LOWER QUINTON TO KING'S COUGHTON

PROPOSED GAS PIPELINE

ARCHAEOLOGICAL
FIELD RECONNAISSANCE, FIELDWALKING AND
GEOPHYSICAL SURVEY

Prepared by

NETWORK ARCHAEOLOGY LTD

on behalf of

MONTGOMERY WATSON HARZA

for

Mc ALPINE - PPS PIPELINE SYSTEMS JV

for

TRANSCO

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SUMMARY

This report presents the results of archaeological field reconnaissance, fieldwalking and geophysical survey on the course of the proposed *c*. 18.5 km long, Transco natural gas pipeline between Lower Quinton and King's Coughton in Warwickshire.

The surveys corroborated fifteen sites previously recorded by the desk based assessment (Network 2002), and found an additional forty-six new sites on the course of the proposed pipeline. All the sites were considered to be locally important (grade D). In addition, thirty-six sites, already identified by the desk-based assessment but uncorroborated by the field surveys, are also discussed.

The D grade sites are mostly of agricultural origin and comprise: areas of raised magnetic susceptibility and magnetic anomalies; earthworks of ridge and furrow cultivation and field boundaries; soil marks indicating former ponds or natural hollows and stream courses; and low density artefact scatters mostly the result of manuring of arable fields.

Large areas of the route appear to be archaeologically quiet. This is unlikely to be a true representation of archaeological potential in these areas. Sites may not have been detected because they are finds poor, masked by alluvium/colluvium, masked by ridge and furrow cultivation, or in areas which were not surveyed.

Recommendations

Specific recommendations for further investigation are summarised as follows:

Recommendation	Plots
Avoidance	none
Evaluation	2, 28, 31/32, 36, 65, 74/75, 80, 82
Topographical survey	26, 39, 41, 49, 56, 59, 64, 69, 72-74, 76-78
Watching brief	all plots

1 INTRODUCTION

This report presents the combined results of archaeological field reconnaissance, fieldwalking and geophysical surveys along a proposed high-pressure gas pipeline to be built between Lower Quinton Above Ground Installation (AGI) and King's Coughton AGI in Warwickshire (figure 1).

Network Archaeology Ltd has been commissioned by Montgomery Watson Harza (MWH) on behalf of McAlpine PPS Pipeline Systems JV for Transco.

This study forms the third stage in what is expected to be a detailed investigative programme of archaeological research, investigation and mitigation (see table 2.1).

2 PROJECT BACKGROUND

2.1 Proposed scheme

Transco propose to construct a new pipeline for the transportation of natural gas, between the existing Above Ground Installations (AGIs) at Lower Quinton and Kings Coughton, in Warwickshire (figure 1). The proposed 1200mm (48") diameter pipeline will be approximately 18.5km long and will be designed for pressures up to 75 bar.

2.2 Reasons for building the pipeline

The proposed pipeline is intended to reinforce Transco's National Transmission System and Local Distribution Zone, primarily in response to increasing demand for gas by domestic and commercial users in the West Midlands.

2.3 Proposed construction techniques

The pipeline is to be built within a 42m wide working width (reduced to 15m at road crossings and to 25m at other hedgerows). Construction will involve four main phases of activity. The first phase, *Right Of Way Activities*, includes hedge removal, cleaning, fluming and temporary bridging of ditches, fencing the working width, topsoil stripping of access areas and the installation of pre-construction drainage**.** *Topsoil stripping* across the working width will then take place along the length of the pipeline. *Trench Excavation and Pipe Laying* to a depth of at least 1.2m will then follow. All roads, major rivers, major services, a dismantled railway and an access road will be crossed by non-open cut. Finally, *Reinstatement*, involving the replacement of topsoil and the installation of post-construction drainage, will take place.

2.4 Previous archaeological stages of work and route selection

A staged approach has been adopted to the archaeological management of this project, as laid out in table 2.1, and explained in greater detail in Appendix D.

The current route has been determined by the work to date, which includes:

- a feasibility study undertaken by Transco (2001); and

- an archaeological desk-based assessment undertaken by Network Archaeology Ltd (October 2002). This assessment collated known archaeological data within a kilometre wide corridor and identified sites of local, regional and national importance. Recommendations were made for the avoidance, where feasible, of national important sites, and for a suite of field surveys along the entire length of the proposed pipeline. The report formed the basis of the Cultural Heritage section of a non-mandatory Environmental Statement undertaken to meet the requirements of the *Public Gas Transporter Pipelines and Works (Assessment of Environmental Effects) Regulation*s.

Table 2.1 Staged approach to investigation and mitigation

Archaeological Stages of Investigation		Transco's phase of works
Stage 1	**feasibility study of route corridor option(s)** an appraisal of archaeological potential	**feasibility assessment**
Stage 2	**desk-based assessment of route corridor** a thorough synthesis of available archaeological information	**conceptual design**
Stage 3	**surveys of entire preferred pipeline route** field reconnaissance survey, field walking survey, geophysical survey, metal detector survey, auger survey, as appropriate	**detailed design**
Stage 4	**evaluation of targeted areas along preferred pipeline route** machine-excavated trenches, hand-dug test-pits, as appropriate	
Stage 5	**excavation** detailed excavation of those sites which it is not possible to avoid or desirable to preserve	
Stage 6	**watching brief** permanent presence monitoring of all ground disturbing activities	**construction**
Stage 7	**archive and publication** synthesis and dissemination of results, leading on from each of the stages outlined above	**post-construction**

2.5 Previous archaeological work in the vicinity of the proposed scheme

Archaeological investigations have taken place at ten different locations within the study corridor of the proposed Lower Quinton to Kings Coughton pipeline. The schemes are listed below and a brief summary of each can be found in the desk based assessment (Network 2002, section 2.5).

- Newbold Pacey to Honeybourne Gas Pipeline (NTS Number 2 Feeder) (GSB Prospection 2000)]
- NTS Number 14 Feeder
- NTS Number 23 Feeder
- LTS pipeline from King's Coughton to Wootton Wawen
- A46 Alcester to Stratford Proposed Road Improvement (WCC 1994)
- Warwickshire Project (RCHME)
- Kings Court, King's Coughton (Booth, P. and Parkinson, A. 1993)
- Alcock's Arbour, Haselor (*Trans. and Procs. of the Birmingham Archaeological Society*)
- St Mary The Virgin Church, Kinwarton (Meek, J. 1996)
- The old filling station, Long Marston (Dalton, J., OAU)

3 AIMS AND OBJECTIVES

The purpose of this assessment is to consider the cultural heritage implications of the proposed pipeline, to assist in the selection of an archaeologically least damaging route, and to provide a basis for further stages of investigation.

The specific objectives are to:

- identify and define the extent of archaeological remains lying within the working width of the proposed pipeline;
- provide a preliminary assessment of their significance;
- assess the overall impact of the proposed pipeline on the remains;
- assess the need for further evaluation and mitigation prior to and during construction; and
- make recommendations for further evaluation and mitigation, where necessary.

4 SURVEY PROCEDURES

4.1 Standards

This assessment has been conducted according to the Institute of Field Archaeologists' *Code of Conduct* (2000)

4.2 Establishment of the proposed pipeline centreline

The pipeline centre-line had been pegged out in the field by McAlpine PPS Pipeline Systems JV surveyors. Alterations to the route were made after the centre line had been surveyed in. Where this occurred, the fieldwalking team measured in the new centreline using a combination of tape measures from mapped landscape features, and Ordnance Survey co-ordinates measured from the 1:2500 strip maps and located with a GPS system to the nearest 5m.

4.3 Fieldwalking survey

Fieldwalking was carried out by a team of four archaeologists walking at 10m spacings within each arable field. Five transects were walked, centred on the centreline of the proposed pipeline. This gave a 40m wide survey area, and provided approximately 25% coverage of the ground within this area. Recovered artefacts were located with a GPS system, and given a unique numeric reference (1, 2, 3 *etc*.). Details of each field walked (including weather/light conditions, ground visibility, relief, walkers present) were recorded on pro-forma record sheets. These form part of the project archive.

4.4 Field reconnaissance survey

This consisted of a visual inspection of every field along the pipeline route, in order to record extant earthworks, significant soil or vegetative anomalies, the nature of land boundaries, present (and former) land use, visible geology, and general topographical variations. Observations were recorded on pro-forma record sheets.

4.5 Geophysical survey

This work was carried out using the two techniques of magnetometer and magnetic susceptibility surveying. The magnetometer survey was arranged as a 15m wide sample strip along the full length of the proposed route, centred on the centreline of the proposed pipeline. The area surveyed was equivalent to coverage of a sample area of about 36% of the proposed 42m wide working width. The susceptibility survey was based on readings taken at 12.5m intervals along three transects

The geophysical survey was positioned in each field by reference to Ordnance Survey co-ordinates measured from the 1:2500 strip maps, and located with a GPS system with sub-metre accuracy. Additional geophysical specification can be found in the technical geophysical survey report (Bartlett-Clark Consultancy 2002).

4.6 Reliability and potential limitations of surveys

The limitations of an archaeological impact assessment of the proposed pipeline include:

- the differential levels of "archaeological visibility" along the route. A field in ideal condition for field reconnaissance and geophysical survey may not be suitable for the recovery of finds.
- the lack of clarity surrounding the extent of some sites. This makes it difficult to provide a precise assessment of potential impact.
- the necessity of making subjective interpretations of the archaeological significance of field observations, finds scatters and geophysical anomalies. An absence of surface finds or magnetic anomalies could be a genuine absence, but equally could be the result of a well preserved site, or poorly responsive geology respectively.

The development of mitigation strategies should take these points into consideration.

4.7 Definition of a 'site'

The term 'site' is used throughout this report to refer to ancient monuments, buildings of architectural and historical importance, parks, gardens, designed landscapes, battlefields, wrecks, public spaces, historic landscapes, historic townscapes, findspots of artefacts and any other heritage asset.

4.8 Reference conventions

The information gathered from the field surveys is uniquely referenced throughout this report and on all the figures. Sites found during the course of the field surveys, which were not previously identified by the desk based assessment, are referred to as FSU sites, identified by a triple letter number. Known desk based sites, which have been corroborated by the field surveys, are referenced by their existing alphanumeric codes (Network 2002, section 4.9).

4.9 Gazetteer of archaeological sites

The sites are summarised as a Gazetteer of Archaeological Sites in Appendix A. The gazetteer is structured in alphanumeric order, as follows:

- DBA Desk Based Assessment site (e.g. DBA:AA)
- FSU Field Survey site (e.g. FSU:08)
- LS Listed Structure (e.g. LS 83634)
- MON English Heritage MONARCH database (e.g. MON 242075)
- SAM Scheduled Ancient Monument (e.g. SAM 31432)
- WSMR Warwickshire Sites and Monuments Record (e.g. WSMR 2156)

The gazetteer provides the source, cross-references, description, period and location of each site. The location is given as a 12 figure national grid reference to the centre of the point, area or linear, and is not therefore the point at which directly impacted sites are crossed by the proposed route. The gazetteer also gives a category of importance

(see 4.16), an assessment of impact (4.17), and an assessment of the significance of impact (4.18).

4.10 Summary field survey figures

The archaeological sites listed in the gazetteer (see 4.9) are summarised on three A3 figures (2 - 4). Each plot is coloured according to the importance of the archaeological site it contains (see 4.16). Where a field contains sites of different levels of importance the field is coloured according to the most important site.

4.11 Field survey site figures

The archaeological sites listed in the gazetteer are presented on seven A3 constraint figures (5 - 11). Each site is represented by a star, shaded area or dashed line, depending on the type of data held. The symbols and corresponding labels are coloured according to the importance of the site (see 4.16).

4.12 Finds distribution figures

The finds retrieved by fieldwalking are presented on thirteen A3 figures (12 - 24). Each find is represented by a symbol indicating the category of material. Each symbol is coloured according to the date of the find.

4.13 Geophysical survey figures

Interpretive magnetometer and magnetic susceptibility survey plots are presented on twenty-one A3 figures (25 - 45). The magnetometer survey data is presented in greyscale and trace plots on twelve A3 figures (46 - 57).

4.14 Accuracy of displayed data

Site data may have been originally captured at a different scale to that which it is now displayed. This should be borne in mind when interpreting the exact location of constraint points and polygonal boundaries. Table 4.1 below presents estimated accuracy levels based upon visual comparison with plots.

Table 4.1 Summary of accuracy levels for displayed data

Source	Source type	Source scale	Positional accuracy in relation to current OS mapping	Accuracy in relation to position on the ground
DBA	OS map	1:10,000 1:10,560	1mm	±10m
DBA	OS map	1:2,500	1mm	±2.5m
DBA	AP vertical	1:5,000 - 1:10,000	1-5mm	±5 - 50m
DBA	AP oblique	1:1,000 - 1:2,500	1-5mm	±5 - 50m
DBA	Tithe/enclosure map	1:5,000 - 1:10,000	1-5mm	±5 - 50m
FSU	reconnaissance survey	-	-	±5m

FSU	fieldwalking survey	-	-	±5m
FSU	geophysical survey	-	-	±1m
LS	annotated OS map	1:2,500	1mm	±2.5m
MON	digital points	-	?	?
SAM	annotated OS map	1:10,000	1mm	±10m
SAM	annotated OS map	1:2,500	1mm	±2.5m
WSMR	digital vector points, polygons and lines	-	?	?

4.15 Impact identification process

This approach looked at each individual site in its wider heritage landscape, and took account of identity and place, and past and present perceptions of value. A three stage process was adopted:

- Stage 1: assessment of importance (see 4.16)
- Stage 2: assessment of impact (of the proposed scheme) (see 4.17)
- Stage 3: assessment of significance of impact (see 4.18)

4.16 Importance

The sites listed in the gazetteer (see 4.9) have been rated, according to their perceived importance, into one of four categories, A to D, as shown in table 4.2.
Each site has been assessed (where possible) on the following characteristics:

- physical form
- survival (i.e. level of completeness)
- condition (i.e. current stability and management)
- complexity (i.e. diversity of elements and relationships)
- setting
- period

The grade awarded to each site considered the geographical scale at which the site matters (i.e. local, regional and national policies, commitments and objectives); representational value, diversity and potential; and existing local, regional and national designations (e.g. Scheduled Monuments).

Table 4.2 Site category definitions

Grade	Description	Examples	Investigation and mitigation
A	Legally protected site	Scheduled Ancient Monuments, listed buildings, conservation areas	To be avoided
B	Nationally significant site, currently not legally protected	major settlements (e.g. villas, deserted medieval villages), burial grounds, standing historic buildings	Avoidance desirable, otherwise further investigation and mitigation recommended
C	Regionally significant site	some settlements, finds scatters, Roman roads, sites of historic buildings	Further investigation and mitigation recommended
D	Locally significant site	field systems, ridge and furrow, trackways, wells	Avoidance and investigation not envisaged

The process of importance categorisation has been adopted as a tool to determining appropriate mitigation. The categories should not be taken as a statement of fact regarding the importance or value of a particular site. The use of examples of types of site is simply a guideline. The inclusion of a site in a particular category often involved a degree of subjective judgement based upon the current level of information. Categories are not fixed and finite, and there is every possibility that the classification of a site at this stage may change as a result of findings made during later stages of investigation.

