrith lay at a crossroads of two of these routes. Margary's RR82, also known as The Street (00-0001), runs east from Penrith largely following the route of the present day A66.

8.6.36 Towards the eastern part of the study area, there is significant evidence of a Romano-British settlement including the Scheduled Monument of Brougham fort and civil settlement (02-0002).

8.6.37 Brougham fort, *Brocavium* (Bidwell, 2009)[27], was constructed on the south bank of the River Eamont near its confluence with the River Lowther and covers an area of 1.8ha. It is situated at the junction of main north-south and east-west Romano-British roads, which intersected and crossed the River Eamont at the site of the fort (Margary routes RR74 and RR82 respectively, 1957[28]). The fort may have been established during the governorship of Julius Agricola, AD78-84, and remained in use until the end of the fourth century. Altars were found nearby which were dedicated to *Belatucadrus*, a local deity who seems to have been a native equivalent to the Roman god Mars. An inscription records the presence of a part mounted cohort (Cohors III *Bracaraugustanorum*), a unit originally formed in Portugal in the first century AD. An altar was also dedicated to Mars by a soldier of the Stratonician cavalry, which was originally formed in Asia Minor, the Stratonician cavalry were stationed in Brougham fort in the third century AD. By the third century a substantial settlement existed around the fort.

8.6.38 Brougham fort survives as a substantial earthwork partly overlain by Brougham Castle. Various limited archaeological excavations within the castle and the castle's bailey have revealed the well-preserved remains of buried archaeological features, which make up the Scheduled Monument (02-0002).

8.6.39 The antiquarians John Leland and William Stukeley visited Brougham. Leland noted finds of numerous square stones and described them as 'tokens of old buildings' in the plough soil near the castle. Stukeley described the fort as a square plot with a broad ditch around it, with the track of a Romano-British wall visible on the end of the 'vallum'. Excavations within the castle's bailey in AD1987 located what was considered to be part of a possible northern outer ditch of the fort, complete with post holes suggesting the use of sharpened stakes as a defensive measure (Williams, 1992)[29].

8.6.40 During road works in AD1966-67, a considerable portion of a cemetery east of the civil settlement associated with the fort was excavated (Bell, 2004)[30], producing cremation burials of a third century date. Aspects of the funerary rites encountered were unusual in a British context and may be related to the Danubian origins of some of the grave goods found (Bidwell, 2009).[31] In AD1997, two trenches were excavated during a conversion of the former custodian's cottage to an on-site museum producing unstratified Romano-British coins dated AD323 and AD337

[27] Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England
[28] Margary, I. D. (1957) Roman Roads in Britain: II North of the Foss Way-Bristol Channel
[29] Williams (1992) Excavations at Brougham Castle, 1987
[30] Bell, M. and Cool, H.E.M (2004) The Roman Cemetery at Brougham, Cumbria, Excavations 1966-67
[31] Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England

and some pottery (Zant, 2001).[32] Further excavations were carried out in AD2007 along the course of a pipeline running to the south and southeast of the fort. Significant remains of civilian settlement associated with the fort were found dating to the third and fourth centuries (Zant and Clapperton, 2010)[33].

8.6.41 Towards the western extent of the scheme, a sizeable enclosure, determined to likely be Romano-British in date, was identified during analysis of aerial photographs beneath a section of the A66 carriageway (01-0171). The enclosure is sub-rectangular and appears to have additional structures within.

Early Medieval (AD410 – AD1066)

8.6.42 No heritage resources dating to the Early Medieval have been identified within the study area that will be affected by the Project.

8.6.43 For a wider discussion of the Early Medieval period in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the M6 Junction to Kemplay Bank study area, please refer to ES Appendix 8.8: Gazetteer.

Medieval (AD1066 – AD1540)

8.6.44 Brougham Castle (02-0002) is one of three great Norman castles constructed along the strategic route through the Pennines known as Stainmore Pass - Bowes and Brough being the others. Brougham Castle was built between AD1203 and AD1214 by Robert de Vieuxpont. A three-storey keep with a large forebuilding to the east were built together with another structure, possibly a hall, also to the east. The castle was enclosed within a defensive earthwork topped by a timber palisade and was probably entered from the Roman fort to the south, which may have provided a ready-made outer bailey.

8.6.45 By virtue of marriage Robert Clifford (AD1274-1314) succeeded to Vieuxpont's Westmorland heritage in the last decade of the thirteenth century. As an ally of Edward I Clifford became involved in Scottish affairs and made Brougham his principal seat due to its proximity to the border. Clifford made the keep the core of his castle by adding a storey and building a stone curtain wall as well as inner and outer gatehouses. These gatehouses provided the main access from the east and superseded the earlier entrance from the Roman fort to the south. After Robert Clifford's death at Bannockburn the Scots were in the ascendance in northern England for several decades. It fell to Robert's grandson, Roger Clifford (AD1333-1389), to restore Brougham Castle back to an effective border defence. As Warden of the Marches Roger embarked on a building programme that saw the addition of ranges of buildings along the east and south curtains that included a great hall,

[32] Zant, J. M. (2001) An Excavation at Brougham Castle
[33] Zant, J. and Clapperton, K. (2010) Whinfell Holme To Hackthorpe Pipeline, Penrith, Cumbria: Post-Excavation Assessment

kitchen and chapel. He also constructed a covered way from the hall porch to the ground floor of the keep.

8.6.46 Excavations within the south-east corner of the castle's bailey took place in AD1987. The excavation revealed that a large free-standing Medieval stone structure was constructed here sometime after about AD1300.

8.6.47 Eamont Bridge (01-0005) is a Scheduled Monument and Grade I listed building dating to the fifteenth century. The monument is a good example of a Medieval bridge and provides insight into the importance of transport and river crossings at this time. Prior to the government reorganisation and creation of modern Cumbria in AD1974, the River Eamont marked the border between the old counties of Westmorland and Cumberland. Earlier still in the eleventh century, it formed the border between England and Scotland.

8.6.48 Yanwath Hall (01-0008) is a Grade I listed Medieval semi-fortified building with exceptional original plaster work and is one of several fortified houses within the Penrith and wider Cumbria areas. It consists of a two and three storey hall constructed of rubble walls with slate covered roofs. The hall was initially a pele tower built in the fourteenth century, with additions being made later in the fifteenth century.

8.6.49 There are a number of non-designated heritage resources of Medieval date within the study area. These include Skirsgill Lynchet (01-0117), a shrunken Medieval village at Eamont Bridge (02-0036), Thacka Beck (01-0155), and Medieval earthworks identified by the AP/LiDAR survey (01-0126, 01-0127).

8.6.50 Skirsgill Lynchet (01-0117) is located in a glacial depression between Skirsgill Farm and the northern bank of the river near Eamont Bridge and forms part of an extensive lynchet system related to the village settlement of Skirsgill covering an area of roughly 30 acres.

8.6.51 The shrunken Medieval village at Eamont Bridge was considerably more extensive than its successor with traces of the village surviving as earthworks to the east, west and south of the modern village.

8.6.52 Thacka Beck, remains of which survive at Ingmer Meadow and are observable as an earthwork, is a watercourse flowing from the river Petteril to Penrith. The watercourse was culverted by Bishop Strickland, who was Bishop of Carlisle in AD1396 and again from AD1400 to AD1419.

Post Medieval (AD1540 – AD1901)

8.6.53 A majority of the Post Medieval designated heritage resources within the scheme study area are situated in the town of Penrith, with concentrations also in the surrounding villages of Brougham and Carleton.

8.6.54 The Penrith Conservation Area (01-0111) is located approximately 500m north-east of the route as it enters Ulswater Road from Junction 40 of the M6 at Penrith. The listed buildings contained therein include

castles, residences, a bridge, farmsteads and other structures associated with the settlement of Penrith.

8.6.55 The Courtyard Range adjoining Yanwath Hall (01-0011) is a Grade I listed combination of stables, barn, brewhouses and is in part currently a garage. Additional barns added to the east of Yanwath Hall in the nineteenth century are also Grade II listed buildings (01-0109). These elements were built out of sandstone to replicate the original Medieval elements.

8.6.56 Carleton Hall (02-0010) and Carleton Hall Farmhouse (02-0009) are both Grade II* listed buildings located adjacent to the Order Limits. The present Grade II* Carleton Hall dates to the early eighteenth century with late eighteenth century alterations. The front elevation was rebuilt in AD1937.The Hall was leased to the Furzie Close Girl's School in AD1940 and subsequently used by the army as a military hospital from AD1943 until AD1947. Cumbria County Council bought the estate by compulsory purchase in AD1947 for £11,475 for use as the Cumberland and Westmorland Constabulary headquarters. A rapid desk-based assessment and evaluation were undertaken in AD2010 on land that formed part of the grounds, adjacent to Kemplay roundabout. Six trenches were excavated with negligible results (Strickland, 2010).[34]

8.6.57 Lady Anne Clifford's[35] northern England estate included castles at Pendragon (Mallerstang), Brough, Skipton, Appleby and Brougham (02-0002). At Brougham she rebuilt a service wing against the west curtain and inserted fireplaces and doorways in the Tudor style. She used the great hall as a courthouse and converted the top floor of the inner gatehouse to her bedchamber. This room was connected by a passageway to the Painted Chamber in the outer gatehouse which had the dual use as a dining room or a withdrawing room from the great chamber in the adjacent building. As part of Lady Anne's transformation of the castle from a military complex to a country seat she built a new wall round the 'Little Park' adjoining the castle and created a garden to the south and east of the castle.

8.6.58 After Lady Anne's death Brougham Castle came to the Earls of Thanet and the castle gradually fell into ruin with usable material being sold off in AD1714. The ruins of the castle have been consolidated and the moat was cleaned out during the AD1930s.

8.6.59 A large proportion of the Grade II designated heritage resources within the study area are houses and dwellings within Penrith Conservation Area. Other Grade II listed residences outside Conservation Area include North Bank (01-0041), Bridge End (01-0096) and Toll Bar Cottage (01-0095).

[34] Strickland, J. & Cavanagh, N. (2010) Land Adjacent to Kemplay Roundabout, Penrith, Cumbria.
[35] Lady Anne was born in 1590, the daughter of George Clifford, 3rd Earl of Cumberland, and his wife, Margaret. As a young adult Lady Anne Clifford was involved in a long and complex legal battle with her uncle and cousin to obtain the family estate after the death of her father and only took possession in 1649.

8.6.60 Skirsgill (01-0102) is a Grade II listed country house dating to AD1795 that was built for the Whelpdale family. The house is built of red sandstone with ashlar walls, large open balustrades and red sandstone chimneys along with a terrace wall, gate posts, and steps that are also Grade II listed (01-0103). The house has a central glazed door with a stone porch under consoled bracketed cornice. The house was further extended in the nineteenth century for the Parkin family.

8.6.61 There are multiple non-designated heritage resources of a Post Medieval date within the study area, many of which represent water management features such as Westmorland Home river dyke (02-0032) and other weirs (02-0034) as well as industrial sites such as Low Mill cornmill (02-0033). The Lancaster and Carlisle Railway (01-0120) also falls within the study area.

Twentieth century (AD1901 – AD2000)

8.6.62 No designated assets dating to the twentieth century were identified within the scheme study area that will be affected by the Project.

8.6.63 The former icehouse at Carleton Hall (02-0042) is the only non-designated heritage resource dating to the twentieth century contained within the study area.

Archaeological trenching

8.6.64 A programme of archaeological trenching was undertaken by Wessex Archaeology wherein a total of 276 trenches were excavated between September AD2021 and December AD2021 across the schemes from M6 Junction 40 to Kemplay Bank and Penrith to Temple Sowerby (Centre Parcs). The most notable features identified by trenching within this section of the scheme were palaeochannels thoughts to be associated with the River Eamont. The information they contain was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table. The archaeological evaluation report can be found in ES Appendix 8.6: Trenching Report Lot 1 (Application Document 3.4).

Geophysical survey

8.6.65 Two phases of geophysical survey were undertaken by Headland Archaeology between October AD2020 and November AD2020 and between October AD2021 and December AD2021. Five of the areas surveyed within the study area presented evidence of known archaeological features, but no anomalies indicative of previously unidentified archaeological remains or features were recorded. The detailed results and findings of this survey are presented in ES Appendix 8.5: Geophysical Survey Report.

Aerial photography and LiDAR

8.6.66 A programme of aerial photography and LiDAR interpretation has been undertaken across the Project. This survey identified 26 heritage resources between the M6 Junction 40 and Kemplay Bank, 13 of which were features associated with Scheduled Monuments and other non-designated resources such as the London and North Western Railway, Low Mill Corn and Snuff Mill, weirs and enclosures. The information they contain was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The report can be found in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4).

Historic mapping

8.6.67 Access to historic mapping, for example Tithe Maps and their apportionments, was gained through visits to the relevant county archival office(s) and use of the Landmark Solutions historic map data service. A total of nine heritage resources were identified from these documentary or cartographic sources between the M6 Junction 40 and Kemplay Bank primarily comprising milestones, residences as well as industrial and agricultural buildings. The information they contain was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

Penrith to Temple Sowerby

Geological summary

8.6.68 The bedrock beneath the study area of the Penrith to Temple Sowerby scheme is formed of the Penrith Sandstone formation. This is overlain by superficial deposits of glacial till, glaciofluvial deposits, river terrace gravels and alluvium. Glacial till, also known as boulder clay or diamicton, is present across the majority of the study area. This was formed by the action of glaciers and meltwaters in the last glacial era (Devensian period), between around 70,000-10,000 years ago. There is a small area immediately north of the Order Limits, to the east of the Light Water and north of the A66, where glaciofluvial deposits of sand and gravel are present. These glaciofluvial deposits were formed from material washed out in meltwater from the glaciers. Glacial till and glaciofluvial deposits have no geoarchaeological potential.

8.6.69 The A66 crosses several watercourses, tributaries of the River Eamont to the north, within the study area. Alluvium is present along each of these watercourses, which is material deposited by rivers or streams; typically consists of silts, clays, sands and gravel; and may contain anaerobically preserved organic material. This material may contain

palaeoenvironmental remains which are of archaeological interest for their potential to aid in the reconstruction of past environments. River terrace gravel deposits are present on the southern bank of the river Eamont, north of the Order Limits at Barrackbank Wood. These terrace gravel deposits may contain evidence which may be of palaeoenvironmental and archaeological interest.

8.6.70 The soil found within the study area is a freely draining, slightly acidic, sandy soil, typically used for arable farming, although fertility is relatively low.

Topographical summary

8.6.71 The Penrith to Temple Sowerby scheme is located in a relatively flat lowland landscape within the Eden Valley, rising slightly from the western end of the scheme which lies at circa 124m AOD to 136m AOD at the western end.

Identified heritage resources

8.6.72 For a complete record of the heritage resources identified within the Penrith to Temple Sowerby study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Archaeological and historical background

Uncertain date

8.6.73 A number of heritage resources of an unknown date have been identified throughout the study area. Although it is not possible to confirm a period for these resources without further detailed archaeological investigation, it is possible to ascribe possible periods based on the interpretation of the available evidence. For example, certain earthworks in the study area such as cropmarks (03-0019, 03-0118) and ring ditches (03-0050) identified during AP/LiDAR survey are thought to be Prehistoric in origin, due to the presence of Peterborough Ware and other Prehistoric findspots in the vicinity. Additional cropmarks were also identified in amongst an area of Early Medieval finds and field systems (03-0126).

8.6.74 Archaeological evaluation undertaken by Wessex Archaeology in 2021-2022 uncovered multiple undated earthworks within the study area, a majority of which represented ditches, likely field boundaries (03-0203, 03-0204, 03-0205, 03-0206, 03-0209, 03-0210, 03-0211); peat deposits (03-0212, 03-0213); and pits (03-0207, 03-0208). The archaeological trenching undertaken in 2021-2022 also revealed five palaeochannels (03-0198, 03-0200, 03-0201, 03-0202), which were determined to be associated with the River Eamont, the Light Water, and the Swine Gill.

Palaeolithic, Mesolithic and Neolithic (1,000,000BC – 2000BC)

8.6.75 Regional evidence suggests that the wider landscape surrounding the study area was an important routeway for Prehistoric people, comprised of open moorland leading to the Stainmore Pass. Despite this

importance and sustained use, designated heritage resources for settlement or activity dating to the Palaeolithic, Mesolithic or Neolithic periods are absent within the study area.

8.6.76 However, non-designated assets have been identified within the study area., including palaeochannels (03-0129, 03-0130) potentially dating to the Palaeolithic period detected through AP/LiDAR survey.

8.6.77 Brougham Enclosure (03-0051) is a non-designated Neolithic enclosure visible as a cropmark in the form of an irregular sub-rectangular feature, with what appears to be two ditches leading away from it on its northern side. There are also other indeterminate cropmarks within the field.

8.6.78 Archaeological trenching undertaken in 2021 recovered a Neolithic stone axe head from the surface of a roughly cobbled track within the north-eastern edge of the vicus of Brougham Roman fort (03-0004), which may have been re-used purposefully as a good luck charm as there are numerous examples of similar Neolithic polished stone axes being found within foundation deposits or other building areas.

Bronze Age (2900BC – 700BC)

8.6.79 No heritage resources dating to the Bronze Age have been identified that will be affected by the Project.

8.6.80 For a wider discussion of the Bronze Age in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the Penrith to Temple Sowerby study area, please refer to ES Appendix 8.8: Gazetteer.

Iron Age (800BC – AD43)

8.6.81 There is no evidence dating to the Iron Age recorded within the study area.

Romano-British (AD43 – AD410)

8.6.82 There are multiple Scheduled sites dating to the Romano-British period within the study area: a Marching Camp, 410m northeast of Brougham Fort (03-0001); Brougham fort, civil settlement and castle (02-0002); a settlement situated 540m northeast of Brougham Castle (03-0004); and a farmstead and length of road 800m south of Winderath (03-0003).

8.6.83 The marching camp 410m northeast of Brougham fort (03-0001) is known from cropmarks. The gate and tituli in the centre of the south-east side and surrounding ditches are clearly visible in aerial photographs. The marching camp may be presumed to predate the establishment of the permanent fort at Brougham and may therefore date to the initial advance into north-west England under Petillius Cerealis (Bidwell, 2009).[36]

[36] Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England

8.6.84 Brougham Romano-British fort (02-0002) was constructed on the south bank of the River Eamont near its confluence with the River Lowther and covers an area of 3.4 acres. It was situated at the junction of main north-south and east-west roads, which intersected and crossed the River Eamont close to the site of the fort. The fort may have been established under the governorship of Julius Agricola AD78-84 and continued in use until the end of the fourth century. Altars found locally around the fort were dedicated to Belatucadrus, a local deity, record the presence of a part mounted cohort (the Cohors III Bracaraugustanorum), a unit originally formed in Portugal in the first century AD. An altar was also dedicated to Mars by a soldier of the Stratonician cavalry, originally formed in Asia Minor, stationed at Brougham fort in the third century AD.

8.6.85 A substantial settlement developed to the east and north of the fort which thrived into the third century. The settlement 540m northeast of Brougham Castle (03-0004) was discovered using aerial photography. It is situated on a river terrace on the south bank of the River Eamont. The settlement forms part of the vicus of Brougham fort. Evidence of the vicus was identified during archaeological evaluation in 2021 including three stone surfaces, interpreted as a flagged floor and rough trackway; multiple dark earth deposits; and a number of ditches. Geophysical survey has also recorded anomalies outside the Scheduled boundary of the vicus, particularly south of the A66 carriageway.

8.6.86 Burials associated with the fort and vicus (03-0072) have been found from the immediate vicinity of the fort to an area at least as far as 600m to the east. In AD1966 and AD1967, the part of the cemetery located on the low hill east of the fort was threatened by improvements to the A66. The resulting excavation was the largest to be undertaken on a Romano-British cemetery site in the north of England with close to 300 funerary related deposits being identified. The full extent of the cemetery is not known although its eastern extent probably lay at or close to the limit of the AD1966-7 excavations. Archaeological trenching in 2021 identified further evidence relating to the cemetery, including inhumation and cremation burials alongside multiple pits interpreted as votive or ritual deposits.

8.6.87 Distinctive types of native settlements dating to the Romano-British period have been identified in the north of England, many of which were small homesteads similar to the Scheduled site 800m south of Winderath (03-0003). This farmstead is located on elevated ground above the floodplain on the western side of the River Eden. It is visible as cropmarks comprising a sub-rectangular farmstead with an infilled ditch and potential hut circle as well as 570m of Roman road to the south.

Early Medieval (AD410 – AD1066)

8.6.88 There is one designated heritage asset dating to the Early Medieval period within the study area. St Ninians Monastic site, settlement, church and churchyard (03-0005) includes the buried remains of St

Ninian's pre-Conquest monastic site; the buried remains of the deserted nucleated Medieval settlement of Brougham; St Ninian's seventeenth century church and the buried remains of its Early Medieval predecessor; the churchyard; and the socle or base of a Medieval high cross situated in the churchyard to the south of the church. It is located on the floodplain of the River Eamont south and east of a sharp bend in the river. Both the monastic site and the site of the Medieval settlement have been identified from cropmarks visible on aerial photographs which clearly show the infilled ditches of enclosures, pits, field boundaries and structural foundations. The pre-Conquest monastic site lies to the east of St Ninian's Church and is seen from aerial photographs to include an elliptical enclosure containing three rectangular structures along the inside edge of the enclosure ditch and faint traces of several other structures. The central of the three structures is sub-divided into two rooms. This form of monastic settlement typified by the circular enclosure is of early Medieval Irish influence. Pre-Conquest monastic sites are rare nationally and fewer than 100 sites have been recognised from documentary sources, of these the locations of less than half have been confirmed.

Medieval (AD1066 – AD1540)

8.6.89 There are two designated heritage resources within the study area of Medieval date: Brougham Castle (02-0002), built upon the site of Brougham Roman fort, and St Ninian’s Monastic site, settlement, church and churchyard (03-0005), both of which are Scheduled Monuments. For Brougham Castle and its development, please reference the discussion in the M6 Junction 40 to Kemplay Bank baseline conditions section.

8.6.90 The deserted Medieval village of Brougham surrounds the early monastic site of St Ninian’s and is included in the same scheduling. The settlement is seen from aerial photographs to include a series of linear features interpreted as field boundaries, enclosures and pits covering a wide area on all sides of the church. To the east of the monastic site traces of a semi-circular enclosure with an entrance on the western side can be seen on the aerial photographs, as can a field boundary aligned north-north-east to south-south-east, beyond which can be seen faint traces of a sub-rectangular enclosure. By the end of the thirteenth century documentary evidence mentions only 'the walled church of Brougham' and it is thought that the settlement had been destroyed and its lands incorporated within the forest of Whinfell. The Medieval church was dedicated to St Wilfrid. The remains of a high cross of Medieval date can be found in the churchyard to the south of the present church.

8.6.91 A park is mentioned near Brougham from the thirteenth century. Though the full extent of Whinfell Park (03-0089) is unknown, the northern boundary of the park lay along the Roman Road (00-0001). The deer park is mentioned in AD1258 as the property of Robert de Veteripont. Within the park lay the Hartshorn Tree (03-0088), the subject of local

legend which indicates that the park was still an active hunting preserve in the mid-fourteenth century.

Post Medieval (AD1540 – AD1901)

8.6.92 By the mid-seventeenth century the church at St Ninian's Monastic site, settlement, church, churchyard (03-0005) was dilapidated, and the settlement deserted. The Medieval church was demolished and the present church (03-0012) built on the same site in AD1660 by Lady Anne Clifford. The church is 'an eminently interesting example of Gothic Survival' (Pevsner, 1967)[37] with its seventeenth century furnishings almost intact.

8.6.93 The Countess Pillar (03-0006) is a Scheduled Monument 300m west of Lightwater Bridge. It is very well-preserved and represents a unique commemorative marker erected by Lady Anne Clifford. The two constituent elements of the monument provide group value with the alms table (03-0007) being mentioned in the inscription on the pillar. The group is of undoubted historical importance and the monument provides insight into the importance of the nobility in the earlier Post Medieval period and their role in establishing landmarks and commemorative monuments. The monument includes the remains of a stone pillar of seventeenth century date, situated alongside the A66 east of Penrith. The pillar stands to a height of 4.2m and has an octagonal shaft with a chamfered base and moulded capping, above which is a square block with a cornice, pyramidal capping and finial. On the north face of the square block are two carved and painted shields of arms, on the south face is a brass tablet with an inscription and the remaining faces hold sundials. Located approximately 3m east of the pillar is a low sandstone block. The pillar was erected in AD1656 to commemorate the last parting of Lady Anne Clifford and her mother. The stone block, known as the Dolestone, is an alms table upon which the Lady Anne Clifford laid an annual offering to the poor in memory of her mother. The manner and timing of the annuity are detailed on the inscription on the pillar.

8.6.94 Another designated heritage resource in the vicinity of the Project is a Grade II listed milestone near Whinfell Park, which denotes the distance to Appbleby and Penrith (03-0013).

