1EW03 - Enabling Works Central

AWHf – Location Specific Written Scheme of Investigation for Trial Trench Evaluation at Turweston, Buckinghamshire, AC250/27

MDL:

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Revision	Author	Checked by	Approved by	Date approved	Reason for revision
C01	Christina O Regan	Grace Corbett			For acceptance
C01	Christina O Regan	Grace Corbett			

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1 Executive Summary

1.1.1 This Location Specific Written Scheme of Investigation (LSWSI) sets out the methodology, deliverables, programme, health, safety and environmental requirements, resources and interfaces necessary to deliver an archaeological evaluation defined in Project Plan for Trial Trench Evaluations at land near Turweston, Buckinghampshire (AC250) (Document No. 1EW03-FUS-EV-REP-CS06_CL22-007809). The Project Plan established the scope, aims and contribution to the Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS) (Document No.: HS2-HS2-EV-STR-000-000015) objectives, techniques, deliverable and reporting mechanism for the trial trench investigation.

1.1.2 The trial trench evaluation will be undertaken on a single, irregular parcel of land: Area C25083 (NGR centre 460518 237551), measuring 25.124ha.

1.1.3 The Site is located to the east of Turweston, Buckinghamshire, within the Newton Purcell to Brackley Community Forum Area (CFA14). The evidence suggests there is a potential for the Site to contain archaeological remains of medieval origin relating to the adjacent Turweston Manor, likely to comprise field systems, ridge and furrow earthworks. Peripheral medieval settlement activity may be encountered, as suggested by documentary, remote sensing and geophysical survey results (2017 & 2018). The Site also has the potential for deposits of palaeoenvironmental and palaeoartefactual interest associated with the Pleistocene formation of the River Great Ouse, and other evidence of prehistoric activity on the upper slopes and plateau overlooking the watercourse. Their stratigraphic position below the medieval ridge and furrow is indicative that they predate the Medieval period.

1.1.4 The results of the trial trench evaluation will inform the archaeological resource assessment for the Sites and identify whether any archaeological remains present have the potential to contribute to the aims, objectives and knowledge gain defined in the GWSI: HERDS.

1.1.5 This LSWSI has been prepared in accordance with the standards and guidance provided by the GWSI: HERDS, the Technical Standards for Specification for historic environment project plans and location specific written schemes of investigation (Document No. HS2-HS2-EVSTD-000-000036) and Specification for Historic Environment Investigations (Document No. HS2-HS2-EV-STD-000-000035), Standards & Guidance for Field Evaluation (CIfA 2014b), Standard and Guidance for Archaeological Excavation (CIfA 2014c) and Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives (CIfA 2014d).

2 Scheme Design Element Impacts

2.1.1 The Site forms an area of Non-Contestable Utilities (NCU), which includes re-routing of high voltage electricity cables. Within the Site, the proposed NCU works include new pylons, overhead line and a section of new underground cable route (Figure 1). The Site (area C25083) is required to enable 2019 main works haul route construction, comprising areas for rail

alignment formation and embankment, an access road, temporary material stockpile, construction site compound locations and temporary pedestrian diversion, and an assumed area of vegetation clearance.

3 Site Location, Extent and Condition

3.1 Project Background

3.1.1 High Speed Two (HS2) is a new railway network proposed by Government to provide a new link between London, the West Midlands, the East Midlands, South Yorkshire, Leeds and Manchester. Phase One of HS2 will involve the construction of a new railway approximately 230km (143 miles) in length between London and the West Midlands. Powers for the construction, operation and maintenance of Phase One are conferred by the High Speed Rail (London - West Midlands) Act 2017.

3.1.2 The overall framework within which archaeological work will be undertaken is set out in the Environmental Minimum Requirements (EMR), in particular the Heritage Memorandum, the Code of Construction Practice (CoCP) for HS2 Phase One and the GWSI: HERDS. Accordingly, the nominated undertaker or the *Enabling Works Contractor* is required to implement appropriate and reasonable measures to identify, avoid or, where practicable, reduce impacts to the significance of heritage assets prior to the start of construction.

3.2 Site Location

3.2.1 The Site is situated within Archaeological Sub-Zones (ASZ) 14-20, 14-21 and 14-22 of CFA14 (ES 3.5.2.14.4):

- ASZ 14-20 (Westbury/Turweston Salient) is characterised by a plateau of higher ground within a loop of the River Great Ouse as it flows past Brackley, demonstrating a typical locality for prehistoric and historic activity up to the medieval period;
- ASZ 14-21 (Turweston) is situated on the edge of the ASZ 14-20 plateau and demonstrates a typical locality of prehistoric and historic activity up to the medieval period; and
- ASZ 14-22 (Valley of the River Great Ouse – north-facing slope at Turweston) is situated on a relatively steep north-facing slope of the Ouse Valley. Although the northerly aspect of the slope suggests an unfavourable location for settlement activity, the upper slope can be considered a typical location for Mesolithic and Early Neolithic activity and for Bronze Age barrows.

3.2.2 The Site is located within the county of Buckinghamshire in Turweston parish, c. 200m east from the village of Turweston. The Site is accessed by an unnamed road leading from the centre of Turweston to Turweston Fields and Oatleys Hall, essentially dividing the Site itself

into northern and southern parts. The southernmost field is currently in use as arable land and that to the immediate south of the road is currently used as pasture. The northernmost fields are also in use as arable land, with those adjoining the road occupied by a public playing field and paddocks and buildings associated with Ballabeg Stables.

3.2.3 The Site is situated primarily on a plateau above the River Great Ouse, at approximately 125-130m above Ordnance Datum (aOD). The northwesternmost part of the Site lays on a west facing slope overlooking the Great Ouse, falling from c. 125m aOD at its eastern boundary to c. 110m aOD at its western boundary.

3.3 Baseline Information

3.3.1 The information presented below has been derived from the Environmental Statement, prepared in 2013 (CH-001-011 - ES 3.5.2.14.4 and CH-002-011 - ES 3.5.2.14.5, Buckinghamshire and Northamptonshire Historic Environment Records (HER) data checked in August 2018, and results of the surveys undertaken within the Site and in its environs, i.e. geophysical survey and LiDAR survey (CH-004-011 - ES 3.5.2.14.7). Assets and events taken from the Buckinghamshire HER are identified by the prefix "MBC" and from the Northamptonshire HER are identified by the prefix "MNN".

3.3.2 No designated heritage assets are recorded within the Site. Several listed buildings lie within Turweston, between c. 100m and 600m to the west of the Site, including the Barn at Court Cottage (List UID: 1212403), Turweston Manor (List UID: 1212447), Turweston Lodge (List UID: 1212590), Stratton Arms (List UID: 1289476), The Cottage (List UID: 1289477) and Manor Cottages (List UID: 1289544). An Archaeological Notification Area, defined by Buckinghamshire HER over a spread of multi-period pottery findspots, is situated to the immediate west of the Site and partly within the Site itself. Additional Archaeological Notification Areas are defined c. 300m to the west, around the Grade II* Listed Church of the Assumption of the Blessed Virgin Mary in Turweston (List UID: 1289451), and c. 900m to the south-west around a series of circular crop marks.

3.4 Geology and Topography

3.4.1 The British Geological Survey (BGS 2019) records the underlying bedrock geology of the Site as limestone and mudstone of the Forest Marble Formation, formed approximately 166 to 168 million years ago in the Jurassic Period.

3.4.2 Superficial deposits overlaying the bedrock geology is mapped principally as Mid Pleistocene glacial till. Deposits of glaciofluvial sands and gravels are mapped to the north and west of Ballabeg Stables, within the Site's northwest fields, correlating to the River Great Ouse valley. Geotechnical investigation (Document No. 1EW03-FUS-EV-REP-C000-005179) included three boreholes within the northernmost field of the Site. Two boreholes (ML095-WS046 & ML095-WS049) each encountered a single layer of alluvium, of 0.8m and 0.4m in thickness, respectively. The third borehole (ML095-WS048) did not demonstrate any alluvial deposits.

3.4.3 The soils over the Site are mapped as slightly acid loamy and clayey soils with impeded drainage, of moderate to high fertility (Cranfield Online 2019).

3.5 Previous Investigations

3.5.1 No previous intrusive archaeological investigations have been undertaken at the Site. Relevant non-intrusive surveys are detailed below:

Environmental Statement 2013 Remote Sensing Survey

3.5.2 A remote sensing survey incorporating light detection and ranging (LiDAR), hyperspectral imagery and aerial photographic analysis of the Site was conducted as part of the 2013 Environmental Statement (CH004-011 - ES 3.5.2.14.7). The results show that extant ridge and furrow is present within several fields of the Site, as earthworks and cropmarks (N28-9). In addition, three rounded, cut features were identified in the north-eastern field, provisionally interpreted as post-medieval extractive pits (N70).

Geophysical Surveys in 2017 and 2018 (AC250/5)

3.5.3 As part of the Hs2 works, geophysical survey was undertaken across the Site. The initial geophysical survey in 2017 targeted the north-eastern and southernmost fields of the Site only (Document No. P1C2-ETM-EV-REP-000-000008_P01). Remnants of ridge and furrow formations were identified within both fields, principally on a roughly northeast/southwest alignment, truncated by later drains and plough marks. An east/west aligned former field boundary was also identified in the southernmost field.

3.5.4 A geophysical survey of the remaining fields comprising the Site was undertaken in 2018 (Document No. 1EW03-FUS-EV-REP-CS06_CL22-007803). The field units of the survey were sub-divided and interpreted as follows:

- Field to south of unnamed road (5B): northwest/southeast aligned ridge and furrow, linear and curvilinear trends in northwest corner and southern half of 5B likely archaeological in origin, magnetic disturbance attributed to modern activity;

- Part of field to west of 5B (5C): series of earthworks visible but uncertain origins, including a sub-circular depression, an embankment and several amorphous anomalies, magnetic disturbance attributed to modern activity;

- Recreational field north of unnamed road (5D): north-north-east by south-south-west ridge and furrow, amorphous and linear trends of uncertain origin in centre and south of 5D, magnetic disturbance attributed to modern activity;

- Paddocks of Ballabeg Stables (5E): northeast/southwest ridge and furrow across eastern half

turning towards south, sub-circular arrangement of amorphous anomalies and further to south, magnetic disturbance attributed to modern activity;

• Field north of recreational field (5F): north-north-east by south-south-west ridge and furrow in eastern half, rectilinear arrangement of linear trends in northwest corner and a linear spread of amorphous and sub-circular trends running north/south, magnetic disturbance attributed to modern activity; and

• Northernmost field (5G): west-north-west by east-south-east aligned trends linked to modern ploughing, converging linear anomalies in northeast corner (beyond Site boundary) relating to LiDAR anomaly likely archaeological in origin, linear and amorphous trends nearby may be associated with broad curvilinear anomaly to south (just within the Site boundary), numerous curvilinear, linear and amorphous anomalies, magnetic disturbance attributed to modern activity.

3.5.5 These phases of geophysical survey also targeted fields to the immediate south (Document No. P1C2-ETMEV-REP-000-000008_P01) and east and northwest (Document No. 1EW03-FUS-EV-REP-CS06_CL22-007803). These surveys encountered ridge and furrow formations in all areas, in addition to linear, curvilinear and amorphous anomalies to the east and north-west, possibly archaeological in origin.