4.17 Impact

The potential impact of the proposed scheme upon a site has been assessed at three levels:

- nature of impact (see table 4.3)
- type of impact (see table 4.4)
- magnitude of impact (see table 4.5)

Table 4.3 Nature of impact definitions

positive	beneficial contribution to the protection or enhancement of the heritage
negative	detrimental to the protection of the heritage
neutral	where positive and negative impacts are considered to balance out
none	no or negligible impact due to distance from proposed scheme, and/or construction technique removes the impact

Table 4.4 Impact type definitions

Direct (D)	Physical damage including compaction and/or partial or total removal Severance, in particular linear sites
Indirect (I)	Visual intrusion, affecting the aesthetic setting of a site Disturbances caused by vibration, dewatering, changes in hydrology *etc.*
Uncertain	Where the physical extent or survival of a site is uncertain or where the visual impact of the proposed scheme on the setting of sites or landscape features has not been determined

Table 4.5 Magnitude of impact definitions

Severe (sev):	entire or almost entire destruction of the site
Major (maj):	a high ratio of damage or destruction to the site
Minor (min):	a low ratio of damage to the site
Indeterminate (Ind):	where the data level does not allow any secure calculation (e.g. because the quality and extent of the site is unknown, or because construction techniques have not yet been decided)

Factors affecting the assessed magnitude of impact include:

- the proportion of the site affected;
- the integrity of the site; impacts may be reduced if there is pre-existing damage or disturbance of a site, and
- the nature, potential and heritage value of a site

4.18 Significance of impact

The 'significance' of the impact has been assessed as the product of the importance of each site and the impact of the proposed scheme upon each site. The levels of significance of impact are defined in table 4.6. Significance of impact definitions are only provided for negative impacts, as these were the only type on this particular scheme. The significance of impact rating takes no account of potential mitigation.

Table 4.6 Significance of impact definitions

Stage 1	Stage 2			Stage 3
Importance of site	**Nature of impact**	**Type of impact**	**Magnitude of impact**	**Significance of impact**
A	negative	direct	severe	high
			major	high
			minor	high
			indeterminate	high
		indirect	severe	high
			major	high
			minor	medium
			indeterminate	high or medium
		uncertain	indeterminate	unknown
B	negative	direct	severe	high
			major	high
			minor	medium
			indeterminate	high or medium
		indirect	severe	high
			major	medium
			minor	medium
			indeterminate	high or medium
		uncertain	indeterminate	unknown
C	negative	direct	severe	medium
			major	medium
			minor	low
			indeterminate	low or medium
		indirect	severe	medium
			major	low
			minor	low
			indeterminate	low or medium
		uncertain	indeterminate	unknown
D	negative	direct	severe	medium
			major	low
			minor	low
			indeterminate	low or medium
		indirect	severe	medium
			major	low
			minor	low
			indeterminate	low or medium
		uncertain	indeterminate	unknown

5 DESCRIPTION OF PROPOSED PIPELINE ROUTE

5.1 Location and topography

The proposed route lies in Warwickshire about five kilometres to the west of Stratford-upon-Avon, just north of the Gloucestershire border (figure 1). The pipeline runs for approximately 18.4 km from Lower Quinton AGI (418150 248200) to Kings Coughton AGI (408300 259750).

Leaving Lower Quinton AGI (50m above Ordnance Datum, OD), the proposed pipeline heads west, skirting the north east edge of Long Marston village. The pipeline runs north west to Bunkers Hill (50m OD) and turns north, passing under the River Avon, approximately 1.5 km west of Welford on Avon. After crossing the B439 (50m OD) the proposed pipeline rises to over 100m OD to the east of Temple Grafton village. Sweeping to the north west, the route drops again as it runs around the east and north sides of Alcester, crossing the Rivers Alne and Arrow (50m OD). The final stretch runs west to Akeman Street (the A435), terminating between Coughton and King's Coughton at King's Coughton AGI (55m OD) (figures 2 - 9).

5.2 Solid geology

The Mercia Mudstone Group forms the principle element of the solid geology of the study corridor, and accounts for four main geologies (Keuper Marl, Arden Sandstone, Tea Green Marl, and Rhaetic Formation). Lower Lias also outcrops within the study corridor (BGS 1974, 1979, 1989; Landlook 2002).

- ***Keuper Marl***: reddish mudstones with occasional impersistent bands of shale and sandstone ('skerries'); occur between Lower Quinton AGI and the A46.
- ***Ardem Sandstone***: pale green grey, fine-grained sandstones ('skerries') interbedded with thin bands of mudstone; used locally as a building stone; forms slightly raised ground where it outcrops to the west of Haselor.
- ***Tea Green Marl*** (Triassic): pale green grey and white mudstone with occasional sandstone bands ('skerries'); outcrops over the steep north facing slopes above the A46 (T).
- ***Rhaetic Formation***: grey calcareous mudstone over dark grey to black mudstone and shale with thinly bedded sandstone bands ('skerries'); outcrops over the steep north facing slopes above the A46 (T).
- ***Lower Lias***: grey and olive mudstones and clay shales with impersistent bands of limestones; the limestones are exploited locally as a building material; present along the route between Lower Quinton and Temple Grafton.

5.3 Drift geology

The solid geology is overlain by three drift deposits which are all post-glacial in nature (BGS 1974, 1989; Landlook 2002i).

- ***Head:*** structureless mixture of clay, silt, sand and stones, derived from local material; found along the entire route with the deepest deposits being found at the foot of concave slopes.

- ***Alluvium***: red and grey silty clay, often lying over gravels; located in the valley bottoms of the Rivers Avon, Alne, Arrow and their associated tributaries. Boreholes taken 80m either side of the three major rivers recorded alluvium to a depth of 3-4m to the west and east of the River Arrow, to a depth of 1m west and 4m east of the River Alne and 4m west and 1.5m east of the River Avon (Exploration Associates 2002)
- ***River Terrace Deposits:*** loamy deposits with variable quantities of stone, loosely consolidated; flanking the Rivers Avon, Alne and Arrow.

5.4 Soils and land use

The proposed route crosses nine soil types, which are described below in relation to the geology over which they are derived (SSEW 1983).

- ***Arrow:*** deep permeable coarse loamy soils affected by groundwater; suitable for cereals, and some vegetables; developed over river terrace drift on either side of the River Arrow.
- ***Bishampton:*** deep fine loamy soils (over clayey soils) with slowly permeable subsoils and slight seasonal waterlogging; suitable for cereals, short term grassland and some vegetables; developed over river terrace drift.
- ***Compton:*** stoneless red clay soils affected by groundwater on flat land at risk of flooding; suitable for permanent grassland with stock rearing and dairying; developed over alluvium associated with the River Arrow.
- ***Denchworth soils***: slowly permeable, seasonally waterlogged fine loamy over clayey soils; suitable for winter cereals and short term grassland in drier lowlands and dairying on permanent grassland in moist districts; developed over Rhaetic Formation at the southern end of the proposed pipeline route.
- ***Evesham 2:*** slowly permeable calcareous clayey soils and fine loamy over clayey soils, seasonally waterlogged; suitable for cereals and grassland; developed over Lower Lias to the north and south of the River Avon.
- ***Fladbury 1:*** stoneless clayey (calcaerous) soils affected by groundwater on flat land at risk of flooding; suitable for permanent grassland with stock rearing and dairying; developed over alluvium associated with the River Avon.
- ***Salop:*** slowly permeable seasonally waterlogged red fine loamy over clayey soils; suitable for dairying on short term grassland and some cereals; developed over river terraces and associated red till flanking the River Alne.
- ***Whimple 3:*** red fine loamy or fine silty over clayey soils with permeable subsoils and slight seasonal waterlogging; suitable for dairying and stock rearing, cereals and short term grassland; developed over Keuper Marl to the north west of the River Alne.
- ***Worcestor:*** slowly permeable non-calcareous and calcareous red clay soils; suitable for permanent and short term grassland and some cereals; developed over Keuper Marl to the west of Haselor and east of Alcester.

6 RESULTS

6.1 Field reconnaissance survey

This corroborated known earthworks and vegetation or soil marks in seventeen fields identified by the desk based assessment (Network 2002), and found unknown sites in a further fifteen. They include: ridge and furrow; former ponds and quarry pits; a semi dry stream meander; former field boundaries and drains; incoherent patches of nettles and thistles indicating ground disturbance near a dismantled railway; and a possible spring (see appendix A).

6.2 Fieldwalking survey

Eighty-five fields were crossed by the proposed pipeline route. Thirty-eight fields were suitable for artefact retrieval, and the remainder were arable, pasture or set-aside, where ground visibility was considerably reduced, in most cases almost to nil.

One thousand, five hundred and fourteen artefacts were retrieved from the fields which were suitable for finds retrieval. The specialist reports can be found in Appendix E, and a summary of the data is provided in table 6.1.

Table 6.1: summary quantification of artefacts

Material	Count
pottery	142
ceramic building material	656
fired clay	68
clay tobacco pipe	3
glass	10
flint	2
stone	2
iron	2
copper alloy	1
animal bone	1

The most significant finds came from plots 32, 44, 61 and 65:

- plot 32: the only two flints (551 and 556) found by fieldwalking
- plot 44: two limestone setts (023) probably originating from a road, track or yard surface dating to somewhere between the 16th and 20th century.
- plot 61: a large collection of amorphous fired clay fragments of uncertain origin and date.
- plot 65: a large, unweathered fired clay fragment with wattle impressions (618) from a wattle and daub structure of pre-medieval date, and another large collection of amorphous fired clay fragments of uncertain origin and date.

Only the finds in plot 61 and 65 are felt to be indicative of *in-situ* archaeological activity (see appendix A).

The densities of finds were disconcertingly low. Even manuring of agricultural land normally introduces much larger amounts of pottery, slag and ceramic building material. The lack of findings must therefore be viewed with some suspicion. Perhaps medieval ridge and furrow is having a blanketing effect upon earlier archaeological remains. If so, there is surprisingly little material of these periods.

6.3 Geophysical survey

Almost the entire length of the *c*.18.4 km route was subject to geophysical survey, apart from plots 15, 25, 39 and 45, which were unsuitable for survey. The survey corroborated known sites in eight fields identified by the desk based assessment (Network 2002), and found unknown sites in a further twenty-nine (see appendix A). A moderate to high degree of confidence was given to the interpretation of thirteen groups of anomalies, including ridge and furrow, a few weak, pit-like inclusions, and an incoherent area, perhaps indicating levelling near some ponds. A low to moderate degree of confidence was given to the archaeological significance of nineteen groups of anomalies, and a low level of confidence was placed on the archaeological significance of a further five groups of anomalies.

6.4 Coincidence of sites found by fieldwalking, field reconnaissance and geophysical survey

Fieldwalking, field reconnaissance and geophysical survey are complementary prospecting techniques, the combined results of which can be crucial in interpreting the character of any site.

Survey findings correlated in five fields: plots 7, 14, 16, 65 and 83. Plot 65, in particular, provided correlating evidence between all three survey techniques (see 7.6).

6.5 Areas with little or no apparent archaeological potential

Parts of the proposed pipeline route cross areas with few or no known archaeological remains. The possible reasons for this may include:

- low levels of 'archaeological visibility' along the route, due to the masking effects of alluvium, colluvium or medieval ridge and furrow;
- finds poor sites;
- unresponsive soils or geology which hamper the detection of sites by geophysical survey; or
- a genuine absence of archaeological remains at certain points along the pipeline route.

7 ASSESSMENT OF IMPACTS

7.1 Impacts of the proposed scheme

The following construction activities will have direct and indirect impacts on known and potential archaeological remains:

- *Pre-construction drainage*
- *Fencing*
- *Topsoil stripping*
- *Subsoil benching*
- *Soil storage*
- *Movement of heavy machinery*
- *Excavation of the pipe trench (and potential dewatering)*
- *Working width reinstatement (e.g. subsoil ripping)*
- *Post-construction drainage*

7.2 Site-specific impacts

Sixty-one sites have been identified within the proposed pipeline's working width. The known sites have been graded A - D (see 4.8), and the level of impact assessed for each site (see 4.9). This information is summarised below in tables 7.1 and 7.2

Table 7.1 Summary of impacts of the scheme by grade

Grade	Description	Sites within working width	Uncertain impacts	Indirect impacts	Direct impacts
A	Legally protected site	0	0	0	0
B	Nationally significant site, currently not legally protected	0	0	0	0
C	Regionally significant site	0	0	0	0
D	Locally significant site	61	0	0	61
TOTALS		**61**	**0**	**0**	**61**

Table 7.2 Summary of significance of impacts

Significance of impact	Count
None	0
Unknown	0
Low	35
Low or medium	26
Medium	0
High	0
Total	**61**

The following sections (7.3 - 7.6) deal in category order with sites that are affected by the proposed pipeline:

7.3 Category A Sites

No legally protected sites were located within the working width (table 7.1).

7.4 Category B Sites

No nationally important sites (not legally protected) were located within the working width (table 7.1).

7.5 Category C Sites

No regionally important sites were located within the working width (table 7.1).

7.6 Category D Sites

Sixty-one category D sites were located within the working width of fifty-three plots, all of which will be directly affected by the proposed pipeline (tables 7.1 and 7.2). The sites are discussed below in plot order and summarised in appendix A:

Plot 1 (FSU:001)
A former north north-west to south south-east oriented field boundary, observed on an aerial photograph during the desk based assessment (Network 2002), was marked by the line of four oak trees noted during the field reconnaissance survey.
Impacts: Direct, minor; a relatively small proportion of this linear feature will be affected by the proposed pipeline.
Significance of impact: low

Plot 3 (FSU:017 and FSU:018)
Two groups of isolated magnetic anomalies, possible natural silted hollows were detected near the River Arrow. There was a low level of confidence regarding their archaeological significance.
Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 7 (FSU:002 and FSU:019)
A former south west to north east oriented field boundary (FSU:002) was marked by the line of three oak trees noted during the field reconnaissance survey. The geophysical survey also picked up an alignment of disturbed readings (FSU:019), which could be a possible boundary or track.
Impacts: Direct, minor; a relatively small proportion of these linear features will be affected by the proposed pipeline.
Significance of impact: low

Plot 8 (FSU:041)
Geophysical survey revealed ridge and furrow running north north-west to south south-east. Slightly raised susceptibility readings were also recorded, but confidence in their archaeological significance is considered low.
Impacts: Direct, minor; a relatively small proportion of the ridge and furrow will be affected by the proposed pipeline.
Significance of impact: low

Plot 9 (FSU:020)
An isolated pit-like feature detected by the geophysical survey, could be archaeologically significant.
Impacts: Direct, indeterminate; the proposed pipeline crosses the pit-like feature, but as its full character is unknown, it is not possible to determine the level of impact.
Significance of impact: low or medium

Plot 11 (DBA:BR and FSU:003)
Earthworks of a former east to west oriented field boundary (FSU:003) and a dew pond or former quarry (DBA:BR). The pond was marked on an estate map of 1756 and the boundary on an inclosure map of 1760, both sites being recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, indeterminate; the proposed pipeline passes between the former field boundary, and the pond/quarry, and at this stage it is not possible to determine whether both or either will be impacted upon.
Significance of impact: low or medium

Plot 14 (FSU:004, FSU:021 and FSU:022)
Patches of nettles indicating sub-surface disturbance (FSU:004) were recorded by the field reconnaissance survey in the vicinity of the dismantled, Alcester and Bearley Branch Railway (DBA:BA), which once ran along the south side of this field. Dispersed magnetic noise (FSU:021 and FSU:022) indicated the presence of buried slag and/or rubble in the same general vicinity and further north into the field. The level of confidence in the archaeological significance of the findings was very low.
Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies and nettle patches is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 15 (FSU:005)
Patches of nettles indicating soil disturbance were recorded by the field reconnaissance survey in the vicinity of a dismantled railway, which once ran alongside the field.
Impacts: Direct, indeterminate; the areas of disturbance will be crossed by the proposed pipeline, but as their full character and archaeological significance are unknown, the level of impact cannot be determined.
Significance of impact: low or medium

Plot 16 (FSU:006 and FSU:042)
An earthwork of a former north north-west to south south-east oriented field boundary was marked by low bank (FSU:006). A very localised magnetic susceptibility anomaly was detected to the north of the bank adjacent to the road (FSU:042). Some

dispersed weak magnetic readings were detected in the vicinity of the bank (FSU:042). The archaeological significance of these readings was considered low.
Impacts: Direct, minor; a relatively small proportion of the bank will be affected by the proposed pipeline. The significance of the geophysical readings is less clear and therefore the impact upon them is undetermined.
Significance of impact: low