8.6.95 There are multiple non-designated heritage resources of Post Medieval date within the 300m study area, including Brougham mill (03-0091); Brougham rifle range (03-0090); farmsteads and residences; industrial buildings and structures such as the site of a former smithy (03-0146); roads, milestones and guideposts.

Twentieth Century (AD1901 – AD2000)

8.6.96 No heritage resources dating to the twentieth century have been identified that will be affected by the Project.

[37] Pevsner, N. (1967) The Buildings of England: Cumberland and Westmorland

8.6.97 For a wider discussion of the twentieth century in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the Penrith to Temple Sowerby study area, please refer to ES Appendix 8.8: Gazetteer.

Archaeological trenching

8.6.98 A programme of archaeological trenching was undertaken by Wessex Archaeology wherein a total of 276 trenches were excavated between September AD2021 and December AD2021 across the schemes from M6 Junction 40 to Kemplay Bank and Penrith to Temple Sowerby (Centre Parcs). The trenching results from this section of the scheme identified significant amounts of evidence relating to the Romano-British vicus and cemetery at Brougham as well as a number of field boundaries and natural features such as palaeochannels and peat deposits. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table. The archaeological evaluation report can be found in ES Appendix 8.6: Trenching Reports Lot 1 (Application Document 3.4).

Geophysical survey

8.6.99 Two phases of geophysical survey were undertaken by Headland Archaeology between October AD2020 and November AD2020 and between October AD2021 and December AD2021. Geophysical survey identified clear linear and discrete anomalies identified to the north of the existing carriageway within the Scheduled area of the Roman camp and settlements. South of the carriageway more anomalies are present, which may be indicative of more widespread Romano-British activity. Ploughing trending aligned east to west in a small block are noticed at the western end of the study area. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer of (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). See ES Appendix 8.5: Geophysical Survey Report (Application Document 3.4) for further details.

Aerial photography and LiDAR

8.6.100 A programme of aerial photography and LiDAR interpretation has been undertaken across the Project. This survey identified 62 heritage resources between Penrith and Temple Sowerby, 14 of which are features associated with Scheduled Monuments and other non-designated heritage resources such as The Street, Brougham Mill and Rifle Range, settlement sites, cropmarks, and field systems. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact

Assessment Table (Application Document 3.4). The aerial photography and LiDAR report can be found in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4).

Historic mapping

8.6.101 Access to historic mapping, for example Tithe Maps and their apportionments, was gained through visits to the relevant county archival office(s) and use of the Landmark Solutions historic map data service. A total of six heritage resources were identified from these documentary or cartographic sources between Penrith and Temple Sowerby, all of which were milestones or guideposts excepts for the site of a former bridge. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document).

Temple Sowerby to Appleby

Geological summary

8.6.102 The bedrock geology of the study area consists primarily of a Penrith Sandstone formation. This sedimentary bedrock formed approximately 272 to 299 million years ago during the Permian period in an environment dominated by windblown deposits of medium to fine grained material. The land to the north of the scheme comprises bands of Eden Shale and A–bed Evaporite, Gypsum stone, both sedimentary bedrocks laid down in the Permian Period in areas dominated by lakes and lagoons.

8.6.103 Overlying the bedrock, the superficial geology is predominantly glacial tills deposited by glaciers and glacial meltwaters during the Devensian period between 70,000 – 10,000 years ago. The glacial till does not have archaeological potential. Bands and pockets of alluvial clays, silts and sands are also present across the study area, these deposits date from around the Quaternary period and would have been laid down by rivers. These deposits would have no potential for archaeological materials.

8.6.104 Soils across the study area are loamy clays of low to moderate fertility, suitable for woodlands, grasslands and arable in areas.

Topographical summary

8.6.105 The study area is predominantly flat agricultural land with fence and hedge boundaries to the north of the River Eden. The land has pockets of hard and soft woodlands across it as well as dried-up ox bow lakes. The western extent of the scheme at Temple Sowerby the ground level lies at 117m AOD rising to 145m AOD at Crackenthorpe.

Identified heritage resources

8.6.106 For a complete record of the heritage resources identified within the Temple Sowerby to Appleby study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Archaeological and historical background

Uncertain Date

8.6.107 Numerous heritage resources of an uncertain date were identified through AP/LiDAR survey and largely comprise agricultural features, such as cropmarks and enclosures, as well as natural features, such as palaeochannels and former courses of the Trout Beck (0405-0219, 0404-0221, 0404-0226). Additional features of an uncertain date were recorded in the HER data, including dykes at Crackenthorpe (0405-0119, 0405-0120, 0405-0225); additional enclosures (0405-0114, 0405-0117, 0405-0118) and cropmarks (0405-0116).

8.6.108 Geochemical survey undertaken in 2022 identified areas with elevated levels of certain chemicals in close proximity to two of the undated enclosures (0405-0114, 0405-0117), which can indicate anthropogenic activity such as middening, food processing and manuring.

8.6.109 Archaeological trenching undertaken in 2021 identified a number of features that could not be conclusively dated and primarily consisted of linear features and other earthworks (0405-0498, 0405-0499, 0405-0500, 0405-0501, 0405-0502). Some of these include likely enclosure systems and other features that were found in the immediate vicinity of the known Roman camp and road (0405-0492, 0405-0500).

8.6.110 Archaeological trenching to the west of Appleby and adjacent to the Roman road also identified what was interpreted as a round house drip gully and associated enclosure ditches and pits (0405-0494). While the date of these features was determined to be broadly Prehistoric, a more precise date could not be concluded.

Palaeolithic, Mesolithic and Neolithic (1,000,000BC – 2,200BC)

8.6.111 No heritage resources dating to the Palaeolithic, Mesolithic nor Neolithic have been identified that will be affected by the Project.

8.6.112 For a wider discussion of these time periods in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the Temple Sowerby to Appleby study area, please refer to ES Appendix 8.8: Gazetteer.

Bronze Age (2,200 BC – 700BC)

8.6.113 No heritage resources dating to the Bronze Age have been identified that will be affected by the Project.

8.6.114 For a wider discussion of the Bronze Age in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a

complete record of the heritage resources identified within the Temple Sowerby to Appleby study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Iron Age (800BC – AD43)

8.6.115 The available archaeological evidence suggests that, regionally, settlement sites of an early Iron Age (800BC-300BC) date were comparatively small when compared to those from other parts of Great Britain. Interestingly, despite the naturally defendable terrain and the importance of the Stainmore Pass as a routeway through the Pennines, there appears to be no evidence for the presence of hillforts. It is possible, therefore, that settlements were more transitory (and archaeologically more difficult to identify) or, where remains have been identified, occupied on a seasonal basis and perhaps only becoming permanent during the Late Iron Age (1,200BC-700BC).

8.6.116 Because of the inherent uncertainty contained within radiocarbon dates, and the extent to which the north-eastern region has been surveyed and assessed in this way, it is difficult to distinguish between landscape clearance for arable farming that occurred before and immediately after the Roman invasion. Tipping[38] has suggested that the increase in agriculture and permanent arable farming sites within the region during the late Iron Age and early Romano-British (AD43-410) transitionary period was not related to Roman occupation and influence but was already underway. This opinion has also been supported by the work of McCarthy (McCarthy, 1995)[39] and Huntley (Huntley, 2002)[40].

8.6.117 Once again, the evidence contained within the historic environment varies throughout the region. Iron Age field systems identified in lowland areas are often poorly preserved whereas systems within upland regions tend to be better preserved and more easily identifiable.

8.6.118 There are few Iron Age sites and finds located within the study area, with most being related to the Roman occupation in the area. The most significant being a Scheduled Iron Age/ Romano-British enclosed farmstead at Redlands Bank (0405-0001). This native settlement sits 850m from a temporary Roman camp (0405-0004) and is believed to be broadly contemporary, thus providing insight into relationships between the two groups. A geophysical survey conducted at Kirkby Thore also identified a number of anomalies interpreted as potentially representing a late Iron Age or Romano-British farmstead and field system, including roundhouses and an enclosure ditch. A subsequent archaeological evaluation, however, only revealed a single pit with finds of an uncertain but possible Iron Age date (0405-0138) (ASUD, 2019)[41].

[38] Tipping, R. (1997) Pollen analysis and the impact of Rome on native agriculture around Hadrian's Wall
[39] McCarthy, M. (1995) Archaeological and environmental evidence for the Roman impact on vegetation near Carlisle, Cumbria, The Holocene 5
[40] Huntley, J. (2002) Environmental archaeology: Mesolithic to Roman
[41] ASUD (2019) Land at Kirkby Thore, An Archaeological Evaluation

Romano British (AD43 – AD410)

8.6.119 Within the study area, the Roman road known as The Street (00-0001) (Margary 82) (Margary, 1957) remains in use as the current A66, except where it has been previously bypassed. The proposed route aligns with the earlier Roman road at its western extent outside Temple Sowerby. In Kirkby Thore, a crossroad is formed by three Roman roads: The Street, Maiden Way (0405-0404) (Margary 84) to the north and the Low Borrowbridge to Kirkby Thore Roman Road (0404-0405) to the south (Margary 7d). However, the exact junction between these roads and their relationships with the fort and settlement at Kirkby Thore are unknown.

8.6.120 Three Roman forts and camps are located within the study area, all of which are Scheduled Monuments. The Roman fort identified as Bravoniacum (Rivet and Smith, 2019)[42] (0405-0003) was approximately 2.2ha in size and was occupied between the first and fourth century AD (Bidwell, 2009)[43]. The fort is located in fields immediately north and east of the Town End of Kirkby Thore and is bisected by the modern Main Street. Whilst the site of the fort has been somewhat denuded by ploughing in the past, the rampart remains visible as a low but distinct terrace. The line of Main Street, where it crosses the fort, deviates from its generally straight course to form a slight arc. This is a strong suggestion that at an early stage of village development, a substantial building, perhaps the headquarters building, still stood within the fort and that the road was diverted around its ruins. It is believed to have accommodated a cavalry unit, with numismatic evidence and limited excavation suggesting that occupation commenced in the Flavian period with the construction of a turf and timber fort. This was destroyed circa AD125 and replaced by a masonry-built fort. During roadworks in the AD1860s, three tombstones were uncovered depicting cavalry soldiers. Further excavations in the AD1960s uncovered a ditch and turf rampart as well as possible wall foundations. In AD1999, multi-phased timber buildings presumed to be part of the vicus to the south of the fort were uncovered in excavation works (Bidwell and Hodgson, 2009). A likely early field system, potentially Romano-British in date, was also recorded during AP/LiDAR survey immediately to the east of the vicus in AD2020 (0405-0180).

8.6.121 The Roman camp east of Redlands Bank (0405-0004) covers an area of approximately 9.3ha in area with at least one surrounding ditch and bank surviving up to 1m in height in places. The camp was sited parallel to and on the south-west side of the Roman road between Kirkby Thore and Brough, though it is uncertain if the road predates the camp or vice versa. It is unlike most Roman camps in Britain, as it was likely constructed as a complex of permanent structures for multiple temporary uses. The camp is on broadly level ground bisected by a steep sided gully. The fort had at least ten gateways located on the north-east,

[42] Rivet, A.L.F. and Smith, C. (1979) The Place Names of Roman Britain
[43] Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England

south-east and south-west sides. On the north-east side, adjacent to the Roman road, the gateways are regularly spaced at 60m intervals, and all of the gateways are defended by traverses which are preserved as low mounds.

8.6.122 Two hundred metres south-south-east of Castrigg, located on a slight rise adjacent to the northern side of the course of the former Roman road from Scotch Corner to Brougham, is a fortlet (0405-0005). Forming a sub-square enclosure approximately 0.5ha in size, it is bounded by a double ditch and bank. The fortlet survives as a cropmark and in places as a very slight earthwork. In the north-east corner of the interior is a double ring ditch which has been interpreted as the remains of a Roman signal station. Additional earthwork features have been identified by LiDAR in the vicinity of this fortlet (0405-0199, 0405-0201).

8.6.123 There is evidence of other Roman structures in the area, including a Scheduled Roman milestone (0405-0002) formed of a cylindrical red sandstone pillar which stands at 1.3m high. It is located on the parish boundary between Temple Sowerby and Kirkby Thore. The milestone is believed to stand at its original location immediately north of the Roman Road (00-0001). Additionally, two carved Roman arches (0405-0015) were uncovered during clearance works in Temple Sowerby in the early twentieth century.

8.6.124 Archaeological trenching in 2021 identified multiple areas of concentrated Romano-British evidence. A series of V-shaped ditches likely forming an enclosure along with a posthole, pits and other boundary ditches were found to the north-west of Kirkby Thore (0405-0489), from which sherds of southern Spanish ceramics were recovered dating to the second or third century AD. Further enclosure ditches and other linear and curvilinear features were identified along the route of The Street near Crackenthorpe (0405-0493). A number of features comprising mostly ditches and pits were also identified in areas to the west and east of Kirkby Thore, and while the dating is inconclusive, their similarity to other Romano-British evidence in the area was noted (0405-0490, 0405-0491).

Early Medieval (AD410 – AD1066)

8.6.125 The only evidence for settlement or activity of Early Medieval date which has been identified within the study area is the Grade I listed Church of St Margaret and St James (0405-0006), Long Marton where the nave walls and south doorway tympanum are of pre-Conquest date (Pevsner, 19676).[44]

Medieval (AD1066 – AD1540)

8.6.126 The earliest known Medieval features in the study area are the church buildings. These include the Grade I listed Church of St Margaret and St James (0405-0006) to the south of Long Marton, where the pre-Conquest church was expanded to include a tower and extended

[44] Pevsner, N. (1967) The Buildings of England: Cumberland and Westmorland

chancel in the twelfth century. Later subsequent additions in the Medieval period include the south chapel in the mid fifteenth century and the vestry in the sixteenth century.

8.6.127 The Grade II* listed Church of St Michael (0405-0008) in Kirkby Thore is twelfth century in date with later additions and alterations. Sections of the tower were rebuilt across the seventeenth to nineteenth centuries, including parapets, a porch and much of the internal design.

8.6.128 The study area contains three settlements that have Medieval origins: Temple Sowerby, Kirkby Thore and Crackenthorpe.

8.6.129 Temple Sowerby (0405-0149), located at the westernmost extent of the study area, is a red sandstone village centred around informal greens covered by a conservation area (0405-0108). Many of the properties and gardens are still situated on traditional burgage plots facing the once wide village green in the centre of the settlement. A manor at 'Soureby' is documented as being granted to the Knights Templar in the twelfth or thirteenth century.

8.6.130 The Medieval village of Kirkby Thore (0405-0156) has a traditional centre with greens and red sandstone buildings, though the surrounding areas are predominantly modern housing. The village contains a total of 11 listed buildings including the Grade II* listed Church of St Michael (0405-0008) and the Grade II* listed Kirkby Thore Hall, which was built in the fourteenth century with a solar wing though no evidence of other wings has been found (0405-0009). The majority of the other listed buildings are Grade II listed residential properties.

8.6.131 A Medieval shrunken village at Crackenthorpe (0405-0152) is also located within the study area.

8.6.132 In addition to settlements, the study area also contains a Medieval agricultural landscape with evidence of Medieval farming practices being identified, including ditches and lynchets (0405-0497). The high concentration of ridge and furrow features in the study area further demonstrates the long-term agricultural use of much of the surrounding land.

Post Medieval (AD1540 – AD1901)

8.6.133 The study area contains the conservation area of Appleby (0405-0109) at its south-eastern extent, which includes a number of Grade I and Grade II* listed buildings such as churches, residences and ancillary structures.

8.6.134 Much of the present-day village of Temple Sowerby was constructed during the Post Medieval period. The study area includes part of the Conservation Area and contains a number of listed buildings, the majority of which are Grade II listed domestic and agricultural buildings such as Spitals Farmhouse (0405-0103), a late eighteenth to nineteenth century farm complex comprising stables, a threshing barn (0405-0102), as well as a coach house and byres (0405-0101).

8.6.135 The Grade II* listed Crackenthorpe Hall (0405-0011) is a five-bay fronted seventeenth century rebuild of an older home with associated structures also added during the Post Medieval period.

8.6.136 Close to Crackenthorpe Hall is a Grade II listed milestone (0405-0047) which was moved from its original location when the route of the A66 was altered previously. It was originally created by the Turnpike Trust and is probably eighteenth to nineteenth century in date.

8.6.137 Non-designated Post Medieval features include trackways or holloways (0405-0186, 0405-0190, 0405-0191) and numerous field boundaries identified through the AP/LiDAR survey and a french drain (0405-0496) found during archaeological trenching is 2021.

8.6.138 A small section of the Settle – Carlisle railway line is within the study area (0405-0110), which was first constructed in AD1870 and continues to be in use with the route protected as a conservation area because of its notable engineering, unique design and characteristic station buildings.

Twentieth Century (AD1901 – AD2000)

8.6.139 No heritage resources dating to the twentieth century have been identified that will be affected by the Project.

8.6.140 For a wider discussion of the twentieth century in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the Temple Sowerby to Appleby study area, please refer to ES Appendix 8.8: Gazetteer.

Archaeological trenching

8.6.141 A programme of archaeological trenching was undertaken by Wardell Armstrong wherein a total of 568 trenches were excavated between October AD2021 and January AD2022 across the schemes from Temple Sowerby to Appleby and Appleby to Brough (Warcop). The trenching results identified a number of concentrated areas of archaeology, including areas of Romano-British evidence to the north-west, north and east of Kirkby Thore, near Long Marton, and near Crackenthorpe as well as areas of Prehistoric evidence to the west of Appleby. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table. The archaeological evaluation report can be found in ES Appendix 8.6: Trenching Reports.

Geophysical survey

8.6.142 Two phases of geophysical survey were undertaken by Headland Archaeology between October AD2020 and November AD2020 and between October AD2021 and December AD2021. Four of the Temple Sowerby to Appleby survey areas presented evidence of known archaeological features (such as areas of ridge and furrow), as well as

possible curvilinear features in an area along the current A66 between Temple Sowerby and Kirkby Thore (0405-0169) as well as a possible road or track running away from the Roman road (0405-0170). The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table. The detailed results and findings of this survey are presented in ES Appendix 8.5: Geophysical Survey Report (Application Document 3.4).

Geochemical Survey

8.6.143 A programme of geochemical and magnetic susceptibility survey works was undertaken in AD2022 covering three areas between Temple Sowerby and Appleby: north-west of Kirkby Thore, south-east of Kirkby Thore and north-west of Appleby. This survey identified three potentially significant areas: two areas of elevated chemical compositions consistent with settlement activity in close proximity to and likely associated with a rectangular enclosure north-west of Kirkby Thore (0405-0114) and to another enclosure and dyke to the south-east of Kirkby Thore (0405-0117) as well as an area of elevated lead, zinc and phosphorus that may indicate metallurgical activity or mineral extraction also to the south-east of Kirkby Thore (0405-0513). The detailed results and findings of this survey are presented in Appendix 8.7: Geochemical Survey Report and have been incorporated into ES Appendix 8.8: Gazetteer.

Aerial photography and LiDAR

8.6.144 A programme of aerial photography and LiDAR interpretation has been undertaken across the Project. This survey identified 96 heritage resources between Temple Sowerby and Appleby, 18 of which are features associated with Scheduled Monuments and other known non-designated heritage resources such as settlements, railways, industrial activity and enclosures. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The aerial photography and LiDAR report can be found in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4).

Historic mapping

8.6.145 Access to historic mapping, for example Tithe Maps and their apportionments, was gained through visits to the relevant county archival office(s) and use of the Landmark Solutions historic map data service. A total of 13 heritage resources were identified from these documentary or cartographic sources between Temple Sowerby and Appleby, comprising milestones, guideposts and farm buildings. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer

(Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

Appleby to Brough

Geological summary

8.6.146 The bedrock geology of the Appleby to Brough scheme is formed of the Penrith Sandstone Formation, which runs along the Eden Valley in the south and central part of the study area.

8.6.147 In the north and east of the study area there are beds of shales, sandstones and limestone. This includes the Eden Shale Formation, which lies to the north and east of the existent route of the A66 and across much of the study area, and the Stainmore Formation of mudstone and sandstone, the Great Limestone Member and the Alston Formation limestone, siltstone and mudstone which lie immediately north of the A66 at the Brough end of the scheme.

8.6.148 The superficial geology is predominantly till deposits, which were formed by the action of glaciers and meltwaters in the last glacial era (Devensian period), between around 70,000-10,000 years ago. Till does not have geoarchaeological potential. However, there are also watercourses, tributaries of the River Eden, which are associated with bands of alluvium which the proposed route crosses in several places. Alluvium, which is material deposited by rivers or streams, typically consists of silts, clays, sands and gravel and may contain anaerobically preserved organic material. This material may contain palaeoenvironmental remains which are of archaeological interest for their potential to aid in the reconstruction of past environments. At the western end of the scheme, south of the proposed route, there are also small areas of peat.

8.6.149 There are small areas within the study area where glaciofluvial deposits of sand and gravel are present, which were formed by the melting of the glaciers. There is also an area in Brough, in the study area at the eastern end of the Appleby to Brough scheme, where river terrace gravels have been laid down. River terrace gravels can be of archaeological interest as they were deposited during interglacial periods and in-situ Palaeolithic remains have occasionally been found within them.

Topographical summary

8.6.150 The scheme runs from Appleby-in-Westmoreland to Brough and, while still within the lowlands on the west of the Pennines, the land is notably more rugged as the A66 rises towards the Stainmore Pass to the east. At the western end of the scheme the ground level is at circa 136m AOD, at Ketland Moor and the road progressively rises to circa 180m AOD at Brough. The northern part of the study area is part of the Pennine foothills, with smaller hills peaking at circa 250m AOD before the higher fells begin to the north-east.

Identified heritage resources

8.6.151 For a complete record of the heritage resources identified within the Appleby to Brough study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Archaeological and historical background

Uncertain date

8.6.152 A number of heritage resources of an uncertain date were identified through AP/LiDAR survey and largely comprise earthworks corresponding with field boundaries, enclosures, lynchets or cropmarks as well as dykes (06-0108, 06-0123), drainage systems (06-0114, 06-0116), platforms (06-0118), and former trackways (06-0103).

8.6.153 Archaeological trenching undertaken in AD2021 identified a number of enclosure ditches and pits, one of which contained a large amount of burnt material, along the route of the Roman road (00-0001) and to the north of Warcop (06-0228). While the date of these features was determined to be broadly Prehistoric, a more precise date could not be concluded.

8.6.154 Archaeological trenching in 2021 also identified a number of other features whose dates could not be conclusively dated, primarily consisting of linear features such as gullies and ditches and pits (06-0231, 06-0232).

Palaeolithic, Mesolithic and Neolithic (1,000,000BC – 2000BC)

8.6.155 No evidence dating to the Palaeolithic, Mesolithic nor Neolithic is found within the study area.

Bronze Age (2900BC – 700BC)

8.6.156 Three Bronze Age barrows are recorded at Sandford Moor (06-0078, 06-0080, 06-0081), with their location recorded within or immediately adjacent to the existing route of the A66. Two are recorded as having been opened historically; a watching brief at one of these locations did not record any associated evidence though the HER records faint traces being present in the field where it is recorded.

8.6.157 Seventeenth century documentary evidence records the site of the Sandford ring cairn (06-0079) as being located less than 200m to the north-north-west of the above barrows at Sandford Moor. The AP/LiDAR survey notes that records do not cover its location, however, it did record a pair of linear banks (06-0112) theorised to potentially be a corridor between the barrow cluster and the ring cairn, as well as a small ring ditch (06-0111), which may represent a badly eroded barrow not recorded in the HER.

Iron Age (800BC – AD43)

8.6.158 No heritage resources dating to the Iron Age have been identified that will be affected by the Project.

8.6.159 For a wider discussion of the Iron Age in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the Appleby to Brough study area, please refer to ES Appendix 8.8: Gazetteer.

Romano-British (AD43-410)

8.6.160 The recorded evidence from the Romano-British period within the study area is focused upon the Roman road (00-0001), along with a fort, settlement, and temporary camp along its route.

8.6.161 The alignment of the Roman road (00-0001) broadly follows that of the current A66 through the study area. It diverges in the central area north of Warcop, where the A66 moves northwards, and the Roman road continues straight across what are now fields. Associated earthworks were visible in the AP/LiDAR survey in this section. The Roman road alignment also diverges slightly northwards in the western end of the study area.

8.6.162 Evidence of a 200m length of the Roman road is recorded on the southern side of the Scheduled site of the Warcop Roman camp (06-0003). Here the road survives as a slight terrace on the hillslope to the south of the camp and north of the modern road. The AD2020 AP/LiDAR survey identified an east-west aligned bank likely associated with the road, which is recorded as extending to the east and west of the Scheduled area.

8.6.163 Warcop Roman camp (06-0003) is located on northern side of the existent A66. It visible as cropmarks on an aerial photograph which highlights features such as the camp's infilled defensive ditch, faint traces of a possible smaller and earlier Roman camp partly underlying the larger camp's south-western corner, and a curvilinear feature immediately to the east of the larger camp. However, the AD2020 AP/LiDAR survey was only able to identify the bank likely associated with the road and not any clear features of the camp itself.