3.6 Current Site Conditions & Constraints

3.6.1 Site specific constraints/hazards include:

The following ecological constraints will require advice from a Fusion ecologist who will suggest mitigation for these constraints:

- Badgers. One badger sett has been identified beyond the north-western boundary of the Site. The scheme design takes account of the identified badger sett, and a 50m exclusion zone has been created around it which will need to be visibly demarcated on site. In order to protect badgers against falling into trenches, fencing will need to be erected and ramps left overnight within each trench. Each trench will also need to be checked for badgers daily prior to starting work.
- Hedgerows. A number of hedgerows are on the boundary of several parts of the Site. That forming the eastern boundary of the field to the immediate south of the unnamed road meets the criteria for an important ecological and historical hedgerow. Appropriate measures will be implemented to avoid disturbing these features, unless breaches will be required to gain access under Schedule 4 (cf. Section 13.1.2). Any breaches will be carried out under strict ecological controls and approved by Fusion.

- Barn Owls. The current data indicates that there are no recorded barn owls in the Site, but a few medium and low potential spots have been recorded within the surrounding landscape (not shown, see Thompson AWE1 Mitigation Database). The *Archaeological Contractor* should seek advice from an ecologist on the potential of barn owls and any mitigation procedures that may be required.

- Bats. Several trees have been noted as suitable for bat roosts within the Site, with further trees and buildings identified around the edges of the Site. There are no recorded bat building roosts within the Site, but some are recorded in vicinity (see Thompson AWE1 Mitigation Database). These areas are avoided: no work will be carried out under tree canopies, the machinery will not be left running overnight. The *Archaeological Contractor* should seek advice from an ecologist on the potential of bats on the Site and whether certain trees can be removed if needed for access.

Overhead services. Several overhead services cross the Site at various points. An overhead power cable crosses the northern part of the Site from northwest to southeast, joining with an overhead cable running the route of the unnamed road. An associated branch of this service crosses the northeast corner of the field to the immediate south of the road. The principal cable route turns east of the Site to re-enter and cross the southernmost field from north to south. An overhead telecommunications cable runs parallel to the power cable along the unnamed road, including a branch at the northwest corner of the field to the immediate south. A 10m buffer has been established either side of these services and shall be visibly demarcated with a physical barrier and fenced crossing point with goal posts. Appropriate measures will need to be implemented by the *Archaeological Contractor* when manoeuvring machinery in the vicinity of the overhead cables, particularly during delivery along the unnamed road.

Buried services. A buried pipe was detected by geophysical survey crossing the northeast part of the Site from northeast to southwest, connecting Turweston Fields to Ballabeg Stables. As the nature of this service is not currently known, a 20m buffer has been established.

Livestock. Ballabeg Stables holds an unknown number of equine livestock and uses several paddocks to the immediate east of the stables and domestic buildings. Trenches located within the paddocks (25-27) should be excavated with consideration to livestock presence and fenced appropriately to prevent injury.

Footpaths and bridleways. A public footpath and bridleway run the length of the unnamed road bisecting the Site. Care will be taken when accessing the Site using this route and when manoeuvring vehicles here. A branching footpath and bridleway turn from this south, passing through a field of the Site. This path shall be fenced off 1m either side to maintain a safe route for pedestrians and equestrians. A further footpath crosses this through the central area of mature vegetation dividing the two southern fields of the Site.

Woodland and vegetation. A triangular area of mature vegetation, crossed by a public footpath, currently divides the two southern fields of the Site. To the immediate north of this, within the field to the immediate south of the unnamed road, a rectangular strip of recently planted vegetation exists, bounded to the north by a fence.

3.7 Archaeological Background

3.7.1 The archaeological background and context of the Site is described in Section 3 of the Project Plan and is summarised here.

3.7.2 The palaeogeological character and potential of the Site has been informed by a Scheme Wide Palaeoenvironmental Detailed Desk-Based Assessment (Document No. 1D037-EDP-EV-REP-000- 000033) and a Geoarchaeological Desk-Based Assessment (Document No. 1D037-EDP-EV-REP-000-000031).

3.7.3 The Site lies within Geological Character Zone (GCZ) 18 (Mixbury to Brackley), characterised by superficial geological deposits of fine-grained alluvium associated with the River Great Ouse south of Brackley, in addition to deposits of Head and Mid Pleistocene glaciofluvial sands, gravels and till. Although deposits such as these generally hold a low potential for palaeoenvironmental and palaeoartefactual remains, the Site's situation on an outcrop above a principal watercourse (and the inherent archaeological potential associated with such a location) increases the potential for deposits of palaeoarchaeological interest. A greater palaeoenvironmental potential may be considered with the alluvial deposits of the Great Ouse, however, this flows from east to west c. 400m south from the Site, and north to south c. 150m west from the Site, and no such deposits are mapped at the Site itself. The gravels and sands mapped in the northwest part of the Site may be associated with the formation of the Great Ouse and hold a potential for deposits of geoarchaeological significance, as demonstrated by the alluvial deposits recorded by the geotechnical investigation (Document No. 1EW03-FUS-EV-REP-C000-005179).

3.7.4 Mesolithic hunter-gather activity is believed to have focussed on resource-rich areas such as woodland and alongside watercourses, with recorded sites generally situated on dryer, rising ground. Although no Mesolithic remains are recorded nearby, the Site's location on a plateau and upper slope overlooking the River Great Ouse suggests a potential for encountering relevant archaeological remains.

3.7.5 Evidence for the Neolithic period in Buckinghamshire also appears to favour the higher ground overlooking watercourses, although very few relevant remains have been encountered within CFA14 and none close to the Site. Cropmarks suggestive of a ring ditch and enclosure have been identified north of Hopcrafts Farm, c. 900m south-west from the Site, possibly dating to the Neolithic or Bronze Age (MBC11801-2).

3.7.6 The Site's location on a plateau and upper slopes of the River Great Ouse Valley is suggestive of locations typical for Bronze Age monuments in the broader region. However, no Bronze Age settlement or artefactual evidence is recorded within the Site's boundaries or nearby.

3.7.7 The geophysical survey of the Site in 2018 found evidence of curvilinear and linear features within the central part of the Site which may be later prehistoric or Roman in date. These features appeared to be cut by the later ridge and furrow and may represent settlement or agricultural activity (Document No. 1EW03-FUS-EV-REP-CS06_CL22-007803). While these anomalies are largely irregular and amorphous, areas of archaeological potential have been identified. The field to the immediate south of the unnamed road contains two parallel linear features suggestive of a trackway in the northwest corner and further linear and curvilinear features to the south and west suggestive of possible enclosures. The small area to the immediate west of this field contained similar linear and curvilinear trends, some suggestive of a branch or westward turn of the trackway. The fields to the immediate east and west of Ballabeg Stables principally contained groups of amorphous anomalies, clustered in a ring formation within the northernmost paddock to the east and more scattered to the south of this. A cluster of curvilinear trends was encountered north from the stables, in addition to further evidence of possible rectilinear enclosure and scattered amorphous anomalies, linear and curvilinear trends further north of this.

3.7.8 Two locations demonstrating Iron Age settlement activity are situated c. 1.1km and c. 1.9km to the north-west of the Site. The nearer site (NPB074) comprised numerous ditches, pits and postholes, several roundhouses and stone-lined pits. This site also exhibited evidence of funerary activity, comprising several undated burials, a Roman inhumation and scatters of Roman pottery sherds which may indicate disturbed inhumation or cremation burials. The further settlement (NPB083) comprised largely similar features, without funerary evidence.

3.7.9 The general trend in Buckinghamshire of Late Iron Age settlements demonstrating some continuity into the Roman period is represented north of Evenley, c. 1.7km south-west from the Site. At this location, several scatters of Late Iron Age and Romano-British pottery sherds and other settlement-related artefacts have been recovered during fieldwalking and metal detecting surveys (MNN161752-3, MNN32813, MNN18082), including a hoard of Roman coins (MNN18083). The presence of a Roman building, or buildings, close to this location is suggested by the finding of possible architectural fragments (MNN35850).

3.7.10 An additional area of possible prehistoric settlement is suggested c. 500m west from the Site, by crop marks on aerial photographs suggesting a series of enclosures and ring ditches, likely overlain by medieval ridge and furrow formations (NPB051).

Romano-British (AD 43-410)

3.7.11 The Site lays c. 2.7km north from a Roman road designated by the historian I.D. Margary as route 56a, from Alcester to Towcester (Margary 1973). The location of this route likely contributed to the activity north of Evenley and also to the establishment of a villa on the eastern outskirts of present Brackley (MNN11313), c. 1.5km west from the Site. Nearby

features including structural remains, ditches, pits & postholes, and a possible road surface, suggest a sizeable Roman rural settlement at this location, potentially placing the Site within an agricultural hinterland. As mentioned above the linear and curvilinear features recorded on the site by the 2018 geophysical survey may be later prehistoric or Roman in date.

3.7.12 Evidence of earthworks, possibly representing a trackway or enclosure, are recorded c. 700m west from the Site near the banks of the Great Ouse (NPB059). Artefactual finds of Roman and medieval pottery sherds nearby suggest a date range for this feature.

3.7.13 Further evidence of Roman rural activity is demonstrated c. 1.8km north from the Site at Whitfield. Fieldwalking survey in 1993(CBA 1994) encountered Late Iron Age/Roman pottery scatters, and later excavation in 2001 (CBA 2002) associated with the widening of the A43 encountered Roman enclosures, pottery kilns and other undefined structures.

Early Medieval (AD 410-1066) and Medieval (AD 1066-1540)

3.7.14 Many extant English villages in the vicinity of the site are believed to have originated in the Late Saxon period, appearing in the 1086 Domesday Survey (Domesday Online 2019) and establishing the historic landscape pattern. Such settlements near to the Site include *Turvestone* (Turweston), *Westberie* (Westbury), *Brachelai* (Brackley), *Witefelle* (Whitfield) and *Rodestone* (Radstone). Of these, only Radstone, c. 2.4km north from the Site, was depopulated by the end of the medieval period, the remainder continuing to be inhabited into the present.

3.7.15 The name 'Turweston' is believed to stem from the Old Norse for 'farmstead or village of a man called Thorfrøthr or Thorfastr' (Mills 2011), suggesting a possible origin in the 9th-10th centuries. The settlement is recorded as comprising 14 households in the 1086 Domesday Survey (Domesday Online 2019). A mill is also documented, likely situated c. 170m to the west of the site (MNN12735).

3.7.16 The nucleated settlements of the high and late medieval periods within Buckinghamshire were generally associated with manors and farmsteads dispersed throughout the landscape. The manor at Turweston was situated c. 200m west from the Site (MBC12736) and the core of the medieval settlement at a crossroads slightly to the south of this (MBC25992). The Church of the Assumption of the Blessed Virgin at Turweston (MBC1142) contains architectural elements from the 12th century, with later additions and alterations, although the discovery of a Saxon burial slightly to the north (MBC8003) may suggest an earlier structure and yard on the same site.

3.7.17 Areas of extant medieval or post-medieval ridge and furrow formations have been identified by aerial photography, remote sensing, geophysical survey and visual inspection across much of the Site (NPB061, NPB062, NPB099). This evidence suggests a high likelihood that the Site lay within agricultural land associated with the medieval settlement at Turweston during this period. Complex systems of ditches and banks have been identified to the immediate

northwest of the Site and further north along the Great Ouse, likely relating to medieval and post-medieval water management (NPB066).

3.7.18 The core of early medieval settlement at Brackley (MMN11313) lies c. 1.3km west from the Site. Archaeological evidence has demonstrated that early medieval Brackley (Old Town) had developed principally on the same site as the preceding Roman settlement.

3.7.19 A medieval ditch (MNN160122) and possible mill race (MNN160123) situated on the southern bank of the River Great Ouse, c. 1.4km south-west from the Site represent the location of a medieval watermill, marked on Boyce's map of 1814 as Evenley Mill (not reproduced).

