

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and
Additional Provision 2 Environmental Statement

Volume 5 | Technical appendices
CFA19 | Coleshill Junction

July 2015

SES and AP2 ES 3.5.1.6

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Index

This table shows the topics covered by the technical appendices in this volume, and the reference codes for them.

CFA name and number	Topic	Code
CFA19, Coleshill Junction	Community	CM-001-019
	Cultural heritage	CH-002-019
		CH-003-019
		CH-004-019

Environmental topic:	Community	CM
Appendix name:	Community assessment	001
Community forum area:	Coleshill Junction	CFA19

Contents

1	Introduction	1
	Part 1: Supplementary Environmental Statement	2
2	Community impact assessment record sheets - construction	3
2.1	Forty-three residential properties at Gilson Drive, Gilson Road and Meadowbank Drive	3
2.2	Seven residential properties on Gilson Road	5
2.3	Water Orton Primary School	7
2.4	The residents of Water Orton	9
	List of tables	
	Table 1 - Forty-three residential properties at Gilson Drive, Gilson Road and Meadowbank Drive community impact assessment record sheet	3
	Table 2 - Seven residential properties on Gilson Road community impact assessment record sheet	5
	Table 3 - Water Orton Primary School community impact assessment record sheet	7
	Table 4 - The residents of Water Orton community impact assessment record sheet	9

1 Introduction

1.1.1 This appendix provides an update to the Appendix CM-001-019 Community assessment from the main Environmental Statement (ES) as a result of changes to construction assumptions and corrections assessed as part of the Supplementary Environmental Statement (SES) and the Additional Provision 2 Environmental Statement (AP2ES). This update should be read in conjunction with Appendix CM-001-019 Community assessment from the main ES.

1.1.2 This appendix is structured as followed:

- Part 1: Supplementary Environmental Statement
 - Community impact assessment record sheets - construction; and
 - Community impact assessment record sheets - operation.
- Part 2: Additional Provision 2 Environmental Statement
 - Community impact assessment record sheets - construction; and
 - Community impact assessment record sheets - operation.

Part 1: Supplementary Environmental Statement

2 Community impact assessment record sheets - construction

2.1 Forty-three residential properties at Gilson Drive, Gilson Road and Meadowbank Drive

Table 1 - Forty-three residential properties at Gilson Drive, Gilson Road and Meadowbank Drive community impact assessment record sheet

Resource name	Forty-three residential properties at Gilson Drive, Gilson Road and Meadowbank Drive, west of the Proposed Scheme
Community forum area (CFA)	CFA19 - Coleshill Junction
Resource type	Residential
Resource description/profile	A mix of detached and semi-detached properties along the B4117 Gilson Road, Gilson Drive, Meadowbank Drive and at Gilson Hall.
Assessment year	Construction phase (2017+)
Impact: Isolation	<p>Impact: residents of the properties that will be situated to the west of the main line at Gilson, which totals approximately 43 homes and represents the majority of the hamlet, are likely to experience a number of impacts that will contribute to the isolation of the community during the construction period. Works to permanently realign the B4117 Gilson Road to the south of its current position, to route beneath the M42 Coleshill north viaduct, will have a prominent presence in the centre of the hamlet for approximately four months. The properties will also be entirely surrounded by construction working areas that, when combined with the visual impacts of construction plant and machinery and the prominence of construction site hoardings, will create a strong sense of enclosure and a heightened perception of isolation, over and above the severance effects already caused by adjacent motorway infrastructure.</p> <p>Once open to traffic, the realigned B4117 Gilson Road will increase the distance between the east and west of the hamlet by approximately 400m. Whilst this is a relatively minor change for road traffic, the additional distance is likely to act as a deterrent to making journeys on foot or by bicycle. Residents wishing to walk towards Coleshill via the footway along the B4117 Gilson Road, including families walking children to the closest primary school – High Meadow Infant School in Coleshill – will be particularly affected. There are no other convenient alternative routes that can be taken by residents to avoid using the B4117 Gilson Road to travel to Coleshill.</p> <p>To the north of Gilson, the section of the B4117 Gilson Road that will be to the west of the main line provides a link from the hamlet to Water Orton and the industrial estates to the west of Coleshill Parkway and beyond. This section of the B4117 Gilson Road will be affected by one planned full weekend closure. This section of the B4117 Gilson Road will also be crossed by Water Orton viaducts 1 and 3, which will carry the north chords. Works to construct the viaducts will have a prominent visual presence and will require temporary road closures, typically overnight or at weekends, to enable the installation of beams over the road. Whilst this route is not the principal route for journeys to secondary school that need to be made on a daily basis, it is nevertheless a key route to other facilities including the GP surgery at Water Orton and for pupils of Water Orton Primary School and is the only other</p>

Resource name	Forty-three residential properties at Gilson Drive, Gilson Road and Meadowbank Drive, west of the Proposed Scheme
	<p>alternative route out of the hamlet.</p> <p>Duration of impact: temporary during construction. Works in this area undertaken from the M42 Coleshill box structure are anticipated to last in excess of five years. Works to construct Water Orton viaducts 1 and 3 are anticipated to last approximately three years.</p>
Assessment of magnitude	<p>Low: the majority of the hamlet that will be positioned to the west of the mainline will be entirely surrounded by construction working areas. The visual effects of construction plant and machinery and the prominence of construction site hoardings, will create a strong sense of enclosure and a heightened perception of isolation, recognising the severance effects already caused by adjacent motorway infrastructure.</p> <p>Congestion, however, is a contributing factor to the isolation effects of development and reduction in the significant congestion effects reported at the junctions between the A446 Lichfield Road and the B4117 Gilson Road and the A446 Lichfield Road and the B4117 Watton Road from major significant to not significant reduces the assessment of magnitude in the SES.</p>
Relevant receptors	Residential occupiers
Assessment of sensitivity of receptors (s) to impact	High: the hamlet will be entirely surrounded by construction activity, including approximately four months of work in the core of the hamlet to realign the B4117 Gilson Road and divert Gilson Drive. Daily journeys to schools, childcare, healthcare and shops in Coleshill, Water Orton and Chelmsley Wood will be affected by and delay. Residents are a sensitive receptor type, particularly in the context of the visual barrier that will be created by the construction works
Significance rating of effect	<p>Moderate adverse - significant.</p> <p>This significance is different from that reported in the main ES, which was major adverse.</p>
Proposed mitigation options for significant effects	No further mitigation identified
Residual effects significance rating	<p>Moderate adverse - significant.</p> <p>This significance is different from that reported in the main ES, which was major adverse.</p>

2.2 Seven residential properties on Gilson Road

Table 2 - Seven residential properties on Gilson Road community impact assessment record sheet

Resource name	Seven residential properties at B4117 Gilson Road, east of the Proposed Scheme, to include: Adria, The Cottage, The Croft, Sandbourne, Caswell, Franklin and no 4 Gilson Road.
Community forum area (CFA)	CFA19 - Coleshill Junction
Resource type	Residential
Resource description/profile	Properties along the B4117 Gilson Road, in one group of four plus two detached properties in spacious plots, slightly separated from the group and each other by fields.
Assessment year	Construction phase (2017+)
Impact: Isolation	<p>Impact: For the local community, additional traffic on the A446 may be particularly noticeable when the M42 southbound will be reduced to three lane running, when some more localised users of the motorway may choose to use the A446 Lichfield Road as an alternative route. However, this reduction in motorway capacity is anticipated to be less than six weeks of the construction period. There will be no increase in journey length or alteration to the route between the properties and Coleshill for those wishing to walk between the two.</p> <p>Construction activities within the hamlet will create a visual barrier between the two sides of the hamlet.</p> <p>Duration of impact: temporary during construction. Works in this area undertaken from the M42 Coleshill box structure are anticipated to last in excess of five years.</p>
Assessment of magnitude	Low: the visual barriers created by construction plant and machinery and the prominence of construction site hoardings will create a strong sense of enclosure and a heightened perception of isolation in the hamlet.
Relevant receptors	Residential occupiers
Assessment of sensitivity of receptors (s) to impact	High: daily journeys to schools, childcare, healthcare and shops in Coleshill, Water Orton and Chelmsley Wood will be affected by the separation of the eastern part of the hamlet from the west by visual barriers and construction activity, including approximately four months of work in the core of the hamlet to realign the B4117 Gilson Road and divert Gilson Drive. Residents are a sensitive receptor type, particularly in the context of the visual barrier that will be created by the construction works.
Significance rating of effect	<p>Moderate adverse - significant</p> <p>The significance of effect is unchanged from that reported in the main ES.</p>
Proposed mitigation options for significant effects	No further mitigation identified

SES AP2 ES Appendix CM-001-019

Resource name	Seven residential properties at B4117 Gilson Road, east of the Proposed Scheme, to include: Adria, The Cottage, The Croft, Sandbourne, Caswell, Franklin and no 4 Gilson Road.
Residual effects significance rating	Moderate adverse - significant The significance of effect is unchanged from that reported in the main ES.

2.3 Water Orton Primary School

Table 3 - Water Orton Primary School community impact assessment record sheet

Resource name	Water Orton Primary School
Community forum area (CFA)	CFA19 - Coleshill Junction
Resource type	Community infrastructure - primary education
Resource description/profile	<p>The Water Orton Primary School has a range of facilities for teaching and learning including two halls, a music room, a computing suite, two libraries, a cookery area and changing rooms. The school grounds are extensive and include a large playing field, three hard play surfaces, with fixed apparatus and wildlife/pond area, which was opened by naturalist and TV presenter, Bill Oddie. The school is also home to one of Warwickshire's three dyslexia centres.</p> <p>The school offers facilities for several community groups: fitness, arts and crafts, sport and other community events. The school fields to the south of the buildings are also used regularly by two local football clubs at the weekend and there is shared community use of school buildings by a number of regular clubs and groups during evenings and at weekends.</p> <p>There is a combined pre-school and out of hours childcare facility (for children aged between 2 and 11) operated from buildings in the grounds that are leased from Water Orton Primary School, which is called The Tree House of Water Orton.</p>
Assessment year	Construction phase (2017+)
Impact: Isolation	<p>Impact: according to data provided by Warwickshire County Council (WCC), in January 2013, 15% of pupils on the school roll came from the SMBC local authority area. Works along the B4118 Birmingham Road for the construction of the Water Orton Road overbridge will not result in closure to the B4118 Birmingham Road, however this road will be subject to temporary traffic management measures that will result in delays and disruption for pupils travelling to and from the school from the Solihull area. This will result in physical and psychological severance of the school from part of its catchment.</p> <p>Duration of impact: approximately two years.</p>
Assessment of magnitude	Medium: the primary school will be temporarily isolated from approximately 23% of its catchment.
Relevant receptors	Pupils travelling from the SMBC local authority area, Gilson and Coleshill.
Assessment of sensitivity of receptors (s) to impact	Medium: the school serves a mix of users groups including pupils and staff that need to access the school on a daily basis during term time; and community users accessing the premises and grounds during evenings and at weekends throughout the year. Isolation of a portion of the regular user group may disrupt the use and enjoyment of the school. An alternative access route is available but this will involve a considerable increase in journey time to school for 23% of the pupil catchment, as well as community users.

SES AP2 ES Appendix CM-001-019

Resource name	Water Orton Primary School
Significance rating of effect	<p>Moderate adverse - significant</p> <p>The significance of effect is unchanged from that reported in the main ES.</p>
Proposed mitigation options for significant effects	<p>No further mitigation identified. HS2 will work closely with Warwickshire County Council and Water Orton Primary School to identify reasonably practicable measures to mitigate the significant isolation effects, including discretionary measures identified in the draft CoCP.</p>
Residual effects significance rating	<p>Moderate adverse - significant</p> <p>The significance of effect is unchanged from that reported in the main ES.</p>

2.4 The residents of Water Orton

Table 4 - The residents of Water Orton community impact assessment record sheet

Resource name	The residents of Water Orton
Community forum area (CFA)	CFA19 - Coleshill Junction
Resource type	Residential
Resource description/profile	Residents of a mix of two-storey detached, semi-detached and terraced family dwellings in Water Orton
Assessment year	Construction phase (2017+)
Impact: Isolation	<p>Impact: The village lies within the catchment of the Coleshill School and some residents will need to travel out of the village via the B4117 Watton Lane on a daily basis. Works to construct Water Orton viaducts 1 and 3 to the east of Water Orton to carry the north chord over the M42 / M6 Toll, B4117 Gilson Road and the A446 Lichfield Road will disrupt journeys being made to Coleshill. Works to the B4118 Birmingham Road / Water Orton Road to the west of Water Orton will impact travel in and out of the village in this direction. The construction works will require temporary roadworks during the off-line replacement of the B4118 Water Orton Road overbridge, which is likely to result in reduced road capacity and delays, albeit that these are not expected to be significant and there are no temporary road closures or diversions proposed in the area. The changes in traffic flows will not result in significant effects on congestion. It is recognised that residents of the village may not be dependent upon this route for access on a day to day basis to primary schools and health facilities; however, there are no secondary schools or supermarkets within Water Orton and the disruption to regular daily journeys into and out of the village at both the east and west ends could create psychological barriers for a substantial proportion of the community. The B4117 and the B4118 are also both identified as construction traffic routes and will experience an increase in the proportion of HGV through traffic.</p> <p>Duration of impacts: up to three years.</p>
Assessment of magnitude	<p>Medium: Water Orton has a good range of services and facilities and residents are therefore less dependent upon travel outside of the village to meet basic day to day needs. However, it is recognised that the village lies within the catchment of the Coleshill School and that some residents will need to travel out of the village via the B4117 on a daily basis. With regards to works to the B4118 Birmingham Road / Water Orton Road, it is recognised that residents of the village may not be dependent upon this route for access on a day to day basis to schools and health facilities; however, the disruption to journeys into and out of Water Orton at the west end of the village could create psychological barriers for a proportion of the community. There are limited options for residents to take alternative routes to avoid works along the B4117 and B4118.</p>
Relevant receptors	Residential occupiers

Resource name	The residents of Water Orton
Assessment of sensitivity of receptors (s) to impact	Medium: The impact will affect school children travelling to Coleshill on a daily basis and, to a lesser extent, those travelling west out of the village for schooling. Regular daily journeys to destinations outside Water Orton for village residents will also be affected
Significance rating of effect	Moderate adverse - significant The significance of effect is unchanged from that reported in the main ES.
Proposed mitigation options for significant effects	No further mitigation identified
Residual effects significance rating	Moderate adverse - significant The significance of effect is unchanged from that reported in the main ES.

Environmental topic:	Cultural heritage	CH
Appendix name:	Gazetteer of heritage assets	002
Community forum area:	Coleshill Junction	CFA19

Contents

1	Introduction	1
2	Gazetteer	2

List of figures

List of tables

Table 1 – Gazetteer of heritage assets for CFA19	2
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1 Introduction

- 1.1.1 This appendix provides an update to Appendix CH-002-019 Cultural heritage survey reports from the main Environmental Statement (ES) as a result of changes and amendments in CFA19 Coleshill Junction assessed as part of the Supplementary Environmental Statement (SES) and the Additional Provision 2 Environmental Statement (AP2 ES). This update should be read in conjunction with Appendix CH-004-019 Cultural heritage survey reports from the main ES.