8.6.164 The Roman fort of Verteris and associated civil settlement (06-0004) at the site of the later Brough Castle is located at the eastern end of the study area (Rivet, 1979).[45] It was constructed on the highest part of a ridge on the south bank of Swindale Beck and at the western end of the Stainmore Pass. The occupation of the fort possibly dated from the governorship of Agricola (AD78-84) and lasted until the end of the fourth century. Whilst the impacts from the Medieval castle make it difficult to determine the exact extent of the Roman fort, its enclosure is recorded as being approximately 1.2ha in size. An associated civilian settlement site developed in the third century AD to the east of the fort and an associated cemetery is also located to the east of the settlement. Stamps on lead sealings found near to the fort suggest that in the third century the garrison was cohors VII Thracum equitata (Bidwell and Hodgson, 2009), a part-mounted unit approximately 500 strong. Written

[45] Rivet, A.L.F. and Smith, C. (1979) The Place Names of Roman Britain

evidence for the Roman garrison station at Brough comes from later copies of the Notitia Dignitatum, an official late fourth to early fifth century listing of Roman civil and military posts throughout the empire that names the garrison at this time as the Numerus Directorum, the size and composition of which is uncertain but possibly only 100-200 men strong (Fischer, 2019)[46].

8.6.165 Archaeological trenching undertaken in AD2021 identified a concentration of Romano-British features to the east of Warcop, primarily consisting of gullies, ditches and pits (06-0229). A second concentration of Romano-British activity was identified to the west of Warcop (06-0227), which included a section of cobbled trackway/road on a south-east to north-west alignment, potentially representing an iteration or diversion of The Street (00-0001). Additional features found in this area included a possible enclosure, drainage ditches, small pits, and postholes (06-0226, 06-0227).

Early Medieval (AD410 – AD1066)

8.6.166 The antiquarian excavation of one of the Bronze Age tumuli at Warcop (06-0078) is reported as having a secondary burial which has been interpreted as possibly Early Medieval in date. Contemporary reporting records that it was an urned cremation within a secondary vessel, with grave goods including a double-edged sword and a spear head (O'Sullivan, 1980)[47]. A 2001 watching brief associated with the erection of a BT mast upon the site did not record any archaeological feature or finds.

8.6.167 There are no other recorded heritage resources dating to the Early Medieval period within the study area.

Medieval (AD1066 – AD1540)

8.6.168 Most of the evidence of Medieval settlement activity is focused on the present-day settlements within the study area.

8.6.169 Brough Castle (06-0004) was built within the northern extent of the earlier Roman fort and civil settlement and is covered by the same scheduling. The establishment of the castle is thought to have been close to the time of William Rufus' campaign, which resulted in his seizure of Cumbria in AD1092. At this time, the Roman ditches are believed to have been re-cut, a further ditch cut to define the inner and outer baileys, and a stone tower erected. While the inner bailey appears to have been surrounded by stone walls, there is no evidence that the outer bailey was protected in a similar manner, though material excavated during the re-cutting of the ditches at this date appears to

[46] Fischer, T. (2019) The Army of the Roman Emperors: Archaeology and History
[47] O'Sullivan, D. M. (1980) A reassessment of the early Christian' archaeology of Cumbria, Durham theses, Durham University. Available at Durham E-Theses Online: http://etheses.dur.ac.uk/7869/; Preston, W. (1775) Account of opening one of the largest barrows on Sandford Moor, Westmoreland in a letter from Mr William Preston, dated Warcop Hall, Sept 5, 1766, to Bishop Lyttleton. Archaeologia, Vol 3.

have been re-deposited on the Roman defences south of the Medieval curtain wall. The castle's south-west corner is dominated by the shell of the keep, a three-storey structure with corner turrets above a basement. The inner range of buildings at the south-east corner of the castle include the hall range which contained a great hall above more modest rooms such as storerooms, basements and offices. The south-east corner of the castle contains Clifford's Tower, a formerly three-storey semi-circular projecting corner tower. The castle is surrounded by a moat, which remains up to 8.5m deep in places with a counterscarp bank on all sides, although it has partly eroded down the steep hill slope on the north side.

8.6.170 To the northeast of Warcop, along the Eastfield Sike, is a Scheduled Medieval moated site (06-0006). The site includes the earthworks and buried remains of Eastfield Sike Medieval moat, an associated fishpond, and adjacent Medieval wood banks and ditches at Burtergill Wood and Kiln Hill. It lies on the fringe of open moorland which gradually rises northwards before joining the limestone scars of Warcop Fell. Surrounding the platform is a flat-bottomed ditch which is dry on all sides except the north where a small stream flows through the north-east corner of the moat before exiting through a break in the west ditch. Remains of an inlet channel which originally supplied water to the moat survive on the eastern side. To the south of the moat the bank and ditch continue and define a piece of land on the western side of Kiln Hill which, although now largely treeless, is shown on nineteenth century maps as being a continuation of Burtergill Wood.

8.6.171 Foci of Medieval settlement were identified at Market Brough, Warcop, and at a shrunken village at Flitholme; however, it was determined that these areas would not be affected by the Project. For more information on these settlements, please refer to ES Appendix 8.1: Archaeological and Historical Background (Application Document 3.4), ES Appendix 8.8: Gazetteer, and ES Appendix 8.9: Historic Environment Research Framework (Application Document 3.4).

8.6.172 The AP/LiDAR survey and HER entries record evidence for agricultural land usage during the Medieval period with a clear focus around the main settlements of Church Brough, Market Brough, Flitholme and Warcop. Evidence includes the Mains Riggs field system (06-0090) plus lynchets (06-0143), strip fields (06-0134) and field boundaries (06-0140).

Post Medieval (AD1540 – AD1901)

8.6.173 The settlements of Church Brough, Market Brough and Warcop continued to develop and grow through the Post Medieval period. This is reflected in the way in which the majority of the listed structures in the study area are predominately focused around these areas, with most being residences and associated structures. Church Brough is also a Conservation Area (06-0102).

8.6.174 An exception to this agricultural emphasis is the Grade II* listed Helbeck Hall (06-0010) located to the northwest of Helbeck.

8.6.175 Consistent agricultural activity continued into the Post Medieval period, as evidenced by the built heritage of the study area which includes named farmsteads such as Toddygill Hall (06-0208, 06-0209), Broomrigg End (06-0213), Warcop Tower and Farmstead (06-0032), and New Hall Farm (06-0190). Numerous ancillary agricultural structures also survive, some associated with houses or repurposed, as testament to the enduring agricultural land usage (06-0035, 06-0036, 06-0096, 06-0189).

8.6.176 Agricultural landscape evidence from the Post Medieval period is also seen across the study area through the presence of enclosures (06-0217) and field boundaries (06-0145, 06-0146, 06-0147, 06-0148, 06-0154).

8.6.177 The Warcop Walk mill (06-0094) lies to the north of Warcop, on the northern side of the existent A66, with the building and signs of the mill race surviving. The existing A66 incorporates the Walk Mill High Bridge (06-0092), which spans the Hayber Gill waterway to the south of the Warcop Walk Mill.

8.6.178 Historic evidence of quarrying is apparent in the western end of the study area. The AP/LiDAR survey records a large area with multiple extraction pits crossed by trackways (06-0144). Whilst most likely of Post Medieval date, it is theorised it may have earlier, possibly Romano-British, origins.

8.6.179 The mid-nineteenth century saw the introduction of the railway into the area, with the Eden Valley Branch of the North and Eastern Railway (06-0100) opening in AD1862. The line was intended as a connection between the coal fields in the north-east and the iron ore of West Cumbria, but also served to link the settlements of the Eden Valley. The line remained in service until AD1962. Part of the line, between Warcop and Appleby-in-Westmorland, is being preserved and restored by the Eden Valley Railway Trust (Eden Valley Railway Trust, 2022)[48] Warcop Railway Station (06-0095) survives adjacent to the line.

8.6.180 Features related to the turnpikes across the study area and dating to the Post Medieval period include the Gatehouse Toll house (06-0099). Associated with the old turnpike road of Bale Hill, which remains adjacent to the existent line of the A66, the toll house is recorded as representing the most easterly of the toll houses of the former Brough to Eamont Bridge turnpike, obtained through an Act of Parliament in AD1755. Designated features include Grade II listed boundary stones between the townships of Brough and Hilbeck (06-0038) and between the townships of Market Brough and Church Brough.

[48] Eden Valley Railway Trust (2022) Eden Valley Railway, available at: https://www.evr-cumbria.org.uk [accessed 04-03-2021]

Twentieth Century (AD1901 – AD2000)

8.6.181 No heritage resources dating to the twentieth century have been identified that will be affected by the Project.

8.6.182 For a wider discussion of the twentieth century in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the Appleby to Brough study area, please refer to ES Appendix 8.8: Gazetteer.

Archaeological trenching

8.6.183 A programme of archaeological trenching was undertaken by Wardell Armstrong wherein a total of 568 trenches were excavated between October AD2021 and January AD2022 across the schemes from Temple Sowerby to Appleby and Appleby to Brough (Warcop). The trenching results from this section of the scheme identified concentrations of Romano-British evidence to the west and east of Warcop, concentrations of Prehistoric evidence to the north of Warcop and adjacent to the route of the Roman road as well as a cobble and stone trackway. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The archaeological evaluation report can be found in ES Appendix 8.6: Trenching Reports (Application Document 3.4).

Geophysical survey

8.6.184 Two phases of geophysical survey were undertaken by Headland Archaeology between October AD2020 and November AD2020 and between October AD2021 and December AD2021. No anomalies indicative of previously unidentified archaeological remains or features were recorded within the study area of this scheme. The detailed results and findings of this survey are presented in ES Appendix 8.5: Geophysical Survey Report (Application Document 3.4).

Aerial photography and LiDAR

8.6.185 A programme of aerial photography and LiDAR interpretation has been undertaken across the Project. This survey identified 55 heritage resources between Appleby and Brough (Warcop), 14 of which are features associated with Scheduled Monuments and other known non-designated heritage resources such as settlements, railways, industrial activity and enclosures. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The aerial photography and LiDAR report can be found in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4).

Historic mapping

8.6.186 Access to historic mapping, for example Tithe Maps and their apportionments, was gained through visits to the relevant county archival office(s) and use of the Landmark Solutions historic map data service. A total of 15 heritage resources were identified from these documentary or cartographic sources between Appleby and Brough (Warcop), comprising milestones, guideposts, industrial sites such as quarries and coal depots, public houses or inns, a standing stone, residences/domestic properties and farm buildings. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

Bowes Bypass

Geological summary

8.6.187 The bedrock geology of the study area is made up of a variety of rocks within the Yoredale Group. To the west of Bowes, the rocks are predominantly part of the Stainmore Formation, with beds of sandstone, mudstone and siltstone. To the north there is a long band of Crag Limestone. East of Bowes are beds of limestone from the Great Limestone Member and the Four Fathom Limestone Member, which is interspersed with rocks of the Alston Formation, which include limestones, sandstones, siltstones and mudstones.

8.6.188 Overlaying the bedrock, the superficial geology is predominantly glacial till deposits, which were formed by the action of glaciers and meltwaters in the Devensian period, between around 70,000-10,000 years ago. Till does not have geoarchaeological potential. To the south of the study area there are also deposits of alluvium and river terrace gravels along the course of the River Greta, and areas of glaciofluvial deposits. In the uplands to the north and west there are also areas of peat.

8.6.189 The soils vary from clayey wet soils to the west of Bowes, best suited for pasture and seasonally wet loamey and clayey soils east of Bowes, which can support arable crops with drainage (Cranfireld Soil and Agrifood)[49].

Topographical summary

8.6.190 The scheme is located at the upper part of the Greta Valley, where the steep narrow valley opens up into a much flatter agricultural landscape. At the western end of the scheme the ground level lies at circa 298m AOD, falling to circa 280m AOD in Bowes, and to circa 267m AOD at Bowes Cross Farm, at the eastern end of the scheme.

[49] Cranfield Soil and Agrifood Institute (n.d.) Soilscapes map

Identified heritage resources

8.6.191 For a complete record of the heritage resources identified within the Bowes Bypass study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Archaeological and historical background

Uncertain Date

8.6.192 Five heritage resources of an uncertain date have been identified throughout the study area (07-0119 through 07-0123). All of these features are ditches and other features that were identified during a programme of archaeological trenching in AD2021-2022.

Palaeolithic, Mesolithic and Neolithic (1,000,000BC – 2,200BC)

8.6.193 No heritage resources dating to the Palaeolithic, Mesolithic nor Neolithic have been identified that will be affected by the Project.

8.6.194 For a wider discussion of these time periods in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background (Application Document 3.4). For a complete record of the heritage resources identified within the Bowes Bypass study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Bronze Age (2,200BC – 700BC)

8.6.195 The only available evidence for early Bronze Age activity within the study area comprises funerary monuments. Cists, cairns and barrows were often opened and examined by antiquarians during the eighteenth and nineteenth centuries, with many more examples being destroyed through increasingly intensive agricultural practice. However, the group of four barrows at Bowes (07-0036, 07-0037, 07-0038 and 07-0039) appear to have escaped opening, although Round Barrow ‘D’, Bowes (07-0039) has been damaged.

8.6.196 In addition to this barrow group, a stone burial cist (07-0035) was identified in a field adjacent to Priory Farm north of the Order Limits. Unlike the barrows, the cist appears to have been destroyed by ploughing. Its initial discovery, however, suggests that further funerary monuments may be present within the landscape.

8.6.197 As with the monuments and sites of the early Bronze Age, archaeological evidence dating from the middle (1,600BC-1,200BC) and late (1,200BC – 700BC) Bronze Age tends to survive as upstanding features in upland areas. The available archaeological evidence suggests that settlement sites were commonly surrounded by an enclosure but, when compared to other regions, were small in scale.

8.6.198 Unlike the early Bronze Age, the construction and use of funerary and mortuary monuments and sites is uncommon during the latter parts of the Bronze Age and the early Iron Age (800BC-300BC) transition. It is likely that there was a cultural shift in religious or spiritual practice which moved the focus away from monumentalism and toward ritual activity.

There is some evidence for the inhumation of the deceased within barrows during the late Bronze Age and early Iron Age transition, although the rarity of these instances suggests that *"the majority of bodies were disposed of in an archaeologically invisible way"*[35]. Examples of which include excarnation, the scattering of ashes, or the deposition of un-urned cremation remains.

8.6.199 No evidence for settlement or activity of middle or late Bronze Age date has been identified within the study area.

Iron Age (800BC – AD43)

8.6.200 No heritage resources dating to the Iron Age have been identified that will be affected by the Project.

8.6.201 For a wider discussion of the Iron Age in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background (Application Document 3.4). For a complete record of the heritage resources identified within the Bowes Bypass study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Romano-British (AD43 – AD410)

8.6.202 The Roman fort at Bowes (07-0002), known as 'Lavatrae', was originally established during the Flavian period (AD69-AD96) but appears to have fallen out of use by circa AD100. While the main body of the fort follows the standard square pattern of these structures, it is not clear if the 'Flavian Annex' (07-0067) proposed by Bidwell and Hodgson (Bidwell, 2009)[50] was constructed during the fort's initial construction and occupation during the first century AD or following a period of abandonment during its reoccupation in the second century AD – which also saw the establishment of a vicus outside its walls. Following its reoccupation, the fort remained in use into the fourth century AD[51].

8.6.203 The remains of the Roman Fort of Lavatrae (07-0002) can still be seen as earthworks in what is now the grounds of the later Bowes Castle (07-0005). The earthworks comprise the lower courses of a west wall and part of the south wall, which is approximately 0.5m high. The surviving wall remains are set within a roughly rectangular depression which is approximately 2m deep. Two other wall fragments can be seen partway along the north wall and at the north-west corner, both of which survive to a height around 1.5m. Excavation within the fort and vicus at Lavatrae have uncovered the remains of a Bath House, which was excavated to an area of approximately 9m by 6m, as well as multiple examples of material culture. Examples of the finds include an alter which commemorates the restoration of the bath house by the '1st Cohort of Thracians' when Virus Lupus was governor (between circa AD197 and circa AD205), and a small hoard of coins which date from the late third to mid fourth century. A further alter was recovered during the Post

[50] Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England
[51] ibid

Medieval period (AD1540-AD1901) and is now located within the Church of St Giles (07-0007).

8.6.204 A large amount of what appears to be discarded material was found in an eroded scrape just south of the Roman Fort (07-0002), overlooking the course of the River Greta. Material culture recovered from this site includes pottery sherds from Central Gaul of a third and fourth century date, alongside coarse wares of the second to fourth century, opus signinum and animal bone.

8.6.205 Considerable military and domestic archaeological evidence of Romano-British date has been recovered in the area immediately surrounding the Roman Fort (07-0002) throughout the village of Bowes, both in the form of isolated findspots and in remains uncovered by previous archaeological investigations. However, it has been determined that these elements will not be affected by the project. For more information on these heritage resources, please refer to ES Appendix 8.1: Archaeological and Historical Background and ES Appendix 8.8: Gazetteer (Application Document 3.4).

8.6.206 Multiple known and possible major and minor Roman Roads, as well as probable trackways, converge at Bowes. The most prominent of these is The Street (00-0001). Recent evidence obtained by the National LiDAR Programme in AD2019 and assessed by the RRRA suggests that the proposed likely route of The Street (00-0001) from east to west remains largely unchanged from earlier assessment and is mirrored in the landscape by the route of the A66, although there are several known and probable but unconfirmed divergencies.

8.6.207 It has long been assumed that the main road through Bowes – the former route of the A66 before the village was by-passed – was the route of the Roman road The Street (00-0001), as it retains the name 'The Street.' The latest research from the RRRA, however, suggests that this alignment is a later diversion, and The Street (00-0001) originally followed a slightly different alignment (07-0081) through the Roman fort (07-0002) (Haken, 2021).[52] Another variance in alignment between the A66 and the route of The Street (00-0001) has also been identified between Bowes and Stone Bridge Farmhouse (07-0015) (Haken, 2021)[53].

8.6.208 An archaeological watching brief carried out at the site for the former West End Service Station (07-0041) exposed several sandstone blocks on its south side which were interpreted as the possible remains of the now thought to be later, re-aligned route of The Street (00-0001) which passed to the north of the Roman fort (07-0002) rather than through it, which became the main road through Bowes and the route of the A66 before its by-passing in the twentieth century.

[52] Haken (2021) Notes on Roman Roads potentially impacted by the A66 NTP project
[53] Haken (2021) Notes on Roman Roads potentially impacted by the A66 NTP project

8.6.209 The other major Roman Road that extends within the study area is the Bowes to Binchester road via Barnard Castle (07-0066) (Margary, 1957)[54]. The alignment of this route was thought to follow the route of the A67; however, new evidence assessed by the RRRA suggests that this assumed alignment is incorrect. The current hypothesis (07-0080) is that the route of RR820 – the Binchester road (07-0066) – actually connects with RR82 – The Street (00-0001) – approximately 1km east of the Roman fort (07-0002) in the vicinity of Stone Bridge Farmhouse (Haken, 2021)[55].

8.6.210 Haken states that if the alignment of RR820, Bowes to Binchester (07-0066), is now closer to that proposed by the RRRA (07-0080) rather than being preserved in the alignment of the A67, then the speculated link road which was thought to connect Bowes with the A67 on a north-south alignment would probably not exist, despite previous speculations by Sheppard Frere (Haken, 2021)[56]. Haken also notes that it is possible for part of the Eggleston North to Stanhope Roman road (Margary, 1957)[57] to be present north of Bowes at the junction of the A66/A67, but caveats that this hypothesis is highly speculative at present as archaeological evidence has yet to be identified (Haken, 2021)[58].

8.6.211 Outside of the study area to the south, within the 2km ZVI, a Romano-British settlement site (07-0003) has been identified. Located approximately 60m north of an earlier Iron Age (800BC-AD43) walled settlement, the Romano-British settlement site is unenclosed and comprises a series of rectangular platforms. Aligned in an orderly, compact layout across a south-facing slope, the terraces are thought to be the bases for houses and their associated yards. A rectilinear field system of narrow regular fields abuts the settlement and is thought to be contemporary, indicating a permanent year-round presence and the occupation and adaptation of an earlier existing site.

Early Medieval (AD410 – AD1066)

8.6.212 No evidence for settlement or activity of an Early Medieval date has been identified within the study area.

Medieval (AD1066 – AD1540)

8.6.213 The village of Bowes stands on the edge of Stainmore on the banks of the River Greta (North of England Civic Trust, 2020)[59], partway along the main pass through the North Pennines that links Cumbria with North Yorkshire. Bowes is not entered into the Domesday Book and, traditionally, an absence such as this has been interpreted as there

[54] Margary, I. (1957) Roman Roads in Britain volume II. North of the Foss Way – Bristol Channel pp.164-77
[55] Haken (2021) Notes on Roman Roads potentially impacted by the A66 NTP project
[56] ibid
[57] Margary, I. (1957) Roman Roads in Britain volume II. North of the Foss Way – Bristol Channel pp.164-7
[58] Haken (2021) Notes on Roman Roads potentially impacted by the A66 NTP project
[59] North of England Civic Trust (2020) Heart of Teesdale Project Heritage Audit

being no settlement of substantial (taxable) size during the Early Medieval (AD410-AD1066) to Medieval transition. This suggests that its origins rest firmly within the Medieval period; most likely sometime during the twelfth century (Page, 1914)[60]. It is, however, possible that there was some form of settlement at Bowes during the Early Medieval period and that the absence of any archaeological features, remains or deposits from this period is a result of sustained use of the same village area. The village's absence in contemporary documentary material could, of course, be a result of the Harrying of the North.

8.6.214 The first documentary evidence for a settlement at Bowes – recorded as 'Bogas' – can be found in the Yorkshire Charters of 1148. It is possible that the name is a derivation of the Old English word for bow, 'boga', referring here to the bend(s) in a river. The suggestion that the settlement gets its name from the word 'Boghes' entered onto a gate at Bowes Castle (07-0005)[61] is, therefore, likely a misinterpretation as the stone castle was constructed almost 30 years after the Yorkshire Charters were written. Further documentary evidence from the Charter Rolls of 1241 records the settlement as 'Bouis'. It is not known when the current derivation of 'Bowes' came into use.

8.6.215 The settlement of Bowes was most substantially influenced by two of the most dominant parts of Medieval society: religion and war. Bowes Castle (07-0005) was a possession of the crown for much of its history. It was originally part of the Honour of Richmond but, following the death of Earl Conan le Petit, it became a possession of Henry II (this was because Earl Conan had no male heirs). Bowes Castle (07-0005) was strengthened throughout AD1171, and in the year AD1172 to 1173, costing the crown approximately £225. During the year AD1173-1174, Bowes Castle (07-0005) was besieged by King William the Lion during a period of threatened, and partially realised, Scottish invasion before it was broken by the arrival of the army of Geoffrey, Archbishop of York.

8.6.216 Bowes Castle (07-0005) remained a crown possession until it was granted to Peter, Duke of Brittany by Henry III in AD1233. In AD1241, Henry granted both Bowes Castle (07-0005) and its manor to his uncle, Peter of Savoy, Earl of Richmond, for life. A move that was brought into contestation and, ultimately violence, when Edward II granted the ownership to John de Scargill in AD1322. Angered by this move, tenants of the Earl of Richmond besieged and captured the castle. These changes in ownership occurred at a time when the north of England was devastated by the Scottish under the leadership of Robert the Bruce and, by AD1325 Bowes Castle (07-0005) was reported to be in ruins[62]. By AD1341 it was noted as 'weak and worth nothing' (Historic England)[63] and, following the death of de Scargill in AD1361, reverted back to the crown. Between AD1444 and 1471 Bowes Castle (07-0005)

[60] Page, W. (1914) A History of the County of York North Riding: Volume 1
[61] ibid
[62] ibid
[63] Historic England (n.d.) Bowes Castle, Bowes, County Durham

was a possession of the powerful Neville family before it returned once again to the crown as a possession of James I who sold it to raise funds. Any military worth that may have remained at Bowes Castle (07-0005) was destroyed during the English Civil War (AD1642-1651).

8.6.217 The Church of St. Giles (07-0007) is located to the east of Bowes Castle (07-0005) and the remains of the Roman Fort of Lavatrae (07-0002). Although considerably restored and expanded during the nineteenth century, the Medieval heart of the church survives. The oldest part of St. Giles, the nave, dates to the mid-twelfth century (Oliver, 1944)[64] and is broadly contemporary with Bowes Castle (07-0005). The chancel dates to the thirteenth century, the north and south transepts to the fourteenth century and the south porch was erected in circa AD1404[65]. Within the church itself, several features of a Medieval date – as well as a Romano-British alter – survive. These comprise several grave slabs and two circular fonts which date to the twelfth and thirteenth centuries.

