HS2

Phase 2a Generic Written Scheme of Investigation

Historic Environment Research and Delivery Strategy

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Note on terminology

Throughout this document the following terms are used:

Employer: This refers to HS2 Ltd.

Contractor: This refers to a company or organisation contracted by the *Employer* to deliver specific works.

Nominated Undertaker: This refers to the organisation or organisations that will be appointed by the Secretary of State to design, construct, operate and maintain High Speed Rail (West Midlands - Crewe). Unless otherwise stated this *Nominated Undertaker* for the purposes of this document is the *Employer*.

Project Manager: An individual who is assigned responsibility for accomplishing a specific unit of work and is ultimately accountable for project performance. The Project Manager is typically responsible for initiating, planning, implementing, controlling, and reporting status on a project.

1 Introduction

1.1 The Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy

1.1.1 This document forms the *Employer's* High Speed Two (HS2) Phase 2a Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (Phase 2a GWSI: HERDS), in accordance with the commitment set out in the Heritage Memorandum[1]. The Phase 2a GWSI: HERDS covers all aspects of the historic environment including built heritage, archaeology and the historic landscape.

1.1.2 The Phase 2a GWSI: HERDS establishes the objectives for historic environment works which are implemented through the technical standards and procedures set out in the Project Requirement Specification (PRS). The Phase 2a GWSI: HERDS sets out the project mechanisms for designing works, undertaking survey and evaluation, delivering investigations and mitigation, undertaking post excavation assessment, and archive deposition that will be adopted for the design and construction of Phase 2a of HS2, as well as the requirements for community engagement and skills, employment and education. It presents a clear statement of objectives, standards, and structure for the planning and implementation of historic environment works.

1.1.3 The Phase 2a GWSI: HERDS is substantially based on the Phase One GWSI: HERDS[2], however, it differs in a number of ways. It seeks to build on the experience of implementing the Phase One GWSI: HERDS, as well as to address the particular character and opportunities of the Phase 2a route. While this requires new Specific Objectives to be addressed, the Headline Objectives remain the same. It is therefore necessary to consider Phase 2a in its wider project context, as well as within the terms of the HS2 scheme itself.

1.1.4 The Phase One GWSI: HERDS was published in 2017 and is now being implemented through historic environment investigation ongoing along the Phase One route. The wider objectives of the Phase 2a GWSI: HERDS will require collaboration with Phase One (and, in time, Phase 2b) supply chain.

1.1.5 The Phase 2a GWSI: HERDS is the lead delivery document for all aspects of historic environment work associated with HS2 Phase 2a.

[1] High Speed Two Limited (HS2 Ltd), 2017a. Heritage Memorandum, Annex of the Environmental Minimum Requirements accompanying the High Speed Rail (West Midlands - Crewe) Act 2021. Available online at: https://www.gov.uk/government/publications/environmental-minimum-requirements-for-hs2-phase-2a.

[2] HS2 Ltd, 2017. HS2 Phase One Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/642655/hs2_phase_one_historic_environment_research_and_delivery_strategy.pdf.

1.1.6 The *Contractor* shall be responsible for the design and delivery of all required works within the framework provided by Phase 2a GWSI: HERDS, and the technical standards and procedures set out in the PRS.

1.2 Background

1.2.1 HS2 presents an unprecedented opportunity to explore our past through the country's largest ever linear infrastructure project. Connecting with the Phase One route running north from London, the Phase 2a route extends north-west from Lichfield to Crewe across the landscape of the north-west Midlands, crossing the country's east-west watershed as it does so. The nature of its design means that it tends to avoid topographic extremes and heavily built-up areas, and as a consequence, its route through Staffordshire into southern Cheshire is almost entirely rural in character.

1.2.2 The scheme presents a generational opportunity for significant knowledge creation and the testing of differing methodological approaches and techniques. Investigations arising from the HS2 historic environment investigation programme should be able to answer key questions about prehistory and history, the ways in which we study and investigate the past, and the ways in which we construct our understanding about the past. The route runs through a range of different geologies and topographies, and will encounter a diversity of archaeological, built heritage and historic landscape features that, with investigation, has the potential to further our understanding of the past.

1.2.3 The Phase 2a HS2 historic environment investigation programme needs to deliver clear benefits for stakeholders and the wider public, and communities along the route, in a cost-effective manner and within the confines of a construction programme. Delivering maximum knowledge and clear public benefit from a defined budget and within a defined time frame is a central tenet of the *Employer's* approach to the investigation of the historic environment along the route.

1.2.4 The *Employer* has identified the most appropriate way to fulfil the commitments set out in the Heritage Memorandum (refer to paragraph 1.5.16 for further information on this and the other Environmental Minimum Requirements) and to address the historic environment along the route is to develop a scheme-wide Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS). This establishes priorities for investigation and knowledge creation and forms a framework for decision making at all stages of the investigation process. This integrated objective-led approach will enable the *Employer* and *Contractor* to address the complexities and scale of the scheme while delivering real and substantial public benefit.

1.3 Key aspects

1.3.1 The Phase 2a GWSI: HERDS represents an evolution of existing and recent approaches to the design and delivery of historic environment works associated with major infrastructure projects. The Phase 2a GWSI: HERDS is focused on outcomes; it is being developed to ensure that the delivery of Phase 2a of HS2 provides real and substantive public benefits. In terms of the historic environment, these benefits and outcomes lie the fields of knowledge creation, engagement with people and the creation of a lasting archival and skills legacy.

1.3.2 At its heart, the Phase 2a GWSI: HERDS seeks to step away from an approach that merely records archaeological and other historic environment features because they are present within the footprint of a development; instead it seeks to define the purpose for such activities to ensure that all investigations provide tangible knowledge and other benefits.

1.3.3 The *Contractor* shall be cognisant of the following aspects and characteristics during the delivery of the Phase 2a GWSI: HERDS:

- **knowledge creation:** all investigatory work undertaken by the *Contractor* shall support defined objectives in terms of creating knowledge relating to archaeology and history;
- **collaboration**: the sheer scale of Phase 2a of HS2 and the number of contractor organisations delivering the historic environment investigation programme means that a collaborative approach is required. Although an individual contractor's activities may be confined to a particular works package, the *Contractor* must recognise that all such activities form part of a wider programme of research, engagement, and legacy building. The *Contractor* cannot work in isolation and all activities shall be designed and delivered in a collaborative collegiate, manner;
- **information sharing**: the expansive linear nature of the HS2 Phase 2a works and the timeframe under which works will be undertaken makes it essential that all information generated by the *Contractor* relating to historic environment activities is rapidly available to the *Employer* and other contractors involved in the design and delivery of work programmes along the route. A culture of sharing information and knowledge will therefore be required. The *Contractor* will be responsible for the submission of required deliverables that facilitates their sharing;
- **innovation**: the *Contractor* shall seek to develop new techniques, new ways of thinking and new approaches to all aspects of historic environment works. Wider engagement with the public, academia, and other audiences shall also be sought by the *Contractor*, within the frameworks of the community engagement and skills, employment and education works information. A central aim of the approach is to develop new skills and new ways of working that can enhance

delivery of historic environment works for HS2 Phase 2a and other major infrastructure projects across the UK;

- **not just excavation**: Phase 2a GWSI: HERDS is about far more than the excavation, recording and analysis of archaeological sites or the recording of buildings and landscapes. Its Headline Objectives and its underpinning ethos places considerable value and emphasis on developing skills, engaging with communities and inspiring future generations. While knowledge creation is a central tenet of the Phase 2a GWSI: HERDS, these other areas carry very considerable emphasis and weight and must also be addressed by the *Contractor*;
- **prioritisation by outcome**: clearly, as with all major schemes involving extensive land take, there will be unexpected discoveries. The *Contractor's* response to such situations will be based on the objectives and priorities of Phase 2a GWSI: HERDS. If the investigation of the remains can contribute to the knowledge creation objectives being pursued at the location, or indeed other objectives, then the *Contractor* will design works to address those objectives. Where this is not the case then the need for any further investigation will be reviewed by the *Contractor* and *Employer* (potentially with input from other stakeholders) to determine whether it leads to new objectives that could make a meaningful contribution.

1.4 Scope and limitations of the Phase 2a GWSI: HERDS

1.4.1 The Phase 2a GWSI: HERDS provides the strategic framework for the design and delivery of all historic environment works associated with Phase 2a of HS2 by the *Contractor*.

1.4.2 As new knowledge emerges from the historic environment investigation programme, the *Contractor* will be required to submit regular updates to augment and develop the Routewide Heritage Approach (these deliverables are set out in Section 9) and to collaborate with the *Employer* and contribute to the development and/or revision of the Specific Objectives, as the programme of works progress.

1.4.3 This means that objectives and priorities may change as the project progresses; the inclusion of an objective in this document does not mean that it will remain as an objective for the Phase 2a GWSI: HERDS throughout the lifetime of the project.

1.5 Legislation and policy background

The High Speed Rail (West Midlands - Crewe) Act

1.5.1 The High Speed Rail (West Midlands - Crewe) Bill was introduced to the House of Commons on 17 July 2017. The Bill was accompanied by an Environmental Statement, which presents the outcomes of the studies carried out as part of the Environmental Impact Assessment (EIA).

1.5.2 The Bill secured Royal Assent on 11 February 2021 and is now the High Speed Rail (West Midlands - Crewe) Act 2021[3]. The Act disapplies various legislative provisions (see Clauses to the Act: 21-33). Matters relating to listed buildings are set out in Schedule 18. Matters relating to Scheduled Ancient Monuments and burial grounds are set out in Schedules 19 and 20, respectively. A non-technical explanation of the arrangements contained within these schedules is set out below, along with further information on the alternative provisions that have been made where legislation has been disapplied.

Schedule 18: Listed Buildings

1.5.3 Schedule 18 of the Act modifies the application of the Planning (Listed Buildings and Conservation Areas) Act 1990. It disapplies the listed building consents process in relation to those listed buildings to be affected by Phase 2a works and for the works specified in column 3 of Table 1 of Schedule 18 to the Act. For those listed buildings specified in Table 1 of Schedule 18 to the Act, the Secretary of State requires the *Employer* to enter into Heritage Agreements with the Local Planning Authority (LPA), and, where relevant, Historic England (HE) (The Historic Buildings and Monuments Commission for England (The Commission)).

1.5.4 These agreements provide a similar level of information as is required for Listed Building Consent. In the language of an Agreement, the works are termed 'the works details'. Where appropriate it will set out how the works in the works specification will be undertaken. Where appropriate, the Agreement will detail what construction works are specifically required on or at the listed building to construct HS2. It will detail the investigative strategies and archaeological building recording methods that are required before and during construction, together with any necessary protection and monitoring measures. The *Employer* will liaise with the LPA and where necessary, HE, during the preparation of both the methodology for the construction works and the specification for historic building recording works. It is a requirement of a Heritage Agreement, that a heritage method statement for the works specified within the Agreement will be submitted to the LPA (and where necessary, HE) for their approval.

Table 1: Schedule 18, Listed Buildings

Paragraph number	Notes
1	Disapplies certain sections of the Planning (Listed Buildings and Conservation Areas) Act 1990 ('the 1990 Act') in respect of Phase 2a works for the demolition, alteration or extension of those listed buildings specified in Table 1 of Schedule 18. It is proposed (in the Heritage Memorandum) that for those buildings identified in Table 1 of Schedule 18 that an agreement will be made with the local planning authority (and where relevant The Commission) in respect of HS2 Phase 2a works which would be of a type that would normally require listed building consent. The heritage agreement will ensure that appropriate mitigation and safeguarding measures are in place.

[3] High Speed Rail (West Midlands - Crewe) Act 2021, Available online at: https://www.legislation.gov.uk/ukpga/2021/2/contents.

Paragraph number	Notes
2	Disapplies certain sections of the Planning (Listed Buildings and Conservation Areas) Act 1990 ('the 1990 Act') in respect of Phase 2a works for those buildings specified in Table 2 of Schedule 18 for works to be carried out for noise mitigation purposes. It is proposed (in the Heritage Memorandum) that an agreement will be made with the local planning authority (and where relevant The Commission) regarding the site specific arrangements for listed buildings identified in Table 2 in respect of HS2 Phase 2a works which would be of a type that would normally require listed building consent. The heritage agreement will ensure that appropriate mitigation and safeguarding measures are in place.
3	Disapplies Section 59 of the 1990 Act, damage to listed buildings, in respect of works authorised by the Act.
6	Provides for anyone authorised by The Commission or the LPA to enter land to inspect, or observe the carrying out of works as appropriate. However, this right is not to be exercised if the *Nominated Undertaker* considers that it is not safe to do so, and any person exercising the right will have to comply with directions from the *Nominated Undertake*r in respect of compliance with health and safety requirements.
7 and 8	Requires prior notification to The Commission of the demolition of a listed building, works should not commence until after a period of eight weeks has expired following notification and that during that period opportunity should be given for the recording of the building.

Schedule 19: Ancient Monuments

1.5.5 Schedule 19 of the Act concerns changes to the legislation relating to ancient monuments, namely the Ancient Monuments and Archaeological Areas Act 1979. Heritage controls in the 1979 Act have been disapplied to allow the construction of Phase 2a. The Act removes the requirement for consent for works or for damage to specific Scheduled Monuments and allows powers of access to undertake HS2 construction works authorised by the Act. Instead of the usual requirement to seek Scheduled Monument Consent from the Department of Digital, Culture, Media and Sport (DCMS), an alternative regime would apply. However, there are no scheduled monuments within the footprint of the scheme that will be physically affected.

Schedule 20: Burial Grounds

1.5.6 Schedule 20 to the Act provides a regime for the removal of human remains and related funerary monuments.

1.5.7 Schedule 20 will disapply existing legislation in relation to any human remains and burial monuments. The Act will disapply the various legislative provisions to enable specified construction activities to be carried out. The disapplication is conditional on the removal and re-interment or cremation of those remains in accordance with a bespoke regime set out in Schedule 20 to the Act, which is designed to ensure that any such remains and monuments are dealt with in an appropriate manner. Where burial has occurred over 100 years ago, the nature and extent of archaeological investigation of burial grounds will be determined in discussion with Historic England, the relevant local authority archaeological officer and, where applicable, the

appropriate religious authority (e.g. the Archbishops' Council of the Church of England) and Commonwealth War Graves Commission.

1.5.8 The *Employer* has prepared a project specific '2a Burial Grounds, Human Remains and Monuments Procedure' to implement the legal requirements of the Act.

Other legislation

1.5.9 Unless a piece of legislation is disapplied or modified by the High Speed Rail (West Midlands - Crewe) Act it will continue to apply as normal to the design and construction of HS2 Phase 2a (for example, the Treasure Act 1996 remains in place).

Provisions outside of the High Speed Rail (West Midlands - Crewe) Act

1.5.10 In addition to the controls provided for in the Act itself, there are a number of other mechanisms that will support the control of construction impacts on the historic environment.

Environmental Minimum Requirements

1.5.11 The overall framework within which investigation will be undertaken is set out in the Environmental Minimum Requirements (EMRs) for HS2 Phase 2a. The EMRs set out the environmental and sustainability commitments that the *Employer* and *Contractor* will be required to comply with in constructing the scheme. This includes mechanisms by which the *Employer* and *Contractor* will engage with communities and other key stakeholders. It also specifies how environmental and sustainability management measures designed to protect communities and the environment during detailed should be implemented during design development and construction.

1.5.12 The EMRs[4] comprise:

- General Principles: setting out the approach on particular aspects of the Phase 2a route;
- Planning Memorandum;
- Heritage Memorandum;
- Environmental Memorandum;
- Code of Construction Practice (CoCP); and
- Undertakings and Assurances.

Undertakings and Assurances

1.5.13 Undertakings and Assurances are commitments made in relation to the Act.

[4] High Speed Two Limited (HS2 Ltd), 2017. Environmental Minimum Requirements accompanying the High Speed Rail (West Midlands - Crewe) Act 2021. Available online at: https://www.gov.uk/government/publications/environmental-minimum-requirements-for-hs2-phase-2a.

1.5.14 The term 'undertaking' is used to describe either a promise given to Parliament (a breach of which would be addressed through recourse to Parliament) or, a bilateral or multilateral commitment which has effect as a legally binding contract (enforceable by the courts). This will include commitments expressed as formal agreements and undertakings given in consideration of withdrawal of a petition that have effect as a legal contract.

1.5.15 The term 'assurance' is used to describe any other unilateral commitment given directly to Petitioners or affected parties which is not a legally binding contract enforceable by the courts, but is made binding on the *Nominated Undertaker* by being included on the register. Enforcement is through the Secretary of State, who is answerable to Parliament for securing compliance.

Heritage Memorandum

1.5.16 The Heritage Memorandum presents the Secretary of State's commitment to the historic environment (including heritage assets and their setting). The Memorandum sets out how the historic environment will be addressed during the design and construction of Phase 2a of HS2 and includes reference to the production of a GWSI: HERDS. The key provisions of the Heritage Memorandum in relation to historic environment works are set out below.

Table 2: Heritage Memorandum

Paragraph number	Notes
4.5.1	The *Nominated Undertaker* will develop an integrated programme to deliver the heritage investigation and recording works outlined in the Environmental Statement and as developed during the detailed design process. The investigation and recording works will seek to advance our understanding of the past. The programme will set out the key stages of investigation and recording, for example: detailed desk-based assessment; Field evaluation (to inform location specific investigation and recording); Location specific investigation and recording; and Archaeological and Built Heritage post-excavation (assessment, analysis, reporting and archiving).
4.5.2	The heritage investigation programme will be fully integrated with the overall construction programme and that integration will be continuously reviewed to ensure that appropriate time is allowed for investigation works without undue impact on the construction timetable. The management of construction is set out in the CoCP.
4.6.2	Before enabling works and construction works begin, the archaeological research undertaken for the Environmental Statement will be reviewed. Where required, for the purposes of delivering investigation and recording, additional detailed desk-based assessment and/or field evaluation will be carried out and this will inform the development of location specific investigation and recording works (a Location Specific Written Scheme of Investigation (LS-WSI)). These documents will be developed in consultation with Historic England and the relevant local authority and will follow the objectives set out in the GWSI: HERDS.
4.6.3	Works may include the protection and preservation of assets in-situ, investigation and recording in advance of enabling and construction works, and/or the implementation of investigation and recording during enabling and construction works. It may be preferable in some instances to preserve heritage assets where they are found, which may be achieved through design.

Paragraph number	Notes
4.6.4	The LS-WSIs will include individual project plans for specific activities and a programme for heritage work. Where appropriate, the programme will show time periods and sequence of activities as an integrated part of the enabling and construction works programme.
4.6.5	Once heritage investigations are complete, then the records generated and the artefacts and samples collected will be assessed and analysed. The results of that work will be published via a range of media and approaches to this work will be developed with Historic England and the relevant local authority. The *Nominated Undertaker* recognises the need to deposit the HS2 archaeological and built heritage archive appropriately and is committed to working with Historic England and local authorities to identify suitable repository/ies to enable the deposition of the artefacts and records generated by the HS2 heritage works. The *Nominated Undertaker* will deposit the HS2 historic environment archive in an appropriate repository or repositories.

Information Papers

1.5.17 In addition, a series of Information Papers[5] provide important information on the approaches which define the Act and Environmental Statement documentation. The following Information Papers provide for Archaeology and Burial Grounds:

- Information Paper E24 Archaeology[6]; and
- Information Paper E25 Burial Grounds[7].

[5] Information papers provide important information to those outside the project and also provide a non-technical, accessible and user-friendly guide to HS2 policies and strategies, which define the deposited Bill and Environmental Statement documentation.
[6] HS2 Ltd, 2017. Information Paper E24: Archaeology. Available online at: https://www.gov.uk/government/publications/environment-hs2-phase-2a-information-papers.
[7] HS2 Ltd, 2017. Information Paper E25: Burial Grounds. Available online at: https://www.gov.uk/government/publications/environment-hs2-phase-2a-information-papers.

2 Structure of the Phase 2a GWSI: HERDS

2.1 Summary

2.1.1 The following table provides an overview of the elements of the 2a GWSI: HERDS.

Table 3: Key elements of HERDS

Key element	Description	Reference
Ethos and Principles	These set out the *Employer's* underlying drivers and principles that have guided the development of the Phase 2a GWSI: HERDS and will continue to guide its development and implementation.	Section 3
Headline Objectives	These seven key overarching objectives developed by the *Employer* form the building blocks of the Phase 2a GWSI: HERDS and provide a clear sense of direction and purpose for the delivery of the strategy by the *Contractor*. The Headline Objectives cover the full range of issues addressed by Phase 2a GWSI: HERDS including knowledge creation, archive and legacy, community involvement and budget and programme.	Section 4
Specific Objectives	These form the core of the Phase 2a GWSI: HERDS. They have been developed by the *Employer* and respond to the Headline Objectives and work with the strategies, specifications, and procedures to guide the *Contractor* in the development of Location Specific Written Schemes of Investigation (LS-WSI). The Specific Objectives address knowledge creation, skills, employment and education, and community engagement. They have been developed to provide the *Contractor* with sufficient detail to guide implementation without preventing innovation and creativity.	Section 8
Technical Standards and Procedures	To ensure consistency and quality across all works, the *Employer* has developed a suite of technical standards and procedures (known as the HS2 Phase 2a Project Requirement Specification) to be implemented by the *Contractor* in the execution of the works.	Section 9
Research Agenda Review	The *Employer* has reviewed existing regional research assessments during the development of Phase 2a GWSI: HERDS to identify potential themes and areas for investigation. The *Employer* will update these as and when the relevant regional and national research assessments are updated.	Appendix 2
Route Resource Assessment	The *Employer* has undertaken an initial assessment of the known resource within and around the route corridor to inform the development of the Specific Objectives. As the *Contractor* completes their required deliverables (e.g. LS-WSIs, Geographic Information Systems (GIS) and other reporting) this information will be fed into the Routewide Heritage Approach, and the *Contractor* will propose updates to the Route Resource Assessment. The purpose of this is to ensure that there is regular feedback to enable informed decision making as the project progresses and the refinement of the Route Resource Assessment to reflect the increase in knowledge and understanding.	Section 7

Key element	Description	Reference
Routewide Heritage Approach (RHA)	The RHA is a GIS layer showing the locations where specific heritage works need to be carried out in order to address Specific Objectives, and the locations which do not have the potential to address Specific Objectives. The *Contractor* will be required to own and maintain the RHA throughout the programme of heritage work. It should assist in planning and managing heritage works, with surveys carried out in areas of No Recognised Archaeology (NRA) and investigation and mitigation carried out in Recognised Archaeological Zones (RAZs).	Section 9.7
Location Specific Written Schemes of Investigation (LS-WSI)	These documents will be prepared by the *Contractor* and will provide a specification for historic environment works within each individual land package where construction or other scheme-related works are to be undertaken. The *Contractor* will produce LS-WSIs for areas of land that will largely be defined to meet construction needs. Each LS-WSI will contain project plans which will detail specific methodologies to be employed in the investigations and link the LS-WSI works to the Specific Objectives. The *Contractor* is required to record GIS information for each project plan implemented as part of an LS-WSI and provide it to the *Employer*.	Section 9.8 Appendix 5

3 Ethos and Principles

3.1.1 HS2 is a project of national standing and is promoted by government to address major economic, social, and long-term environmental issues in the UK. Its delivery requires innovation and a clear focus on achieving the stated aim of the project to be a catalyst for growth. To achieve its stated aims it must achieve a balance between social, economic, and environmental outcomes and must respond to the communities it serves and passes through.

3.2 Ethos

3.2.1 In this broad context all activities undertaken by the *Contractor* in relation to the historic environment along the route will:

- deliver the commitments set out in the High Speed Rail (West Midlands – Crewe) Act, Environmental Minimum Requirements, notably the Heritage Memorandum;
- engage with and involve local communities around the route;
- create knowledge about our shared past that delivers public understanding of that past;
- ensure that the costs/effort associated with delivery are proportionate to the public value of the historic environment resource;
- be innovative and challenging in nature, helping refine and develop new techniques and philosophies in the historic environment sector;
- provide permanent physical and digital archival resources as well as temporary outputs which address the needs of a broad range of audiences;
- provide employment and training opportunities to help develop a skilled workforce;
- establish new benchmarks for quality, innovation and engagement;
- be an exemplar for future major infrastructure projects in the UK and internationally; and
- be delivered on time and within the scheme budget.

3.3 Principles

3.3.1 Given the importance of Phase 2a of HS2 and the resources that will be required regarding the historic environment, it is imperative that it delivers demonstrable public benefit and value. To achieve this the works will focus on the following principles.

Creating knowledge, not information

3.3.2 Investigatory works will be aimed at answering questions about the past, about how we study the past and about how we should address the past in the future. When developing LS-WSIs the works will prioritise specific knowledge creation objectives

rather than simply recording buildings, archaeological remains and landscapes for the sake of it[8].

3.3.3 All historic environment practice and research is underpinned by a theoretical basis of some form. There have been many developments, particularly in archaeological theory, over the last 20 years that have not been fully explored within the context of professional practice, particularly on large infrastructure projects. There is a real need for innovation associated with exploring theory as to how we study the past in the field as well as addressing practical and data-driven/high-tech techniques.

Involving people

3.3.4 Delivering government objectives for HS2 will require a broadening of engagement to a range of audiences, such as local communities (including traditionally uninterested audiences); national, regional, and local amenity societies; academic institutions; and professional practitioners. Involving people is also about including all layers of professional practitioners, and others instrumental in delivering the works in decision-making around what is addressed, how questions are answered in the field, and how all aspects of the work are delivered. While involvement and decision making will be structured and accountable, this will not prevent active discussion and debate around the delivery of work packages and activities.

Establishing a lasting legacy

3.3.5 The creation of a valuable project legacy and a physical and digital archive is an integral part of the lasting legacy of the programme of historic environment programme. Creating this archival legacy will require a consistent data-driven approach to the production, management, and delivery of archival information and requires the material to be structured such that it can be efficiently shared and reused, in a practical and user-friendly manner. Beyond the archive, there is also a need to understand the legacy of the project in terms of, for example, the audiences it inspires, the jobs created, and skills developed in the sector. The legacy needs to be more than boxes of 'things'; pieces of paper and megabytes of data if it is going to have demonstrable public value.

[8] Examples of current or recent research projects, the questions and themes arising from which may contribute to the strategy include:

- The English Landscapes and Identities project (https://englaid.wordpress.com) which aims to examine long-term settlement change from the first nucleated settlements of the Middle Bronze Age through to emerging medieval landscapes at the time of the Domesday Survey;
- The rural settlement of Roman Britain project (http://www.reading.ac.uk/archaeology/research/roman-rural-settlement) which is examining themes of settlement regionality, change in settlement forms and frequency over time, the consumption of material culture and the economic and social context of rural settlement; and,
- The social context of prehistoric non-ferrous metalworking in Britain project (http://archaeologydataservice.ac.uk/archives/view/social_lt_2017/index.cfm) which aims to understand the social significance of metalworking across regions and across time through an examination of the context of metalworking activities.
- Regional research frameworks relevant to the HS2 Phase 2a route comprise the West Midlands Regional Research Framework (https://archaeologydataservice.ac.uk/archives/view/wmrrf_he_2016/) and the North West Regional Research Framework (https://archaeologynorthwest.wordpress.com/2018/04/).

4 Headline Objectives

4.1 Introduction

4.1.1 The Headline Objectives have been established by the *Employer* and are the overarching objectives of the Phase 2a GWSI: HERDS. They form the building blocks of the strategy and support the communication of the aims of the Phase 2a GWSI: HERDS. From these Headline Objectives, more detailed, Specific Objectives have been established (see Section 8) alongside a process for specifying and delivering heritage works (see Section 9).

4.1.2 The *Contractor* shall comply with the Headline Objectives throughout the design, implementation, and delivery of all aspects of the historic environment works.

4.1.3 The Headline Objectives cover the full range of issues addressed by Phase 2a GWSI: HERDS including knowledge creation, archive and legacy, community involvement, and budget and programme. They are relatively broad in nature but at the same time, they provide a clear sense of direction and purpose for Phase 2a GWSI: HERDS.

4.1.4 Each objective links to one of the principles set out in Section 3.3; knowledge, legacy, and involvement.

4.2 Objectives

Headline Objective 01: Works will address key current and emerging research questions in British archaeology and history

Principles: Knowledge; legacy

4.2.1 Knowledge creation is a central tenet of the *Employer's* approach to the resourcing and delivery of Phase 2a GWSI: HERDS. It is therefore essential that the public benefit of the programme is realised by contributing to and exploring key research themes in British archaeology and history. The scale of the scheme and its orientation as a corridor across broad regional topographies and geologies offers the opportunity to explore patterns in the development of the historic environment and cultural change across both wide geographical areas and significant timescales.

4.2.2 To realise these benefits, and to reduce investment in limited value works, it is essential that investigations are designed to focus on Specific Objectives that can be addressed in an integrated manner along the route. Recognising research potential within specific landscape, historical, architectural or archaeological contexts is, therefore, key to contributing to a targeted strategy focusing upon advancing understanding, rather than perpetuating existing knowledge through recording heritage assets that may have little research value.