Post-Medieval (AD 1540-1900)

3.7.20 The post medieval period saw the widespread abandonment of medieval agricultural organisation (principally based on utilisation of common land) in favour of gradual field enclosure under private ownership. Turweston parish, including the Site, was enclosed by parliamentary act in 1813 (Page 1927). This event would have witnessed the establishment of hedged and possibly ditched boundaries between plots, some of which have been maintained into the present, including that situated c. 300m north from the Site (NPB064).

3.7.21 The presence of several post-medieval farmsteads near to the Site indicates its historically rural character. These include Grovehill Farm (NPB046) and its barn (NPB045) c. 770m south from the Site, Grove Farm (NPB048) c. 730m to the south-east, and Oatleys Farm (NPB052) c. 340m to the east. The Site lay beyond the extent of urban development at Westbury, Turweston and Brackley during the post-medieval and modern periods, retaining its rural character and use as agricultural land.

3.7.22 Two railway lines were constructed close to the Site during the 19th century: the Banbury to Verney Junction branch of the Buckinghamshire Railway in 1850 (NPB030) and the Great Central Railway in the 1890s (NPB003). These events had a profound impact on the surrounding countryside, carving through the mosaic of enclosed agricultural fields and likely removing, or significantly truncating, any earlier archaeological remains along its route. Neither route directly impacted upon the Site.

3.7.23 The 1920 Ordnance Survey (not reproduced) suggests the fields to the south of the unnamed road were in use as arable land and much of the fields comprising the Site to the north of the road were in use as allotments. The northern fields adjoining the road had been divided into the plots presently occupied by Ballabeg Stables and a playing field by 1950, although these did not come into being until later in the 20th century.

3.7.24 Turweston Airfield (NPB054) was opened in 1942, stretching from (and including) the northeastern part of the Site up to c. 2.2km to the north-west. The airfield was used during the Second World War as a base for 92 Group RAF Bomber Command for operational, air gunnery and ferry training units. The site is currently partly in use as a flying school, with a large part

given over to photovoltaic panel placement. The parts within the Site's boundaries and immediately adjoining have returned to use as arable land.

3.7.25 The Site and its environs remained largely unchanged since the construction of the railway lines and any subsequent impacts are likely to be associated exclusively with agricultural activity. The modernisation of the A422, forming the northern boundary of the Site, may also be considered to have had a limited, localised impact.

Previous Disturbance

3.7.26 The Site appears to have remained principally in agricultural use from the medieval period onwards. Centuries of ploughing may have damaged upper horizons of buried archaeological features and levelling for the paddocks and playing field would have reduced any visible earthworks. A significant below ground impact on any archaeological remains may be expected within the footprint of Ballabeg Stables. Any modern field drains would have had only localised and negligible impact on any archaeological remains that may be present within the site.

4 Overview of Project Plan

4.1.1 The location for the evaluation has been selected to address construction programme risk to land required for the proposed development. The Non-Contestable Utilities (NCU) area, as the main programme driver, forms an urgent works aspect of the wider scheme for the Site. The land parcel is required to enable 2019 main works haul route construction, comprising areas for rail alignment formation and embankment, an access road, temporary material stockpile, construction site compound locations and temporary pedestrian diversion, and an assumed area of vegetation clearance.

4.1.2 This LSWSI has been prepared to provide the necessary specification and site-specific information to enable the delivery of the evaluation as defined in the Project Plan for a Trial Trench Evaluation at Turweston, Buckinghamshire (AC250) (Document no.: 1EW03-FUS-EV-REP-CS06_CL22-007809).

4.1.3 A copy of the Project Plan is appended as Appendix 1 of this LSWSI. The Site code for the investigations will be issued by HS2 in due course.

4.1.4 The Project Plan establishes the scope, aims, objectives, methodology and deliverables for the archaeological evaluation in accordance with the commitments made in Environmental Minimum Requirements (EMRs) for HS2 Phase One; the objectives set out in the GWSI: HERDS and HS2 Technical Standards. It also establishes the requirements for information management, quality assurance and the results of engagement with the archaeological advisor to the local planning authority (Buckinghamshire County Council).

4.1.5 The Project Plan identifies requirements to undertake archaeological trial trenching in advance of construction. The trial trench evaluation across the Site will comprise:

- Excavation of 16 No. trenches to examine the areas of the proposed utilities works (new pylons and underground cable trench).
- Excavation of 45 No. trial trenches to examine the remainder of the Site, targeting the geophysical anomalies and blank areas of the Site.

4.1.6 In total, 61 No. trial trenches measuring 50m x c. 2m (dictated by machine bucket width) will be excavated across the Site. This represents an approximate 3% sample of the available area of the entire site.

4.1.7 Section 4 of the Project Plan identifies the contribution the results of the archaeological evaluation can make to a number of specific research objectives set out in the GWSI: HERDS. Trial trench investigation will provide the most suitable method for the recovery of archaeological evidence to inform the research objectives. Sections 5 and 6 of the Project Plan provide a methodology and deliverables for the trial trench evaluation. The specific aims, research objectives and the potential knowledge outcomes for the Site are identified within the Project Plan; the contribution to those by this evaluation is outlined in Section 4.3.

4.2 Aims and Objectives

Aims of the Fieldwork

4.2.1 The trial trench evaluation is required to determine, as far as reasonably possible, the nature of the archaeological resource within the Site. The extant evidence (documentary, geophysical, previous archaeological fieldwork) suggests there is a potential for the Site to contain archaeological remains of medieval origin relating to the adjacent Turweston Manor, likely to comprise field systems, ridge and furrow earthworks. Peripheral medieval settlement activity may be encountered, as suggested by documentary evidence, remote sensing and geophysical survey results. The Site also has the potential for deposits of palaeoenvironmental and palaeoartefactual interest associated with the Pleistocene formation of the River Great Ouse, and other evidence of prehistoric activity on the upper slopes and plateau overlooking the watercourse. Their stratigraphic position below the medieval ridge and furrow is indicative that they predate the Medieval period.

Objectives of the Fieldwork

4.2.2 The objective of the investigation is to identify the extent and character of any surviving archaeological remains within the Site and to inform an archaeological resource assessment of its knowledge value and ability to contribute to Specific Objectives. The outcomes of the investigation will be used to inform the requirement and strategy of further archaeological investigation. Where present the investigation will define the character, extent, quality, preservation and significance of the archaeology in order to determine its potential to contribute to Specific Objectives set out in the GWSI: HERDS. Results of the trial trench evaluation will be combined with data from other archaeological assessments carried out as part of the project, such as the desk-based studies which contributed to the ES for Phase One

of HS2, geophysical surveys etc., in order to analyse the archaeological potential of the Site, and to develop a programme of further archaeological investigation, as required.

4.2.3 The aims of the trial trenching evaluation are:

- to confirm the presence/absence, extent and depth of any surviving archaeological remains within the site;

- to determine the nature, date, condition, state of preservation, complexity and significance of any archaeological remains;

- to determine the likely range, quality and quantity of artefactual and environmental evidence present;

- suggest measures, if appropriate and feasible, for further archaeological investigation to mitigate identified significant impacts; and

- contribute to the delivery of GWSI: HERDS Specific Objectives as specified in Section 5.3.

4.3 Contribution to Specific Objectives

4.3.1 Through delivery of the works set out in Section 5 and through addressing the aims set out in 5.2, the trial trench evaluation will create knowledge and outputs that would contribute to the following specific objectives in the following ways:

Table 1 Contribution to HERDS Objectives

Specific Objective	Contribution
KC1: Refine understanding of the Palaeolithic potential of deposits beyond river valleys.	The Site has the potential to encounter evidence of the Palaeolithic period, however any such artefacts or deposits are likely to be associated with the Pleistocene formation of the River Great Ouse.
KC4: Develop more refined chromo-stratigraphic models for Pleistocene river terrace deposits present throughout the route, such as those associated with the Great Ouse, and to correlate these with the more established elements of the Thames Valley sequence.	Evidence for Pleistocene river gravel terraces may be encountered at the Site, particularly in the northwest field situated on a slope overlooking the Great Ouse.

KC5: Identifying settlement location and developing models for settlement patterns for the Mesolithic, Neolithic and Early Bronze Age.	Although little archaeological evidence has been recorded for these periods close to the Site, the Site's geographical and topographical location suggests a typical location for contemporary agricultural, settlement and funerary activity.
KC15: Can we identify regional patterns in the form and location of Late Bronze Age and Iron Age settlements across the route, and are there associated differences in landscape organisation and enclosure?	The presence of known Iron Age settlements on the opposite ridge of the Great Ouse valley from the Site, and geophysical survey results identifying a strong potential for similar evidence at the Site itself, the evaluation has the potential to encounter and characterise late Bronze Age and Iron Age settlement.
KC19: The Romano-British period saw the beginning of a more established infrastructure network. Can we investigate the development of these routes, trackways and roads and the influence they had on landscape change?	Evidence recorded within the wider area shows that Roman settlement/activity may have potentially been enabled/ driven by the nearby Roman road. The Site and the surrounding area may have formed part of the wider landscape utilised in the Roman period and there is the potential for the evaluation to reveal evidence associated with Roman activity.
KC30: Identify the location and form of Early and Middle Saxon settlement and investigate evidence for land use in the period; and	Although little evidence is currently available to suggest an Early Saxon presence at Turweston, this period and the process of settlement formation in the 1st millennium AD is poorly understood. The evaluation has the potential to investigate the eastern periphery of Turweston to better inform our understanding of this period.
KC31: Identify the location of Middle to Late Saxon settlement, explore processes of settlement nucleation and understand the development of associated field types and agricultural regimes.	Many extant English settlements have origins in the Late Saxon period and continue to use adapted place-names given during this period. The evaluation has the potential to investigate the formation of Turweston and the use and organisation of its peripheral agricultural land.
KC34: Undertake research and investigation into medieval manorial complexes. What was their origin, development and impact on the landscape.	The potential presence of medieval activity at the Site (as evidenced in the remains of ridge and furrow) and the proximity of the Site to Turweston Manor means that this site has the potential to contribute to our understanding of the hinterland of this manor site.

5 Programme

5.1.1 The trial trench evaluation will be completed in December 2019. The *Archaeological Contractor* will develop the detailed programme and sequencing of the works (including detailed Gantt chart baseline programme) and the *Contractor* will contact the landowner to notify them that the investigation will be taking place, a minimum of 7 days prior to entering the Site.

5.1.2 Where archaeological remains of significance are identified, further investigation in the form of trial-trench evaluation, or other appropriate mitigation measures may be implemented prior to or concurrent with works required as part of construction.

6 Specific Method Statements

6.1 Scope

6.1.1 The scope and method for the trial trench evaluations are set out in Section 5 of each Project Plan. This section of the LSWSI develops that methodology to provide clear site specific methodologies and information to enable the *Archaeological Contractor* to successfully deliver the programme of archaeological evaluations.

6.1.2 The trial trench evaluations will comprise a total of 61 trenches measuring 50m in length and c. 2m in width, as detailed in Tables 2 and 3 and Figure 2 of this LSWSI and shown on Figure 8 of the Turweston Project Plan (Appendix 1). This represents an approximate 3% sample of the available areas of the Site. The trial trenches are discussed below.

6.1.3 Exploratory test pits will be excavated at each trench location to recover artefacts from the topsoil and upper subsoil horizons. Three test pits will be excavated at each trench location: one at either end and one in the centre. This gives a total of 183 test pits. Each sample will be recovered using the mechanical excavator equipped with a toothless bucket and placed on plastic sheeting adjacent to the pit.