8.6.218 The village cross in the front garden of Cross House and Church View (07-0028) is the only upstanding structure of a Medieval date within Bowes. Carved from sandstone, the remains of the village cross (07-0006) are set close to the road at the front of the property, facing Bowes Castle (07-0005) and the Church of St Giles (07-0007). The remains comprise a square-plan plinth with rounded corners and chamfered top edge, which supports an octagonal-plan base and badly worn fragment of cross shaft some 0.6m tall. The holy well is located to the south of Bowes village and is thought to likely be Medieval in origin but may have been a re-dedication of an earlier site.

Post Medieval (AD1540 – AD1901)

8.6.219 While several farmsteads with Post Medieval origins (such as Low Broats (07-0103)) have been identified within the study area, a smaller number were established during the sixteenth or seventeenth centuries. For example, while the street-facing main view and entrance of The Ancient Unicorn Hotel (07-0027) was built during the mid-eighteenth century, its rear wing comprises two much-altered, and themselves re-fronted, seventeenth century buildings.

8.6.220 The remaining farmhouses within the study area are all extant and date to the end of the period. Annums Farmhouse (07-0020) dates to the early nineteenth century while the larger and more complex Stone Bridge Farmhouse (07-0015), and its associated loose boxes (07-0016) and linked farm buildings (07-0032) (comprising a threshing barn, byres and gin-gang), were constructed in circa AD1840. West End Farm (07-0021), which has a close physical association and connection with Dotheboys Hall (07- 0014), is thought to have been established at a similar time during the early-to-mid nineteenth century. Other former agricultural buildings located within Bowes include Unicorn Cottage (07-0057) (which was adapted to act as a petrol station before its conversion

[64] Oliver, W. (1944) The Story of Bowes Church
[65] ibid

to a residential dwelling) and the upstanding buildings to the north and east of the courtyard (07-0058) of the Ancient Unicorn Hotel (07-0027), which have also been converted for domestic use. Beyond the eastern edge of the village, the cowhouse (07-0034) survives in situ and remains in agricultural use, although it is now accompanied by a larger modern barn. The agricultural buildings of the study area are all constructed in variation of an overarching local vernacular style which has also been adopted by the residential properties of Bowes.

8.6.221 The local vernacular style comprises rubble or squared rubble walls, stone-flagged roofs, and worked stone chimney stacks. The raw material that enabled construction was most likely sourced from local sandstone quarries. The limestone quarries at Bowes West (07-0053) was not, however, established to extract stone for building but for the production of quicklime and, potentially, cement. It is marked as including lime kilns on the first and second editions of the Ordnance Survey map (although annotated as 'disused' on the second edition).

8.6.222 Higher status buildings and their surrounding structures, for example Bowes Hall (07-0018) and its garden walls (07-0026), were constructed from squared ashlar rather than rubble. Built during the seventeenth century, Bowes Hall (07-0018) was extended and re-fronted during the nineteenth century, concealing its earlier form from external view. The extension and re-facing of older halls and houses are common practice throughout the Post Medieval period as architectural styles fell into and out of fashion. Most of the earliest residential buildings in Bowes (for example, Castle Terrace (07-0013), Prospect House (07-0023), and 1 and 2 The Street (07-0024)) are constructed in the vernacular style stated previously and date from the late eighteenth to mid-nineteenth centuries, often with evidence of later alterations.

8.6.223 The earliest domestic property to survive largely intact and unaltered is the cottage of Sunny Croft (07-0008). Now attached to the later Croft House, Sunny Croft was built in AD1797 while Croft House dates to the early nineteenth century. The Grove (07-0022) and its associated Forecourt Walls and Gatepiers (07-0019) may have been constructed earlier than Sunny Croft (07-0008) during the mid-eighteenth century, however, The Grove (07-0022) was subjected to alterations during the late nineteenth century.

8.6.224 Strike Bridge (07-0063) was constructed in the eighteenth century. Like the majority of residential dwellings within Bowes, it is built in the vernacular style.

8.6.225 Following their first meeting in 1800, which was attended by only four members, the practicing Wesleyan Methodists of Bowes grew their congregation steadily. In AD1822 they constructed their first dedicated chapel and maintained an average attendance of 72 worshippers each Sunday morning and 30 Sunday School attendees each Sunday evening by AD1851 (My Wesleyan Methodists)[66]. The original chapel

[66] My Wesleyan Methodists (n. d.) Bowes Wesleyan Chapel

was replaced by a larger chapel (07-0078) in 1878 that served as a meeting place until the late twentieth century (it was converted into a residential property in 1991). Despite the presence of the new chapel, worship continued at the Church of St Giles (07-0007). The arrival of Methodism within Bowes does not seem to have adversely affected the fortunes of the church, which was extended and renovated during the mid-nineteenth century increasing its capacity and taking the form it bears today.

8.6.226 Four of the many graves within the churchyard of St Giles are of particular interest. Three primarily for their age, and the fourth because of the individual's association with the literary work of Charles Dickens and the social conscience movement regarding the conditions of many of the nation's private schools during the nineteenth century. The oldest of the graves at St Giles dates to AD1691 and is an upstanding table tomb dedicated to one Henry Binks (07-0011). The headstone marking the grave of Thomas Hanby (07-0009) and the chest tomb of William Thompson (07-0010) date to AD1760 and AD1790 respectively.

8.6.227 The final grave is marked by a headstone and remembers one William Shaw (07-0012). Shaw died in AD1850 and is posthumously remembered as the inspiration for the character Wackford Squeers in Charles Dickens' Nicholas Nickleby. Shaw was the principal of Bowes Academy, a private boys school run out of the converted late eighteenth century Dotheboys Hall (07-0014). Bowes Academy was home to approximately 200 boys and, along with Shaw, became infamous following a visit by Dickens on 2 February AD1838. Outraged by the disgraceful conditions he witnessed, Dickens publicly exposed Shaw and Bowes Academy creating a public outcry. The effect of this action caused many similar private schools throughout the country to close, including Bowes Academy.

8.6.228 Throughout its history, Bowes has been inextricably linked to the movement of people through the Stainmore Pass. Furthermore, since the Romano-British (AD43-AD410) period, it has been located upon the main west-east road of the region and was likely a confluence of several other minor roads. This relationship with the road network was no less important during the Post Medieval period. Bowes was part of the Middleton Tyas Lane to Greta Bridge and Bowes Turnpike Trust, which managed the route eastward from Bowes through Carkin and on to Scotch Corner (the approximate route of the A66 today) following its establishment in AD1744 (Rosevar, A, 2017).[67] Four years later, in AD1748, the road from Bowes to Sunderland Bridge via Barnard Castle (approximately 5km north-east of Bowes) was also turnpiked and managed by the Bowes and Sunderland Bridge Turnpike Trust[68], the approximate route of the A67 and A688 today. Bowes was also on the route of the Penrith to Greta Bridge Turnpike (00-0002). Besides the route of the roads themselves, the only surviving extant remains of the

[67] Rosevar, A. (2017) Turnpike Roads in England and Wales
[68] ibid

network located within the study area are milestones, one of which notes the distance to Bowes and Brough (07-0031).

8.6.229 Turnpike roads were a dominant feature of the transport network until the arrival of the railway, with which they could not compete when it came to moving volumes of material and people quickly over long distances. Gradually, the road network was 'dis-turnpiked' throughout the nineteenth century and the Turnpike Trusts wound up. The responsibility for maintaining the local road network then moved to local Highway Boards (created in AD1835) and eventually to County Councils following their establishment in AD1889 (Cumbria County Council)[69].

8.6.230 In addition to the main thoroughfares across the study area, AP & LiDAR surveys undertaken in AD2020 also identified possible Post Medieval roads or trackways, one located to the east of Bowes Hall (07-0075).

8.6.231 Until the latter parts of the Post Medieval period, the primary occupation of the people of Bowes would have been associated with agriculture and local small industry. With the establishment of large – and numerous – coal, metal and mineral mines throughout the region, opportunities for work increased and occupations shifted. The arrival of the railways at Bowes in AD1861 meant that workers could not only easily find employment from further afield but move around the region with much greater speed and regularity than they had before. The Bowes Working Mens Club (07-0029) was founded at a similar time, during the early-to-mid-nineteenth century, and reflects the changing social, economic, and to some degree political, spheres of the time.

8.6.232 Bowes Railway Station (07-0052) was built and opened in AD1861 as part of the South Durham & Lancashire Union Railway Company (07-0061) (SD&LUR) – a subsidiary of the Stockton and Darlington Railway Company (SDR). The railway was established with the objective of transporting iron ore from Barry in Lancashire, west of the Pennines, to Teesdale for processing. In return, coke and coal would be sent from Teesdale back to Lancashire. The line was completed in sections with the Barnard Castle (approximately 5km north-east of the study area) to Tebay (approximately 35km south-west of the study area) section completed first. The infrastructure for the accompanying passenger service, which included Bowes Railway Station (07-0052), was completed at the same time. In AD1863 the SD&LUR, along with the Eden Valley Railway Company (which was formed in AD1856 as another subsidiary of the SDR, and connected with the SD&LUR at Kirkby Stephen approximately 21km south-west of the study area) were all amalgamated into the North Eastern Railway Company (NER).

8.6.233 Archaeological trenching in 2022 identified a likely Post Medieval field system (07-0070).

[69] Cumbria County Council, (n.d.) Turnpike Trusts

Twentieth Century (AD1901 – AD2000)

8.6.234 The railway that served Bowes (the SD&LUR) was opened in AD1861, then amalgamated with several neighbouring companies to form the NER during the late nineteenth century, before itself being amalgamated with the regional London and North Eastern Railway (LNER) in AD1923. Following the trend of the time, the LNER placed a 'camping coach' at Bowes Railway Station (07-0052) in AD1933, possibly in AD1934, and from AD1937 to AD1939 (Quick, 2019)[70]. Commonly converted from former passenger carriages, camping coaches were a commercial initiative offered by many of Great Britain's railway companies throughout the AD1930s. In an effort to capture additional revenue through the reviving tourism market, Britain's holiday makers were encouraged to not only travel around the county by train, but also to book accommodation in a camping coach at their destination station. The coaches offered sleeping and basic living space and, of course, easy access to the local railway network, enabling holiday makers to further explore the areas they had chosen to visit by rail and maximising the potential for revenue generation.

8.6.235 After the Second World War a series of passenger closures began throughout the Darlington to Tebay (Stainmore) and Kirkby Stephen to Clifton Line (Eden Valley) areas, prioritising the movement of freight (Catford).[71] Several of the stations on the network were closed to passengers following the announcement. Bowes Railway Station (07-0052), however, remained open to passengers until 9 December AD1959 when British Railways announced that passenger services would finally be withdrawn (but freight services would continue). The line was finally closed to freight on 22 January AD1962, and the track lifted five months later. Throughout the rest of the twentieth century the platform, station house and ancillary buildings at Bowes Railway Station (07-0052) fell into gradual decay and ruin. The signal box was supposedly dismantled and placed into storage[72].

8.6.236 Further changes to the transport infrastructure of the region came to Bowes in AD1978 when a programme of improvement works to the A66 was proposed and consulted upon. The proposed improvements included the construction of a bypass at Bowes, moving the route of the A66 from the centre of the village to trace its northern limits, partly following the line of the former railway. The Clint Lane Bridge (07-0065), located at the north-western entrance to the village, was constructed as part the bypass works.

8.6.237 Bowes was designated as a Conservation Area (07-0033) in AD1984 because of its architectural and historic interest, character and appearance.

[70] Quick, M. (2019) Railway passenger stations in Great Britain: a chronology (5th ed.)
[71] Catford, (n.d.) Disused Stations: Bowes
[72] ibid

Archaeological trenching

8.6.238 A programme of archaeological trenching was undertaken by Wessex Archaeology wherein a total of 498 trenches were excavated between November AD2021 and January AD2022 across the schemes from Bowes Bypass (A66/A67), Cross Lanes to Greta Bridge (Rokeby) and Stephen Bank to Carkin Moor. Five ditches (07-0019, 07-0120, 07-0121, 07-0122 and 07-0123) - two of which had been identified during geophysical survey - were encountered during the evaluation as was further evidence for the known Post Medieval field system (07-0070). The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table. The final archaeological evaluation report can be found in ES Appendix 8.6: Trenching Reports.

Geophysical survey

8.6.239 Two phases of geophysical survey were undertaken by Headland Archaeology between October AD2020 and November AD2020 and between October AD2021 and December AD2021. Five of the areas surveyed within the Bowes Bypass study area presented evidence of known archaeological features (such as areas of ridge and furrow), but no anomalies indicative of previously unidentified archaeological remains or features were recorded. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The detailed results and findings of this survey are presented in Appendix 8.5: Geophysical Survey Report (Application Document 3.4).

Aerial photography and LiDAR

8.6.240 A programme of aerial photography and LiDAR interpretation has been undertaken across the Project. This survey identified 27 heritage resources within the Bowes Bypass study area, 13 of which are features associated with Scheduled Monuments and other known non-designated heritage resources such as funerary monuments, railways and roads. The features not associated with known resources are primarily Post Medieval agricultural or industrial features. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The results have been interpreted in the AP & LiDAR report, which can be found in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4).

Historic mapping

8.6.241 Access to historic mapping, for example Tithe Maps and their apportionments, was gained through visits to the relevant county archival office(s) and use of the Landmark Solutions historic map data service. A total of 16 heritage resources were identified from these documentary or cartographic sources within the Bowed Bypass study area. They comprise milestones, wells, isolated domestic and farm buildings, a guidepost and the site of lime kiln. While many are no longer extant, several of the domestic residences and farmsteads remain extant. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

Cross Lanes to Rokeby

Geological summary

8.6.242 The bedrock geology of the study area is made up of a variety of rocks within the Yoredale Group. To the north, the rocks are predominantly part of the Stainmore Formation, with beds of sandstone, mudstone and siltstone. The A66 runs along a band of limestone, the Great Limestone Member, with successive beds of limestones and Alston Formation sandstone, siltstone and mudstone to the south.

8.6.243 Overlaying the bedrock, the superficial geology is predominantly glacial till deposits, which were formed by the action of glaciers and meltwaters in the Devensian period, between 70,000-10,000 years ago. Till does not have geoarchaeological potential. Along the course of the River Greta and River Tees there are also large glaciofluvial deposits and river terrace gravels. Glaciofluvial deposits were formed from material washed out in meltwater from the glaciers and does not have any geoarchaeological potential. It is found across the northern part of Rokeby Park and on the eastern side of the River Greta south-west of Greta Bridge. Due to the conditions they were formed within, glaciofluvial deposits do not have geoarchaeological potential.

8.6.244 River terrace gravels, conversely, can be of archaeological interest as they were deposited during interglacial periods and in situ Palaeolithic remains have occasionally been found within them. River terrace gravels are found within the study area along the course of the River Greta and the River Tees. There is also alluvium present in these areas. Alluvium, which is material deposited by rivers or streams, typically consists of silts, clays, sands and gravel and may contain anaerobically preserved organic material. This material may contain palaeoenvironmental remains which are of archaeological interest for their potential to aid in the reconstruction of past environments (Historic England, 2015)[73]. The soil is a freely draining, slightly acidic, loamy soil,

[73] Historic England (2015) Geoarchaeology. Using Earth Sciences to Understand the Archaeological Record

suitable for both arable and pastoral farming, although its fertility is relatively low (Cranfield Soil and Agrifood Institute)[74].

Topographical summary

8.6.245 The scheme is located on a section of the A66 which crosses the River Greta at its eastern end and then climbs gradually towards the higher ground at Bowes and the Stainmore Pass beyond. At Greta Bridge the ground level is at circa 129m AOD. The scheme then follows the A66 along the northern part of the Greta valley, with ground levels rising to circa 210m AOD at Cross Lanes.

Identified heritage resources

8.6.246 For a complete record of the heritage resources identified within the Cross Lanes to Rokeby study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Archaeological and historical background

Uncertain date

8.6.247 Features of an uncertain date have been identified through AP & LiDAR survey, archival research and archaeological trenching; these include footpaths or trackways (08-0055, 08-0102, 08-0104), a roadside structure (08-0110), and other linear features (08-0054, 08-0056, 08-0057, 08-0123). Geophysical survey and archaeological trenching identified a concentrated area of undated archaeological activity set between the route of The Street (00-0001) to the north and a broad curvilinear feature to the south and south-east, which contained two adjoining rectilinear enclosures with three well-defined ring ditches as well as a pit and possible post hole (08-0056). A second area of undated activity was found via archaeological trenching consisting of a north-east to south-west-oriented gully, three ditches and a post hole (08-0125).

Palaeolithic, Mesolithic, and Neolithic (500,000BC-2,200BC)

8.6.248 Regional evidence shows that the wider landscape surrounding the study area, comprising the open moorland and the navigable Stainmore Pass, was an important routeway for Prehistoric people (North of England Civic Trust)[75]. Despite this importance and sustained use, evidence for settlement or activity dating to the Palaeolithic, Mesolithic or Neolithic periods has not been identified within the study area.

Bronze Age (2,200BC-700BC)

8.6.249 Although dated as broadly as Prehistoric by Wessex Archaeology following its identification during an AP & LiDAR survey, it is possible that the Ring Ditch (08-0064) identified approximately 120m north-east of Poundergill could have Bronze Age origins. Although not exclusively so, ring ditches are indicative of Bronze Age activity, and it is therefore

[74] Cranfield Soil and Agrifood Institute (n.d.) Soilscapes map
[75] North of England Civic Trust (n.d.) Heart of Teesdale Project Heritage Audit

possible that this resource could represent the only Bronze Age evidence present within the study area.

Iron Age (800BC-AD43)

8.6.250 No evidence for settlement or activity of Iron Age date has been identified within the study area.

Romano-British (AD43-AD410)

8.6.251 While a great deal is known and understood about the forts, roads and marching camps of the region, relatively little detail is known about its vici and even less about its rural settlement sites. The precise date for the establishment and construction of the Roman Fort at Greta Bridge (08-0002) is uncertain. Positioned on a raised terrace on the west bank of the River Greta, the available evidence suggests that its earliest construction date could be during the first century AD, however, it could equally have been established as late as the late second or early third century AD. An inscribed stone dating to between AD205 and AD208 (during the reign of Emperor Septimus Severus) was recovered close to the north gate in AD1793. Although indicative of construction work occurring during this period, this artefact does not confirm whether the work was local to this part of the fort (for example, as an improvement to an existing structure or the construction of a new single structure like a gatehouse) or representative of the founding and construction of the entire fort.

8.6.252 The HER data suggests that the Roman fort (08-0002) was known as Maglona or Moribum, however, a source for this name is not cited and there is little evidence of either version being attributed to the fort. Bidewell and Hodgeson, for example, list the name of the Roman fort (08-0002) at Greta Bridge as 'unknown' (Bidwell, P, 2009)[76] and Rivet and Smith suggest that Maglona was the name of the Roman fort and settlement on Old Carlisle Farm near Wrighton, Cumbria (Rivet, 1979)[77] (approximately 112km north-west of Greta Bridge, close to the route of the Roman Road from Carlisle to Papcastle (Margary Roman Road reference RR75 (Margary, 1957)[78]) – the modern A595).

8.6.253 The Roman Fort (08-0002) at Greta bridge is extensive, measuring approximately 140m by 95m with almost all of its defensive ramparts and ditches surviving as upstanding earthworks. These defences are best preserved on the south of the fort and include the easily identifiable point where the original entrance causeway and southern gate were located. The defences to the east (which fronts the River Greta) and west are less well preserved in terms of upstanding remains, however, the western ditch has been subjected to substantial levels of infill, meaning that much of it is likely to survive below ground level. The northern part of the fort now lies within the grounds of the Morritt Arms

[76] Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England p.53
[77] Rivet, A.L.F. and Smith, C. (1979) The Place-Names of Roman Britain p.407
[78] Margary, I. (1957) Roman Roads in Britain volume II. North of the Foss Way – Bristol Channel

Hotel (08-0023) where it survives as buried archaeological remains (08-0079). An archaeological excavation in advance of development at Burns Cottage in 1994 and 1996 revealed archaeological remains and material culture. The archaeological remains were interpreted as part of the fort's earthen rampart and parts of a stone building, while the material culture comprised pottery and coins dating to the second and third century AD (Northern Archaeological Associates, 1996).[79]

8.6.254 The vicus at Greta Bridge (08-0002) is located immediately north of the fort, to which it is connected by a link road. Part of the link road – which also connected the fort to the route of The Street (00-0001) – was observed in 1928 during road works immediately to the north of the Morritt Arms Hotel (08-0023). Remains of The Street (00-0001) and the vicus (08-0002) were identified and partially excavated from 1972 to 1974 as part of the A66 realignment works which resulted in the bypassing of the village of Greta Bridge. Excavation was undertaken to the east of the River Greta and revealed the remains of a large timber courtyard building and at least 12 rectangular strip houses (Casey, 1998).[80] The remains of these structures, as well as the original Roman Road (The Street, 00-0001) – which survives as 'a cambered gravel surface 6m wide, later replaced in stone, and flanked by stone lined drains' (Historic England)[81] – lie largely intact beneath the carriageway of the A66 and the fields to its north and south.

8.6.255 The evidence obtained from these excavations suggests that occupation of the vicus dated from the mid-Antonine period at the earliest, to possibly the Severan period at the latest (Bidwell, P, 2009).[82] The buildings to the east of the River Greta appear to have been rebuilt in stone during the late third century AD and broader evidence for occupation into the first quarter of the fourth century AD exists within the vicus on both sides of the river (Casey, 1998)[83]; an unusually late date for vicus settlement in northern Britain (Bidwell, P, 2009).[84]

8.6.256 Material culture recovered during the excavation comprised pottery and coins dating from the mid-to-late second century and the fourth century AD. Evidence of iron working was also recovered from this part of the vicus in a plot adjacent to the route of The Street (00-0001). The iron working site itself is thought to have been small- scale in nature and concerned with the production of nails and iron fitments for buildings. The area immediately east of the iron working site has, interestingly, produced evidence of cremation burials. Burial sites are normally located beyond the limits of a vicus or settlement suggesting that

[79] Northern Archaeological Associates (1996) An archaeological evaluation at Burns Cottage, Greta Bridge
[80] Casey, P.J. and Hoffman, B (1998) Rescue excavations in the Vicus of the fort at Greta Bridge, Co. Durham, 1972-4
[81] Historic England (n.d.) Greta Bridge Roman Fort, Vicus and section of Roman Road
[82] Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England p.53
[83] Casey, P.J. and Hoffman, B (1998) Rescue excavations in the Vicus of the fort at Greta Bridge, Co. Durham, 1972-4
[84] Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England p.53

eastern limit of the vicus lies in this area. The extant of the possible cremation cemetery is currently unknown and may extend beyond the limits of the current Scheduled area.

Early Medieval (AD410-AD1066)

8.6.257 Placename evidence suggests that any settlement (and people) in the study area were completely absorbed into the Danelaw following its establishment. The names “Rokeby” and “Greta” are both derived from the Old Norse language (sometimes also known as Norse, Old Nordic, or Old Scandinavian) meaning “rocky farm” (North of England Civic Trust)[85] and “stony stream” (Mills, 1991)[86] respectively.

8.6.258 Other than the placenames, there is no evidence for settlement or activity of Early Medieval date within the study area.

Medieval (AD1066-AD1540)

8.6.259 Settlement of the north-east region during the Medieval period is predominantly rural with, in the case of the uplands (within which the study area is located), a dominance of pastural agriculture. Extensive areas of common land for pasture, and the use of shielings, supported a dominance in the rearing of cattle and sheep (Winchester, 2000)[87] over arable land use. Despite the tendency of lowland areas to be predominantly arable, the division between upland and lowland is not binary. For instance, crop cultivation (including barley and rye) is practiced during the Medieval period in upland areas, the evidence for which can be seen through the survival of relict terraces, areas of ridge and furrow and recovered environmental deposits (Petts, 2006[88] Furthermore, the rearing of sheep and cattle would have been equally as important to the farmers of lowland areas despite conditions being more favourable to arable farming than they were in upland areas.

8.6.260 Today, the village of Greta Bridge is at the heart of the study area, however, it was not established as a settlement until the Post Medieval (AD1540-AD1901) period. During the Medieval period, and potentially the end of the Early Medieval (AD410-AD1066) period, the main settlements of the study area were Rokeby – situated within the northern-most boundary of Rokeby Park (08-0048), next to the remains of St Michael’s Church (08-0003) – and neighbouring Mortham. Unusually for settlements positioned so close to one another, both appear to have been Manors and, from AD1286 or AD1287 onward, were both held by the Rokeby family and descended together (Page, 1914)[89].