Headline Objective 02: Delivery of the works will inspire the next generation of historic environment professionals and stimulate the development of skills in the sector, leaving a legacy of trained professionals and high quality, sustainable training practice

Principles: Legacy; involvement

4.2.3 Over the last ten years there has been a decline in numbers of practising historic environment professionals in the UK due to the global recession and reduced uptake of university places (particularly in archaeology). The reduction in numbers is an issue for the delivery of archaeological and other historic environment projects across the UK, particularly where these relate to major infrastructure schemes. In this environment, the delivery of HS2 historic environment work offers the potential to create new jobs in the sector, attracting emerging graduates and inspiring people to move into the profession.

4.2.4 Given the potential public benefit that could be achieved by delivering this objective, the *Employer* has determined that the works will contribute to the development of capacity in the sector.

Headline Objective 03: A highly accessible and outstanding archival legacy will be developed and actively promoted

Principles: Knowledge; legacy

4.2.5 The challenges of managing physical and digital archives are well known, with particular pressures on museum storage space for deposited artefacts and the constant advancement in technology and software requiring continual training and management of digital archives to ensure they remain accessible. However, despite these challenges, there exists an exciting opportunity to make the HS2 historic environment archive more interesting, accessible and purposeful for both lay and professional users.

4.2.6 The *Employer* will therefore seek to ensure that a highly accessible archive that is usable, relevant and retains an ongoing purpose and knowledge value is delivered. The development of the archive, in digital form, will commence early in the delivery process to enable early use by a range of audiences. Once established, awareness of the archive will be raised and information on ways to use them for research, display, and interpretation will be readily available.

Headline Objective 04: New and existing methods of historic environment investigation and practice will be tested and developed and the results used to inform works along the route and beyond

Principles: Knowledge; legacy

4.2.7 HS2 provides the opportunity to assess and develop existing techniques and strategies for historic environment investigation, including digital by default

recording, archaeological prospection, built heritage recording and landscape analysis. It will be possible to build upon previous assessments of prospection techniques within commercially-led archaeology for example, the evaluation of archaeological decision making processes and sampling strategies (Hey and Lacey 2001) and to test the ability of existing methods to answer specific research objectives. An example of methods and strategies tailored to specific research objectives can be found in the Heathrow Terminal 5 excavations (Framework Archaeology 2010).

4.2.8 The *Employer* seeks the implementation of new and innovative sampling strategies and prospection techniques that can be tested for their effectiveness in detecting archaeological remains, their form and extent of preservation. Potential exists, for example, for the application and testing of new techniques in geophysical survey and remote sensing technologies, and for testing and developing 3D scanning/ photogrammetric/remote sensing techniques relating to the recording and analysis of standing buildings and existing landscapes.

4.2.9 Examples of previous research-led investigations include the 'Where Rivers Meet' project, which used innovative geophysical technologies (including Ground Penetrating Radar) to examine the sub-surface form and extent of prehistoric ritual monuments on the gravels of the River Trent, followed by a programme of ground truthing (Watters 2006a; Watters 2006b).

Headline Objective 05: Local communities along the route and a wider audience of lay, professional and academic practitioners will be engaged and involved with the delivery of the historic environment works

Principles: Involvement; legacy; knowledge

4.2.10 Establishing and sustaining a collaborative approach to discovering, researching, and interpreting the historic environment along the route of HS2 is a central tenet of the Phase 2a GWSI: HERDS. This collaboration seeks to go beyond the confines of the *Employer's* relationships with the *Contractors* and encompass relationships with communities along the route and wider lay, professional and academic bodies. The Phase 2a GWSI: HERDS has been developed with input from a range of professional, academic, and lay audiences. This collaborative engagement will continue through the delivery of the Phase 2a GWSI: HERDS.

4.2.11 To achieve this objective, routes to collaboration and engagement will be developed at an early stage, by the *Contractor* in discussion with the *Employer*, as part of the wider community engagement strategy.

Headline Objective 06: A diverse range of quality outputs will be delivered across the lifetime of the project. These will address the needs of a broad range of audiences and set new standards for publication and engagement.

Principles: Involvement; legacy

4.2.12 Typically, historic environment works for major infrastructure schemes result in a limited range of outputs. These generally include a physical archive, digital archive, monograph type publication, lay reader type publication and perhaps a temporary exhibition. These outputs tend to emerge at the end of the project following the post-investigation assessment and analysis periods.

4.2.13 The *Employer* seeks to take a different approach to the outputs from the Phase 2a works. The Phase 2a GWSI: HERDS needs to engage a broad range of audiences with the historic environment works along the route. The outputs from the historic environment programme are central to this engagement.

4.2.14 The *Contractor* will be required to design and deliver a diverse range of quality outputs throughout the lifetime of the project, not just after in-field investigations have completed. Outputs could include:

- television and online shows and programmes;
- performance and art work exploring aspects of the process;
- targeted community and national events;
- primary and secondary school projects and materials aimed at humanities and science, technology, engineering and mathematics (STEM) agendas;
- establishment of new research networks;
- strategy-based website/social media outlets throughout the lifetime of the project;
- digital interactive products to support engagement with digital savvy audiences;
- specifically developed outreach, research and engagement projects to meet the needs of hard-to-reach communities and individuals including disadvantaged populations, economically challenged areas and 'inner city' audiences;
- temporary and/or permanent fixed/travelling exhibitions drawing on the physical material and interpretation of the investigations;
- a range of location specific technical reports relating to work activities, published digitally;
- range of route-wide technical reports relating to work activities published digitally; and
- stimulating and intellectually challenging synthetic publications that provide material for academic and lay audiences, published in a mixture of hard copy and digital forms.

Headline Objective 07: All historic environment activities will be delivered within defined cost and programme parameters and demonstrable public benefit will be achieved through the investment in these activities

Principles: Legacy

4.2.15 Programme and resourcing are critical factors for the *Employer*, consequently the *Contractor* shall design and deliver the historic environment programme within clear programme and budget parameters, and this shall be set out in the RHA and LS-WSIs.

5 Historic environment community engagement approach

5.1 Introduction

5.1.1 This section sets out the *Employer's* approach for community engagement to be delivered as part of the Phase 2a historic environment works. It describes the requirements of the *Employer* and explains how these requirements help to deliver wider objectives for community engagement on the project. The section goes on to provide the context for and scope of the types of activities that the *Contractor* could deliver, the potential benefits of this work and how those benefits should be measured. The approach to historic environment community engagement is linked to the Headline Objectives (see Section 4) and Specific Objectives (see Section 8).

5.2 Requirements

5.2.1 All work designed by the *Contractor* shall be in compliance with the Phase 2a HS2 Community Engagement Strategy. The *Contractor* shall define methods for engagement of a range of communities (see paragraph 5.4.2 below) in the *Contractor's* Community Engagement Plan.

5.2.2 The *Contractor* shall keep Project Plans, LS-WSIs and the Community Engagement Plan consistent.

5.2.3 The Project Plans and LS-WSIs shall consider how audiences – local communities, lay and professional interest groups and the academic community – will engage in historic environment works from project planning through investigation and fieldwork to analysis, presentation, and publication.

5.2.4 The *Contractor* shall set out a clear approach for evaluating all historic environment related community engagement activities within the *Contractors* Community Engagement Plan and at Project Plan level in relation to individual activities.

5.2.5 The *Contractor* shall ensure that historic environment community engagement activities are identified in Project Plans and LS-WSIs and also reported to the *Project Manager* each quarter.

5.2.6 The *Contractor* shall work with both the *Employers* and the *Contractors* community engagement teams in order to consider additional measurables and deliver reporting on the results of community engagement activities.

5.3 The Employers approach to community engagement

5.3.1 The Community Engagement Strategy[9] sets out how community engagement will be managed during the planning, building and operation of HS2 Phase 2a. It acknowledges that the scheme will have a significant impact on the communities living along the route.

5.3.2 The *Employer* is committed to establishing an ethos through the Phase 2a GWSI: HERDS that will ensure that community engagement is fully integrated with historic environment works for HS2 Phase 2a and helps to deliver a lasting legacy. The *Employer* encourages the *Contractor* to consider how communities can be part of the process of delivery of historic environment work and decision making within that process. The *Employer* wishes the *Contractor* to demonstrate that community contributions are visible and that they have contributed to new thinking about the historic environment.

5.3.3 The *Employer* expects the *Contractor* to invest its time, people, skills and equipment in the local community through a Local Community Investment Plan in accordance with detailed guidance provided by HS2 Ltd[10]. Historic environment community engagement provides an opportunity for supporting *Contractor* delivery of this corporate social responsibility activity. There is also potential for *Contractors* to fund local projects and activities, provided there's no conflict with HS2 Ltds route-wide community funds[11].

5.3.4 Working with the *Employers* community relations team will ensure a consistent approach to local community engagement and will also aid in facilitating historic environment project involvement and project communication. There are a number of good practice examples of delivering public benefit that can offer a benchmark and reference point from which to shape and translate the unique opportunity for wide reaching and meaningful community involvement that HS2 offers through all stages of heritage works. The CIfA website and Public Benefit Information Sheet provides examples[12]. Examples from HS2 Phase One heritage works include:

- Contractors piloted engagement activities around Euston, London, prior to commencing their mitigation works. Pilot projects included volunteers digitising St James's burial records; a gravestone recording project and recording the setting of heritage assets around Euston through a series of walks. Evaluation of the pilot projects led to better understanding of how to deliver engagement activities at this complex urban site.

[9] HS2 Ltd (2021), Respecting people, Respecting places. HS2 Community Engagement Strategy. Available online at: https://www.gov.uk/government/publications/hs2-ltds-community-engagement-strategy.
[10] HS2 Ltd Community Engagement Framework Phase 2a – West Midlands to Crewe.
[11] Phase 2a Information Paper C11: The Community and Environment Fund and Business and Local Economy Fund (Phase 2a Allocation).
[12] Chartered Institute for Archaeologists (CIfA), https://www.archaeologists.net/profession/publicbenefit.

- At old St Mary's Church site in Stoke Mandeville, public site tours, displays of detailed historical documentary research and surveys carried out by heritage contractors, and a pop-up field museum formed part of two public engagement days to share the results of ongoing work. Feedback was overwhelmingly positive, visitors pleased they had the opportunity to learn more about the investigations.
- Public engagement sessions were undertaken in partnership with Birmingham Museums Trust at the Think Tank Museum and the Coffin Works in order to share the findings and specialist knowledge of archaeologists and osteologists working at the site of the former Park Street burial ground.
- Contractors, HS2 community engagement and historic environment teams, worked with local partners to deliver three Heritage Open Day events at Euston, Curzon Street (Birmingham), old St Mary's Church site (Stoke Mandeville). A range of activities included walking tours, talks, and the opportunity to talk learn about the work of archaeological specialists and take part in an HS2 oral history recording project.
- A series of historic environment public webinars were broadcast for the Festival of Archaeology and Heritage Open Days, sharing results of investigations along Phase One and introducing the archaeology of Phase 2a.

5.4 Scope of community engagement for the historic environment

5.4.1 Local community engagement and participation can take a variety of forms, including activities grounded in historic environment practice itself (investigations and research), as well as those which engage people in other ways to appreciate and enjoy their historic environment (community walks, festivals and oral histories). The outputs of this work could be expressed through many media, for example film, music, poetry, art, performing arts, publications, online webpages, photographs, and social media.

5.4.2 This work will include local communities, lay and professional interest groups and the academic community. Potential groupings in this context include:

- Local communities:
  - communities living along and near to the Phase 2a route;
  - general/interested public;
  - targeted groups (e.g. youth, rehabilitation);
  - project community (building/working on scheme); and
  - national and local media.

- Lay and professional interest groups:
  - specialist societies and voluntary groups;

- local authority heritage officers (e.g. archaeologists, Historic Environment Record (HER) officers, conservation officers);
- community archaeologists;
- museums' archaeologists and curators;
- librarians and archivists;
- tourism specialists;
- professional heritage specialists (e.g. scientists, osteoarchaeologists, periods specialists, conservators, Archaeological Data Services (ADS)[13], Environmental, Geoservices);
- professional bodies and other sector organisations (e.g. Council for British Archaeology (CBA)[14], Federation of Archaeological Managers and Employers (FAME)[15], University Archaeology UK[16], Chartered Institute for Archaeologists (CIfA);
- Historic England; and
- specialist and period societies.

- Academic and educational institutions:
  - universities and colleges (particularly schools with specialist interest);
  - academics with specialist interest;
  - PhD students;
  - University of the Third Age (u3a)[17]; and
  - schools (particularly along the Phase 2a route).

5.4.3 The above list is not exhaustive and other groups/people may emerge as the project progresses.

5.5 Background and context

5.5.1 One of the most useful tools to understanding levels of participation in community engagement work in the sector is through the DCMS' Taking Part Surveys[18]. The latest Longitudinal Report (DCMS 2016) provides an insight into how people have and continue to engage with heritage (this is separate to museums and galleries and refers specifically to archaeological sites, visiting historic parks and buildings).

5.5.2 This latest study reveals that there has been very little change in the types of audiences that wish to engage with heritage over the last 15 years. People who visit

[13] Archaeology data service, http://archaeologydataservice.ac.uk/.
[14] Council for British Archaeology, http://new.archaeologyuk.org/.
[15] Federation of Archaeological Managers and Employers (FAME), https://famearchaeology.co.uk/.
[16] University Archaeology UK, http://www.universityarchaeology.co.uk/.
[17] u3a, https://www.u3a.org.uk/.
[18] This is a household survey in England that has been examining participation in the cultural and sport sector since 2005. The survey is commissioned by the Department for Culture, Media and Sport (DCMS) in partnership with Arts Council England, Historic England and Sport England. https://www.gov.uk/government/publications/taking-part-a-strategy-for-the-next-five-years.

and are interested in heritage tend to be white, and from higher socio-economic groups (DCMS 2016). This is reinforced in the latest Survey (DCMS 2020).

5.5.3 This is also mirrored in research undertaken in 2015 by the Council for British Archaeology (CBA). In 2015, audience participation (and non-participation) research was commissioned for the Festival of Archaeology (CBA 2015). This is an annual event organised by the CBA, which aims to promote interest in and engagement with the historic environment. Key findings from the survey (821 responses) were:

- the lowest attendance age group was from 16 – 24 year olds at only 2.8%;
- the largest group of attendees were aged between 55 – 64 (17%);
- the lowest attendance was from families on low incomes and from 'Black, Asian and minority ethnic' (BAME) groups;
- the highest levels of attendance came from the higher affluent socio-economic groups; and
- the majority of visitors (64%) lived locally to the archaeology event taking place.

Why involve people?

5.5.4 It has been recognised for a long time that involving people in archaeological practice and historic environment investigation has many benefits: personal and social satisfaction, closer relationship between communities and environment, and providing access to professionals and specialists. Community engagement in large infrastructure projects is not new. For organisations, demonstrating good community engagement provides 'good news' stories for local and national press, and helps to deliver social and community obligations.

5.5.5 Community engagement can provide exciting opportunities from which different approaches can be pursued: enabling release from well tried and tested methods that may not continue to add value to the research agenda and our desire to create and enhance knowledge of the past and our present. Engagement in a collaborative and consultative manner means providing opportunity for more meaningful and honest community projects that make real contributions to the Phase 2a GWSI: HERDS. Involving people, be they local communities, academics or historic environment professionals, should allow for the instigation and conception of projects that they collaborate and shape; which may mean some ideas lie outside of research agendas conceived by the *Employer*. Communities and specialists often have access to knowledge that is not immediate to others, and an indication of where and what priorities should be the focus of research.

5.5.6 There has always been strong emphasis from organisations such as Heritage Lottery Fund (HLF) and the Council for British Archaeology (CBA) on ensuring that involving people is at the heart of project proposals. HLF funding has provided a catalyst for the formation of new heritage groups and organisations with a particular purpose or goal – these can be transient (created solely for the purpose of delivery project

outcomes). These groups can also become more permanent and established bodies or continue to forge partnerships with other groups and institutions. The Community Archaeology Forum provides a useful insight into the health of volunteer heritage groups. There is also interest directed at the younger generation through the Young Archaeologists Club (YAC), which is aimed for children between the ages of 8 – 16.

5.5.7 There is a real appetite to be part of the historic environment research process. A number of studies have attempted to establish the wider benefits that come from engaging people with their history and environment, such as: social cohesion, health, and wellbeing, sense of belonging and interaction with local environment and communities, confidence and happiness from recognition and familiarity of local landmarks, training, and sharing of skills through active engagement in the historic environment.

5.5.8 Engaging audiences in Phase One historic environment research and investigations has demonstrated real benefits in saving time and money as local knowledge, active volunteer base and relationships made from previous investigations are readily available. There are numerous local history and archaeological societies, regional and period specialists, ex-historic environment professionals that still retain skills and interest in the sector and of value to research projects of this nature.

5.5.9 Academic, professional and specialist engagement will be an invaluable resource in initiating research ideas, comment, and review throughout the investigative process, contributing to interpretation and understanding.

Challenges to involvement

5.5.10 Interest in heritage and engagement in cultural activities tends to come from a small and select section of our society (see DCMS Taking Part Survey[19]). Difficult to reach sections of our society have tended to be: those in minority communities, young families, people on low incomes and young adults.

5.5.11 Part of the challenge is always to think about how to engage with these groups. However, this should not be done at the expense of interested audiences and their needs are as much a priority in decisions about involving people in historic environment projects.

5.5.12 Often barriers to involvement are due to audiences' lack of (or perceived) opportunities to be part of a project. Raising awareness, particularly of contacts and the schemes of work taking place, early on in the process allows time for engagement to happen and to reach a wider interested group of people.

[19] Department for Digital, Culture, Media & Sport, 2016. Taking Part Survey. Available online at: https://www.gov.uk/guidance/taking-part-survey.

5.5.13 Being able to engage with information, have access to it, feeling informed and able to contribute individual research pieces, provides a sense of value and importance to the community engagement process and makes it integral to the work being done.

5.5.14 Open data and ability to reuse big 'data' are key tools for our professionals and academic communities in delivering new research and establishing new approaches. There can be challenges to establishing strong collaborative links and partnerships. These can be partially overcome through use of new technology (digital recording, SharePoint, or project management software, GIS and Building Information Modelling (BIM) through which data can be made available before, during and following the investigative process.

5.5.15 The creation of HS2 will result in a dramatic change to some local communities. Some localities and individuals feel quite negative towards and are highly critical of the new high-speed railway. There could be resistance to engage in historic environment projects as this could be seen as giving personal acceptance to the scheme, particularly by groups and individuals who have actively campaigned against it. The challenge will be to consider the various routes available to involving people that will provide opportunity for local communities to document and be part of understanding this change and in thinking about the wider historical changes and implications this has had on our world.

5.5.16 Local community stories and official histories do not always complement each other. This often leads to dissatisfaction with how people's stories are presented or interpreted. A project like HS2 offers good opportunities for local communities to tell and rewrite their stories through exploring their social network, cultural connections, landscapes, and time. Reaffirming local communities' capacity to shape and mould present thinking of who they are (through project creation as well as contribution) can be an enriching process and one which will encourage people to be involved in the discovery and learning of the rich heritage that could be revealed as part of HS2 works.

5.5.17 HS2 can offer a new approach to reaching out to young people. This is also important from the perspective of securing the future of the historic environment profession, as interest sparked early can lead to pursuit of historic environment careers. Interest could be secured through promotion and encouragement of projects that have wider social and cultural remits that have young people defining the parameters and objectives of their interest. Access to historic environment professionals, community archaeologists, and academic institutions during Phase One works has already provided stimulating and exciting collaborations and ideas, which allow for a refreshing look and take on historic environmental meaning and appreciation.

5.6 Measuring impact

5.6.1 The *Contractor* will consider what measurables of community engagement activities would be appropriate to identify the impact of the *Employer's* Respecting people, Respecting places HS2 Community Engagement Strategy. These should aim to document the delivery of new understanding, knowledge and skills, attitudes and behaviours, community spirit and cohesion.

5.6.2 Evaluation is carried out on many heritage projects in the UK to deliver data to funders, communities they serve and to the general public. Structures for measuring the benefits of work in the historic environment are available through both government guidance and guidance provided by other heritage bodies[20].

5.6.3 The *Contractor* shall measure the following types of impact:

- impact on understanding: whether an interest in something new has been created, whether participation has led to more work in the historic environment or more community projects;
- impact on skills: whether new specific skills have been learned, how they have been used, increased qualification levels;
- impact on attitudes and/or behaviour: whether participants have changed their opinion on the importance of the historic environment, whether young people or other new groups have been involved; and
- impact on community spirit and enjoyment: whether participants liked being part of a team, achieving something, whether they will visit/participate again, whether they will recommend to others, whether they have found increased confidence, a feeling of making a contribution; whether new future volunteers have been created.

5.6.4 The *Contractor* may wish to employ any or all of the following sorts of evaluation methods:

- counting participant numbers and collecting demographic data;
- self-completion survey (on-site or sent digitally afterwards);
- face-to-face surveys (on-site);
- interviews/focus groups on site, by phone, or in person; and/or
- IT metrics e.g. page views/downloads,Google Analytics,Facebook 'Likes', sentiment analysis of twitter.

[20] Guidance on good practice in the evaluation of public expenditure programmes and other policy initiatives is issued by the Treasury in the form of the Magenta Book: https://www.gov.uk/government/publications/the-magenta-book; the Heritage Lottery fund also provide useful guidance for evaluating heritage projects: https://www.hlf.org.uk/evaluation-guidance.

6 Historic environment skills, employment and education approach

6.1 Introduction

6.1.1 This section sets out the *Employers* approach for integrating skills, employment and educational opportunities into the Phase 2a historic environment work. It describes the requirements of the *Employer* and explains how these requirements help to deliver wider objectives for skills, employment and education (SEE) on the project. The section goes on to provide the context for and scope of the types of activities that the *Contractor* could deliver, the potential benefits of this work and how those benefits should be measured. The approach to historic environment skills employment and education is linked to the Headline Objectives (see Section 144) and Specific Objectives (see Section 8).

6.2 Requirements

6.2.1 All work designed by the *Contractor* shall be in compliance with the HS2 Skills, Employment and Education Strategy[21] and with the Works Information.

6.2.2 The *Contractor* shall include historic environment skills, employment and education opportunities within their overall Skills, Employment and Education Implementation Plan.

6.2.3 The *Contractor* shall ensure that all projects and approaches are in line with existing guidance and standards for developing skills in the historic environment sector.

6.2.4 The *Contractor* shall tie in and cross reference SEE activities in Project Plans and LS-WSIs for historic environment works. The Project Plans and LS-WSIs shall consider how SEE objectives may be met at all stages of the historic environment works from project planning through investigation and fieldwork to analysis and presentation.

6.2.5 The *Contractor* shall ensure that historic environment SEE activities are identified in Project Plans and LS-WSIs and are fed into and align with the SEE Implementation Plan and quarterly reporting requirement; the details of all SEE activities will also be reported to the *Project Manager* each quarter.

[21] HS2 Ltd, 2018. *Skills, Employment and Education Strategy.* Available online at: https://www.hs2.org.uk/documents/hs2-skills-employment-and-education-strategy/.

6.2.6 The *Contractor* shall set out a clear approach to evaluating all SEE focussed activities undertaken as part of Phase 2a, both within the *Contractors* SEE Plan, and at Project Plan and LS-WSI level in relation to individual SEE activities.

6.2.7 The *Contractor* shall work with both the *Employers* and the *Contractors* SEE teams in order to consider additional measurables and deliver reporting on the results of SEE activities.

6.3 The Employer's approach

6.3.1 The *Employer* has strategic priorities in relation to the development of skills, employment and education in engineering and the other disciplines that will contribute to delivery of Phase 2a. The *Employer* has commitments to improve skills, jobs, education and the economy through our investment along the length of the route and to act as a driver for improvements in the sustainability of the engineering and construction sector. Some 2,000 apprenticeship opportunities will be created by the *Employer* across all Phases of HS2.

6.3.2 The National College for Advanced Transport Infrastructure (NCATI) is established as a centre of excellence to provide rail industry-standard, relevant training at Level 4 and above to support the growth of a technically skilled and competent workforce for the Project and the United Kingdom (UK) transport network. The rail industry is a fundamental partner in the development of the NCATI.

6.3.3 Research and consultation commissioned by the *Employer* identifies the need for development of skills in historic environment practice that will be required to achieve delivery of the programme of historic environment work. In particular, research has identified a shortage of skilled field archaeologists, archaeological specialists (in specific periods and processes of investigation) and mid-range managers (see paragraph 6.5.5 below for new apprenticeships delivering these skills). There is a further requirement to ensure that historic environment professionals become conversant with and further skilled in the application of BIM principles and processes.

6.3.4 One of the Headline Objectives for the Phase 2a GWSI: HERDS (Headline Objective 02) focuses on identifying and stimulating the development of skills needed to deliver the project and leaving a legacy (for Phase 2a and beyond) of trained professionals and high quality, sustainable training practice.

6.4 Scope of SEE work for the historic environment

6.4.1 Skills, employment and education work undertaken to help deliver the *Employers* commitments above should include:

- considering the training and upskilling requirements of the workforce to meet UK Standards;
- identifying training available to historic environment practitioners through the NCATI;
- implementing current sector initiatives, such as work based learning models, structured professional development and vocational training;
- working with universities/higher education in the delivery of training opportunities such as historic environment apprenticeships at all levels available (Levels 3 – 7);
- developing initiatives to increase the pipeline of under-represented individuals into the sector;
- demonstrating best practice in graduate recruitment and equality, diversity and inclusion (EDI); and
- developing a strategy for bringing skills into local communities, in accordance with professional archaeological and other technical standards.

6.4.2 The kind of projects and approaches that could be included by the *Contractor* within the SEE Implementation Plan in relation to the historic environment are:

- proposals around upskilling current staff, including CPD, work-based training and apprenticeships;
- proposals for recruiting and training new staff;
- school engagement to inspire the next generation of archaeologists; and
- work placements and employment programmes for local people and under-represented groups.

6.5 Existing guidance and standards

6.5.1 The following outlines existing standards and guidance documents that could inform the *Contractor* with the development of historic environment skills, employment and education opportunities within their SEE Implementation Plan.

National Occupational Standards in Archaeological Practice

6.5.2 National Occupational Standards (NOS) describe the skills, knowledge and understanding needed to undertake a particular task or job to a nationally recognised level of competence. The NOS for Archaeological Practice has been in place since 2003. NOS are the building blocks of National Vocational Qualification (NVQ) and can be used to write job descriptions or to identify skills needs and plan training.

6.5.3 A database of standards can be searched (using the key 'Archaeological Practice' at https://www.ukstandards.org.uk/).

National Vocational Qualification Level 3

6.5.4 The National Vocational Qualification (NVQ) enables archaeologists to demonstrate that they have particular sets of skills, competencies or experience. It is a means of accrediting informal training and on-the-job learning. An Assessment Centre within the Chartered Institute for Archaeologists (CIfA) administers the NVQ at Levels 3 and 4 in Archaeological Practice (http://www.archaeologists.net/learning/nvq).

The Historic Environment Apprenticeship Standards

6.5.5 An *Employer's* group convened by Historic England worked with Institute for Apprenticeships on the development of a suite of Apprenticeship Standards in Historic Environment Practice. These include a Level 3 Archaeological Technician and a Level 7 for Archaeological Specialists.

Chartered Institute for Archaeologists' technical guidance

6.5.6 The Chartered Institute for Archaeologists (CIfA) has produced a Professional Practice Paper entitled 'An introduction to providing career entry training in your organisation' to guide employers and employees in the sector. The guidance is based on a tried and tested model, which can be used to structure a training programme for career entry-level employees, employees transferring between specialisms, or employees moving between junior levels in the first few years of their career. The model has been piloted through the CIfA Workplace Learning Bursaries Scheme and has already been adapted for use by Historic England and by the Council for British Archaeology. Structured training has been offered in over 50 areas of archaeological practice, for each of which a training plan identifies the particular skills to be taught, the required outcomes of training, the sort of support required for the training to be effective and the sorts of activities to be undertaken by the trainee through which training will be delivered. These are available through CIfA.

6.6 Measuring impact

6.6.1 The *Employer* sets out four objectives for the development of skills in the HS2 SEE Strategy:

1. Ensure we have the skills to deliver the HS2 Programme and leave a skills legacy for the transport infrastructure sector and the wider UK economy.
2. Create sustainable skills, employment and education opportunities in HS2 Ltd's supply chain through the use of procurement levers.
3. Stimulate interest in STEM subjects to encourage more young people into transport infrastructure related careers.
4. Work in partnership with stakeholders and industry as they maximise the economic and regeneration benefits of the HS2 Programme locally along the line of the route and across the UK.

6.6.2 The *Contractor* will therefore consider what feedback on historic environment-based SEE focussed activities would be appropriate to support measurement of the impact of the *Employer*s Strategy – this could be feedback on the delivery of new skills, new participants in heritage practice, or co-created skills and education focussed initiatives with other parts of the heritage sector.

6.6.3 Evaluation is carried out on many heritage projects in the UK to deliver data to funders, to the communities they serve and to the general public. Structures for measuring the benefits of work in the historic environment are available through both government guidance and guidance provided by other heritage bodies. Guidance on good practice in the evaluation of public expenditure programmes and other policy initiatives is issued by the Treasury in the form of the Magenta Book[22] . The Heritage Lottery Fund also provide useful guidance for evaluating heritage projects[23].