6.1.4 The trial trenching will include a 500m² contingency. The purpose of the contingency will be to investigate any significant or unexpected remains during the archaeological evaluation. The extension of trial trenches under this contingency shall not be undertaken without a written instruction from the *Contractor's Historic Environment Manager*.

6.1.5 The trenches have been positioned to avoid the identified constraints.

Table 2 Schedule of Trial Trenches

Trench No	Length (m)	Width (m)	Max Trench Depth	Objectives/Comments
001	50	2	To natural geology	Targeted on proposed pylon and cable trench as well as linear anomalies.
002	50	2	To natural geology	Targeted on proposed cable trench as well as linear & curvilinear anomalies.
003	50	2	To natural geology	Targeted on proposed cable trench as well as linear & curvilinear anomalies.
004	50	2	To natural geology	Targeted on proposed cable trench as well as geophysical anomalies.
005	50	2	To natural geology	Targeted on proposed cable trench (in blank area).
006	50	2	To natural geology	L-shaped trench; targeted on linear and amorphous anomalies (and proposed cable trench).
007	50	2	To natural geology	Targeted on linear and amorphous anomalies and proposed cable trench.
008	50	2	To natural geology	Targeted on linear anomalies and proposed cable trench.
009	50	2	To natural geology	Targeted on proposed pylon (in blank area).
010	50	2	To natural geology	Targeted on blank area.
011	50	2	To natural geology	Targeted on geophysical anomaly.
012	50	2	To natural geology	Targeted on blank area.
013	50	2	To natural geology	Targeted on geophysical anomaly.
014	50	2	To natural geology	Targeted on geophysical anomalies.
015	50	2	To natural geology	Targeted on blank area.
016	50	2	To natural geology	Targeted on geophysical anomalies.
017	50	2	To natural geology	Targeted on blank area.
018	50	2	To natural geology	Targeted on blank area.

019	50	2	To natural geology	Targeted on ferrous anomalies.
020	50	2	To natural geology	Targeted on blank area.
021	50	2	To natural geology	Targeted on blank area.
022	50	2	To natural geology	Targeted on blank area.
023	50	2	To natural geology	Targeted on blank area.
024	50	2	To natural geology	Targeted on blank area.
025	50	2	To natural geology	Targeted on blank area.
026	50	2	To natural geology	Targeted on ridge & furrow
027	50	2	To natural geology	Targeted on ridge & furrow.
028	50	2	To natural geology	Targeted on linear & curvilinear anomalies.
029	50	2	To natural geology	Targeted on blank area.
030	50	2	To natural geology	Targeted on blank area.
031	50	2	To natural geology	Targeted on geophysical anomalies.
032	50	2	To natural geology	Targeted on linear & amorphous anomalies.
033	50	2	To natural geology	Targeted on linear anomalies.
034	50	2	To natural geology	Targeted on blank area.
035	50	2	To natural geology	Targeted on blank area.
036	50	2	To natural geology	Targeted on blank area.
037	50	2	To natural geology	Targeted on blank area.
038	50	2	To natural geology	Targeted on blank area.
039	50	2	To natural geology	Targeted on blank area.
040	50	2	To natural geology	Test geophysical interpretation (drains).
041	50	2	To natural geology	Targeted on blank area (proposed overhead line in vicinity of proposed new pylon which falls within a constraints buffer).
042	50	2	To natural geology	Test geophysical interpretation (drains).
043	50	2	To natural geology	Targeted on blank area.

044	50	2	To natural geology	Targeted on blank area.
045	50	2	To natural geology	Targeted on blank area.
046	50	2	To natural geology	Targeted on blank area.
047	50	2	To natural geology	Targeted on blank area.
048	50	2	To natural geology	Targeted on blank area.
049	50	2	To natural geology	Targeted on blank area.
050	50	2	To natural geology	Test geophysical interpretation (drains).
051	50	2	To natural geology	Targeted on blank area.
052	50	2	To natural geology	Targeted on blank area.
053	50	2	To natural geology	Targeted on blank area.
054	50	2	To natural geology	Targeted on blank area.
055	50	2	To natural geology	Targeted on blank area.
056	50	2	To natural geology	Targeted on blank area.
057	50	2	To natural geology	Targeted on blank area.
058	50	2	To natural geology	Targeted on blank area.
059	50	2	To natural geology	Targeted on blank area.
060	50	2	To natural geology	Targeted on blank area.
061	50	2	To natural geology	Targeted on proposed cable trench (in blank area).

6.2 General methodology

6.2.1 The scope and method for the trial trench evaluation are set out in Section 5 of the Project Plan. This section of the LSWSI develops that methodology to provide a clear site specific methodology and information to enable the *Archaeological Contractor* to successfully deliver the programme of archaeological evaluation at each site.

6.2.2 All archaeological works will be carried out in accordance with the Project Plan, this LSWSI and any further instructions from the *Contractor*. This design takes account of the guidance and specifications set out in the HS2 Phase One EMRs, CoCP, GWSI: HERDS and Technical Standards principally the Technical Standard Specification for historic environment

investigations (HS2-HS2-EV-STD-000-000035), and the guidance provided by the Chartered Institute for Archaeologists (CIfA) Code of Conduct (CIfA 2014a) and the Standard and Guidance for Archaeological Field Evaluation (CIfA 2014b).

6.2.3 Prior to the start of each trial trench evaluation a site meeting and walkover will be held between the *Contractor* and the *Archaeological Contractor* to confirm that each of the indicative trench locations remain accessible and clear of obstruction. Access routes, safe working areas and any constraints to the trial trenching works will also be identified.

6.2.4 The *Archaeological Contractor* shall ensure that the archaeological investigations are undertaken in an organised, efficient and professional manner. The *Archaeological Contractor* shall therefore have full regard for the safety of all personnel on site, including measures to ensure the safety of all, including any effects the archaeological evaluation may have on the daily operations of the landowner, other contractors engaged in the construction of HS2 Phase One and members of the general public.

6.2.5 The on-site archaeological recording and recovery techniques will be in line with the methods set out in the Project Plan, this LSWSI and current industry best practice and should be fully understood by all.

6.2.6 All paper and digital records made during the course of the archaeological evaluation, and the treatment of artefacts and environmental remains, will be reviewed continuously. Record checking and collation will be completed at regular intervals, as appropriate, and before an area is considered complete, abandoned, backfilled or the site closed. Errors or omissions in recording discovered during post-excavation cannot be recovered. The *Archaeological Contractor* will make suitable allowance for this task.

Site Access

6.2.7 A site visit from public rights of way was undertaken on 21 June 2019 and the access arrangements as listed below have been noted. At present, the only suitable access within the Consolidated Construction Boundary (CCB) is using an unnamed road leading east from the central crossroads of Turweston. This road divides the Site into northern and southern parts. Access to the northern section of the Site will be via a gate off the unnamed road, where Trench 31 is located. The compound will be located at this point. Access to the southern section will be off the A422 to the south.

6.2.8 The *Archaeological Contractor* will satisfy themselves that the access points are suitable and safe prior to the start of the evaluation and will undertake all due care when accessing the site from either the public highways or private tracks. The method for and controls placed on site access/egress will be set out in the *Archaeological Contractor*'s Method Statement and will comply with the *Contractor's* Construction Phase Health and Safety Plan.

6.2.9 A suitable location for the siting of a temporary works compound was noted in the location of Trench 31, accessed from the unnamed road.

Site Set-up

6.2.10 Prior to the start of the archaeological evaluation the *Archaeological Contractor* will attend a pre-works site meeting with the *Contractor's Historic Environment Manager*. The purpose of this meeting will be to allow the *Archaeological Contractor* to confirm the access points, ground conditions, site specific hazards and to agree the location for the welfare facilities and the storage of plant and materials.

6.2.11 Site set-up will be conducted following the relevant guidance set out in the Enabling Works Information WI0200 General Constraints (Document No. 1E001-HS2-PR-ITT-000-000098) in particular Sections 6 *Construction site layout and good housekeeping*.

6.2.12 Fencing (*eg* pedestrian barriers subject to Fusion approval) will not be required around the trenches which will be backfilled before the end of each working day. Where trenches will be left open overnight, fencing will be required around each trench.

Ecological and Arboriculture Permit

6.2.13 As per the Fusion Ecological and Arboriculture Permit, the following conditions will be adhered to:

- The edge of the ancient woodland will be clearly demarcated to ensure no plant moves beyond the area of works. The nearest trench to the ancient woodland is 100m away and will be set out accurately using a DGPS system to ensure it is not placed within the area of ancient woodland.
- Works will be carried out in accordance with British Standard BS5837:2012 'Trees in Relation to Design, Demolition and Construction'.
- No work will be carried out under tree canopies and no machinery will be left running overnight.
- The Archaeological Contractor will seek advice from Fusion Ecologist on the potential of bats on Site. This will be carried out in advance of works commencing.
- A Pre-Works inspection will take place on mobilisation day. A pre-construction check will be carried out using Thomson's database.

Setting Out

6.2.14 All 61 trial trenches will be excavated at the locations indicated on Figure 2 of this LSWSI and on Figure 8 the Project Plan. The corner points of each trench shall be positioned to an accuracy of ± 500mm of the specified trench location using Real Time Kinematic (RTK) Global Navigation Satellite System (GNSS) equipment or other suitable automated equipment referenced from a minimum of three Permanent Ground Markers (PGM) created within the Site.

6.2.15 The specific requirements for setting out the trenches are set out at Section 5.2 of the Project Plan.

6.2.16 The *Archaeological Contractor* shall ensure that all trench or excavation limits, and significant archaeology detail are surveyed 'as dug' in relation to the project grid before leaving the site. Ground level height data shall be recorded for each trench. Survey methodology and a detailed survey record shall be provided to HS2 Ltd within the survey report.

Artefact Collection

6.2.17 Prior to the excavation of each trial trench, the *Archaeological Contractor* will sample the topsoil/ploughsoil for the recovery of artefacts.

6.2.18 Three sample locations are required at each trench location and should be recovered from each end of the trench and at its centre, for a total of 183 test pits. Each sample will be recovered using a mechanical excavator fitted with a toothless ditching bucket and placed on an adjacent board or tarpaulin/ geotextile.

6.2.19 Samples are to be equivalent in volume to a 0.25m by 0.25m test pit which will be machine excavated (where practical). Samples will be excavated in spits and the appropriate pro-rata volume of ploughsoil will be dry hand-sieved. The volume sieved for each test pit will correspond to the pro-rata volume of a 0.25m by 0.25m test pit, of a depth corresponding to the particular ploughsoil depth at each test pit location. Soil samples should then be sieved or screened through ¼" or 6mm wire mesh to recover artefacts. Samples will be sieved on site.

6.2.20 In the event of encountering substantial quantities of archaeological artefactual evidence during the test pit phase, an amended trenching strategy may be employed to better understand the factors behind the evidence. Any trial trench amendments would be discussed with the *Contractor* and a change control process (see Section 10) woul be implemented if required.

Machine Excavation

6.2.21 Trial trenches shall be excavated to the first archaeological horizon or natural geology, whichever is encountered first. Excavation will be undertaken using a mechanical excavator with toothless ditching bucket.

6.2.22 In the unlikely event that modern foundations are encountered, and where it is clear that modern foundations have truncated certain archaeological levels, they should be removed to assess lower archaeological levels. All reasonable care shall be taken to ensure that any damage to archaeological deposits is limited as far as practicable. If significant damage is likely to occur the work shall be suspended and the *Contractor's Historic Environment Manager* informed so that a technical solution can be agreed.