2 Gazetteer

Table 1 - Gazetteer of heritage assets for CFA019

Unique ID	Map reference	Asset type	Name	Description	Period	Designation	Grade	Significance/value	NHL reference	HER reference
COL017	CH-01-112	Archaeology	Cropmark enclosure, possible pits and ditch	<p>Three sides of a banked and ditched enclosure, north of the moated site at Coleshill Hall Farm. A further small sub-rectangular enclosure appears to cut the larger enclosure (Aerial Photograph, English Heritage Archive SP 1888/1-5).</p> <p>Geophysical survey (CNo21; WSI-CFA19-003) has identified a number of possible archaeological anomalies. The survey did not identify the enclosure banks and ditches as indicated by cropmarks. The survey identified a group of oval anomalies in an approximate linear formation which may indicate the presence of part of a ditch, along with an area of increased magnetic response and possible pits.</p>	Undated	None	None	Low	None	MWA4846
COL108	CH-01-113	Archaeology	A group of possible pits east of the River Cole	Pit-like responses of possible archaeological interest identified as anomalies within geophysical survey CNo23 (WSI-CFA19-005; Appendix CH-004-019).	Undated	None	None	Low	None	N/A

Environmental topic:	Cultural heritage	CH
Appendix name:	Impact assessment table	003
Community forum area:	Coleshill Junction	CFA19

Contents

1	Introduction	1
2	Impact assessment	2

List of figures

List of tables

Table 1 - Impact assessment for CFA19	2
---------------------------------------	---

1 Introduction

- 1.1.1 This appendix provides an update to Appendix CH-003-019 Cultural heritage survey reports from the main Environmental Statement (ES) as a result of changes and amendments in CFA19 Coleshill Junction assessed as part of the Supplementary Environmental Statement (SES) and the Additional Provision 2 Environmental Statement (AP2 ES). This update should be read in conjunction with Appendix CH-004-019 Cultural heritage survey reports from the main ES.

2 Impact assessment

Table 1 - Impact assessment for CFA19

Unique identification	Name	Designation(s)	Value	Construction impact			Operation impact			New or different environmental effect from that reported in the main ES or the Additional Provision (AP ₁) ES
				Nature of impact including mitigation	Scale of impact	Effect	Nature of impact including mitigation	Scale of impact	Effect	
COL017	Cropmark enclosure	None	Low	Construction of the mainline, on embankment, will remove the cropmark enclosure and possible archaeological features identified through geophysical survey, of unknown date.	Permanent high adverse	Permanent moderate adverse	No impact on significance.	No change	Neutral	There is a change in the magnitude of effect reported in the main ES, from a permanent major adverse effect to a permanent moderate adverse effect.. There is a change in value from moderate to low.
COL108	A group of possible pits east of the River Cole	None	Low	The asset lies within land required for the construction of the main alignment and will therefore be removed by construction works.	High adverse	Moderate adverse	No impact on significance	No change	Neutral	This is a new effect not reported in the main ES

Environmental topic:	Cultural heritage	CH
Appendix name:	Survey reports	004
Community forum area:	Coleshill Junction	019

Contents

1	Introduction	3
2	Geophysical surveys	3
2.1	Site: CNo21	3
2.2	References	13
2.3	HER Records Consulted	13
2.4	Figures	14
2.5	Site: CNo23	20
2.6	References	22
2.7	HER Records Consulted	22
2.8	Figures	23
2.9	Annex 1: Survey Equipment and Data Processing	27
2.10	Annex 2: Geophysical Interpretation	27

List of figures

Figure 1: Site location	14
Figure 2: Greyscale plot	15
Figure 3: XY trace	16
Figure 4: Interpretation	19
Figure 5: Site location	23
Figure 6: Greyscale (north)	24
Figure 7: XY trace (north)	24
Figure 8: Interpretation (north)	25
Figure 9: Greyscale plot (south)	25
Figure 10: XY trace (south)	26
Figure 11: Interpretation (south)	26

1 Introduction

- 1.1.2 This appendix provides an update to Appendix CH-004-019 Cultural heritage survey reports from the main Environmental Statement (ES) as a result of changes and amendments in CFA19 Coleshill Junction assessed as part of the Supplementary Environmental Statement (SES) and the Additional Provision 2 Environmental Statement (AP2 ES). This update should be read in conjunction with Appendix CH-004-019 Cultural heritage survey reports from the main ES.

2 Geophysical surveys

2.1 Site: CNo21

Introduction

- 2.1.1 Wessex Archaeology was commissioned by Atkins, on the behalf of HS2, to carry out a geophysical survey of area CNo20 off Birmingham Road (B4114) near Coleshill, Warwickshire (Figure 1), hereafter “the Site” (centred on NGR 419084 288536). The survey forms part of an ongoing programme of archaeological works being undertaken ahead of the proposed development of HS2.
- 2.1.2 The geophysical survey undertaken here has been preceded by a Desk-Based Assessment (DBA) (HS2 Environmental Survey 2013) and a remote sensing survey comprising LiDAR and hyperspectral survey and analysis (Wessex Archaeology 2013). Geophysical survey areas have been identified based on the archaeological potential and conclusions identified in these reports.
- 2.1.3 This Site, CNo21, was selected for geophysical survey to ascertain the extents of remains associated with the medieval earthworks of Coleshill moat and possible manor house to the south-west and it is in the vicinity of a known cropmark complex .
- The Site*
- 2.1.4 The Site comprises one field located off Birmingham Road (B4114) and lies approximately 1km west of the centre of Coleshill. The limits of the geophysical survey area are defined by modern field boundaries for much of the area with the north-west limits defined by South Drive, off Birmingham Road (B4114). Geophysical survey was undertaken over the whole Site with total data coverage of approximately 4.7ha.
- 2.1.5 The Site lies on a south-east facing slope at a maximum height of 85m aOD (above Ordnance Datum) falling to just over 80m aOD. The River Cole and associated floodplain is to the south and west of the survey area at a height of 80m aOD.
- 2.1.6 The solid geology is recorded as Keuper marl (Triassic) (Ordnance Survey 1957) with superficial deposits of river terrace sands and gravels, alluvium and glacial deposits recorded on Site and close by (Ordnance Survey 1977).
- 2.1.7 The soils underlying most of the Site are likely to be typical stagnogley soils of the 711b (Brockhurst 1) association. The soils close to the River Cole are recorded as pelo-alluvial gley soils of the 813b (Fladbury 1) association (SSEW 1983). Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

Summary Archaeological and Historic Background

- 2.1.8 For a detailed assessment of the known archaeology of the Site and surrounding area the relevant DBA should be consulted (HS2 Environmental Statement 2013). A summary of relevant sites within 1km of the survey area are summarised below and have been included to provide context and inform the geophysical interpretation. Sites referred to can be found either within the gazetteer for CFA 19 in the Environmental Statement (COL numbers) or in the Warwickshire SMR (MWA numbers).
- 2.1.9 The current landscape is characterised as large rectilinear fields, possibly planned enclosures, and appears to have been part of the grounds associated with Coleshill Hall and Coleshill Medieval Deer Park (COL015). Coleshill Hall Farm to the south of the Site is characterised as a pre-1880s historic farm complex (COL051). The location of the current Coleshill Manor is approximately 1km to the north-west of the Site.
- 2.1.10 Remote sensing revealed several features in the vicinity of the Site. In addition to the circuit of the moat, LiDAR and earthwork survey in the surrounding area has identified a number of associated banks, ditches and terraced areas along with remnant ridge and furrow (WA19.17 to WA19.22 and WA19.24)
- 2.1.11 The most significant record within the area relates to the earthworks attributed to the medieval moated manor site of Coleshill Hall (COL014). The record mentions the moat is visible as an earthwork although no structures are visible inside it; a causeway is recorded across the northwest side but this is considered to be modern. The manor of Coleshill is mentioned in documentary sources from the 11th century onwards and this site is considered the likely location of the hall (COL014).
- 2.1.12 The Site is within a larger area identified as a medieval deer park is recorded in this area from 1483 and was not disparked until around 1812 (COL015). Earthworks identified within the park include a former park pale boundary, former land divisions and ridge and furrow.
- 2.1.13 An undated cropmark enclosure comprise three sides of a banked and ditched enclosure, north of the moated site at Coleshill Hall Farm with a further small sub-rectangular enclosure appearing to cut the larger enclosure (COL017). Geophysical survey identified another small enclosure of unknown date approximately 0.6km north of the Site and east of Manor Drive (COL015).
- 2.1.14 The present farm of Coleshill Hall Farm is a Grade II listed farmhouse, stable block and barn dating from the 17th century (MWA1226 and COL052).

Survey Objectives

2.1.15 A Written Scheme of Investigation (WSI) was prepared by Wessex Archaeology which outlined the aims of the survey and the proposed methodology to be followed (Wessex Archaeology 2014). The stated aims include the following:

- To conduct a detailed survey which covers as much of the specified area as possible, allowing for artificial obstructions;
- To clarify the presence/absence and extent of any buried archaeological remains within the site;
- To determine the general nature of the remains present; and
- To combine the results of the geophysical surveys with data from other archaeological assessments carried out as part of the project in order to analyse the archaeological potential of the survey locations.

2.1.16 This report presents a brief description of the methodology followed, the detailed survey results and the archaeological interpretation of the geophysical data.

Survey Dates

2.1.17 A detailed gradiometer survey was carried out by Wessex Archaeology's in-house geophysics team between the 4th and 5th November 2014.

Grid Location

2.1.18 The individual survey grid nodes were established at 30m x 30m intervals using a Leica Viva RTK GNSS instrument, which is precise to approximately 0.02m and therefore exceeds English Heritage recommendations (English Heritage 2008).

2.1.19 A representative sample of survey grid nodes (around 10%) were re-surveyed in the mornings in the event they were left out in the field overnight. This was undertaken along with a visual inspection of entire lines of grid nodes to ensure the survey grid remained accurate for the entire survey.

Instruments Used and Survey Method

2.1.20 The magnetometer survey was conducted using a Bartington Grad601-2 fluxgate gradiometer instrument, which has a vertical separation of 1m between sensors. Data were collected at 0.25m intervals along transects spaced 1m apart with an effective sensitivity of 0.03nT, in accordance with EH guidelines (English Heritage 2008).

2.1.21 Data were collected in the zigzag method with grids oriented north to south (Grid North). The first direction walked for each grid was heading towards the north.

Data Processing

2.1.22 Data from the survey was subject to minimal data correction processes. These comprise a zero mean traverse (ZMT) function (± 5 nT thresholds) applied to correct for any variation between the two Bartington sensors used, and a de-step function to account for variations in traverse position due to varying ground cover and topography. These two steps were applied to all survey data, with no interpolation applied.

2.1.23 Further details of the geophysical and survey equipment, methods and processing are described in Annex 1.

Data Presentation

2.1.24 The processed gradiometer data were output as .png image files and georeferenced in CAD (AutoCAD Map 3D 2011); these images were exported as georeferenced .png image files (accompanied by .pgw files). The interpretation layers were digitised in CAD and the resulting interpretation layers were exported as ESRI shapefiles, in accordance with the specification. The data images and interpretation shapefiles were then passed to our graphics team who produced the final figures in GIS (ESRI ArcMap 10).

2.1.25 The gradiometer data are displayed at -2nT (white) to +3nT (black) for the greyscale image and ± 25 nT at 25nT per cm for the XY trace plots. The XY trace plot images have been produced at a scale of 1:1500.

Results

Introduction

2.1.26 The gradiometer survey has been successful in identifying anomalies of archaeological interest, along with numerous trends. The results are presented as a series of greyscale and XY plots, and archaeological interpretations, at a scale of 1:1500 (Figures 2 to 4).

2.1.27 The interpretation of the datasets highlights the presence of potential archaeological anomalies, ferrous/burnt or fired objects, and magnetic trends (Figure 4). Full definitions of the interpretation terms used in this report are provided in Annex 2.

2.1.28 Ferrous anomalies are visible throughout the detailed survey dataset. These are presumed to be modern in provenance and are not referred to, unless considered relevant to the archaeological interpretation.

Interpretation: Archaeology

2.1.29 A concentration of several oval-shaped positive anomalies at 4000 is interpreted as possible archaeology and is located in an approximate linear formation, they represent cut features and because of their layout are possibly the remains of a ditch. A weak linear L-shaped trend has been identified which possibly extends this anomaly north and south and could be further ephemeral remains of the ditch. This possible ditch feature is located in an area of increased magnetic response with a slightly elevated background level and numerous small, single dipolar anomalies. There is possibly an association between the remnant ditch features and this area of disturbance.

2.1.30 At 4001 is a single, approximately oval shaped positive anomaly interpreted as possible archaeology and is potentially a pit-type feature.

2.1.31 A few linear and curvilinear anomalies have been identified, such as at 4000 and 4003, and are weakly contrasting positive anomalies. They are interpreted as trends of uncertain origin and possibly represent ephemeral remains associated with archaeological activity or could possibly be natural in origin due to changes in the soil or superficial geology. It is not possible to characterise them further.

2.1.32 Ploughing trends in the form of weakly positive, closely spaced, parallel linear anomalies are oriented north-west to south-east at 4002 and north-east to south-west at 4004 which are on the same alignments as current field boundaries.

2.1.33 A large area of ferrous response at 4005 is a modern disturbance due to an electricity pylon.

Interpretation: Modern Services

- 2.1.34 No modern services have been identified within the Site.
- 2.1.35 It is not clear from the geophysical data whether the services identified are in active use or not. Also gradiometer data will not be able to locate and identify all services present on site. This report and accompanying illustrations should not be used as the sole source for service locations and appropriate equipment (e.g. CAT and Genny) should be used to confirm the location of buried services before any trenches are opened on site.

Conclusions*Introduction*

- 2.1.36 The detailed gradiometer survey has been successful in detecting anomalies of likely and possible archaeological interest within the Site in addition to responses from ploughing activity, an area of increased magnetic response, ferrous anomalies and trends of uncertain origin.

Discussion

- 2.1.37 The anomalies of possible archaeological origin around 4000 are consistent with cut features and could possibly represent the remains of a ditch if taken together with the L-shaped weak linear trend extending from this area. Elsewhere across the site is only a single isolated pit-type anomaly also characterised as possible archaeology. Although the trends of uncertain origin are weak and ephemeral they could possibly relate to archaeological activity but there is not enough information to characterise them further.
- 2.1.38 Ploughing trends are predominantly in two directions and are presumed to be post-medieval or modern in origin. There are no visible anomalies associated with remnant ridge and furrow as identified in the lower-lying areas from LiDAR survey.
- 2.1.39 It should be noted that small, weakly magnetised features may produce responses that are below the detection threshold of magnetometers. It may therefore be the case that more archaeological features may be encountered than have been identified through geophysical survey. Given how weak many of the features interpreted in this data are it seems very likely that more features may be present than were detected during the survey.

2.2 References

English Heritage, 2008. Geophysical Survey in Archaeological Field Evaluation. Research and Professional Service Guideline No. 1, 2nd Edition.

HS2 Environmental Statement, 2013. London-West Midlands Environmental Statement, Volume 5: Technical Appendices: CFA19: Coleshill Junction Baseline Report: Cultural Heritage. Report Reference: CH-001-019.

Ordnance Survey, 1888. OS County Series: Warwickshire, 1:2500.

Ordnance Survey, 1957. Sheet 2, Geological Map of Great Britain. England and Wales: Ordnance Survey: Chessington.

Ordnance Survey, 1977. Quaternary Map of the United Kingdom: South. Ordnance Survey: Southampton. Ordnance Survey 1887.

Soil Survey of England and Wales, 1983. Sheet 3, Soils of Midland and Western England. Ordnance Survey: Southampton.

Wessex Archaeology, 2013. HS2 Community Forum Area 19 (Coleshill): Hyperspectral and LiDAR Analysis. Report Reference 86252.01.

Wessex Archaeology, 2014. HS2: Geophysical Survey Written Scheme of Investigation. Report Reference: 86257.01.