6.6.4 The *Contractor* shall measure the following types of impact:

- impact on skills: new skills have been learned in areas of historic environment practice or higher levels of qualification achieved by already skilled practitioners - this might include employment of apprentices or delivery through other forms of training; and
- impact on capacity building: new entrants to historic environment practice have been identified and/or introduced to routes into the sector – this might include the engagement of schools or university departments, or the development of sustainable training programmes.

6.6.5 The *Contractor* may wish to employ any or all of the following sorts of evaluation methods:

- counting numbers of apprentices;
- identifying and delivering any training with the NCATI in areas applicable to historic environment practice;
- counting numbers and demonstrating the quality of employer led training programmes (through professional accreditation or sector award schemes); and/or
- counting numbers and demonstrating the effects of school or university engagement, with qualitative and quantitative feedback from those involved.

[22] HM Treasury and Evaluation Task Force, 2011. The Magenta Book. Available online at: https://www.gov.uk/government/publications/the-magenta-book.
[23] Heritage Fund, Evaluation Guidance, Available online at: https://www.hlf.org.uk/evaluation-guidance.

Table 4: Examples of SEE best practice

Type	Example
Structure work-based learning	https://www.archaeologists.net/trainingtoolkit
CPD best practice and templates	http://www.archaeologists.net/development/cpd
Skills passport	http://www.archaeologyskills.co.uk/
In-house training schemes	https://molaheadland.com/becoming-an-archaeologist-the-a14c2h-traineeship-scheme/ http://www.cotswoldarchaeology.co.uk/careers/training-and-development/
Historic Environment Apprenticeships	https://historicengland.org.uk/services-skills/training-skills/work-based-training/heritage-apprenticeships/ https://www.instituteforapprenticeships.org (search 'archaeology' and 'historic environment').

7 Route resource assessment

7.1 Introduction

7.1.1 The route resource assessment synthesises the know heritage resource along the route of Phase 2a and identifies gaps in knowledge. The synthesis has formed a significant component in the development of the Specific Objectives (see Section 8), alongside an analysis of regional and national research agendas (see Appendix 2) and the results of a series of discussion workshops held with representatives of the heritage sector (see Appendix 1). The aim of the review process has been to provide a point-in-time understanding of the heritage of the Phase 2a Route, including the identification of Recognised Archaeological Zones (RAZs).

7.1.2 The route resource assessment presented in this chapter is the initial assessment at the start of the project, and represents a point-in-time that will evolve and be enhanced by the works undertaken throughout the project. This emergent version of the route resource assessment will be updated as works progress.

7.2 Overview

Prehistoric

7.2.1 Compared with more southern and eastern parts of England, the area through which Phase 2a passes has a much more limited archaeological record, even allowing for lower levels of investigation. It is yet to be established if this reflects a generally low level of population, or a population that has not left an archaeologically recognisable trace.

7.2.2 The lack of archaeological evidence is particularly true of the prehistoric period. There are no recorded Lower or Middle Palaeolithic finds along the route, and any remains of such a date could contribute to research objectives focussed on these periods. There is a similar lack of Upper Palaeolithic or Mesolithic finds, though for these periods it has been established that humans were present in surrounding areas, and there is known potential for significant Late Glacial/Early Holocene palaeoenvironmental evidence at various locations along the route.

7.2.3 Cropmarks of Neolithic monuments are restricted to the Trent Valley at the southern end of the route, around Mavesyn Ridware, where cropmarks indicative of causewayed enclosure (which has been partly excavated) and other potential sites are visible. Circular cropmarks, potentially indicative of Neolithic circular monuments or Early Bronze Age round barrows, also cluster in this area but are found somewhat more widely as individual monuments and small groups dispersed along the route.

7.2.4 Analogy with other areas of the country suggests that later prehistoric settlement was likely to have been predominantly located along the free-draining terraces of the

Trent, where rectilinear enclosures of probable Iron Age date are visible as cropmarks around Abbots Bromley and Hill Ridware. These terraces become considerably more restricted upriver beyond Rugeley, where an overall pattern of very small settlements along the river valleys, with access to the higher and perhaps wooded interfluves, is a likely model for settlement based on the limited evidence. Burnt mounds are found along streams in the area, but the context in which they were used is not well understood. The only known Iron Age site from this part of the Trent Valley is the earthwork enclosure at Bury Bank, near Stone, although in the surrounding landscape there are hillforts at Berth Hill and Bury Bank. However, it should be noted that this area is less conducive to cropmark production and it is likely that other settlement sites remain to be found. There is evidence that the Upper Trent was still well forested in later prehistory, with woodland clearances being sporadic and temporary.

Romano-British

7.2.5 The Roman period offers more evidence along the route of Phase 2a, but it is clear from the distribution of known archaeology that 'Romanisation', in so far as it is represented by artefactual evidence, was limited to the main sites established by the Romans – principally on the road system that they created. The route of Phase 2a intersects with this road system at only one point. In addition, there is a possible villa site identified through geophysical survey.

7.2.6 The limited amount of evidence for a permanent Roman military presence in the area does not necessarily suggest that the local population was hostile. Extrapolating backwards from the documentary and environmental evidence of subsequent periods suggests that much of the area would have been heavily wooded. Based on the limited evidence available, it may be that the area around the route was a 'resource extraction zone', with a relatively 'un-Romanised' population contributing to the monetised Roman economy in the form of cattle or other resources, via local markets in the few central Roman settlements.

Early Medieval

7.2.7 Evidence for early Anglo-Saxon settlement along the route of Phase 2a is limited – there are no significant early cemeteries or examples of material culture. Nevertheless, by the early seventh century the landscape was part of 'the first land of the Mercians', from which it expanded to form the much larger political entity. This might have been a 'boundary' zone of cattle-raising, mining and hunting, all central to Mercian culture (Blair 2018).

Medieval and Post-Medieval

7.2.8 Settlement evidently expanded during the late Saxon period – most of the settlements in Staffordshire are recorded in Domesday Book. One-fifth of those recorded, however, were described as 'waste'. This may suggest some land had fallen out of cultivation, although the reasons for this are uncertain. Staffordshire

and Cheshire have lower Domesday values per square mile than any other county except Yorkshire. There is variation within the counties; the Trent and Sow valleys contained much of the arable, and a model of development can be hypothesised involving early arable cultivation along the valleys, with meadow on the valley floors, and woodland on the interfluves. Settlement may have then expanded into the woodland areas, but even at the time of Domesday extensive woodland remained, with perhaps a third of the county still wooded. The later settlement would have been onto heavy, intractable clays, and these are the settlements that would have been most vulnerable to the effects of climate change and population reduction in the fourteenth century, resulting in the prevalence of shrunken and deserted medieval settlements along the route of Phase 2a.

7.2.9 The landscape though which Phase 2a passes is also characterised by 'hays' and parks, which sometimes fringe the legal forest areas, and a model might be suggested whereby such enclosures take place where forest clearance is happening, perhaps through grazing, and local lords are powerful enough to carve out areas where they wish to retain woodland for hunting. These subsequently ring the larger 'wastes', which are then subject to enclosure in the post-medieval period.

7.2.10 By the early sixteenth century about a quarter of Staffordshire remained unenclosed wood or waste, and William Pitt, in 1794, considered that 19% of the county was unenclosed. The origins of these wastes and woods is not certain, but it is likely that they were the remnants of the woods recorded in Domesday.

7.2.11 As late as the fifteenth century, most of Staffordshire was under tillage, although not necessarily in the form of open fields. As these areas were predominantly grassland, parliamentary enclosure tended to happen for large areas in the early nineteenth century (when the major enclosures of wastes took place), rather than in the late eighteenth century (when the enclosure of open fields took place). A contributing factor here is the local tradition of temporary arable – ploughing up land for a few years before it is allowed to revert to pasture – which would allow the balance to be easily changed.

Overview summary

7.2.12 Our knowledge of prehistoric activity in this area is limited, which probably reflects a combination of low visibility, for various reasons, and a lack of previous research. The area lies close to the north-western limits of early human occupation in Europe, and subsequently there is still discussions around extent of occupation beyond the Trent Valley and the degree to which populations remained seasonally mobile. There are cropmarks indicative of intensive settlement and activity along the Trent Valley during the Neolithic, Bronze Age and Iron Age, although this evidence tails off to the north of the Trent; possibly a result of ground conditions or lack of development hindering visibility.

7.2.13 During the Roman period the area remained relatively undeveloped outside the main Roman centres and away from the roads, although perhaps involved in the monetised economy through resource exploitation.

7.2.14 There was little in the way of early- and middle-Saxon settlement, although the areas transitional location between a Welsh west and an Anglian east may have lent it a particular culture which was taken on by the later Mercian kingdom.

7.2.15 Some expansion had taken place by the time of Domesday – many settlements existed but were dispersed through a largely unenclosed and heavily wooded landscape. There is a suggestion in Domesday that the area had suffered population decrease previously, but population rose towards the fourteenth century, such that a majority of the landscape was under arable.

7.2.16 Villages along the river valleys in particular, and perhaps out on the clays, acquired some open fields, but the process and timing by which this occurred remains uncertain. Settlement was constrained in some areas by the creation of legal forests, and landed elites created hays and parks to retain woodland for game, perhaps as a reaction to ongoing assarting.

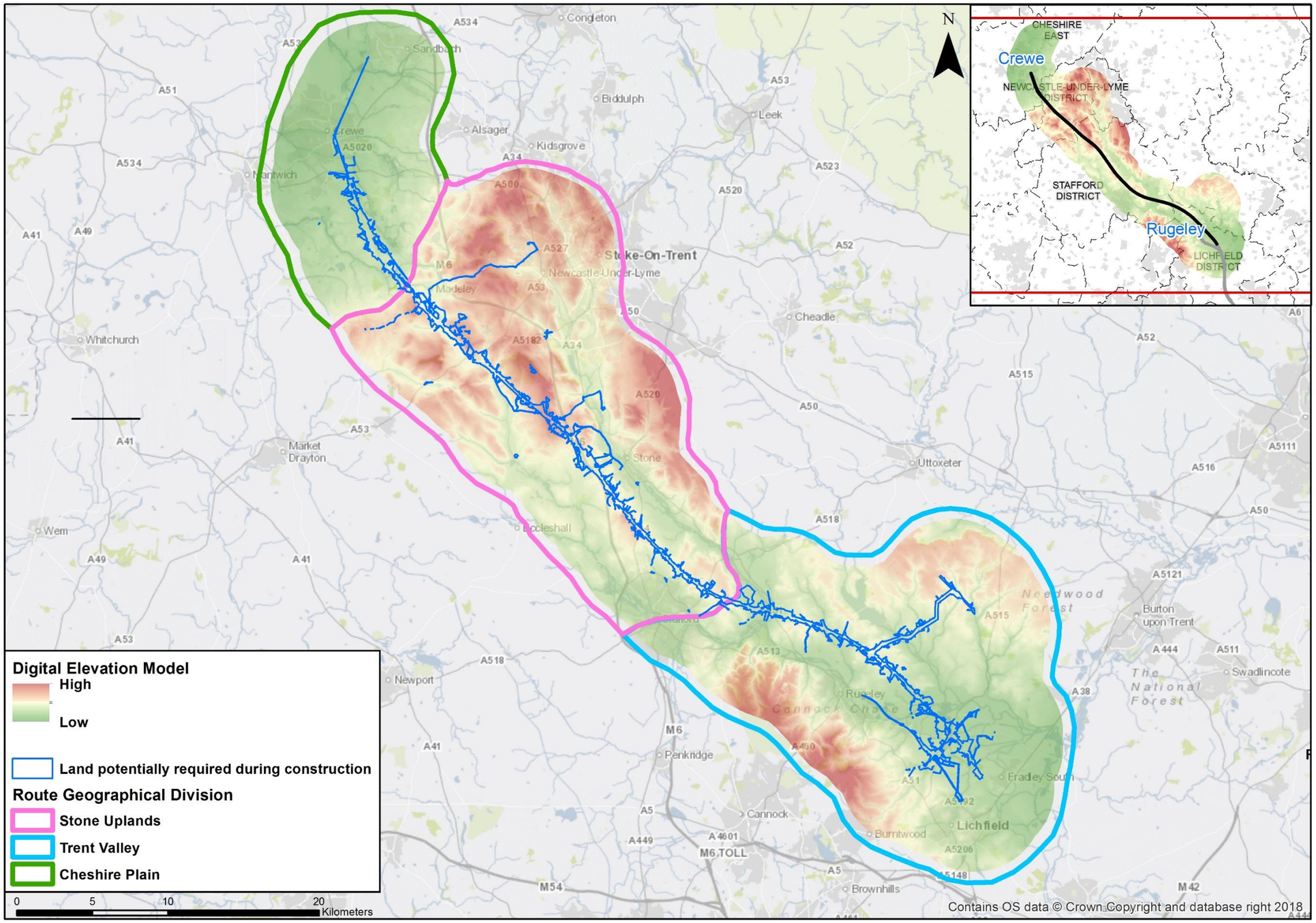
7.2.17 Following the climatic change and epidemics of the fourteenth century much arable reverted to grassland, some of the more unsuitably located villages became deserted, and it is reasonable to suppose that this area began to acquire a more specialist type of production, particularly in dairying and fattening of stock.

7.2.18 Droving becomes significant, and by the fourteenth century the first signs of significant industries in pottery, iron and coal start to appear. This forms the basis for the Industrial Revolution of the eighteenth and nineteenth century.

7.3 Topographic regions and archaeological character areas

7.3.1 The HS2 Phase 2a scheme crosses the east-west watershed of the country, from the Trent to the Mersey catchment. In doing so, it traverses three distinct topographies: the Trent Valley, Stone Uplands and the Cheshire Plain, which provide essential context for understanding the historic environment of the route. These can be further broken down into seven archaeological character areas (ACA).

Figure 1: Map of the HS2 Phase 2a scheme, showing the three key topographical zones of the Trent Valley, Stone Uplands, and Cheshire Plains



7.3.2 The southernmost topographic area is dominated by the Upper Trent Valley; its floodplain and gravel terraces contain evidence for occupation and activity throughout the prehistoric and historic periods. This includes multiple long-established, potentially pre-medieval settlements, and a complex prehistoric funerary landscape. Three smaller archaeological character areas have been identified within this section of the route: Trent Valley Crossing 1, Blithbury to Colwich and Trent Valley Crossing 2.

7.3.3 The middle portion of the route, the Stone Uplands, encompasses higher ground extending south from the Peak District – effectively a southern outlier of the Pennines. This is reflected by the presence of distinct monuments including two large Iron Age hillforts close to the scheme, and the potential for a Roman settlement site near Madeley. There is some evidence to suggest that there was extensive woodland clearance in this area during the medieval period. Three smaller archaeological character areas have been identified within this section of the route: Stafford North Uplands, Meece Brook and Swynnerton, and Whitmore and Madeley.

7.3.4 The northernmost element of the scheme lies in the southern Cheshire plain, where very little evidence for prehistoric activity has been recognised to date. This area includes flint outcrops and the potential for salt mining, resources desirable for early societies. Based on this evidence it appears that that later Bronze and Iron Age society and economy in the Cheshire Plain was substantially different from that at the southern end of the route where cropmarks suggest the presence of more permanent settlement, perhaps incorporating elements of mobility and transhumance.

7.3.5 Within each of these topographical regions, the desk-based studies and archaeological surveys carried out in support of the Environmental Statement have identified significant numbers of heritage assets in the form of archaeological sites, historic buildings and other material remains of the past. In the overview below, a number of provisional RAZs have been identified in each of the regions. These are areas within the land required for the scheme, which contain known heritage assets, or groups of heritage assets, that merit investigation and documentation in the pre-construction period.

7.3.6 The RAZs have been identified using professional judgement informed by baseline information derived from the ES and subsequent surveys. They vary in size and extent, from the site of a single known medieval building to extensive areas of former settlement and field systems. Notwithstanding this, there remain individual heritage assets within the land required for the scheme that do not fall within a RAZ. These generally comprise individual post-medieval standing buildings of relatively limited heritage significance.

7.3.7 It is important to emphasise that the RAZs represent a snapshot of our knowledge of heritage along the route at the time this document was written and that much

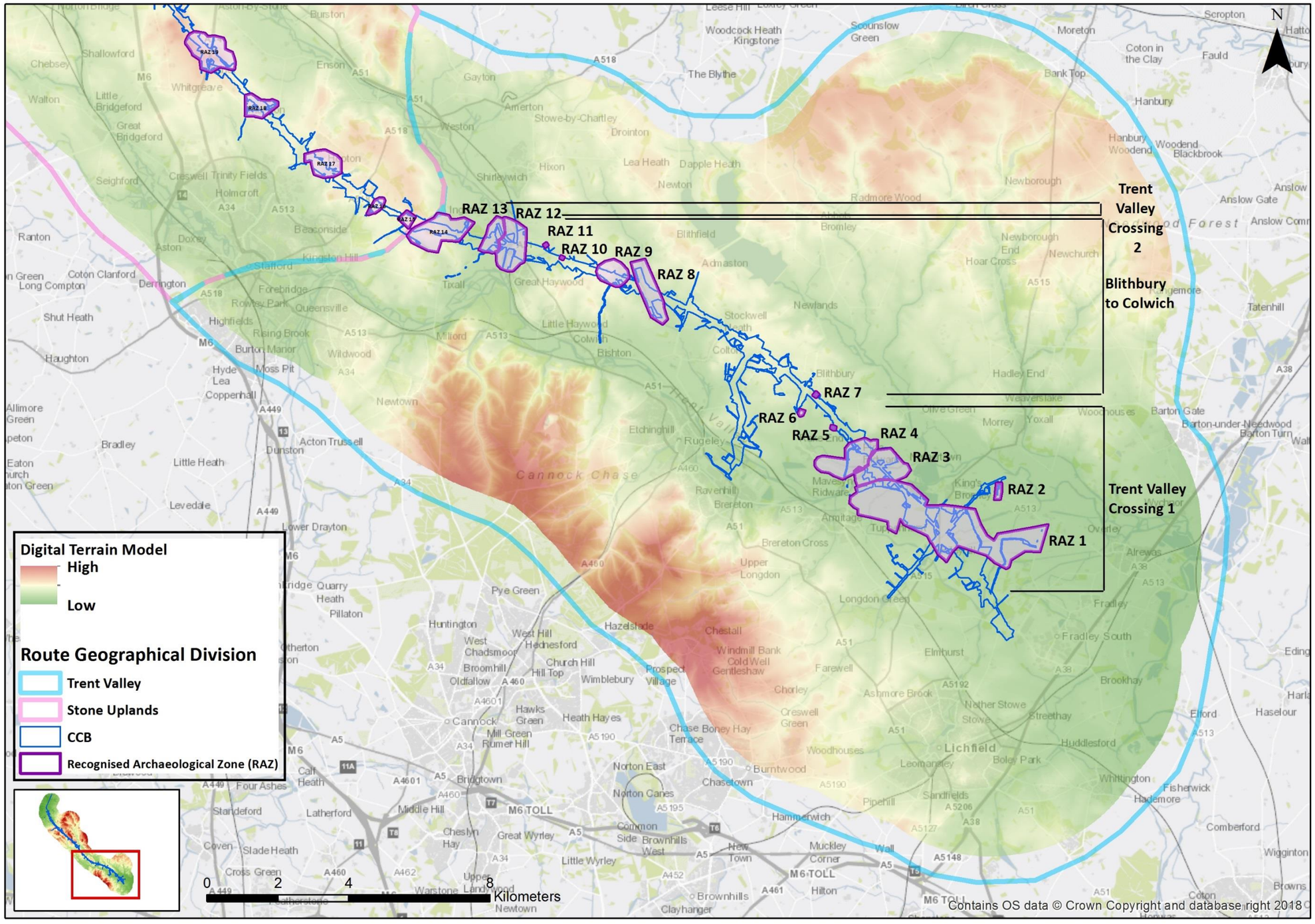
unrecognised archaeology is likely to exist in between these areas (and potentially within them). Surveys across the route, in order to determine the survival, character and extent of currently unrecorded archaeological remains, are likely to identify additional RAZs, which will be incorporated into the heritage investigations in line with Section 9.

7.4 Topographic region: Upper Trent Valley

ACA1 Trent Valley Crossing 1 (Fradley to Pipe Ridware): Overview

7.4.1 At its southern end, the Phase 2a route crosses the Trent initially between Kings Bromley and Handsacre (the second crossing being further north at Great Haywood), running across river gravel terrace deposits laid down by the River Trent during the Pleistocene epoch. The Pleistocene deposits extend from Fradley, to the south-east of the River Trent, to the rising ground, north-west of Pipe Ridware. They are crossed by several minor watercourses including, from south-east to north-west: Pyford Brook, Ashby Sitch, Bourne Brook, a brook to the east of Handsacre and, on the north-western bank of the River Trent, Bentley Brook. Many of these watercourses are flanked by alluvium of Pleistocene or Holocene date, as is the River Trent itself. RAZs 1 – 4 fall within this area, all comprising large areas of possible prehistoric and Romano-British cropmarks.

Figure 2: Map showing the Recognised Archaeological Zones (RAZs) within the Trent Valley



ACA 1 Trent Valley Crossing 1: Recognised Archaeological Zones (RAZs)

7.4.2 The crossing of the Trent Valley between Fradley and Pipe Ridware contains a higher concentration of recognised archaeology than any other portion of the Phase 2a route. Much of the area falls within RAZs 1 – 4, where extensive prehistoric, Romano-British and medieval remains have been identified as cropmarks on aerial imagery (see Figure 5 and Figure 6). The drift geology here comprises Pleistocene gravels, covered in places by later alluvial Holocene deposits, producing light soils amenable to early farming technology.

7.4.3 Partly as a result of this, the area saw widespread occupation in prehistory, and has also produced much evidence for Neolithic and Bronze Age funerary and ritual monuments similar to those found within the 'Where Rivers Meet' study area at Catholme, approximately 5km (3.1 miles) to the east (Buteux and Chapman 2009). There are also extensive remains of enclosed settlement and field systems of possible Iron Age and Romano-British date.

7.4.4 RAZ 1, an area between Rileyhill and Kings Bromley continuing westwards to the south side of the Trent, contains a major concentration of cropmarks of these periods. There is a particularly intensive area of funerary monuments and potential ritual enclosures of later Neolithic to early Bronze Age date either side of the A513 road, to the west of the Kings Bromley Manor gravel pits (see Figure 5).

7.4.5 RAZ 2 covers a small outlier of this concentration of cropmarks, characterised by pit alignments of likely Iron Age date, indicating a remnant prehistoric field system to the east of Kings Bromley.

7.4.6 RAZ 3 covers the area of the modern Trent River channel, which lies on the northern side of the valley at this point. There are notably fewer cropmarks within this zone, although two potential ring-ditches have been identified on the north side of the river. Modelling from boreholes indicate 15m of Pleistocene gravels overlain by Holocene alluvium including, in places, layers of peat[24]. This indicates the potential for Holocene sediments to mask earlier land surfaces within this area in addition to their palaeoenvironmental potential.

7.4.7 RAZ 4 covers the area around Pipe Ridware on the northern edge of the Trent floodplain. Cropmarks and previous archaeological work (Network Archaeology 1998) indicate the presence of Iron Age and Romano-British settlement in the area, as well as a number of potential early Bronze Age burial mounds and ring-ditches. The medieval settlement at Pipe Ridware lies on the edge of the scheme at this point

[24] HS2 Ltd, *Phase 2a Routewide geoarchaeology study desk study report*, Annex A, Section 5.4. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/628019/E37_CH-006-000_WEB.pdf.

and may have been a focus for early medieval and well as the historically-attested medieval settlement.

Figure 3: Aerial image showing cropmarks identified at Rileyhill in the Trent Valley

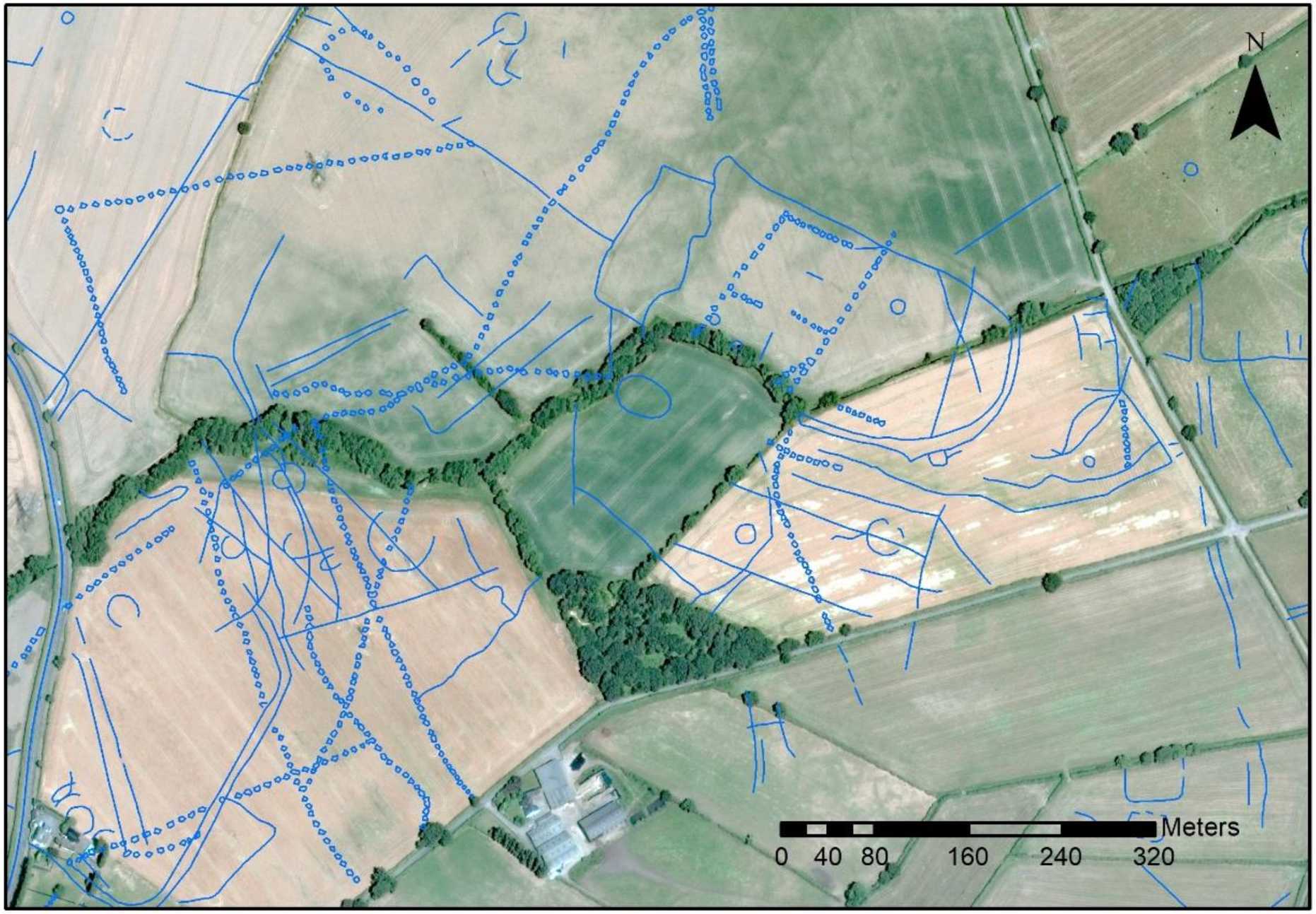
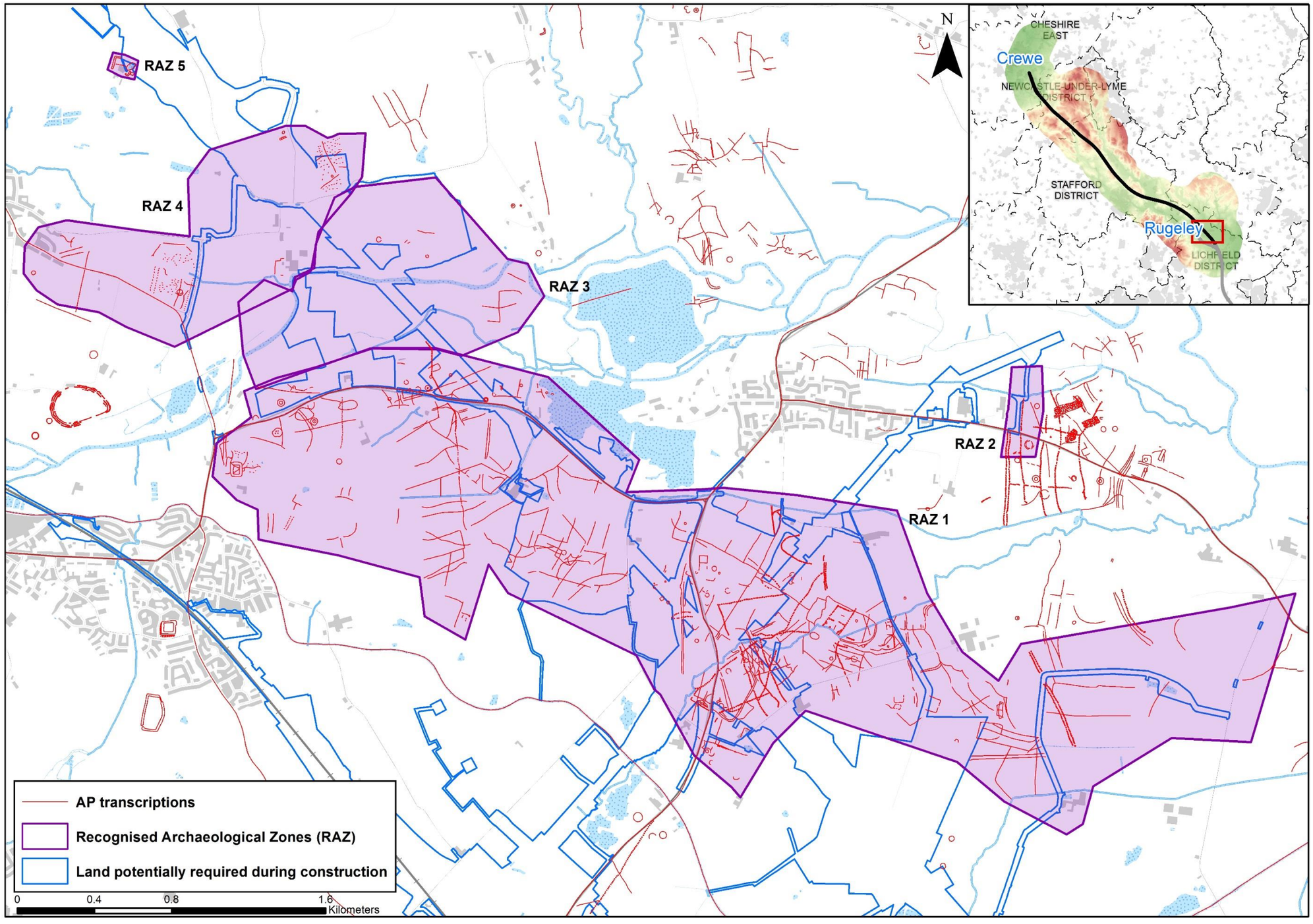


Figure 4: Map showing Recognised Archaeological Zones (RAZs) and aerial photograph (AP) transcriptions in the Trent Valley.