Plot 17 (FSU:007 and FSU:043)
A semi-dry hollow (FSU:007) may represent a former river meander adjacent to the River Alne. Closer to the river were some isolated magnetic anomalies (FSU:043), which are thought to be natural silted hollows. There was a low level of confidence regarding their archaeological significance.
Impacts: Direct, minor; a relatively small cross section will be affected by the proposed pipeline
Significance of impact: low

Plot 20 (FSU:044)
Geophysical survey revealed ridge and furrow running approximately north to south.
Impacts: Direct, minor; a relatively small proportion of the ridge and furrow will be affected by the proposed pipeline.
Significance of impact: low

Plot 26 (DBA:FZ)
Earthworks of ridge and furrow observed during the reconnaissance survey. The earthworks were oriented in the same direction as the proposed pipeline in this area (NNW-SSE) and measured approximately 8m wide by 0.3m high. They lay immediately adjacent to and east of some WSW-ENE oriented ridge and furrow with a pronounced headland. The earthworks appear to correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, major; the proposed pipeline crosses the centre of the NNW-SSE oriented area of ridge and furrow.
Significance of impact: low

Plot 28 (FSU:023)
A low to moderate degree of confidence was placed in the interpretation of a weak, possibly linear feature and some small anomalies, which were detected by the geophysical survey.
Impacts: Direct, indeterminate; the proposed pipeline will cross these anomalies, but as their true character and significance is unknown, the impact of the proposed pipeline has not been determined.
Significance of impact: low or medium

Plots 29 and 31 (DBA:FZ and DBA:FY)
Parallel linear disturbances recorded by the geophysical survey were interpreted as possible field drains. The readings appear to correlate with possible drains recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, minor; a relatively small proportion of these linear features will be affected by the proposed pipeline.
Significance of impact: low

Plot 32 (DBA:FX and FSU:008)
An earthwork (FSU:008) recorded by the reconnaissance survey appeared to be a former natural spring, but could have been a pond or quarry. The site lies close to a Roman road which follows the plot's northern boundary. Parallel linear disturbances, running approximately north to south, recorded by the geophysical survey at the south end of the field were interpreted as ridge and furrow. They correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002, DBA FX).
Impacts: Direct, indeterminate; the earthwork will be affected by the proposed pipeline, but as its full character is unknown, the level and significance of the impact is unknown. A small proportion of the ridge and furrow will be impacted.
Significance of impact: low or medium

Plot 33 (DBA:FX)
Two sets of parallel linear disturbances recorded by the geophysical survey were interpreted as ridge and furrow. The set at the north west end of the field run approximately east to west, whilst the set at the south east end of the field runs approximately north to south. They correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, minor; a relatively small proportion of these linear features will be affected by the proposed pipeline.
Significance of impact: low

Plot 36 (DBA:FP and FSU:025)
Parallel linear disturbances, in the middle of the field, recorded by geophysical survey were interpreted as ridge and furrow. They correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002 - DBA:FP). Weak magnetic disturbances (FSU:025) to the south of the ridge and furrow may perhaps be archaeologically significant.
Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 37 (FSU:026)
Magnetic noise recorded by the geophysical survey was located close to the west boundary of this plot and not far from a former building (DBA:CA) recorded by the Archaeological Desk Based Assessment (Network 2002, p36). There is no reason, however, to attribute archaeological significance to the readings.
Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 38 (DBA:FP)
Parallel linear disturbances, oriented north to south, recorded by the geophysical survey were interpreted as ridge and furrow. They correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, minor; a relatively small proportion of these linear features will be affected by the proposed pipeline.
Significance of impact: low

Plot 39 (DBA:FL)
Ridge & furrow earthworks, measuring about 10m wide, 0.4m high, and oriented north to south, were recorded by both the field reconnaissance and geophysical surveys
Impacts: Direct, minor; a small proportion of the earthworks will be affected by the proposed pipeline, which crosses the north east corner of the plot.
Significance of impact: low

Plot 41 (DBA:FL)
Two groups of ridge & furrow earthworks belonging to a medieval or post medieval arable field system were recorded by the reconnaissance survey in this plot. The larger component was oriented east to west whilst the smaller was oriented north to south. The ridges measured about 0.3-0.4m high and 8-10m wide. The ridge and furrow at the north end of this field appears to have been detected by the geophysical survey.
Impacts: Direct, major; a substantial proportion of these well preserved earthworks will be affected by the proposed pipeline.
Significance of impact: low

Plots 44-45
High magnetic susceptibility recorded within these fields appears to be the result of topography and is not considered to be archaeologically significant.

Plot 49 (FSU:009 and FSU:010)
The field reconnaissance and geophysical surveys detected ridge & furrow earthworks and magnetic anomalies. Two or three slighted ridges (FSU:010), oriented east to west, were noted on the south side of plot 49. It was thought that these ridges might not be agricultural ridge and furrow, but related to a railway, now dismantled, which ran along the southern side of the plot. However, the geophysical survey seemed to confirm that the ridges had resulted from medieval or post medieval cultivation. Although poor ground visibility in plot 49, prevented field walking, a concentration of clinker (FSU:009) was noted along the southern boundary. Clinker was associated with the use of poor quality coal, used in early farm steam-driven equipment and steam engines. These slags were often reused as hardcore for road metalling or scattered across fields to improve drainage. The scatter is therefore not considered to be of archaeological importance.
Impacts: Direct, minor; although crossed by the proposed pipeline, the ridges are rather degraded, and the impact is therefore considered to be minor.
Significance of impact: low

Plot 51 (FSU:027)
Isolated pits were detected by geophysical survey in this plot, but there is only a low degree of confidence in their archaeological significance.
Impacts: Direct, indeterminate; the pits will be crossed by the proposed pipeline, but as their full character and archaeological significance are unknown, the level of impact cannot be determined.
Significance of impact: low or medium

Plot 52 (DBA:FE)
The geophysical survey identified the remains of ridge and furrow, and perhaps field drains, which were no longer visible as earthworks. The ridge and furrow includes several components oriented north to south and east to west. They correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, minor; although crossed by the route, the ridge and furrow has already been virtually destroyed, and the impact of the proposed pipeline is therefore low.
Significance of impact: low

Plot 55 (FSU:028)
Some pits or hollows were recorded by the geophysical survey. There is only a low degree of confidence in their archaeological significance.
Impacts: Direct, indeterminate; the pits/hollows will be crossed by the proposed pipeline, but as their full character and archaeological significance are unknown, the level of impact cannot be determined.
Significance of impact: low or medium

Plot 56 (DBA:GA)
Ridge & furrow earthworks oriented east north-east to west south-west, and measuring about 5m wide by 0.5m high were recorded by the field reconnaissance survey. They correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, minor; only a small proportion of the ridge and furrow will be affected by the proposed pipeline.
Significance of impact: low

Plot 57 (FSU:029 and FSU:030)
Two pit-like anomalies in an area of high susceptibility (FSU:029) and a magnetically disturbed area (FSU:030) were recorded by geophysical survey at the south end of the plot. There is only a low degree of confidence in their archaeological significance.
Impacts: Direct, indeterminate; the pit and disturbed area will be crossed by the proposed pipeline, but as their full character and archaeological significance are unknown, the level of impact cannot be determined.
Significance of impact: low or medium

Plot 59 (DBA:EZ)
Field reconnaissance survey found three groups of ridge & furrow earthworks belonging to a medieval or post medieval arable field system in plot 59. One small area was oriented north to south, and the two other areas were oriented east to west. The ridges were about 8m wide and 0.2m high. Two low headlands (0.10m high)

were also visible. The earthworks correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, minor; the proposed pipeline will cross both headlands, the north to south oriented ridge and furrow, and the northwest corner of the larger east to west oriented ridge and furrow. The impact of the proposed pipeline is lessened by the fact that the earthworks are already somewhat degraded.
Significance of impact: low

Plot 61 (FSU:039)
A large collection of amorphous fired clay fragments of uncertain origin and date were recovered by fieldwalking, on the line of the proposed working width. The significance of these findings is felt to be low.
Impacts: Direct, minor; the findings are directly crossed by the proposed pipeline, but as their true character, significance and extent is unknown, the impact of the proposed pipeline has not been determined.
Significance of impact: low or medium

Plot 64 (DBA:EX and FSU:031)
Ploughed down ridge & furrow earthworks were recorded by the field reconnaissance survey at the north east end of the field. The earthworks were oriented north east to south west, and were about 10m wide by 0.15m high. They correlate with ridge and furrow recorded by the Archaeological Desk Based Assessment (Network 2002 - DBA:EX). Geophysical survey detected the ridge and furrow (DBA:EX) at the south end of the field. It also found a linear disturbance (FSU:031), thought to be a possible former hedge line, in the middle of the field.
Impacts: Direct, minor; the proposed pipeline will cross the earthworks, but as they are already so degraded the impact is felt to be minor.
Significance of impact: low

Plot 65 (DBA:EX, FSU:011, FSU:012, FSU:013 and FSU:032)
A concentration of brick/baked clay (FSU:013), including one piece with wattle impressions, coincided with a reddened soil mark on the line of the proposed working width. The evidence suggests that fragments of a wattle and daub structure have recently been brought to the surface by ploughing. The date of this postulated structure is uncertain. A small quantity of medieval pottery found nearby is thought to result from manuring activities, whilst two Romano-British sherds found elsewhere in the field are more likely to be the result of settlement. In addition, a low concentration of blast furnace slag (used for improving soil drainage) was recovered from the rest of the plot, but its significance is uncertain.

The postulated building may have had a domestic, industrial or agricultural function. The geophysical survey found scattered, weak disturbances in conjunction with high susceptibility readings in this plot (FSU:032). A moderate to low degree of confidence was given to their interpretation as archaeologically significant. Earthworks of two former ponds or quarries (FSU:011 and FSU:012) were also noted. Geophysical survey also detected ridge and furrow, which had been recorded by the Archaeological Desk Based Assessment (Network 2002 - DBA:EX).
Impacts: Direct, indeterminate; the findings are directly crossed by the proposed pipeline, but as their true character, significance and extent is unknown, the impact of the proposed pipeline has not been determined.

Significance of impact: low or medium

Plot 66 (FSU:014)
A north east to south west oriented former field boundary ditch, recorded by the field reconnaissance survey, and also indicated by magnetic readings, correlated with a boundary marked on the OS map of 1884 (Network 2002).
Impacts: Direct, minor; a relatively small proportion of this linear feature will be affected by the proposed pipeline.
Significance of impact: low

Plot 67 - 68 (DBA:EX and FSU:015)
The geophysical survey identified the remains of ridge and furrow, oriented north east to south west, which were no longer visible as earthworks, and had been recorded by the Archaeological Desk Based Assessment (Network 2002 - DBA:EX). A soil mark of a former field boundary (FSU:015), oriented north east to south west was recorded by the field reconnaissance survey.
Impacts: Direct, minor; although crossed by the route, the ridge and furrow has already been virtually destroyed; a relatively small proportion of the linear feature will be affected by the proposed pipeline.
Significance of impact: low

Plot 69 (DBA:EX)
North to south oriented ridge and furrow earth works adjoining a smaller area of east to west oriented ridge and furrow were recorded during the field reconnaissance survey. The ridges were well defined and were approximately 8m wide and 0.5m high.
Impacts: Direct, major; the proposed pipeline affects quite a large proportion of the north to south oriented ridge and furrow, as it crosses it at an angle.
Significance of impact: low

Plot 71 (FSU:033)
The geophysical survey identified the remains of ridge and furrow, oriented approximately north to south, which were no longer visible as earthworks and magnetic susceptibility readings were high across this field. The archaeological significance of these readings was considered low.
Impacts: Direct, minor; although crossed by the route, the ridge and furrow has already been virtually destroyed, and the impact of the proposed pipeline is therefore low.
Significance of impact: low

Plot 72 (DBA:ET)
Four groups of ridge & furrow earthworks belonging to a larger medieval or post medieval arable field system (see plots 74, 76, 77, 78) were recorded across this plot. The field reconnaissance survey recorded ploughed down ridge & furrow earthworks which were about 12m wide by 0.1m high, and oriented north to south. These were also detected by the geophysical survey. The ridge and furrow had been recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, minor; a substantial proportion of the earthworks will be bisected by the proposed pipeline, but as the ridges are rather degraded, the impact is considered to be minor.

Significance of impact: low

Plot 73 (DBA:ET)
Most of the ridge and furrow in this plot was oriented east to west, but one small area was oriented north to south. The two smallest areas comprised ridge and furrow measuring approximately 8m wide and 0.1m high. The ridge and furrow in the two larger areas measured about 16m wide and 0.5m high. The ridge and furrow had been recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, major; a corner of one of the smaller areas of ridge and furrow is clipped by the proposed pipeline, and a high percentage of one of the larger areas is affected.
Significance of impact: low

Plot 74 (DBA:ES and FSU:034)
Two groups of ridge and furrow earthworks (DBA:ES) belonging to a larger medieval or post medieval arable field system (see plots 73, 76, 77 & 78) were recorded in this plot by the field reconnaissance survey. The larger component was oriented east south-east to west north-west, and the smaller north north-east to south south-west. Most of the ridges were about 8-12m wide and 0.3-0.6m high. Some larger ridges measured about 16m wide and 1.2m high. The ridge and furrow had been recorded by the Archaeological Desk Based Assessment (Network 2002). Some strong magnetic anomalies (FSU:034) were recorded by the geophysical survey, but there was no clear plan of features. This indicates the irregular filling in and or levelling of sub-surface hollows. A moderately high degree of confidence was accorded to the archaeological significance of the anomalies.
Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 75 (FSU:035)
Some strong magnetic anomalies were recorded by the geophysical survey, but there was no clear plan of features. This indicates the irregular filling in and or levelling of sub-surface hollows. A moderately high degree of confidence was accorded to the archaeological significance of the anomalies.
Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 76 (DBA:EN)
Extremely well preserved ridge & furrow earthworks were observed in this plot during the field reconnaissance survey. The earthworks were oriented east to west, and were probably part of a larger medieval arable field system (see plots 73, 74, 77 & 78). The ridge and furrow in plot 76 generally measured about 7-8m wide and 0.2m high, but two large ridges in the middle of the plot measured about 15m wide by 0.6m high. The ridge and furrow had been recorded by the Archaeological Desk Based Assessment (Network 2002).

Impacts: Direct, major; the proposed pipeline crosses the ridge and furrow earthworks, and the impact is felt to be major, particularly because of the good state of preservation.
Significance of impact: low

Plot 77 (DBA:EN)
Well preserved ridge & furrow earthworks, oriented east to west, were observed during the field reconnaissance survey. The larger ridges tended to be about 0.5m high, and 9-10m wide. The earthworks were probably part of a larger medieval arable field system (see plots 73, 74, 76 & 78). The ridge and furrow had been recorded by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, major; a substantial proportion of the earthworks will be bisected by the proposed pipeline.
Significance of impact: low

Plot 78 (DBA:EN and FSU:045)
Ridge & furrow earthworks (DBA:EN) oriented north north-west to south south-east were recorded by the field reconnaissance survey. Every third ridge was larger than the others. The larger ridges measured about 12-14m wide, and 0.4m high, whilst the smaller ridges were about 7-8m wide and 0.2m high. The earthworks were probably part of a larger medieval arable field system (see plots 73, 74, 76 & 77). The ridge and furrow had been recorded by the Archaeological Desk Based Assessment (Network 2002). A small group of magnetic anomalies (FSU:045) lying close to the west boundary of the field is not considered to be archaeologically significant
Impacts: Direct, major; a substantial proportion of the earthworks will be bisected by the proposed pipeline.
Significance of impact: low

Plot 79 (FSU:046)
High susceptibility and a small group of magnetic anomalies lying close to the west boundary of the field are not considered to be archaeologically significant.
Impacts: Direct, indeterminate; the full character, significance and extent of the anomalies is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 80 (FSU:040)
High susceptibility and disturbed pit-like anomalies were recorded over the north west end of this field, and are considered to be potentially archaeologically significant.
Impacts: Direct, indeterminate; the full character, significance and extent of the anomalies is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 81 (DBA:EM and FSU:036)
Strong magnetic disturbance (FSU:036) in this area may have indicated a filled in hollow, and spread of debris. There was a very low level of confidence in the archaeological significance of these readings. Vague undulations, seen during the reconnaissance survey could have been the remains of very degraded ridge & furrow earthworks (recorded by the Archaeological Desk Based Assessment, Network 2002 - DBA:EM), or may have been associated with a nearby airfield.

Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies and earthworks is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 82 (FSU:037)
The geophysical survey identified the remains of ridge and furrow or field drains, which were no longer visible as earthworks. It is likely that the remains were ridge and furrow because the farmer indicated that this was an area where deliberate degradation of ridge and furrow earthworks had taken place since the 1970s. One of the geophysical anomalies included a right-angle and could be a fragment of an enclosure.
Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies and earthworks is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 83 (DBA:EL)
Very slight linear undulations and linear variations in soil colour, oriented north to south were noted towards the east side of the plot. According to the farmer, there was very distinct ridge and furrow in this field, and it has only been since the 1970s that a concerted effort has been made to get rid of it. The geophysical survey also detected parallel linear features. Ridge and furrow earthworks were recorded across this field by the Archaeological Desk Based Assessment (Network 2002).
Impacts: Direct, minor; the area is crossed by the proposed pipeline, but the as the earthworks are already very degraded, the impact is minor.
Significance of impact: low

Plot 84 (FSU:038)
Slight linear undulations and linear variations in soil colour indicated north east to south west oriented ridge & furrow earthworks which had been dispersed by ploughing. According to the farmer, there was very distinct ridge and furrow in this field, and it has only been since the 1970s that a concerted effort has been made to reduce their size. Magnetic disturbance (FSU:038) was detected in the corner of the plot, but there was a very low level of confidence in the archaeological significance of the readings.
Impacts: Direct, indeterminate; the full character, significance and extent of the archaeology represented by the geophysical anomalies is not known, but the findings are crossed by the proposed pipeline.
Significance of impact: low or medium

Plot 85 (DBA:EL and FSU:016)
A single east to west oriented ridge (FSU:016), and some north east to south west oriented vegetation marks (DBA:EL) indicated the remains of ridge and furrow earthworks which have been deliberately ploughed out since the 1970s. A north west to south east oriented former field boundary, recorded during the field reconnaissance survey, was visible as a vegetation mark.
Impacts: Direct, minor; a relatively small proportion of the ridge and furrow and linear feature will be affected by the proposed pipeline.
Significance of impact: low

7.7 Uncorroborated desk based sites

Thirty-five sites flagged up by the desk based assessment, and within fields crossed by the proposed pipeline working width, were not corroborated by the field reconnaissance, field walking or geophysical surveys (see table 7.3):

Table 7.3: Summary table of uncorroborated sites

Plots	Reference	Description	Grade	Easting	Northing	Recommend's
1	WSMR 3775	Boundary bank	D	408236	259721	watching brief
2	WSMR 4646	Settlement	C	408580	259767	evaluation
1, 2, 3	DBA:GN	EW & SM: Ridge and furrow	D	408390	259979	watching brief
2, 3, 4	WSMR 5228	Deserted settlement	C	408720	259760	watching brief
4, 5, 6, 7	DBA:GM	EW & SM: Ridge and furrow	D	409057	259510	watching brief
5	DBA:AV	Paths marked on OS map of 1886	D	408867	259775	watching brief
6	DBA:AW	Track marked on OS map of 1886	D	409190	259618	watching brief
9, 10, 11	DBA:BX	Kinwarton & Coughton parish boundary marked on inclosure map of 1800	D	409813	259230	watching brief
9, 10, 11	DBA:GK	EW: Ridge and furrow	D	409797	259263	watching brief
9, 10, 11, 12, 13, 14	DBA:BO	Numerous small plots, ridge and furrow marked on inclosure map of 1756	D	410139	259041	watching brief
14, 15, 16	WSMR 1549	Railway bridge	D	410513	258760	watching brief
15	DBA:BA	Alcester and Bearley Branch railway marked on OS map of 1886	D	411022	258849	watching brief
15, 16	DBA:BS	Numerous small plots marked on inclosure map of 1756	D	410661	258735	watching brief
16	DBA:BB	Path marked on OS map of 1886	D	410721	258640	watching brief
16	WSMR 4517	Horse pendants	D	410800	258600	watching brief
17, 18, 19, 20	DBA:GH	SM: Ridge and furrow	D	410903	258343	watching brief
31, 32	WSMR 446/ WSMR 4757	Roman road	C	413748	256213	evaluation
32	WSMR 7273	Flint flakes	D	412350	256410	watching brief
33, 35, 36, 37	DBA:GY	Temple Grafton and Haselor parish boundary marked on OS map of 1886	D	412693	255428	watching brief
39, 42	DBA:CX	Track marked on OS map of 1886	D	412974	254792	watching brief
41	DBA:CY	Path marked on OS map of 1886	D	413339	254709	watching brief
43, 44, 45, 46	DBA:FK	EW & SM: Ridge and furrow	D	412690	254271	watching brief
43, 44, 45, 46, 47, 48,	WSMR 8559	Grafton Court park	C	413063	253645	watching brief
48,	DBA:FH	EW: Ridge and furrow	D	413186	253323	watching brief
49	DBA:DH	East and West Junction railway marked on OS map	D	413340	252992	watching brief

		of 1897				
59	DBA:DG	Survey post marked on OS map of 1887	D	412981	251094	watching brief
61	DBA:EY	Track	D	413328	250972	watching brief
61, 62, 63, 64, 65, 66, 67, 68, 69	DBA:GU	Dorsington and Welford parish boundary marked on OS map of 1884	D	414309	250101	watching brief
69, 70, 71, 72	DBA:GW	Welford and Long Marston parish boundary marked on OS map of 1884	D	415629	249213	watching brief
70, 71	DBA:EW	Plots	D	415563	249253	watching brief
71, 72, 73	DBA:EJ	Track marked on OS map of 1924	D	415603	249019	watching brief
75, 76, 77, 78	DBA:DP	Paths marked on OS map of 1884	D	416304	248323	watching brief
76	DBA:EO	VM: Possible barn	D	416060	248495	watching brief
77=	DBA:ER	EW & SM: Ridge and furrow	D	416923	249060	watching brief
80, 81	WSMR 8029	RAF Long Marston airfield	C	417183	248098	watching brief
81	DBA:GX	Long Marston & Quinton parish boundary marked on OS map of 1884	D	417075	248102	watching brief

Plot 1
WSMR 3775, Boundary bank
NGR 408236 E, 259721 N
An earthwork oriented east to west and running parallel to the southern boundary of Coughton parish is thought to be a medieval boundary bank. No evidence for a bank was found during the field survey and so it is assumed that the bank has been ploughed-out since its previous observation. There may, however, be a buried ditch.

Plot 2
WSMR 4646, Cropmarks
NGR 408580 E, 259767 N
Cropmarks of enclosures and linear features north of Kings Coughton are associated with a scatter of Roman pottery (WSMR 4646). These remains are believed to represent a Romano-British settlement. The cropmarks include a large multivallate enclosure that lie just north of the Coughton parish boundary. The proposed pipeline is currently routed to the north of one of the multivallate enclosures, but will cross two ditch-like linear cropmarks which extend from it to the north.

Fieldwalking and geophysical survey along the proposed route found no evidence of the two ditch-like cropmarks or Romano-British settlement in general. The reason for this may be that the site has been destroyed by ploughing since the aerial photographs were taken. It is also possible that the site, which lies within the floodplain of the River Arrow, is buried beneath alluvium, although if this is the case, the site would have been less likely to show as cropmarks. Even thin layers of alluvium, however, can mask sites from detection by fieldwalking and geophysical survey. The most likely explanation is that the part of the site crossed by the proposed route is removed from the focus of the Romano-British settlement and was not part of a cultivated field system in this period.

Plots 2, 3 and 4
WSMR 5228, Deserted settlement
NGR 408720 E, 259760 N
A deserted post medieval settlement near Coughton is still visible as earthworks on the west bank of the River Arrow. The pipeline crosses the south west extent of this site, in an area that is removed from the known settlement remains. This appears to have been confirmed by the field surveys which found no evidence for the site on the route.

Plots 14, 15 and 16
WSMR 1549, Railway bridge
NGR 410513 E, 258760 N
This site was recorded in the sites and monuments record, but no evidence of it was found during the field surveys. It is likely that the structure has been dismantled and it may have been destroyed altogether.

Plots 15
DBA:BA, Alcester and Bearley Branch Railway
NGR 411022 E, 258849 N
The site was observed on the OS map of 1886. On modern maps, the railway appears as 'dismantled', although nothing is marked at the point where it is crossed by the proposed pipeline, and nor was anything found during the field surveys. It is likely that the railway structure has been dismantled and removed.

Plots 31 and 32
WSMR 446, WSMR 4757, Roman Road
NGR 413748 E, 256213 N
The modern A46 approximately follows the line of the Roman road connecting Alcester to Stratford (WSMR 4757). The section of the road within the pipeline corridor also formed part of saltway from Droitwich in the Roman period (WSMR 446). The survival and condition of the road are unknown, but there may be an *agger* (road make-up and surface) and/or associated *fossa* (roadside ditches). No evidence for the Roman road was found by the field surveys. This may be because the Roman road lies beneath the modern road, or lies 'buried' on either side of it. Despite the lack of evidence at this site, there is also the potential for settlement and burial alongside the road.

Plots 43, 44 and 45
WSMR 8559, Grafton Court Park
NGR 413063 E, 253645 N
The park at Grafton Court was laid out when the house was built *c.*1876. It is not included in the national Register of Parks and Gardens. The pipeline crosses the western side of the park at a distance of at least 500m from the house. The reconnaissance survey confirmed that that part of the park crossed by the pipeline is currently under an agricultural regime and no features relating to its former use as a park were recorded.

Plot 49
DBA:DH, East and West Junction Railway
NGR 4413340 E, 252992 N

The site was observed on the OS map of 1897. On modern maps, the railway appears as 'dismantled', although nothing is marked at the point where it is crossed by the proposed pipeline, and nor was anything found during the field surveys. It is likely that the railway structure has been dismantled and removed.

Other uncorroborated sites

The remaining sites listed in table 7.3, for which the field surveys found no evidence, include ploughed-out ridge and furrow, destroyed tracks and recovered finds.

8 RECOMMENDATIONS

8.1 Summary of recommendations

A summary of recommendations is provided in Table 8.1.

Table 8.1 Summary of recommendations

Recommendation	Plots
Avoidance	none
Evaluation	2, 28, 31/32, 36, 65, 74/75, 80, 82
Topographical survey	26, 39, 41, 49, 56, 59, 64, 69, 72-74, 76-78
Watching brief	all plots

8.2 Avoidance

8.2.1 Realignment of the route

No sites are recommended for avoidance at this stage.

Where feasible, however, minor alterations to the proposed route should be considered in order to avoid an impact upon nationally important archaeological remains, should any come to light during evaluation (see 8.3).

8.2.2 Minimisation of impact

Where feasible, the impact upon unavoidable archaeological sites of national or regional importance should be minimised by reduction of the working width to the minimum practical level, and/or the laying of geotextile matting or bog mats, and/or careful reinstatement procedures (e.g. avoidance of subsoil 'ripping').

8.3 Evaluation

Of the sixty-one sites located by the field surveys, six are proposed for evaluation in advance of construction. These are in plots 28, 36, 65, 74/75, 80 and 82 (see 7.6). A further two sites, that were not corroborated by the field surveys, are also proposed. These are in plots 2 and 31/32 (see 7.7).

Plot 2: WSMR 4646
NGR 408580 259840
Evaluation is considered necessary to determine the depth, and level of survival of two buried Roman ditches and to assess the potential risk of Roman settlement in their vicinity. These remains have the potential to be well-preserved and waterlogged. Initially, evaluation should target the ditch-like cropmarks in plot 2, and depending upon the results, may need to extend into the rest of this plot and possibly into the adjacent plots.

Plot 28: FSU:023
NGR 411940 256930
Evaluation is proposed to determine the nature of geophysical anomalies within this field, and so minimise the risk of encountering settlement remains during construction.

Plots 31-32: WSMR 446, WSMR 4757 and WSMR4786
NGR 412380 256540
Evaluation is proposed on either side of the A46 to determine the location, survival and condition of the Roman road, and also to determine whether there is associated settlement and/or burial alongside the road.

Plot 36: FSU:025 and DBA:FP
NGR 412770 255550
Evaluation is proposed to determine the nature of geophysical anomalies within this field, and so minimise the risk of encountering settlement remains during construction.

Plot 65: DBA:EX, FSU:011, FSU:012, FSU:013 and FSU:032
NGR 414110 250240
Evaluation is proposed to determine the nature of a soil mark, finds concentration, magnetic anomalies and magnetic susceptibility high, which indicate the location of a postulated pre-medieval building.

Plots 74-75: DBA:ES, DBA:EN, FSU:035 and FSU:034
NGR 415950 248570
Evaluation is proposed to determine the nature of geophysical anomalies, and so minimise the risk of encountering settlement remains during construction.

Plot 80: FSU:040
NGR 416830 248180
Evaluation is proposed to determine the nature of geophysical anomalies lying within an area of high magnetic susceptibility, and so minimise the risk of encountering settlement remains during construction.

Plot 82: FSU:037
NGR 417440 248500
Evaluation is proposed to determine whether a possible enclosure revealed by the geophysical survey is genuine, and so minimise the risk of encountering settlement remains during construction.

8.4 Topographical survey

Topographical survey of extant ridge and furrow is proposed, in advance of construction. As a minimum, this should include all multi-directional ridge and furrow. This includes six plots: 26, 41, 59, 72, 73 and 74. Ideally, single direction ridge and furrow should also be recorded. This includes eight plots: 39, 49, 56, 64, 69, 76, 77 and 78. Topographical survey is not recommended for the vestigial earthworks seen in plots 81, 83, 84 and 85, due to their uncertain and possibly modern origin.

8.5 Watching brief

8.5.1 Known and unexpected sites

A permanent-presence watching brief should be maintained during all ground disturbing activities of the construction phase of the project, to record unexpected discoveries, and known sites which did not merit investigation in advance of construction. Those sites described in sections 7.6 and 7.7, which have not been flagged up for evaluation, should be closely monitored and, if appropriate, recorded during the watching brief.

The main phases of monitoring for the pipeline should be topsoil stripping, trench excavation and the opportunistic observation of the pre-construction drainage. Contingencies should allow for salvage excavation of significant, unexpected archaeological remains found during construction.

8.5.2 Historic boundaries

The construction programme should aim to minimise the disturbance of historic boundaries, particularly those marked by an Important Hedge (e.g. by minimisation of the working width). Cross sections of those boundaries which are unavoidable should be recorded during the course of a watching brief. Archaeologically significant layers sealed beneath banks may require sampling.

Former field boundaries which have been identified as being potentially historic should also be targeted for detailed recording during the course of a watching brief.

Extant and former historic boundaries were identified within the desk based assessment report (Network Archaeology 2002: figures 10-12).

8.5.3 Geo-archaeological, palaeo-environmental and organic remains

Geo-archaeological and palaeo-environmental specialist advice should be sought in the formulation of a project design. This should address the need for pre-emptive, and reactive works. Adequate resources should be put in place for dealing with geo-archaeological archaeological, palaeo-environmental and organic remains found during construction.

8.6 Reinstatement

Where feasible, every effort should be made to reinstate landscape earthworks, such as ridge and furrow and field boundaries. The ridge and furrow recorded along the route varies in its level of preservation, as shown in table 8.2.

Table 8.2 Summary of ridge and furrow survival

Level of preservation	Height of survival	Plots
high	greater than 0.5m	56, 69, 74, 76, 77
moderate	0.2m - 0.5m	26, 39, 41, 73, 78
low	less than 0.2m	49, 59, 64, 72, 81, 83, 84, 85

As a minimum, it is proposed that those plots containing 'moderate' and 'high' level preservation ridge and furrow should be reinstated. Ideally, all ridge and furrow would be reinstated. It may not, however, be feasible to reinstate vestigial remains (i.e. those categorised as 'low').