2.3 HER Records Consulted

COLo14 - Moat at Coleshill Hall Farm and the possible site of Coleshill Hall manor house.

COLo15 - Former Coleshill deer park including boundary features.

COLo17 - Cropmark enclosure, north of the moated site at Coleshill Hall Farm.

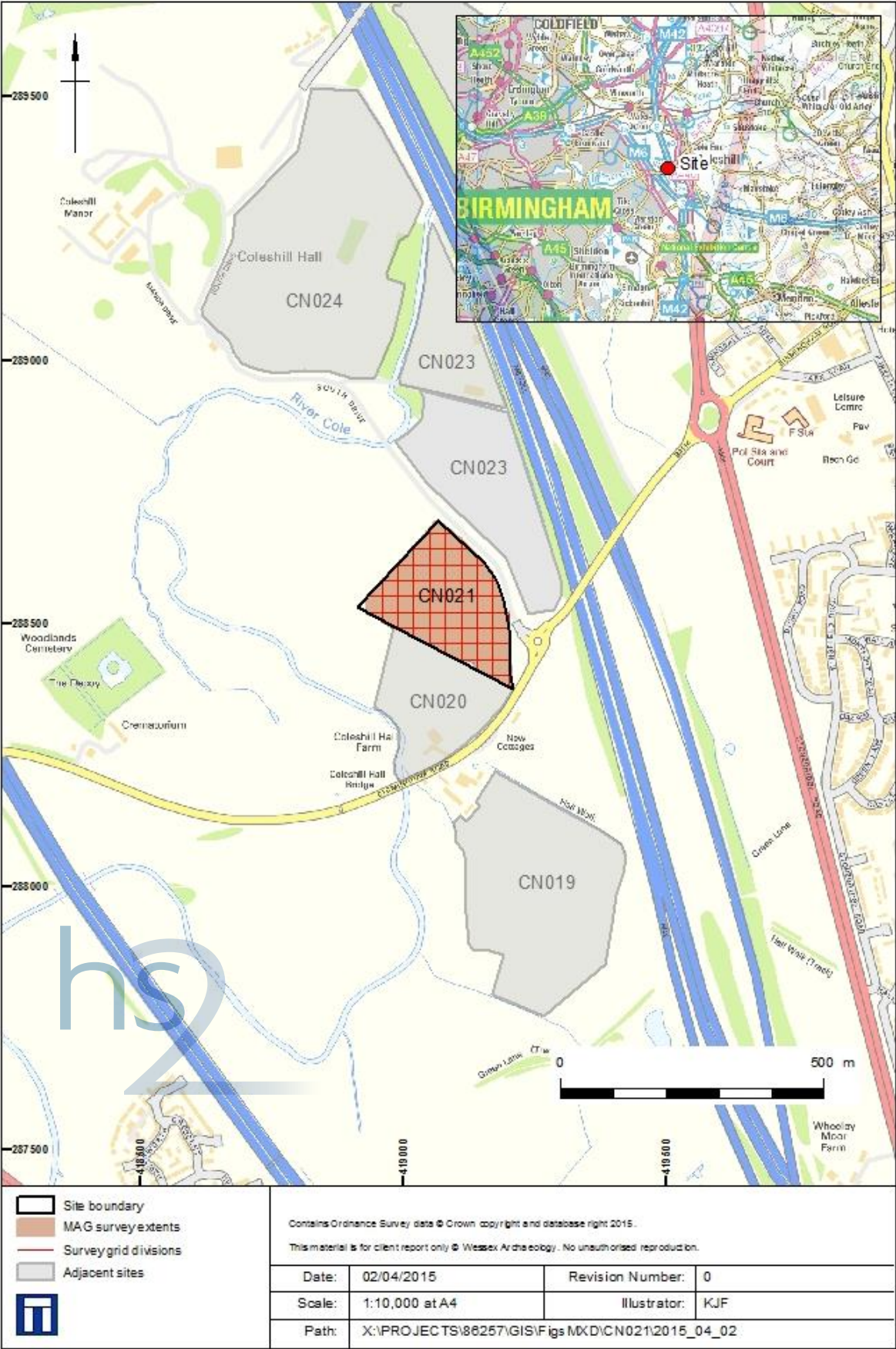
COLo51 - Coleshill Hall Farm, marked on the OS 1st edition onwards.

COLo52 - Coleshill Hall Farmhouse, late 17th century farmhouse incorporating a stable block.

MWA1226 - Old Coleshall Farm Building, barn.

2.4 Figures

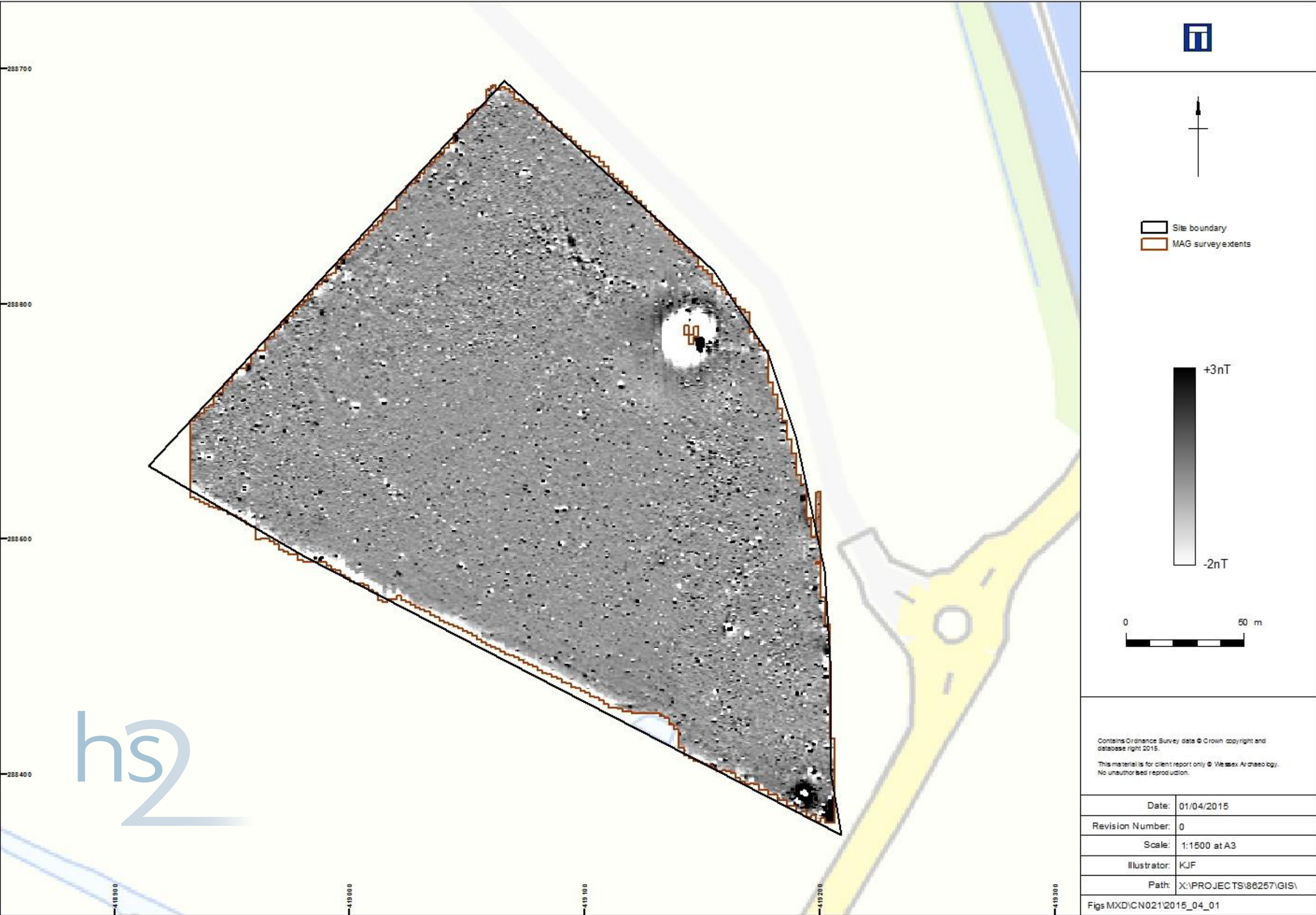
Figure 1: Site location



Site location

Figure 9

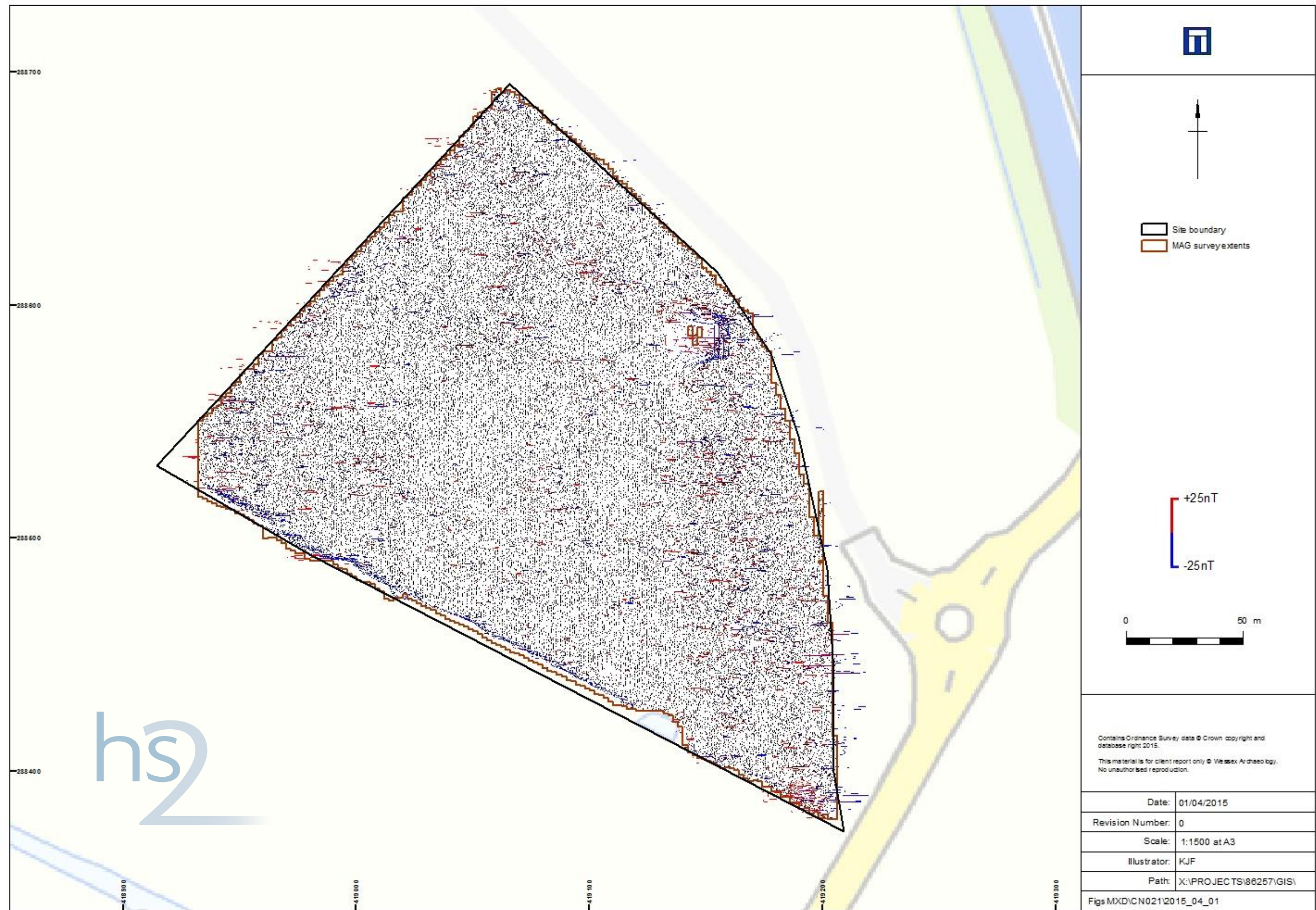
Figure 2: Greyscale plot



Greyscale plot

Figure 10

Figure 3: XY trace



XY trace

Figure 11

Figure 4: Interpretation

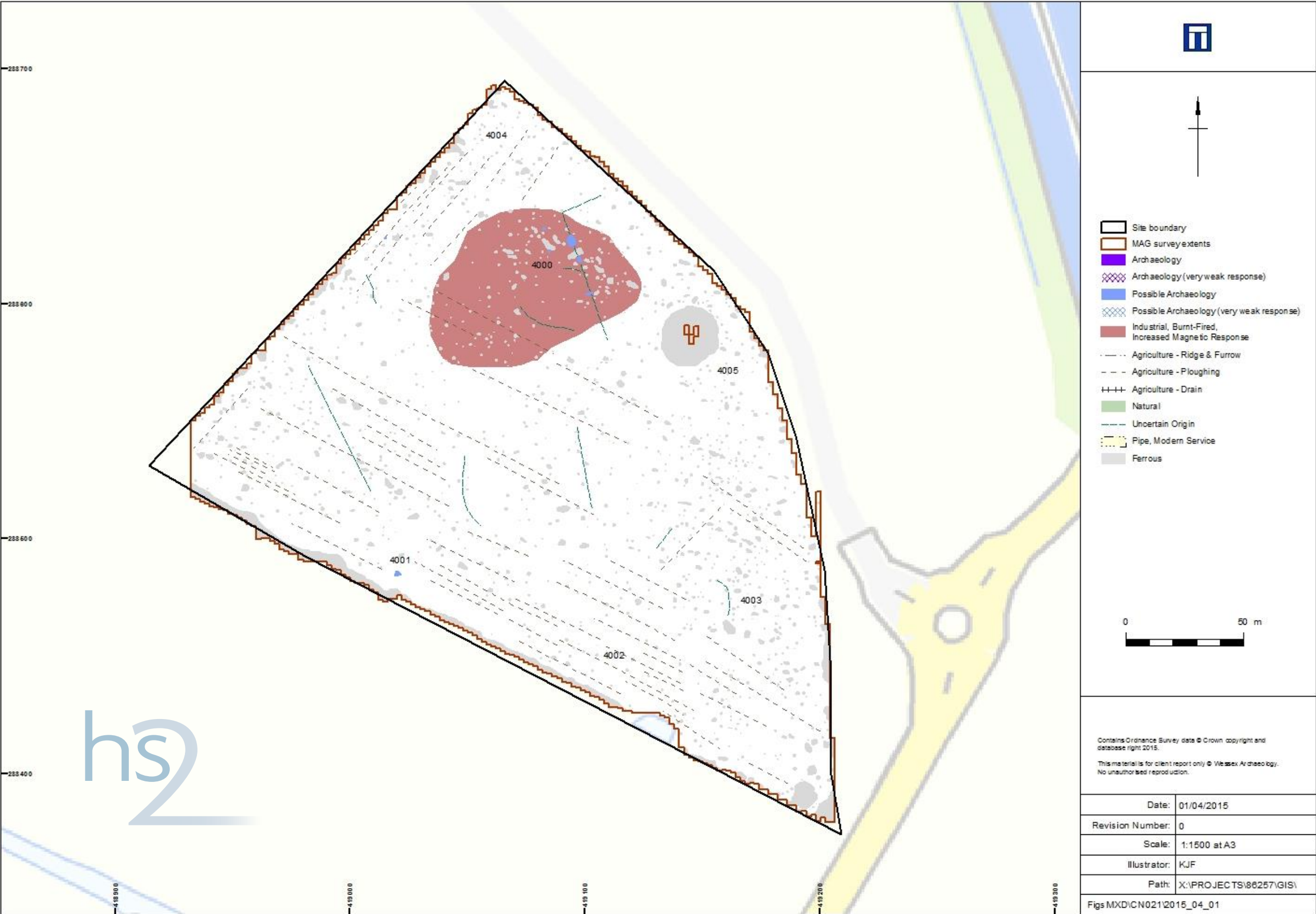


Figure 12

2.5 Site: CNo23

Introduction

- 2.5.1 Wessex Archaeology was commissioned by Atkins, on the behalf of HS2, to carry out a geophysical survey of area CNo23 between Manor Drive and the M42, near Coleshill, Warwickshire (Figure 5), hereafter “the Site” (centred on NGR 419147 288799). The survey forms part of an ongoing programme of archaeological works being undertaken ahead of the proposed development of HS2.
- 2.5.2 The geophysical survey undertaken here has been preceded by a Desk-Based Assessment (DBA) (HS2 Environmental Statement 2013) and a remote sensing survey comprising LiDAR and hyperspectral survey and analysis (Wessex Archaeology 2013). Geophysical survey areas have been identified based on the archaeological potential and conclusions identified in these reports.
- 2.5.3 This Site, CNo23, was selected for geophysical survey as it is considered to be an area at high risk with known remains in the vicinity associated with medieval activity and a known cropmarks complex.