6.2.23 Machining shall be carried out under the constant supervision of a suitably qualified archaeologist to excavate the ground in spits. The Archaeological Contractor shall use their

professional judgement to determine the appropriate depth of each spit. Any variations to the excavation methodology shall be actioned following consultation with and approval of the Contractor and recorded in writing for inclusion in the final report. Each spit shall be examined carefully to assist the recovery of any archaeologically significant artefacts and thus to determine when to cease machining. It is the responsibility of the Archaeological Contractor to ensure that the finished surface is machined to a suitably 'clean' state in order to identify, define and investigate any exposed archaeological deposits. If the surface is not sufficiently clean, hand cleaning of the surface will be required. Machine excavation will comply with the Employer's Technical Standard - Route wide soil resources plan (Document No. HS2-HS2-EV-STD-000-000008).

6.2.24 Metal detectors will be used by experienced staff to scan for metallic finds during the excavation of key archaeological features or deposits. The spoil from each trench will also be subject to a metal detector survey, with any finds recorded on the relevant trench sheet.

6.2.25 The *Archaeological Contractor* shall ensure that water is discharged and excavated material from archaeological excavations are stored in accordance with the *Contractor's* environmental protection requirements (as set out in the package Works Information and their Environmental Management Plan) and any relevant consents for the worksite. The *Contractor* shall monitor discharge rates and, if necessary, conductivity of discharge waters to ensure compliance.

6.2.26 In areas where deep stratigraphy is encountered, such as alluvial sequences, each intervention shall be excavated to the base of the stratigraphic sequence and shall be appropriately shored and kept free of water to allow 'person entry' to the excavations, i.e. to allow the *Archaeological Contractor* to undertake investigation and recording to fulfil the aims of the work. The *Archaeological Contractor* will ensure that all works undertaken in deep stratigraphy will comply with the *Employer's* Technical Standard – Temporary Works (Document No. HS2-HS2-CV-STD-000-000005). When recording deep stratigraphic sequences, the *Archaeological Contractor* shall pay particular attention to establishing the vertical extent of layers of archaeological potential and shall be aware that horizons of cultural activity may be interdigitated with horizons of sterile sediments. The *Archaeological Contractor* shall supervise the excavation in such a manner so as to allow a cumulative or continuous section to be recorded.

6.2.27 Should any material be excavated that is deemed to be contaminated or potentially contaminated it shall be investigated, controlled (e.g. placed separately from clean material) and removed from the site in accordance with the *Contractor's* environmental protection requirements (as set out in their Environmental Management Plan).

Sondages into Alluvium and Gravel

6.2.28 Following the excavation of Trenches 1-9, 13-16, 18 & 20-24, the *Archaeological Contractor* will sample any alluvium or gravel and sand deposits identified to test their depth, to record the sedimentary sequence, and for the recovery of artefacts. The *Archaeological Contractor* shall

seek the advice of a suitably qualified geoarchaeologist to determine deposits suitable for further investigation. The excavation of a single sondage to depth in each of the above listed trenches (if suitable deposits are identified) is anticipated to provide sufficient information to produce an informative deposit model for superficial geological formation.

6.2.29 The sondages will provide:

- The opportunity to observe the full stratigraphic sequence in section; and
- Access larger volumes of sample than is achievable through coring.

6.2.30 This will be undertaken through the excavation of a single machine excavated sondage where the alluvium is expected to be at its deepest. It is expected that in practice this will mean excavating sondages within the ends of trenches closest to the nearest watercourse.

6.2.31 The *Archaeological Contractor* shall supervise the excavation of each sondage in such a manner as to allow a cumulative or continuous section to be recorded. Particular attention will be made to establishing the vertical extent of layers of archaeological and/or palaeoenvironmental potential and must remain aware that horizons of cultural activity could be interdigitated within layers of sterile alluvium. Archaeologically significant horizons will be hand excavated and cleaned.

6.2.32 The *Archaeological Contractor* shall ensure that any water is discharged, and arisings stored in accordance with the *Contractor's* environmental protection requirements and any other relevant consents for the Site. The *Archaeological Contractor* shall monitor discharge rates and if necessary, conductivity of discharge waters to ensure compliance.

6.2.33 Where sondages into alluvium are unsafe to enter the *Archaeological Contractor* shall direct excavation in a manner that will allow excavated sediments to be adequately sampled and interpreted by the geoarchaeologist. Material to be sampled will be placed by the excavator at a safe distance from both the sondage and plant. The sedimentary sequence will then be recorded by the geoarchaeologist according to standard conventions (Ayala *et al* 2007) to include sediment structure, colour, texture, sorting and any identifiable boundary characteristics. Depths of each stratigraphic boundary will be recorded, or where full access is unsafe estimated and recorded as such.

6.2.34 Where entry to a sondage is safe and practicable, buried soils will be inspected and recorded by the geoarchaeologist to provide data for understanding formation processes. Procedures and techniques for this data capture will be as outlined in Historic England guidance (Campbell *et al* 2011 and HE 2015). Samples for laboratory assessment, analysis and dating shall be collected where appropriate following agreement with the Contractor.

Hand Excavation

6.2.35 Archaeological hand excavation and recording shall be undertaken by the *Archaeological Contractor* to the general requirements as described in the GWSI: HERDS and the Technical

Standard Specification for historic environment investigations (Document No. HS2-HS2-EV-STD-000-000035; section 4.14 and 4.17). The sufficient sample strategy will be guided by the CIfA Standard and guidance for archaeological field evaluation (2014), as well as, where applicable, Local Planning Authority guidance documents, and will be detailed in the *Archaeological Contractor's* LS-WSI. The *Archaeological Contractor* will ensure that sufficient sample of the features and deposits encountered will be sampled/fully excavated to allow the resolution of the aims and objectives of the work. Structures, features, or finds which might reasonably be considered to merit preservation in-situ shall not be unduly damaged.

6.2.36 Where areas of extensive archaeological stratification are encountered, the horizontal and vertical extent of archaeological stratification shall be assessed by the *Archaeological Contractor* through implementation of an appropriate strategy including, either the excavation of features cut into horizontal stratification, limited test pitting or auguring. The aim shall be to recover suitable stratigraphic, finds and environmental samples from the full, intended depth of the trench, as far as is practicable. The exact methodology may need to be determined by the *Contractor* during the excavation of individual trenches and agreed with the *Employer*.

6.2.37 All investigation of archaeological levels will usually be by hand, with cleaning, examination and recording both in plan and section.

6.2.38 Within significant archaeological levels, the minimum number and proportion of features required to meet the aims of the evaluation will be hand excavated. Pits and postholes will usually be subject to a 50% sample by volume, at sufficient frequency to characterise the archaeological activity across the Site. Linear features will be sectioned as appropriate. More complex features such as those associated with funerary activity will usually be subject to 100% hand excavation. The approach is presented in Table 4 below.

Table 3 Proportion of features to be excavated

Type	Description	Proportion of features (as revealed in trial trench) to be excavated to full depth
Linear features (main body)	Agricultural	10%
Linear features (main body)	Non-structural settlement, trackway, routeway	25%
Linear features (main body)	Structural settlement, industrial, funerary	100%
Linear features (bends/termini)	All types	100%

Discrete features	Pits, postholes	50%
Discrete features	Large pits	50% (by area) to full depth
Deep features	Wells, water pits	25-50%
Post structures	Fences, buildings	100%
Stone, masonry structures	Walls, buildings	25-50%
Stone, masonry structures	Surfaces	25%
Other structures	Ovens, kilns, hearths	100%
Funerary	Human, animal	100%
Layers	Agricultural, settlement	10-50%
Discrete special deposits	Settlement, industrial, funerary (i.e. middens, industrial waste, pyre deposits)	50-100%
Intersections	All types of features/deposits	50% of each intersection (typically)

6.2.39 Where proportions provided are variable, the precise proportion of the features to be excavated will be determined in liaison with the Contractor for the section. Any variation from the above will only occur following consultation with, and agreement from, the Contractor for the section. The sample volume of features may be increased, in some circumstances; should the archaeological content or value of a feature warrant further investigation at the evaluation stage, this will be implemented following agreement with the *Contractor*.

6.2.40 In the case of evaluations, it is not necessarily the intention that all trial trenches will be fully excavated to natural stratigraphy, but to the depth of archaeological deposits. The stratigraphy of a representative sample of the evaluation trenches will be recorded even where no archaeological deposits have been identified. Any excavation, both by machine and by hand, will be undertaken with a view to avoiding damage to any archaeological features or deposits, which appear to be worthy of preservation *in situ*.

6.2.41 Where deposits are investigated, and found to be undated, and where these have the potential to be of archaeological significance (e.g. of earlier prehistoric or early medieval date,

or any other deposit types notable for artefactual scarcity) appropriate samples should be taken for artefact recovery. The soil should be hand excavated and then sieved or screened through ¼" or 6mm wire mesh to recover artefacts. Samples can be sieved on site or retained for immediate sieving off-site.

6.2.42 In order to protect any waterlogged remains during the works, the *Archaeological Contractor* may identify a requirement for trial excavations to be allowed to refill with water overnight. In such cases, the *Archaeological Contractor* shall ensure that any hazards to staff or 3rd parties are minimised.

Plant Movement

6.2.43 Once delivered to the Site, the mechanical excavator will only operate within the limits of the Consolidated Construction Boundary (CCB) and Site as shown on Figure 1. Plant movement will only be undertaken under the supervision of a certified banksman and in accordance with approved RAMS (Document No. 1EW03-FUS-CL-MST-CS06_CL22-000002).

6.2.44 The mechanical excavator will move across the Site following the most direct route from trench to trench. Where the excavator cannot track directly between trenches i.e. across field boundaries, it will track along the field margins to a suitable crossing point. The excavator will then track back along the field margin to the next trial trench.

6.2.45 The location of each trench shall be clearly marked with a coloured flag.

6.2.46 When traversing across the site the mechanical excavator will avoid slewing its tracks where possible to minimise disturbing the plough soil.

Fieldwork Recording

6.2.47 The requirements for fieldwork recording are set out in paragraphs 5.2.33 – 5.2.39 of the Project Plan. All archaeological recording will be carried out in accordance with the general requirements as described in the GWSI: HERDS and the HS2 Technical Standard for Historic Environment Investigations (Document No. HS2-HS2-EVSTD-000-000035).

6.2.48 The archaeological trial trenching at Turweston will be undertaken using site codes to be issued by HS2.

6.2.49 A sufficient sample of the archaeological features and deposits revealed will be sampled/or fully excavated to meet the aims and objectives of the archaeological evaluation. Structures, features, or finds which might reasonably be considered to merit preservation *in situ* shall not be unduly damaged.

6.2.50 As a minimum, the following will be recorded:

- At least one representative section at (1:10 or 1:20 scale) of each evaluation trench, from ground level to the base of the excavation;
- the written record of individual context descriptions on appropriate pro-forma;
- plans at appropriate scales (1:10, 1:20 or 1:50);

- single context planning should be used only if appropriate;
- photographs and other appropriate drawn and written records; and
- other sections, including the half-sections of individual layers or features shall be drawn as appropriate to 1:10 or 1:20.

6.2.51 A 'site location plan', indicating site north shall be prepared at 1:1250. Individual 'trench plans' at 1:200 (or 1:100) shall be prepared which show the location of archaeology investigated in relation to the investigation area. The location of site plans will be identified using OSGB coordinates.

6.2.52 Section drawings shall be located on the relevant plan and OSGB co-ordinates recorded. The locations of the PGM bench markers used and any site TBM shall also be indicated.