8.7 County liaison and monitoring

The Warwickshire County Museum Field Service should be invited to assist in the formulation of Written Schemes of Investigation for subsequent archaeological fieldwork, and they should monitor their implementation. Provision should be made for the Warwickshire County Museum Field Service to monitor fieldwork in advance of, and during construction, and to review any reports.

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10 REFERENCES

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11 STATEMENT OF INDEMNITY

Every effort has been taken in the preparation and submission of this report in order to provide as complete an assessment as possible within the terms of the brief, and all statements and opinions are offered in good faith. Network Archaeology Ltd cannot accept responsibility for errors of fact or opinion resulting from data supplied by any third party, or for any loss or other consequences arising from decisions or actions made upon the basis of facts or opinions expressed in this report and any supplementary papers, howsoever such facts and opinions may have been derived, or as a result of unforeseen and undiscovered sites or artefacts.

Network Archaeology Ltd: February 2003

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APPENDIX A

Gazetteer of archaeological sites

Reference	Plot	Source	Description	Period	Importance	Impact	Significance of impact	National grid reference
DBA:BR	11	FRS	Pond marked on estate map	PM?	D	-D min	low	409950 259121
DBA:EL	83	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	417629 248066
DBA:EL	83	GS	Possible ridge and furrow, or field drains	Undetermined	D	-D sev	low	417554 248066
DBA:EL	85	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	418004 248246
DBA:EM	81	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	417240 248143
DBA:EN	76	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	416084 248438
DBA:EN	77	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	416240 248431
DBA:EN	78	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	416384 248125
DBA:ES	74	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	415923 248650
DBA:ET	72	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	415734 249092
DBA:ET	73	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	415728 248876
DBA:EX	64	FRS	EW & SM: Ridge and furrow	Medieval	D	-D min	low	413799 250528
DBA:EX	65	GS	Ridge and furrow	Undetermined	D	-D sev	low	414201 250151
DBA:EX	68	GS	Ridge and furrow	Undetermined	D	-D sev	low	414788 249741
DBA:EX	69	FRS	EW & SM: Ridge and furrow	Medieval	D	-D min	low	415294 249367
DBA:EZ	59	FRS	EW: Ridge and furrow	Medieval	D	-D min	low	412999 251040
DBA:FE	52	GS	Ridge and furrow (and perhaps field drains)	Undetermined	D	-D sev	low	413092 252261
DBA:FL	39	FRS	EW & SM: Ridge and furrow	Medieval	D	-D min	low	413044 254908
DBA:FL	41	FRS	EW & SM: Ridge and furrow	Medieval	D	-D min	low	413130 254745
DBA:FP	36	GS	Possible ridge and furrow	Undetermined	D	-D sev	low	412724 255609
DBA:FP	38	GS	Possible ridge and furrow	Undetermined	D	-D sev	low	413097 255057
DBA:FX	33	GS	Possible ridge and furrow	Undetermined	D	-D sev	low	412323 256181
DBA:FY	31	GS	Parallel linear disturbances - field drains?	Undetermined	D	-D sev	low	412402 256639
DBA:FZ	26	FRS	EW & SM: Ridge and furrow	Medieval	D	-D min	low	411548 257184
DBA:FZ	29	GS	Parallel linear disturbances - field drains?	Undetermined	D	-D sev	low	412020 256822
DBA:GA	56	FRS	Ridge and furrow	Medieval	D	-D min	low	412982 251519
FSU:001	1	FRS	Former field boundary marked by line of four oak trees, observed on AP	Undetermined	D	-D min	low	408342 259787
FSU:002	7	FRS	Former field boundary marked by line og three oak trees	Undetermined	D	none	none	409331 259515
FSU:003	11	FRS	EW: field boundary, possibly relating to FB marked on inclosure map	Undetermined	D	none	none	409974 259211

Reference	Plot	Source	Description	Period	Importance	Impact	Significance of impact	National grid reference
FSU:004	14	FRS	VM: disturbed ground associated with dismantled railway	Undetermined	D	-D sev	low	410490 258792
FSU:005	15	FRS	VM: Disturbed ground	Undetermined	D	none	none	410748 258857
FSU:006	16	FRS	EW: Field boundary	Undetermined	D	-D min	low	410632 258706
FSU:007	17	FRS	Semi-dry river meander	Undetermined	D	-D min	low	410883 258558
FSU:008	32	FRS	EW: Spring, pond or quarry	Undetermined	D	none	none	412360 256236
FSU:009	49	FRS	Concentration of slag	Undetermined	D	-D sev	low	413341 253004
FSU:010	49	FRS	EW: Ridge and furrow	Undetermined	D	-D min	low	413330 253074
FSU:011	65	FRS	EW: Pond	Undetermined	D	none	none	414155 250251
FSU:012	65	FRS	EW: Pond or quarry	Undetermined	D	-D sev	low	414335 250073
FSU:013	65	FWS	CBM scatter, possible building	Undetermined	D	-D maj	low	414115 250247
FSU:014	66	FRS	EW: Field boundary, marked on OS map	Undetermined	D	-D min	low	414412 250179
FSU:015	68	FRS	SM: Field boundary, observed on AP	Undetermined	D	-D min	low	414899 249632
FSU:016	85	FRS	SM: Field boundary	Undetermined	D	-D min	low	417848 248104
FSU:017	3	GS	Isolated magnetic anomalies, possible natural silted hollows near River Arrow	Undetermined	D	-D sev	low	408730 259762
FSU:018	3	GS	Isolated magnetic anomalies, possible natural silted hollows near River Arrow	Undetermined	D	-D sev	low	408681 259816
FSU:019	7	GS	Alignment of disturbed readings. Possible boundary or trackway	Undetermined	D	-D sev	low	409303 259388
FSU:020	9	GS	Isolated pit-like feature	Undetermined	D	-D sev	low	409560 259287
FSU:021	14	GS	Dispersed magnetic noise (slag / rubble?)	Undetermined	D	-D sev	low	410371 258881
FSU:022	14	GS	Dispersed magnetic noise (slag / rubble?)	Undetermined	D	-D sev	low	410478 258795
FSU:023	28	GS	Possible weak linear feature and some pit-like anomalies	Undetermined	D	-D sev	low	411941 256926
FSU:024	33	GS	Possible ridge and furrow	Undetermined	D	-D sev	low	412370 256080
FSU:025	36	GS	Weak pit-like disturbances	Undetermined	D	-D sev	low	412772 255544
FSU:026	37	GS	Small area of magnetic noise	Undetermined	D	-D sev	low	412834 255459
FSU:027	51	GS	Isolated pits near boundary	Undetermined	D	-D sev	low	413257 252735
FSU:028	55	GS	A few possible pits near a boundary	Undetermined	D	-D sev	low	412996 251542
FSU:029	57	GS	Magnetic noise at south of field	Undetermined	D	-D sev	low	413035 251311
FSU:030	57	GS	Isolated pit in area of high susceptibility	Undetermined	D	-D sev	low	413006 251411
FSU:031	64	GS	Linear disturbance - possible former hedge line	Undetermined	D	-D sev	low	413856 250413
FSU:032	65	GS	Scattered weak magnetic anomalies in area of high	Undetermined	D	-D sev	low	414118 250229

Reference	Plot	Source	Description	Period	Importance	Impact	Significance of impact	National grid reference
			susceptibility readings					
FSU:033	71	GS	Ridge and furrow	Undetermined	D	-D sev	low	415574 249240
FSU:034	74	GS	Some strong anomalies, but no clear plan of features; perhaps irregular filling in / levelling?	Undetermined	D	-D sev	low	415935 248615
FSU:035	75	GS	Some strong anomalies, but no clear plan of features; perhaps irregular filling in / levelling?	Undetermined	D	-D sev	low	415958 248544
FSU:036	81	GS	Strongly magnetic anomalies - perhaps filled in hollow, and spread of debris	Undetermined	D	-D sev	low	417126 248091
FSU:037	82	GS	Ridge and furrow or land drains	Undetermined	D	-D sev	low	417386 248047
FSU:038	84	GS	Magnetic noise in corner of field	Undetermined	D	-D sev	low	417724 248097
FSU:039	61	FWS	Fired clay fragments	Undetermined	D	-D maj	low	413388 250683
FSU:040	80	GS	High susceptibility and pit-like anomalies	Undetermined	D	-D sev	low	416868 248163
FSU:041	8	GS	Ridge and furrow	Undetermined	D	-D sev	low	409463 259325
FSU:042	16	GS	Magnetic anomalies	Undetermined	D	-D sev	low	410611 258707
FSU:043	17	GS	Isolated magnetic anomalies	Undetermined	D	-D sev	low	410842 258553
FSU:044	20	GS	Ridge and furrow	Undetermined	D	-D sev	low	411085 258252
FSU:045	78	GS	Magnetic anomalies	Undetermined	D	-D sev	low	416320 248363
FSU:046	79	GS	Magnetic anomalies	Undetermined	D	-D sev	low	416539 248283

APPENDIX B

Gazetteer of artefacts

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
23	44	Clay heat affected	Undetermined	1	16	412982 254285
23	44	Production waste	Modern	1	12	412982 254285
23	44	CBM	Undetermined	1	23	412982 254285
24	49	Stone heat affected	Undetermined	4	14	413341 253004
24	49	Production waste	Modern	10	610	413341 253004
62	82	CBM	Undetermined	1	29	417358 248082
62	82	CBM	Undetermined	1	5	417358 248082
63	82	Pottery	Post-medieval	1	10	417380 248072
63	82	Pottery	Post-medieval	1	7	417380 248072
63	82	CBM	Undetermined	1	4	417380 248072
64	82	CBM	Undetermined	1	21	417396 248066
64	82	CBM	Undetermined	1	45	417396 248066
65	82	CBM	Undetermined	1	3	417416 248059
65	82	CBM	Undetermined	1	57	417416 248059
66	82	CBM	Undetermined	1	29	417416 248059
66	82	CBM	Undetermined	1	39	417416 248059
67	82	CBM	Undetermined	1	47	417411 248071
67	82	CBM	Undetermined	1	4	417411 248071
68	82	Production waste	Undetermined	1	56	417407 248072
68	82	CBM	Undetermined	1	7	417407 248072
69	82	CBM	Undetermined	1	177	417400 248075
69	82	CBM	Undetermined	1	175	417400 248075
70	82	CBM	Undetermined	1	15	417379 248081
70	82	CBM	Undetermined	1	28	417379 248081
70	82	CBM	Undetermined	1	146	417379 248081
71	82	CBM	Undetermined	1	18	417363 248085
73	82	Production waste	Modern	1	16	417406 248070
74	82	CBM	Undetermined	1	42	417412 248060
75	83	Pottery	Post-medieval	1	3	417446 248091
75	83	CBM	Undetermined	1	76	417446 248091
76	83	Pottery	Modern	1	1	417460 248110
76	83	CBM	Undetermined	1	36	417460 248110
77	83	CBM	Undetermined	1	18	417456 248089
77	83	CBM	Undetermined	1	14	417456 248089
77	83	CBM	Undetermined	1	54	417456 248089
78	83	CBM	Undetermined	1	8	417648 248106
78	83	CBM	Undetermined	1	23	417648 248106
79	83	Production waste	Post-medieval	1	14	417597 248101
79	83	Pottery	Post-medieval	1	6	417597 248101
80	83	CBM	Undetermined	1	71	417550 248099
80	83	Pottery	Modern	1	2	417550 248099
80	83	CBM	Undetermined	1	22	417550 248099
81	83	Pottery	Post-medieval	1	4	417480 248108
81	83	CBM	Undetermined	1	18	417480 248108
82	83	CBM	Undetermined	1	76	417508 248110
82	83	Pottery	Modern	1	1	417508 248110
82	83	Pottery	Post-medieval	1	6	417508 248110
82	83	CBM	Undetermined	1	80	417508 248110
83	83	Pottery	Post-medieval	1	16	417538 248109
83	83	CBM	Undetermined	1	4	417538 248109
84	83	Pottery	Post-medieval	1	32	417619 248114
86	83	Pottery	Medieval	1	14	417682 248118
86	83	CBM	Undetermined	1	42	417682 248118
87	71	CBM	Undetermined	1	5	415572 249229

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
88	71	Clay heat affected	Undetermined	2	9	415576 249229
89	71	CBM	Undetermined	1	63	415593 249214
89	71	Pottery	Modern	1	4	415593 249214
89	71	CBM	Undetermined	1	37	415593 249214
90	71	CBM	Undetermined	1	128	415585 249210
90	71	CBM	Undetermined	1	178	415585 249210
90	71	Pottery	Modern	2	36	415585 249210
90	71	Pottery	Modern	1	3	415585 249210
90	71	Pottery	Modern	1	19	415585 249210
90	71	CBM	Undetermined	1	11	415585 249210
91	71	CBM	Undetermined	1	9	415544 249251
92	71	CBM	Undetermined	1	21	415459 249266
92	71	CBM	Undetermined	1	5	415459 249266
92	71	CBM	Undetermined	1	29	415459 249266
93	71	CBM	Undetermined	1	26	415481 249267
93	71	CBM	Undetermined	1	54	415481 249267
94	71	CBM	Undetermined	1	30	415513 249277
95	67	CBM	Undetermined	1	42	414515 249945
96	67	CBM	Undetermined	1	53	414523 249942
97	67	CBM	Undetermined	1	28	414534 249936
97	67	CBM	Undetermined	1	11	414534 249936
97	67	CBM	Undetermined	1	12	414534 249936
98	67	CBM	Undetermined	1	7	414559 249915
99	67	CBM	Undetermined	1	89	414560 249911
100	67	CBM	Undetermined	7	52	414595 249889
101	67	Clay heat affected	Undetermined	1	15	414636 249848
101	67	CBM	Undetermined	1	60	414636 249848
102	67	CBM	Undetermined	1	28	414670 249831
103	67	Clay heat affected	Undetermined	4	21	414640 249857
105	67	CBM	Undetermined	1	161	414623 249872
106	67	CBM	Undetermined	1	18	414598 249895
106	67	CBM	Undetermined	1	37	414598 249895
107	68	CBM	Undetermined	1	31	414854 249678
108	68	CBM	Undetermined	1	162	414781 249729
109	68	CBM	Undetermined	1	127	414833 249688
110	32	CBM	Undetermined	1	15	412372 256295
111	32	CBM	Undetermined	1	15	412385 256356
112	32	Pottery	Modern	1	2	412396 256424
112	32	Glass	Post-medieval	1	3	412396 256424
114	32	Pottery	Modern	1	12	412385 256481
114	32	Glass	Post-medieval	1	2	412385 256481
115	32	Pottery	Post-medieval	1	6	412384 256475
115	32	Production waste	Undetermined	1	32	412384 256475
115	32	Production waste	Undetermined	1	8	412384 256475
115	32	Glass	Post-medieval	1	15	412384 256475
116	32	Production waste	Undetermined	1	168	412382 256470
116	32	Production waste	Undetermined	1	256	412382 256470
117	32	Pottery	Post-medieval	1	42	412379 256448
117	32	CBM	Undetermined	1	18	412379 256448
118	32	CBM	Undetermined	1	14	412367 256371
119	32	CBM	Undetermined	1	26	412354 256296
120	33	Pottery	Post-medieval	1	42	412402 256080
121	33	CBM	Undetermined	1	16	412386 256108