The Site

- 2.5.4 The site comprises a mixture of six arable and pasture fields located approximately 0.8km west of Coleshill, Warwickshire. The site is bounded to the north-west by the River Cole with the M42 and M6 Toll road to the east and the Birmingham road converging to the south. The gradiometer survey covered an area of approximately 3.8ha with an area of 4.8ha previously surveyed in 2013 (HS2 Environmental Statement 2013).
- 2.5.5 The Site lies on an area of gently sloping land that rises from less than 85m aOD (above Ordnance Datum) in the southern fields to a little under 75m aOD to the north of the Site. It lies within an area characterised as floodplain and bordering the River Cole.
- 2.5.6 The solid geology is recorded as Mercia Mudstone (Triassic) (Ordnance Survey 1957) with superficial deposits of alluvium, the sand and gravel of river terrace deposits and glacial deposits also recorded (Ordnance Survey 1977).
- 2.5.7 The soils underlying most of the Site are likely to be gleyic brown earths of the 543 (Arrow) association. The soils close to the River Cole are recorded as pelo-alluvial gley soils of the 813b (Fladbury 1) association (SSEW 1983). Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

Summary Archaeological and Historic Background

- 2.5.8 For a detailed assessment of the known archaeology of the Site and surrounding area the relevant DBA should be consulted (HS2 Environmental Statement 2013). A summary of relevant sites within 1km of the survey area is provided below and has been included to provide context and inform the geophysical interpretation. Sites referred to can be found either within the gazetteer for CFA 19 in the Environmental Statement (COL numbers) or in the Warwickshire SMR (MWA numbers).
- 2.5.9 The majority of the current landscape across the Site is characterised as planned enclosures of larger rectilinear fields marked on the Ordnance Survey 1st edition (COL103) with a floodplain

area associated with the River Cole in the north of the Site (COL104). There is a pre-1880s historic farmstead and a barn within the northern half of the site (HWA1889; HWA3464).

- 2.5.10 No prehistoric sites or findspots are located within 1km but the Site lies adjacent to the River Cole and river terrace deposits of alluvium and sands and gravels are recorded in the northern half of the survey area.
- 2.5.11 The area is dominated by medieval finds and sites with the medieval settlement of Coleshill approximately 0.8km to the east of the Site (MWA8782). A medieval cropmark enclosure is located approximately 100m to the south-west of the Site (COL017). The Site lies within a much larger area identified as a medieval deer park belonging to Coleshill Hall. To the south of the Site surviving earthworks are visible (COL014) and cropmarks thought to be the medieval moated manor of Coleshill Hall (COL014) as opposed to the Listed Building of Coleshill Hall which was built as a country house in 1873 and located to the north-west. A further undated earthwork enclosure lies to the north-east (COL033).
- 2.5.12 As well as earthworks and cropmarks there have been Roman, medieval and post-medieval findspots including coins to the north-west of the Site and to the east in an area now beneath the M42 and M6 Toll road (MWA9299-9306; MWA9811-9813).

Survey Objectives

- 2.5.13 A Written Scheme of Investigation (WSI) was prepared by Wessex Archaeology which outlined the aims of the survey and the proposed methodology to be followed (Wessex Archaeology 2014). The stated aims include the following:
- To conduct a detailed survey which covers as much of the specified area as possible, allowing for artificial obstructions;
 - To clarify the presence/absence and extent of any buried archaeological remains within the site;
 - To determine the general nature of the remains present; and
 - To combine the results of the geophysical surveys with data from other archaeological assessments carried out as part of the project in order to analyse the archaeological potential of the survey locations.
- 2.5.14 This report presents a brief description of the methodology followed, the detailed survey results and the archaeological interpretation of the geophysical data.

Survey Dates

- 2.5.15 A detailed gradiometer survey was carried out by Wessex Archaeology's in-house geophysics team between the 3rd and 5th to 6th November 2014, with data also previously collected between the 21st and 22nd August 2013.

Grid Location

- 2.5.16 The individual survey grid nodes were established at 30m x 30m intervals using a Leica Viva RTK GNSS instrument, which is precise to approximately 0.02m and therefore exceeds English Heritage recommendations (English Heritage 2008).
- 2.5.17 A representative sample of survey grid nodes (around 10%) were re-surveyed in the mornings in the event they were left out in the field overnight. This was undertaken along with a visual

inspection of entire lines of grid nodes to ensure the survey grid remained accurate for the entire survey.

Instruments Used and Survey Method

- 2.5.18 The magnetometer survey was conducted using a Bartington Grad601-2 fluxgate gradiometer instrument, which has a vertical separation of 1m between sensors. Data were collected at 0.25m intervals along transects spaced 1m apart with an effective sensitivity of 0.03nT, in accordance with EH guidelines (English Heritage 2008).
- 2.5.19 Data were collected in the zigzag method with grids oriented north to south (Grid North). The first direction walked for each grid was heading towards the north.

Data Processing

- 2.5.20 Data from the survey was subject to minimal data correction processes. These comprise a zero mean traverse (ZMT) function ($\pm 5\text{nT}$ thresholds) applied to correct for any variation between the two Bartington sensors used, and a de-step function to account for variations in traverse position due to varying ground cover and topography. These two steps were applied to all survey data, with no interpolation applied.
- 2.5.21 Further details of the geophysical and survey equipment, methods and processing are described in Annex 1.

Data Presentation

- 2.5.22 The processed gradiometer data were output as .png image files and georeferenced in CAD (AutoCAD Map 3D 2011); these images were exported as georeferenced .png image files (accompanied by .pgw files). The interpretation layers were digitised in CAD and the resulting interpretation layers were exported as ESRI shapefiles, in accordance with the specification. The data images and interpretation shapefiles were then passed to our graphics team who produced the final figures in GIS (ESRI ArcMap 10).
- 2.5.23 The gradiometer data are displayed at -2nT (white) to +3nT (black) for the greyscale image and $\pm 25\text{nT}$ at 25nT per cm for the XY trace plots. The XY trace plot images have been produced at a scale of 1:1500.

Results

Introduction

- 2.5.24 The gradiometer survey has been successful in identifying anomalies of likely and possible archaeological interest, along with numerous trends. The results are presented as a series of greyscale and XY plots, and archaeological interpretations, at a scale of 1:1500 (Figures 6 to 11).
- 2.5.25 The interpretation of the datasets highlights the presence of potential archaeological anomalies, ferrous/burnt or fired objects, and magnetic trends (Figures 8 and 11). Full definitions of the interpretation terms used in this report are provided in Annex 2.
- 2.5.26 Ferrous anomalies are visible throughout the detailed survey dataset. These are presumed to be modern in provenance and are not referred to, unless considered relevant to the archaeological interpretation.

Interpretation: Archaeology

- 2.5.27 There are few anomalies of likely archaeological interest within the survey area with only one feature deemed to be of clear archaeological interest at 4000 (Figure 11). This feature is made up of linear positive anomalies with magnetic values typically over +2nT, although there are weaker regions with values less than +2nT. These features are considered to represent ditches and appear to partly define a small sub-rectangular enclosure measuring at least 10.5m in length and 4.8m in width. The eastern end of this feature is well-defined but the western end is open and as the values fade out in this direction may either represent poor survival of the feature here or simply indicate a loss in magnetic contrast. This possible enclosure is considered to be of likely archaeological potential.
- 2.5.28 There are other positive anomalies that may prove of archaeological interest located at 4001 to 4005 in the north-west of the survey area closest to the river (Figures 8 and 11). They comprise sub-oval positive anomalies varying in size and form with no particular distribution or concentration. They are interpreted as possible archaeology while the majority of the anomalies in this area are dipolar ferrous anomalies resulting in large areas of increased magnetic response. Due to their shape and uneven distribution there is also the possibility that they could be natural in origin such as tree throws or from variations in the superficial geology.
- 2.5.29 The weak positive linear anomaly at 4005 lies perpendicular to the modern field boundary and is considered to be a relatively recent agricultural ditch. Anomalies 4002 and 4003 are sub-oval to irregular in shape, measuring roughly 4.4m and 1.5m in length respectively. Both features have magnetic values over +3nT and have a smooth curved shape visible on the XY trace plot. These anomalies are considered to possibly represent cut features such as pits. They have however been classed as possible archaeology as they are located in dense areas of ferrous responses and a non-archaeological explanation for them cannot be ruled out.
- 2.5.30 There are numerous agricultural features visible in the data including ploughing trends at 4006 and ceramic field drains at 4005. The remaining trends are considered to be of uncertain origin as they are set at different alignments to the ploughing and have differing forms. The curving trends at 4004 may prove to be archaeological due to their shape in plan and as they are not obviously linked to modern agricultural activity.
- 2.5.31 The remaining anomalies of possible archaeological interest are numerous small sub-oval positive responses. They typically have values over +1.5nT and are considered to either represent cut features such as small pits and postholes or geological features. It is not possible to be more definite in this interpretation as these features form no significant pattern in their spatial distribution.
- 2.5.32 There are several concentrations of ferrous responses accompanied by spreads of increased magnetic response in the data, as at 4009, 4012, 4014 and a particularly large and strong concentration at 4017 at the southern end of the Site (Figure 11). These spreads are not considered to be archaeological and are likely to be formed of relatively modern metallic and ceramic debris that have either been dumped or deliberately spread during agricultural activity. For this Site in particular a large amount of ferrous debris was probably introduced during the construction of the adjacent modern services and the M6 Toll road.
- 2.5.33 There are three services visible in the data at 4010, 4013 and 4015; these features are discussed in more detail below. An approximately circular area of ferrous response at 4011

corresponds to the location of an electricity pylon. A line of ferrous response that extends from the service at 4010 roughly towards the north-east; is interpreted as a modern track.

Interpretation: Modern Services

- 2.5.34 Three modern services have been identified in the data at 4010, 4011, 4013 and 4015 (4013 and 4015 are the same pipe/modern service across two different fields). The first two services (4010 and 4013/4015) appear to be metallic/ceramic pipes. The larger of these in plan at 4013/4015 runs roughly north-south through the south-east corner of the field while the second extends perpendicular to the western field boundary. Both services run beyond the extent of the survey area and most likely continue further into unsurveyed areas of this field. The third service is a pylon base at 4011 that carries overhead electricity cables across the Site.

- 2.5.35 Gradiometer data will not be able to locate and identify all services present on site. This report and accompanying illustrations should not be used as the sole source for service locations and appropriate equipment (e.g. CAT and Genny) should be used to confirm the location of buried services before any trenches are opened on site.

Conclusions

Introduction

- 2.5.36 The detailed gradiometer survey has been successful in detecting anomalies of likely and possible archaeological interest within the Site, in addition to regions of increased magnetic response, numerous trends of uncertain origin and at least three modern services.

Discussion

- 2.5.37 The data shows few likely archaeological anomalies with only one small enclosure found at 4000 that might be of interest. No features were identified that can be clearly related to the cropmarks identified further south around the moated site at Coleshill Hall Farm. Pit-like responses of possible archaeological interest were also observed at 4001, 4002, 4003 and 4004; they are all located in the north-west of the Site in the vicinity of the River Cole.
- 2.5.38 This field has clearly been covered with a lot of strongly magnetised debris. This debris has magnetic values that are high enough to mask the weaker responses expected from archaeological features. This has reduced the area in which archaeological features are visible, especially in areas such as around 4009, 4012 and 4017. It may be that more archaeological features are present than were detected in the geophysical data presented in this report.
- 2.5.39 The relative dimensions of the modern services identified by the gradiometer survey are indicative of the strength of their magnetic response, which is dependent upon the materials used in their construction and the backfill of the service trenches. The physical dimensions of the services indicated may therefore differ from their magnetic extents in plan. It is assumed that the centreline of services is coincident with the centreline of their anomalies. It is difficult to estimate the depth of burial of the services through gradiometer survey.
- 2.5.40 It should be noted that small, weakly magnetised features may produce responses that are below the detection threshold of magnetometers. It may therefore be the case that more archaeological features may be encountered than have been identified through geophysical survey. Given how weak many of the features interpreted in this data are it seems very likely that more features may be present than were detected during the survey.

2.6 References

English Heritage, 2008. Geophysical Survey in Archaeological Field Evaluation. Research and Professional Service Guideline No. 1, 2nd Edition.

HS2 Environmental Statement, 2013. London-West Midlands Environmental Statement, Volume 5: Technical Appendices: CFA19: Coleshill Junction Baseline Report: Cultural Heritage. Report Reference: CH-001-019.

Ordnance Survey, 1884. OS County Series: Staffordshire 1:2500.

Ordnance Survey 1957. Sheet 2, Geological Map of Great Britain: England and Wales. Ordnance Survey: Chessington.

Ordnance Survey, 1977. Quaternary Map of the United Kingdom: South. Ordnance Survey. Southampton.

Soil Survey of England and Wales, 1983. Sheet 3, Soils of Midland and Western England. Ordnance Survey: Southampton.

Wessex Archaeology 2013. HS2 Community Forum Area 19 (Coleshill Junction): Hyperspectral and LiDAR Analysis Report Reference: 86252.01.

Wessex Archaeology, 2014. HS2: Geophysical Survey Written Scheme of Investigation: Warwickshire. Report Reference: 86257.01.

2.7 HER Records Consulted

HWA1889 - Farm Complex - field barn.

COL016 - Large irregular fields on floodplain of River Cole. Once part of Coleshill Hall grounds and Coleshill Medieval Deer Park.

COL016 - Planned Enclosure, large rectilinear fields marked on the OS 1st edition onwards. This area appears to have been part of the grounds associated with Coleshill Hall and part of Coleshill Medieval Deer Park.

HWA3464 - Farm Complex pre-1880s, historic farmstead.

COL014 - Moat at Coleshill Hall Farm, it is visible as an earthwork and is situated 200m north of Coleshill Hall Farm.

COL015/ - Site of Coleshill Deer Park.

COL017- Medieval cropmark enclosure.

COL033 - An enclosure of unknown date was visible as an earthwork. It was situated 500m west of Coleshill Bridge.

MWA8782/? - Coleshill Medieval Settlement.

MWA9299 - Roman finds from potato field, Coleshill.

MWA9300 - Medieval finds from Coleshill.