[85] North of England Civic Trust (n.d.) Heart of Teesdale Project Heritage Audit
[86] Mills, A.D. (1991) Dictionary of English Place-Names
[87] Winchester, A. (2000) The harvest of the hills: rural life in northern England and the Scottish Borders, 1400-1700
[88] Petts, D. and Gerrard, C. (2006)Shared Visions: The North-East Regional Research Framework for the Historic Environment
[89] Page, W. (1914) A History of the County of York North Riding: Volume 1

8.6.261 Unlike many of the settlements of the region, The Domesday Book contains records for both Rokeby and Mortham. Rokeby is recorded briefly as generating two pounds and 10 shillings in AD1066 and, at the time of the survey in AD1086, comprising two ploughlands and two areas of woodland covering one league (Powell-Smith)[90] In contrast to this, the entry for Mortham is considerably more detailed, however, it comprises the account of multiple settlements under the ownership of Count Alan of Brittany[91] and does not give a true reflection of the extent of the settlement.

8.6.262 Like much of the region, the settlements of Rokeby and Mortham were subjected to continued attacks by raiders from Scotland during the political and military unrest of the fourteenth century. While Rokeby was continually rebuilt and survived as a settlement until the early seventeenth century, Mortham was abandoned after a particularly fierce attack in AD1346. The last remnants of any upstanding remains at Rokeby were removed during the Post Medieval (AD1540-AD1901) period when, in AD1735, Sir Thomas Robinson rebuilt Rokeby Hall (08-0011) and began to alter the surrounding parkland (now Rokeby Park (08-0048)). Part of the former settlement does, however, still survive as belowground remains close to the site of St Michael's Church (08-0003).

Post Medieval (AD1540-AD1901)

8.6.263 The basic road network of the north-east was, in terms of its main highways, recognisable during the Medieval (AD1055-AD1540) period. It was not until more detailed mapping of the region was undertaken during the Post Medieval period that the network began to expand. Greta Bridge was part of the Middleton Tyas Lane to Greta Bridge and Bowes Turnpike Trust which managed the route of The Street (00-0001) from Scotch Corner, through Carkin Moor and Rokeby, and on to the western parish boundary of Bowes. It was established in AD1744 (Rosevar, 2017)[92] and follows the approximate route of the A66 today.

8.6.264 Two milestones (08-0013 and 08-0014) mark the route of the Post Medieval turnpike road (00-0002) through the study area. Both milestones are recorded as noting the distance to Bowes and Greta Bridge and have been recorded as 'lost' since AD2000 by the Milestone Society (Moore, 2021)[93] (a term used to indicate that the presence of the milestone has not been visually confirmed since this date rather than it is no longer extant). Neither milestone was located during the walkover and windscreen survey of the study area, but this does not mean that they are no longer extant and it remains possible that they survive in whole or in part close to their recorded positions.

8.6.265 Turnpike roads were a dominant feature of the transport network until the arrival of the railway, with which they could not compete when it

[90] Powell-Smith, A. (n.d.) Open Domesday
[91] ibid
[92] Rosevar, A. (2017) Turnpike Roads in England and Wales
[93] Moore (2021) A66 NTP Project – Milestone Society: Interests

came to moving volumes of material and people quickly over long distances. Gradually, the road network was 'dis-turnpiked' throughout the nineteenth century and the Turnpike Trusts wound up. The responsibility for maintaining the local road network then moved to local Highway Boards (created in AD1835) and eventually to County Councils following their establishment in AD1889 (Cumbria County Council)[94]

8.6.266 Because of its position on the main west-east route across the Pennines, the village of Greta Bridge appears to have blossomed as a coaching stop during this time. In AD1789 it is noted as hosting 'two good inns' – The George (now The Square (08-0041)) and New Inn (now Thorpe Grange, located approximately 800m south-east of Greta Bridge (08-0001)) – and the Morritt Arms Hotel (08-0023). The George Inn was made famous by Charles Dickens as the stop at which Mr Squeers and Nicholas Nickleby alight on their way to Dotheboys Hall (07-0014) in Bowes.

8.6.267 Charles Dickens is one of several notable persons who visited and drew inspiration from the study area during the eighteenth century. Dickens and Hablot K. Browne stayed at the New Inn on 31 January AD1838 while Sir Walter Scott was a visitor to Rokeby Hall (08-0011) and Rokeby Park (08-0048) multiple times between AD1809 and AD1828. 'Southey stayed [at Rokeby] in 1812 and 1829…and Ruskin in 1876 when visiting the scenes of Turner's paintings (Page, 1914)'[95]. Turner had visited the area in AD1797 as part of his tour of the Richmondshire and did so again in AD1816. J.S. Cotman visited in AD1805 and painted scenes at both Rokeby Park (08-0048) and of the Greta Bridge (08-0001), which had been rebuilt in AD1773.

8.6.268 Cotman's AD1805 visit was his third to North Yorkshire and it was during this visit that he made the famous sequence of watercolour studies that included On the Greta. Cotman himself wrote that his chief study during the visit had been 'colouring from nature' and that his sketches were 'close copies of that ficle Dame'(Tate)[96] It seems that Turner may have been less fortunate with the weather during his subsequent visit to the area in AD1816 as his sketch that formed the basis for his studio watercolour Junction of the Greta and Tees at Rokeby was drawn 'with unusual brevity for such a subject and by comparison with other drawings in this sketchbook' (Hill, 2009).[97] An observation that led Hill to suggest that it was raining when Turner visited.

8.6.269 Aside from its inns and hotel, the rest of the village of Greta Bridge (08-0049) also appears to have benefited from the commerce brought about by its position. Almost all its historic core dates to the eighteenth century with most of the buildings adapted to some degree during nineteenth century. Several, such as Tutta Beck Cottages (08-0039) and Stable

[94] Cumbria County Council (n.d.) Turnpike Trusts
[95] Page, W. (1914) A History of the County of York North Riding: Volume 1
[96] Tate, (n.d.) John Snell Cotman, On the Greta c.1805, Gallery Label
[97] Hill (2009) The Junction of the Rivers Greta and Tees at Rokeby 1816 by Joseph Mallord William Turner, catalogue entry May 2009

Yard Cottage (08-0033), were combined from one dwelling into two or built in two distinct stages, and all carry architectural traits of the local vernacular; comprising a rubble and/or cut stone construction with cut stone accents (such as quoins and lintels), slate roofs, sash and Yorkshire Sash windows and brick chimney stacks. A style that continued to be adopted by later constructions outside of the village itself, such as at Rokeby Grove (08-0040) and Gable End, Rokeby House, The Cottage (08-0029).

8.6.270 Religious practice within the study area was centred upon St Michael's Church (08-003) until at least AD1740 when it was replaced by the new parish church, the Church of St Mary (08-0012). The new church was probably designed by Sir Thomas Robinson and is noted as being similar in design to another church he designed at Glynde in Sussex. Connected to Rokeby Park (08-0048) by what may have originally been a dedicated tree-lined walkway, the Church of St Mary (08-0012) is known to have been unfinished when it was sold to the Rokeby estate in AD1769. It was at this time that J.S. Morritt (the incumbent at Rokeby) commissioned John Carr to complete the work. St Mary's was finally consecrated in AD1778.

8.6.271 The present form of the Church of St Mary (08-0012) dates to AD1877 when considerable alterations, which included the addition of an organ chamber and chancel, were made. Further alterations were made in the nineteenth century. While the eighteenth-century parts of the church were designed and built in the Classical style, these later alterations were completed in a hybrid Classical/Romanesque style, reflecting the change in architectural fashion between the centuries.

8.6.272 Rokeby Rectory (08-0053) (also known as The Old Rectory) was constructed opposite the Church of St Mary (08-0012) (on the south side of the A66) and is part of a group of buildings that includes a former schoolhouse and the schoolmaster's house (located on the north side of the A66, east of the Church of St Mary (08-0012)). An appraisal of Rokeby Rectory (08-0053) – which is not designated nor entered onto the HER – was undertaken in AD2021 and states that while 'its usage is clearly linked to the church in historic terms, the architecture of the building is more traditional' (A66 NTP Integrated Project Team, 2021)[98] and reflects the local vernacular style.

8.6.273 The available evidence suggests that Rokeby Rectory (08-0053) was built in AD1805 by the Morrit family of the near-by Rokeby estate and was added to and altered several times throughout the nineteenth century (at one point, even including a summer house in its garden)[99]. These alterations, along with later twentieth century works, appear to have removed or shielded many of the building's original circa AD1805 features (both internally and externally) as well as its plan and the former arrangement of its grounds.

[98] A66 NTP Integrated Project Team (2021) Rokeby Old Rectory Significance Appraisal
[99] ibid

8.6.274 The rural agricultural landscape of the study area is dotted with farm complexes and some intermittent examples of former field boundaries (for example, 08-0067, 08-0068) and field systems. Generally formed of a farmhouse and several associated outbuildings (such a cow shed, barns, stables, cart sheds, wheel hedges, cotes, yards, and even a dairy/milking parlour), the complexes of Ewebank Farm (08-0051), Castle Farmhouse (08-0024), Dent House Farmhouse (08-0047), Cross Lanes Farmhouse (08-0028), and Birkhall Farmhouse (08-0025) are built in the local vernacular style.

8.6.275 This style comprises rubble walls with occasional cut stone fronts, cut stone dressings, stone slate roofs – which are often hipped – sash and Yorkshire Sash windows, and brick chimney stacks. The various barns, cow houses and other mixed agricultural ranges of these complexes (for example, 08-0011, 08-0015 and 08-0078) follow this same style, although more domestic features such as sash windows aren't included; replaced by smaller window lights and external stairs to lofts.

8.6.276 Sir Walter Scott was a frequent visitor to Rokeby Hall (08-0011) and Rokeby Park (08-0048) thanks to his friendship with J.B.S. Morritt – the then owner of the Rokeby estate. This friendship was to be to the benefit of Scott who, in AD1811, was looking to cover the rising expenses for a new property he was building by finding a popular and potentially lucrative poetic subject (Edinburgh University Library, 2011)[100]. In December AD1811 Scott settled upon the years of the English Civil War (AD1642-1651) and decided to set the action at Rokeby Park (08-0048). Morritt hosted Scott during what today could be considered a research visit in September AD1812 and even supplied local historical information[101] to assist his work. Scott's poem *Rokeby* was completed on 31 December AD1812 and published on 11 January AD1813, selling over 10,000 copies in the first three months of its printing.[102]

8.6.277 The Rokeby estate, including Rokeby Hall (08-0011) and its associated buildings and decorative garden structures and features, are contained within Rokeby Park (08-0048). Rokeby Park (covers approximately 48ha, is located immediately north of the village of Greta Bridge (08-0049) and is bounded by the course of the River Greta to the east and the River Tees to the north. The confluence of these rivers is in the parks north-east corner. It is local beauty spot known as the Meeting of the Waters (Rokeby Park).[103] A by-road connecting the settlements of Barnard Castle and Greta Bridge comprises the western boundary while the A66 severs the southern tip of the parkland from its main body. Rokeby Park (08-0048) also includes a treelined pathway (Church Plantation) leading westward from its boundary with the A66 to the Church of St Mary (08-0012).

[100] Edinburgh University Library (2011) Rokeby: The Walter Scott Digital Archive
[101] ibid
[102] ibid
[103] Rokeby Park (n.d.) Rokeby

8.6.278 Rokeby Park (08-0048) was never formally planned as a designed landscape and has also never hosted a formal garden.[104] There are, however, lawns on the east and west sides of Rokeby Hall (08-0011). These are accented by the display of multiple antiquities and artistic pieces. For instance, five Roman altars (08-0007) (which are positioned on a raised platform) and a sundial (set upon a Medieval stone shaft) that can all be found to the west of the hall on the lawns. A kitchen garden can be found amongst the buildings to the south-west.

8.6.279 The remainder of the parkland comprises open pastureland with scattered trees. A ha-ha runs from the bank of the River Greta to a point approximately 300m south-west of Rokeby Hall (08-0011) and the remains of an avenue can be identified approximately 400m to its south-east. Estate maps from the eighteenth-century show Rokeby Park (08-0048) as being sheltered by belts of trees (as it is today) with axial rides cut through the woodland in order to provide views of the estate and its grounds. Following the thinning of these woodland belts the rides have been lost.

8.6.280 The principal building of Rokeby is Rokeby Hall (08-0011), although it is accompanied by several ancillary and associated structures. Immediately north of the hall, to its rear, is a courtyard and several ancillary buildings. Roughly 200m south-west of the hall is a complex of buildings comprising the Gardner's House (08-0021) and several smaller buildings either side of the kitchen garden. A group of early eighteenth century

8.6.281 Rokeby Hall (08-0011) was built by Sir Thomas Robinson between AD1725 and AD1731 at the same time as the parkland was being enclosed (AD1725) and the woodland planting increased (AD1730 to AD1737). Rokeby Hall (08-0011) is built in the Palladian style with a central three-story main house flanked on either side by a range of set-back pavilions which form a pattern of receding cubes when view from the south, the front of the hall. It is likely that the fabric of an earlier structure at Rokeby was incorporated into Sir Thomas's new hall. The external stuccoed walls of Rokeby Hall (08-0011) are painted in an ochre wash intended to give the hall 'a colourful exterior more typical of Vincentine (North Italian) villas. Repetition of Palladio's pyramidical roofs, the Doric columns and the unusual double Venetian window on the west elevation add to [its] classical appearance' (Rokeby Park)[105] The Venetian window was added to the structure in AD1769 on the instruction of J.B.S. Morritt who had purchased Rokeby from Robinson. John Carr was commissioned to do the work, which also included the relocation of the stables from the rear of the hall to their present location to its south-west.

8.6.282 Carr is also likely to have been responsible for changes in the interior decoration of the dining room, which contains some fine neo-classical

[104] ibid
[105] Rokeby Park (n.d.) Rokeby

plasterwork by Joseph Rose Jnr, and the addition of a second storey to the east block (which was completed in AD1877). The decorative schemes and internal layout of Rokeby Hall (08-0011) have evolved alongside the tastes of their owners and the fashions of the time. There are, however, two rooms which remain largely unaltered since their construction in the AD1730s. These are the 'library, with its Tuscan columns, and the Music Room, with its early egg and dart and Greek key plasterwork [and] pedimented doorcases'[106].

8.6.283 Sir Thomas Robinson sold Rokeby complete with its furnishings and pictures; many of which were collected on the Grand Tours he made during the eighteenth century. The new owner of Rokeby, J.B.S. Morritt, was a noted collector of the arts and who added to the existing collection. The most notable of Morritt's acquisitions was the painting 'Toilet of Venus' by Velásquez. The painting hung at Rokeby Hall (08-0011) until AD1905 when it was bought by public subscription and moved to the National Gallery. A copy of the Rokeby Venus, as it became known, was made by W.A. Menzies and is still on display at the hall. Copies of works by Poussin, Rubens, Salvator Rosa, and Zuccarelli were also produced in exquisite needlework by Anne Eliza Morritt, (d.AD1797). Rokeby is also home to 'the only known contemporary painting of the Coronation of Louis XIV'.[107]

Twentieth Century (AD1901-AD2000)

8.6.284 During the Second World War Rokeby Hall (08-0011), like many other country houses and estates, was requisitioned in support of the war effort. While some estates became training camps, others became hospitals or rehabilitation centres for service personnel. Rokeby Hall (08-0011) served as the latter. By AD1941 six new camps had been built in the area and the town of Barnard Castle, approximately 5km north of Greta Bridge, had become a garrison town.

8.6.285 Up until the late twentieth century (AD1967-AD2000), the A66 ran through the centre of Greta Bridge. During the AD1970s Greta Bridge – along with the nearby towns and villages of Brough, Appleby and Bowes– were bypassed. While the bypassing of these neighbouring settlements managed to largely avoid disconnecting parts of the settlements, this was not achieved at Greta Bridge. The selected route ran to the north of the settlement but, in so doing, passed through the southern tip of Rokeby Park (08-0048), severing it from the rest of the parkland and Rokeby Hall (08-0011).

8.6.286 Although a detailed appraisal is still to be produced, the Greta Bridge Conservation Area (08-0049) was designated in AD1987.

8.6.287 In AD2020, an AP & LiDAR survey undertaken by Wessex Archaeology identified a previously unknown archaeological feature which has been

[106] ibid
[107] ibid

interpreted as a former field boundary or 'riser' (08-0068), between two slightly terraced field areas.

8.6.288 North of the study area, within the ZVI, is the settlement of Barnard Castle and the Barnard Castle Conservation Area (08-0099). Designated in AD1969 and extending beyond the boundary town to the south, the conservation area incorporates a plethora of buildings from multiple and single periods.

Archaeological trenching

8.6.289 A programme of archaeological trenching was undertaken by Wessex Archaeology wherein a total of 498 trenches were excavated between November AD2021 and January AD2022 across the schemes from Bowes Bypass (A66/A67), Cross Lanes to Greta Bridge (Rokeby) and Stephen Bank to Carkin Moor. The placement of two evaluation trenches over and in proximity to the parallel linear anomalies identified during geophysical survey (08-0056) revealed a possible post hole and a circular pit. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The final archaeological evaluation report can be found in ES Appendix 8.6: Trenching Reports (Application Document 3.4).

Geophysical survey

8.6.290 Two phases of geophysical survey were undertaken by Headland Archaeology between October AD2020 and November AD2020 and between October AD2021 and December AD2021. Nine of the survey areas presented evidence of known archaeological features (such as areas of ridge and furrow), and three areas presented anomalies indicative of previously unidentified archaeological remains or features (08-0054, 08-0055, and 08-0056). The anomalies interpreted as having a possible archaeological origin are all forms of linear feature. They comprise a mixture of discrete, fragmentary, single, and parallel responses. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table. The detailed results and findings of this survey are presented in Appendix 8.5: Geophysical Survey Report (Application Document 3.4).

Aerial photography and LiDAR

8.6.291 A programme of aerial photography and LiDAR interpretation has been undertaken across the Project. This survey identified 18 heritage resources within the Cross Lanes to Rokeby study area, three of which are features associated with Scheduled Monuments and other known designated and non-designated heritage resources around Rokeby Park (08-0048). The features not associated with known resources are primarily agricultural or industrial features such as field boundaries and

enclosures. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The results have been interpreted in the AP & LiDAR report, which can be found in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4).

Historic mapping

8.6.292 Access to historic mapping, for example Tithe Maps and their apportionments, was gained through visits to the relevant county archival office(s) and use of the Landmark Solutions historic map data service. A total of 14 heritage resources were identified from these documentary or cartographic sources within the Cross Lanes to Rokeby study area. They comprise examples of guideposts (for example, 08-0111), bridges (for example, 08-0109), roadside structures of unconfirmed use (for example, 08-0110) as well as residences (for example, 08-0115) and smithy (09-0118), several of which remain extant. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

Stephen Bank to Carkin Moor

Geological summary

8.6.293 The bedrock geology of the study area is made up of a variety of rocks within the Yoredale Group which lie in beds orientated north-west to south-east. The A66 roughly follows the line of one of these beds, the Alston Formation sandstone, with beds of limestone, mudstone and siltstone to the north and south.

8.6.294 Overlaying the bedrock, the superficial geology is predominantly glacial till deposits, which were formed by the action of glaciers and meltwaters in the Devensian period between 70,000-10,000 years ago. There are glaciofluvial deposits which are present just to the south-west of the A66, north of Ravensworth, and further glaciofluvial deposits at the northern end of the study area at Smallways. Glaciofluvial deposits were formed from material washed out in meltwater from the glaciers and neither it, nor the till deposits, have any geoarchaeological potential. There is alluvium, which can be of palaeoenvironmental interest, in the northern part of the study area at Smallways, but it is outside of the Order Limits.

8.6.295 The soils in the northern part of the study area are freely draining, slightly acidic, loamy soils, suitable for both arable and pastoral farming, although its fertility is relatively low. South of Ravensworth the soils become seasonally wet, loamy and clayey. These are better suited for

pasture, although arable farming is possible (Cranfield Soil and Agrifood Institute)[108].

Topographical summary

8.6.296 The A66 runs along the edge of a large flat plain which extends to the north and east, with lower-lying land to the south and west, following the course of the Harforth Beck and several other small watercourses which run along the valleys at the base of the Pennines. At the northern end of the scheme, the ground level at the A66 is approximately159m AOD, falling slightly towards Ravensworth but rising to approximately151m AOD at its south-eastern end.

Identified heritage resources

8.6.297 For a complete record of the heritage resources identified within the Stephen Bank to Carkin Moor study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Archaeological and historical background

Uncertain date

8.6.298 A number of heritage resources of an uncertain date has been identified throughout the study area. These resources include slight but important features such as palaeochannels (09-0024, 09-0025 and 09-0035) and linear features (like 09-0021, 09-0027, 09-0041 and 09-0045) – both of which could provide important evidence for past human activity associated with the Prehistoric (500,000BC-AD43) or Romano-British (AD43-AD410) periods – as well as more easily identified earthwork features.

8.6.299 Several circular enclosures (09-0036, 09-0039, and 09-0044), indicative of possible Bronze Age (2,200BC-700BC) activity, have been identified. Other resources of a currently unknown but likely Bronze Age date include a ring ditch (09-0068) and a circular platform and possible ring ditches (09-0028).

8.6.300 Evidence for Medieval (AD1066-AD1540) activity within the study area could also be increased should the undated mounds identified by Wessex Archaeology during the AP & LiDAR survey of AD2020 (09-0029, 09-0031) be confirmed as pillow mounds. Serving as artificial warrens, pillow mounds are long, low, broadly cigar-shaped earthwork mounds – sometimes constructed in groups – built to farm rabbits. Permission to construct an artificial rabbit warren and farm rabbits for their fur and meat was granted via a licence (a ‘Right to Warren’) from the King. Those charged with undertaking rabbit farming and maintaining the mounds were called ‘Warreners’. As well as their distinctive form, physical evidence for possible pillow mounds can also be complimented by placename evidence, as shown by the proximity of ‘Warrener Lane.’

[108] Cranfield Soil and Agrifood Institute (n.d.) Soilscapes map

8.6.301 While other mounds (09-0032 and 09-0038) were identified during the same survey, Wessex Archaeology considered it likely that these are of natural origin, along with the Possible Cropmarks 65m east of the terminus of New Road (09-0042), and not associated with past agricultural practice.

8.6.302 Other features that have been identified within the study area but do not communicate possible periods for origin or association are a Possible Mineral Extraction Site (09-0022) and a Faint Linear Feature (09-0067) that has been interpreted as a possible field boundary.

Palaeolithic, Mesolithic, and Neolithic (500,000BC-2,200BC)

8.6.303 No evidence for settlement or activity of Palaeolithic, Mesolithic nor Neolithic date has been identified within the study area.

Bronze Age (2,200BC-700BC)

8.6.304 As with almost all of Britain, the earliest observable change in cultural practice between the Neolithic (4,000BC–2,200BC) and Bronze Age in Yorkshire comes from a distinct change in burial practice. Neolithic Long Barrows, which housed the remains of groups of individuals, fall out of direct use and a practice of individual inhumations surmounted by circular burial mounds (barrows) is adopted. In a further change to funerary practice, grave goods – such as pottery, weapons, and other high-status objects – are also deposited with the deceased. As well as the advances in metallurgy, pottery typologies also change during this period; with insular British ceramic types replaced with the Beaker-type vessels of the pan-European ceramic tradition (Roskams, 2005)[109].

8.6.305 The AP & LiDAR assessment identified an example of possible Bronze Age activity identified within the study area lies located approximately 65m south of the Roman Fort (09-0001) at Carkin. Comprising a series of ring ditches (09-0047) it is not yet understood if this feature is evidence of possible settlement activity – as some of the ditch features appear to overlap – or the possible remains of funerary or ritual monuments. The remains of a possible burnt mound (09-0020), dated by the absence of heather in samples taken from the remains to no later than the Bronze Age, were uncovered in trenching to the east of the fort at the site of the vicus (09-0020).

Iron Age (800BC-AD43)

8.6.306 Evidence for Iron Age settlement within the study area can be found alongside the more visible remains of the later Roman Fort (09-0001). Although no longer visible as an earthwork, the remains of the settlement at Carkin Moor were identified through aerial photographs. The settlement site (09-0001) comprises a rectangular enclosure some 100m by 75m in size and, although recorded as ‘Prehistoric’, is thought to be of Iron Age date based on evidence provided by similar enclosures

[109] Roskams, S. and Whyman, M. (2005) Yorkshire Archaeological Research Framework: Resource Assessment

identified in other parts of north-eastern England (Historic England).[110] This evidence suggests that the enclosure probably housed a farmstead comprising circular domestic buildings, stock pens and other structures, and small agricultural areas. Although their form is not confirmed, traces of internal features and a probable smaller, parallel enclosure have been noted at Carkin Moor. It is possible that the Iron Age settlement is much larger than is currently understood as, alongside the known features discussed above, the AP & LiDAR survey conducted in AD2020 by Wessex Archaeology identified evidence for a probable Prehistoric Field System (09-0070) nearby.

8.6.307 The relationship between the Iron Age settlement (09-0001) and the Roman fort (09-0001) at Carkin is clearly one of great complexity and nuance. As is the possible relationship between the Roman fort (09-0001) and Iron Age settlement (09-0001) with a second, smaller rectilinear enclosure (09-0012) located approximately 42m to the north-west. Dating from the late Iron Age (100BC-AD43) to early Romano-British (AD43-AD410) transitionary period, it is possible that this enclosure (09-0012) could relate to either the Roman fort (09-0001), the Iron Age settlement (09-0001), or both.