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
122	33	CBM	Undetermined	1	49	412369 256133
122	33	CBM	Undetermined	1	20	412369 256133
123	33	CBM	Undetermined	1	144	412357 256146
124	33	Pottery	Post-medieval	1	102	412359 256135
125	33	CBM	Undetermined	1	19	412365 256124
125	33	CBM	Undetermined	1	28	412365 256124
125	33	CBM	Undetermined	1	42	412365 256124
126	33	CBM	Undetermined	1	38	412365 256107
127	37	CBM	Undetermined	1	18	412885 255428
128	38	Pottery	Modern	1	5	413116 255045
129	38	CBM	Undetermined	1	127	413039 255204
130	40	CBM	Undetermined	1	15	413144 254922
131	40	CBM	Undetermined	1	154	413155 254947
132	40	CBM	Undetermined	1	28	413136 254990
132	40	CBM	Undetermined	1	166	413136 254990
133	47	CBM	Undetermined	1	30	413097 253526
134	44	CBM	Undetermined	1	44	413060 254140
134	44	CBM	Undetermined	1	26	413060 254140
135	44	CBM	Undetermined	1	15	413048 254157
136	44	CBM	Undetermined	1	26	413035 254179
137	44	CBM	Undetermined	1	40	413019 254204
137	44	CBM	Undetermined	1	16	413019 254204
138	44	CBM	Undetermined	1	7	413005 254206
138	44	Clay heat affected	Undetermined	1	17	413005 254206
138	44	CBM	Undetermined	1	34	413005 254206
139	44	CBM	Undetermined	1	9	413014 254197
139	44	CBM	Undetermined	1	32	413014 254197
139	44	CBM	Undetermined	1	38	413014 254197
139	44	CBM	Undetermined	1	3	413014 254197
139	44	CBM	Undetermined	1	30	413014 254197
140	44	CBM	Undetermined	1	31	413020 254188
140	44	CBM	Undetermined	1	22	413020 254188
141	44	CBM	Undetermined	1	81	413027 254179
142	44	CBM	Undetermined	1	269	413048 254138
143	44	CBM	Undetermined	1	21	412982 254280
143	44	CBM	Undetermined	1	21	412982 254280
144	44	CBM	Undetermined	1	15	412987 254271
144	44	CBM	Undetermined	1	8	412987 254271
145	44	CBM	Undetermined	1	34	412997 254258
145	44	CBM	Undetermined	1	11	412997 254258
145	44	CBM	Undetermined	1	37	412997 254258
145	44	CBM	Undetermined	1	8	412997 254258
145	44	CBM	Undetermined	1	18	412997 254258
146	44	CBM	Undetermined	1	30	413004 254223
147	44	Pottery	Medieval	1	22	413001 254232
148	44	CBM	Undetermined	1	26	412994 254246
148	44	CBM	Undetermined	1	19	412994 254246
148	44	CBM	Undetermined	1	9	412994 254246
148	44	CBM	Undetermined	1	31	412994 254246
148	44	CBM	Undetermined	1	55	412994 254246
149	44	CBM	Undetermined	1	10	412990 254244
149	44	CBM	Undetermined	1	18	412990 254244
149	44	CBM	Undetermined	1	43	412990 254244
150	44	CBM	Undetermined	1	71	412973 254266
150	44	CBM	Undetermined	1	3	412973 254266

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
150	44	CBM	Undetermined	1	29	412973 254266
151	44	CBM	Undetermined	1	15	412970 254283
151	44	CBM	Undetermined	1	26	412970 254283
151	44	CBM	Undetermined	1	63	412970 254283
152	44	CBM	Undetermined	1	28	412977 254264
153	44	CBM	Undetermined	1	37	412980 254254
153	44	CBM	Undetermined	1	29	412980 254254
154	43	CBM	Undetermined	1	65	412963 254374
155	43	CBM	Undetermined	1	10	412975 254389
155	43	CBM	Undetermined	1	19	412975 254389
155	43	CBM	Undetermined	1	15	412975 254389
156	43	CBM	Undetermined	1	34	413001 254436
157	43	Pottery	Modern	1	2	413020 254468
158	43	CBM	Undetermined	1	26	413047 254544
159	43	Pottery	Post-medieval	1	40	413036 254521
160	43	CBM	Undetermined	1	53	413028 254501
161	43	Pottery	Post-medieval	1	10	413020 254489
162	43	CBM	Undetermined	1	23	412986 254427
162	43	CBM	Undetermined	1	74	412986 254427
163	43	Pottery	Post-medieval	1	13	412937 254355
163	43	CBM	Undetermined	1	15	412937 254355
164	43	Pottery	Post-medieval	1	48	412955 254392
165	43	CBM	Undetermined	1	1336	412937 254341
166	46	CBM	Undetermined	1	41	413075 253662
167	68	CBM	Undetermined	1	15	415083 249544
168	68	CBM	Undetermined	1	26	415064 249558
169	68	CBM	Undetermined	1	112	415007 249605
170	68	CBM	Undetermined	1	23	414988 249608
171	68	CBM	Undetermined	1	19	415018 249583
172	68	CBM	Undetermined	1	38	415040 249568
173	65	CBM	Undetermined	1	30	414248 250103
174	65	CBM	Undetermined	1	25	414276 250099
175	65	CBM	Undetermined	1	32	414288 250095
175	65	Pottery	Modern	1	1	414288 250095
175	65	Pottery	Medieval	1	4	414288 250095
175	65	CBM	Undetermined	1	30	414288 250095
176	65	CBM	Undetermined	1	73	414296 250103
177	65	CBM	Undetermined	1	45	414229 250134
178	65	CBM	Undetermined	1	26	414204 250156
179	65	Pottery	Medieval	1	4	414166 250193
180	65	CBM	Undetermined	1	15	414062 250291
181	65	CBM	Undetermined	1	363	414023 250319
182	65	Clay heat affected	Undetermined	1	169	414091 250254
182	65	CBM	Undetermined	1	18	414091 250254
183	65	CBM	Undetermined	1	205	414103 250243
184	65	CBM	Undetermined	1	14	414109 250236
184	65	CBM	Undetermined	6	201	414109 250236
184	65	CBM	Undetermined	1	73	414109 250236
185	65	CBM	Undetermined	1	27	414129 250217
186	65	Pottery	Romano-british	1	4	414191 250158
186	65	Production waste	Post-medieval	1	104	414191 250158
186	65	CBM	Undetermined	1	804	414191 250158
187	65	Pottery	Modern	1	2	414206 250148
188	65	Pottery	Post-medieval	1	6	414235 250109

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
189	65	CBM	Undetermined	1	22	414173 250166
190	65	Clay heat affected	Undetermined	10	309	414131 250230
191	65	CBM	Undetermined	1	81	414063 250294
192	64	CBM	Undetermined	1	79	414025 250356
193	64	CBM	Undetermined	1	23	413974 250382
194	64	CBM	Undetermined	1	134	413919 250414
194	64	CBM	Undetermined	1	14	413919 250414
195	64	CBM	Undetermined	3	33	413885 250416
196	64	Pottery	Medieval	1	3	413855 250446
196	64	CBM	Undetermined	1	38	413855 250446
197	64	CBM	Undetermined	3	19	413846 250455
198	63	CBM	Undetermined	1	42	413722 250513
199	64	CBM	Undetermined	1	31	413835 250447
200	64	CBM	Undetermined	2	44	413850 250439
201	64	Clay heat affected	Undetermined	3	28	413860 250434
202	64	CBM	Undetermined	1	15	413880 250421
202	64	Clay heat affected	Undetermined	1	19	413880 250421
202	64	CBM	Undetermined	1	4	413880 250421
203	64	CBM	Undetermined	1	9	413894 250413
203	64	CBM	Undetermined	3	41	413894 250413
204	64	CBM	Undetermined	1	23	413941 250387
205	64	Clay heat affected	Undetermined	1	11	413980 250365
205	64	CBM	Undetermined	1	28	413980 250365
206	62	CBM	Undetermined	1	30	413598 250578
207	62	CBM	Undetermined	1	38	413592 250579
208	62	CBM	Undetermined	1	15	413551 250597
209	61	CBM	Undetermined	1	24	413521 250590
210	62	CBM	Undetermined	1	47	413556 250558
211	62	CBM	Undetermined	1	22	413585 250541
213	61	CBM	Undetermined	1	18	413314 250692
214	61	CBM	Undetermined	1	27	413333 250683
215	61	CBM	Undetermined	2	41	413340 250679
216	61	CBM	Undetermined	1	47	413353 250670
216	61	CBM	Undetermined	1	30	413353 250670
217	61	Pottery	Post-medieval	1	12	413364 250664
218	61	CBM	Undetermined	1	6	413494 250594
218	61	CBM	Undetermined	1	57	413494 250594
219	61	Pottery	Post-medieval	1	1	413512 250596
220	61	CBM	Undetermined	1	45	413464 250625
221	61	Production waste	Modern	1	50	413431 250643
222	61	CBM	Undetermined	1	20	413408 250657
222	61	CBM	Undetermined	1	9	413408 250657
223	61	Pottery	Post-medieval	1	52	413369 250677
224	61	Clay pipe	Post-medieval	1	3	413352 250687
224	61	Clay heat affected	Undetermined	1	17	413352 250687
225	61	Clay heat affected	Undetermined	2	27	413261 250748
225	61	CBM	Undetermined	1	3	413261 250748
226	60	CBM	Undetermined	1	23	413105 250838
227	60	CBM	Undetermined	1	182	413103 250841
228	60	CBM	Undetermined	1	19	413091 250833

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
229	61	Pottery	Post-medieval	1	6	413140 250800
230	61	CBM	Undetermined	1	143	413259 250727
231	61	Pottery	Post-medieval	1	20	413241 250730
232	61	Pottery	Post-medieval	1	9	413197 250753
233	60	CBM	Undetermined	1	43	413030 250894
234	56	CBM	Undetermined	1	1545	412975 251481
235	52	Pottery	Post-medieval	1	14	413153 252495
236	52	CBM	Undetermined	1	22	413096 252333
238	52	CBM	Undetermined	1	153	413083 252315
239	52	CBM	Undetermined	1	34	413070 252263
240	52	CBM	Undetermined	1	32	413055 252039
240	52	CBM	Undetermined	1	10	413055 252039
241	52	CBM	Undetermined	1	9	413056 252049
243	52	Clay heat affected	Undetermined	1	15	413053 252076
245	52	CBM	Undetermined	1	24	413056 252088
246	52	Clay heat affected	Undetermined	1	40	413055 252187
246	52	CBM	Undetermined	1	16	413055 252187
247	52	CBM	Undetermined	1	19	413079 252009
248	52	CBM	Undetermined	1	14	413073 251962
249	53	CBM	Undetermined	1	13	413091 251833
250	53	CBM	Undetermined	1	22	413099 251902
250	53	CBM	Undetermined	1	105	413099 251902
251	52	Pottery	Medieval	1	30	413093 251959
252	53	CBM	Undetermined	1	23	413098 251947
253	53	CBM	Undetermined	1	64	413073 251755
254	27	CBM	Undetermined	1	34	411775 257060
255	27	CBM	Undetermined	1	90	411673 257116
256	28	CBM	Undetermined	1	22	411988 256921
257	28	CBM	Undetermined	1	59	411940 256950
258	28	CBM	Undetermined	1	124	411902 256975
259	23	CBM	Undetermined	1	154	411321 257759
260	23	CBM	Undetermined	2	73	411342 257725
261	23	CBM	Undetermined	1	16	411357 257680
261	23	CBM	Undetermined	1	8	411357 257680
263	23	Pottery	Post-medieval	1	5	411311 257739
264	23	Pottery	Romano-british	1	5	411315 257734
265	24	Pottery	Post-medieval	1	13	411393 257571
266	24	CBM	Undetermined	1	14	411423 257511
267	24	CBM	Undetermined	1	11	411431 257499
268	24	Pottery	Medieval	1	1	411437 257487
268	24	CBM	Undetermined	1	47	411437 257487
269	24	Pottery	Post-medieval	1	61	411445 257474
269	24	Pottery	Romano-british	1	3	411445 257474
269	24	CBM	Undetermined	1	42	411445 257474
270	24	Pottery	Medieval	1	7	411448 257459
271	24	Production waste	Undetermined	1	44	411453 257449
272	24	CBM	Undetermined	1	27	411467 257425
273	24	CBM	Undetermined	1	18	411481 257421
274	24	CBM	Undetermined	1	16	411420 257547
275	24	CBM	Undetermined	1	22	411417 257554
276	24	CBM	Undetermined	1	1	411411 257562
277	24	CBM	Undetermined	1	42	411410 257588

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
278	24	CBM	Undetermined	1	9	411444 257518
279	25	CBM	Undetermined	1	3	411499 257398
280	25	Pottery	Post-medieval	1	10	411505 257394
281	25	CBM	Undetermined	1	85	411514 257381
281	25	CBM	Undetermined	1	7	411514 257381
282	25	Pottery	Post-medieval	1	16	411524 257362
282	25	CBM	Undetermined	1	22	411524 257362
283	25	CBM	Undetermined	1	3	411529 257352
284	25	CBM	Undetermined	1	18	411536 257339
284	25	CBM	Undetermined	1	14	411536 257339
285	25	Pottery	Post-medieval	1	2	411530 257324
286	25	CBM	Undetermined	1	34	411524 257342
287	25	CBM	Undetermined	1	16	411511 257367
288	25	CBM	Undetermined	1	117	411502 257390
288	25	CBM	Undetermined	1	39	411502 257390
289	25	CBM	Undetermined	2	43	411489 257380
289	25	CBM	Undetermined	1	36	411489 257380
290	1	CBM	Undetermined	1	8	408231 259770
290	1	CBM	Undetermined	2	8	408231 259770
291	1	Pottery	Modern	1	2	408248 259781
291	1	CBM	Undetermined	1	11	408248 259781
292	1	Pottery	Post-medieval	1	8	408301 259786
292	1	CBM	Undetermined	1	313	408301 259786
293	1	Pottery	Post-medieval	1	6	408315 259789
294	1	CBM	Undetermined	1	38	408317 259795
295	1	CBM	Undetermined	1	58	408364 259802
295	1	CBM	Undetermined	1	30	408364 259802
296	1	CBM	Undetermined	1	18	408311 259801
297	1	CBM	Undetermined	1	148	408293 259801
298	1	CBM	Undetermined	1	75	408284 259798
299	1	CBM	Undetermined	1	31	408248 259792
299	1	CBM	Undetermined	1	29	408248 259792
300	1	CBM	Undetermined	1	33	408232 259790
301	1	CBM	Undetermined	1	11	408195 259781
302	1	CBM	Undetermined	1	48	408216 259792
303	1	CBM	Undetermined	1	65	408227 259793
304	1	CBM	Undetermined	1	39	408250 259797
304	1	CBM	Undetermined	1	11	408250 259797
305	2	CBM	Undetermined	1	15	408568 259828
306	2	CBM	Undetermined	1	31	408539 259820
307	2	CBM	Undetermined	1	796	408481 259806
308	2	CBM	Undetermined	1	20	408561 259833
309	2	CBM	Undetermined	1	41	408568 259835
310	2	CBM	Undetermined	1	38	408576 259837
311	3	CBM	Undetermined	4	14	408729 259775
312	3	CBM	Undetermined	2	397	408639 259868
313	3	CBM	Undetermined	1	5	408652 259842
314	3	CBM	Undetermined	1	29	408680 259817
315	5	CBM	Undetermined	1	49	408841 259604
316	5	CBM	Undetermined	1	26	408857 259599
317	5	CBM	Undetermined	1	309	408915 259566
318	5	CBM	Undetermined	1	18	409065 259480
319	5	Pottery	Post-medieval	1	18	409047 259497
320	5	Pottery	Romano-british	1	8	409038 259510
321	5	CBM	Undetermined	1	3	408939 259575