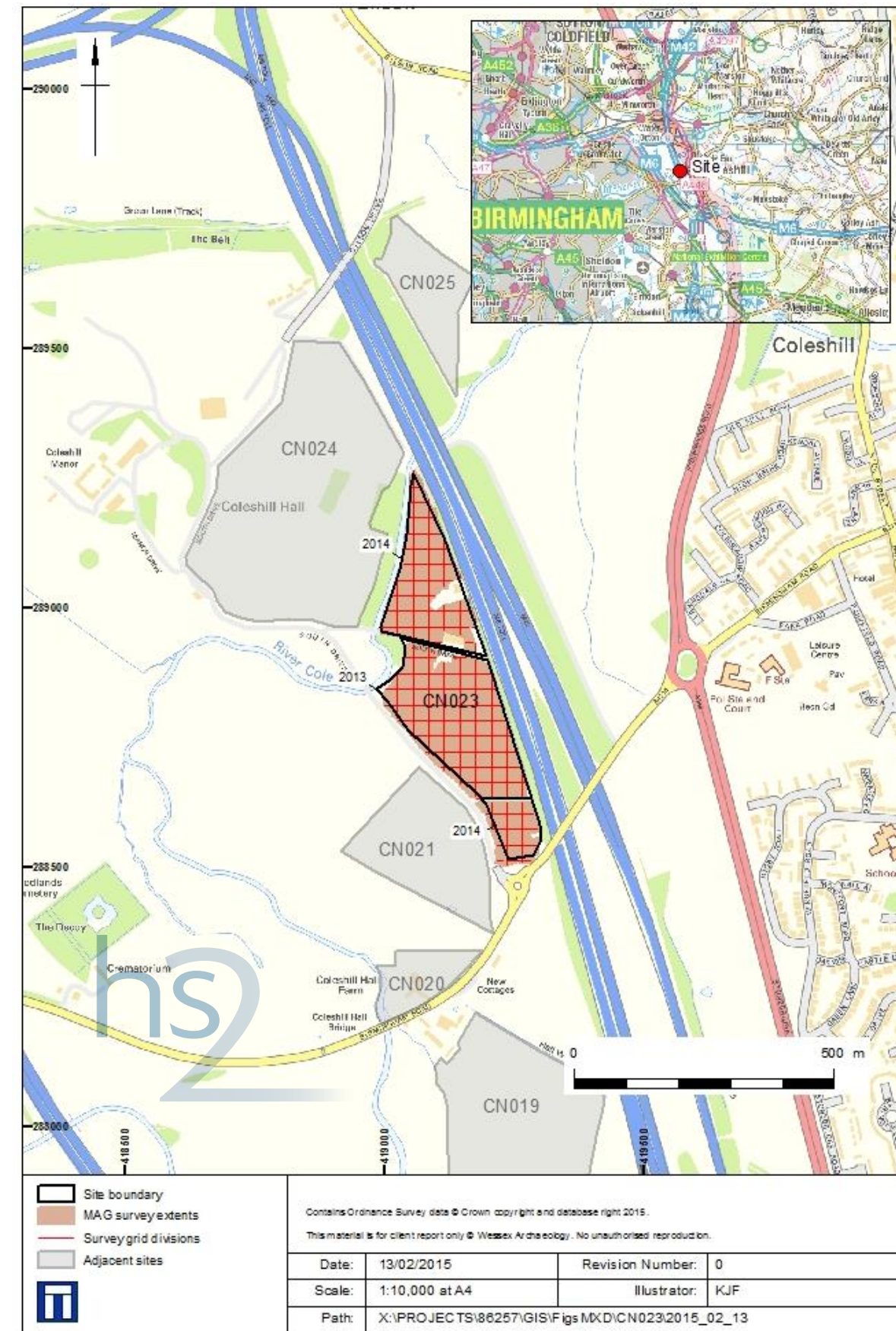
MWA9301 - Post-medieval finds from Coleshill.

MWA9304 - Imperial finds from potato field, Coleshill.

- MWA9305 - Modern finds from potato field, Coleshill.
- MWA9306 - Undated finds from potato field, Coleshill.
- MWA9811 - Find of Roman coin on the Water Orton/Coleshill boundary.
- MWA9812 - Find of a medieval coin in Water Orton.
- MWA9813 - Find of a post-medieval coin near Coleshill.

2.8 Figures

Figure 5: Site location



Site location

Figure 13

Figure 16: Greyscale (north)

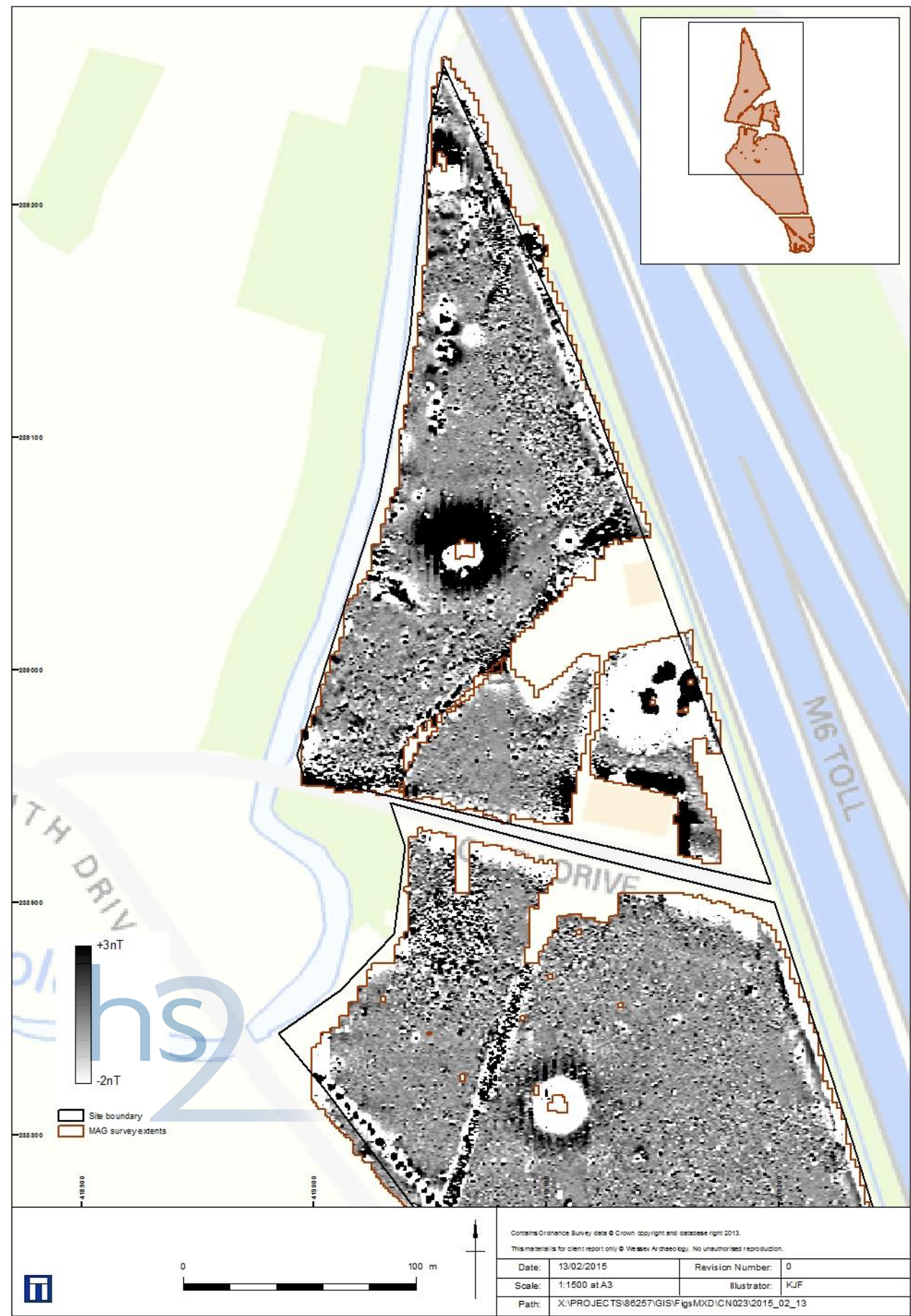


Figure 7: XY trace (north)

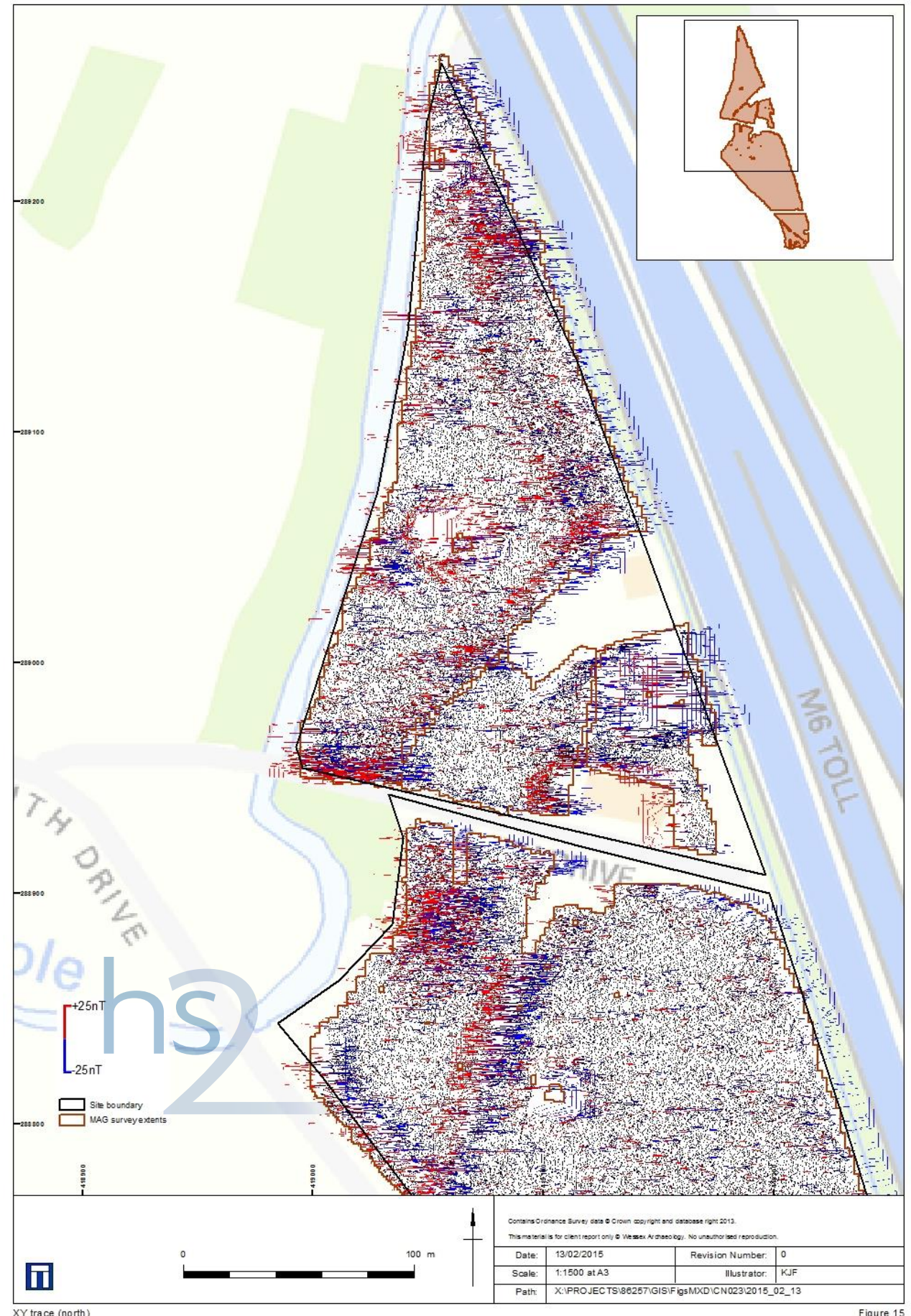


Figure 8: Interpretation (north)

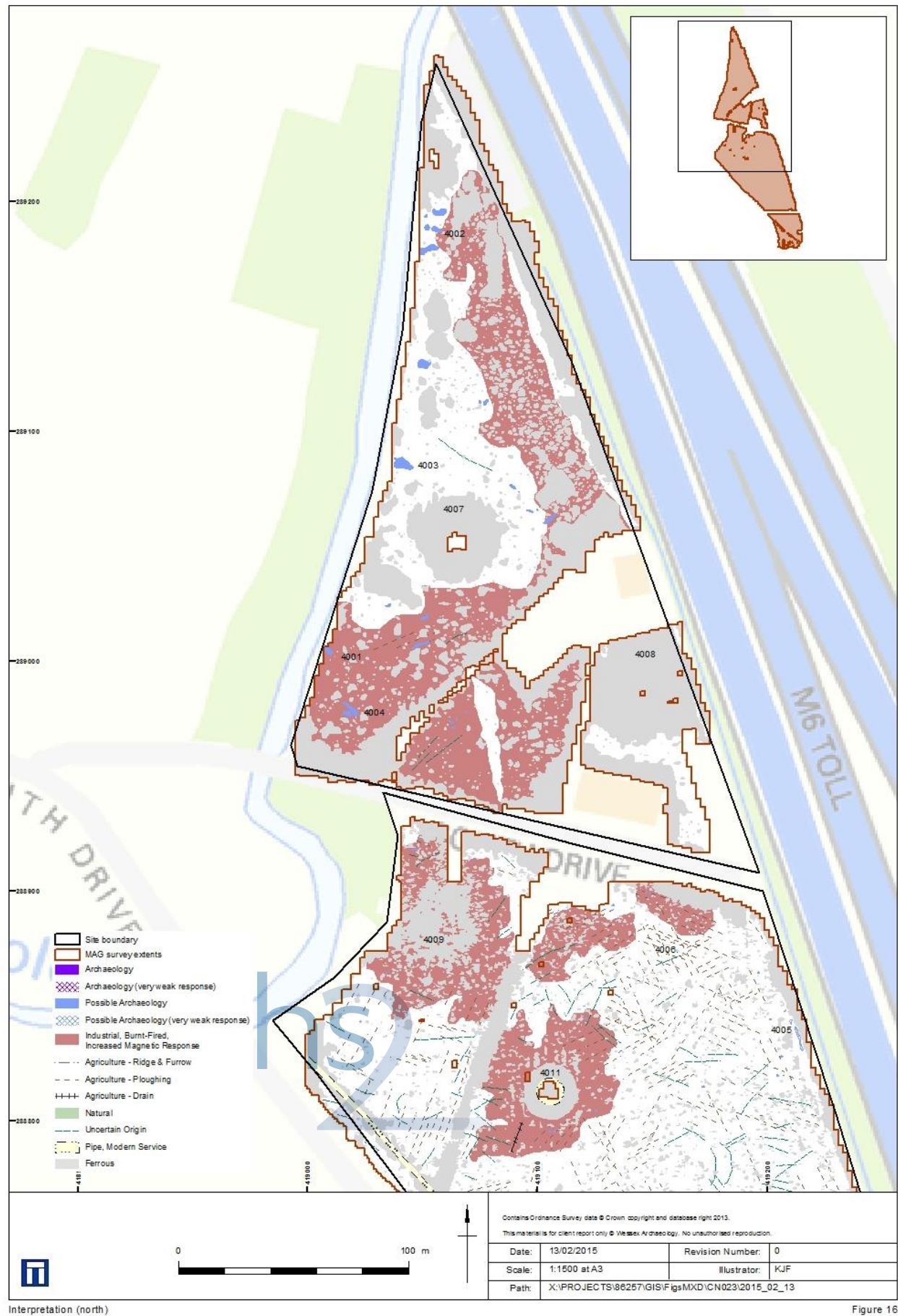


Figure 16

Figure 9: Greyscale plot (south)