ACA1 Trent Valley Crossing 1: Areas of No Recognised Archaeology (NRA)

7.4.8 The greater portion of the Trent Valley has been allocated as a RAZ. Aerial surveys in the southern and eastern fringes, where the ground starts to rise towards Fradley and Handsacre, have identified relatively few features. It is not clear whether this reflects a change in soil conditions which reduces the visibility of buried remains. There is potential for the Pleistocene and Holocene deposits in these areas to contain archaeological and palaeoenvironmental remains.

ACA2 Blithbury to Colwich: Overview

7.4.9 This area is focussed primarily on the south-east to north-west aligned interfluve uplands between the Rivers Trent and Blithe. The bedrock geology of the interfluve is of the Mercia Mudstone Group. This gives rise to slightly acidic soils that are wetter and heavier than those formed above the river terrace deposits that characterise the Trent Valley. This area is crossed by minor watercourses draining into the Trent, notably Bentley Brook and Moreton Brook, containing deposits of Holocene alluvium. The Moreton Brook valley also contains extensive deposits of peat, covered with a thin layer of alluvium (Jones 1983).

7.4.10 RAZs 5 – 11 fall within this section of the route. They comprise two possible prehistoric and Romano-British enclosures, a group of burnt mounds and five sites of medieval settlement and activity. Due to changes to the Proposed Scheme, RAZ 6 is no longer impacted and has been disapplied.

ACA2 Blithbury to Colwich: Recognised Archaeological Zones (RAZs)

7.4.11 RAZ 5, situated on the edge of the high ground overlooking the Trent Valley to the south and south-west, contains a moated site at a farm known today as Quinton's Orchard. It is believed to have been the site of the medieval Pipehalle manor.

7.4.12 RAZ 7 comprises a square cropmark enclosure situated to the south of Blithbury overlooking the valley of Bentley Brook. Its function is not clear, but a Bronze/Iron Age or Roman date seems most likely.

7.4.13 RAZ 8 covers a section of Moreton Brook where a series of burnt mounds of presumed prehistoric date and evidence for medieval or early post-medieval glass making have been recognised near Lount Farm. The valley contains deposits of Holocene alluvium which could contain significant palaeoenvironmental deposits.

7.4.14 RAZ 9 encompasses traces of medieval cultivation and settlement as well as a number of standing post-medieval farms and agricultural buildings at Moreton, including the Grade II Listed Moreton House situated on the highest point of the local landscape. This is listed as a settlement in the Domesday Book (Williams and Martin 1992). The identity of the medieval core of the settlement here has yet to be identified with certainty.

7.4.15 RAZ 10 is the documented location of Colton tithe barn, potentially of medieval origin, still marked on early nineteenth century mapping.

7.4.16 RAZ 11 is the site of a square enclosure, potentially Iron Age/Romano-British settlement, on slopes overlooking the crossing of the Trent to the north of Great Haywood.

ACA2 Blithbury to Colwich: Areas of No Recognised Archaeology (NRA)

7.4.17 There are fewer cropmark remains of prehistoric activity on the Mercia Mudstones of the interfluve uplands than on the river terrace deposits of the River Trent. This is likely to be the result, at least in part, of the heavier and wetter soils that formed upon geology of the Mercia Mudstone Group. However, the area does contain prehistoric archaeological remains, including scatters of prehistoric flint work that can only be identified through surface collection. The presence of additional unrecognised sites, particularly of the Mesolithic to Neolithic periods, therefore seems likely.

7.4.18 Documentary evidence indicates that the area was settled by the later Saxon period. Archaeological evidence for this is most likely to occur in the immediate vicinity of documented medieval villages, which survive as focusses of rural settlement up to the present. The scheme crosses the site of medieval deer parks at Stockwell Heath and Abbots Bromley. Remains of park pales and other associated features can be expected to survive in these locations.

ACA3 Trent Valley Crossing 2 (Great Haywood to Ingestre): Overview

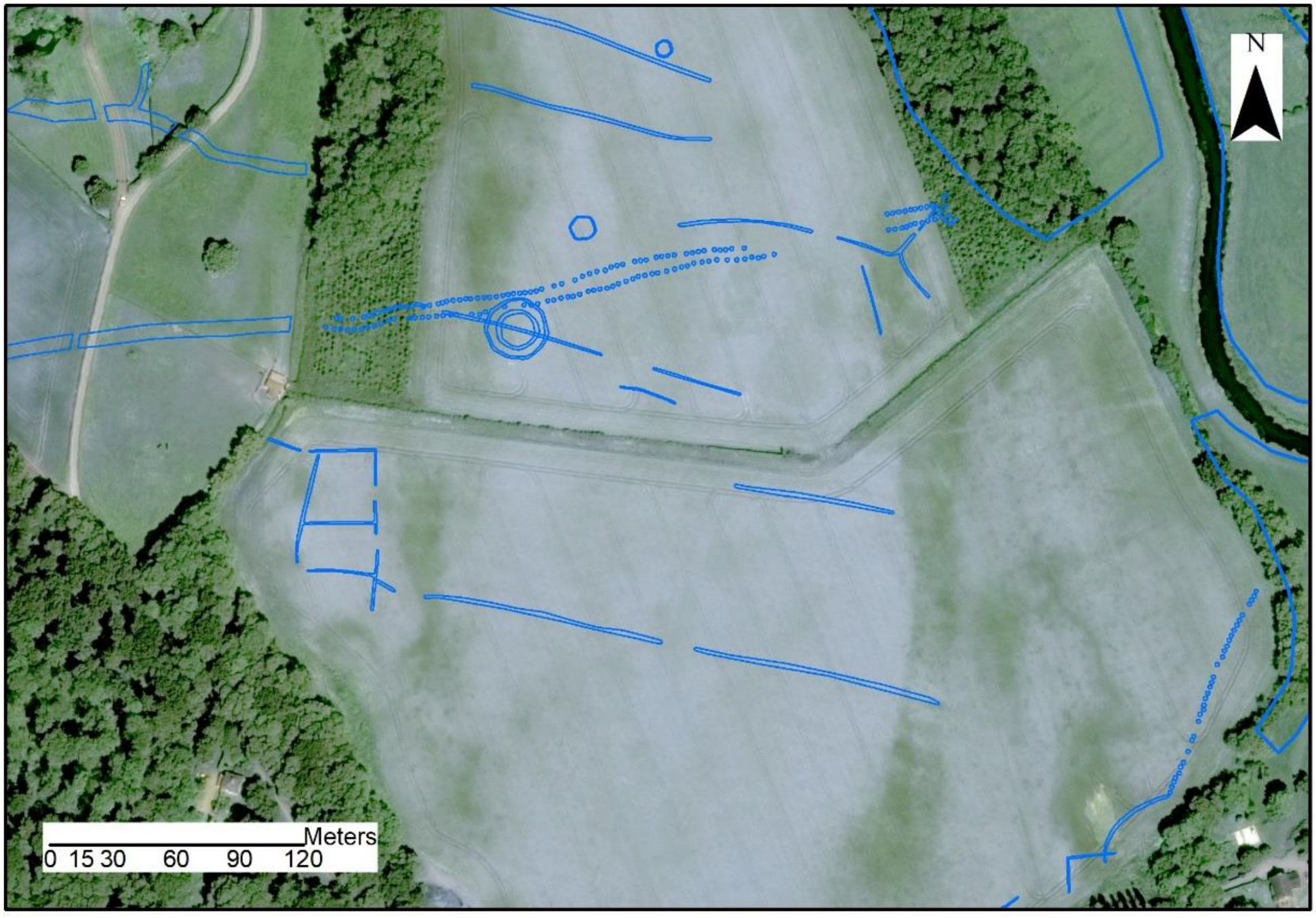
7.4.19 This area comprises the Pleistocene river terrace deposits and Pleistocene or Holocene alluvium that flank the River Trent where it is crossed by the Phase 2a route at Great Haywood and Ingestre. It is entirely covered by RAZs 12 and 13 (see Figure 8).

ACA3 Trent Valley Crossing 2 (Great Haywood to Ingestre): Recognised Archaeological Zones (RAZs)

7.4.20 RAZ 12 lies within the floodplain of the Trent to the north of the confluence with the River Sow at Great Haywood. No prehistoric material or features have been recognised within the area up to the present although the potential of the Pleistocene gravels and Holocene alluvium to contain or conceal archaeological and palaeoenvironmental remains is clear. The area encompasses the area around Hoo Mill, on the western edge of the floodplain, where buried remains of medieval water management structures are likely to survive. There are widespread remains of post-medieval water meadows in this section of the valley (Breeze et al. 2008). The Trent and Mersey Canal continues to follow the Trent Valley, including a wharf formerly connected by a tramway to Hoo Mill, which ground flint for the Stoke potteries in the eighteenth and nineteenth centuries.

7.4.21 RAZ 13 encompasses a concentration of cropmarks on Pleistocene gravel terraces to the west of the Trent. Similarly to the Trent Valley at Kings Bromley, these indicate a group of prehistoric funerary monuments, including Bronze Age barrows (ring-ditches) and possible Iron Age square barrows. A larger circular cropmark, just outside the boundary of the Phase 2a route, has characteristics that suggest that it could be a Late Neolithic monument. There are also pit alignments – including a trackway aligned on a square barrow – of potential Iron Age date. A possible brine spring inside Lionslodge Covert could have attracted settlement from the prehistoric period onwards.

Figure 5: Aerial transcription of cropmarks at Ingestre, in ACA3 Trent Valley Crossing 2



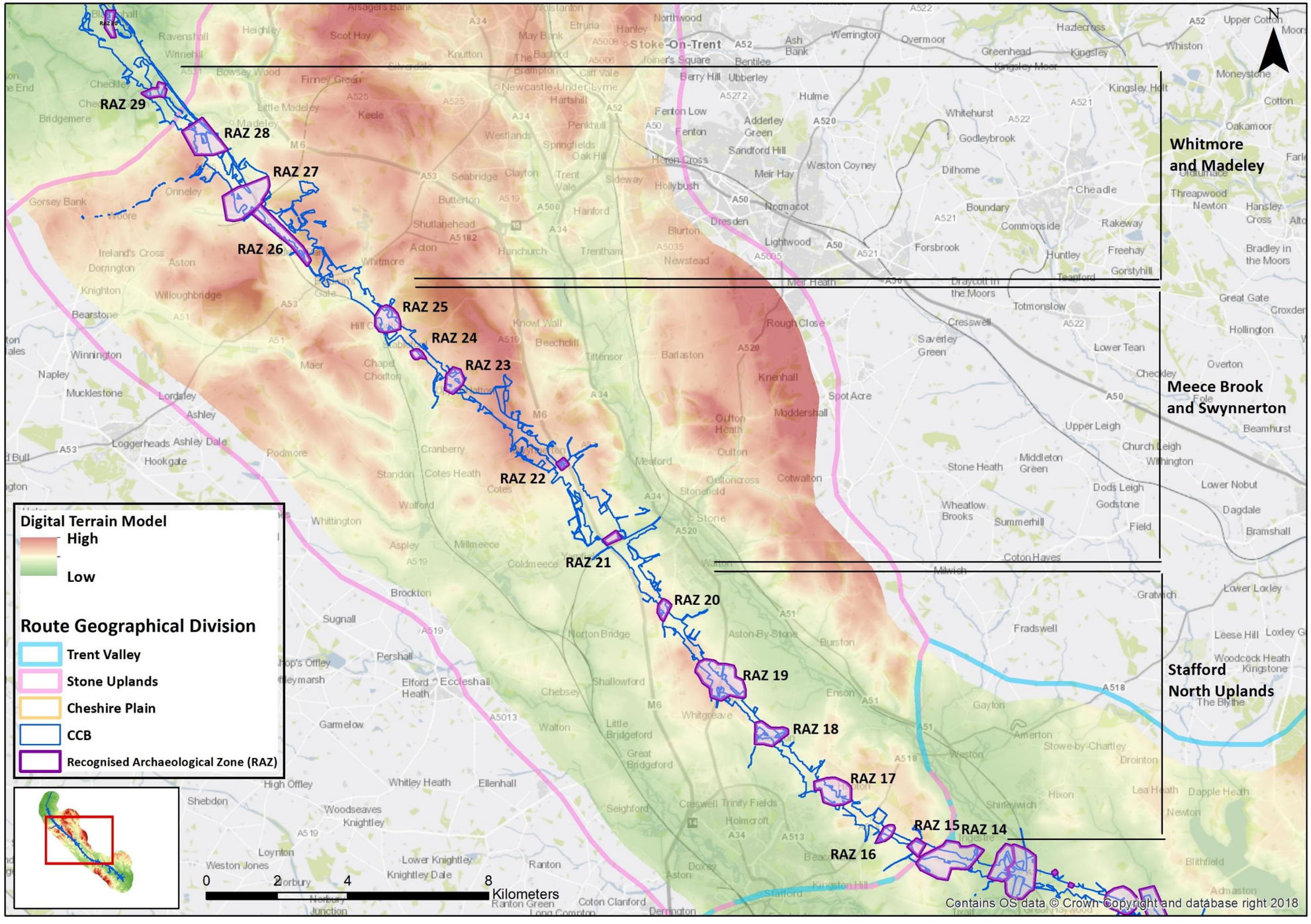
7.5 Topographic region: Stone Uplands

ACA4 Stafford North Uplands: Overview

7.5.1 This area covers the route of the scheme running from Ingestre as far as Pirehill, to the south of Stone, running along a ridge of high ground, at between 75m – 150m OD, separating the Rivers Sow (to the south) and Trent (to the north). It largely comprises geology of the Mercia Mudstone Group, which supports fertile agricultural soils, albeit wetter and heavier than those in the Trent Valley. An exception is the area around Salt, Hopton and Tixall, where sandstone produces relatively acidic soils. This has tended to mean lower levels of cultivation in these areas. Occasional streams, at Hopton and Marston, drain southwards towards the River Sow.

7.5.2 RAZs 14 – 20 fall within this section of the route, mostly comprising areas of medieval settlement (or the fringes thereof) with just one area of identified prehistoric potential.

Figure 6: Recognised Archaeological Zones (RAZs) within the Stone Uplands



ACA 4 Stafford North Uplands: Recognised Archaeological Zones (RAZs)

7.5.3 RAZ 14 covers an area that falls within the historic extent of the landscape parks attached to the Ingestre and Tixall estates. Extensive cropmarks provide evidence of the medieval and post-medieval landscapes that preceded the creation of the extensive parklands in the eighteenth and nineteenth centuries, as well as evidence of potential remains associated with a settlement at Ingestre.

7.5.4 RAZ 15 covers Upper Hanyards Farm and environs. Documented as a settlement since the thirteenth century, its location on Hanyards Lane, connecting Stafford with Ingestre, points towards an earlier origin.

7.5.5 RAZ 16 covers an area of cropmarks, earthworks, and geophysical anomalies indicative of Iron Age and Romano-British enclosed settlement and Bronze Age funerary activity at Berryhill, immediately east of Staffordshire County Showground.

7.5.6 RAZ 17 covers the area immediately to the south and west of the modern village of Hopton where aerial imagery indicates the presence of extensive traces of medieval ridge and furrow cultivation as well as smaller enclosures off Hopton Lane that could represent traces of a formerly larger medieval settlement.

7.5.7 RAZ 18 includes the northern portion of the shrunken medieval settlement at Marston, where there are extensive earthworks centred on the junction of Marston and Yarlet Lanes.

7.5.8 RAZ 19 embraces a large remnant estate boundary around Yarlet, a Domesday settlement which was subsequently granted to the Cistercian monks of Combermere. The site lies on the main road (today the A34) leading north from Stafford. The locations of the early medieval settlement and grange have not been identified with confidence. It is possible that they may be found on or around the site of the early post-medieval manor house, believed to have stood within an area of woodland that stands to the south of Yarlet School.

7.5.9 RAZ 20 encompasses the summit of Pirehill, between the M6 Stafford services to the south and Stone to the north. The site of a signal beacon in the post-medieval period, Pirehill was the name of the medieval hundred covering much of north-western Staffordshire. Hundredal centres were traditionally where regional courts were convened. No archaeological evidence has yet been recovered from the site but its historical associations suggest that it has potential for early medieval archaeology.

ACA4 Stafford North Uplands: Areas of No Recognised Archaeology (NRA)

7.5.10 To the west of the Stafford showground, there is very limited evidence for the presence of a prehistoric population on aerial imagery or from extensive geophysical survey. This perhaps indicates that the heavy soils in this area, which sits on geology

of the Mercia Mudstone Group, were not widely exploited until the early medieval period, or could reflect a lack of visibility in the archaeological record. The potential for more ephemeral evidence of earlier prehistoric activity remains. The medieval settlement pattern survives in the landscape today, either as contemporary settlements or as shrunken, deserted settlements such as Hopton, Marston and Yarlet.

ACA5 Meece Brook and Swynnerton: Overview

7.5.11 This area covers the section of the Phase 2a route as it passes to the west of Stone. The route runs initially across a lowland area of former wetland and heath between Yarnfield and Stone, at a minimum elevation of 100m Ordnance Datum (OD), before climbing onto higher ground to the east and north of Swynnerton, where it reaches approximately 180m OD. The underlying geology of the area as far as Swynnerton is part of the Mercia Mudstone Group, extending beyond that to Triassic sandstone. The acid soils, overlying the sandstone, have meant that there is much woodland in the more northerly part of the route.

7.5.12 RAZs 21 – 25, which fall within this section of the route, are relatively small and are quite scattered, reflecting the generally sparse nature of known heritage in this area. Three of the RAZ comprise evidence for medieval to post-medieval settlement and activity. The remaining two contain evidence of probable prehistoric date and a Second World War complex, detailed below. The relatively low density of known sites in this area may reflect the impact of the M6 in erasing traces of earlier activity as well as the relatively inhospitable character of the landscape, much of it being low-lying and wet, with relatively poor quality soils.

ACA5 Meece Brook and Swynnerton: Recognised Archaeological Zones (RAZs)

7.5.13 RAZ 21 is the location of Darlaston Pool, fed by Filly Brook. Its origins remains unclear, although there may be evidence here for earlier medieval settlement. In the late nineteenth century, it was used as a boating lake.

7.5.14 RAZ 22, Blakelow Farm appears to date back to the medieval period although none of the buildings visible today appear to predate the seventeenth century (at the earliest). The 'low' element of the name could be a reference to a burial mound in the vicinity of the farm.

7.5.15 RAZ 23 comprises a group of four Second World War bunkers north of Clifford's Wood. The original function and precise date of these structures remains to be established, although they may well be associated with a nearby munitions factory at Cold Meece. They merit further investigation and recording for what they can reveal about the impact of the Second World War on society and the landscape in the area.

7.5.16 RAZ 24 covers a group of linear geophysical anomalies east of the Rowe, the date and function of which is unclear but which could represent Bronze or Iron Age settlement.

7.5.17 RAZ 25 contains the post-medieval farmstead of Shelton-under-Harley, which is listed in the Domesday Book, suggesting that medieval and potentially early medieval remains of settlement may exist beneath and around it.

ACA5 Meece Brook and Swynnerton: Areas of No Recognised Archaeology (NRA)

7.5.18 There is very little known archaeology recovered from this area. An area of glacial till to the north of Swynnerton could contain redeposited Palaeolithic material. The valleys of Meece Brook and Filly Brook, to the south-west of Stone, offer some potential for the preservation of prehistoric archaeological and palaeoenvironmental material within areas of alluvial deposition. Recent work at Norton Bridge has recovered evidence of Late Neolithic activity and waterlogged timber, including a mill wheel fragment in the valley of Meece Brook to the south of the route. There are a number of possible Bronze Age burial mounds in the vicinity of Swynnerton, although none have been confirmed through excavation. The Phase 2a route passes less than 2km (1.2 miles) to the west of the Bury Bank Iron Age hillfort.

ACA6 Whitmore and Madeley: Overview

7.5.19 This area contains the Madeley Basin and Whitmore Trough, which runs northwards from Baldwin's Gate to Madeley before opening out north-westwards onto the Cheshire Plain. It marks the east-west watershed with Meece Brook (part of the Trent catchment) running southward from Whitmore, while the River Lea (a tributary of the River Weaver) runs north and west from Old Madeley Manor.

7.5.20 The route wide geoarchaeological study[25] identifies the valley as a palaeolake, a periglacial feature of a kind that was typically created at the end of the last ice age at the margins of the retreating Devensian ice sheet. While the Madeley Basin contains largely glacial sands, the Whitmore Trough contains glacial sands and clays overlain by peat.

7.5.21 This area contains RAZs 26 – 29, which comprise a mixture of prehistoric, potentially Roman, medieval and post-medieval remains. This reflects the fact that this landscape niche offers considerable benefits to settlers: shelter, water, and good soils with easy access to resources (such as coal, salt and wood).

[25]HS2 Ltd, 2017. *Phase 2a Route-wide geoarchaeology study desk study report*, Annex A, Section 5.4. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/628019/E37_CH-006-000_WEB.pdf).

ACA6 Whitmore and Madeley: Recognised Archaeological Zones (RAZs)

7.5.22 RAZ 26 covers the portion of the 'Madeley palaeolake' that falls within the Phase 2a route. Boreholes indicate deposits of clay and peat to a depth of 1.5m above late glacial sands, clays and gravels extending to at least 11m in depth. This suggests high potential for early post-glacial palaeoenvironmental evidence and potentially associated archaeology.

7.5.23 RAZ 27 covers an extensive area on both sides of the southern Madeley Basin, where a large mound to the west below Madeley Manor Farm and a circular geophysical anomaly on the east side of the valley suggest the presence of Bronze Age burials. The scheduled site of the medieval manor lies immediately to the south-west as well the site of a former medieval mill fed by the headwaters of the River Lea. While the area lies to the north of the identified extent of the palaeolake, the valley is likely to contain significant late Pleistocene and Holocene sediments.

7.5.24 RAZ 28 covers the portion of the Madeley Basin immediately to the west of Madeley, on the opposite side of the West Coast Main Line (WCML). The area includes the site of a potential burial mound and an area of cropmarks and geophysical anomalies to the south-west, south, and south-east of Moor Hall farm. Geophysical survey indicated the footings of a masonry building. Together with a series of straight, linear cropmarks in the fields to the east, perhaps the most likely interpretation of this is as a Roman period building.

7.5.25 RAZ 29, at the mouth of the Lea Valley as it runs into the Cheshire plain, comprises fields to the south of Wrinehill manor, including formal gardens and the potential site of a brick kiln.

ACA6 Whitmore and Madeley: Areas of No Recognised Archaeology (NRA)

7.5.26 The Whitmore trough and Madeley Basin and wider vicinity contain extensive evidence for important later Pleistocene and Holocene deposits. The free-draining soils above the local sands and gravels have attracted settlement from the prehistoric period onwards. There is extensive evidence for Bronze Age and Iron Age activity in the area, including numerous burial mounds and a hillfort at Berth Camp less than 2km (1.2 miles) west of the route. So far, no traces of Iron Age settlement have been found in the immediate vicinity of the Phase 2a route. Such sites are, perhaps, likely to be found on more elevated ground overlooking the valley bottom.

7.6 Topographic region: Cheshire Plain

ACA7 Cheshire Plain: Overview

7.6.1 This area extends along the Phase 2a route from the northern end of the Madeley valley as far as Crewe. This is an area of gently undulating farmland, characterised by widespread deposits of glacial sand, gravel, and clay. These landscape features reflect the notion that this area lay at the edge of the Devensian ice sheet during the

last glacial maximum, between 20,000 and 30,000 years ago. The deposits largely comprise outwash deposits formed by meltwater as the ice sheet retreated. This has resulted in the formation of numerous lakes and pools, some of which have subsequently filled with sediment and often are manifested as mosses and marshes. Where ice wedges became embedded in the landscape and subsequently melted, they have formed 'kettle holes', which typically are waterlogged and often contain organic sediments. These have high potential for the preservation of palaeoenvironmental material.

7.6.2 The above-mentioned formation has resulted in the creation of a fairly flat landscape, with streams meandering from south-east to north-west. Checkley Brook runs to the west of the route of the scheme while Basford Brook runs parallel and to the east of the WCML, before crossing the railway line immediately south of Crewe. Both brooks drain into the River Weaver to the west of Crewe.

7.6.3 RAZs 30 – 33 comprise early post-glacial deposit sequences with the potential to contain archaeology in the form of dispersed medieval settlements, characteristic of this landscape type. These features reflect the unique formation of the Cheshire plain in comparison to the sections of the Phase 2a route further south.

ACA7 Cheshire Plain: Recognised Archaeological Zones (RAZs)

7.6.4 RAZ 30 includes two deposits of organic material (potential kettle holes of late glacial period) within deposits of Devensian sand and gravel. It is likely that they contain late Devensian to early Holocene palaeoenvironmental deposits, and kettle holes also have the potential to contain archaeological material.

7.6.5 RAZ 31 comprises the earthwork and buried remains of the deserted medieval village of Godwynesleigh, located beside Gonsley Green farm. The extensive earthwork remains of this former settlement are clearly visible on aerial and LiDAR imagery. The location of these features coincides with the known position of a medieval settlement at Gonsley, (formerly Godwynesleigh), with a second potential kettle hole evident on the northern boundary of the farm.

7.6.6 RAZ 32 covers an area of earthwork remains to the north of Heath Farm, located to the south of Crewe. This is one of numerous scattered historic farmsteads in the local landscape, characteristic of the Cheshire plain where the predominance of pastoral agriculture favoured the development of a dispersed settlement pattern from an early date. In this case, there is evidence of rectilinear earthworks adjacent to the post medieval farm buildings along with traces of trackways indicating possible evidence for medieval settlement.