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
321	5	CBM	Undetermined	1	26	408939 259575
322	5	CBM	Undetermined	1	27	408889 259602
322	5	CBM	Undetermined	1	42	408889 259602
323	5	CBM	Undetermined	1	90	408866 259615
324	5	CBM	Undetermined	1	16	408855 259635
325	5	Pottery	Post-medieval	1	9	408909 259597
326	6	CBM	Undetermined	1	91	409263 259413
326	6	CBM	Undetermined	1	0	409263 259413
327	6	CBM	Undetermined	1	11	409272 259389
327	6	CBM	Undetermined	1	38	409272 259389
327	6	CBM	Undetermined	1	7	409272 259389
328	6	CBM	Undetermined	1	90	409255 259390
329	13	CBM	Undetermined	1	13	410252 258966
330	13	CBM	Undetermined	1	21	410258 258956
331	13	CBM	Undetermined	1	14	410225 259006
333	12	Pottery	Post-medieval	1	4	410057 259133
334	12	CBM	Undetermined	1	23	410058 259131
334	12	Pottery	Post-medieval	1	4	410058 259131
334	12	CBM	Undetermined	1	62	410058 259131
336	12	Pottery	Modern	1	7	410053 259127
336	12	CBM	Undetermined	1	4	410053 259127
337	12	Glass	Post-medieval	1	15	410055 259125
337	12	Pottery	Post-medieval	1	6	410055 259125
337	12	CBM	Undetermined	1	22	410055 259125
338	12	Pottery	Post-medieval	1	15	410126 259078
338	12	Pottery	Post-medieval	1	3	410126 259078
339	13	CBM	Undetermined	1	43	410143 259070
504	82	CBM	Undetermined	1	24	417340 248055
505	82	CBM	Undetermined	1	13	417347 248053
506	82	Pottery	Medieval	1	8	417377 248041
507	82	CBM	Undetermined	1	5	417333 248071
508	82	Pottery	Medieval	1	5	417329 248071
509	82	Pottery	Medieval	1	2	417322 248074
512	82	Pottery	Post-medieval	1	2	417330 248083
514	82	CBM	Undetermined	1	6	417360 248071
515	83	CBM	Undetermined	1	54	417459 248065
516	82	Glass	Post-medieval	1	30	417424 248041
517	82	CBM	Undetermined	1	27	417419 248062
518	82	Pottery	Post-medieval	1	7	417436 248062
519	83	CBM	Undetermined	1	53	417441 248067
520	83	Clay pipe	Post-medieval	1	1	417473 248075
521	83	Bone animal	Undetermined	1	6	417450 248076
522	83	Pottery	Post-medieval	1	23	417459 248086
523	83	Pottery	Modern	1	4	417462 248088
524	83	Pottery	Modern	1	6	417530 248087
525	83	CBM	Undetermined	1	41	417556 248088
527	83	Pottery	Post-medieval	1	14	417622 248093
528	83	Clay pipe	Post-medieval	1	3	417558 248082
529	83	CBM	Undetermined	1	29	417485 248083
530	83	CBM	Undetermined	1	49	417564 248062
531	83	CBM	Undetermined	1	26	417659 248066
532	71	CBM	Undetermined	1	11	415625 249224
532	71	CBM	Undetermined	1	8	415625 249224
532	71	CBM	Undetermined	1	3	415625 249224
533	71	CBM	Undetermined	1	48	415623 249230
533	71	CBM	Undetermined	1	30	415623 249230

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
533	71	CBM	Undetermined	1	44	415623 249230
534	71	Pottery	Modern	1	1	415607 249246
535	71	CBM	Undetermined	1	11	415601 249253
536	71	Pottery	Post-medieval	1	3	415574 249248
537	71	CBM	Undetermined	1	6	415546 249279
538	71	CBM	Undetermined	1	11	415478 249300
539	67	CBM	Undetermined	1	78	414694 249820
540	67	CBM	Undetermined	1	22	414643 249862
541	67	Pottery	Post-medieval	1	4	414545 249958
542	67	CBM	Undetermined	1	44	414528 249973
543	67	CBM	Undetermined	1	6	414518 249980
544	66	CBM	Undetermined	1	14	414525 249994
545	67	CBM	Undetermined	1	9	414569 249955
546	67	CBM	Undetermined	1	16	414638 249894
547	67	Pottery	Post-medieval	1	4	414697 249828
548	67	Pottery	Modern	1	5	414580 249952
549	67	CBM	Undetermined	1	25	414543 249981
550	67	CBM	Undetermined	1	46	414533 249996
551	32	Flint knapped	Undetermined	1	30	412326 256332
552	32	CBM	Undetermined	1	21	412329 256356
553	32	Pottery	Post-medieval	1	32	412334 256390
554	32	Pottery	Post-medieval	1	18	412345 256455
555	32	Pottery	Post-medieval	1	20	412353 256490
558	37	CBM	Undetermined	1	54	412899 255402
559	37	CBM	Undetermined	1	41	412860 255451
560	37	CBM	Undetermined	1	30	412852 255450
561	37	CBM	Undetermined	1	46	412869 255403
562	37	CBM	Undetermined	1	84	412823 255473
563	37	CBM	Undetermined	1	19	412961 255246
564	37	Pottery	Modern	1	4	413005 255252
565	38	CBM	Undetermined	1	9	413056 255105
566	40	Pottery	Post-medieval	1	15	413178 254978
567	40	Production waste	Post-medieval	1	58	413142 255026
568	40	Production waste	Modern	1	34	413143 255008
569	47	CBM	Undetermined	1	43	413106 253601
570	47	CBM	Undetermined	1	21	413116 253489
571	44	CBM	Undetermined	1	14	413085 254114
571	44	CBM	Undetermined	1	29	413085 254114
571	44	CBM	Undetermined	1	49	413085 254114
572	44	CBM	Undetermined	1	365	413045 254224
573	44	CBM	Undetermined	1	77	413083 254159
573	44	CBM	Undetermined	1	29	413083 254159
574	44	CBM	Undetermined	1	30	413093 254137
575	44	CBM	Undetermined	1	26	413077 254146
576	44	CBM	Undetermined	1	10	413070 254160
576	44	CBM	Undetermined	1	34	413070 254160
577	44	CBM	Undetermined	1	18	413064 254172
577	44	Clay heat affected	Undetermined	1	10	413064 254172
577	44	CBM	Undetermined	1	5	413064 254172
578	44	CBM	Undetermined	1	48	413038 254200
579	44	CBM	Undetermined	1	44	413050 254175
580	44	Production waste	Modern	1	62	412974 254322
582	44	CBM	Undetermined	1	28	413021 254268
582	44	CBM	Undetermined	1	17	413021 254268
583	44	CBM	Undetermined	1	20	413003 254268

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
584	44	CBM	Undetermined	1	23	412992 254282
585	44	CBM	Undetermined	1	36	412981 254305
586	43	CBM	Undetermined	1	41	412959 254334
587	43	CBM	Undetermined	1	33	412951 254321
588	43	CBM	Undetermined	1	65	412945 254300
589	43	CBM	Undetermined	1	44	413097 254570
590	43	CBM	Undetermined	1	56	413093 254563
591	43	CBM	Undetermined	1	29	413036 254476
592	43	CBM	Undetermined	1	26	412968 254359
593	43	CBM	Undetermined	1	93	412985 254388
594	43	Pottery	Post-medieval	1	17	413015 254443
595	43	CBM	Undetermined	1	9	413043 254496
595	43	CBM	Undetermined	1	27	413043 254496
595	43	CBM	Undetermined	1	76	413043 254496
596	43	CBM	Undetermined	1	18	413049 254558
597	43	CBM	Undetermined	1	13	413015 254497
597	43	CBM	Undetermined	1	42	413015 254497
597	43	CBM	Undetermined	1	32	413015 254497
598	46	CBM	Undetermined	1	15	413075 253607
599	46	Pottery	Post-medieval	1	74	413060 253669
600	46	CBM	Undetermined	1	28	413046 253706
601	68	Clay heat affected	Undetermined	2	33	414928 249623
601	68	CBM	Undetermined	1	8	414928 249623
602	68	CBM	Undetermined	1	28	414962 249596
602	68	CBM	Undetermined	1	11	414962 249596
603	68	CBM	Undetermined	1	80	415001 249567
603	68	CBM	Undetermined	1	59	415001 249567
604	68	CBM	Undetermined	1	97	415145 249446
605	68	Pottery	Post-medieval	1	8	415081 249505
606	68	CBM	Undetermined	1	34	415072 249513
606	68	CBM	Undetermined	1	14	415072 249513
607	68	CBM	Undetermined	1	47	415051 249528
608	68	CBM	Undetermined	1	23	414984 249605
609	68	CBM	Undetermined	1	37	415004 249593
610	65	CBM	Undetermined	1	86	414271 250140
611	66	CBM	Undetermined	1	150	414297 250125
612	65	Pottery	Romano-british	1	16	414064 250321
612	65	CBM	Undetermined	1	14	414064 250321
613	65	CBM	Undetermined	1	11	414100 250289
613	65	CBM	Undetermined	1	30	414100 250289
614	65	Pottery	Post-medieval	1	11	414119 250268
615	65	Pottery	Post-medieval	1	8	414139 250241
615	65	CBM	Undetermined	1	11	414139 250241
616	65	Pottery	Post-medieval	1	26	414223 250160
617	65	CBM	Undetermined	1	100	414205 250170
618	65	Clay heat affected	Undetermined	1	53	414125 250243
618	65	CBM	Undetermined	1	2	414125 250243
619	65	Clay heat affected	Undetermined	1	42	414111 250258
619	65	CBM	Undetermined	1	26	414111 250258
620	65	Clay heat affected	Undetermined	1	86	414099 250272
620	65	CBM	Undetermined	1	123	414099 250272

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
621	65	Clay heat affected	Undetermined	1	44	414090 250278
622	65	CBM	Undetermined	1	41	414056 250317
623	65	CBM	Undetermined	1	72	414045 250321
624	65	CBM	Undetermined	1	11	414033 250288
625	65	CBM	Undetermined	1	53	414044 250282
626	65	CBM	Undetermined	1	41	414085 250235
626	65	Pottery	Medieval	1	41	414085 250235
626	65	CBM	Undetermined	1	12	414085 250235
627	64	CBM	Undetermined	1	44	413826 250416
628	64	Clay heat affected	Undetermined	1	15	413847 250403
628	64	CBM	Undetermined	1	31	413847 250403
629	64	CBM	Undetermined	1	58	413937 250353
631	64	CBM	Undetermined	1	31	413932 250369
632	64	CBM	Undetermined	1	76	413881 250403
632	64	CBM	Undetermined	1	15	413881 250403
633	64	CBM	Undetermined	1	51	413797 250446
634	64	Pottery	Post-medieval	1	18	413768 250472
635	64	Clay heat affected	Undetermined	1	39	413939 250374
637	63	CBM	Undetermined	1	54	413701 250505
638	63	CBM	Undetermined	1	42	413696 250510
639	63	CBM	Undetermined	1	52	413648 250535
640	63	CBM	Undetermined	1	25	413639 250539
640	63	CBM	Undetermined	1	85	413639 250539
641	63	CBM	Undetermined	2	388	413637 250543
642	63	CBM	Undetermined	1	42	413647 250548
642	63	CBM	Undetermined	1	131	413647 250548
643	63	CBM	Undetermined	1	28	413655 250542
644	63	CBM	Undetermined	1	38	413673 250531
645	63	CBM	Undetermined	1	18	413649 250558
645	63	CBM	Undetermined	1	18	413649 250558
646	63	CBM	Undetermined	1	118	413617 250516
647	63	CBM	Undetermined	1	43	413668 250505
648	63	CBM	Undetermined	1	10	413678 250503
649	63	CBM	Undetermined	1	7	413682 250500
650	63	CBM	Undetermined	1	92	413680 250498
652	61	Clay heat affected	Undetermined	1	42	413491 250626
652	61	CBM	Undetermined	3	49	413491 250626
653	61	Glass	Post-medieval	1	26	413348 250700
653	61	CBM	Undetermined	2	46	413348 250700
654	61	CBM	Undetermined	1	22	413318 250717
655	61	CBM	Undetermined	1	18	413344 250722
655	61	CBM	Undetermined	1	16	413344 250722
656	61	Pottery	Post-medieval	1	86	413410 250686
656	61	CBM	Undetermined	1	42	413410 250686
657	61	Pottery	Post-medieval	1	9	413515 250618
657	61	Clay heat affected	Undetermined	1	69	413515 250618
658	61	Pottery	Post-medieval	1	2	413466 250647
659	61	CBM	Undetermined	1	62	413416 250676
660	61	CBM	Undetermined	1	167	413395 250687
661	61	Clay heat affected	Undetermined	1	35	413370 250699

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
662	61	Clay heat affected	Undetermined	24	177	413118 250841
663	61	CBM	Undetermined	1	52	413168 250819
664	61	CBM	Undetermined	1	17	413284 250747
665	61	Pottery	Post-medieval	1	5	413234 250779
666	60	CBM	Undetermined	1	71	413112 250842
667	61	Production waste	Post-medieval	1	22	413093 250817
668	61	Pottery	Modern	1	48	413117 250803
668	61	CBM	Undetermined	1	541	413117 250803
669	61	Pottery	Post-medieval	1	26	413201 250760
670	60	CBM	Undetermined	1	20	413027 250899
671	60	Clay heat affected	Undetermined	1	9	412944 250912
672	60	CBM	Undetermined	1	115	413002 250867
673	57	CBM	Undetermined	1	4	413053 251308
674	57	Pottery	Post-medieval	1	13	413049 251317
675	52	CBM	Undetermined	1	18	413169 252530
675	52	CBM	Undetermined	1	53	413169 252530
676	52	CBM	Undetermined	1	98	413165 252510
677	52	CBM	Undetermined	1	34	413161 252498
678	52	CBM	Undetermined	1	65	413158 252483
679	52	CBM	Undetermined	1	200	413146 252451
680	52	CBM	Undetermined	1	33	413127 252399
681	52	Clay heat affected	Undetermined	1	18	413101 252327
682	52	CBM	Undetermined	1	247	413100 252327
682	52	CBM	Undetermined	1	162	413100 252327
683	52	CBM	Undetermined	1	119	413092 252299
684	52	CBM	Undetermined	1	59	413093 252295
685	52	CBM	Undetermined	1	0	413084 252265
688	52	CBM	Undetermined	1	24	413090 252047
689	52	CBM	Undetermined	1	18	413089 252077
689	52	CBM	Undetermined	1	60	413089 252077
690	52	CBM	Undetermined	1	26	413087 252141
691	52	Pottery	Post-medieval	1	64	413086 252176
692	52	CBM	Undetermined	1	8	413060 252148
693	52	CBM	Undetermined	1	21	413060 252090
693	52	CBM	Undetermined	1	150	413060 252090
694	52	CBM	Undetermined	1	40	413060 252045
695	53	Pottery	Medieval	1	6	413090 251937
695	53	Pottery	Post-medieval	1	17	413090 251937
696	53	CBM	Undetermined	1	62	413085 251937
696	53	CBM	Undetermined	1	22	413085 251937
697	53	CBM	Undetermined	1	38	413084 251914
698	53	CBM	Undetermined	1	10	413081 251816
699	27	CBM	Undetermined	1	124	411744 257044
700	27	CBM	Undetermined	1	18	411800 257016
701	28	CBM	Undetermined	1	131	411940 256917
702	28	CBM	Undetermined	1	23	411918 256939
703	28	CBM	Undetermined	1	18	411836 257002
704	23	Pottery	Modern	1	4	411410 257637
705	23	CBM	Undetermined	1	7	411382 257692
706	23	CBM	Undetermined	1	16	411378 257700
707	23	CBM	Undetermined	1	25	411368 257726
708	23	CBM	Undetermined	1	70	411350 257731
709	23	CBM	Undetermined	2	70	411362 257711