Romano-British (AD43-AD410)

8.6.308 In its basic form, the Roman Road network for Yorkshire and the north-east is made up of several major north-south routes (for example Dere Street (11-0023), which runs through Scotch Corner, and Cade's Road, which runs from the River Tees to Newcastle via Durham and Chester-le-Street) and occasional east-west routes (for example The Street (00-0001) (Margery, 1957)).[111] Breaking from Dere Street (11-0023) (Margary, 1957)[112] at Scotch Corner, The Street (00-0001) passes through Carkin Moor before proceeding further westward (Petts, 2006)[113] The RRRA advise that the A66 follows the alignment of the Roman Road for over half of its route, and that the section of the A66 from Stephen Bank to Carkin Moor almost certainly overlays the original road (Haken, 2021)[114]. Evidence for river crossings have also been identified.

8.6.309 The Roman fort at Carkin Moor (09-0001) is located just four miles from Scotch Corner where The Street (00-0001) – which the fort straddles – connects with Dere Street (11-0023). The alignment of The Street (00-0001) is projected as continuing westward from the Roman fort (09-0001) in an almost uninterrupted straight line until it encounters the

[110] Historic England, (n.d.) Roman fort and prehistoric enclosed settlement 400m west of Carkin Moor Farm
[111] Margary, I.D. (1957) Roman Roads in Britain volume II. North of the Foss Way – Bristol Channel pp.164-7
[112] ibid
[113] Petts, D. and Gerrard, C. (2006) Shared Visions: The North-East Regional Research Framework for the Historic Environment
[114] Haken (2021) Notes on Roman Roads potentially impacted by the A66 NTP project

River Greta at Greta Bridge. At this point it deviates from the current alignment of the A66 before continuing westward.

8.6.310 The Roman fort (09-0001) itself is set upon the summit of a small flat-topped hill alongside an existing Iron Age (800BC–AD43) settlement site (09-0001). Rectangular in shape, the fort measures 150m north-east to south-west by 132m north-west to south-east. Clearly visible as earthworks, the north-eastern corner is the most well preserved and survives as a raised platform that extends up to 2m high in places. Other defensive features, such as a ditch, have been identified on the northern edge of the fort and are thought to survive as below-ground remains to its south, where the degree of upstanding earthwork remains is limited. Other than their proximity to one another, the relationship between the Roman fort (09-0001) and the Iron Age settlement (09-0001) – and how this changed over time – is not fully understood.

8.6.311 Efforts to better understand the development of the Roman fort (09-0001) have been made, and in AD2013 Oxford Archaeology North opened three test pits in its north-eastern corner (within the Scheduled area). The remains of an external cobbled surface placed directly on top of the natural geology was identified in Test Pit 14 while Test Pit 13 produced evidence of a substantial ditch cut into the sub-soil (Oxford Archaeology North, 2013)[115]. Several small sherds of abraded Romano-British pottery and ten fragments of a lava quern were recovered from the layer above the ditch. Test Pit 15 did not produce any archaeological evidence.

8.6.312 In AD2015 archaeological excavations at Mainsgill Farm, approximately 125m west of the Roman fort (09-0001) on the south side of the A66, anticipated encountering the projected remains of The Street (00-0001) as it exited the fort enroute to Greta Bridge. While evidence for The Street (00-0001) was encountered, so was evidence for a previously unknown vicus (09-0020). The archaeological remains were accompanied by material culture deposits (comprising mostly pottery) and revealed six roadside enclosures – two of which had been walled – areas of separate cobbled surfaces distinct from The Street, the footing for a possible building, wheel ruts and drainage gullies, occupational refuse dumps and, most significantly, a fourth century pottery kiln comprising bowl, flue, and stokehole pit with a secondary flue exiting the site to the south (Northern Archaeology Associates, 2015)[116].

8.6.313 Northern Archaeological Associates, who conducted the excavation work, have interpreted the remains as an industrial centre[117] that was probably established as part of the vicus, which itself may have incorporated the existing Iron Age (09-0001) settlement situated alongside the Roman fort (09-0001). The industrial centre at Mainsgill

[115] Oxford Archaeology North (2013) A66 (Package A) Road Improvement Scheme, Greta Bridge to Scotch Corner Archaeological Archive Report
[116] Northern Archaeological Associates (2015) Carkin Moor Roman Fort to West Layton: Pipeline renewal
[117] ibid

has provided "the only evidence of pottery making on the entire length of the Stainmore Pass between Catterick and Penrith,"[118] and probably extends further along The Street to both the west and east along the southern and northern sides of the A66.

8.6.314 Subsequent archaeological trenching in AD2022 (09-0020) identified numerous Romano-British features thought to be industrial in nature, including a series of pits, gullies, and ditch with multiple fills (containing charcoal, burnt stone and clay) interpreted as a kiln or furnace structure. Two further pits were discovered also with evidence for in-situ burning, both of which were interpreted as kilns. This programme of trenching also revealed the likely boundary ditch of the fort measuring 8.7m wide though no evidence for a palisade was found. Other Romano-British features include a cobbled surface within a sharp cut, several characteristic V-shaped ditches and a possible 'dark earth' layer.

8.6.315 Geophysical survey undertaken between AD2020-AD2021 uncovered further evidence likely associated with the vicus, including a rectilinear anomaly immediately west of the Scheduled area as well as linear anomalies that are oriented south-west by north-east and clearly aligned with the footprint of the fort. AP/LiDAR survey also identified a possible field system that may be associated with the fort or settlement (09-0070).

Early Medieval (AD410-AD1066)

8.6.316 Commonly a useful source for political, social and economic history, the Domesday Book offers some indication as to the settlement of the region toward the end of the Early Medieval period. The study area, along with much of the Stainmore Pass, is recorded as being under the control of the castle of Count Alan of Brittany and would essentially have been subject to martial law from the moment the Normans arrived and attempted to bring the region under their control. Unlike the Bowes Bypass and Cross Lanes to Rokeby study areas – which lack extensive confirmed settlement evidence for this period – evidence for ten potential Early Medieval settlements exists within and immediately adjacent to the Stephen Bank to Carkin Moor study area. It should be noted, however, that there remains a distinct lack of even scattered material culture from this period. It is possible, therefore, that the Harrying of the North (AD1069–AD1070) did not completely disperse the populace from this area, although it no doubt had a considerable impact all the same.

8.6.317 The Domesday Book has entries for the settlements of Hutton Magna, West Layton, East Layton, and Ravensworth. The name 'Hutton' broadly translates as a 'farm on a hill'. The 'Magna' suffix (from the Latin for 'large'), may have been added to distinguish it from the nearby hamlet of Little Hutton, located outside of the study area to the east. There is no confirmed evidence, however, as to when this suffix was added. The settlements of West and East Layton have the same etymological origin

[118] ibid

with the 'Layton' suffix being a derivation of 'Laston', 'Lastun', and/or 'Latton'; meaning a 'town where leeks are grown' (Ekwall, 1947)[119].

8.6.318 The etymologic origins for the West and East Layton and Hutton Magna have been identified largely through documentary evidence created during the Medieval (AD1066-AD1540) period and infer that a settlement was present at each site prior to the Norman Conquest, during the latter parts of the Early Medieval period. In contrast to this, placename evidence for the establishment of Ravensworth as an Early Medieval settlement is much more solid. While there is some debate over the origin of the 'Raven' prefix, the general consensus is that the 'worth' suffix is a derivation of the Nordic word 'wath' (meaning 'ford'), which refers to a crossing of the Holme Beck. The spelling of Ravensworth varies in the available documentary evidence from each century. It is recorded as 'Raveneswet' in the eleventh century, 'Rasueswaht' in the twelfth century, Raveneswade in AD1201 and Ravenswath from the thirteenth to sixteenth centuries (Page, 1914)[120].

Medieval (AD1066-AD1540)

8.6.319 As previously stated, the effects of the Harrying of the North (AD1069-AD1070) on the local populace of the region were extensive if not complete. It caused considerable damage to the manorial economy of large parts of the north of England which, at the time of the Domesday survey approximately 16 years later, had still not recovered (Hull Domesday Project).[121] This slow recovery can be seen in the number of households attributed to settlements like East Layton and West Layton in AD1086. East and West Layton are mentioned as within a list of 28 settlements under the same Domesday entry meaning that, when the recorded land, resources, and households are averaged across all named settlements, they support 0.9 households each (Powell-Smith)[122]. Powell-Smith states that settlements of effectively single-household size comprise the smallest 20% of settlements recorded within Domesday[123].

8.6.320 Evidence for Medieval settlement within the study area can be seen in isolated features and as surviving elements of built heritage resources, examples of which include the expansive motte and bailey castle, water defence features, park pale and shrunken Medieval village (09-0002) at Ravensworth and the two moated sites north of the Old Hall (09-0003) at East Layton.

8.6.321 The two moated sites at Old Hall, East Layton (09-0003) survive as visible earthworks and comprise the remains of two separate moted sites and their associated structures, which include a dovecote, building platforms and enclosures. The first of the sites (09-0003) is thought to

[119] Ekwall, E. (1947) The concise Oxford dictionary of English place-names
[120] Page, W. (1914) A History of the County of York North Riding: Volume 1
[121] Hull Domesday Project (n.d.) Land of Count Alan
[122] Powell-Smith, A. (n.d.) Open Domesday
[123] ibid

date from the twelfth to fourteenth century and would have been the site of a high-status manorial residence. The size, complexity and range of surviving features indicate that the complex included multiple ancillary features crucial to its economic and social function. Alongside the dovecote, the building platforms and enclosures would have supported stables, workshops, stores, possible livestock pens, and gardens (both for pleasure and horticulture).

8.6.322 The second site (09-0003) is positioned north-east of the first, likely main, site and was probably constructed at a later date. Unlike the first site (09-0003), the reason for the construction of this second moated site is unclear. While it may have supported a dwelling, it is more likely that it was constructed to support the ancillary activities of the existing manor, rather than as a place of formal occupation. Archaeological evidence shows that the interior of this second site was filled with (now destroyed) broad ridges; suggesting that it had a primarily horticultural purpose – possibly as an orchard (a phenomenon common in the late Medieval and early Post Medieval periods[124]).

8.6.323 While the main manorial site (09-0003) was abandoned in the late fifteenth century in favour of the site of the Old Hall to its south, it is probable that the second moated site (09-0003) remained in use for some time. This was probably because of its horticultural function as part of a newly organised estate centred around the newly constructed Old Hall.

8.6.324 Located outside the study area but within the 2km ZVI is Ravensworth Castle (09-0002), which dates to the eleventh century and is thought to have been established by the Fitzhugh family in the years following the Norman Conquest. The Fitzhugh's appear to have remained the lords of Ravensworth for a considerable time and, during the late fourteenth century undertook a series of improvements and alterations both to the castle itself and its surrounding land. Henry, Lord Fitzhugh is recorded as receiving a licence to enclose 200 acres of land at Ravensworth to form, or possibly extend, a park (09-0002) in AD1391. Evidence observed in the surviving upstanding buildings at Ravensworth Castle (09-0002) suggests that much of the castle was rebuilt during the same period. It is possible that this programme of rebuilding also included the construction of, or improvements to, the castle chapel; within which a chantry dedicated to St Giles was founded in AD1467. In AD1512 the Fitzhugh's estate at Ravensworth was divided and entered a period of steady decline (Historic England, 2017).[125] By AD1608, Ravensworth Castle (09-0002) was in the possession of the Crown, a status which did not prevent the abandoned castle buildings and the original park walls (09-0002) from being extensively quarried for building material. The effects of this activity appear to be far-reaching – and likely

[124] Historic England (n.d.) Two moated sites, the site of a dovecote and further associated features 120m north west and 180m north of The Old Hall
[125] Historic England (n.d.) Ravensworth motte and bailey castle, water defence features, park pale and shrunken Medieval village

subsequently repeated in latter periods – reducing the stability of the structure. Because of this, Ravensworth Castle (09-0002) is currently entered on to Historic England's Heritage At Risk (HAR) register (HAR ID 1013087) due to its poor physical condition and the immediate risk of further rapid deterioration and loss of structural fabric.

8.6.325 Although more clearly legible during the Medieval period than it is today, Ravensworth Castle (09-0002) is intricately connected with its surrounding landscape. The marshland which surrounds the castle appears to have been its main defensive measure and was exploited through the construction of a several drainage channels to re-direct and hold water as required. During the Medieval period, Ravensworth Castle (09-0002) is noted as possessing a moat and a large shallow lake (located to its west), both of which were constructed and maintained through management of the marshland. Further away from the castle itself, the boundary of the Medieval park and pale can still be traced through the landscape. To the north of Ravensworth Castle (09-0002) is an area of higher (and dryer) ground upon which the remains of a range of buildings has been identified. These structures are thought to be part of the shrunken Medieval village of Ravensworth (09-002) rather than part of the castle complex.

Post Medieval (AD1540-AD1901)

8.6.326 The network of former holloways, lanes and roads (for example, The Street (00-0001)) that connected the Medieval (AD1066-1540) settlements scattered round the edge of the study area, survived largely undisturbed into the early Post Medieval period. Between AD1555 and AD1835, the maintenance of roads was the responsibility of the local parish. By the later seventeenth century, however, many parishes were unable to maintain their roadways successfully because of the increased damage caused by larger volumes of wheeled traffic and greater use brought about by the changing economic profile of the country and north-east region.

8.6.327 In order to address the issue, the responsibility for managing and maintaining many of the major roads was assumed by Turnpike Trusts. Carkin (which was part of historic parish of Forcett until AD2015) was part of the Middleton Tyas Lane to Greta Bridge and Bowes Turnpike Trust. Established in AD1744 (Rosevar 2017)[126], the Trust managed the route of The Street (00-0001) from Scotch Corner, through Carkin Moor and Rokeby and on to the western boundary of Bowes parish; the approximate route of the A66 today. Besides the route of the road itself (00-0002), the only surviving remains of the original Post Medieval road network found within the study area are two milestones; the first of which (09-0017) is located beside the A66 close to Carkin Moor Roman Fort (09-0001), while the second (09-0018) – again beside the A66 – can be found to the north-west of Fox Hall cottage. Both milestones are recorded as being lost since AD2007 by the Milestone Society (Moore,

[126] Rosevar, A. (2017) Turnpike Roads in England and Wales

2021)[127], meaning that it has not been possible to confirm their presence visually, rather than their being no longer extant.

8.6.328 Turnpike roads were a dominant feature of the transport network until the arrival of the railway, with which they could not compete when it came to moving volumes of material and people quickly over long distances. Gradually, the road network was 'dis-turnpiked' throughout the nineteenth century and the Turnpike Trusts wound up. The responsibility for maintaining the local road network then moved to local Highway Boards (created in AD1835) and eventually to County Councils following their establishment in AD1889 (Cumbria Council)[128]

8.6.329 The sandstone used in the construction and maintenance of the turnpike, and many of the buildings of the study area, was probably quarried locally. The historic Ordnance Survey maps of AD1857 show multiple quarry sites within the study area; however, these appear to be concerned with the extraction of limestone (09-0015) for agricultural use, rather than sandstone for construction.

8.6.330 The number of former field boundaries associated with the settlements at East and West Layton, Dunsa Manor (09-0007), Old Dunsa, Green Bank Farm, Browson Bank, and East Browson is also reflective of the changes in agricultural practice that occurred during the Post Medieval period.

8.6.331 There is evidence to suggest that at least some of the areas of woodland located within the study area may have been actively managed during this period. Although currently confined to an area of plantation (09-0066) rather than natural woodland, the management of woodlands for pannage, hunting, and timber was often an integral part of the rural economy during the latter parts of the Medieval (AD1066-AD1540) period and, to a steadily reducing degree, during the Post Medieval – when the focus began to switch to private management linked to large, landed estates and sport rather than a companion to subsistence.

8.6.332 Almost all of the historic buildings identified within the study area can be found within or on the periphery of its settlements. For example, Hay Barn (09-0005) at West Leyton is set back from the main through-road and core the village but still within its bounds.

8.6.333 The buildings of East Layton have a distinct architectural style that evolved from the agricultural buildings of the mid-to-late seventeenth and mid-eighteenth century – like the Stable with Granary (09-0105) and West Farmhouse and West Farm Cottage (09-0077) respectively – that informed its later eighteenth and nineteenth century buildings like the Old Smithy (09-0073). One of the more ornate buildings of East Layton is Christ Church (09-0075). Set out in a cruciform plan and constructed from ashlar, Christ Church (09-0075) is a chapel of ease that was

[127] Moore (2021) A66 NTP Project – Milestone Society: Interests
[128] Cumbria County Council (n.d.) Turnpike Trusts

designed by J.P. Pritchett and H.D. Pritchett for Mrs Maynard Proud in 1895. Each of these buildings contribute considerably to the character of the East Layton Conservation Area (09-0084).

Twentieth Century (AD1901-AD2000)

8.6.334 The route of The Street (000-01) has remained a key feature of the study area since the Romano-British (AD43-AD410) period. Its role as the primary conduit for east-west travel and trade has continued uninterrupted since this time. Furthermore, the alignment of the road as remained largely unchanged with the modern A66, and its later expansion during the late twentieth century, hardly deviating from its original course.

8.6.335 Focusing on the rural settlements of the study area, two conservation areas were designated during the twentieth century: Ravensworth Conservation Area (09-0083) was designated in AD1982 and East Layton Conservation Area (09-0084) was designated in AD1995. Hartforth Conservation Area (09-0085), which is located outside of the study area but falls within the ZVI, was designated in AD1979.

8.6.336 Although designated on their own specific character and merit, each of the conservation areas shares some common characteristics which include, but are not limited to, tight boundaries around the settlements, the relationship of landscape features (including trees, green spaces and stone walls etc.) to the form of the settlement, and the sometimes carefully designed sometimes unusual mix of domestic, municipal, and agricultural buildings. Each conservation area contains several individual buildings of note and there are instances of important internal views. Generally, the wider landscape setting of each conservation area is less influential upon its character than its internal composition and setting.

Archaeological trenching

8.6.337 A programme of archaeological trenching was undertaken by Wessex Archaeology wherein a total of 498 trenches were excavated between November AD2021 and January AD2022 across the schemes from Bowes Bypass (A66/A67), Cross Lanes to Greta Bridge (Rokeby) and Stephen Bank to Carkin Moor. A high concentration of archaeological activity was recorded at and in proximity to the Roman Vicus at Carkin Moor Roman Fort (09-0020). Thirteen trenches provided evidence in the form of ditches and gullies, a probable road or trackway surface and pottery. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table. The final archaeological evaluation report can be found in ES Appendix 8.6: Trenching Reports (Application Document 3.4).

Geophysical survey

8.6.338 Two phases of geophysical survey were undertaken by Headland Archaeology between October AD2020 and November AD2020 and between October AD2021 and December AD2021. Several of the survey locations within the study area presented evidence of known archaeological features (such as areas of ridge and furrow and land drains), and three areas presented anomalies indicative of previously unidentified archaeological remains or features (09-0020, 09-0021, and 09-0022). The anomalies are interpreted as having a possible archaeological origin and include areas of possible material extraction and localised quarrying. Linear and rectilinear anomalies (suggestive of a possible enclosure) and possible ditch and pit-type anomalies, all in close proximity to the Roman Fort (09-0001), were also identified. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The detailed results and findings of this survey are presented in ES Appendix 8.5: Geophysical Survey Report (Application Document 3.4).

Aerial photography and LiDAR

8.6.339 A programme of AP & LiDAR interpretation has been undertaken across the Project. This survey identified 60 heritage resources within the Stephen Bank to Carkin Moor study area, nine of which are features associated with the Scheduled Monument of the Roman Fort (09-0001) and other known designated and non-designated heritage resources including The Street (00-0001), the Roman vicus (09-0020), quarries and other features. The identified resources not associated with known resources are primarily Post Medieval agricultural or industrial features such as numerous field boundaries, holloways, mounds and enclosures. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The results have been interpreted in the AP & LiDAR report, which can be found in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4).

Historic mapping

8.6.340 Access to historic mapping, for example Tithe Maps and their apportionments, was gained through visits to the relevant county archival office(s) and use of the Landmark Solutions historic map data service. A total of eight heritage resources were identified from these documentary or cartographic sources within the Stephen Bank to Carkin Moor study area, comprising examples of bridges, milestones, guideposts, a water trough, and a public house, none of which remain extant. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8:

Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

A1(M) Junction 53 Scotch Corner

Geological summary

8.6.341 The bedrock geology of the study area is formed by the Four Fathom Limestone Member. This is overlain by glacial till, also known as boulder clay or diamicton, which was formed by the action of glaciers and meltwaters in the Devensian period between 70,000-10,000 years ago. Glacial till has no geoarchaeological potential.

Topographical summary

8.6.342 The scheme is focused on Scotch Corner, a very large roundabout junction between the A1, the A66, the A6108 and Middleton Tyas Lane. It is located on a low ridge which rises above the valleys of the Kirk Beck and Gilling Beck to the east and west. Ground level lies between circa 140-150m AOD.

Identified heritage resources

8.6.343 For a complete record of the heritage resources identified within the A1(M) Junction 53 Scotch Corner study area, please refer to ES Appendix 8.8: Gazetteer.

Archaeological and historical background

Uncertain Date

8.6.344 While a number of heritage resources of an unknown date were identified throughout the study area via the AP & LiDAR survey undertaken in AD2020, it was determined that none of these will be affected by the scheme. For further information, please refer to ES Appendix 8.4: AP & LiDAR Assessment, ES Appendix 8.8: Gazetteer, and ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

Palaeolithic, Mesolithic and Neolithic (500,000BC-2,200BC)

8.6.345 No evidence for settlement or activity of Palaeolithic, Mesolithic nor Neolithic date has been identified within the study area.

Bronze Age (2,200BC-700BC)

8.6.346 No evidence for settlement or activity of Bronze Age date has been identified within the study area.

Iron Age (800BC-AD43)

8.6.347 No heritage resources dating to the Iron Age have been identified that will be affected by the Project.

8.6.348 For a wider discussion of the Iron Age in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background (Application

Document 3.4). For a complete record of the heritage resources identified within the A1(M) Junction 53 Scotch Corner study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Romano-British (AD43-AD410)

8.6.349 No heritage resources dating to the Romano-British period have been identified that will be affected by the Project.

8.6.350 For a wider discussion of the Romano-British period in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background (Application Document 3.4). For a complete record of the heritage resources identified within the A1(M) Junction 53 Scotch Corner study area, please refer to ES Appendix 8.8: Gazetteer.

Early Medieval (AD410-AD1066)

8.6.351 No evidence for settlement or activity of Early Medieval date has been identified within the study area.

Medieval (AD1066-AD1540)

8.6.352 No heritage resources dating to the Medieval period have been identified that will be affected by the Project.

8.6.353 For a wider discussion of the Medieval period in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the A1(M) Junction 53 Scotch Corner study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Post Medieval (AD1540-AD1901)

8.6.354 The village at Middleton Tyas expanded during the Post Medieval period, likely in conjunction with the growth of the copper mining industry nearby. Development in the village proceeded southwest into the study area along Middleton Tyas Lane, primarily in the form of domestic residences, cottages, and associated outbuildings dating to the eighteenth to early nineteenth centuries, all of which in the study area are Grade II Listed Buildings.

8.6.355 From at least the Romano-British period, Scotch Corner has been situated at a joining of major regional roads, which continued throughout the Post Medieval period. Scotch Corner was part of the Middleton Tyas Lane to Greta Bridge Trust following its establishment in AD1744. The trust managed the route westward from Middleton Tyas toward Bowes along the approximate route of the present-day A66. The responsibility for maintaining the local road network moved to a local Highway Board in AD1835 before becoming the responsibility of County Councils following their establishment in AD1893.[129]

[129] Cumbria County Council (n.d.) Turnpike Trusts

Twentieth Century (AD1901-AD2000)

8.6.356 No heritage resources dating to the twentieth century have been identified that will be affected by the Project.

8.6.357 For a wider discussion of the twentieth cenutry in the region, please refer to ES Appendix 8.1: Archaeological and Historical Background. For a complete record of the heritage resources identified within the A1(M) Junction 53 Scotch Corner study area, please refer to ES Appendix 8.8: Gazetteer (Application Document 3.4).

Geophysical survey

8.6.358 A programme of geophysical survey has not been undertaken within the A1(M) Junction 53 Scotch Corner study area as the Order Limits are within the existing extent of the carriageway.

Aerial photography and LiDAR

8.6.359 A programme of AP and LiDAR interpretation has been undertaken across the Project. This survey identified eight heritage resources within the A1(M) Junction 53 Scotch Corner study area, two of which are associated with known areas of Iron Age and Romano-British settlement. The identified resources not associated with known heritage resources are all archaeological earthworks of an uncertain date. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). The AP & LiDAR report can be found in ES Appendix 8.4: AP & LiDAR Assessment (Application Document 3.4).