6.2.53 A record of the full extent in plan of all archaeological deposits as revealed in the investigation shall be made. These plans will normally be based on digital survey data (digital planning methods shall be agreed in advance with the *Contractor's* Historic Environment Manager and the *Employer*) supplemented where appropriate by hand drawn records on polyester based drawing film (at a scale of 1:10 or 1:20 unless otherwise agreed with the *Contractor's* Historic Environment Manager and the *Employer*). All hand drawn information shall be digitised (or preferably generated digitally in the first instance), and final deliverables will be supplied in an Esri format and adhere to standards set out in the *Employer's* Cultural Heritage GIS Standard (Document No. HS2-HS2-GI-SPE-000-000004). Single context planning shall be used where complex stratigraphy is encountered.

6.2.54 A 'Harris matrix' stratification diagram shall be employed to record stratigraphic relationships (Harris *et al* 1993) where appropriate. This record shall be compiled and fully checked by the *Archaeological Contractor* during the course of the excavations. Spot dating shall be incorporated onto this diagram.

6.2.55 Recording of structural evidence revealed below ground level will vary according to the level of special interest of the structure and its relationship to archaeological remains. Structures of little or no significance shall be noted on a site plan. Detailed drawings of important features revealed in investigations may be required in accordance with the aims and objectives of the investigation as defined in the Project Plan.

6.2.56 The photographic record will be in digital format, resulting in high resolution TIFF (uncompressed) images. Photographs will illustrate both the detail and context of the principal archaeological features discovered. In addition, the *Archaeological Contractor* shall take appropriate record photographs to illustrate work in progress. All photographic records will include information detailing: site name and number/code, date, context, scale and orientation. A selection of progress photos of publication quality must be submitted with the weekly progress report. A selection of progress photos of publication quality must be submitted with the weekly progress report.

Human Remains

6.2.57 The requirements for dealing with Human Remains are set out in paragraphs 5.2.40 & 5.2.41 of the Project Plan.

6.2.58 Where human remains are identified, all subsequent work must be undertaken in accordance with the *Employer*'s Human remains and monuments procedure (Document No. HS2-HS2-EV-PRO-0000-000008) and Technical Standard Specification for historic environment investigations (Document No. HS2-HS2-EV-STD-000-000035 section 4.18 Methodology for archaeological excavation of human burials). In consideration of the currently available evidence, it is considered unlikely that human remains shall be encountered at the Site. Should human remains be discovered, the *Archaeological Contractor* shall notify the *Contractor's Historic Environment Manager* immediately, who will notify the *Employer*, so that the procedures set out in the *Employer*'s Human remains and monuments procedure (Document No. HS2-HS2-EV-PRO-0000-000008) can be implemented. This notification may be initially made personally or by telephone but shall be confirmed in writing (including email) within 24 hours of discovery.

6.2.59 In the event that human remains are identified, the *Archaeological Contractor* will cease all works at that location until further instruction is provided by the *Employer* and communicated by the *Contractor's Historic Environment Manager*. The *Archaeological Contractor* shall undertake an initial *in situ* observation and assessment of the remains and shall advise the *Contractor's* Historic Environment Manager of the course of action required. The *Contractor's Historic Environment Manager* will then notify the *Employer*.

Environmental Sampling

6.2.60 The requirements for developing an environmental sampling strategy are set out in paragraphs 5.2.42 – 5.2.53 of the Project Plan.

6.2.61 In line with the *Employer*'s Technical Standard Specification for Historic Environment Investigations (Document No. HS2-HS2-EVoSTD-000-000035) an initial sampling strategy is set out below for the site. This strategy is based on the existing information about the site, gathered from nonintrusive surveys and the HERDS objectives outlined in Table 1.

6.2.62 This sample strategy, along with the HERDS objectives, identifies the key elements that should, where present, be sampled during the evaluation. However, the strategy will need to be reviewed throughout the on-site work and, where unexpected features or deposits are identified, revised accordingly to take these into account.

6.2.63 The purpose of sampling at the evaluation stage is to identify the range of environmental materials present on site, their preservation, significance and distribution.

6.2.64 The Site has potential for features associated with prehistoric activity as well as with medieval and post-medieval archaeological remains, which could include enclosures, land boundaries, trackways, and ridge and furrow earthworks as identified in Section 3.7.

6.2.65 Sampling will therefore target the following, where present, as a minimum:

- Archaeological features identified as cropmarks or geophysical anomalies which are likely associated with potentially prehistoric or medieval activity (i.e. ditches, banks, gullies, earthworks) as well as other relevant remains (i.e. pits or postholes); and
- Deposits representing the main phases of activity on site (to assess whether there are changes in rates of deposition or material survival over time).

6.2.66 Sampling will not only just target charcoal-rich or wet deposits, but will be undertaken on those features outlined above, taking into account advice from the *Contractor's* environmental archaeologist. This will ensure that samples are recovered from a representative range of contexts, which adequately characterise past activities on site and allow an assessment to be made of the extent to which they help address palaeoenvironmental and paleoecologic questions.

6.2.67 Where unexpected deposits or features are identified during the evaluation which are not covered in the initial sampling strategy above, the need for sampling will be assessed in terms of the specific objectives (both those in Table 1 as well as the remaining HERDS objectives), the sampling strategy will be updated and the features will be sampled accordingly.

6.2.68 All samples will be taken to address a specific question. The purpose of the sample, and the question it has been taken to address, will be recorded on a Site-specific sample record sheet.

6.2.69 Samples will be taken using ten litre plastic buckets (with lids and handles), or strong polythene bags (double bagged) secured at the neck, for the recovery of bulk 'disturbed' environmental samples. Labelling will follow guidance set out in the Technical Standard Specification for Historic Environment Investigations (Document No. HS2-HS2-EV-STD-000-000035).

6.2.70 For non-waterlogged deposits bulk samples will normally be taken in the range of 40-60 litres. Where contexts have a volume of less than that stated above, then 100% of the context will be sampled. Each bulk sample will only contain sediment derived from a single context. Where waterlogged deposits are encountered, sample sizes will usually be in the range of 10-20 litres, which is suitable for the recovery of macrofossils from these contexts. Samples shall be protected at all times from temperatures below 5°C and above 25°C and from wetting and drying out due to weather exposure.

6.2.71 Where house floors or other buried land-surfaces are encountered, and these are sampled, appropriately sized monolith or kubiena boxes will be used for the recovery of 'undisturbed' monolith samples for soil micromorphology and to sub-sample for microfossils (e.g. polled and spores, diatoms, ostracods). Where longer sequences are sampled, contiguous column samples will be collected for the retrieval of macrofossils (e.g. molluscs, plant remains and insects). Further guidance on specialist samples is provided in the Technical Standard Specification for Historic Environment Investigations (Document No. HS2-HS2-EV-STD-000-000035 –Sections 4.21.22-26).

6.2.72 Processing of all bulk soil samples collected for biological assessment should be completed within two weeks of collection. Processing samples at the time of fieldwork will allow this sampling strategy to be updated and refined where necessary. The preservation state, density and significance of material retrieved shall be assessed by the *Archaeological Contractor*'s recognised specialist. Special consideration shall be given to any evidence for recent changes in preservation conditions that may have been caused by alterations in the site environment.

Metallic Objects and Residues

6.2.73 Where works are intended to address Specific Objectives relating to industrial activity and there is evidence for industrial activity, macroscopic technological residues (or a sample of them) shall be collected by hand. Separate samples (c. 10ml) shall be collected for micro-slags (hammer-scale and spherical droplets). Reference should be made to guidance on Archaeometallurgy (HE 2015b). Assessment of any technological residues shall be undertaken. Assessment of finds assemblages shall, where appropriate to the Specific Objectives being addressed, include x-radiography of all iron objects (after initial screening to exclude obviously recent debris) and, where appropriate, nonferrous artefacts (including all coins). Where necessary, active stabilisation / consolidation shall be carried out to ensure long-term survival of the material, but with due consideration to possible future investigations.

Geoarchaeology

6.2.74 Samples collected for geoarchaeological assessment as part of the alluvium sondages will be processed promptly by the *Archaeological Contractor's* specialist, and appropriate assessment undertaken as agreed with the *Employer*. Where preservation *in situ* is a viable and desirable option, consideration shall be given to minimising the possible effects of compression and loading on the physical integrity of the site and any hydrological or chemical impacts of the proposed construction works (Campbell *et al.* 2011).

Preservation of Archaeological Remains

6.2.75 Where preservation has been identified as an option for areas of the Site, or it becomes clear during the evaluation that certain parts of the Site might be retained in situ within the scheme design, the *Archaeological Contractor* will ensure that suitable samples are taken to assess the state of preservation (as set out in Historic England guidance on preserving archaeological remains). Where it is proposed that waterlogged deposits are preserved, discussion should be held with the *Contractor* about initiating a water environment study. If preservation is considered to be a viable and desirable option, the areas proposed should be excluded from further plant/vehicle movement, to minimise the possible effects of compression and loading on the physical integrity of the Site. Thought should also be given to whether the proposed construction works will have any short or long term hydrogeological or chemical impacts on the archaeological remains.

Backfilling

6.2.76 The general requirements for backfilling the trial trenches are set out in paragraphs 5.2.57 – 5.5.60 of the Project Plan. Backfilling will comply with the Employer's Technical Standard - Route wide soil resources plan (Document No. HS2-HS2-EV-STD-000-000008). For the purposes of the archaeological evaluation simple backfilling will be appropriate.

6.2.77 The trial trenches shall not be backfilled and reinstated without the prior approval of the *Contractor's Historic Environment Manager*, although in exceptional circumstances some backfilling would be permitted if health and safety or ground stability reasons warranted.

6.2.78 Prior to backfilling the trenches shall be pumped dry if necessary (by the *Archaeological Contractor*) and any necessary protection measures for archaeological remains (in addition to those for below ground infrastructure, services or utilities) shall be completed prior to backfilling.

6.2.79 The trial trenches shall only be backfilled by machine under appropriate conditions and with direct archaeological supervision. Arisings from the trench will be replaced strictly in the correct sequence, with the ploughsoil being replaced last. The arisings will be levelled with the blade of the excavator bucket and tracked over but will not be compacted.

6.2.80 Generally, all backfill material shall consist of non-toxic, uncontaminated, non-putrescible, natural and inert material which shall be compacted and (if necessary) tested (dynamic compaction test or other) in accordance with a specification provided by the *Contractor*. Surface conditions shall be reinstated to the required standard.

6.2.81 Where excavation has been undertaken into the subsoil and/or alluvium to investigate a feature or recover artefacts, earth should be backfilled and firmly compacted prior to replacement of subsoil and topsoil layers (uncompacted).

6.2.82 Any identified archaeological remains shall be protected using a suitable geotextile prior to backfilling.

6.2.83 Land drains or drainage where encountered should not be disturbed. Accidental damage to land/mole drains shall be immediately notified to the *Contractor*. The *Archaeological Contractor* will repair any damage to the satisfaction of the landowner or his agent. If a specialist contractor is required to meet this requirement the *Contractor* will be informed immediately.

6.2.84 Sondages into alluvium will be excavated and recorded rapidly so that deep trenches are not left overnight. These deeper pits will be backfilled as soon as their stratigraphy has been recorded.

7 Post-investigation Reporting and Archiving

7.1 Interim Report

7.1.1 The *Archaeological Contractor* shall submit an interim statement to HS2 Ltd within two weeks of completion of the evaluation. The interim statement will be consistent with the requirements detailed in the Specification for historic environment investigations (Document No. HS2-HS2-EV-STD-000-000035) and will provide HS2 with the information necessary to inform design decisions relating to:
a. the next stage of archaeological works (if required) and
b. engineering design.