Figure 7: Recognised Archaeological Zones (RAZs) within the Cheshire Plain

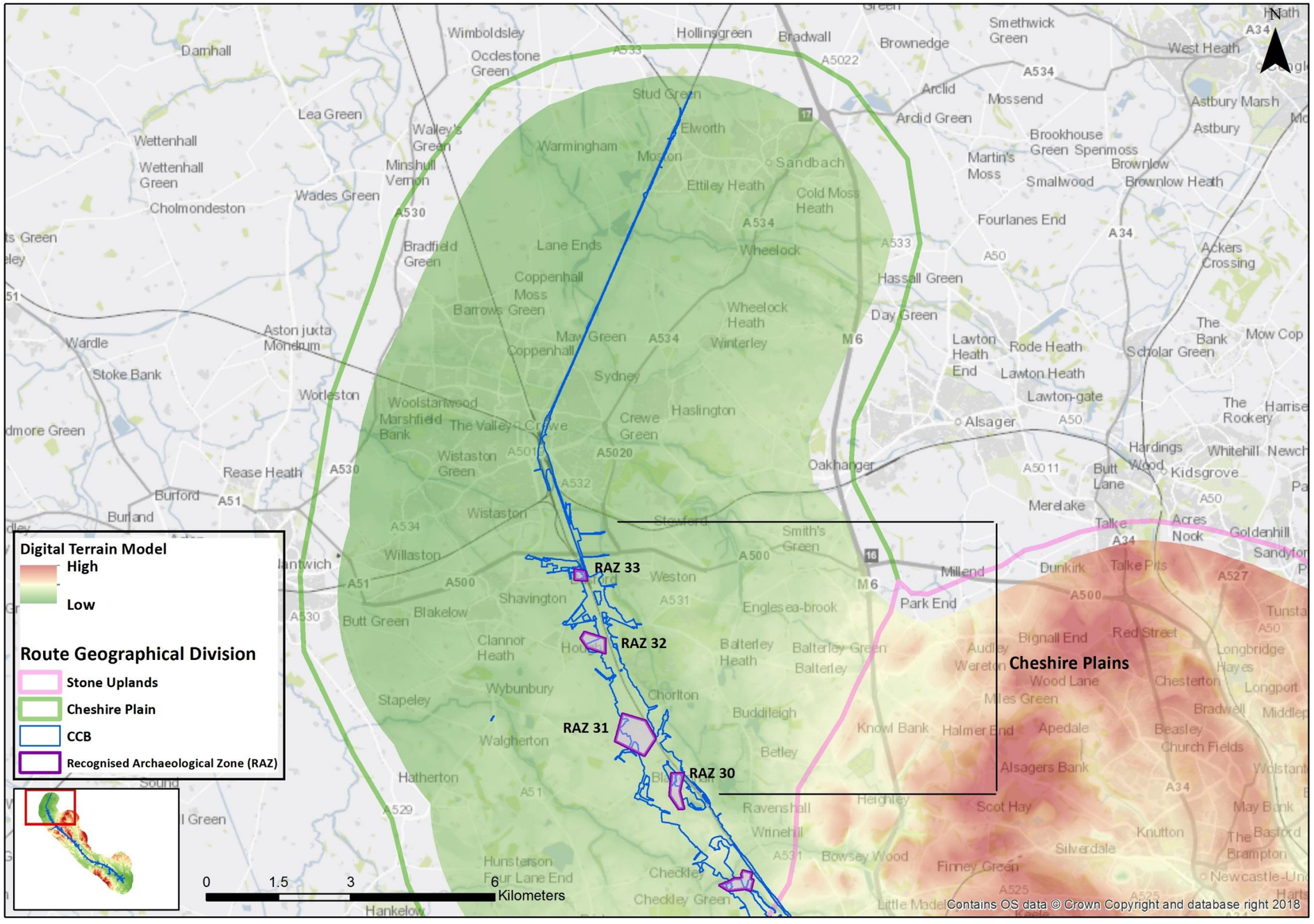


Figure 8: Satellite image of RAZ 31, the remains of the deserted medieval village of Godwynsleigh, in the southern Cheshire Plain

7.6.7 Similarly to RAZ 32, RAZ 33, Basford Hall, was the location of a substantial post-medieval house with associated earthwork features and historic farm buildings. The construction of the Grand Junction Railway in the early 1830's cut across the eastern edge of the settlement complex, initially leaving the hall itself intact.

ACA7 Cheshire Plain: Areas of No Recognised Archaeology (NRA)

7.6.8 The presence of extensive Devensian and Holocene organic deposits in this area provides palaeoenvironmental sequences that can offer the appropriate context to understanding the archaeology of multiple periods. It further suggests the potential for buried in-situ Pleistocene to late glacial ground surfaces. The low-lying, wet nature of the landscape is likely to have created good conditions for the preservation of organic archaeological remains across periods. Previous work in the region suggests that early prehistoric activity is likely to have been seasonal and may be represented by scatters of flints and other organic and inorganic archaeological material on slightly elevated areas of higher ground.

7.6.9 The presence of salt sources a short distance to the west of the route (for example at Hough), along with the known salt production centre at Nantwich five kilometres to the west of the Phase 2a route, indicate potential for prehistoric and Roman activity in the area. The numerous scatter of medieval farms and manors signify an intensively exploited agricultural landscape.

7.7 Built heritage

7.7.1 Three Grade II Listed mileposts, as well as the Grade II Listed Crewe Station, lie within the footprint of Phase 2a. These buildings, and the proposed works to be carried out on them, are set out in Table 1 of Schedule 18 to the Act. The milestones will be stored during construction and replaced, and the work at Crewe Station is limited, and is not considered likely to impact upon the heritage significance of the building.

7.7.2 Several non-listed buildings, some of which are of heritage significance, fall either within the construction boundary or are located close to it. These assets are not represented by RAZs due to their established presence and heritage significance, which allows a higher degree of certainty in planning heritage works as opposed to the more risk-based identification of archaeological remains. This section summarises the potential built heritage structures that fall within the land required for the scheme, which may require further investigation.

Rural settlement

7.7.3 Several groups of historic farm buildings are located within the boundary of the Phase 2a route, all of which are built from red brick, presumably locally manufactured. These comprise the late nineteenth century cottages at Tithebarn Farm, smallholdings at Mount Farm and Lowerbridge Farm at Hopton, and a barn at

Shelton-under-Harley, most of which have seen extensive modern renovation. The brick outbuildings at Basford Farm (immediately outside of the Phase 2a route) potentially dates to the later eighteenth century. The buildings at Hanyards Farm (RAZ 15), are, based on documentary evidence, suggested to have been occupied since at least the thirteenth century and are of heritage significance.

7.7.4 There is potential for the survival of earlier building materials in all of these buildings particularly given the persistence of settlement in this area from the early medieval period onwards.

Industry, transport and communication

7.7.5 It is perhaps inevitable, given the linear nature of the Phase 2a route, that it should encounter older elements of linear transport infrastructure in a number of places. The Roman road system aside (which on current knowledge appears to be absent within the route), the earliest evidence of industry, transport and communication are the turnpikes of the eighteenth century. These were provided with hollow cast-iron triangular mileposts, a number of which fall within the boundary of the route. Walkover surveys of the route have generally found them to be in poor condition, often in advanced states of decay.

7.7.6 Efficient distribution networks were fundamental to the international success of Staffordshire's potteries in the eighteenth and nineteenth centuries. For this reason the Trent and Mersey Canal was built in the later eighteenth century, and was partly funded by Josiah Wedgewood, providing, as it did, access from the potteries of Stoke-on-Trent to both sides of the country. The canal follows the Upper Trent Valley to Stone and is crossed by the Phase 2a route twice (once at Fradley and once at Great Haywood).

7.7.7 Similarly, the early railway network made use of many of the same topographic corridors that are being followed by the Phase 2a route. The Grand Junction Railway (one of the earliest passenger railway lines built) opened in 1837, was designed to connect the Liverpool and Manchester Railway (the first passenger line) to Birmingham. The Phase 2a route runs close to this line from Whitmore northwards, converging with it to the south of Crewe. It is unclear how much of the original engineering fabric, if any, of the Grand Junction Railway survives given the expansion of the WCML in the later twentieth-century. The Phase 2a route also crosses a number of branch lines: the North Staffordshire line, the (disused) Stafford and Uttoxeter line, the Norton Bridge line and the Market Drayton line (also disused).

Military

7.7.8 There are a number of substantial historic and current military sites close to the Phase 2a route, including substantial installations at Hopton, Stafford and Swynnerton. A Second World War pillbox beside the RAF Lichfield within the Trent

Valley, and a group of four ammunition bunkers at Hatton Rough, fall within the boundaries of the Phase 2a route.

8 Specific Objectives

8.1 Introduction

8.1.1 The Specific Objectives, coupled with the strategies, technical standards and procedures (see Section 9) form the core of the Phase 2a GWSI: HERDS and translate the Headline Objectives into tangible potential actions. The Specific Objectives identify what the *Employer* requires to be achieved and the strategies, technical standards, and procedures set out how the *Employer* requires them to be delivered.

8.1.2 This section sets out the Specific Objectives for the Phase 2a GWSI: HERDS. A matrix linking the Specific Objectives to the Headline Objectives is provided in Appendix 3.

8.1.3 The Specific Objectives may need to be updated and revised to reflect the result of ongoing field investigations along the Phase 2a route.

8.1.4 The *Contractor* shall design and deliver heritage works in order to address the Specific Objectives.

8.2 Specific Objectives: Historic environment skills, employment and education

8.2.1 The Specific Objectives for skills development and training have been developed to deliver Headline Objective 2, and to support delivery of the other Headline Objectives. Delivery of this objective will in many instances be a vital prerequisite for delivery of the other aspects of Phase 2a GWSI: HERDS.

8.2.2 The *Contractor* will use these Specific Objectives to support and contribute historic environment matters into the Skills, Employment and Education Implementation Plan. Reference should also be made to Section 6 of Phase 2a GWSI: HERDS.

2aSEE1: Address potential historic environment skills shortages relating to the delivery of the Phase 2a GWSI: HERDS

8.2.3 The *Employer* aims to be an exemplar for the rail, engineering and construction industry in acting as a driver for improvements in the sustainability of the sector by appointing the right workforce, to be available at the right time with the right skills and behaviours. As part of this, the *Contractor* shall identify the historic environment contribution to the volume and mix of skills, employment and education (SEE) outputs that will be delivered and the proposed methodology within the SEE Implementation Plan.

8.2.4 The *Contractor* shall identify skills shortages that may affect the delivery of elements of the Phase 2a GWSI: HERDS and this shall form the basis for determining the route to SEE options and opportunities. Consideration shall be given to work-based

learning traineeships in historic environment practice, apprenticeships, links with schools – for example to highlight the career paths, engagement with higher education organisations to highlight the career opportunities and facilitate the development of specialist skills (including data management and BIM related skills) and wider environmental, business and management training that may be available at the National College for Advanced Transport Infrastructure of High Speed Rail.

8.3 Specific Objectives: Historic environment community engagement

8.3.1 Three thematic Specific Objectives (2aCE1, 2aCE2, 2aCE3) that have been prepared, these are intended to provide guidance on the role/project themes that communities could take up. They meet the *Employer's* Design Vision themes of 'people, place, time'. They also link into some of the knowledge creation Specific Objectives. Accompanying these thematic Specific Objectives there are two other Specific Objectives related to legacy (2aCE4 and 2a CE5). Reference should also be made to Section 5 of Phase 2a GWSI: HERDS.

2aCE1: Marking and communicating the changes to landscapes and environments

8.3.2 Phase 2a of HS2 will bring landscape change, in which local communities will see a transformation of their local environment. Landscape and environments have constantly shifted and altered throughout time and this theme encourages engagement in the research and discovery of change of local and regional landscapes (e.g. landscapes of power, conflict and exclusion, the built environment – canals, railways, local monuments, favourite places, local landmarks). Perhaps the most obvious example of this along the Phase 2a route are the changes brought about at the time of the industrial revolution, with the construction of the canals in the later eighteenth century followed by the development of the railway system – and the development of Crewe as a railway hub – in the mid-late nineteenth century.

8.3.3 This objective is focused on recognising personal and emotional responses to landscape change: understanding change as experienced by different generations; gaining community insights into the management and acceptance of change to local environments and landscapes. This objective encourages the *Contractor* to support and engage in projects that aim to deliver community recording and marking of landscape change.

8.3.4 It seeks to explore how we can employ different methods to understand change, explore and record change in the world around us. This can be through artistic expression, oral history, or research; and in partnership with multiple community groups, specialists and academic institutions.

8.3.5 There are potential links with 2aKC8, 2aKC10, 2aKC13, 2aKC14, 2aKC19, 2aKC20, and 2aKC21.

2aCE2: Identifying and sharing our stories

8.3.6 There is a growing interest and appetite for family history and ancestry and researching roots and identities. Phase 2a of HS2 offers opportunities for communities to further discover their past, their links to other communities and cultures, and how cultural and social developments have transformed peoples' lives. This provides the means to discover the richness of diversity and cultural progress by exploring past cultures and relationships through contemporary thinking and approaches to social engagement. This would allow some exploration of history through the connections between people and place and how this has evolved.

8.3.7 This objective aims to keep people at the heart of the delivery of Phase 2a of HS2; in providing a means for communities to engage with their history and present their own stories. It is important that this applies to disadvantaged and marginalised groups as well as more traditional heritage audiences. *Contractor*s will be available to support and recognise project opportunities in this area, working with the *Employer's* Community Engagement team. This aims to deliver wider social skills and learning opportunities across generations; social cohesion and celebration of diversity across cultural groups; wellbeing and contentment within societies.

8.3.8 There are potential links with 2aKC19, 2aKC20, 2aKC21 and 2aKC23.

2aCE3: Meeting the challenge of inspiring the next generation

8.3.9 There is evidence of limited interest in the historic environment from young people (see DCMS and CBA studies – Section 5), this is also reflected in the reduction of young people taking up archaeology as an academic study or profession. The challenge is to increase professional historic environment expertise and capacity to manage the resource. It is therefore important to seek and develop opportunities through Phase 2a of HS2 to inspire interest in history, archaeology and the historic environment profession.

8.3.10 Working with, for example, schools, colleges, youth groups, students, young archaeologists (CBA) and community clubs, *Contractor*s will identify and facilitate projects that provide young people with the opportunity to work alongside professionals in the historic environment sector. This should include as wide a range as possible of the different skills and specialisms that exist within the historic environment sector. Programmes should be initiated with youth group professionals and academic institutions that includes experience of archaeological practice, conservation and curating, as well as a variety of techniques and technologies; where they are directly contributing to outcomes, results and decisions.

8.3.11 The scale of Phase 2a of HS2 and the availability of a wide range of skilled professionals to engage with the younger generation through a variety of approaches aims to initiate a renewed interest in the historic environment and the breadth of professional opportunities available.

8.3.12 There are potential links with 2aKC8, 2aKC13, 2aKC14, 2aKC17, 2aKC19 and 2aKC20.

2aCE4: Accessible information and knowledge sharing

8.3.13 The *Contractor* shall develop digital communication approaches that allow them to engage with a broad range of audiences. This includes liaising with the *Employer* to share discoveries using social, and other digital media, to engage with the public, communities and volunteers (as appropriate).

8.3.14 The *Contractor* shall develop and implement innovative approaches to engage a broad range of audiences with the historic environment works. Examples of such approaches could include:

- rapid distribution of digital site material through an open access portal; live streaming of excavations with feedback and comments;
- creation of a Photo Lab to share images of finds/places/features/sites and the people involved (discoverers);
- a development of the PASt Explorers scheme by the Portable Antiquities Schemes (PAS) through the creation of apps/websites showing links between field, museum, archives and artefact to help engage people with the story and how it is evolving; and
- lunchtime, evening and weekend 'webinars' to engage those working on the projects as well as external parties in the wider audiences.

8.3.15 It is expected that data and information emerging from historic environment works for HS2 Phase 2a will be primarily digital. In attempting to achieve a 'born digital' or 'digital by default' approach, digital and media communication techniques form part of a new wave of engagement and dissemination, which will aim to attract harder to engage groups (e.g. gaming, social media), keep interested audiences involved (specialist publications – Internet Archaeology; Community Archaeology); allow for specialist engagement and more purposeful and efficient project creation, delivery and analysis (e.g. digital recording), public awareness and understanding (Augmented Reality interpretations). The *Contractor* should make good use of technology available and proactively support the capture, sharing and dissemination of data.

2aCE5: Contribute to the process and facilitation of audience project creation

8.3.16 There may be projects which have already been initiated or which are about to commence by community groups/academic researchers/professional archaeological investigations that could relate to the research priorities set out in the Phase 2a

GWSI: HERDS. There may also be projects that are initiated from the Phase 2a GWSI: HERDS process by any of the lay, professional and academic audiences.

8.3.17 Although thematic Specific Objectives have been created (see 2aCE1, 2aCE2 and 2aCE3) which may stimulate projects from audiences; equally there may be ideas for projects which may not automatically fit these themes, but which may be just as valid and of importance to audiences in wishing to research the historic environment. These may be route-wide or locational specific and may relate to community anniversaries and events; academic institutions research agendas; historic environment professionals multi-specialist studies and big-data projects; community social and political imperatives; particular locations/sites or methods of historic environment investigations that communities have a vested interest in (e.g. local landmarks; demolition of buildings).

8.3.18 Through working with the *Employer*, the *Contractor* through their historic environment supply chain shall identify how they can support project facilitation or provide expertise in order to help deliver wider community projects and leave a lasting legacy of their engagement in the process. This objective aims to give communities the opportunity to direct their own research agendas and methods of participation; having access to expertise and possible funding streams to create their own legacy.

8.4 Specific Objectives: Knowledge creation

Introduction

8.4.1 The specific research objectives set out below represent a development of those created to support Phase One HERDS, building on lessons learned while ensuring that there is continuity of research aims, where applicable.

8.4.2 Some of the Specific Objectives refer to the location-specific studies undertaken in support of the Phase 2a Environmental Statement[26]. This includes the heritage gazetteer and baseline studies developed for each of the five community areas along the route. Where individual sites are referred to in this section, their ES gazetteer references are used (for example, FRC001, COY001, STS001, WHM001, SCH001).

8.4.3 The route wide geoarchaeological desk study[27] provides important background for an understanding of the different geoarchaeological deposits along the route, which are broken down into Geoarchaeological Character Zones (for example GCZ01).

[26] HS2 Ltd 2021. *HS2 Phase 2a Environmental Statement*. https://www.gov.uk/government/collections/hs2-phase-2a-environmental-statement.

[27] HS2 Ltd, *Phase 2a Routewide geoarchaeology study desk study report*, Annex A, Section 5.4. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/628019/E37_CH-006-000_WEB.pdf.

8.4.4 The provisional Recognised Archaeological Zones (RAZs) identified in Section 7 are referred to where appropriate.

8.4.5 These Specific Objectives were informed by a series of workshops held with technical experts. A summary of these workshops is included as Appendix 1.

8.4.6 Where Specific Objectives provide opportunities for the *Contractor* to engage with local communities, this has been highlighted; however, the *Contractor* should seek to identify additional or alternative opportunities dependent on the scope of works.

2aKC1: Identify, investigate and document Pleistocene and Holocene fluvial deposits along the Phase 2a route

8.4.7 Pleistocene river terrace and Holocene alluvial deposits are key contexts for archaeological and geoarchaeological investigation. Understanding their extent, date and character is fundamental in understanding the likely extent and character of early prehistoric and palaeoenvironmental remains along the Phase 2a route.

8.4.8 The Pleistocene terrace sands and gravels reflect deposition under cold climatic conditions in braided river environments, whereas organic silts and clays are associated with meandering rivers in temperate climates. Within individual catchments evidence for several terrace deposits can usually be mapped, representing successive phases of aggradation and incision covering multiple glacial-interglacial cycles. In the Upper Trent Valley, the earliest river terrace evidence dates back to the end of the Anglian glaciation, around 450,000 years ago (Bridgland et al. 2014).

8.4.9 Holocene alluvium is recorded along the floodplains of the rivers Trent, Sow and Lea and along several smaller active tributaries – it has been identified in fourteen locations altogether[28]. Floodplain alluvium is a key context for the preservation of sensitive waterlogged archaeology and associated palaeoenvironmental remains; both critical for understanding the physical evolution of the landscape and its exploitation by past human communities living on the adjacent dry ground.

8.4.10 It is important to recognise the potential of fluvial systems to include archaeology and deposits dating to later prehistoric and historic periods. Should these contexts exist, they could provide important information relevant to the objectives around later prehistoric, Romano-British, medieval and later activity and settlement.

8.4.11 Where the route is anticipated to require disturbance of areas of Pleistocene/ Holocene fluvial deposits, the *Contractor* should develop as complete an understanding as possible of the depth, date, and character of these sequences. This

[28] HS2 Ltd, *Phase 2a Routewide geoarchaeology study desk study report*, Annex A, Section 5.4. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/628019/E37_CH-006-000_WEB.pdf.

will allow appropriate and informed archaeological strategies to be developed in these areas. In areas with complex Pleistocene/Holocene sequences, including the Trent Valley crossings (RAZs 1 – 4, 12, 13) and the Madeley palaeolake (RAZ 26), the development of deposit models will be an important tool to enable this. Integrating investigations and data from geotechnical ground investigations, including boreholes and trial pits, is required in developing such models. Where appropriate and/or necessary, these may be supplemented by targeted, geoarchaeologically-driven boreholes.

8.4.12 Dating of key deposits is important in order to provide chronological resolution to these sequences. The potential for radiocarbon dating of deposits within the limits of the last 45,000 – 50,000 years should be maximised. Where feasible and appropriate, multiple dating techniques should be applied to the same sequence to provide robust dating for the sediments under investigation. This will help to understand the complex formation processes of Pleistocene deposits and validate/ refine the application and interpretation of scientific dating techniques; suitable dating techniques would include amino acid racemisation (AAR), optically stimulated luminescence (OSL), thermo-luminescence (TL), uranium series and C14.

2aKC2: Explore glacial tills along the Phase 2a route to establish with the greatest precision possible the extent and date of the maximum advance of the most recent (Devensian) ice sheet

8.4.13 Tills are poorly sorted sediments deposited directly by ice sheets. The upper reaches of the Trent were glaciated during the last Ice Age (Late Devensian, MIS 2), with the tills attributed to this period identified on the basis of British Geological Survey (BGS) mapping (Bridgland et al. 2014). The southern end of the Phase 2a route of this area is close the margins of this icesheet and its precise extent is still the focus of debate[29]. Some of the tills at the southern end may relate to earlier glacial episodes between the Anglian and Late Devensian (White et al. 2016), which in turn, has implications for the potential for discovering Lower and Middle Palaeolithic archaeology. Although the tills themselves have limited archaeological potential, they may seal and preserve underlying stratigraphy containing archaeological sites and associated environmental remains.

8.4.14 Chronological work to date has been based entirely on radiocarbon dating. Techniques such Optically Stimulated Luminescence (OSL) and Amino Acid Racemization (AAR) analyses offer additional opportunities to refine chronologies.

8.4.15 An alternative approach is to carry out a combined lithological and sedimentological analysis of till deposits from different locations. The objective of this would be to establish if they are composed of the same or different material that could suggest the same or different ice advances and source of geological materials. Tills deposited by the icesheet could be entirely Late Devensian in date, but the possibility of pre-

[29] The work of the Britice project is relevant to this issue: https://www.sheffield.ac.uk/geography/staff/clark_chris/britice_v2/index.

Devensian Tills has implications for the survival of lower and middle Palaeolithic archaeology.

8.4.16 Analysis of cores through the glacial tills will help to determine if they are entirely Late Devensian in date – thereby suggesting a similar date for terrace deposits and a lower likelihood for retrieval of Palaeolithic archaeology. If, on the other hand, the tills are of Late and pre-Devensian date, this would help to define the probable southern limit of the Devensian icesheet. It would also highlight those areas (notably the terraces of the Trent Valley) with higher probability for retrieval of Lower, Middle and Upper Palaeolithic archaeology.

2aKC3: Explore evidence for Palaeolithic occupation or activity within the Phase 2a route

8.4.17 The Trent Valley offers the best opportunity to recover Palaeolithic evidence from the Phase 2a route, given that river terrace deposits in England do contain tools indicative of human activity, although usually in non-primary contexts. In many catchments further south, flint is widely available, both in the Cretaceous Chalk bedrock and river gravels, and therefore it has been the primary material used to produce hand axes. This distribution reflects the distribution of remains with respect to the Late Devensian icesheet and scarcity of flint further north. In the Midlands, quartzite available locally from the Triassic bedrock would have formed a key resource for hunter gatherers (White et al. 2009), but individual worked clasts abrade quickly and do not stand out within other superficial deposits without expert oversight.

8.4.18 River terrace sediments may also preserve floral and faunal remains that are instrumental in providing information on past climates and environments and developing secure chronostratigraphic frameworks through both relative and absolute dating. For example, at the Trent-Tame confluence, a low terrace revealed the remains of four woolly rhinoceroses and organic remains indicative of an arctic climate attributable to the Middle Devensian (Schreve et al. 2013). Pleistocene deposits are key contexts for future investigation, particularly where there is the opportunity to reveal stratified sedimentary sequences and associated archaeological deposits.

8.4.19 Palaeolithic evidence is often recovered from river valley deposits in England and these locations have traditionally formed the primary focus of research across the period. There is, therefore, a bias in the data that could be redressed through a broader study. Occupation and activity was not solely confined to these areas. Sites in different topographic and geological locations may yield a variety of other evidence. The understanding of the location and frequency of occupation in differing environmental contexts has the potential to significantly change accepted narratives for the period.

8.4.20 The potential for the Trent Valley to preserve late Upper Palaeolithic material has been revealed by recent work at Tucklesholme Quarry close to the Tame-Trent confluence. The presence of a number of late glacial/periglacial features within the northern part of the route (e.g. Madeley palaeolake, RAZ 26, and the group of kettle holes/pingos in the Cheshire plain, RAZs 29 – 31) also indicates the potential to uncover stratified remains of this period. Investigations along the Phase 2a route provide an opportunity, therefore, to provide new evidence for the recolonization of Britain by human populations in the early post-glacial period.

2aKC4: Identify sequences of environmental change for the Late Upper Palaeolithic–Early Mesolithic transition through investigation of Late Glacial and Early Holocene sequences in the Trent Valley, the Madeley Palaeolake, kettle hole sites in the Cheshire Plain and other locations along the route

8.4.21 Refining existing understanding of the transitions between each of the major archaeological periods is consistently cited as a priority across many of the national research frameworks. The presence of numerous sites along the Phase 2a route containing deposit sequences likely to span the late Pleistocene into the early Holocene indicates the potential to address questions about the Upper Palaeolithic-Early Mesolithic transition.

8.4.22 This transition period experienced major environmental change with the onset of the Holocene and the replacement of tundra and open vegetation with an increasingly wooded environment. The knowledge gaps that currently exist relate to the scarcity of in-situ sites nationally and a paucity of radiocarbon dates for this transition. At a larger scale this is increasingly being addressed, with phases of occupation and abandonment correlated with the Greenland ice core stages, with specific questions emerging, such as whether there is a lag between climate change and vegetation/faunal turnover, and how that correlates with human presence/absence.

8.4.23 The potential of early post-glacial deposit sequences in the area has been demonstrated by palaeoenvironmental studies at the King's Pool, Stafford (Bartley and Morgan 1990). Sequences that fall within the Phase 2a scheme with similar potential include peat deposits and infilled periglacial landform features (including potential kettle holes) in the Cheshire plain (SCH089-098)[30] and the palaeolake sequence in the Whitmore Trough to the south of Madeley (WHM083). The identification of further palaeoenvironmental evidence within surviving organic deposits may enable a greater understanding of environmental change and provide a context for changes in social organisation, subsistence and technology.

[30] Where individual sites are referred to in this section, their ES gazetteer references are used (for example, FRC001, COY001, STS001, WHM001, SCH001).

2aKC5: Identify and investigate evidence for change in the environment and management of the landscape during the Mesolithic, Neolithic, and Early Bronze Age periods

8.4.24 Reconstruction of past environments including, for example, patterns of forest cover, land management and faunal assemblages, are critical to our understanding of settlement during this time. A period of rapid climatic warming from c.9700 BC resulted in the transition from open tundra grassland environments to extensive woodland habitats blanketing the landscape, with an associated change in faunal species, and associated change in hunting-gathering-fishing practises. There is evidence from King's Pool, Stafford, for charcoal in sediments dating from 6,000 – 5,000 BC, perhaps evidence for deliberate clearance of forest in the later Mesolithic (Leah et al. 1998). In the Early Neolithic localised woodland clearance for agriculture is likely to have taken place, but the degree of continuity of mobile subsistence strategies from the Mesolithic is uncertain.

8.4.25 The *Contractor* should identify and sample deposits that may inform our understanding of environmental change and anthropogenic influence upon environments across the Mesolithic and Neolithic. This can potentially provide insights into the character of the Mesolithic- Neolithic transition, the rate of adoption of agricultural practice, continuity and change in subsistence strategies. Previous work carried out on waterlogged sedimentary sequences during the Northwest Wetlands Survey studies of Staffordshire (Leah et al. 1998) and Cheshire (Leah et al. 1997), and on the deep sequence at King's Pool Stafford (Bartley and Morgan 1990) has demonstrated the potential of such locations to provide information about the impact of humans on the environment during these periods. The application of similar techniques (palynology, palaeobotanical analysis and radiocarbon dating) to sedimentary sequences along the Phase 2a route should be explored to provide new insights into the effect of humans on their environment during the transition from Mesolithic to Neolithic ways of life.

8.4.26 Refining existing understanding of the transitions between each of the major archaeological periods and their sub-divisions is consistently cited as a priority across many of the national research frameworks. The geographical extent of the Scheme leads to a higher potential to encounter transition sites or highlight broad scale differences between patterns of occupation over time. It is thought that the uptake of Neolithic practices at a national scale may have spread from the south east along river valleys. The *Contractor* should explore evidence for, and develop models of, the earliest Neolithic activity within the route across a variety of landscape contexts. The identification of such activity can be used as a basis of comparison with models for the location and pattern of settlement in the Late Mesolithic. This could be done through:

- a focus on inter- and intra- site analyses alongside landscape archaeological approaches. This could involve mapping known artefact distributions/site

locations in relation to natural features, potentially of liminal or ritual importance (e.g. rivers, groves, caves) as well as anthropogenic monumental sites and resource pools;
- application of site-catchment analysis/optimal forager models, relating them to established sites, material distributions, prospective sites (e.g. identified through remote sensing or geophysical survey), and the location of known resources; or
- analysis of site placement preferences, incorporating evidence for land cover change (if a substantial palaeobotanical coring methodology is established), reuse, resource procurement and potential mobility and visibility of human communities.