Historic mapping

8.6.360 Access to historic mapping, for example Tithe Maps and their apportionments, was gained through visits to the relevant county archival office(s) and use of the Landmark Solutions historic map data service. A total of three heritage resources were identified from these documentary or cartographic sources within the A1(M) Junction 53 Scotch Corner study area, comprising two public houses and a residence. The information was incorporated into the baseline and any newly identified heritage resources were added to ES Appendix 8.8: Gazetteer (Application Document 3.4) and assessed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

Future baseline

8.6.361 The following resources are on the Heritage at Risk register maintained by Historic England: Parish Church of St Andrew, St Andrew's Place, Penrith (01- 0010), Appleby Conservation Area (0405-0109), Brough Castle (06-0004), Church of St Mary, Rokeby, Rokeby (08-0012), Mortham Tower (08-0009), Ravensworth Castle (09-0002) and Two Moated Sites, the site of a dovecote and further associated features

120m north-west and 180m north of the Old Hall (09-0003). These resources may, if conservation efforts are not advanced, see a reduction in their heritage value over time.

8.6.362 Additional changes to the Cultural Heritage baseline may occur as a result of in-combination climate change impacts. The in-combination climate change assessment has used a future climate baseline that is based on representative concentration pathway 8.5 (RCP 8.5) of the UK climate change 2018 projections (UKCP18). This future climate baseline is presented in Chapter 7: Climate .

8.7 Potential impacts

8.7.1 Based on the Project design and associated construction activities, the Project has the potential to impact upon Cultural Heritage during both construction and operation.

8.7.2 The design of the Project, including any embedded mitigation measures that have been incorporated, are described in Chapter 2: The Project and section 8.8 below. Any key aspects of the design and embedded mitigation are also referenced in this section where they are directly applicable to the Cultural Heritage assessment.

8.7.3 Potential impacts of the Project are described in this section prior to the implementation of the essential mitigation described in Section 8.8 below. The residual effects of the Project, taking into account this essential mitigation, are then described in section 8.9.

Construction

Design and embedded mitigation

8.7.4 Minimisation of impacts on Cultural Heritage resources has been incorporated throughout the design development. Details of relevant design development can be found in Chapter 2: The Project and the Route Development Report (Application Document 4.1).

Potential Impacts before essential mitigation and enhancement

8.7.5 Construction of the project has potential for benefits to Cultural Heritage resources, such the improved access to heritage sites and opportunities for enhanced interpretation which are detailed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

8.7.6 Where the Project is contained within the existing A66 corridor and alongside areas of prior disturbance, the potential for the presence of as-yet unknown archaeological remains would have been previously substantially or wholly removed. However, where the Project requires excavation below the existing ground surface within previously undeveloped areas archaeological remains may exist.

8.7.7 Construction of the project has the potential for adverse impacts upon the cultural heritage resources detailed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4), including:

- partial or total removal of heritage resources, including archaeological remains, within the Project footprint
- compaction of archaeological deposits by construction traffic and structures
- temporary impacts upon the settings of heritage resources
- permanent impacts upon the setting of heritage resources
- changes to key views and sight lines

8.7.8 Views from heritage resources towards permanent works such as new roads, cuttings, embankments and other structures are considered to be permanent construction impacts for the purposes of the assessment. Likewise, removal of elements of the existing A66, such as lighting of junctions, are considered to be construction effects.

8.7.9 Construction activity, including movements of plant, temporary lighting and temporary compounds, would take place within the setting of listed buildings, conservation areas and upstanding non-designated heritage resources within the study area. These are detailed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4). These works would be temporary, of limited duration and reversible.

Operation

Potential Impacts

8.7.10 The operational phase of the Project has the potential to result in both beneficial and adverse impacts on the setting of Cultural Heritage resources due to traffic noise and the visibility of moving vehicles on the road. Impacts could include changes to the settings of monuments or changes to key views and sightlines.

8.7.11 There would be no physical impacts on below-ground archaeology during operation, as these would have occurred during the construction phase. Details of operational impacts are presented in Appendix 8.10: Impact Assessment Table.

8.8 Essential mitigation and enhancement measures

Construction

Essential mitigation

Route wide

8.8.1 Essential mitigation of construction impacts would take the form of measures to reduce direct impacts (physical damage), and indirect impacts (changes to setting that affect the significance of the resources).

8.8.2 Mitigation commitments in respect of temporary construction impacts are presented in the Environmental Management Plan (Application Document 2.7). The temporary impacts from dust, noise and vibration will be addressed in detailed mitigation plans.

8.8.3 Mitigation of direct impacts on archaeological remains would take the form of 'preservation by record', that is, the investigation of archaeological remains prior to construction, and the analysis of artefacts and publication of results following the construction of the project.

8.8.4 Preservation by record can involve a number of levels of detail, commensurate with the significance of the resources being affected directly by the project. These may include detailed archaeological excavation of high value buried archaeological remains, strip-map-sample where archaeological remains are expected to be present dispersed over a wide area, or archaeological watching brief in areas of lower archaeological potential. The type and location of mitigation required has been detailed within the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

8.8.5 Any specifics such as relocation or building recording are mentioned below under the scheme to which they are relevant.

M6 Junction 40 to Kemplay Bank

8.8.6 Archaeological investigation as detailed in the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

8.8.7 No relocation or building recording is proposed as the significant impacts on historic buildings are temporary.

Penrith to Temple Sowerby

8.8.8 Archaeological investigation as detailed in the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

8.8.9 The Grade II listed Milestone East of Whinfell Park (03-0013) is within the Order Limits. In order to mitigate the adverse effect which would result the milestone will be temporarily removed during construction works and then reinstated at its original location or as close as possible after the construction of the new route has been completed.

8.8.10 The Countess Pillar (03-0006), the Alms Table (03-0007) adjacent and the railings around the monument would be fenced off for protection and preserved in situ.

Temple Sowerby to Appleby

8.8.11 Archaeological investigation as detailed in the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

8.8.12 The Grade II listed Milestone to the north-east of Crackenthorpe Hall (0405-0047) is located within the Order Limits. In order to mitigate the adverse effect which would result the milestone may be temporarily removed during construction works if required and then reinstated at its

original location or as close as possible after the construction of the new route has been completed.

Appleby to Brough

8.8.13 Archaeological investigation as detailed in the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

8.8.14 The Boundary Stone to the North of Bullistone Cottage (06-0038) falls within the Order Limits. In order to mitigate the adverse effect which would result the boundary stone will be temporarily removed during construction works and then reinstated at its original location or as close as possible after the construction of the new route has been completed.

Bowes Bypass

8.8.15 Archaeological investigation as detailed in the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

8.8.16 The remains of Bowes Station (07-0052) will be recorded and sufficiently intact railway-related materials salvaged for transfer to the Railway Trust.

Cross Lanes to Rokeby

8.8.17 Archaeological investigation as detailed in the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

8.8.18 In the Cross Lanes to Rokeby scheme two listed milestones would be recorded before being removed under archaeological supervision and stored in a safe location off-site. Once the work is complete they would be relocated to the closest point to their current location possible within the completed road landscape design.

Stephen Bank to Carkin Moor

8.8.19 Archaeological investigation as detailed in the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

8.8.20 In the Stephen Bank to Carkin Moor scheme two non-designated milestones (09-0017 and 09-0018) will be recorded before being removed under archaeological supervision and stored in a safe location off-site. Once the work is complete, they would be relocated to the closest point to its current location possible within the completed road landscape design.

8.8.21 At Carkin Moor Roman fort (09-0001) the part of the fort south of the proposed retaining wall will be fenced off for protection and preserved in situ.

Scotch Corner

8.8.22 While the scheme is located at the junction of two Roman roads and past archaeological investigation has revealed significant archaeological remains in close proximity, the Order Limits enclose an area where considerable disturbance has taken place for the construction, in multiple phases, of Scotch Corner junction. As such no archaeological mitigation is proposed.

8.8.23 No relocation or building recording is proposed as there are no significant effects on historic buildings.

Enhancement

Route wide

8.8.24 Enhancement measures for specific resources are noted below and detailed in the Historic Environment Mitigation Strategy with the EMP (Application Document 2.7) (including an Overarching Written Scheme of Investigation (WSI)).

Penrith to Temple Sowerby

8.8.25 In the Penrith to Temple Sowerby scheme two enhancement measures are proposed: improved public access to The Countess Pillar and Alms Table through provision of a parking area to the east; and improved public access to St Ninian's Church through enhanced parking provision.

Operation

Essential mitigation

8.8.26 The operational effects from the Project on heritage resources have been considered in collaboration with the landscape and noise teams. As a result the proposed design incorporates screening and noise barriers which serve to mitigate as far as possible the effects on heritage resources. These proposals are presented in Chapter 10 Landscape and Visual and Chapter 12: Noise and Vibration. No specific mitigation is proposed in this chapter.

Enhancement

8.8.27 None proposed as potential enhancements have been captured at construction.

8.9 Assessment of likely significant effects

8.9.1 This section identifies the likely Cultural Heritage effects of the Project that are predicted to be significant following the implementation of the essential mitigation described in section 8.8 above. Likely effects not predicted to be significant are presented in ES Appendix 8.10: Impact Assessment Tables (Application Document 3.4).

Routewide

Construction

8.9.2 Two Cultural Heritage resources are common to more than one scheme study area - the Roman road running between Scotch Corner and Penrith (Brougham) via Bowes identified by Margary as RR82 (00-0001) (Margary, 1957)[130] and its Post Medieval turnpiked successor (00-0002). Whilst individual sections of these will see impacts from the Project none are deemed to be significant following implementation of mitigation and the Roman road and its turnpiked successor are not predicted to be subject to significant effects.

8.9.3 No significant effects are expected to result from impacts derived from multiple schemes.

Operation

8.9.4 No significant routewide effects are predicted to result from operational impacts.

M6 Junction 40 to Kemplay Bank

Construction

8.9.5 Two listed buildings will be subject to moderate adverse effects to their setting during the construction period. However, these effects will be limited to the construction phase and are therefore temporary.

8.9.6 The Grade II* listed Carleton Hall (02-0010), now the Cumbria Police Headquarters, and the associated non-designated group of buildings is directly adjacent to the Order Limits. Activities associated with the proposed widening of the existing A66 to the north and northwest, the construction of a pond and associated access track to the east, a temporary haul route to the south of the resources, and the use of land to the east as a construction compound storage area will result in temporary moderate adverse impacts during the construction phase, including associated noise, lighting and traffic movement. Dust and noise abatement measures will be incorporated into the relevant detailed management plans, however the effect will remain significant. The permanent and operational effects are anticipated to be comparable to that of the present baseline.

8.9.7 The Grade II Toll Bar Cottage (01-0095) is located immediately adjacent to the Order Limits. The construction work associated with the Scheme alongside a temporary construction compound area proposed to the west and a temporary haul route to the east will all result in moderate adverse impacts via noise, lighting and construction traffic. However, these will all be temporary impacts limited to the duration of the construction phase resulting in a temporary moderate adverse effect. Whilst the Scheme will move the A66 alignment slightly closer to the

[130] Margary, I. D. (1957) Roman Roads in Britain: II North of the Foss Way-Bristol Channel

cottage, the permanent and operation effects are anticipated to be comparable to that of the present baseline.

8.9.8 There are no permanent likely significant effects resulting from the construction of the Scheme within the M6 Junction 40 to Kemplay Bank section.

Operation

8.9.9 There are no likely significant effects as result of the operation of the Project within the M6 Junction 40 to Kemplay Bank section.

Penrith to Temple Sowerby

Construction

8.9.10 Three assets will be subject to moderate adverse effects during the construction period. However, these effects will be limited to the construction phase and are therefore temporary.

8.9.11 The Scheduled Monument and Grade II* listed Countess Pillar (03-0006) and the associated Grade II* listed Alms Table (03-0007) are both located within the Order Limits but will not be removed or physically affected by the scheme. Temporary construction activities would occur within the setting of the resource, including moving plant, lighting and noise. There is also a possibility of restricted access during the construction phase. These would be temporary minor adverse impacts to the settings of the Countess Pillar and Alms Table resulting in a moderate adverse effect on these high value assets. The addition of a new accommodation overbridge to the west of the Pillar will alter the baseline setting, however the impacts will be negligible, and permanent construction impacts of the road itself are likely to be very similar to baseline as detailed in ES Appendix 8.10: Impact Assessment Table (Application Document 3.4).

8.9.12 The Grade II listed Milestone East of Whinfell Park (03-0013) is also located within the Order Limits. The works will include the widening of an existing section of the road which incorporates the location of the milestone which will require removal during construction. Provided it is restored to as close a location to its original site as practicable, this would be a temporary minor adverse impact resulting in a moderate adverse effect. The completed road will slightly alter the baseline appearance of the milestone's setting but would not alter the contribution of the milestone's setting to its value, and it would retain its important roadside connection.

8.9.13 Five assets will also be subject to large and moderate adverse effects resulting from the construction of the scheme. These effects are the result of the loss of physical evidence arising from the construction of the scheme and will be permanent.

8.9.14 The Scheduled Monument of Brougham Roman fort (Brocavum) and civil settlement and Brougham Castle (02-0002) lies partially within the

Order Limits. Although temporary construction activities would occur within the setting of the Scheduled Monument, including moving plant, lighting and noise, these are mainly screened from the upstanding sections of Brougham Castle and would not have a significant effect on the significance of the monument. However, the northern part of the easternmost Scheduled area is located within the Order Limits. The scheme at this location will include the creation of a hardstanding cycle path with associated verges and earthworks along the route, and areas of environmental mitigation consisting of species rich grassland and marsh and wet grassland. Any below ground works will result in the loss of associated physical evidence in the area within the Order Limits and a moderate adverse impact to the overall Scheduled Monument resulting in a large adverse effect, resulting in a moderate adverse effect following essential mitigation. Operational impacts are anticipated to be comparable to the baseline and would not result in a significant effect.

8.9.15 There will be a moderate adverse physical impact upon the Brougham Vicus Roman settlement site (03-0004) where the southern extent of the Scheduled area falls inside the Order Limits. The LIDAR assessment undertaken for the Project also indicates that the site may have a more substantial footprint than presently recorded which may extend further into the Order Limits on both the north and south side of the existing A66. Geophysical surveys undertaken in this area also suggest a high level of likely archaeological survival which was confirmed by trenching. Archaeological remains associated with the Brougham Vicus Roman settlement must be treated as undesignated resources of schedulable quality and importance. Where the Scheduled area is located within the Order Limits, works will include the extension of the carriageway from single lane carriageway to dual carriageway in both directions closely following the existing road alignment, the creation of a priority left-in/left-out junction, a new accommodation overbridge to provide local farm access and associated access route and non-motorised users route. Although some of the works will be within previously disturbed areas, any works with below ground impacts in previously undisturbed areas will result in the removal of any archaeological remains to formation levels. As the site is of high value, this will result in a large adverse effect, resulting in a moderate adverse effect following essential mitigation.

8.9.16 The Cumbria HER records the ring ditches at Brougham (03-0050) as being visible on aerial photographs and associated with a site where prehistoric pottery has been recovered although the site was not identified in the 2020 AP/LiDAR survey and the grid reference given for the site places it under the existing A66. This site falls within the Order Limits in an area where works will include the extension of the carriageway from single lane carriageway to dual carriageway in both directions. Any groundworks in this area will adversely impact upon any archaeological remains associated with the ring ditches which may survive. These are of medium value, causing a major adverse impact

and a large adverse effect, resulting in a moderate adverse effect following essential mitigation.

8.9.17 Two areas of peat deposits likely associated with nearby palaeochannels (03-0212 and 03-0213) were identified during archaeological evaluation in 2021. These peat deposits are located within the Order Limits where works will include the construction of a balancing pond, a new access route, WCHR route and areas of environmental mitigation including the creation of woodland and species rich grassland. Groundworks will remove archaeological or geoarchaeological remains associated with these medium value features to formation levels, which will result in major adverse impacts and aa large adverse effect, becoming a moderate adverse effect following essential mitigation.

Operation

8.9.18 A new amenity parking area and footway access for the Scheduled Monument and Grade II* listed Countess Pillar (03-0006) and the associated Grade II* listed Alms Table (03-0007) will enable better access to the site. This would be a minor beneficial impact on these high value assets, resulting in a moderate beneficial effect.

8.9.19 The Scheduled Monument of St Ninian's (03-0005), including the buried remains of the pre-Conquest monastic site and the deserted Medieval settlement, and the Grade II listed Church of St Ninian (03-0012) built in 1660 on the Medieval site are both beyond the Order Limits to the north. The church is screened by surrounding trees from the Project, although part of the larger surrounding landscape of the Scheduled area of St Ninian's falls within the ZVI. A new accommodation overbridge will be constructed at the eastern end of this scheme, but at a far distance from the Ninekirks site and would not alter the contribution of the setting towards the significance of these assets. A new priority left-in/left-out junction will enable access to the road leading to the car park and PRoW 311/013 to St Ninian's Church from the A66 eastbound carriageway. The existing car park will be relocated within the site. This will improve accessibility to the St Ninian's site which will have a minor beneficial impact resulting in a moderate beneficial effect on both the listed church and the Scheduled site at St Ninian's.

Temple Sowerby to Appleby

Construction

8.9.20 Four assets will be subject to moderate adverse effects during the construction period. However, these effects will be limited to the construction phase and are therefore temporary.

8.9.21 The Grade II listed Milestone to the north-east of Crackenthorpe Hall (0405-0047) is located within the Order Limits. The works will include the improvement and extension of a WCHR route along the route of the existing A66. The WCHR route will be on the south side of the route at

this location, while the milestone is located on the north side of the existing A66. Construction activities would occur within the setting of the resource, including moving plant, lighting and noise. Given the nature of this asset as a roadside milestone, these impacts are not considered to meaningfully differ from the baseline. However, the asset may be required to be removed whilst works are being undertaken for its protection from construction activities. This will be restored to as close a location to its original site as practicable, this would be a temporary minor adverse impact resulting in a moderate adverse effect. The completed road will slightly alter the baseline appearance of the milestone's setting but would not alter the contribution of the milestone's setting to its value, and it would retain its important roadside connection.

8.9.22 The Grade II listed Spital Farmhouse group is located immediately adjacent to the Order Limits, including Spital Farmhouse with adjoining Stables, Byre and Gin Gang (0405-103), Threshing Barn and Byre to the east of Spital Farmhouse (0405-0102) and Coach House, Barns, Byres and Entrance Arch to the north of Spital Farmhouse (0405-0101). The construction work associated with the Scheme as well as a temporary construction compound area proposed on the southern side of the A66 directly south of the Spital Farmhouse group will result in moderate adverse impacts via noise, lighting and construction traffic. However, these will all be temporary impacts limited to the duration of the construction phase and will result in a temporary moderate adverse effect. Whilst the Scheme will move the A66 alignment slightly closer to the Spital Farmhouse group, the permanent and operation effects are anticipated to be comparable to that of the present baseline.

8.9.23 Two assets will be subject to moderate adverse effects resulting from the construction of the scheme. These effects are the result of the loss of physical evidence arising from the construction of the scheme and will be permanent.

8.9.24 The 2021 archaeological trial trench evaluation identified archaeological features located entirely within the Order Limits. These features include an Enclosure and other features north-west of Kirkby Thore (0405-0489) and a Prehistoric round house drip gully and associated features (0405-0494). These features are located within the footprint of where a new offline section of dual carriageway road will be constructed. Groundworks will remove archaeological or geoarchaeological remains associated with these medium value features to formation levels. These would be major adverse impacts on medium value assets resulting in large adverse effects. These would be moderate adverse effects following essential mitigation.

Operation

8.9.25 There are no likely significant effects as result of the operation of the Project within the Temple Sowerby to Appleby section.

Appleby to Brough

Construction

8.9.26 One asset will be subject to moderate adverse effects during the construction period. However, these effects will be limited to the construction phase and are therefore temporary.

8.9.27 The Grade II listed Boundary Stone To North Of Bullistone Cottage (06-0038) is located within the Order Limits. The works will include the construction of new access routes for a new farm accommodation and overbridge for WCHR near West View Farm and a new offline section of road consisting of a left-only T-junction with appropriate diverge and merge tapers on the westbound carriageway to provide access for the properties, farm and land at the south side of the carriageway. The asset will be required to be removed whilst works are being undertaken for its protection from construction activities. This will be restored to as close a location to its original site as practicable with the construction of the new left-only T-junction at the current location of the boundary stone, this would be a temporary minor adverse impact resulting in a moderate adverse effect. The completed road will slightly alter the baseline appearance of the boundary stone's setting but would not alter the contribution of the boundary stone's setting to its value, and it would retain its important roadside connection.

8.9.28 Seven assets will be subject to large and moderate adverse effects resulting from the construction of the scheme. These effects are the result of the loss of physical evidence arising from the construction of the scheme and will be permanent.

8.9.29 The Scheduled Monument of Warcop Roman Camp (06-0003) is located within the ZVI and partially within the Order Limits. The works include the construction of a new offline section of road within the boundary of the Roman Camp. Any below ground works will result in the loss of associated physical evidence in the area within the Order Limits and a moderate adverse impact to the overall Scheduled Monument resulting in a large adverse effect. This would be a moderate adverse effect following essential mitigation.

8.9.30 The Sandford Moor Barrows group is located within the Order Limits, consisting of Sandford Moor Barrow (06-0078), Sandford Ring Cairn Site (06-0079), Sandford Moor Barrow Flint Find (06-0080) and Sandford Moor Barrow (06-0081). The proposed works include the widening of the A66 involving the construction of a new offline section of road over the recorded area of the location of the prehistoric features. However, the survival of the barrow and associated features is currently uncertain and the sites may already have been subject to extensive truncation and removal as a result of antiquarian investigation as well as the construction of the modern A66. As a result, there may be no impact from the scheme on the prehistoric features at Sandford; however, should any medium value buried archaeological remains survive they would experience a major adverse impact resulting in a large adverse

effect, resulting in a moderate adverse effect following essential mitigation.

8.9.31 Two concentrations of archaeological features were identified during archaeological evaluation in 2021, a Roman trackway and associated features (06-0227) and prehistoric features north of Warcop (06-0228). The works at both locations consist of the construction of a new offline section of road over the identified sites of medium value buried archaeological remains. These buried archaeological remains will experience a major adverse impact resulting in a large adverse effect, resulting in a moderate adverse effect following essential mitigation.

Operation

8.9.32 There are no likely significant effects as result of the operation of the Project within the Appleby to Brough section.

Bowes Bypass

Construction

8.9.33 Three heritage resources will be subject to moderate adverse effects resulting from the construction of the scheme. These effects are the result of temporary and permanent changes to the setting of these resources.

8.9.34 A group of three Grade II listed buildings (high value), Stone Bridge Farmhouse (07-0015), Loose boxes, 5 metres east of Stone Bridge Farmhouse (07-0016), and linked farm buildings and gin-gang attached to south of Stonebridge Farmhouse (07-0032), will be subject to changes to their setting during the construction period. Construction of the Mid Low Fields Farm Access and Proposed East Bowes Accommodation Access Overpass would result in the current access track in front of the buildings becoming a slip road into the overbridge, with an embankment built to the immediate east of the group. Construction works will result in temporary moderate adverse impacts during the construction phase, including associated noise, lighting and traffic resulting in a moderate adverse effect.

8.9.35 The construction of the Mid Low Farm Access and Proposed East Bowes Accommodation Access Overpass would also involve the permanent addition of a new junction and slip road embankment to the setting of the farmhouse group (07-0015, 07-0016, 07-0032). This upstanding industrial structure will result in a greater sense of enclosure surrounding the resources and a partial disconnection of the farm group from its farmland setting, as well as a change in the historic topography and character of the area, resulting in a permanent, moderate adverse impact to these high value assets, resulting in a moderate adverse effect.

Operation

8.9.36 Three heritage resources will be subject to moderate adverse effects resulting from the operation of the scheme. These effects are the result of changes to the setting of these resources relating to increased noise and traffic flow.

8.9.37 In addition to the construction impacts outlined above, the operation of the Mid Low Farm Access and Proposed East Bowes Accommodation Access Overpass will result in an increase in traffic passing immediately in front of the farmhouse group (07-0015, 07-0016, 07-0032) in addition to that along the main road corridor, increasing the noise and general busyness of its environment. This will generate a moderate adverse impact to these high value assets, resulting in a moderate adverse effect.

Cross Lanes to Rokeby

Construction

8.9.38 Close consultation with stakeholders and the relevant Statutory Authorities has been undertaken throughout the design development for the Scheme to minimise any impacts of the Project on the Cultural Heritage resource. Details of the relevant design development can be found in Chapter 3: Assessment of Alternatives and the Route Development Report (Application Document 4.1). As a result of this iterative process and the embedded mitigation measures outlined in section 8.8, there will be no significant construction effects generated as a result of the Scheme.

Operation

8.9.39 As a result of the measures outlined above, no significant effects will occur during the operation phase of the Project.