7.1.2 As a minimum, the interim report will include:
- A summary of the work undertaken and the findings of the work;
- A background to the work;
- The Aims and Objectives the work was to address;
- A description of the results of the work;
- Outline of contribution to HERDS objectives;
- A context table (including finds discovered and spot dates of these where applicable);
- A location plan of the works;
- A post-excavation plan of the works;
- Photographs of significant and / or typical features.

7.1.3 Interim reports are only used to inform decision-making on further works in programme critical areas and when confidence in the geophysical survey/trial trenching results indicate that the Site has no significant archaeological potential. It is preferable that all decisions for further works are based on the full factual fieldwork reports.

7.2 Trial Trenching Report

7.2.1 The C01 fieldwork report will be produced within 6 weeks of completion of fieldwork, compliant with the following structure:
- Non-technical summary;
- Introduction;
- Summary of project's background (including the Specific Objectives addressed);
- Description and illustration of the site location;
- Previous work(s) relevant to the archaeology of the site (e.g. previous surveys);
- Geology and topography of the site;
- Specific Objectives and Aims;
- Methodology of site-based and off-site work;
- Results and observations, including quantitative report, stratigraphic report and any

constraints on site;
• Assessment and interpretation of results against original expectations and objectives and, where appropriate, a review of evaluation strategy;
• Statement of potential archaeology;
• Conclusions and recommendations for appropriate archaeological investigation strategy or post–excavation assessment in light of Specific Objectives;
• Considerations of the results and conclusions within the wider context;
• Evaluation of methodology employed and results obtained (i.e. a confidence rating);
• Publication and dissemination proposals (in addition to fieldwork report);
• Archive deposition;
• Bibliography;
• Acknowledgements;
• OASIS/HER form;
• Site matrices, where appropriate;
• Specialist assessment or analysis reports where undertaken;
• Illustrations, including location plans with scale and grid co-ordinates;

7.2.2 The trial trenching report will contain figures accompanied by supporting text. All figures within the report shall be on the same paper size, where appropriate. All categories of anomaly identified will be labelled with the appropriate assigned number code on the figures, which will be referred to in the text document.

7.2.3 The following figures will be included in trial trenching reports:
• General plan (mandatory)
• Engineering design (mandatory)
• Site location
• Survey extent and trial trench locations
• Survey results to include plans and sections of archaeological features, deposits and sequences
• Selected photographs of representative and/or significant features and finds.

6.2.4 With regard to Digital Archival Material including OASIS/Historic Environment Record summary sheets, the *Archaeological Contractor* will provide the required data, metadata and digital material as specified in the Historic Environment Digital Data Management and Archiving Procedure (Document No. C262-ARP-EVSPE-000-000003).

7.3 Survey Report

7.3.1 A survey report will be produced. This will include a written and graphic survey report for the works upon completion of fieldwork as an appendix to the Fieldwork report. Evidence shall be provided for check measurements and results of levelling for establishment of TBMs. Unless otherwise agreed, the survey report shall be submitted to the *Contractor* and *Employer* within two weeks of completion of fieldwork.

7.3.2 The *Archaeological Contractor* shall prepare and submit site area outlines and levels in accordance with the *Employer's Cultural Heritage GIS Standard* (Document No. HS2-HS2-GI-STD-000-000010) and BIM requirements (Document No. 1EW03-FUD-IM-PLN-C000-000001). Each drawing shall identify the relevant event code and subsite division, if applicable.

7.4 Archaeological Summary Report

7.4.1 A short summary report of no more than 500 words (the Summary Report) for the works shall be prepared for submission to the *Contractor* for subsequent publication within an appropriate journal or publication outlet specified by the *Employer*.

7.4.2 The draft summary report shall be submitted to the *Contractor* for approval within 8 weeks of the completion date of the fieldwork event. The *Contractor* will review the draft summary report and then issue it to the *Employer* for comment and approval. The *Archaeological Contractor* shall allow two weeks in the programme of works for *Contractor* and *Employer* to provide comments.

7.4.3 The *Archaeological Contractor* shall include any amendments required by the *Contractor* and *Employer* in the final Summary Report which shall be submitted within one week of receiving comments on the draft report.

7.5 GIS Deliverables

7.5.1 GIS Deliverables will be provided to the *Contractor* for approval within 8 weeks of the completion date of the fieldwork. The specific requirements of this deliverable are provided by HS2 in the Technical Standard Specification for historic environment investigations (Document No. HS2-HS2-EV-STD-000-000035) and the GWSI: HERDS (Document No. HS2-HS2-EV-STR-000-000015).

8 Information Management

8.1.1 GIS deliverables will be provided in accordance with the *Employer's* Cultural Heritage GIS Specification (Document No. HS2-HS2-GI-SPE-000-000004). CAD files will be GIS compatible and follow standards set out in the same Specification. Figures may be produced using CAD, but final deliverables must be supplied in GIS format.

8.1.2 Mapping and spatial data deliverables will conform to the *Employer's* GIS Standards as set out in Document No. HS2-HS2-GI-STD-000-000002 and other associated referenced documents.

8.1.3 The *Employer's* standard template for reports (Document No. HS2-HS2-PM-TEM-000-000004) will be used.

9 Quality Assurance Process

9.1.1 All archaeological works will be delivered in accordance with the *Contractor's* AWH Quality Plan (Document No. 1EW03-FUS-QY-PLN-C000-001658). The trial trenching report will be prepared and conducted by suitably qualified, experienced and competent professionals.

9.1.2 The trial trenching report will be checked and then reviewed by senior, qualified, experienced and competent professionals prior to issue to the *Employer* for acceptance. Final reports, following comments, will be checked and reviewed again prior to issue.

10 Change Control

10.1.1 During the course of the archaeological investigation unexpected, complex or undated archaeological remains may be encountered. In order to inform the decision-making process and to minimise delays to the enabling works construction programme it may be necessary to implement a contingency or vary the methodology or extent of the archaeological investigation.

10.1.2 The GWSI: HERDS establishes the need to manage unexpected discoveries and regularly review ongoing fieldwork events (Sections 7.6.5 and 7.6.17; Document No. HS2-HS2-EV-STR-000-000015). In order to promote rapid decision making and to minimise delays a clearly defined change control process will be followed. This change control process will enable:

- Rapid decision making during historic environment investigation;
- The implementation of contingencies;
- The variation of methodologies being used on site;
- The localised extension of investigation areas; and
- The rapid implementation of mitigation measures.

9.1.3 The change control process will be recorded using the proforma *Historic Environment Fieldwork Change Control Acceptance Sheet* at Appendix 2 of this LSWSI and will comprise the following steps:

1) The *Archaeological Contractor* will:
- prepare an interim summary of the investigation results noting key features or elements of the archaeological remains or structure;
- provide a proposal for the variation to the works or methodologies; and

- suggest any new or existing HERDS objectives to which the variation may provide opportunities for knowledge gain;

2) The interim summary will be submitted to the *Contractor's Historic Environment Manager* who will disseminate the results and arrange a meeting on site with the *Employer's Historic Environment Manager* and local authority (stakeholder) archaeologist;

3) At the site meeting all parties will:
- review the nature, extent and significance of the archaeological remains;
- review and agree the proposed variation to the works; and
- signify their endorsement or approval of the variation by signing the Historic Environment Fieldwork Change Control Acceptance Form.
- Following agreement with the Fusion commercial team a work instruction will be issued to the subcontractor via the Fusion Package Manager.

4) Following the site meeting the *Contractor* will submit a copy of the completed the *Historic Environment Fieldwork Change Control Acceptance Form* to the *Employer* via eB.

5) Where the rapid implementation of mitigation measures is required the *Contractor* will, prior to completion of the ongoing archaeological investigation:
- prepare a new Project Plan detailing the aims, HERDS objectives and specification of the archaeological mitigation and submit it to the Employer for acceptance;
- Request a new site code from the *Employer*; and
- Update and resubmit the existing LSWSI to include the archaeological mitigation works.

11 Interface and Communication Plan

11.1.1 Due to the nature of the proposed works, it is considered that community engagement is not applicable for this trial trench evaluation. The results of the investigations will be disseminated to the wider public in due course, as appropriate.

12 Site Monitoring and Engagement Plan

12.1.1 Prior to commencing the works, the *Archaeological Contractor* shall agree a programme of weekly-written progress reports and periodic progress meetings with the *Contractor's* Historic Environment Manager and shall be represented at such meetings to the satisfaction of the *Contractor*. The *Archaeological Contractor* shall provide information describing progress on-site to date and feedback from any initial assessment.

12.1.2 Where required, the *Contractor's* Historic Environment Manager shall arrange site visits with specialist stakeholders and expert bodies to provide advice on-site where this is considered

beneficial and agreed with the *Employer*. This will be undertaken within the *Employer's* communication protocols set out in the *Employer's* Community Relations Strategy.

12.1.3 Periodic updates on the progress of the Area Central Enabling Works archaeology programme shall be submitted to the *Employer* and Local Authority Archaeologist by the *Contractor's* Historic Environment Manager. The *Archaeology Contractor* shall provide information to the *Contractor's* Historic Environment Manager as requested to inform this reporting.

12.1.4 The *Contractor's* Historic Environment Manager shall arrange and convene monitoring site visits with the *Employer* to assess the quality and progress of the archaeological works and their adherence to HS2 technical standards and procedures.

12.1.5 The *Employer* may invite the Local Authority Archaeologist to attend these meetings, as appropriate. The *Employer* will be responsible for informing Historic England and the local authority historic environment specialists on the progress of fieldwork activities and findings.

12.1.6 In addition to monitoring visits, the *Employer* may plan and host media events or documentary recording, particularly in the event of a significant archaeological discovery. If requested to do so, the *Archaeological Contractor* shall provide the HS2 media team with escorted access to the Site. Any request for media access will be confirmed in advance, in writing, by the *Contractor's* Historic Environment Manager.

12.1.7 There shall be no unauthorised access to the works in any other circumstances. Any visits to the works shall be in accordance with the *Contractor's* health and safety, site access and security requirements.

13 Quality Assurance Processes and Plan

13.1.1 All archaeological works will be delivered in accordance with the *Contractor's* AWH Quality Plan (Document No. 1EW03-FUS-QY-PLN-C000-001658) and the standards and guidance set out in the following documents:

- High Speed Rail (London–West Midlands) Environmental Minimum Requirements.
- High Speed Rail (London–West Midlands) Environmental Minimum Requirements Annex 3: Heritage Memorandum (Document No. CS755 02/17).
- High Speed Rail (London–West Midlands) Environmental Minimum Requirements Annex 1: Code of Construction Practice (Document No. CS755 02/17).
- HS2 Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (Document No. HS2-HS2-EV-STR-000-000015).
- HS2 Technical Standard: Specification for Historic Environment Investigations. (Document No. HS2-HS2-EV-STD-000-000035).
- HS2 Technical Standard: Historic Environment Physical Archive Procedure (Document

No. HS2-HS2-EV-STD-000-000039).

- HS2 Technical Standard: Historic Environment Digital Data Management and Archiving Procedure (Document No. HS2-HS2-EV-STD-000-000040).
- HS2 Cultural Heritage GIS Specification (Document No. HS2-HS2-GI-SPE-000-000004).
- Chartered Institute for Archaeologists (CIfA), 2014a. Code of Conduct.
- CIfA, 2014b. Standard and Guidance for Archaeological Field Evaluation.
- Historic England, 2015a. Management of Research Projects in the Historic Environment (and associated guides and project planning notes).

14 Resource Plan

14.1 Personnel

14.1.1 The *Archaeological Contractor* shall provide project personnel of experience as described below. The personnel shall be approved by the *Contractor*. Approval may be withdrawn by the Employer at their discretion and in accordance with the contract conditions.