2aKC6: What were patterns of movement and change in populations from prehistory to the present day? Did the origins of individuals contribute to social and cultural identity? Can this be defined across time and space?

8.4.27 The scientific analysis of human skeletal material has the potential to identify large-scale movements of individuals through defining their likely geographic place of origin. Techniques include oxygen and strontium isotope analysis, as well as analysis of ancient DNA. Applying these techniques across a broader spectrum of time has the potential to identify patterns in large-scale movement, which may contribute to our understanding of identity, the spread of ideas, knowledge and beliefs. It may also be able to define periods of more frequent large-scale mobility and contrast these with more static population dynamics across periods of time and geographic regions.

8.4.28 This may be particularly informative for periods of large-scale cultural/technological change, such as the Mesolithic/Neolithic and Neolithic/Bronze Age transitions. There may be opportunities within the Phase 2a route to recover skeletal remains from the Late Neolithic/Early Bronze Age in particular. There are significant numbers of cropmarks indicating the presence of Early Bronze Age burial mounds within and close to the route from the Trent Valley to the Madeley Basin. Two such burials – King's Low and Queen's Low – have been excavated close to the route at Tixall (Lock et al. 2013). The development of the funerary tradition of single inhumations under burial mounds is generally dated to the Late Neolithic/Early Bronze Age transition (c.2,500 – 2,000 BC). Such burials are also frequently associated with evidence for Beakers and early metallurgy. Evidence from DNA and other sources increasingly points towards the influence of immigrants from continental Europe in bringing about this major cultural and technological change. Study of a number of burials from different points along the Phase 2a route could provide important new information in understanding these processes. Specifically cropmarks indicate the presence of possible burial mounds of this period in RAZs 2, 4, 13, 17 and 27. An assessment of museum or private collections of lithics may help to identify patterns in material culture.

8.4.29 Other periods to which these techniques might be applied include the late Roman/early medieval transition, the period following the Black Death in the later fourteenth century AD and the Industrial Revolution. This objective has the potential to contribute to themes of movement through the landscape, regionality, communication routes as agents of social change and transition, legacy and inheritance.

8.4.30 Such patterns of population and boundary change may also be intelligible in analysis of artefacts and material culture, as identified in Specific Objective 2aKC10.

2aKC7: Explore the Neolithic/Bronze Age ritual landscape of the Trent Valley, placing it within its wider settlement context

8.4.31 The concentration of a number of major Neolithic and Early Bronze Age ritual monuments in the Upper Trent Valley – including causewayed enclosures, cursuses, timber circles and penannular ring-ditches structures – is of national significance. It is reminiscent of monument concentrations in other recognised ritual centres of the period of which the best-known is Stonehenge. Another – perhaps more directly comparable – example is the Walton Basin in the Welsh borders (Britnell 2013). Recent exploration at the Walton Basin has revealed a causewayed camp, cursuses and smaller rectangular enclosures, bearing striking similarities to monuments known from aerial imagery and, in some cases, excavation in the Upper Trent basin. The extent, range and complexity of the group of monuments that extends from Rugeley in the west to Catholme in the east justifies such comparisons. A number of monuments on the eastern side of this distribution at the Trent-Tame confluence were investigated and published as part of the 'Where Rivers Meet' project (Buteux and Chapman 2009).

8.4.32 Notwithstanding these projects, the wider significance of this ritual landscape remains relatively poorly understood. The Phase 2a route will affect a significant portion of this landscape (RAZs 1 – 4) as well as a secondary, smaller group of monuments to the west of the Great Haywood crossing of the Trent (RAZ 13). Garwood (2011) provides a useful overview and discussion of ritual landscapes in the region that provides useful context. The remains within the route should be explored and analysed to understand what they can tell us a about the chronology, purpose and character of these monuments. Questions that should be considered when designing fieldwork strategies of these monuments include:

- the need to establish a robust chronology of use – through the application of Bayesian statistical approaches to radiocarbon dates – of different monuments at different times;
- to establish the frequency and character of activity at each monument, keeping in mind that uses may have changed through time;
- to explore the spatial and functional relationships of the different monuments through time; and

- to consider how earlier monuments may have affected the location and development of later monuments.

8.4.33 It should be established whether the Neolithic/Bronze Age monuments of the Trent Valley represent a genuine grouping, or whether this perception is distorted by the nature of the evidence, which is predominantly (although not exclusively) visible from cropmarks identified from aerial imagery). Similarly the fact that there has been extensive fieldwork ahead of gravel extraction across the Trent Valley to the east of the scheme may have biased existing knowledge about the extent and character of archaeological remains in the area. The Trent Valley group forms a striking contrast with the Phase 2a route further north (and with the area of the West Midlands crossed by Phase One to the south). The presence and absence of monuments can influence the understanding of movement through the landscape and the organisation of settlement space in this period, where monuments may have influenced settlement location and rhythms of transient occupation of the landscape.

8.4.34 The monuments of the Upper Trent Valley remain isolated from evidence of settlement during these periods (which is often difficult to identify). Evidence from the 'Where Rivers Meet' project indicated that the area remained largely covered by wildwood into the later Neolithic period (Buteux and Chapman 2009). There may be opportunities within the alluvial deposits of Trent Valley to identify buried ground surfaces with Neolithic or Bronze Age archaeology. The identification of such remains through the use of geoarchaeological survey and trial trenching should be prioritised. Field walking and targeted test-pitting, with appropriate sampling strategies, provide methods of identifying evidence for artefacts that may exist within the plough soil. Such techniques can both be used within the Trent Valley and on higher ground in the surrounding areas in order to provide comparative evidence.

2aKC8: Explore the evidence for increasing social complexity in the archaeological record in the Middle and Late Bronze Age and Iron Age, and identify patterns of intra-regional and regional variation

8.4.35 The Middle and Late Bronze Age, and into the Iron Age was a period of marked population growth and increasing social complexity across the country. Evidence for funerary practices is typically poorly represented throughout the 1st millennium BC, and what has been identified shows considerable variation both regionally and temporally. Indications of long distance contact, trade and exchange have also been identified, one example in the vicinity of the Phase 2a route being salt from the brine wells of southern Cheshire which was traded widely across the country (Kinory 2012). The West Midlands has been identified as holding considerable potential for investigating regional and intra-regional variation, due to the great diversity of cultural forms, practices, and sequences of change evident in each period, particularly around the periphery and in the different river systems, but also because

of the geographical position of the region. The scale of HS2 Phase 2a allows the opportunity to investigate these variations on a large, landscape scale.

8.4.36 Increased social complexity drove the development of settlement hierarchies in many areas. Examples close to the Phase 2a route include Iron Age enclosed farmsteads explored at the Trent-Tame confluence (Buteux and Chapman 2009) and potentially within the route (at RAZs 1, 4, 7, 13, 17 and 24), as well as the nearby hillforts at Berth Hill (WHM017)[31] and Bury Bank (STS035). The development of social and trade networks are likely to have driven some of the cultural changes evident in the archaeological record of the period, including the increasing evidence for site enclosure in and around the Trent Valley. The relative lack of such sites north of Madeley may indicate different cultural practices in the very different environment of the Cheshire plain, or may be a function of the differing visibility in differing geologies. This points to the need to consider divergence and regionality of traditions within this wider understanding of developing societal complexity.

8.4.37 A similar pattern can be identified with respect to land division, with significant traces of early land division and trackways, often marked by pit alignments, seen in the Trent Valley and seemingly relatively little further north. In these areas, the first clear evidence for land division can only be recognised in the medieval (or potentially early medieval) period. This is in strong contrast with the more extensive evidence of the development of landscape division from the later Bronze Age in southern English counties, reflecting the broader national picture (Yates 2007).

8.4.38 Understanding the chronology of broad scale landscape enclosure more fully, particularly in regions where this is less well understood, should support the development of narratives of social change from the Late Bronze Age onwards. The extensive cropmarks in the region of the Trent Valley (in RAZs 1 – 4 and 13) can provide an opportunity to investigate these questions.

8.4.39 In exploring enclosed settlement sites, and potentially early land division, sampling strategies should be developed to ensure consistency of approach. Scientific dating and well directed programmes of artefactual and palaeoenvironmental sampling provide potential for looking at change over time, and thus place local and regional archaeological activity in its wider context.

8.4.40 Where cropmarks representing potential early land divisions are identified, they should be targeted and sampled to provide Carbon-14 dates. Where extensive complexes of cropmarks are identified, such as in the Trent Valley, a relative chronology should be established from desk-based sources (particularly aerial photographs) in advance of fieldwork. In other areas, major territorial/estate boundaries should also be targeted and similarly sampled and dated. Where extant

[31] Where individual sites are referred to in this section, their ES gazetteer references are used (for example, FRC001, COY001, STS001, WHM001, SCH001).

banks survive OSL dating could be explored to establish if it could contribute to this specific objective. Where early boundaries overlap or interact, these junctions should be targeted for sampling in order to establish relative sequencing.

8.4.41 Nearby sites in the surrounding landscape (such as the Berth Hill and Bury Bank hillforts) could be considered for off-route survey to provide a landscape context for discoveries within the route. Investigations of this type could be undertaken as part of community-based projects.

2aKC9: Explore the influence that the exploitation and distribution of natural resources had on prehistoric and Romano-British settlement along the route

8.4.42 The Phase 2a route runs across a landscape which is surrounded by important natural resources – coal, salt, clay and metal ores. This ultimately resulted in the widespread development of medieval rural industries (such as iron and glass production) and the industrial boom of the eighteenth century. Many of these resources were also valued and exploited in the prehistoric and Romano-British periods. It is necessary to consider how their proximity may have affected earlier communities and the development of technology and trade along the Phase 2a route in these periods.

8.4.43 Salt is perhaps the most important commodity in close proximity to the route. It is well-known that the brine springs of Nantwich and Middlewich, to the west and north of Crewe, were intensively exploited through the Iron Age and Romano-British periods. The halite geology that leads to the development of these springs extends towards the route as it approaches Crewe, with deposits known at Hough, Wybunbury and Shavington. Further south, halite is again close to the surface in the Trent Valley around Ingestre, leading to significant post-medieval salt production at Stafford, Shirleywich, Weston and Salt. There is evidence for a brine well within the Phase 2a route at Ingestre. There is no evidence at present for earlier exploitation of the brine at these locations, but it must be considered reasonably likely given its value at all periods.

8.4.44 Whether there is direct evidence for prehistoric or Roman salt production within the Phase 2a route or not, it was a significant industry in the region, which required distribution networks and associated industries such as ceramic, lead and charcoal production. The effect of these secondary activities is very likely to have left an archaeological signature in the form of material culture (such as briquetage – see Kinory 2012) or evidence for routeways along which the salt was carried.

8.4.45 Similarly, the presence of easily exploited sources of clay, iron and coal across north Staffordshire – notably on Cannock Chase – may well have attracted the attention of Iron Age and Roman populations. The woodland which current evidence suggests stretched across much of Staffordshire into the medieval period would have provided a ready resource of fuel for early industry. The waters of the Trent and its

tributaries could have been useful in the manufacturing process as well supplying a potential source of power and a corridor for trade. Metal ores were further off – in the uplands of North Wales, the Welsh Marches and the Peak District – but were beginning to be exploited by the Roman period. Evidence for Roman industrial production at Holditch, a short distance to the north of the route, is evidence of the fact that the Roman state was both interested and active in resource exploitation in this region (Rogers and Garner 2007).

8.4.46 In this context, there is potential for evidence of extraction, manufacture and distribution of these commodities at almost any point along the Phase 2a route. Evidence of salt production (such as, for example, briquetage or Roman lead brine pans) is most likely to be encountered close to the known sources of brine, the distribution of associated material culture can provide valuable clues to the transport networks. Similarly iron exploitation and/or production is generally easily identified through the presence of furnaces (which show up clearly in geophysical magnetometry surveys), bloom or slag and concentrations of ironwork. When carrying out metal detecting the potential for iron production should be kept in mind when designing method statements (which often specify the discard of iron objects, or filter out the detecting of iron by the detectors themselves).

8.4.47 One additional, but less visible, resource that is likely to have been exploited along the Phase 2a route are animal products, largely cattle rearing and associated processes such as tanning. This is likely to have been particularly well-suited to the wetland landscapes that occur frequently along the Phase 2a route, most notably in the Cheshire Plain. Britain is known to have been an important source of hides and furs for the Romans. It will therefore be important to analyse animal bone assemblages in this light, considering not only species and numbers of animals, but slaughter and rearing practices and evidence for seasonal grazing patterns (see 2aKC10 below).

2aKC10: Investigate evidence for mobility among past populations along the proposed route

8.4.48 The contrasting nature of material culture relating to later prehistoric and Roman settlement is very marked along the Phase 2a route compared with regions further south. A distinction can also be seen within the Phase 2a route, where the evidence (predominantly from cropmarks and geophysical survey) for later prehistoric settlement appears to become more ephemeral moving northwards from the Trent Valley towards the Cheshire Plain (see 2aKC11 below). The rich palimpsest of prehistoric monuments and field systems is visible in the southern areas of the route. This forms a striking contrast with an increasing sparsity of evidence further north, and an apparent absence of evidence of sedentary Iron Age (or Romano-British) settlement along the route in the Cheshire Plain. While there are several possible explanations for this, it seems probable that this is at least partly a

reflection of significant cultural differences in the population of these contrasting areas, albeit with the influence of different visibility of the archaeological record.

8.4.49 One key factor likely to have led to a less visible archaeological presence is a more mobile culture of groups moving across the landscape on a seasonal cycle, whether in regard to transhumance or for ritual reasons. While increasing sedentism is an established aspect of later Bronze and Iron Age cultures in many areas of the country, there is no reason to think that this remained a constant in all regions. The relative lack of obvious settlement sites of these periods – as well as in the Roman and Early Medieval periods – along the Phase 2a route to the north of Stafford could point towards a continuing tradition of mobile pastoralism. While such lifestyles are likely to have left archaeological traces, with the reuse of seasonal settlement sites across time, these are likely to be more ephemeral than permanently settled/ enclosed sites, of the kind that are found further south. Such cultures might well have continued to have been largely or partly a-ceramic, while the absence of local flint sources is likely to mean that there are relatively low levels of worked stone artefacts. In the latter case, quartzite could have been used instead, but identification of such material in archaeological contexts presents additional challenges.

8.4.50 Techniques for identifying patterns of mobility in any given period should include innovative approaches to the recovery of material evidence in order to identify settlement sites, including looking closely at plough soils (see 2aKC11). Any artefactual evidence that is recovered from prehistoric settlement sites which could contribute to this specific objective should be analysed in order to establish its source. In the case of lithic technology and ceramics, this will require geological analysis and interpretation to identify the sources of stone/pottery temper. Examples of this include recent work on flint sources from sites on the Carlisle northern relief route[32] (Teather et al. 2019). While such evidence is open to multiple interpretations (such materials could have been moved through trade, exchange or direct procurement), it can contribute to an overall understanding when considered with other evidence in the wider context whole length of the Phase 2a route (and beyond).

8.4.51 A focus on the sources of lithic raw material for the Mesolithic and subsequent periods can provide insights into the range and extent of exchange networks, albeit caveated with the natural movement of lithics within drift geologies. Similarly, a consistent approach to petrographic analysis of prehistoric pottery along the route should be employed in order to understand patterns and traditions of manufacture, trade and movement. In carrying out such analysis, it will be useful for excavators to consider potential clay and temper sources and to sample them for analysis alongside the ceramics. One particularly well-researched and relatively common category of material are the distinctive 'briquetage' salt containers used to hold and

[32]Carlisle Northern Development Route Post Excavation Project, http://cndr.oxfordarchaeology.com/.

transport salt from the salt production centres in the West Midlands such as Droitwich and Nantwich (Morris 1985, Kinnory 2012). Similarly, trace analysis of selected metal finds should be explored to reveal their origin.

8.4.52 A further category of material that can throw light on movements of populations in prehistory is oxygen and strontium isotope analysis of teeth from human and animal remains. The latter, in particular, can provide an understanding of the geographical range of groups at different periods.

8.4.53 The potential for seasonal pastoralism in later periods of prehistory and beyond should be kept in mind when looking at field systems and trackways. There is already evidence from cropmarks of prehistoric trackways leading up to adjacent unenclosed higher ground around the fringes of the Trent Valley (as investigated in the 'Where Rivers Meet' project. This may well point towards a practice of seasonal upland grazing/transhumance. Such features should be targeted for evidence of date and relative chronology, and also any animal bone and/or palaeoenvironmental evidence.

8.4.54 In addition to the archaeological approaches set out above, documentary, landscape and place-name studies may provide evidence for further pastoralism into the early medieval period. This work in particular provides an opportunity for community engagement.

2aKC11: Assess the evidence for regional and cultural distinctiveness along the length of the route in the Romano-British period, with particular regard to the different settlement types encountered along the route

8.4.55 The route lies in an area generally lacking in known Roman remains. There are no confirmed Roman road alignments crossing the Phase 2a route, which falls into a gap between Watling Street, to the south, Ryknield Street to the east and roads connecting to the salt production centre at Salinae (Middlewich) to the north of Crewe. The area northwest of the Fosse Way has traditionally been interpreted as a highly rural, dispersed, agricultural landscape highlighted by the absence of villa sites in the region. However, there is potential for a military and industrial presence in the areas, including marching camps and perhaps a more complex road network than is currently understood, such as putative routes running north-west and south-west from Chesterton and/or Holditch towards Nantwich, Chester or Wroxeter. There is extensive cropmark evidence for enclosed settlement and associated field systems likely to date to this period in the Trent Valley in the vicinity of Kings Bromley (RAZs 1 – 4).

8.4.56 The Rural settlement of Roman Britain project has recently highlighted the need for consistency in methodologies for the retrieval of artefacts from the excavation of Romano-British settlement sites (Smith et al. 2016). It has been highlighted that the majority of rural settlement site types were unknown prior to the advent of

developer-funded archaeology in 1990 and that the current synthesis of this work has the potential to alter established narratives.

8.4.57 In order to build upon this research, it is necessary to retrieve material culture consistently. It is necessary, therefore, for future interventions to establish the variation in material culture consumption across the site types of Roman Britain, in order for meaningful comparisons to be made at regional and national scales. This should include topsoil sampling and metal detecting enabling data comparison at a large scale. The establishment and use of consistent methodologies of sampling, recording templates and data formats during excavations across all sites is therefore essential to enabling inter-site analysis and comparison.

8.4.58 The use by the *Contractor* of carefully monitored metal detection may provide an opportunity to engage with local groups.

2aKC12: Identify and explore settlement sites with low levels of material culture

8.4.59 Previous exploration of Cheshire and, to a lesser extent, Staffordshire has shown that prehistoric, Romano-British and early medieval-settlement sites in the region tend to have very low levels of non-organic material culture (e.g. stone tools, metalwork, and ceramics). This makes them hard to identify during reconnaissance surveys, particularly where conditions for geophysical survey are poor, as well as difficult to interpret during excavation (for discussion of these issues in Cheshire see Phillpot 2017). It is necessary to be aware of this both when carrying out evaluation surveys outside of the established RAZ as well as when carrying out investigations of identified sites.

8.4.60 It is important that fieldwork strategies for surveys be calibrated accordingly. This could include the following measures:

- focussing on stray finds (from known datasets, such as the HER and the PAS, or recovered from reconnaissance surveys) as potential indications of previously unidentified settlement sites (individual finds can be more significant in this environment than in other, more material rich areas). A route wide review of PAS and HER stray-finds data should be undertaken to support this approach;
- using survey techniques which allow for recovering artefactual material, including plough soil sampling, systematic surface collection and metal detecting; or
- building on the work carried out in Phase One of HS2, targeting surveys on locations where settlement seems most likely based on local morphology, presence of water sources, slope aspect, presence of natural resources, or previous monuments or other ritual aspects etc. taking into account how such environmental factors influence the distribution of known settlement at different periods.

8.4.61 Excavation methodology should also be developed with appropriate approaches to material recovery, sampling and analysis in order to recover as much evidence as possible about the date, nature and significance of sites with limited material culture. This could include:

- developing strategies for programmes of sampling for scientific dating, and implement in project plans, including the collection of multiple carbon dating samples from stratigraphic sequences to which Bayesian statistical approaches might be applied;
- the targeted processing of dating samples at an early stage of site investigation in order to inform investigations strategies. This will be of particular importance where there are stratified alluvial/colluvial deposit sequences in order to provide a basic understanding of site chronology ahead of the main phases of excavation;
- developing and Implementing strategies for environmental sampling and analysis; or
- use of dry and wet sieving to ensure levels of artefact recovery are sufficient to address this specific objective.

2aKC13: Identify evidence for the expansion and development of the kingdom of Mercia in the Early and Middle Saxon periods and investigate evidence for associated impacts on the landscape

8.4.62 The absence of archaeological evidence for early, pagan Saxon settlement (and burial) in the area of the Upper Trent is striking. This is despite the fact that the area was the heart of the early Anglo-Saxon kingdom of Mercia by the seventh century AD. This could indicate the persistence of indigenous British settlement in the area in the post-Roman period (as indicated, for example, by place-name evidence), or could reflect a lack of archaeologically visible evidence generated by early Mercian culture. The same could well have been the case in other parts of the Phase 2a route, where archaeological evidence of this period is lacking, despite clear historical indications of a Mercian presence. Understanding the relationship between the pre-existing populations and the incoming Anglo-Saxons through identification of settlement and funerary remains of the sixth to eighth centuries would throw important new light on these issues.

8.4.63 One potential source of information are Anglo-Saxon charters, of which there are an unusually large number in Staffordshire. It is important that the potential informational value of these charters for the area of the route is fully explored.

8.4.64 The emphasis on hunting inferred from documentary evidence for the period may indicate that this was an important aspect of the economy and culture at this time – perhaps as much as it was later in the medieval period. Evidence for the extent and location of woodland – and when it was cleared – from palaeoenvironmental analysis should be explored to help to provide a chronology for landscape change in this period.

8.4.65 Settlement sites of this date are rare and can be difficult to locate. Known sites are focused within river valleys and on permeable geologies, although these distributions should be tested in the light of our knowledge of site preservation and visibility. They are small, normally single or multiple farmsteads, probably representing a family or small kin-based group. Comprising rectangular post-built timber halls and smaller sunken buildings, they are generally unenclosed and may have been subject to regular re-siting, suggesting shifting patterns of settlement. Given the lack of clear evidence currently for Romano-British settlement along much of the Phase 2a route, evidence of settlement continuity from the Romano-British period is most likely to be identified in the Trent Valley, as evidenced by the results of the excavations at Catholme (Losco-Bradley and Kinsley 2002).

8.4.66 There is evidence for planning in the layout of settlement sites, and potential increasing complexity in the spatial organisation and functional differentiation of settlement types into the middle Saxon period. There is, for example, evidence for the location of specialist activities (production sites), and high status settlement sites (royal and ecclesiastical estates).

8.4.67 Sites have previously been located using the normal suite of prospection techniques and a strategy should be developed that reflects local conditions including past and current land use, hydrology, soils and geology. In particular, surface artefact collection and test-pitting may enable the identification of settlement at a broad scale. Note should be taken of recent successful surveys in the East Midlands (such as those undertaken as part of the University of Cambridge Currently Occupied Rural Settlement (CORS) project). Consideration should be given to selecting areas for off-route survey to provide a landscape context for discoveries within the route. Metal detecting and PAS data is also likely to be an important and productive technique for site identification.

8.4.68 It may be possible to explore data across a range of landscapes zones, in order to define settlement patterns more closely at a broad landscape scale. Such an approach may include testing different prospection techniques. Specific sites along the Phase 2a route where which historic/landscape context points towards the potential for early medieval settlement include the following:

- at Pipe Ridware (RAZs 3 – 4). While the route passes to the east of the settlement focus, its status as a berewick of Lichfield in the Domesday Book may imply settlement as early as the seventh century. Evidence of this could include Saxon-period water-management (such as the waterlogged remains at Norton Bridge) and/or fishing structures associated with the River Trent. Geophysical surveys and targeted trial trenching are most likely to be effective in identifying such remains;
- at range of known medieval sites (see 2aKC15 below) where there is potential for continuity from pre-existing settlement;

- at Yarlet (RAZ 19). Its strategic position on high ground, on the main road running north from Stafford, a fortified Mercian burh established by Aethelflaed in 913, points towards the probability of early medieval activity. A combination of geophysical survey, metal detecting and trail trenching are most likely to identify evidence of this; and
- at Pire Hill (RAZ 20), potentially the location of the court of Pirehill Hundred. Such sites are generally thought to have been meeting places during the early medieval period. Surface artefact collection and metal-detecting followed by targeted trial trenching are most likely to succeed in identifying remains of this period.

8.4.69 Non-intrusive methods of survey, such as surface artefact collection and metal-detecting, are often suitable for community-based projects, and could contribute to this specific objective.

2aKC14: What is the relationship between population density, Royal and landlord power and the presence of extensive woodland in this area?

8.4.70 Staffordshire in 1086 was a county recorded in the Domesday Survey as relatively poor, and divided among few tenants-in-chief. It was also heavily wooded, with an average of around a third of each manor being woodland. Robert Plot, in his 1686 published work, considered the part of the county between the Trent, Tean and the Dove could be called the Woodlands, in comparison with the Moorlands to the north. A large part of the county was at one time or another under forest law.

8.4.71 Although a medieval forest is not necessarily wooded, Plot's research highlighted that the two forests most closely associated with the route of Phase 2a, Needwood and Cannock, evidently were. The (Staffordshire) New Forest was probably created during the rule of the Angevin monarchs during the twelfth and thirteenth centuries, and may have had a brief existence, although its influence should not be discounted. Above all, a forest is an area over which a particular form of control applied, which may have impacted upon the ability for forest areas to develop economically. There may be a link between the presence of the extensive forests of Needwood and Cannock and the development of a distinctly Mercian culture connected to this landscape (Blair 2018).

8.4.72 The proposed route of Phase 2a begins at the southern end within one of the hays of Cannock Forest (Alrewas Hayes) and having crossed the Trent runs between both Cannock and Needwood Forests. Both Cannock and Needwood are distinctly lacking in settlement at the time of the Domesday Survey and both have very low population levels, even by Staffordshire standards (Darby and Terrett 1971). There are settlements in the area between, and the dating of their development would help shape understanding of this region. Did they develop here, and not in Cannock or Needwood, because there was no forest law to restrain them? Was this area originally wooded, like Cannock and Needwood? When was the woodland lost?

8.4.73 The very dispersed settlement pattern of Staffordshire is generally assumed to be the result of later colonisation of woodland or waste, contrasting with the regular open field systems of the Midland Belt, but this is still subject to debate. If the regular field systems of the Midland Belt are the result of reorganisation of a pre-existing pattern, is there evidence to indicate that the dispersed pattern in Staffordshire is a remnant of an older system? If so, is it based on an infield-outfield system that never developed to a regular field system?

8.4.74 Staffordshire in particular is fortunate in having good documentation (a result of the few tenants-in-chief), and this provides the opportunity to inform archaeological fieldwork. Given the potential value of research drawing on local archives, this objective provides a good opportunity for community engagement.

2aKC15: What is the origin, purpose and trajectory of hays and parks in this area?

8.4.75 Hays and parks are areas that are enclosed, and from which any rights of common grazing have been excluded. As enclosed areas in what would have been a largely unenclosed landscape, they would have been a dominant feature of the landscape. Despite fairly extensive literature, the distinction between the two has never been clearly identified, but medieval Staffordshire was well supplied with both. When the Domesday Survey was compiled, Staffordshire had no recorded parks or hays at all, whereas the adjacent part of Cheshire has a considerable density. In addition, in Cheshire, all 104 enclosures are recorded as 'haia' or 'haiae', not parks. The differences in numbers and terminology are probably a result of the way that the Domesday Survey was compiled and there is every reason to think there were hays, or parks, in Staffordshire before the Conquest. What is the date of origin of the hays and the parks? Is there an archaeologically recognisable difference between them?

8.4.76 In Staffordshire, some parks are evidently fairly late creations. For example, Haywood Park and Beaudesert Park on the edge of Cannock Chase may date from the late thirteenth century, Wolseley Park was definitely a late fifteenth century creation and Bagot's Park may also be a fifteenth century creation, subsuming an earlier Fenshay. There do not appear to be any 'late' hays, although Glashousehay in Wolseley should be noted in the fifteenth century, the name deriving from the fact that it supplied wood to the local glass furnaces.

8.4.77 The enclosure of hays and parks requires either that any local opposition is not significant, or that it can be overcome. In the area across which Phase 2a travels, this might either be the result of the fact that the population density was limited, or that local ruling class power was strong. It might be possible to test this, by a comparison of the location and date of the creation of hays and parks with the documentary evidence for landholding.