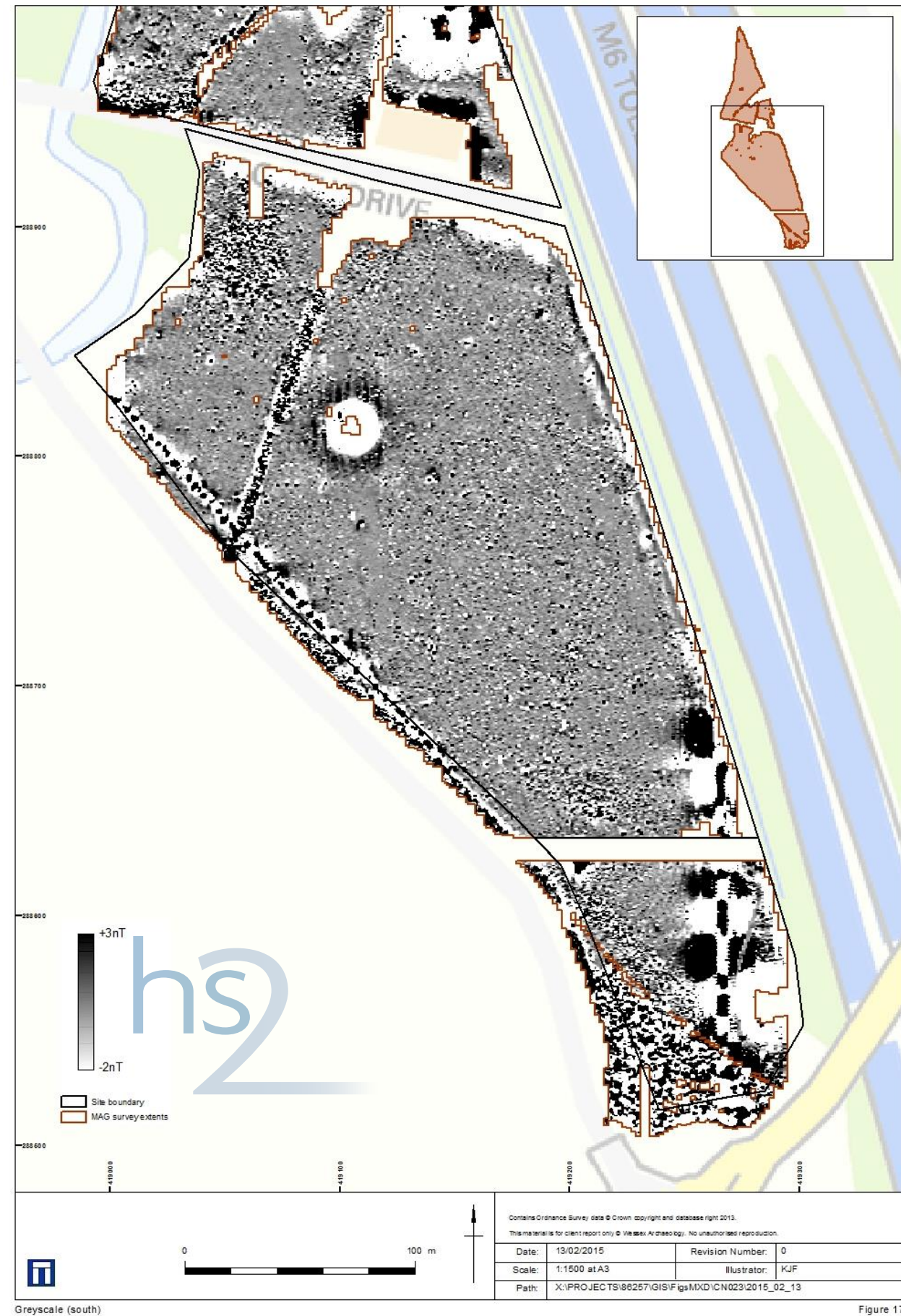


Figure 17

Figure 10: XY trace (south)

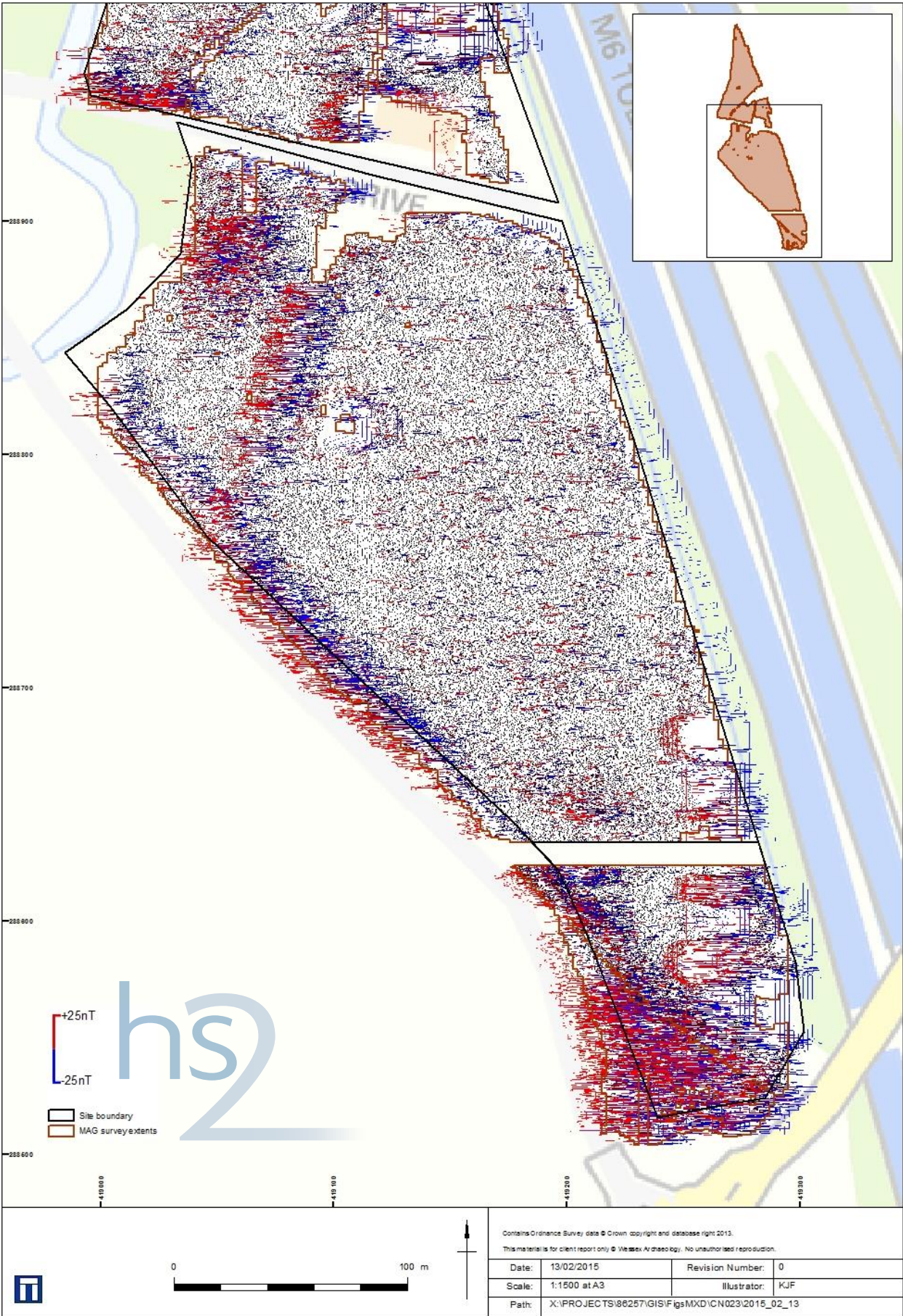


Figure 18

Figure 11: Interpretation (south)

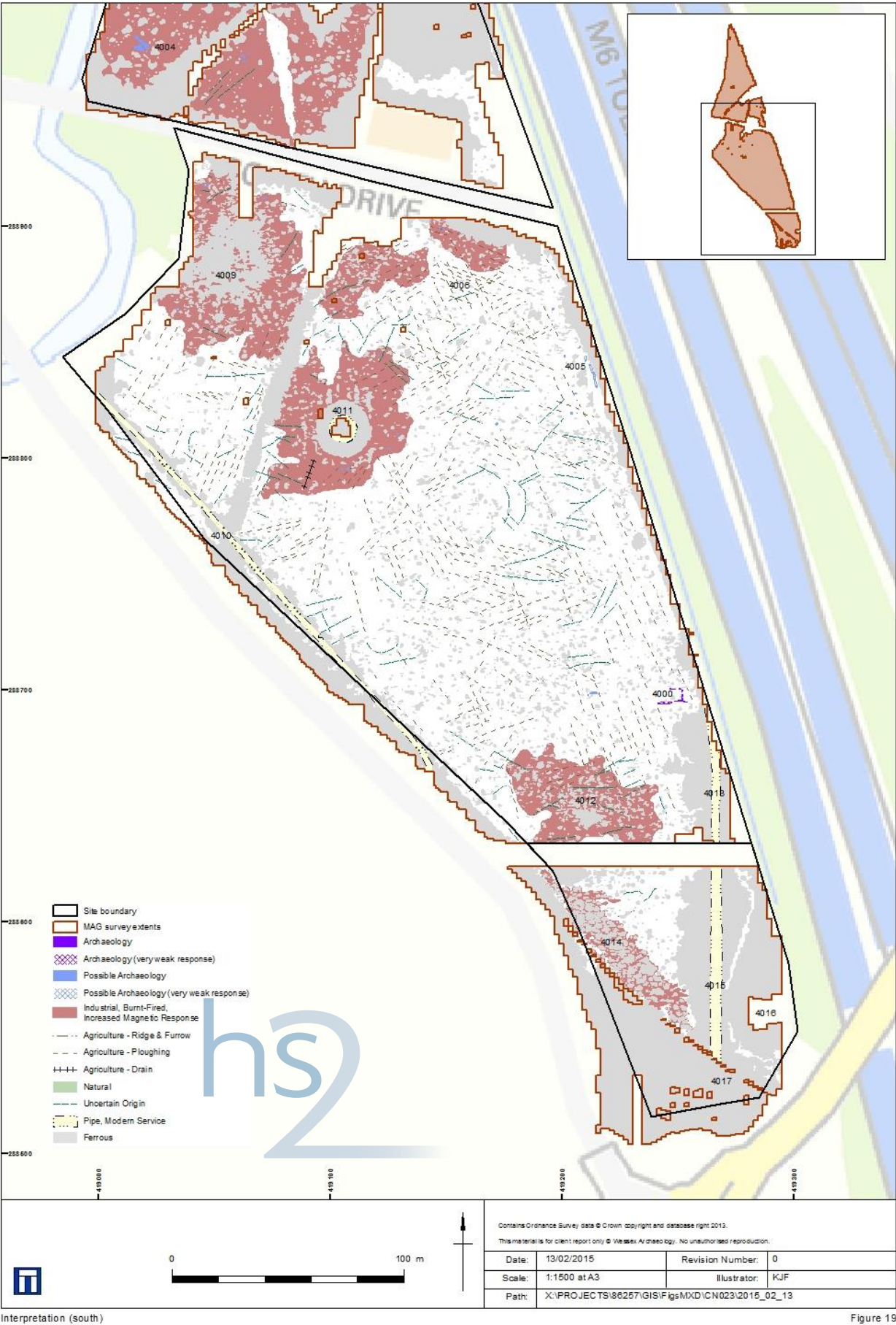


Figure 19

Annex 1: Survey Equipment and Data Processing

2.9 Annex 1: Survey Equipment and Data Processing**Survey Methods and Equipment**

- 2.9.1 The magnetic data for this project was acquired using a Bartington 601-2 dual magnetic gradiometer system. This instrument has two sensor assemblies fixed horizontally 1m apart allowing two traverses to be recorded simultaneously. Each sensor contains two fluxgate magnetometers arranged vertically with a 1m separation, and measures the difference between the vertical components of the total magnetic field within each sensor array. This arrangement of magnetometers suppresses any diurnal or low frequency effects.
- 2.9.2 The gradiometers have an effective resolution of 0.03nT over a ± 100 nT range, and measurements from each sensor are logged at intervals of 0.25m. All of the data are stored on an integrated data logger for subsequent post-processing and analysis.
- 2.9.3 Wessex Archaeology conducts detailed gradiometer surveys using an accurate 20m or 30m site grid, which is achieved using a Leica Viva RTK GNSS instrument and then extended using tapes. The Leica Viva system receives corrections from a network of reference stations operated by the Ordnance Survey and Leica Geosystems, allowing positions to be determined with a precision of 0.02m in real-time and therefore exceed the level of accuracy recommended by English Heritage (2008) for geophysical surveys.
- 2.9.4 The detailed surveys consist of 20m x 20m or 30m x 30m grids, and data are collected at 0.25m intervals along traverses spaced 1m apart. These strategies give 1600 or 3600 measurements per 20m or 30m grid respectively, and are the recommended methodologies for archaeological surveys of this type (EH 2008).
- 2.9.5 Data may be collected with a higher sample density where complex archaeological anomalies are encountered, to aid the detection and characterisation of small and ephemeral features. Data may be collected at up to 0.125m intervals along traverses spaced up to 0.25m apart, resulting in a maximum of 28800 readings per 30m grid, exceeding that recommended by English Heritage (2008) for characterisation surveys.

Post-Processing

- 2.9.6 The magnetic data collected during the detail survey are downloaded from the Bartington system for processing and analysis using both commercial and in-house software. This software allows for both the data and the images to be processed in order to enhance the results for analysis; however, it should be noted that minimal data processing is conducted so as not to distort the anomalies.
- 2.9.7 As the scanning data are not as closely distributed as with detailed survey, they are georeferenced using the GPS information and interpolated to highlight similar anomalies in adjacent transects. Directional trends may be removed before interpolation to produce more easily understood images.
- 2.9.8 Typical data and image processing steps may include:
- Destripe – Applying a zero mean traverse in order to remove differences caused by directional effects inherent in the magnetometer;

- Destagger – Shifting each traverse longitudinally by a number of readings. This corrects for operator errors and is used to enhance linear features;
- Despike – Filtering isolated data points that exceed the mean by a specified amount to reduce the appearance of dominant anomalous readings (generally only used for earth resistance data);
- Deslope - This function is used to remove a linear trend within a data set. It is most commonly used to remove grid edge discontinuities that can result from applying zero mean traverse to a data set; and
- Multiply - The multiply function multiplies the data by a negative or positive constant value. It has a variety of functions but its typical use is to normalise data that has been collected with sensors at different heights from the ground.

2.9.9 Typical displays of the data used during processing and analysis:

- XY Plot – Presents the data as a trace or graph line for each traverse. Each traverse is displaced down the image to produce a stacked profile effect. This type of image is useful as it shows the full range of individual anomalies; and
- Greyscale – Presents the data in plan view using a greyscale to indicate the relative strength of the signal at each measurement point. These plots can be produced in colour to highlight certain features but generally greyscale plots are used during analysis of the data.