14.1.2 The *Archaeological Contractor* shall submit CVs of all proposed personnel including any specialists, but excluding site technician grades, to the *Contractor* for approval if this has not already been done as part of the pre-qualification process.

14.1.3 The works shall be managed, directed and staffed by appropriately qualified and experienced personnel. The *Archaeological Contractor's* Key Person shall possess at least ten years' relevant experience.

Table 4 Connect Personnel

Name	Position
Adam Griffiths	Fieldwork Manager/Lead Archaeologist
Patrick Mayer	Fieldwork Manager
Catherine Edwards	Fieldwork Manager
Les Capon	Project Officer
Lynda McCormick	Supervisor
Kris Hall	Archaeologist

Alex Tzikas	Archaeologist
Chris Scurfield	Archaeologist
Lynda McCormick	Surveyor

14.1.4 The excavation, sampling and recording of the works shall be project managed by a Fieldwork Director who is a Member of the Chartered Institute for Archaeologists (MCIfA). Supervisory staff shall have an appropriate level of demonstrable experience commensurate with their specific role i.e. an appropriate level of membership of the CIFA, IHBC or an equivalent demonstrable professional standing.

14.1.5 The *Archaeological Contractor's* project team shall include an environmental archaeologist suitably qualified in archaeological science and geo-archaeological sediment description methods, and on-site sample processing and assessment techniques.

14.1.6 The *Archaeological Contractor's* project team shall be staffed by technician grades with minimum six months' experience in appropriate aspects of excavation and recording.

14.1.7 Specialist staff employed on any aspect of the works, including post-excavation assessment or analysis of any kind including the writing of reports, shall be suitably qualified and shall be supervised by personnel with a minimum of ten years of relevant experience in their field (this may be inclusive of post-graduate studies).

14.1.8 Specialist staff shall be available, at 24 hours' notice, for the duration of the works to provide advice on any specialist tasks to be undertaken.

14.2 Site Specific Requirements

14.2.1 To deliver trial trench investigations the *Archaeological Contractor* shall provide:

- An Archaeological Risk Assessment and Method Statement inclusive of safe methods of working;
- Suitably qualified and competent staff who have valid CSCS cards;
- Suitably qualified and competent plant operators who have valid CSCS cards and certification;
- A team of suitably qualified archaeologists, experienced in archaeological investigation, recording and the nature of archaeological deposits which are expected on this site;
- Mechanical excavator(s) of a suitable type and size to cleanly excavate the trial trenches;

- Appropriate welfare and first aid facilities for the number of staff deployed to the Site;
- All fencing, signage, goal posts and security measures required to fulfil the aims and objectives set out in the Project Plan and this LSWSI; and
- Any other tools or materials the *Archaeological Contractor* requires to successfully deliver the programme of archaeological trial trench evaluation defined in the relevant Project Plan and this LSWSI.

15 References

Title	Reference
British Geological Survey, Geology of Britain viewer http://mapapps.bgs.ac.uk/geologyofbritain/home.html	BGS Online 2019
Campbell, G. Moffett, L. and Straker, V. 2011 Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (2nd ed.). Historic England Guidance	Campbell et al. 2011
Chartered Institute for Archaeologists (CIfA), 2014a. Code of Conduct.	CIfA 2014a
Chartered Institute for Archaeologists (CIfA) 2014b Standard and Guidance for Archaeological Field Evaluation	CIfA 2014b
Chartered Institute for Archaeologists (CIfA) 2014c Standard and Guidance for Archaeological Excavation	CIfA 2014c
Chartered Institute for Archaeologists (CIfA) 2014d Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives	CIfA 2014d
Council for British Archaeology (CBA) 1994 Group 9: South Midlands Archaeology Newsletter 24/1994/23	CBA 1994
Council for British Archaeology (CBA) 2002 Group 9: South Midlands Archaeology Newsletter 32/2002:26	CBA 2002
Cranfield Soil and Agrifood Institute, Soilscapes http://www.landis.org.uk/soilscapes/index.cfm	Cranfield Online 2019
Fusion AWH Quality Plan	1EW03-FUV-QY-PLN-C000-001658
Fusion BIM Execution Plan	1EW03-FUS-IM-PLN-C000-000001
Fusion Construction Phase Health and Safety Plan	1EW03-FUV-HS-PLN-C000-000053
Fusion Incident & Emergency Preparedness Plan	1EW03-FUV-HS-PLN-C000-000001
Fusion Standard for Accident and Incident Investigation and Reporting	SH2 STD1
Harris, E C 1989 Principles of Archaeological Stratigraphy (2nd ed.) Academic Press	Harris 1989
Hey, G. and Lacey, M. 2001 Evaluation of archaeological decision-making processes and sampling strategies. Kent County Council	Hey and Lacey 2001
High Speed Rail (London-West Midlands) Environmental Minimum Requirements Annex 3: Heritage Memorandum	CS755 02/17
High Speed Rail (London-West Midlands) Environmental Minimum Requirements Annex 1: Code of Construction Practice	CS755 02/17
Historic England 2010 Waterlogged Wood: Guidelines on the recording, sampling, conservation and curation of waterlogged wood. Historic England.	Historic England 2010

Historic England 2011 Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and recovery to Post-excavation (2nd ed.). Historic England	Historic England 2011
Historic England 2012 Waterlogged Organic Artefacts: Guidelines on the Recovery, Analysis and Conservation. Historic England	Historic England 2012
Historic England 2014 Animal Bones and Archaeology: Guidelines for Best Practice. Historic England	Historic England 2014
Historic England 2015a Management of Research Projects in the Historic Environment: The MoRPHE Project managers' Guide	Historic England 2015a
Historic England 2015b Management of Research Projects in the Historic Environment (and associated guides and planning notes)	Historic England 2015b
Historic England 2015c Geoarchaeology: Using earth sciences to understand the archaeological record	Historic England 2015c
Historic England 2015d Archaeometallurgy: Guidance for Best Practice	Historic England 2015d
HS2 2017 Geophysical Survey Report (magnetic) for Site 1059 HSN17J	TG_HSN17J_1059_report_text_df
HS2 2018 Geotechnical Investigation Borehole Log Examination Report – Central Package C	1EW03-FUS-EV-REP-C000-005179
Hs2 2019 HS2 1EW03 – Enabling Works Central AWH Final Report for Geophysical Magnetometer Survey at Turweston, Glebe and Turweston Manor, Turweston Cutting, Buckinghamshire (AC250/5)	1EW03-FUS-EV-REP-CS06_CL22-007803
HS2 Country South Utility Drawing, Sheet 25	C222-ATK-UT-DPL-020-208700-FPD
HS2 Cultural Heritage GIS Specification	HS2-HS2-GI-SPE-000-000004
HS2 Cultural Heritage GIS Standard	HS2-HS2-GI-STD-000-000002
HS2 *Employer's* Technical Standard - Route wide soil resources plan	HS2-HS2-EV-STD-000-000008
HS2 *Employer's* Technical Standard – Temporary Works	HS2-HS2-CV-STD-000-000005
HS2 Enabling Works Information WI0200 General Constraints	1E001-HS2-PR-ITT-000-000098
HS2 Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy	HS2-HS2-EV-STR-000-000015
Hs2 Geoarchaeological Desk Based Assessment (GDBA): review of the geoarchaeological potential of High Speed Two Phase One	1D037-EDP-EV-REP-000-000031
HS2 2017 Geophysical and Fieldwalking Survey Report – Rural South – Buckinghamshire	P1C2-ETM-EV-REP-000-000008_P01

HS2 Historic Environment Digital Data Management and Archiving Procedure	C262-ARP-EVSPE-000-000003
HS2 Human remains and monuments procedure	HS2-HS2-EV-PRO-0000-000008
HS2 Ltd, 2015. Heritage Risk Model Phase 1 Review 2014 - Volume I	C253-ATK-EV-REP-000-000002
HS2 Phase One Environmental Statement and Supplementary Environmental Statements - Newton Purcell to Brackley: CFA 14	CH-001-011 - ES 3.5.2.14.4 CH-002-011 - ES 3.5.2.14.5 CH-003-011 - ES 3.5.2.14.6 CH004-011 – ES.3.4.5.14.7
HS2 Standard Template for Reports	HS2-HS2-PM-TEM-000-000004
HS2 Technical Standard Specification for Historic Environment Investigations	HS2-HS2-CV-STD-000-000035
HS2 Technical Standard: - Route wide soil resources plan	HS2-HS2-CV-STD-000-000008
HS2 Technical Standard: – Temporary Works	HS2-HS2-CV-STD-000-000005
HS2 Technical Standard: Cultural Heritage GIS Specification	HS2-HS2-GI-SPE-000-000004
HS2 Technical Standard: Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy	HS2-HS2-EV-STR-000-000015
HS2 Technical Standard: Historic Environment Digital Data Management and Archiving Procedure	HS2-HS2-EV-STD-000-000040
HS2 Technical Standard: Historic Environment Physical Archive Procedure	HS2-HS2-EV-STD-000-000039
HS2 Technical Standard: Specification for historic environment investigations	HS2-HS2-EV-STD-000-000035
HS2 Technical Standard: Specification for Project Plans and Location Specific Written Scheme of Investigations	HS2-HS2-EV-STD-000-000036
Margary, I.D. 1973 Roman Roads in Britain (third edition)	Margary 1973
Mills, A.D. Dictionary of British Place Names	Mills 2011
Open Domesday website https://opendomesday.org/ Accessed 15 April 2019	Domesday Online 2019
Page W. 1927 Parishes: Turweston A History of the County of Buckingham: Vol. 4	Page 1927

16 Glossary of Terms

The following terms have been used in this report:

- **Archaeological Contractor** – the organisation undertaking the specific historic environment works for the Contractor.
- **Contractor** – the organisation undertaking the Enabling Works on behalf of the Employer.
- **Employer –** HS2 Ltd, the organisation responsible for delivery of HS2 Phase One Scheme and all terms and conditions, policies, procedures, and payments
- **Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS)** – the framework for delivering all historic environment investigations undertaken as part of the HS2 Phase 1 programme.
- **Location** – a specific HS2 worksite or group of worksites that are being addressed as a combine historic environment investigation programme of assessment, evaluation and investigation.
- **Project Plans** – specification document for each specific package of activity (e.g. a survey, desk-based assessment, excavation, recoding project). The plans would respond to the Specific Objectives set out in the GWSI: HERDS and be delivered within an agreed budget.
- **Works** – the specific historic environment assessment, evaluation or investigation works at each location.

17 Appendices

17.1 Appendix 1 - Project Plan

Table 3 Project Plan

Document Number	Project Plan	Status
1EW03-FUS-EV-REP-CS06_CL22-007809	AWHf Project Plan for a Trial Trench Evaluation at Turweston Buckinghamshire AC250	Code 2

17.2 Appendix 2 - Change Control Register

Historic Environment Fieldwork Change Control Acceptance Sheet	
Site Code:	
Site Name:	
Historic Environment Investigation Type:	
Contractor:	
Project Plan Doc. No.:	
LSWSI Doc. No.:	
Summary of Results	
Fieldwork Director:	Date:
Description of Proposed Change:	

Drawing / Sketch:

Change type: (Delete as applicable)	Implementation of Contingency	Variation of Methodology	Rapid Investigation	Extension of Investigation Area

Proposed HERDS Objectives:

Compiled by: (Archaeological Contractor)	Name	Date	Signature
Checked by: (Contractor)	Name	Date	Signature
Consultation with: (Stakeholder Archaeologist)	Name	Date	Signature
Approved by: (HS2 Historic Environment)	Name	Date	Signature

17.3 Appendix 3 - Figures