8.4.78 The assumption that hays and parks are a result of the pre-existence of extensive woodland can also be tested. In one local case at least, Bagot's Park, it is evident that the newly created park enclosed a large area of former arable.

8.4.79 Hays and parks were created primarily for raising non-domestic animals, principally deer, but as areas that were enclosed in what was predominantly an unenclosed landscape, they became the location of activities that required the exclusion of other stock and people. The most common use was for wood or timber production, although many other uses are possible (cattle raising in Tutbury, coal mining on Cannock Chase). These alternatives uses might be identified and investigated.

8.4.80 Many of the hays and parks subsequently became the site of the designed landscapes of the sixteenth century onwards. The route by which they travelled from medieval stock enclosures to expressions of wealth and power into the nineteenth century can be investigated. Are all designed landscapes based on medieval origins? Did any follow a different trajectory, perhaps created anew where there was formerly settlement (as in the case of Shugborough)?

8.4.81 As with 2aKC14, this key objective relies on the close integration of documentary and archaeological work. This could involve a detailed examination of all available mapping, particularly for major estates, and including associated significant landowners identified in the awards, for evidence of hays, parks, hags or lawns.

2aKC16: Undertake research and investigation into medieval manorial complexes. What was their origin, development and impact on the landscape?

8.4.82 The Royal, ecclesiastical or lay manor with its demesne, remained a constant in the medieval landscape and the manorial court provided the focus for regulation of communal farming activities. While manors as economic landholdings are identified in the Domesday Book, many of the manorial complexes, and their principal landscape components, have not been securely located on the ground.

8.4.83 Some manorial complexes were sited within moats, but not necessarily all, and not all moats are manorial. There are numerous examples of moats along the Phase 2a route. They are a particularly common feature of medieval woodland landscapes, where they were created perhaps in association with the clearance and colonisation of woodland in the later twelfth through to fourteenth centuries. Examples (or likely candidates) include Pipe Ridware (RAZ 4), Quinton's Orchard/Pipehalle (RAZ 5), Moreton (RAZ 9), Upper Hanyards (RAZ 15), Yarlet (RAZ 19), Shelton-under-Harley (RAZ 25), Madeley Manor (RAZ 27), Heath Farm (RAZ 32) and Basford (RAZ 33).

8.4.84 Manorial complexes vary in size and form but common elements include a central hall and the lord's private accommodation (Hunter and Ralston 2009). Other buildings might have also included a chapel, separate kitchen, stables and barns. The manor might also contain gardens, orchards and associated fish ponds.

8.4.85 Each manor and its associated elements have their own trajectory of development. Key questions include:

- Can an Anglo-Saxon origin for any manorial sites be identified?
- How has the layout and function of manorial sites changed over time?
- How do the landscape context, layout and form of the manorial site express ideas of status and lordship?
- How does the location of a manorial residence relate to the village and church and broader landscape?
- At what date were moats established, can phases of reuse be identified and when did they go out of use?
- Can waterlogged or other environmental evidence be obtained from moats/fish ponds or other features to indicate the activities that were carried out on the manorial site and the broader agricultural landscape?

8.4.86 On the basis of current evidence, the sites at Upper Hanyards (RAZ 15), Yarlet (RAZ 19), Heath Farm (RAZ 32) and Basford (RAZ 33) may represent the best opportunity for knowledge creation. Currently unknown manorial sites may also be discovered within village earthworks (for example at Hopton/RAZ 17, Marston/RAZ 18 or Gonsley/RAZ 31). There could be great value in selecting key sites for more detailed investigation dependent on, for example condition, preservation, association with other contemporary elements and documentary evidence.

2aKC17: Investigate the impacts on rural communities of social and economic shocks in the mid-fourteenth century and thereafter and their contribution to settlement desertion

8.4.87 By the early fourteenth century it is likely that lowland Britain was heavily farmed and populated up to or beyond the previous estimated maximum at the end of the Roman period. The climate at this time was characterised by the transition from the Medieval Warm Period to the Little Ice Age, where the northern hemisphere experienced a decline in temperatures and greater seasonal variation. Historical records provide accounts of famines and plagues during the fourteenth century, including the Black Death from 1348. This period had a significant effect on population dynamics and the abandonment of rural settlement.

8.4.88 There are a number of shrunken and abandoned medieval settlements along the Phase 2a route that may have been impacted by these events. Individual townships experienced their own particular trajectory of change often dependent on the circumstances of land ownership and lordship. This has led to a variety of outcomes, from deserted settlements (notably Gonsley/Godwynesleigh/RAZ 31), to shrunken nucleated settlements (such as Marston/RAZ 18 and Hopton/RAZ 17), and a number of documented medieval settlements which have survived as farms/houses up to the present (including Moreton/RAZ 9, Upper Hanyards/RAZ 15, Shelton-under-Harley/RAZ 25, Heath Farm/RAZ 32 and Basford/RAZ 33).

8.4.89 Questions to engage with this objective include:

- What is the documentary evidence for individual settlements between the mid-fourteenth and mid-sixteenth century? How does the physical evidence on the ground match this history?
- Can the environmental record provide a more detailed picture of the impact of the onset of the Little Ice Age on rural agriculture and crop production in different regions along the proposed HS2 route during the fourteenth century?
- What archaeological evidence is there for the first outbreak of plague from 1348 and then subsequent outbreaks in the late fourteenth and first half of the fifteenth century? Can this be seen in settlement shrinkage or desertion, in other material culture indicators or in pathological/biomolecular evidence from human populations?
- How did rural communities and land owners adapt to the significant reduction in population, and the changes to agricultural production, land ownership and the relationship between lord and peasant? Can different trajectories of change be seen between different areas?
- What evidence is there for later medieval land enclosure and settlement desertion associated with the switch from arable to sheep or cattle grazing? What other reasons for settlement change are there?

8.4.90 Given that many of these settlements lie partly outside the land required for the scheme, there is the potential for collaboration with local groups and communities to enrich understanding of these settlements.

2aKC18: Examine the trajectory of sites controlled by the church in the landscape in the medieval and post-medieval period with particular regard to the medieval estate at Yarlet

8.4.91 The role of the church in the development of the rural economy and culture of the region during the medieval period is relatively poorly understood. Ecclesiastical houses such as the abbey of Burton-upon-Trent were important landowners in the region. The most significant ecclesiastical estate on the Phase 2a route is the manor of Yarlet, which was granted to the Cistercian monastery of Combermere (Cheshire) in the twelfth century. The Domesday Book lists a manor at Yarlet including eight peasant households and two slaves. At present very little is known about either the early medieval secular settlement or the monastic grange which replaced it.

8.4.92 The whole of the core estate of Yarlet falls within the Phase 2a route, providing an opportunity to explore in detail the origins and development of this strategically important medieval settlement. Among the questions that should be addressed in investigating the estate at Yarlet are the following:

- Can an early medieval/Mercian phase of settlement be identified, contemporary with the foundation of the burh at Stafford?

- Where was the late Saxon/early Norman settlement? What was its form and extent?
- Can significant changes be identified in the settlement at Yarlet at the time of its acquisition by the Cistercians? Can a grange farm be identified? What can we tell about the agricultural economy practiced at the grange and if and how had the Cistercian acquisition changed agricultural practices across the manor of Yarlet?
- Can the location and plan of the post-medieval Yarlet manor house (COY138)[33] be identified within woodland to the south of the school (as suggested by historic maps)? Was this also the location of medieval settlement?
- What is the origin and date of the group of earthworks to the north of the school (COY137)?
- Is the oval boundary preserved in field boundaries around the manorial centre at Yarlet related to the boundary of the medieval estate?

8.4.93 These questions can be addressed using a mixture of archaeological and historical sources. Documentary research is needed to establish the chronological and administrative context. Archaeological techniques that should be considered include review of LiDAR data, topographic surveys of earthworks (including those at asset COY138), geophysical survey, metal detecting, trial trenching and, ultimately, open area excavation.

8.4.94 Palaeoenvironmental analysis of samples from selected contexts and study of animal bones will provide important information about the economy and lifestyle of the medieval community. Analysis of any human remains will provide new evidence for the demography, structure and health of the medieval population of the area.

8.4.95 At Ingestre the location of the medieval parish church is unknown (although it seems likely that it was close to the site of the later hall), while a chapel dedicated to St Erasmus is documented beside a sacred well (probably a brine well close to the Trent Valley). This should be kept in mind when exploring archaeological remains in this area.

2aKC19: Investigate the location and development of rural industry in the medieval and early post-medieval periods

8.4.96 Documentary and archaeological evidence indicates that the medieval woodlands of central and north-western Staffordshire, combined with other natural resources in the region (coal, salt, clay) led to the early development of a number of rural industries. The extraction of coal, stone, iron ore and clay supported the production of salt, glass, ceramics and iron. Supporting this technology was the power supplied by fuel from the woodlands as well as water mills along the Trent and other waterways.

[33] Where individual sites are referred to in this section, their ES gazetteer references are used (for example, FRC001, COY001, STS001, WHM001, SCH001).

8.4.97 Focus should be placed on identifying archaeological remains of extraction, power generation, processing and manufacture, as well as getting a better understanding of the finished products. This should include the following:

- the identification and examination of medieval/early post-medieval glass production sites (such as those known at Abbots Bromley and Lount Farm;
- the use of remote sensing data (notably LiDAR), and geological mapping, combined with documentary evidence to identify potential areas where medieval salt production might have taken place (such as the Trent Valley and the Cheshire Plain);
- identification of charcoal production sites;
- identification through use of remote sensing and place-name information of brick and tile production sites;
- identification and exploration of water mills and associated infrastructure (mill leets and pools);
- identification and documentation of stone quarrying sites, notably in the sandstone belt around Ingestre, Tixall and Hopton (including the known quarry at Upper Hanyards Farm); and
- the management and processing of cattle. This can be traced through developing a better understanding of land-use at different periods, including stock enclosure and drove roads. It should also involve the identification and exploration of evidence for the processing of hides/leather/horn.

8.4.98 Consideration should be given to the persistence of rural industries into the post-medieval period, their relationship to changes in agricultural production methods and enclosure and the role they may have played in the genesis of the industrial revolution in the region. What is the evidence for the persistence/development of rural industry in the sixteenth, seventeenth and early eighteenth centuries? Is there evidence for change in the exploitation/distribution of local resources during this period? How is the proximity of resources such as coal, iron and salt reflected in changes in the local landscape during this period?

8.4.99 A mixture of documentary, cartographic and archaeological techniques should be brought to bear to answer such questions. These should target elements of early industrial development within the scheme such as:

- the glass industry at Colton (RAZ 8) and Abbots Bromley;
- watermills at Ingestre (RAZ 13), Chorlton (WHM006), Madeley (RAZ 27) and south of Crewe (SCH028, SCH081);
- elements of transport infrastructure, such as pre-industrial routeways and early toll roads, as well as evidence for pre-industrial navigation of the Trent;
- evidence for iron production, including forges around historic settlements (e.g. at Hopton/RAZ 17, Marston/RAZ 18, Yarlet/RAZ 19 and Gonsley/RAZ 31); and

- evidence for changing agricultural practices through the post-medieval period, including looking at evidence from animal bones, the enclosure of open fields, and farm layouts (e.g. at Upper Hanyards/RAZ 15).

8.4.100 This theme provides opportunities to engage with community groups to explore local knowledge of traditional crafts and industries. One theme of particular interest may be the role that traditional industries played in the industrial revolution of the mid-late eighteenth century.

2aKC20: Investigate the link between the development of the turnpikes, canal network and railways and broader changes in the historic landscape, such as urban settlement expansion and the development of industry

8.4.101 The development of industry in Staffordshire in the later eighteenth century went hand in hand with the construction of a new network of regional and ultimately national transport infrastructure. This started with the development of local turnpike roads, soon joined by canals and from 1830 the railway. The creation of this network was crucial in the genesis of the industrial revolution, enabling the manufacturing towns of the potteries to take advantage of their central position on the east-west watershed.

8.4.102 The extent of the later eighteenth century canal network in the form of channels, locks and bridges, can be seen along the route, most notably in the form of the Trent and Mersey Canal (FRC008). This provided access to the Mersey and the Humber and, with the addition to the network of the Coventry Canal (FRC006) and the Staffordshire and Worcestershire Canal (COY040), to London and the Severn Estuary. The Trent and Mersey Canal was constructed with strong support from Josiah Wedgewood and the pottery manufacturers of Stoke, for whom it provided a distribution network. The canals not only carried the pottery to the coast; they also brought crucial raw materials – clay, salt, ground flint and fuel – to the potteries.

8.4.103 In the nineteenth century railways superseded the canal network as the primary form of transport for goods, materials and passengers. After the establishment of the Liverpool to Manchester line in 1830, the Grand Junction Railway was built, connecting Birmingham to the existing line, in 1837. This led the development of Crewe as a major railway hub and, as a consequence, to the development of the town on what had previously been open countryside.

8.4.104 Questions to be answered should be:

- What physical traces remain in the landscape of the turnpike infrastructure?
- How did the development of the canals impact on the landscape, economy and society of the region?
- How much settlement expansion can be associated with the development of the railways?

- What effect did the railways have on canal usage and eventual abandonment?
- Did the canals and the railways affect the growth of rural industries through the ability to acquire raw materials and transport goods more widely?
- Is there any evidence for early railways/plateways associated with eighteenth/early nineteenth century industry?

8.4.105 Answers to these questions should be obtained through use of documentary research, map regression, landscape investigation and excavation.

8.4.106 A significant number of built heritage assets crossed by the HS2 route relate to the management and operation of the railway network. These assets vary greatly in date, type, form and style, which indicates the breadth of structures needed to support the operation of the railways, and the length of time that the railways have been operational. The structures include: railway bridges; viaducts, station buildings, signal boxes and associated engineering structures, including tunnels and cuttings.

8.4.107 The Grand Junction Railway line opened in 1837 in the midst of a pioneering phase of British railway engineering and development. This period in railway history saw the arrival of influential figures in civil engineering, such as George and Robert Stephenson, Charles Fox, Joseph Franklin and Joseph Locke, and innovation in the design of railway engineering structures, including early railway engineering works at Crewe.

8.4.108 Railway terminus buildings provided an opportunity to create monumental structures to express the commercial and social power of the incoming railway and ascribe an architectural identity to competing companies. The impressive polychrome rebuilt Crewe Station dating to 1867 (SCH052) was constructed under the supervision of William Baker, overseer of works for the London, Midland and North Western Railway during the period. The classical and Egyptianising ornamental tunnel entrances at Shugborough Park on the North Staffordshire Line (1848) are a reflection of the enduring power of aristocratic landowners as well as the wealth of the railways in this pioneering period.

8.4.109 Can we understand the architectural impact of railway buildings, and their changing public perception through their use, adaptation, disuse and reinvention? Did the architectural elaboration of railway architecture spread beyond landmark structures to more mundane elements of the early railway system? How has this been marked by changes in the way that we travel and our perception of stations as 'urban spaces'?

8.4.110 Given the wide public interest in railway heritage, and the significance of the railways to communities around Crewe in particular, this specific provides a good opportunity for community engagement.

2aKC21: Conflicts of the post-medieval period, notably the two World Wars, have had a major effect on British society and landscape: how can we achieve a greater understanding of the significance of this to communities of the past and present along the route?

8.4.111 The modern period is often largely defined by the two major conflicts that occurred within the first half of the twentieth century, not only as a result of their direct consequences but also through the social changes brought about after hostilities had finally ceased. Together with the Cold War, these conflicts had a profound effect on Britain and the world in the twentieth century.

8.4.112 While not always obvious today, wars have had a major effect on the society and landscape of Staffordshire and southern Cheshire. An early Civil War battle was fought to the north of the route, at Hopton Heath (COY099). While the battlefield lies on a plateau to the north-east of the route, the Royalist forces had to cross the route in their approach to (and retreat from) the battle from Stafford. The artillery of the parliamentary forces were firing southwards, so cannonballs could be found on the lower ground on the southern edge of Hopton crossed by the route. Metal detecting and surface collection in this area could reveal traces of the battle.

8.4.113 The impact of the First World War was felt strongly in the West Midlands, as across much of Britain, through the military mobilisation of large sectors of the (largely) male population and the large-scale losses which followed (Carpenter et al. 2018). This is marked by the presence of war memorials in almost every settlement along the Phase 2a route. Near Madeley, possible practice trenches have been identified by geophysical survey (RAZ 27/WHM027) and other examples of this may well exist within the route. Less obvious effects are likely to have been the increasing mechanisation of farming and the increasingly direct participation of women in industry and the agricultural economy. The changes in farming are likely to traceable in changes/adaptations of the use and character of farm buildings.

8.4.114 The Second World War, due largely to the technology of aerial warfare, had a more enduring effect on the landscape of the route. The River Trent was fortified as a 'stop line' with a series of bunkers being constructed along its length. These are the visible remnants of this defensive line but pill boxes were often nodal points in a network of defences which could include slit trenches, mortar and artillery positions. Such positions may survive as below ground archaeological remains in close proximity to pill boxes.

8.4.115 A series of airfields were constructed close to the route – at RAF Lichfield (where there is a surviving bunker within the route: FRC194), Stafford and Hixon – while a munitions factory at Cold Meece apparently made use of a group of bunkers that fall within the route (RAZ 23). A Lancaster bomber crashed close to the route at Ingestre village as it was coming in to land at Hixon RAF base in August 1944. The railways – and particularly the key hub at Crewe – were important strategic targets in the air

war, as reflected by the presence of anti-aircraft positions around the town (SVH034 and SCH072). The major estates were used for storage and accommodation, with a major depot being evidenced on aerial imagery to the north of Ingestre Hall and at Shrugborough, where there was a prisoner of war camp. A school catering for children evacuated from the cities was established at Pipewood (FRC381), the surviving buildings of which fall within the route.

8.4.116 Questions to be answered in relation to this objective are:

- To what extent did conflicts from the Civil War onwards impact on the landscape and society of an area?
- How were memorials to the deceased intended to be appreciated and to what extent do these still resonate in their surroundings today?
- How did technological advances initiated and developed during the wars contribute to mid-twentieth century industry, society, and culture?

8.4.117 This objective should be explored using a broad range of methods, which should include oral history, photographic evidence, documentary research and archaeological data. The study, documentation and analysis of built heritage – and related documentary research relating to the Second World War in particular – can reveal much about the impacts of these events on the communities of the area and beyond.

8.4.118 This is an objective with many opportunities for the engagement of local communities, where much valuable knowledge and memory resides.

2aKC22: Test and develop geophysical survey methodologies

8.4.119 A variety of methods of geophysical survey are available for archaeological prospection, with magnetometry surveys forming the standard technique in commercial field archaeology. It has been demonstrated in past research projects that a variety of techniques including standard magnetometry, caesium vapour magnetometry, magnetic susceptibility, resistivity, electrical resistivity tomography (ERT) and Ground Penetrating Radar (GPR), and can usefully be employed to assess and characterise sub-surface archaeology, alongside the 'ground truthing' of results (e.g. Watters 2006a; 2006b). The Phase 2a route provides an opportunity to test a variety of geophysical survey techniques upon known archaeological sites (including the response of various techniques on differing geologies), both to maximise the information available for sub-surface remains and to test new techniques and methodologies.

8.4.120 The different methods described above all have strengths and weaknesses: some provide greater depth of ground penetration, some are more logistically challenging, some are more time-consuming to deploy and/or analyse. It is therefore important to apply specific methods with a clear understanding of their potential benefits in

the most appropriate locations. ERT, for example, is more suited to providing slices across deep stratigraphy than for wide areas survey. This makes it a particularly valuable tool for developing a deposit model of the Pleistocene/Holocene sequences of the Trent, the Madeley Palaeolake or some of the larger kettle holes of the south Cheshire plain.

8.4.121 The techniques more suited to identifying the horizontal extent and form of buried archaeology are the various forms of magnetometry and GPR. These can and should be deployed according to their particular strengths:

- magnetometry, where significant variations in magnetic response from archaeological remains can be anticipated (such as when looking for traces of burning or industry – e.g. burnt mounds, charcoal burning, or iron, salt and glass production);
- caesium vapour magnetometry, where higher resolution is desirable or where greater ground penetration is desirable (for example above shallow deposits of alluvium in the Trent Valley and elsewhere); and
- GPR, where voids and/or masonry structures may be anticipated.

8.4.122 These techniques can also be deployed in combination: where buried remains are known to exist but greater detail is needed, it may be advantageous at times to use both magnetometry, resistivity and/or GPR. If the resulting data is then processed in combination, it provides the potential for the different techniques to complement each other, giving fuller and more detailed results.

8.4.123 Data can be used to form a targeted excavation strategy designed at answering specific thematic objectives, ultimately feeding into interpretative narratives. Surveys may be intensive at sites of known archaeological remains or extensive and designed to contextualise sites where data has the opportunity to contribute to research objectives at a landscape scale.

2aKC23: Explore the pattern, form and function of post-medieval rural vernacular architecture

8.4.124 Post-medieval rural vernacular architecture along the route largely dates from the eighteenth and nineteenth centuries, but with some earlier examples and the potential for some buildings to incorporate earlier phases of construction. The majority of these are agricultural buildings that relate to farm houses as part of a cohesive farm complex, although there are several examples of individual agricultural structures no longer associated with a particular farm. A number of the individual farm buildings in particular have been heavily altered and converted to accommodate other uses. Further examples of agricultural rural housing are also present, ranging from workers' cottages to more substantial dwellings that display characteristics of suburban housing design. There are also a limited number of

former light industrial buildings that once provided a supporting function within a wider building complex or landed estate.

8.4.125 It is important to understand the origins of these rural buildings and their relationship with the rural agricultural economy, trends in the development of rural settlement and also within the context of social developments in the period. Understanding the form of rural architecture will contribute to our knowledge of, and definition of, regional styles. Identifying and understanding regional styles of form and construction also has the potential to contribute to our understanding of social and economic interaction, influence and change within rural communities in this period.

8.4.126 Key questions include:

- What does the building fabric reveal about the time, location and techniques of production and construction, and does this conform to neighbouring or regional buildings of the same period? What can this tell us about regional building techniques and common architectural styles and traditions of the area and to what extent can the building be described as representing a local vernacular? Can intra-regional traditions be identified?
- Can we recognise changes in function of a building over time? Are there materials and decorative or construction techniques present that suggest a building use that contrasts with initial interpretations? Do these reflect changes in social status or lifestyle of the building's occupants?
- What does the siting, orientation and material selection reveal about how the building was designed within its contemporary environment? To what extent has that environment changed? How has the building been adapting in line with this change reflecting different economic conditions, social mores and transport routes, and agricultural innovations? Has the building become absorbed within an urban or semi-urban landscape? Can an understanding of both the building and its context within the landscape or streetscape increase our understanding of changing architectural traditions and the key social and economic developments in the region?
- Would the application of specific investigative techniques, such as dendrochronology and laboratory analysis of paint, mortar or plaster samples resolve ambiguities about a building's history that could contribute to a greater understanding of the origins and development of a particular settlement?

8.4.127 Much knowledge about the form and former function of many post-medieval buildings is likely to reside in the local communities, or can be investigated through supporting documentary studies. This specific objective therefore offers an opportunity for community engagement.

9 Specifying and delivering the historic environment works

9.1 Introduction

9.1.1 This chapter sets out the process through which the Specific Objectives of HERDS will be achieved. In doing so it sets out the roles of *Project Manager* and *Contractor*, sets out requirements for specification and design documents, and describes how these should be implemented.

9.2 Summary of deliverables

9.2.1 In summary, the deliverables for the historic environment works comprise the following, which are expanded upon in the chapter below.

Table 5: Summary of deliverables

Deliverable	Format	Paragraph	Scale/frequency	Deadline
Programme for delivery of heritage deliverables	Programme	9.6.3	Route-wide	Prior to any other deliverable Update as required
Phase 2a HERDS briefing to supply chain	Meeting	9.10.6	One-off	Prior to development of the RHA
Baseline Data Review Summary	Document	9.7.5	One-off	Prior to development of the RHA
Review/update of Routewide Heritage Approach	GIS	9.7.1	Route-wide/ ongoing	Initially within 14 weeks of commencement Prior to the development of the LS-WSIs Update via DRN or Publication Recommendations Document
LS-WSI, incorporating project plans and data management plans	Document in line with template in Appendix 5	9.8.1	Site-specific	Ten weeks before site work
Initial HERDS GIS deliverable	GIS	9.8.9	One deliverable per Project Plan	Submitted alongside the LS-WSI
Historic Environment Survey Report	Document	9.9.10	Site-specific	Six weeks after completion of survey
Bulk Sampling Strategy	Document in line with Appendix 6 pro forma	9.9.6	Site-specific, if bulk samples are required	As set out in pro forma

Deliverable	Format	Paragraph	Scale/frequency	Deadline
Fieldwork Summary	Document	9.9.12	Site-specific	Six weeks after completion of fieldwork
Final HERDS GIS Deliverable	GIS	9.9.3	One deliverable per Project Plan	Submitted alongside Survey Report or Fieldwork Summary
Historic environment Post-Excavation Assessment	Document	9.9.12	Site-specific	Nine months after completion of fieldwork, unless otherwise agreed
Publication Recommendations Document	Document	9.9.20	Route-wide	Every 26 weeks, or at the completion of each Post-Excavation Assessment
Decision Record Notice (DRN)	Document in line with template in Appendix 4	9.7.14	Site-specific	As required
Weekly Historic Environment Progress Report	Document	9.11.10	Weekly	In advance of weekly meeting
Weekly Historic Environment Progress Map	Document	9.11.10	Weekly	In advance of weekly meeting
Weekly meeting	Meeting	9.11.9	Weekly	n/a
Weekly minutes of all contact with stakeholders	Document	9.11.10	Weekly	In advance of weekly meeting
Bi-monthly round-table meetings	Meeting	9.11.1	Every two months	n/a
Heritage incorporated into Construction programme and Master Information Delivery Plan (MIDP)	Planning	9.10.1	Route-wide	Ongoing
Reporting of heritage CE and SEE activities	Document	5.2.5/6.2.5	To be aligned with other discipline CE/SEE teams	Ongoing
Heritage incorporated into the *Contractors* Environmental management plan	Planning	9.10.2	Route-wide	Ongoing
Presentation to P2a Heritage Sub-Group	Meeting	9.11.3	Every six months	n/a

Deliverable	Format	Paragraph	Scale/frequency	Deadline
Artefact Ownership mapping	GIS	9.13.7	Route-wide	As required
Update to Museum Collection Areas GIS Layer	GIS	-	One-off	Alongside first LS-WSI
Physical archive	Site-specific	9.9.17	Site-specific	As required
Digital archive	Site-specific	9.9.17	Site-specific	As required
Archive index	Site-specific	9.9.18	Site-specific	As required

9.3 Summary of stakeholder engagement

9.3.1 In summary, the requirements for engagement with stakeholders at set points comprise the following, which are expanded upon in the chapter below.

Table 6: Summary of stakeholder engagement

Reason for engagement	Stakeholders	Paragraph	Sequence	Deliverable
Production of LS-WSI, incorporating project plans	HE, LPA	9.8.11	Discussions by the *Contractor* at the earliest opportunity during production of the LS-WSI	*Contractor* to include a summary of engagement, including contractor responses, within the LS-WSI document.
Decision Record Notice (DRN)	HE, LPA	Appendix 4	During production of the DRN	*Contractor* to include a summary of engagement, including contractor responses, in DRN.
Bi-monthly meetings to discuss specific objective progress	HE, LPA	9.11.1	Invitation to the meeting	*Contractor* to record invitations being sent within Weekly Historic Environment Progress Reports.
Production of Post-Excavation Assessment (PXA)	HE, LPA	9.9	Provide a draft to the stakeholders for comment before submitting to the *Project Manager*	*Contractor* to include a summary of engagement, including contractor responses, within the PXA.

9.4 General requirements

9.4.1 The *Contractor* shall ensure all deliverables are in line with Web Content Accessibility Guidelines (WCAG) 2.1[34].

9.4.2 The *Contractor* shall ensure all document deliverables are in line with HS2 Ltd's document management requirements.

9.5 Design and Delivery Partner

9.5.1 For the purposes of this chapter, *Project Manager* is used to refer to either HS2 Ltd or the Design and Delivery Partner (DDP), depending on the final structure and role of the DDP. Elements of the works that are delegated to the *Nominated Undertaker* (such as approval of Schedule 18 and Schedule 20 documents) will remain with HS2 Ltd.

9.6 Development of a Historic Environment Approach

9.6.1 This section sets out the approach to be taken when specifying and designing historic environment works along the Phase 2a route. It details the hierarchy of documents (comprising an overarching Routewide Heritage Approach, delivered through Location Specific Written Scheme of Investigations (LS-WSI) with associated Project Plans) required for the scheme.

9.6.2 The *Contractor* shall incorporate the historic environment works (including design, consenting and stakeholder consultation), into the construction programme. Heritage deliverables shall be co-ordinated across the construction programme, and integrated into each Master Information Delivery Plan (MIDP).

9.6.3 The *Contractor* shall provide a programme for the production of the deliverables in Section 9.2 to the *Project Manager.*

9.7 Routewide Heritage Approach

9.7.1 The *Contractor* shall maintain the Routewide Heritage Approach (RHA) in order to plan surveys and deliver fieldwork to address the Specific Objectives of Phase 2a GWSI: HERDS.