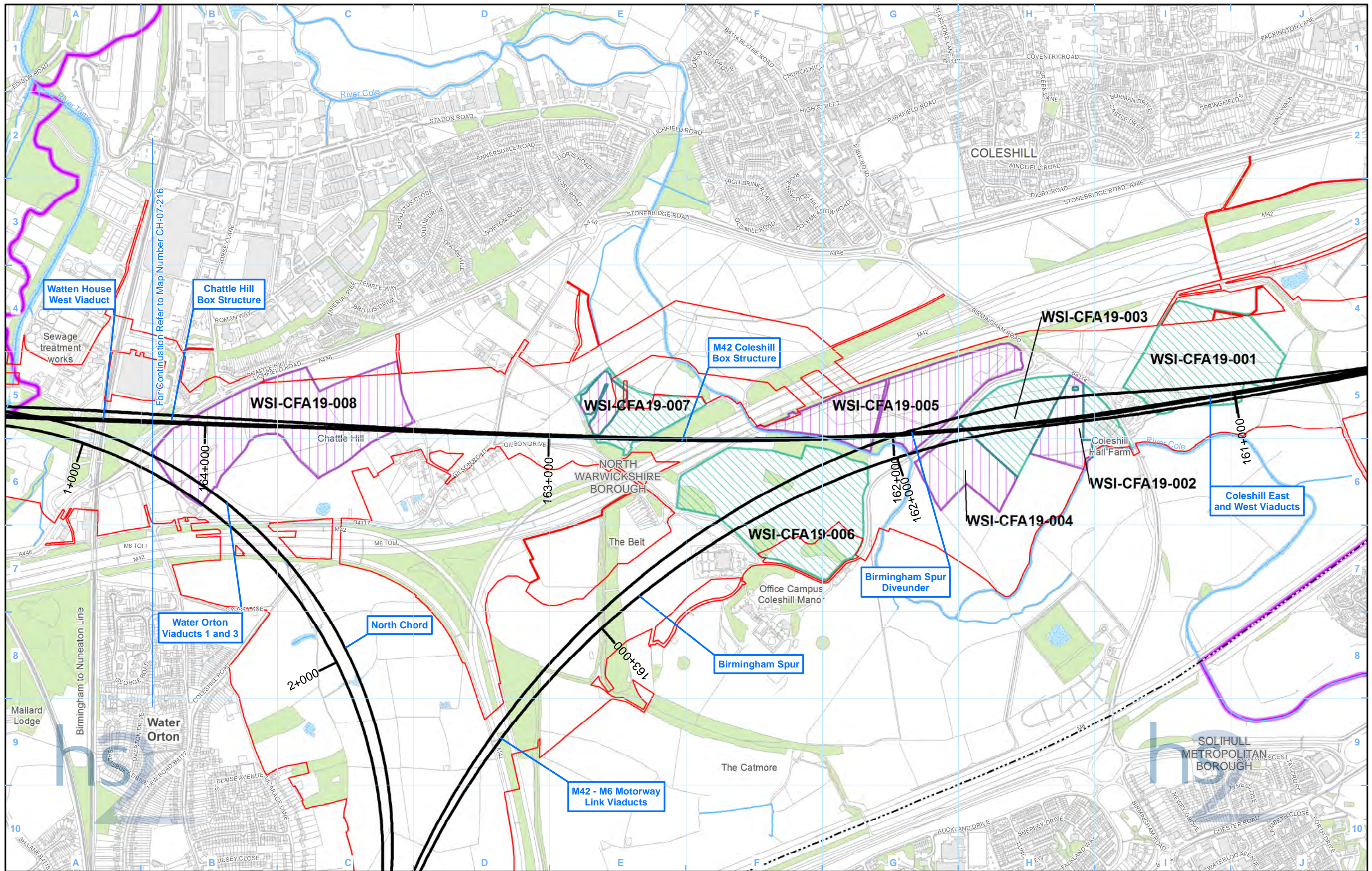
2.10 Annex 2: Geophysical Interpretation**Interpretation Categories**

- 2.10.1 The interpretation methodology used by Wessex Archaeology separates the anomalies into two main categories: archaeological and unidentified responses.
- 2.10.2 The archaeological category is used for features when the form, nature and pattern of the anomaly are indicative of archaeological material. Further sources of information such as aerial photographs may also have been incorporated in providing the final interpretation. This category is further sub-divided into three groups, implying a decreasing level of confidence:
- Archaeology - used when there is a clear geophysical response and anthropogenic pattern; and
 - Possible archaeology - used for features which give a response but which form no discernible pattern or trend.
- 2.10.3 The unidentified category is used for features when the form, nature and pattern of the anomaly are not sufficient to warrant a classification as an archaeological feature. This category is further sub-divided into:
- Industrial, Burnt-Fired, Increased magnetic response - used for areas dominated by bipolar and dipolar anomalies which may have some archaeological potential;
 - Uncertain Origin - used for low amplitude or indistinct linear anomalies;
 - Ferrous - used for responses caused by ferrous material. These anomalies are likely to

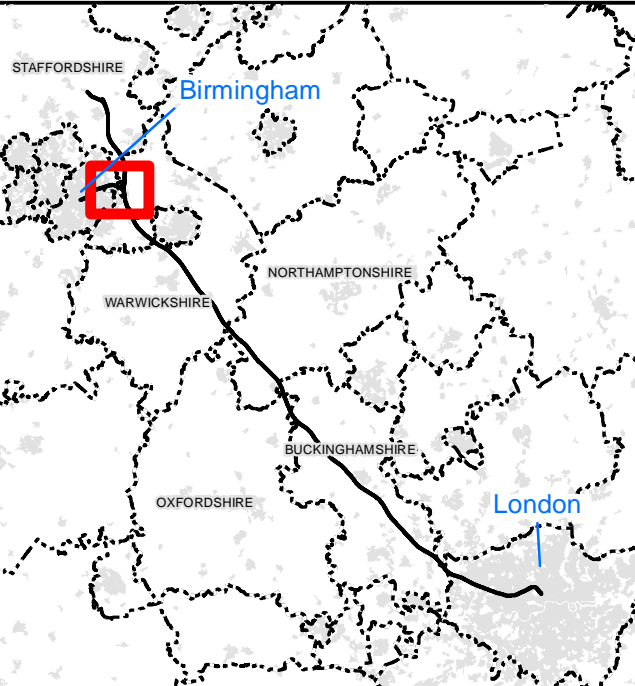
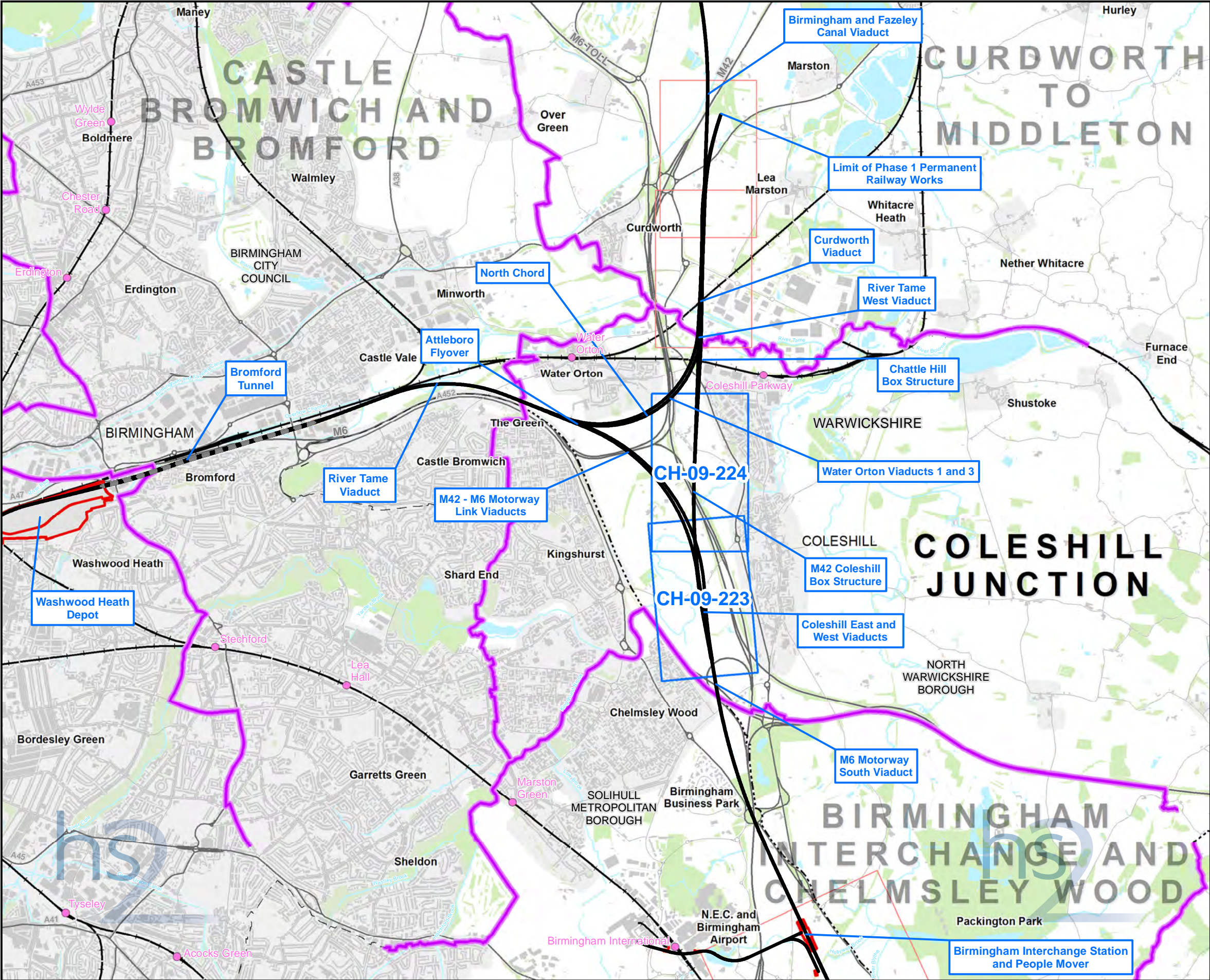
be of modern origin;

- Agricultural - used for linear trends that can be shown to relate to agricultural activity including ridge and furrow, drainage and ploughing scars; and
- Natural - used for spreads of anomalies that are considered to be geological or more discrete anomalies considered to be natural.

2.10.4 Finally, services such as water pipes are marked where they have been identified along with ceramic field drains.



Legend		Map Number CH-07-215		 HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way. Registered in England. Registration number 06791686. Registered office: One Canada Square, London, E14 5AB. © Crown copyright and database rights 2015. Ordnance Survey Licence Number 100049190. Scale at A3: 1:10,000 0 100 200 300 400 Metres Date: 08/06/15
Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community forum boundary County boundary District/Borough boundary		Map Name Archaeological Geophysical Survey - Location SES and AP2 ES Community Forum Area CFA19: Coleshill Junction		
Watercourse Water body Woodland Area identified for survey 2014 Geophysical and Fieldwalking surveys Geophysical surveys Areas surveyed in 2013 Fieldwalking surveys completed Geophysical surveys completed				



Map Series Information:

This map series shows magnetometer survey results within the land required for the construction of the Proposed Scheme

Note: Not all data layers in the legend are represented on every map.

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum with amendment

Map sheets not included in this community forum

Map sheets included in this community forum with amendment

Map sheets not included in this community forum

Map Number

CH-09-INDEX-CFA19

Map Name

Index Map of:
Archaeological Geophysical
Survey - Magnetometer Data Plot
SES and AP2 ES
Community Forum Area CFA19:
Coleshill Junction

hs2

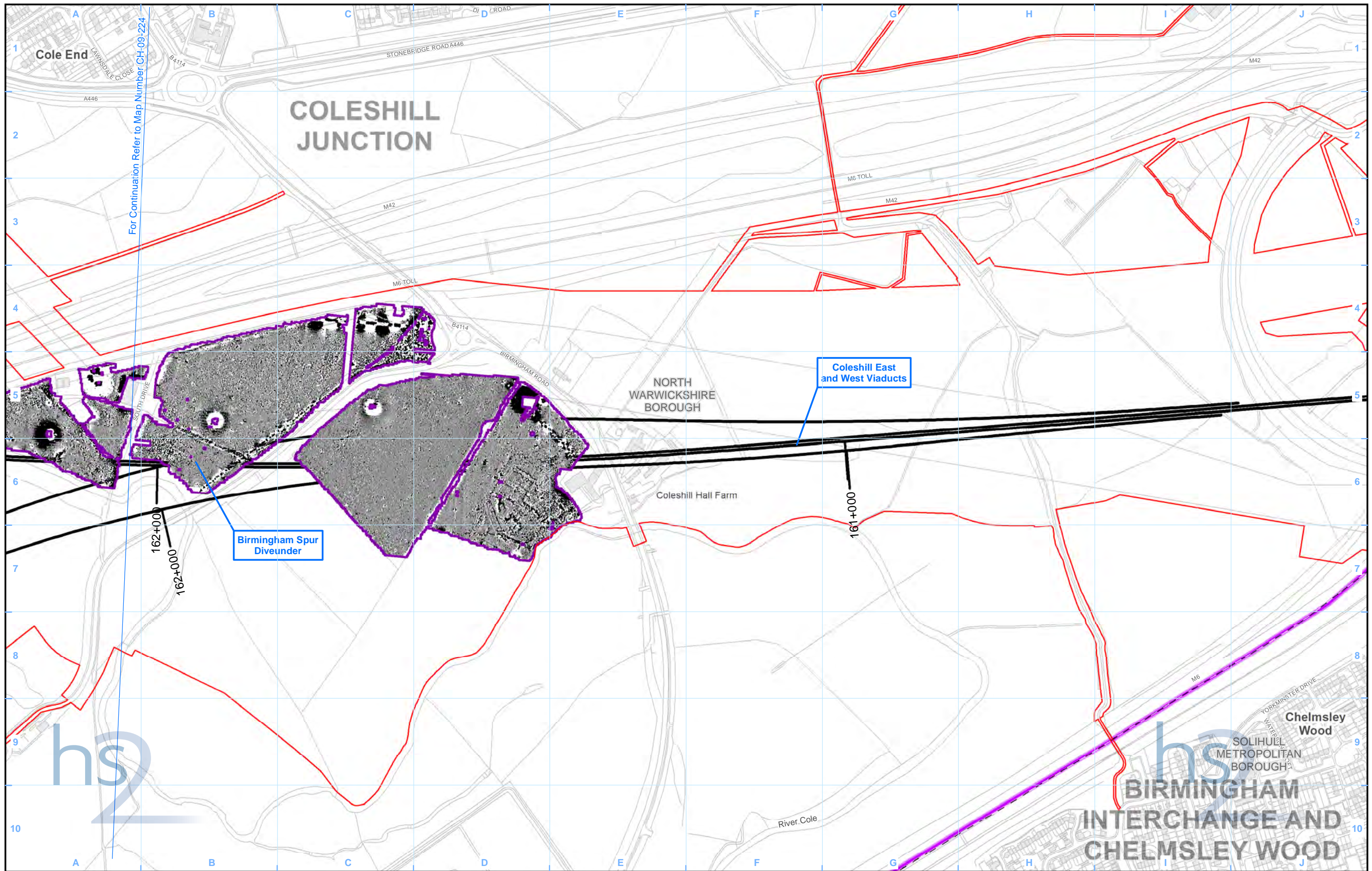
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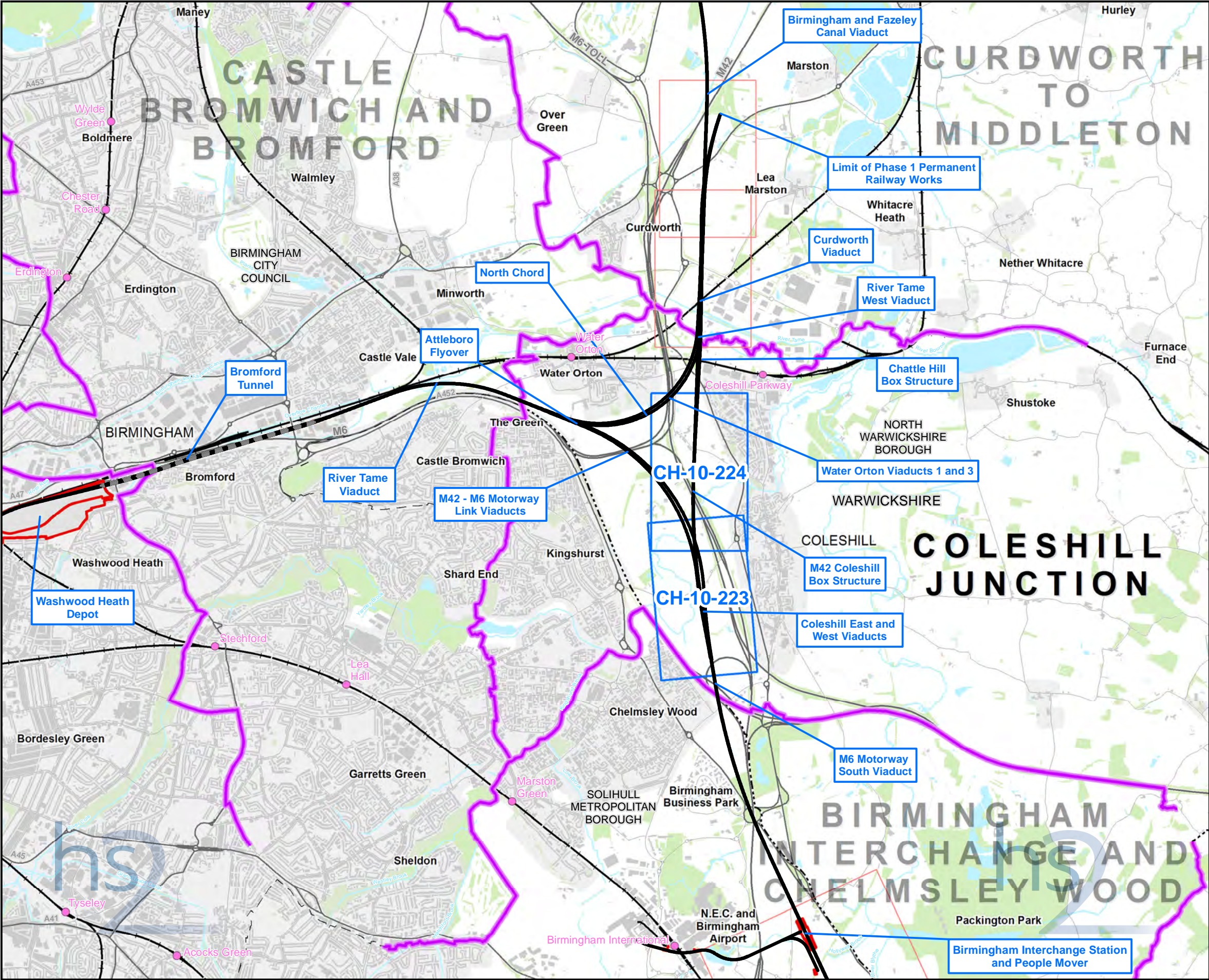
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Metres