Stephen Bank to Carkin Moor

Construction

8.9.40 Two heritage resources will be subject to moderate adverse effects resulting from the construction of the scheme. These effects are the result of permanent physical impacts to the resources as a result of construction activities and as a result of changes to their setting.

8.9.41 The Roman Fort and Prehistoric enclosed settlement 400m west of Carkin Moor Farm (09-0001; high value) is bisected by the course of the A66 which runs in cutting through the centre of the Roman fort, following the approximate line of the Roman road. The resource lies partially within the Order Limits and will experience permanent, physical construction impacts as a result of the Project. To the south of the current road corridor, a small section of the resource will be removed to enable the construction of the retaining wall, which will form the southern side of the improved road corridor. This wall will abut the

remaining monument, creating a defined boundary for the resource and protecting it from subsequent encroachment and erosion from any future works carried out within the corridor. To the north, a small section from each corner immediately adjacent to the existing road corridor will be removed to facilitate the construction of the embankment. This will overlay the resource along the carriageway, enabling the new road corridor to sit within a 'cutting' without further impacts to the Scheduled area being incurred. All works will take place in areas of the monument which border the existing carriageway and may therefore have experienced previous impacts from previous phases of construction and maintenance of the A66.

8.9.42 The Project will result in permanent changes to the setting of the resource, as a result of the new, offline, section curving north immediately to the west. The Scheduled monument is intrinsically linked to the course of the A66; a road of at least Roman date which passed directly through the Roman fort. The retention of the road as it passes through the fort enables that historic connection to continue. The original line of the road to the west will be retained as a local access road, however, the new offline section will alter the setting of the fort and change the course of the road as the primary route through the landscape surrounding the resource, a position it has maintained for nearly two millennia. A new access road will be constructed to the south of the resource, extending the route of Warrener Lane to the north-west, past the Scheduled monument, intersecting with the original route of the A66 to the south of the new offline section. The new road will serve as access to four new balancing ponds which will be located to the south-west and north-east of the resource, introducing landscaped elements immediately adjacent to the southern part of the fort.

8.9.43 The combination of physical impacts from the construction of the scheme and the changes to the asset's setting would, without mitigation, result in a moderate adverse impact, resulting in a moderate adverse significance of effect.

8.9.44 As outlined above (section 8.8) a programme of archaeological mitigation would be put in place to ensure preservation by record of any archaeological remains within the footprint of the works. This preservation by record of any archaeological features will reduce the physical impacts on the resource alone from a moderate adverse impact to a minor adverse impact. However, the combination of impacts including changes to the resource's setting, outlined above, will result in a moderate adverse impact on this high value resource, resulting in a moderate adverse significance of effect.

8.9.45 A probable Roman roadside settlement has been identified to the west of Carkin Moor Roman fort, lying to the south of remains of the Roman road (09-0020). It is possible that these remains may be of schedulable quality and, as a result, it has been assessed as being of high value. Trial trenching evaluation has further confirmed the presence of archaeological remains in this area, suggesting a settlement which

extended some way back from the Roman road and which may have also included industrial and/or craft areas, within the settlement. These, and previously identified features of the resource in the northern part of the vicus, lie within the Order Limits and will be removed by construction activities associated with the widening of the carriageway and construction of access road to the south (creation of verges, landscaping and laying of hardstanding). Without mitigation the result of the proposed works will be a moderate adverse impact on an asset of high value, generating a moderate adverse significance of effect. The effect is considered to be moderate, as opposed to large, since the Scheme impacts only parts of the resource.

8.9.46 Following the implementation of the mitigation outlined in section 8.8, the high value of the resource means that the Scheme will still result in a moderate adverse effect, generating a moderate adverse significance of effect. The significance of effect may be lower if the site is subsequently demonstrated to be of moderate or lower heritage value, however as the extent of the settlement has yet to be fully defined it must be assumed to be of high value until shown to be otherwise.

Operation

8.9.47 No significant effects will occur during the operation phase of the Scheme.

A1(M) Junction 53 Scotch Corner

Construction

8.9.48 Due to the limited nature of the works proposed in this Scheme, no significant effects will be generated as a result of the Project.

Operation

8.9.49 No significant effects will occur during the operation phase of the Scheme.

Future baseline

8.9.50 When assessing future baseline conditions the Project opening year will be 2029 and future operation year, where used, 2044.

8.9.51 Changes to the archaeological baseline from the construction of other projects are considered in Chapter 15: Cumulative Effects.

8.9.52 Changes to the future baseline from climate change are considered below.

In-Combination Climate Impacts

Construction

8.9.53 The construction period has been scoped out from the climate resilience assessment because the climate projections suggest only a minimal

change to the climate by the 2020s compared to the 1981-2010 baseline.

8.9.54 The aim of the In Combination Climate Change Impact review is to understand whether any of the effects identified in the original assessment are exacerbated/reduced by projected future climate change. Effects on Cultural Heritage resources which might change as the result of climate impacts after the construction period are:

- Desiccation of waterlogged archaeological remains as a result of increasingly warm and dry summers
- Damage to the fabric of historic buildings as a result of flooding during extreme weather events

8.9.55 Potential changes to the water table as a result of the construction of the Project have been identified in the Temple Sowerby to Appleby Scheme where a cutting is required to the north and east of Kirkby Thore. There are no waterlogged archaeological remains in this location. A significant in combination effect from desiccation is therefore not expected.

8.9.56 The Project takes into account the need for the design to accommodate predicted changes in climate over its lifespan. The drainage design for the Project aims to ensure that the construction of the road will result in no worsening of the current flood risk in the surrounding environment. None of the historic buildings affected by the Project are deemed to be at risk of flooding. A significant in combination effect is therefore not expected.

Operation

8.9.57 In combination climate effects are not expected to arise as a result of interaction with operational effects on Cultural Heritage resources.

Table 8-10: Summary of significant effects (construction)

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Routewide						
N/A						
M6 Junction 40 to Kemplay Bank						
Grade II* listed Carleton Hall (02-0010)	Setting	High	Temporary Moderate adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP.	Temporary Moderate Adverse	Temporary moderate adverse
Grade II Toll Bar Cottage (01-0095)	Setting	High	Temporary Moderate adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP.	Temporary Moderate adverse	Temporary moderate adverse
Penrith to Temple Sowerby						
Grade II* listed Countess Pillar (03-0006)	Setting	High	Temporary minor adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP	Temporary minor adverse	Temporary moderate adverse
Grade II* listed Alms Table (03-0007)	Setting	High	Temporary minor adverse	Temporary construction impacts will be mitigated by dust, noise and vibration	Temporary minor adverse	Temporary moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
				control measures laid out in the EMP		
Grade II listed Milestone East of Whinfell Park (03-0013)	Setting; Physical removal	High	Temporary minor adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP	Temporary minor adverse	Temporary moderate adverse
Scheduled Monument of Brougham Roman fort (Brocavum) and civil settlement and Brougham Castle (02-0002)	Archaeology	High	Permanent moderate adverse	Archaeological investigation	Permanent minor adverse	Permanent moderate adverse
Scheduled Monument of Brougham Vicus Roman settlement site (03-0004)	Archaeology	High	Permanent moderate adverse	Archaeological investigation	Permanent minor adverse	Permanent moderate adverse
Ring ditches at Brougham (03-0050)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Peat deposit (03-0212)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse
Peat deposit (03-0213)	Archaeology	Medium	Permanent major adverse	Archaeological mitigation	Permanent moderate adverse	Permanent moderate adverse
Temple Sowerby to Appleby						
Grade II listed Milestone to the north-east of Crackenthorpe Hall (0405-0047)	Setting; Physical removal	High	Temporary minor adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP. If necessary the milestone will be removed and replaced.	Temporary minor adverse	Temporary moderate adverse
Grade II listed Spital Farmhouse with adjoining Stables, Byre and Gin Gang (0405-103)	Setting	High	Temporary moderate adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP.	Temporary moderate adverse	Temporary moderate adverse
Grade II listed Threshing Barn and Byre to the east of Spital Farmhouse (0405-0102)	Setting	High	Temporary moderate adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP.	Temporary moderate adverse	Temporary moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Grade II listed Coach House, Barns, Byres and Entrance Arch to the north of Spital Farmhouse (0405-0101)	Setting	High	Temporary moderate adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP.	Temporary moderate adverse	Temporary moderate adverse
Enclosure and other features north-west of Kirkby Thore (0405-0489)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse
Prehistoric round house drip gully and associated features (0405-0494)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse
Appleby to Brough						
Grade II listed Boundary Stone To North Of Bullistone	Setting; Physical removal	High	Temporary minor adverse	The Boundary Stone will be recorded, removed and replaced following construction.	Temporary minor adverse	Temporary moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Cottage (06-0038)						
Scheduled Monument of Warcop Roman Camp (06-0003)	Archaeology	High	Permanent moderate adverse	Archaeological investigation	Permanent minor adverse	Permanent moderate adverse
Sandford Moor Barrow (06-0078)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse
Sandford Ring Cairn Site (06-0079)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse
Sandford Moor Barrow Flint Find (06-0080)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse
Sandford Moor Barrow (06-0081)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse
Roman trackway and associated features (06-0227)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Prehistoric features north of Warcop (06-0228)	Archaeology	Medium	Permanent major adverse	Archaeological investigation	Permanent moderate adverse	Permanent moderate adverse
Bowes Bypass						
Grade II listed Stone Bridge Farmhouse (07-0015)	Setting	High	Temporary and permanent moderate adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP. Mitigation by design was not possible for these impacts on the resource.	Temporary and permanent moderate adverse	Temporary and permanent moderate adverse
Grade II listed Loose boxes, 5 metres east of Stone Bridge Farmhouse (07-0016)	Setting	High	Temporary and permanent moderate adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP. Mitigation by design was not possible for these impacts on the resource as detailed in the PDO Report and Appendix 8.10: Impact Assessment Tables.	Temporary and permanent moderate adverse	Temporary and permanent moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
Grade II listed Farm buildings and gin-gang attached to south of Stonebridge Farmhouse (07-0032)	Setting	High	Temporary and permanent moderate adverse	Temporary construction impacts will be mitigated by dust, noise and vibration control measures laid out in the EMP. Mitigation by design was not possible for these impacts on the resource.	Temporary and permanent moderate adverse	Temporary and permanent moderate adverse
Cross Lanes to Rokeby						
N/A						
Stephen Bank to Carkin Moor						
Roman Fort and Prehistoric enclosed settlement 400m west of Carkin Moor Farm (09-0001)	Archaeology; Setting	High	Permanent moderate adverse	Archaeological Investigation	Permanent moderate adverse	Permanent moderate adverse
Roman Settlement at Carkin Moor Roman Fort (09-0020)	Archaeology	High	Permanent moderate adverse	Archaeological Investigation	Permanent moderate adverse	Permanent moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential impact before essential mitigation	Essential mitigation/enhancement	Impact magnitude	Residual effect
A1(M) Junction 53 Scotch Corner						
N/A						

Table 8-11: Summary of significant effects (operation)

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/ enhancement	Impact magnitude	Residual effect
Routewide						
N/A						
M6 Junction 40 to Kemplay Bank						
N/A						
Penrith to Temple Sowerby						
Scheduled Monument and Grade II* listed Countess Pillar (03-0006)	Setting; Access	High	Permanent minor beneficial	None required	Permanent minor beneficial	Permanent moderate beneficial

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/ enhancement	Impact magnitude	Residual effect
Grade II* listed Alms Table (03-0007)	Setting; Access	High	Permanent minor beneficial	None required	Permanent minor beneficial	Permanent moderate beneficial
Scheduled Monument of St Ninian's (03-0005)	Setting; Access	High	Permanent minor beneficial	None required	Permanent minor beneficial	Permanent moderate beneficial
Grade II listed Church of St Ninian (03-0012)	Setting; Access	High	Permanent minor beneficial	None required	Permanent minor beneficial	Permanent moderate beneficial
Temple Sowerby to Appleby						
N/A						
Appleby to Brough						
N/A						
Bowes Bypass						
Grade II listed Stone Bridge Farmhouse (07-0015)	Setting	High	Permanent moderate adverse	Mitigation by design was not possible due to the need for the access road at this location.	Permanent moderate adverse	Permanent moderate adverse

Receptor	Attribute	Receptor sensitivity	Potential Impact before essential mitigation	Essential mitigation/ enhancement	Impact magnitude	Residual effect
Grade II listed Loose boxes, 5 metres east of Stone Bridge Farmhouse (07-0016)	Setting	High	Permanent moderate adverse	Mitigation by design was not possible due to the need for the access road at this location.	Permanent moderate adverse	Permanent moderate adverse
Grade II listed Farm buildings and gin-gang attached to south of Stonebridge Farmhouse (07-0032)	Setting	High	Permanent moderate adverse	Mitigation by design was not possible due to the need for the access road at this location.	Permanent moderate adverse	Permanent moderate adverse
Cross Lanes to Rokeby						
N/A						
Stephen Bank to Carkin Moor						
N/A						
A1(M) Junction 53 Scotch Corner						
N/A						

8.10 Monitoring

Construction

8.10.1 There will be a requirement to monitor the effectiveness of protection measures during construction at the following Cultural Heritage resources which lie within the Order Limits:

- The Countess Pillar (03-0006) and associated Alms Table (03-0007),
- Grade II listed Milestone East of Whinfell Park (03-0013) and
- Carkin Moor Roman fort (09-0001).

8.10.2 The measures which are to be put in place to monitor at these locations and to ensure that the Order Limits are adhered to are laid out in the EMP (Application Document 2.7).

Operation

8.10.3 There is no requirement to monitor Cultural Heritage resources during the operational phase.

8.11 References

A66 NTP Integrated Project Team (2021) Rokeby Old Rectory Significance Appraisal. Project Report.

ASUD (2019) Land at Kirkby Thore, An Archaeological Evaluation. ASUD. Project Report.

Bell, M. and Cool, H.E.M (2004) The Roman Cemetery at Brougham, Cumbria, Excavations 1966-67. Malet Street, Society for the Promotion of Roman Studies

Bidwell, P. and Hodgson, N. (2009) The Roman Army in Northern England. South Shields, Arbeia Society.

Brown, F. (2008) A66 (Package A) Road Improvement Scheme, Greta Bridge to Scotch Corner. Archaeological Post-Excavation Assessment. Oxford, Oxford Archaeology North. Project Report.

Casey, P.J. and Hoffman, B (1998) Rescue excavations in the Vicus of the fort at Greta Bridge, Co. Durham, 1972-4. Cambridge, Cambridge University OPress.

Catford, (n.d.) Disused Stations: Bowes. Available at: [redacted]

Cumbria County Council (n.d.) Turnpike Trusts. Available at: https://www.cumbria.gov.uk/archives/Online_catalogues/official/turnpike.asp

Cranfield Soil and Agrifood Institute (n.d.) Soilscapes map. Cranfield, Cranfield Soil and Agrifood Institute.

Eden Valley Railway Trust (2022) Eden Valley Railway. Available at: [redacted]

Ekwall, E. (1947) The concise Oxford dictionary of English place-names. Oxford, Oxford University Press.

Fell, D.W.
(2020) Contact, Concord and Conquest: Britons and Romans at Scotch Corner. Barnard Castle: Northern Archaeological Associates.

Fischer, T. (2019) The Army of the Roman Emperors: Archaeology and History. Oxford, Oxbow Books.

Haken (2021) Notes on Roman Roads potentially impacted by the A66 NTP project. Project Report.

Headland Archaeology Ltd (2010) Archaeological Monitoring of an extension to Hulands Quarry, County Durham: MAP2 Assessment. Edinburgh, Headland Archaeology Ltd. Project Report.

Hill (2009) The Junction of the Rivers Greta and Tees at Rokeby 1816 by Joseph Mallord William Turner. Catalogue entry May 2009

Historic England (n.d.) Bowes Castle, Bowes, County Durham. London, Historic England.

Historic England (n.d.) Egglestone Abbey Premonstratensian Monastery: inner precinct, monastic enclosures and Post Medieval house

Historic England (n.d.) Greta Bridge Roman Fort, Vicus and section of Roman Road. London, Historic England.

Historic England, (n.d.) Roman Milestone against west wall of Rokeby Park. London, Historic England.

Historic England, (n.d.) Platform with Roman Alters on Lawn west of Rokeby Park. London, Historic England.

Historic England, (n.d.) Remains of St Michael's Church, 50m north-west of Dairy Bridge, Rokeby. London, Historic England.

Historic England, (n.d.) Roman fort and prehistoric enclosed settlement 400m west of Carkin Moor Farm. London, Historic England.

Historic England, (n.d.) Two moated sites, the site of a dovecote and further associated features 120m north west and 180m north of The Old Hall. London, Historic England.

Historic England, (n.d.) Medieval settlement remains immediately south east of Hutton Hall. London, Historic England.

Historic England, (n.d.) Ravensworth motte and bailey castle, water defence features, park pale and shrunken Medieval village. London, Historic England.

Historic England, (n.d.) East Layton Hall. London, Historic England.

Historic England, (n.d.) Newsham – Richmondshire. London, Historic England.

Historic England (2015) Geoarchaeology. Using Earth Sciences to Understand the Archaeological Record. London, Historic England.

Hull Domesday Project (n.d.) Land of Count Alan. Available at: [redacted]

Huntley, J. P. (2002) Environmental archaeology: mesolithic to Roman period, in Past, present and future: the archaeology of Northern England, proceedings of a conference held in Durham in 1996. Durham: Architectural and Archaeological Society of Durham and Northumberland, 79-96. Research report.

Hutchinson, W. (1794) The History of the county of Cumberland and some place adjacent, from the earliest accounts to the present time. Vol.1 of 2. Carlisle, F. Jollie.

Margary, I. D. (1957) Roman Roads in Britain: II North of the Foss Way-Bristol Channel. London, Phoenix House.

McCarthy, M. R. (1995) Archaeological and environmental evidence for the Roman impact on vegetation near Carlisle, Cumbria. The Holocene, 5(4), 491–495.

Mills, A.D. (1991) Dictionary of English Place-Names. Oxford, Oxford University Press.

Moore (2021) A66 NTP Project – Milestone Society: interests.

My Wesleyan Methodists (n. d.) Bowes Wesleyan Chapel. North Riding, My Wesleyan Methodists.

North of England Civic Trust (n.d.) Heart of Teesdale Project Heritage Audit. Newcastle, North of England Civic Trust.

Northern Archaeological Associates (1996) An archaeological evaluation at Burns Cottage, Greta Bridge. Barnard Castle, Northern Archaeological Associates. Project Report.

Northern Archaeological Associates (2015) Carkin Moor Roman Fort to West Layton: Pipeline renewal. Barnard Castle, Northern Archaeological Associates. Project Report.

O'Sullivan, D. M. (1980) A reassessment of the early Christian' archaeology of Cumbria, Durham theses, Durham University. Available at: [redacted]

Oliver, W. (1944) The Story of Bowes Church. Barnard Castle: Teesdale Mercury.

Oxford Archaeology North (2013) A66 (Package A) Road Improvement Scheme, Greta Bridge to Scotch Corner Archaeological Archive Report. Oxford, Oxford Archaeology. Project Report.

Page, W. (1914) A History of the County of York North Riding: Volume 1. London: Victoria County History.

Parish of Penrith (n. d.) History of the Giants Grave at St Andrews Church. Available at: [redacted]

Petts, D., and Gerrard, C. (2006) Shared Visions: The North-East Regional Research Framework for the Historic Environment. Durham, Durham County Council.

Pevsner, N. (1967) The Buildings of England: Cumberland and Westmorland. London, Penguin Books.

Powell-Smith, A. (n.d.) Open Domesday. Available at: [redacted]

Preston, W. (1775) Account of opening one of the largest barrows on Sandford Moor, Westmoreland in a letter from Mr William Preston, dated Warcop Hall, Sept 5, 1766, to Bishop Lyttleton. Archaeologia, Vol 3, 273.

Quick, M. (2019) Railway passenger stations in Great Britain: a chronology (5th ed.). Market Drayton: Railway and Canal Historical Society.

Railton, M. D. (2012) The Druidical Judgement Seat: Archaeological Investigation of an Iron Age Enclosure on Brackenber Moor, Appleby-in-Westmorland, Cumbria. Transactions of the Cumberland & Westmorland Antiquarian & Archaeological Society, Vol. 12, 21-36.

Rivet, A.L.F. and Smith, C. (1979) The Place Names of Roman Britain. London, Batsford Ltd.

Robinson, W.R. (1833) Robinson's Guide to Richmond. Richmond: W.R. Robinson.

Rokeby Park (n.d.) Rokeby.

Rosevar, A. (2017) Turnpike Roads in England and Wales.

Roskams, S. and Whyman, M. (2005) Yorkshire Archaeological Research Framework: Resource Assessment. Swindon, English Heritage.

Scott, W. (1813) Rokeby. Edinburgh, Ballantyne and Co.

Strickland, J. & Cavanagh, N. (2010) Land Adjacent to Kemplay Roundabout, Penrith, Cumbria. North Pennines Archaeology Ltd.

Tate (n.d.) John Snell Cotman, On the Greta c.1805. Gallery Label

Tipping, R. (1997) Pollen analysis and the impact of Rome on native agriculture around Hadrian's Wall in Reconstructing Iron Age Societies: New approaches to the British Iron Age. Oxford: Oxbow Monographs 71, 239-47.

Williams, J.H. (1992) Excavations at Brougham Castle, 1987. Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society (TWAAS), 92(2), 105-122.

Winchester, A. (2000) The harvest of the hills: rural life in northern England and the Scottish Borders, 1400-1700. Keele, Keele University Press.

Young, A. (1770) A Six Months Tour through the North of England. Edinburgh: W.R. Strahan.

Zant, J. M. (2001) An Excavation at Brougham Castle. Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society, Vol. 1, 31-38

Zant, J.M and Clapperton, K. (2010) Whinfell Holme to Hackthorpe Pipeline, Penrith, Cumbria: Post-Excavation Assessment. Oxford Archaeology North. Project Report.

Historic map sources

Cumbria County Archive, Carlisle

Brampton Tithe Map - PR/60/25

Carleton Tithe Map - PR/76/254

Enclosure Map for Pentirth Urban District: Forest of Inglewood - QRE/1/135

Penrith Hugh Parkin's Estate at Skirsgill - DBS/6/1/315

Penrith Map Drawings (collection) - DX/2488/32

Penrith Tithe Map, Redemption and Altered Apportionment - DRC/8/150/1

Plan of the Turnpike Road from Penrith to Greta Bridge in Yorkshire - ST/3/72

Cumbria County Archive, Kendal

Appleby St Lawrence Tithe Map - WDRC/8/26

Appleby St Michael Tithe Map - WDRC/8/32/1

Brougham Tithe Map - WDRC/8/19

Church and Market Brough Tithe Map - WDRC/8/76

Church Brough Enclosure - WPR/23A/14/1/1

Colby Tithe Map - WDRC/8/41

Crackenthorpe Tithe Map - WDHH/143

Map of Crake Trees and Gill Foot - WDRIG/A/1296/5

Map of Westmorland Manors - WDX/1290

Market Brough Envlosure - WDX/753

Papers on Temple Sowerby Trust - WDHH/74

Sandford Tithe Map - WDRC/8/63

Skirsgill Estate - WDDF/Plans/36

Sockbridge and Yanworth and Eamnot Bridge Enclosure - WPR/93/14/1/1

Temple Sowerby Tithe Map - WDRC/8/68

Yanworth and Eamnot Bridge Tithe Map - WDRC/8/28/1 and WDRC/8/28/2

Durham County Archive, Durham
Boldron Tithe Appointment - CP/Bld/1/2

Boldron Tithe Plan - CP/Bld/1/1

Plan of Boldron in Moor - D/MOB/4/6

Plan of Bowes West Pasture - D/MOB/4/9

Plan of Ox Pasture, Bowes - D/MOB/4/8

Plan of Thornberry, Bowes - D/MOB/4/7

Provisional Order of the Inclosure Commissioners for England and Wales for the inclosure of Bowes Moor - D/MOB/4/18

Provisional Order of the Inclosure Commissioners for England and Wales for the inclosure of Bowes Moor - D/MOB/4/19

Staindrop to Greta Bridge turnpike road - Q/D/P/32

Supplementary inclosure award for lands at Bowe - D/MOB/4/5

North Yorkshire County Archive, North Allerton

East Layton Tithe Map - MIC/1796

Middleton Tyas Tithe Map - MIC1797

Newsham (Parish of Kirby Ravensowrth) Tithe Map - MIC1798

Ravensworth Tithe Map - MIC/1799

Ravensworth Kirby and Ravensworth Washton Tithe Map - MIC/1539

Ravensworth Kirby Tithe Map - MIC/1795

Rokeby House Ground Plan - MIC/1488

West Layton Tithe Map - MIC/1796

Landmark Solutions (Historical Map Data)
Historical County Series Maps, Ordnance Survey (1840-1996)