9.7.2 The RHA is a GIS database which sets out where the Phase 2a historic environment surveys will be delivered, how heritage works will address the Specific Objectives, and at which locations this can best be achieved. It also identifies opportunities for route-wide heritage works to address the Specific Objectives.

[34] Web Content Accessibility Guidelines (WCAG) 2.1, https://www.w3.org/TR/WCAG21/.

Review of RHA and existing baseline information

9.7.3 Upon appointment, the *Contractor* will need to be able to demonstrate understanding of the heritage resource within their package area.

9.7.4 The *Contractor* shall review existing heritage information and will meet the *Project Manager* to address any specific questions. The *Project Manager* will endeavour to provide clarification to all of the *Contractor's* queries.

9.7.5 The *Contractor* shall provide a summary of the review, including questions asked and responses received.

9.7.6 The *Contractor* shall revise the Routewide Heritage Approach in light of this review.

9.7.7 Existing heritage information will be provided by HS2 and will comprise:

- the Phase 2a EIAR and appendices;
- the Phase 2a Routewide Heritage Approach (RHA);
- Historic Environment Record (HER) data;
- Portable Antiquities Scheme (PAS) data;
- geophysical surveys carried out by HS2 Ltd to date;
- fieldwalking and metal detecting surveys carried out by HS2 Ltd to date;
- archaeological trenching and excavation carried out by HS2 Ltd to date;
- aerial photograph interpretation carried out by HS2 Ltd to date;
- geological data;
- LiDAR data;
- Historic Ordnance Survey mapping; and
- Historic Tithe, Enclosure, Parish and Estate mapping.

Routewide characterisation

9.7.8 In drawing up the RHA, HS2 Ltd has characterised the route of Phase 2a into three broad distinctions, reflecting a Red/Amber/Green rating for risk to the HS2 programme:

- Red are Recognised Archaeological Zones (RAZs), which will require investigation to identify and characterise heritage assets (further details set out in Section 7);
- Amber are Areas with No Currently Recognised Archaeology (NRA), which are likely to require investigation to identify and characterise currently unrecorded heritage assets; and
- Green are areas where no further investigative work is required (NFW).

9.7.9 The *Contractor* shall update the RHA to reflect the results of ongoing fieldwork at the following points:

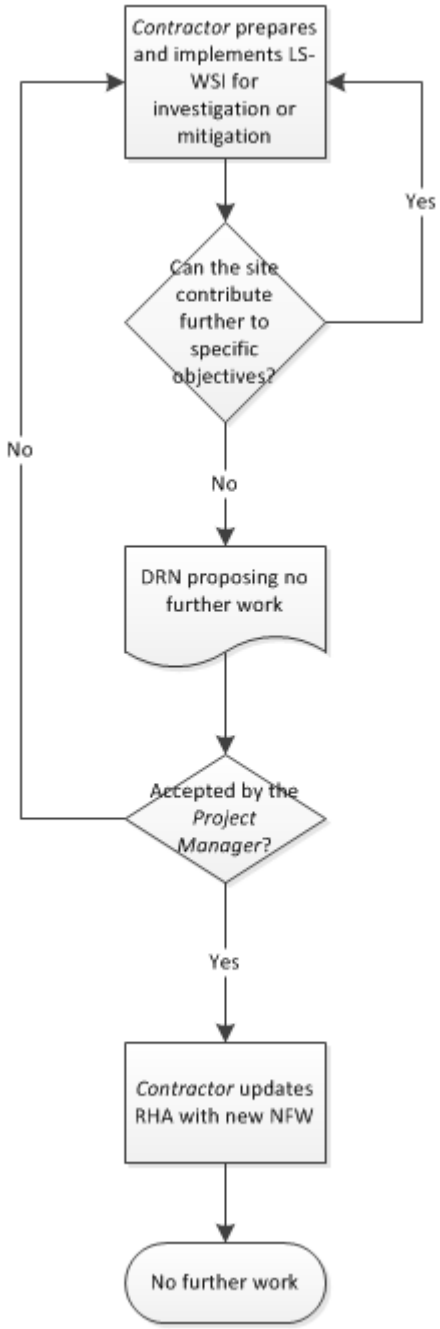
- every time a Decision Record Notice (DRN) for either no further works or a new Recognised Archaeology Zone is accepted by the *Project Manager*; or
- every 12 weeks, whichever is shortest.

Routewide Characterisation: Recognised Archaeological Zones (RAZs)

9.7.10 Recognised Archaeological Zones (RAZs) are areas containing known or likely heritage assets which can contribute to HERDS Specific Objectives and require investigation or mitigation.

9.7.11 The *Contractor* shall carry out investigation and mitigation in RAZs, until such work will no longer contribute to HERDS Specific Objectives and a DRN confirming no further work is accepted by the *Project Manager*.

Figure 9: Heritage works process within RAZ



9.7.12 The RAZs provisionally identified are based on the information from baseline studies and surveys carried out in support of the Environmental Statement which accompanied the hybrid Bill[35]. This information is derived from documentary and remote sensing sources.

[35] HS2 Ltd, 2017. *HS2 Phase 2a Environmental Statement*. Available online at: https://www.gov.uk/government/collections/hs2-phase-2a-environmental-statement.

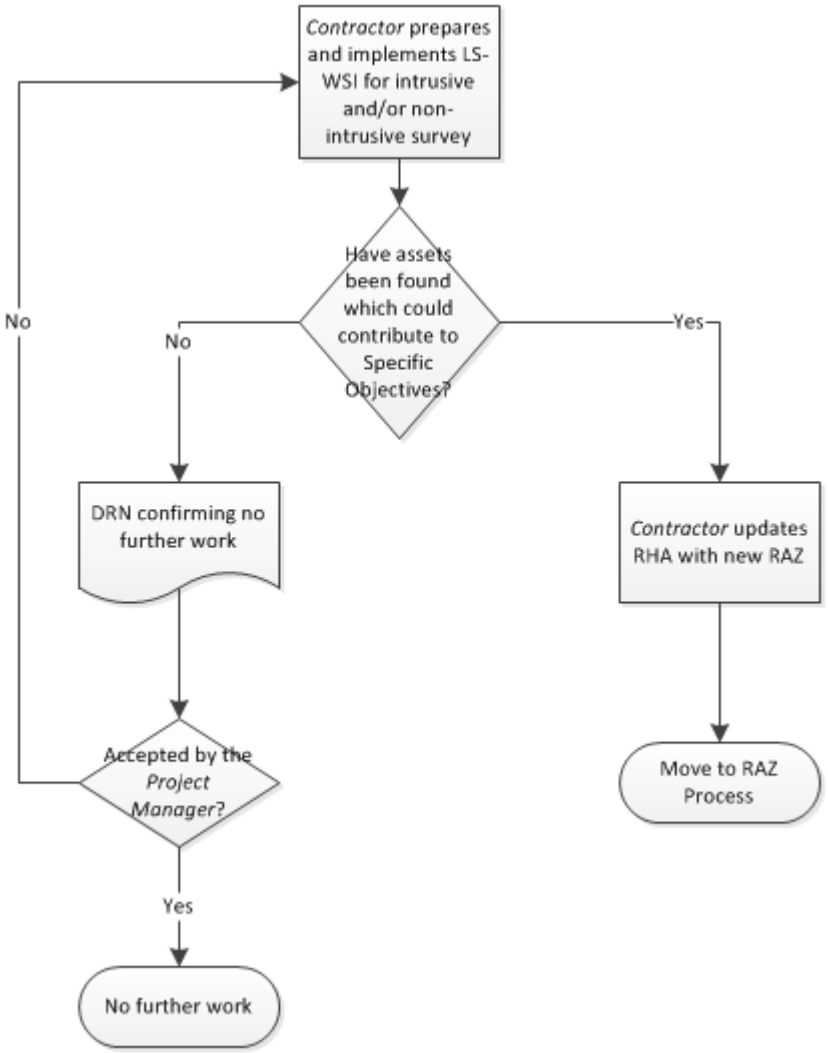
Routewide Characterisation: Areas with No Recognised Archaeology (NRA)

9.7.13 Most areas outside the RAZ can be characterised as 'Areas with No Recognised Archaeology'. This is where, to date, no archaeology has been recognised, but there is the potential that intrusive and non-intrusive surveys, such as trial trenching or geophysics, will uncover additional remains that will contribute to HERDS Specific Objectives. Surveys in these areas are likely to see further RAZs identified in addition to those already known.

9.7.14 The *Contractor* shall carry out intrusive and non-intrusive archaeological surveys in NRAs until either:

- a Decision Record Notice (DRN) confirming no further work is accepted by the *Project Manager*; or
- heritage assets which could contribute to HERDS Specific Objectives are found, and a DRN confirming that the area should become a RAZ is accepted by the *Project Manager*.

Figure 10: Heritage works process within NRA



9.7.15 In either case, the *Contractor* shall update the RHA Characterisation as either a Recognised Archaeological Zone (RAZ) or an Area of No Further Work (NFW).

9.7.16 Where trial trenching is proposed the minimum resolution shall be 4%, unless otherwise agreed with the *Project Manager*.

Routewide characterisation: Areas of No Further Work (NFW)

9.7.17 Some areas are characterised as not requiring any further heritage work. This can be because of previous disturbance (such as quarry sites, lakes, modern roadways), or because archaeological work has been completed and a DRN stating this has been submitted by the *Contractor* and accepted by the *Project Manager*.

Timescales

9.7.18 The *Contractor* shall review and revise the RHA for acceptance by the *Project Manager* whenever a DRN is accepted, or every 26 weeks (or as otherwise agreed with the *Project Manager*).

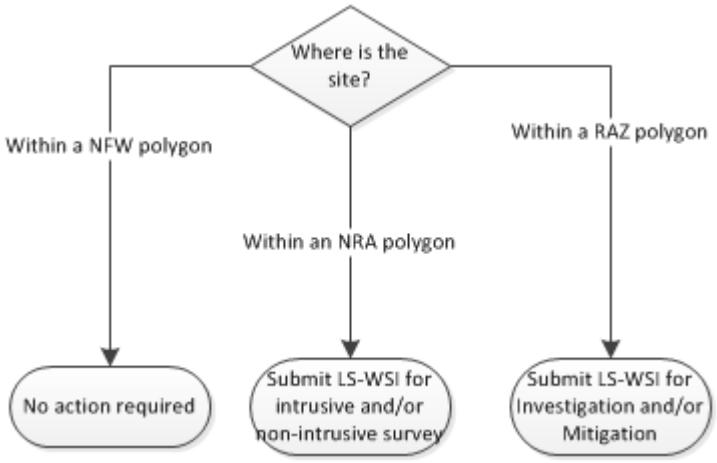
9.8 Location Specific Written Scheme of Investigation (LS-WSI)

9.8.1 The *Contractor* shall provide a LS-WSI in advance of any heritage work. All work proposed in the LS-WSI or Project Plan shall conform to the relevant CIfA, HE or IHBC standards.

9.8.2 The *Contractor* shall provide LS-WSIs with filename format as specified by the *Project Manager*.

9.8.3 The LS-WSI should set out in full the heritage works to be carried out in any given location, and how they will be implemented. This may involve a single technique or a series of techniques. The geographic scope of each LS-WSI shall be defined by the *Contractor*, and should reflect the construction works package boundaries, the Schedule 17 planning consents packages and construction programme. A template for the LS-WSI is provided in Appendix 5.

Figure 11: Process map for LS-WSI selection



9.8.4 When preparing LS-WSI, the *Contractor* will specify formal review points at which project progress and emerging findings are discussed and addressed. The scale of investigation will determine the frequency of review points. Changes to the scope of works, such as moving from evaluation to previously unforeseen excavation, will require a Decision Record Notice (see Appendix 4).

Project plans

9.8.5 Each LS-WSI shall include a section for each type of activity to be implemented as part of the LS-WSI, in order to meet the Specific Objectives. This section is known as the Project Plan.

9.8.6 Project Plans are a specification for each specific type of activity (e.g. a survey, desk based assessment, excavation, recording project). The suite of possible methodologies and techniques are set out in HS2 Ltd's Technical Standard: Specification for Historic Environment Investigations, which provides generic and adaptable text to insert into specific sections of the project plan and LS-WSI.

9.8.7 Project plans shall contain the specific technical methods and requirements of the activity concerned, including the following:

- the location and extent of the activity, including trial trenches, excavation areas, geophysical surveys, coring, surface collection, metal detecting or shovel test-pitting, historic building recording;
- which specific objective the activity will address; and
- a statement setting out whether the project plan has the opportunity for historic environment community engagement activities and skills, employment and education opportunities.

9.8.8 Each project plan needs a unique Site Code, issued by the *Project Manager* following a request from the *Contractor*.

9.8.9 The *Contractor* shall include an initial data deliverable for each Project Plan in line HS2's data standards when the LS-WSI is submitted for acceptance.

Engagement

9.8.10 The Heritage Memorandum sets out the requirement for LS-WSIs to be developed "in consultation with Historic England and the relevant local authority and will follow the objectives set out in the GWSI: HERDS".

9.8.11 Subject to approval from the *Project Manager,* the *Contractor* shall engage with the following stakeholders at the earliest opportunity during production of the LS-WSI:

- relevant officers at the local planning authority (LPA) (generally conservation officers and/or archaeological advisors, and the Historic Environment Record); and
- Historic England.

9.8.12 The results of this engagement, including comments from stakeholders and the *Contractors* response to these comments, shall be recorded within the LS-WSI.

Timescales

9.8.13 A full draft of the LS-WSI shall be submitted by the *Contractor* a minimum of ten weeks ahead of work commencing for that area. They must be accepted by the *Project Manager* before work can commence.

9.9 Fieldwork reporting and Post-Excavation Assessment (PXA)

Historic environment reporting – General requirements

9.9.1 The *Contractor* shall prepare all reports in accordance with the LS-WSI, and in line with Historic England, IHBC and CIfA standards.

9.9.2 The *Contractor* shall provide all reports with filename format as specified by the Project Manager.

9.9.3 As part of the fieldwork reporting the *Contractor* shall submit a completed data deliverable for each Project Plan in line with HS2 Ltd's data standards. For survey, this shall be submitted alongside the Survey Report. For excavation or mitigation, this shall be submitted alongside the Fieldwork Summary.

9.9.4 For geophysical surveys, the *Contractor* shall submit a completed data deliverable for the results of each survey in line with HS2 Ltd's data standards.

9.9.5 For fieldwalking or metal detecting surveys, the *Contractor* shall submit a completed data deliverable for the results of each survey in line with HS2 Ltd's data standards.

9.9.6 For surveys or any fieldwork requiring bulk sampling, the *Contractor* shall submit a completed Sampling Strategy, in line with the pro forma provided as Appendix 6.

9.9.7 The *Contractor* shall collaborate with other contractors to ensure consistency of sampling and recovery strategies, as well as of quantifications and material categories. All quantifications shall be presented in a standard, accessible form both between sites and between contracts.

9.9.8 The *Contractor* shall utilise the most up to date calibration curve for any C14 dates (at the time of writing this is INTCAL20), unless otherwise agreed with the *Employer*. No samples will be submitted for dating unless agreed with the *Employer*.

9.9.9 Where significant (as agreed with the *Employer*) archaeobotanical remains are identified, the *Contractor's* archaeobotanist shall record analysis data relating to these remains on the ArboDat database.

Historic environment survey reports

9.9.10 For intrusive or non-intrusive survey, building recording, or monitoring/construction integrated recording, the *Contractor* shall prepare a fully illustrated survey report.

9.9.11 The survey report shall be submitted to the *Project Manager* for acceptance within six weeks of the completion of the fieldwork (unless otherwise agreed). This report shall be produced in line with relevant HE, CIfA and IHBC guidance.

Excavation (or mitigation) reports and Post-Excavation Assessment (PXA)

9.9.12 For excavation or mitigation works, the *Contractor* shall prepare both a Fieldwork Summary and a PXA for acceptance by the *Project Manager*, unless otherwise agreed with the *Project Manager*.

9.9.13 The *Contractor* shall provide a Fieldwork Summary for acceptance by the *Project Manager* within six weeks of the completion of the fieldwork (unless otherwise agreed with the *Project Manager*). This summary shall include initial/interim phase plans and an initial/interim quantification of finds. This summary shall be no more than two pages of text, unless otherwise agreed.

9.9.14 The *Contractor* shall submit a PXA for acceptance by the *Project Manager* within nine months of the end of fieldwork, unless otherwise agreed. The PXA shall be produced in line with relevant HE, CIfA and IHBC guidance, and shall include the elements set out in paragraph 9.9.16 below, unless otherwise agreed.

9.9.15 The *Contractor* shall engage with the archaeological or historic building advisor to the LPA (as appropriate) and/or Historic England prior to submitting the PXA to the *Project Manager* for acceptance.

9.9.16 The PXA should contain as a minimum:

- introduction – including the location and date of the work carried out;
- original research aims in relation to the GWSI: HERDS;
- summary of the documented history of the site(s);
- a full statement on the results of Fieldwork (in lieu of a Fieldwork Report);
- quantification and characterisation of the site archive, including at a minimum: a description of the site records; quantification and characterisation of finds with indicative dating; description of the nature and quality of environmental material sampled; and the nature of associated documentary records. This should also include quantification of those not selected for assessment, and a statement outlining the reasons for selection.
    - This basic level of quantification must be consistent between sites in each package, and between the two packages on P2a, to facilitate route-wide comparisons. *Contractors* should work together to ensure this consistency, basing their approach on established practice.
- potential of the data to meet current and any new HERDS objectives;
- the results of any pilot studies or other investigation carried out to inform the feasibility of future research projects;
- proposals for future research (specifically, Post Excavation Analysis), in line with the GWSI:HERDS and with Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide, MoRPHE (Historic England, 2015). Proposals will be set out as follows, and will be indicative only:
    - the scope of each individually proposed research product (in accordance with MoRPHE), including research purpose;
    - assessment of the likely programme requirement/constraints for each research product;
    - description and justification of methods and consideration of any alternative approaches for each research product;
    - if scientific sampling is proposed, justification of statistical approach;
    - risk assessment – any ethical, methodological, cost or resource risks applicable to each proposed research product;
    - rating of success likelihood of individual products, including the results of relevant pilot studies;
    - consideration of third-party interest in each product, including stakeholders or other researchers;
    - any considerations or parameters for future data management or storage in relation to proposed products;
    - any considerations or parameters regarding archiving of particular physical assemblages or data, including selection and discard approach, and

- if evident in relation to individual research products, any dependencies or interfaces with other research on Phase 2a and beyond HS2, including identification of joint working opportunities or match funding potential; and
- supporting data including illustrations, data tables and references.

Archiving

9.9.17 The *Contractor* shall collate the physical and digital archives, and prepare them for deposition in accordance with the *Project Managers* technical standards, policies and procedures, including:

- the Historic Environment Physical Archive Procedure; and
- the Historic Environment Digital Data Management and Archiving Procedure.

9.9.18 The *Contractor* shall provide an Archive Index for the archive generated by each activity, unless otherwise agreed, for acceptance by the *Project Manager*. This shall include an entry for each Archive on AIMS.

9.9.19 The *Contractor* shall identify the collection museums for their package area, and provide an update to the Museum's Collection Areas GIS Layer, for acceptance by the *Project Manager*.

Publication recommendations document

9.9.20 The *Contractor* shall prepare a publication recommendations document and submit this to the *Project Manager* for acceptance. This *Contractor* shall review this document every 26 weeks or at the completion of each PXA.

9.9.21 This will set out:

- proposals for which sites need to proceed from PXA to analysis and publication;
- how the findings from the historic environment investigation works are to be published and disseminated; and
- proposed updates to the Phase 2a Route Resource Review to reflect findings and knowledge creation from the works, on the basis of completed assessments, analysis, and publications.

9.10 Construction programme and Environmental Management Plan

Heritage and the Construction programme

9.10.1 The *Contractor* shall include historic environment works input in the construction programme.

Heritage and the Environmental Management Plan

9.10.2 The *Contractor* shall include management of historic environment works in the *Contractor's* overall Environmental Management Plan.

Heritage and Schedule 17

9.10.3 The *Contractor* shall programme, and deliver, the historic environment works such that the results are available to provide sufficient information to support applications under Schedule 17 to the Act.

9.10.4 This will require close liaison with both the *Contractors* and the *Project Manager's* Town Planning teams in order to align the works with the timetables for Schedule 17 submissions.

Coordination

9.10.5 Collaboration is required in order to deliver these works. The *Contractor* should ensure that all parts of the supply chain work together to deliver the historic environment works.

9.10.6 The *Contractor* shall provide a briefing on the requirements of HERDS to specialist archaeology and heritage contractors within their supply chain.

Expertise

9.10.7 The experience from Phase One suggests that the successful management of historic environment requires expertise in the management of large-scale archaeological, landscape and historic built environment projects, BIM/data management, community archaeology and stakeholder management.

Stakeholder site visits

9.10.8 The *Contractor* shall arrange and convene site visits with specialist stakeholders and expert bodies to provide advice on-site as required. The *Project Manager* shall be invited to these meetings.

9.10.9 Any visits to the works shall be in accordance with the *Contractors* health and safety, site access and security requirements.

9.10.10 There shall be no unauthorised access to the works in any circumstances.

9.11 Engagement, monitoring and review

Engagement

9.11.1 Every two months the *Contractor* shall convene a round-table meeting with the *Contractor, Employer* and stakeholders to discuss ongoing fieldwork, progress against Specific Objectives and, if necessary, to review the continuing validity of Objectives.

9.11.2 These meetings should discuss, and include recommendation of any changes, adjustments or additions, to survey methodologies, processes, or the Specific Objectives in response to results from ongoing fieldwork and surveys, as well as discussion of techniques, methodologies, and ongoing results. The *Contractor* shall invite HE and the relevant heritage advisors from the LPA to these meetings.

9.11.3 The *Contractor* shall attend meetings of the Heritage Sub-Group to the Phase 2a Planning Forum, held once every six months, and provide an update to stakeholders.

Updating Specific Objectives

9.11.4 As the project progresses, the Specific Objectives may be updated, amended and potentially marked as completed.

9.11.5 Changes need to be proposed and agreed during the round-table meetings then submitted by the *Contractor* for acceptance by the *Project Manager*.

9.11.6 If the change is accepted, the *Contractor* shall review the RHA for any further required changes as a result of the change to the Specific Objective.

Data management plan

9.11.7 The *Contractor* shall produce a heritage data management plan as part of each LS-WSI. This heritage data management plan shall be in line with relevant ADS, HE, CIfA, and IHBC standards as well as HS2 BIM Standards.

9.11.8 This heritage data management plan shall set out details of how all digital data will be created and managed during the works and outlines the plans for sharing and preservation following the completion.

Progress reporting

9.11.9 The *Contractor* shall attend weekly meetings with the *Project Manager* to report on progress.

9.11.11 In advance of these meetings, the *Contractor* shall submit to the *Project Manager*:

- a Weekly Historic Environment Progress Report, including a map of all completed, ongoing, and proposed fieldwork; and
- the minutes of all communication with stakeholders over that week.

Investigation review points

9.11.12 As set out above, the LS-WSI will propose review points to discuss fieldwork and possible changes to scope. Generally, these review points should be carried out:

- half way through the LS-WSI investigations; and
- at the completion of the LS-WSI investigations.

9.11.13 The review process will consist of a meeting to discuss the progress and future direction of the investigations.

9.11.14 The review process will have one of three possible outcomes:

- decide no change to the LS-WSI;
- decide changes to the LS-WSI and the *Contractor* submits a DRN to the *Project Manager* for acceptance; or
- decide no further work is necessary and the *Contractor* submits a DRN to the *Project Manager* for acceptance.

9.11.15 The *Project Manager* may involve stakeholders or other third party specialists to provide advice as part of the review process if the changes are substantial, or if expert advice is required.

Contractor's role in the review

9.11.16 The *Contractor* shall undertake the following activities:

- provide a DRN (if a decision is required) in line with Appendix 4, setting out a summary of the works and findings to date, sufficient to make decisions on changes to the LS-WSI or requirements for further work;
  - while drawing up the DRN, *Contractor* should discuss with the *Employer* at the earliest opportunity whether consultation/engagement with stakeholders is required;
- provide any other summary of work to date at the site as required;
- respond to specific requests before a review process convenes;
- provide specialists to participate in the review process (if the *Project Manager* deems it necessary);
- provide minutes of previous progress meetings and stakeholder meetings;
- amend the LS-WSI based on the decision of the review process;

- submit a decision record notice for acceptance, if required; and
- submit an update to the RHA to reflect the DRN, if required.

9.11.17 Special circumstances may arise that the *Contractor* may feel requires a review, such as when no archaeological remains are encountered or when unexpected discoveries are made. This would require a request through the *Project Manager*.

9.11.18 The *Project Manager* can refuse an application from the *Contractor* to hold a review if they feel it is not necessary.

Technical sign-off

9.11.19 The review at the end of the fieldwork will determine if the works can be regarded as complete.

9.11.20 A DRN confirming completion of works will be submitted by the *Contractor* and accepted by the *Project Manager* when the works for a particular phase have been carried out in accordance with the LS-WSI.

9.11.21 Until a DRN agreeing no further works is accepted, the relevant area will continue to be regarded as having the potential for currently unrecorded heritage assets.

9.11.22 The *Project Manager* will be responsible for issuing the following:

- technical review and acceptance of applications for DRNs; and
- technical review and acceptance of heritage works.

9.12 Responsibilities and requirements

Project Manager responsibilities

9.12.1 The HS2 Ltd Phase 2a Historic Environment management team will be responsible for (but not limited to) the following:

- review and acceptance of the route-wide heritage approach submitted by the *Contractor*;
- review and acceptance of the LS-WSI and Project Plans submitted by the *Contractor*;
- site monitoring, to be carried out on a selected, risk-based sample;
- review and acceptance of all deliverables set out in Section 9.2;
- ownership of stakeholder relationships; and
- alongside the *Project Manager*, managing the review process.

Contractor responsibilities

9.12.2 The *Contractor* shall be responsible for the design and delivery of all works set out by the Phase 2a GWSI: HERDS and the associated strategies, technical standards and procedures.

Project Manager-Contractor communications

9.12.3 The *Project Managers* Historic Environment Manager and the *Contractors* Historic Environment Project Manager and their respective management teams will liaise on a regular basis to review some or all aspects of the historic environment works throughout the tenure of the contract. All meetings will be minuted by the *Contractor* for acceptance by the *Project Manager*.

9.13 Artefacts and the Treasure Act

Treasure Act 1996

9.13.1 In the event of the discovery of 'treasure', the Treasure Act 1996 will apply to works for Phase 2a of HS2 and the *Contractor* shall comply with it.

9.13.2 The Treasure Act defines 'treasure' as:

- any object at least 300 years old when found which:
  - is not a coin but has metallic content of which at least 10% by weight is precious metal;
  - when found, is one of at least two coins in the same find which are at least 300 years old at that time and have that percentage of precious metal; or
  - when found, is one of at least 10 coins in the same find which are at least 300 years old at that time.
- any object at least 200 years old designated as treasure by the Secretary of State under section 2(1) of the Treasure Act 1996;
- any object that would have been 'Treasure Trove'; and
- any object found with any of the above.

9.13.3 The Treasure (Designation) Order 2002 extends the definition of treasure to include:

- finds of least two base metal objects (other than coins) of prehistoric date; and
- any object (other than a coin) of prehistoric date with any precious metal content.

9.13.4 Should, during the course of construction of HS2 Phase 2a, artefacts be located that are deemed to be 'treasure' as defined by the Treasure Act 1996 (see above), then all necessary measures to comply with the requirements of the Treasure Act and any project specific requirement will be implemented.

Ownership of artefacts

9.13.5 The *Contractor* shall manage the ownership of artefacts in accordance with any undertaking and assurances, and common law.

9.13.6 The transfer of ownership of artefacts will depend on who, in any particular case, is the owner of them and whether that is the *Employer* or whether they remain in private ownership.

9.13.7 The *Contractor* shall provide the *Project Manager* with clear GIS mapping relating to the location of all artefacts recovered during the works to enable the division of the artefactual archive between landowners. Mapping shall include landownership divisions.

9.13.8 Where land is entered onto temporarily by consent of the landowner outside the powers of the Act, either because it predates the enactment of the Act or is outside Act limits, then any artefacts belong to the landowner. The *Employer* will seek ownership in agreement with the relevant landowner.

9.13.9 Where land is occupied only temporarily under Act powers, it is generally on terms that it will be restored to the owner in its original condition, which would include anything found on the land during the period for which it was occupied. The *Employer* would have to secure ownership in agreement with the relevant landowner.

9.13.10 Where the land is entered onto following permanent compulsory acquisition under the Act, any artefact found afterwards would normally belong to the acquiring authority.

10 References

10.1 HS2 Ltd documents

High Speed Two Limited (HS2 Ltd), 2017a. *Environmental Minimum Requirements (comprising General Principles; Code of Construction Memorandum; Planning Memorandum; Heritage Memorandum; and Environmental Memorandum)*. Available online at: https://www.gov.uk/government/publications/environmental-minimum-requirements-for-hs2-phase-2a.

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