Doc Number: C253-ATK-EV-MAP-030-001860-AP02-P01

Date: 10/06/15



Legend <ul style="list-style-type: none">Route in tunnelRoute on surfaceDepot, station, headhouse or portal buildingLand potentially required during constructionCommunity forum boundaryDistrict/Borough boundaryEdge of geophysical survey	Map Number CH-09-223	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: One Canada Square, London, E14 5AB.</p> <p>© Crown copyright and database rights 2015. Ordnance Survey Licence Number 100049190.</p> <p>Scale at A3: 1:5,000</p> <p>0 50 100 150 200 Metres</p> <p>Doc Number: C253-ATK-EV-MAP-030-001816-AP02-P01 Date: 08/06/15</p>
	Map Name Archaeological Geophysical Survey - Magnetometer Data Plot SES and AP2 ES	
	Community Forum Area CFA19: Colehill Junction	



Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary

- Map sheets included in this community forum with amendment
- Map sheets not included in this community forum

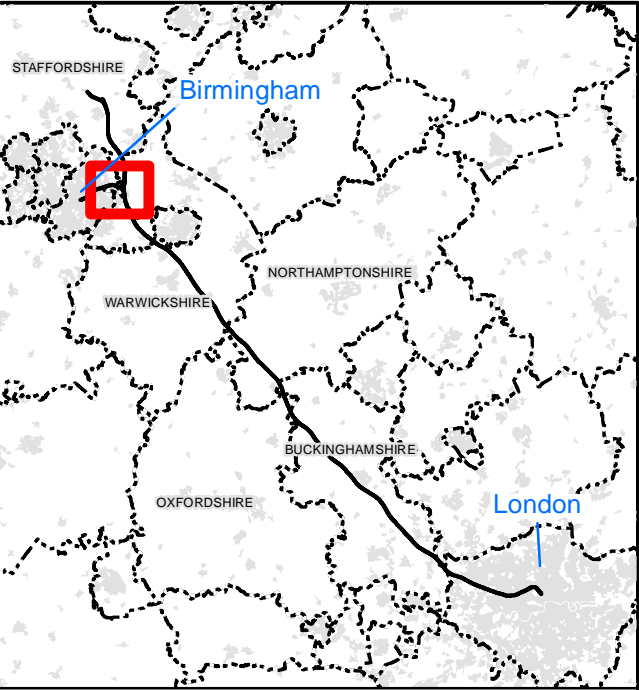
Map Number

CH-10-INDEX-CFA19

Map Name

Index Map of:
Archaeological Geophysical
Survey - Interpretation Plot
SES and AP2 ES

Community Forum Area CFA19:
Coleshill Junction



Map Series Information:

This map series shows interpretation of magnetometer survey results within the land required for the construction of the Proposed Scheme

Note: Not all data layers in the legend are represented on every map.

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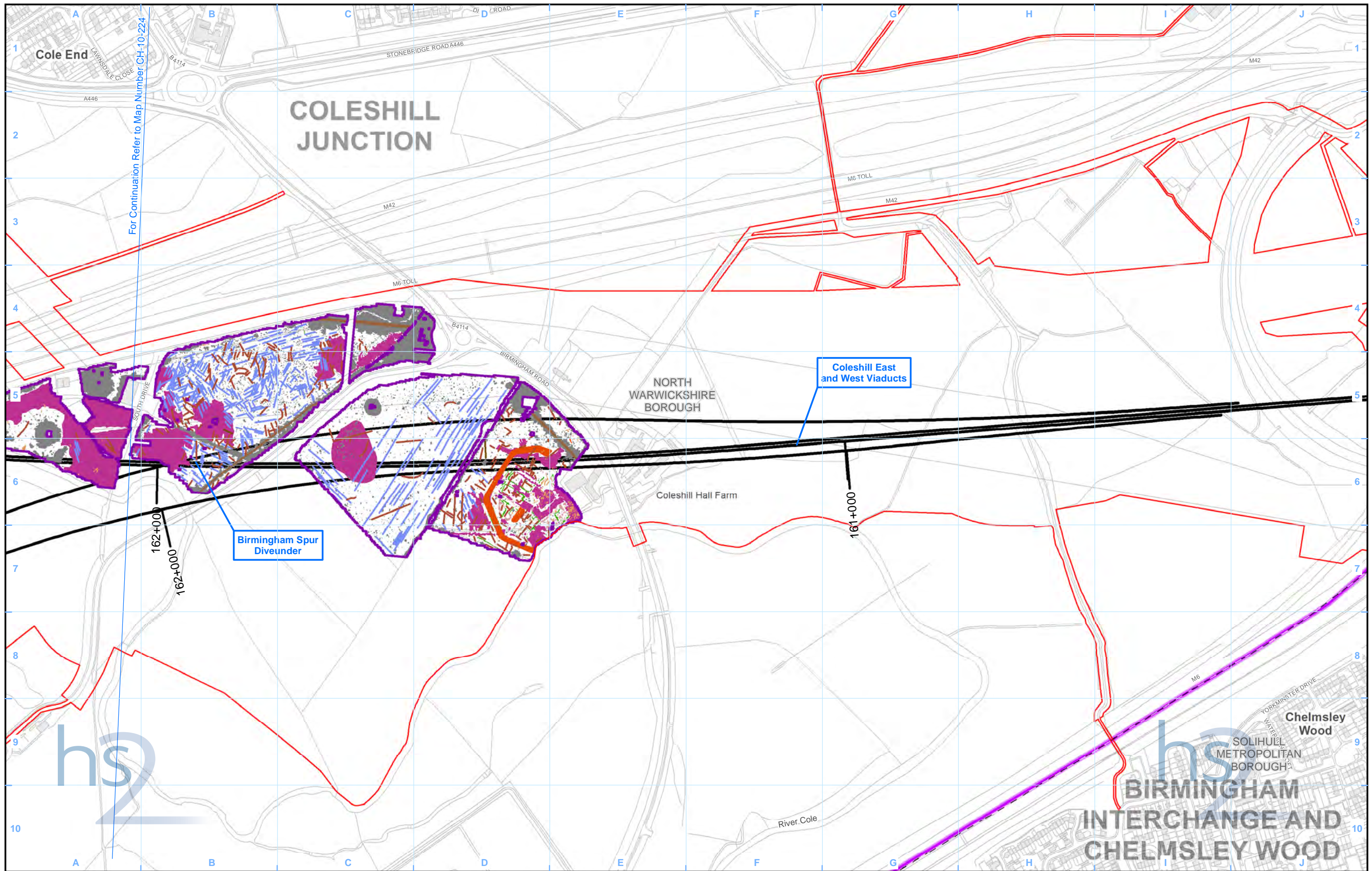
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Doc Number: C253-ATK-EV-MAP-030-001867-AP02-P01

Date: 10/06/15



Legend

Route in tunnel	Geophysical survey results	Uncertain origin	Old field boundary	Ridge and furrow
Route on surface	Possible archaeology (VWR)	Archaeology (discrete)	Increased magnetic response	Uncertain
Depot, station, headhouse or portal building	Drain	Archaeology (zone)	Industrial burnt fired	
Land potentially required during construction	Pipe	Archaeology (VWR)	Modern service	
Community forum boundary	Plough	Possible archaeology (VWR)	Natural	
District/Borough boundary	Ridge and furrow	Possible archaeology	Pipe, modern service	
Edge of geophysical survey	Trend	Ferrous	Plough	

Map Number: CH-10-223

Map Name: Archaeological Geophysical Survey - Interpretation Plot SES and AP2 ES

Community Forum Area CFA19: Colehill Junction

hs2

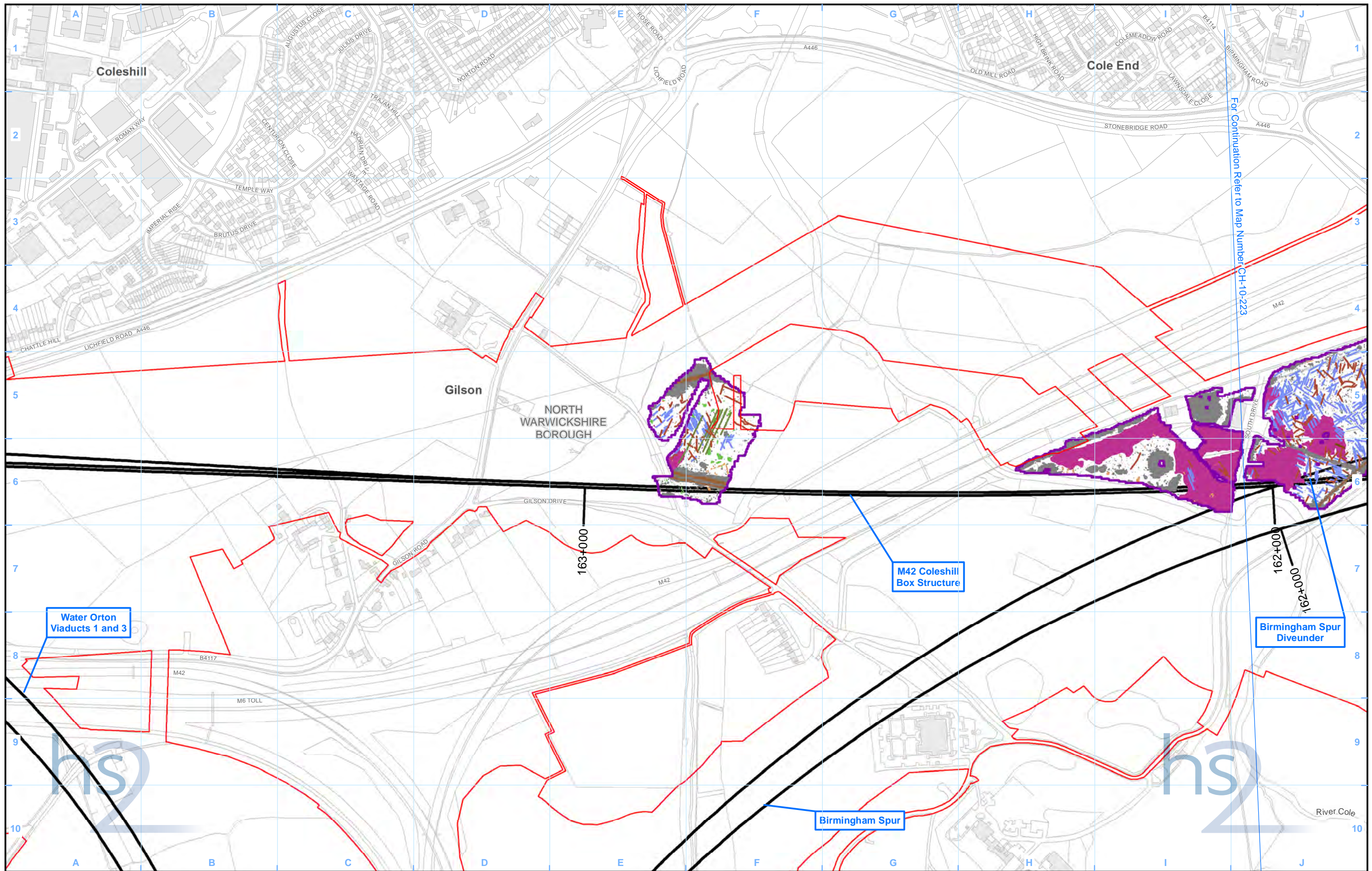
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Doc Number: C253-ATK-EV-MAP-030-001837-AP02-P01

Date: 08/06/15



Legend

Route in tunnel	Geophysical survey results	Uncertain origin	Old field boundary	Ridge and furrow
Route on surface	Possible archaeology (VWR)	Archaeology (discrete)	Increased magnetic response	Uncertain
Depot, station, headhouse or portal building	Drain	Archaeology (zone)	Industrial burnt fired	
Land potentially required during construction	Pipe	Archaeology (VWR)	Modern service	
Community forum boundary	Plough	Possible archaeology (VWR)	Natural	
District/Borough boundary	Ridge and furrow	Possible archaeology	Pipe, modern service	
Edge of geophysical survey	Trend	Ferrous	Plough	

Map Number
CH-10-224

Map Name
**Archaeological Geophysical Survey - Interpretation Plot
SES and AP2 ES**
Community Forum Area CFA19:
Coleshill Junction

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Scale at A3: 1:5,000

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Metres

Doc Number: C253-ATK-EV-MAP-030-001838-AP02-P01
Date: 08/06/15