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
710	23	Pottery	Post-medieval	1	19	411363 257708
710	23	Pottery	Post-medieval	1	10	411363 257708
711	23	Pottery	Modern	1	40	411371 257694
711	23	CBM	Undetermined	1	11	411371 257694
712	23	Pottery	Post-medieval	1	2	411383 257656
713	23	Pottery	Post-medieval	1	11	411408 257613
714	23	Pottery	Post-medieval	2	6	411372 257616
715	23	CBM	Undetermined	1	20	411351 257659
716	23	CBM	Undetermined	1	31	411348 257672
717	24	Pottery	Post-medieval	1	12	411466 257481
718	24	CBM	Undetermined	1	38	411460 257527
718	24	CBM	Undetermined	1	30	411460 257527
718	24	CBM	Undetermined	1	45	411460 257527
719	24	CBM	Undetermined	1	34	411456 257537
720	24	Pottery	Post-medieval	1	4	411453 257552
721	24	CBM	Undetermined	1	16	411443 257567
722	24	CBM	Undetermined	1	66	411431 257583
722	24	CBM	Undetermined	1	67	411431 257583
722	24	CBM	Undetermined	1	67	411431 257583
723	24	CBM	Undetermined	1	7	411451 257521
723	24	CBM	Undetermined	1	4	411451 257521
724	24	CBM	Undetermined	1	58	411481 257451
724	24	CBM	Undetermined	1	58	411481 257451
725	24	CBM	Undetermined	6	23	411505 257432
725	24	CBM	Undetermined	1	17	411505 257432
726	24	Pottery	Post-medieval	1	2	411484 257483
726	24	CBM	Undetermined	1	18	411484 257483
727	24	Pottery	Post-medieval	1	1	411482 257484
728	24	CBM	Undetermined	1	28	411452 257476
728	24	CBM	Undetermined	1	4	411452 257476
728	24	CBM	Undetermined	1	19	411452 257476
729	24	CBM	Undetermined	1	19	411481 257444
730	24	CBM	Undetermined	1	44	411465 257481
731	25	CBM	Undetermined	1	927	411583 257283
731	25	CBM	Undetermined	1	181	411583 257283
732	25	CBM	Undetermined	1	59	411568 257320
733	25	CBM	Undetermined	1	36	411548 257344
734	24	CBM	Undetermined	1	23	411519 257415
735	25	CBM	Undetermined	1	42	411526 257376
736	25	CBM	Undetermined	1	84	411538 257356
736	25	CBM	Undetermined	1	1238	411538 257356
737	25	CBM	Undetermined	1	22	411565 257310
737	25	CBM	Undetermined	1	36	411565 257310
739	1	CBM	Undetermined	1	11	408445 259792
740	1	Pottery	Modern	1	5	408301 259770
740	1	CBM	Undetermined	1	11	408301 259770
741	1	CBM	Undetermined	1	2	408285 259765
741	1	Pottery	Modern	1	4	408285 259765
741	1	CBM	Undetermined	1	32	408285 259765
742	1	Pottery	Modern	1	21	408273 259764
743	1	CBM	Undetermined	1	189	408221 259766
743	1	CBM	Undetermined	1	32	408221 259766
744	1	Pottery	Modern	1	2	408259 259768
745	1	Glass	Post-medieval	1	1	408275 259772
746	1	CBM	Undetermined	1	57	408294 259775
747	1	CBM	Undetermined	1	42	408341 259778

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
748	1	CBM	Undetermined	1	69	408395 259789
749	1	CBM	Undetermined	1	49	408442 259812
750	1	CBM	Undetermined	1	107	408379 259819
751	1	CBM	Undetermined	1	61	408335 259814
752	1	CBM	Undetermined	1	109	408288 259807
752	1	CBM	Undetermined	1	92	408288 259807
753	1	CBM	Undetermined	1	73	408256 259801
754	2	CBM	Undetermined	1	13	408571 259840
755	2	CBM	Undetermined	1	38	408522 259833
756	2	CBM	Undetermined	1	10	408545 259845
756	2	CBM	Undetermined	2	42	408545 259845
757	2	Pottery	Modern	1	3	408493 259822
758	2	CBM	Undetermined	1	8	408500 259856
758	2	CBM	Undetermined	1	12	408500 259856
759	2	CBM	Undetermined	1	23	408539 259847
760	2	CBM	Undetermined	1	12	408585 259871
761	2	CBM	Undetermined	1	42	408609 259878
761	2	CBM	Undetermined	1	57	408609 259878
761	2	CBM	Undetermined	1	4	408609 259878
762	2	CBM	Undetermined	1	54	408528 259851
763	2	CBM	Undetermined	1	26	408524 259854
764	2	CBM	Undetermined	1	46	408517 259850
764	2	CBM	Undetermined	1	51	408517 259850
765	2	CBM	Undetermined	1	13	408500 259844
766	3	CBM	Undetermined	1	35	408626 259879
767	3	CBM	Undetermined	1	100	408671 259887
768	3	CBM	Undetermined	1	19	408744 259798
768	3	CBM	Undetermined	1	630	408744 259798
769	3	CBM	Undetermined	1	14	408726 259797
770	3	CBM	Undetermined	1	23	408707 259814
771	5	CBM	Undetermined	1	73	409067 259524
772	5	Pottery	Post-medieval	1	29	409049 259532
772	5	CBM	Undetermined	1	27	409049 259532
773	5	CBM	Undetermined	1	52	409024 259549
774	5	Pottery	Post-medieval	1	17	408947 259594
775	5	CBM	Undetermined	1	13	408908 259616
775	5	CBM	Undetermined	1	42	408908 259616
776	5	CBM	Undetermined	1	31	408900 259622
776	5	CBM	Undetermined	2	34	408900 259622
777	5	CBM	Undetermined	1	93	408876 259634
778	5	CBM	Undetermined	1	142	408928 259595
779	5	Pottery	Medieval	1	5	408944 259586
780	5	CBM	Undetermined	1	40	408983 259561
781	5	CBM	Undetermined	1	25	409055 259518
782	5	CBM	Undetermined	1	85	409062 259514
783	5	CBM	Undetermined	1	34	409084 259491
784	5	CBM	Undetermined	1	16	409037 259520
785	5	CBM	Undetermined	1	62	409034 259523
786	5	Pottery	Romano-british	1	1	408931 259584
787	6	CBM	Undetermined	1	4	409267 259407
787	6	CBM	Undetermined	1	15	409267 259407
787	6	CBM	Undetermined	1	10	409267 259407
788	6	CBM	Undetermined	1	41	409274 259406
788	6	CBM	Undetermined	1	92	409274 259406
788	6	CBM	Undetermined	1	36	409274 259406

Find number	Plot	Identification	Period	Count	Weight (g)	National grid reference
789	6	CBM	Undetermined	1	127	409274 259390
789	6	CBM	Undetermined	1	46	409274 259390
789	6	CBM	Undetermined	1	194	409274 259390
790	6	CBM	Undetermined	1	32	409232 259411
791	13	Pottery	Post-medieval	1	9	410291 258969
792	13	CBM	Undetermined	1	20	410233 259014
793	13	CBM	Undetermined	1	7	410231 259015
793	13	CBM	Undetermined	1	9	410231 259015
794	13	CBM	Undetermined	1	33	410218 259024
795	13	CBM	Undetermined	1	47	410201 259039
796	13	CBM	Undetermined	1	23	410169 259072
797	13	CBM	Undetermined	1	37	410255 259012
798	11	Pottery	Post-medieval	1	15	410019 259117
799	11	Pottery	Post-medieval	1	29	410017 259118
799	11	Pottery	Post-medieval	1	1	410017 259118
800	12	CBM	Undetermined	1	30	410042 259099
801	12	CBM	Undetermined	1	26	410076 259076
803	12	CBM	Undetermined	1	12	410158 259037
804	12	CBM	Undetermined	1	67	410119 259055
805	12	CBM	Undetermined	1	17	410096 259068
806	12	CBM	Undetermined	1	58	410061 259091
807	12	Pottery	Post-medieval	1	5	410034 259113
808	12	CBM	Undetermined	1	3	410038 259112
808	12	CBM	Undetermined	1	17	410038 259112
1002	60	Pottery	Post-medieval	1	2	413048 250868
1003	60	CBM	Undetermined	1	50	413036 250876
1003	60	CBM	Undetermined	1	10	413036 250876
1004	57	Pottery	Modern	1	4	413058 251316
1007	52	Pottery	Modern	1	5	413181 252486
1008	52	CBM	Undetermined	1	18	413084 252211
1009	52	CBM	Undetermined	1	11	413077 252199
1012	52	Pottery	Modern	1	1	413080 252011
1013	52	CBM	Undetermined	1	44	413081 251997
1014	52	CBM	Undetermined	1	50	413061 251982
1015	52	Pottery	Modern	1	2	413099 252040
1016	52	CBM	Undetermined	1	70	413092 252070
1017	53	CBM	Undetermined	1	42	413056 251883
1018	53	CBM	Undetermined	1	24	413061 251913
1019	53	CBM	Undetermined	1	17	413060 251916
1020	28	Glass	Post-medieval	1	6	411864 257022
1021	28	CBM	Undetermined	3	7	411947 256965
1502	60	CBM	Undetermined	1	20	413038 250864
1503	52	CBM	Undetermined	1	27	413112 252317
1504	52	CBM	Undetermined	1	19	413102 252298
1505	52	CBM	Undetermined	1	11	413078 252220
1506	52	CBM	Undetermined	1	38	413068 252038
1507	52	Glass	Post-medieval	1	6	413069 252072
1508	52	CBM	Undetermined	1	6	413066 252094
1508	52	CBM	Undetermined	1	13	413066 252094
1509	52	CBM	Undetermined	1	13	413085 252112
1510	53	CBM	Undetermined	1	3	413076 251932
1511	53	CBM	Undetermined	1	92	413077 251914
1512	53	CBM	Undetermined	1	30	413080 251863
1513	28	Pottery	Post-medieval	1	8	411905 256968
1514	28	Pottery	Post-medieval	1	4	411973 256940

APPENDIX C

Explanation of phased approach to archaeological investigation and mitigation

TRANSCO'S PHASE OF WORK	**CORRESPONDING ARCHAEOLOGICAL STAGES**
feasibility assessment	***Stage 1*** ***feasibility study of route corridor option(s) -*** an appraisal of archaeological potential
conceptual design	***Stage 2*** ***desk-based assessment of route corridor -*** a thorough synthesis of available archaeological information
detailed design	***Stage 3*** ***field surveys of entire preferred pipeline route -*** field reconnaissance survey field walking geophysical survey (metal detector survey) (auger survey) ***Stage 4*** ***field evaluation of targeted areas along preferred pipeline route -*** machine-excavated trenches hand-dug test-pits ***Stage 5*** ***excavation -*** detailed excavation of those sites which it is not possible to avoid or desirable to preserve
construction	***Stage 6*** ***watching brief -*** permanent presence monitoring of all ground disturbing activities
post-construction	***Stage 7*** ***archive and publication -*** synthesis and dissemination of results, leading on from each of the stages outlined above

Explanation of Phased Approach to Mitigation

Network Archaeology Ltd recognises seven main phases of work in the archaeological investigation of pipelines:

Stage 1 Feasibility Study
An appraisal of archaeological potential

Stage 2 Desk-based Assessment
A thorough synthesis of available information.

Stage 3 Non-intrusive Field Survey

3a Field Reconnaissance Survey (rapid walkover)
This involves a visual inspection of the entire length of the proposed pipeline route in order to record the following:

- location and character of unrecorded earthworks
- the level of preservation of known earthworks (e.g. ridge-and-furrow)
- the occurrence of soil and vegetation changes which could indicate the presence of archaeological deposits
- land-use
- topographic variations
- visible geology
- health and safety implications
- project specific requirements

3b Field walking
Field walking involves the systematic recovery of artefacts (pottery, tile, glass, slag, coins *etc.*) from the surface of ploughed fields. This exercise is intended to:

- determine the date and spatial extent of *known* sites on the proposed route which could not be avoided by route modifications.
- determine if any *known* sites lying close to the proposed route extend into it.
- locate, delimit and date previously *unknown* sites, lying in the course of the proposed route.

Field walking needs bare earth, ideally ploughed, harrowed and weathered. Late autumn and winter is the optimum time for this work.

3c Metal Detector Survey
Metal detecting can be carried out on all types of land. Ideally, detectorists with local experience are used. This exercise:

- complements field walking in arable areas.
- provides the only means of obtaining dating evidence in pasture, fen, moss and woodland areas.
- identifies and date sites that may not be archaeologically visible by field walking (e.g. metal hoards, fair/trading sites, accompanied burials)

3d Earthwork survey

This work is undertaken to produce a topographic record of extant earthworks. These sites might include *known* earthworks identified by the Desk based Assessment, or previously *unknown* earthworks found during the Field Reconnaissance Survey. The sites may include settlement earthworks or agricultural earthworks (such as, ridge and furrow and lynchets).

Two methods are commonly employed; plane table survey which obtains a hachure survey, or total-station theodolite survey which produces a close contour plot.

3e Auger Survey

The retrieval of sub-surface soil samples can be used to determine the presence or absence, nature, extent and state of preservation of known or potential archaeological deposits. This may be appropriate in areas sealed by peat or alluvium, or on sensitive sites such as earthworks. Areas requiring auger survey can be identified during or shortly after the field reconnaissance and field walking surveys. This information can be crucial for determining areas suitable for geophysical survey.

3f Geophysical Survey

Geophysical survey can be used to:

- determine the character and spatial extent of *known* sites on the proposed route which can not be avoided by route modifications.
- determine if any *known* sites lying close to the proposed route extend into it.
- locate, delimit and determine the character of previously *unknown* sites lying in the course of the proposed route.

There are a number of available techniques, the most appropriate of which are *magnetometry, magnetic susceptibility* and *resistivity.*

Magnetometry

This technique detects local variations in the earth's magnetic field, resulting from anthropogenic changes to soil. These variations are often caused by the presence of buried archaeological deposits (e.g. ditches, pits, buildings, *etc*.). This survey

technique uses hand-held equipment, usually a Geoscan FM 35 Fluxgate Gradiometer.
The instrument can be used to scan large areas before focusing on smaller areas for detailed gridded survey, usually at 1m transect separation. Scanning is often used in tandem with magnetic susceptibility (see below) to identify areas of potential for detailed survey.

Magnetometry is most suited to shallow archaeology up to *c*.1-1.5m below ground level. It can operate in all weathers and is not prone to seasonal effects. In general, boulder clay and alluvium tend to be poorly responsive, whilst other solid geologies and riverine gravels are relatively conducive to magnetometry, although local iron concentrations can sometimes give spurious results. It can also be affected by magnetic fields (e.g. pylons). This technique is quick and cost-effective.

Magnetic susceptibility
This technique records variations of magnetic susceptibility within topsoil and subsoil. Enhanced susceptibility is often a sign of past human activity. It differs from magnetic scanning in that it locates areas of *archaeological activity* rather than discrete *features*. Magnetic susceptibility is often used in tandem with magnetic scanning to identify areas of potential for detailed survey.

Resistivity
In this method, an electric current is passed through the ground between a pair of mobile electrodes. The current passes more easily through soil which has a lower resistance (e.g. ditch fills), but is impeded by buried walls and road surfaces, which have a higher resistance. Survey involves pushing a pair of electrodes into the ground along transects 1m apart. A Geoscan RM15 resistivity meter with twin electrode configuration is commonly applied. A new attachment called a 'multi-plexer', and a technique called 'resistivity profiling' allows readings to be taken from multiple levels at the same time.

Resistivity is most suited to shallow archaeology up to *c*.1m below ground level. The technique is slower than magnetometry and can be hampered by hard ground; ideally the probes need soft damp soil for good conductivity. Resistivity is affected by seasonal variability of groundwater. Saturated soils or soils with a high saline content are likely to produce poor results. Natural geological variations can also make interpretation difficult. This type of survey can show greater detail than magnetometry.

Stage 4 Field Evaluation
In some cases, where the results of field walking and/or geophysical survey are positive, and it is not possible or desirable to avoid a site, an evaluation can take place in advance of construction. This might involve:

4a machine-excavated trenches
4b hand-dug test-pits

By using these techniques, it should be possible to confirm the presence or absence of archaeological deposits and to determine their character, extent, date and state of preservation. The choice of technique(s) will depend upon site-specific factors.

It may be desirable to undertake evaluation of certain category B or category C sites with high archaeological potential, even if the geophysical survey has failed to locate significant anomalies. Evaluation work is usually completed well in advance of pipeline construction.

Stage 5 Area Excavation

In occasional cases where the results of evaluation are positive, and it is not possible or desirable to avoid a site, area excavation may be the most appropriate course of action, in order to record a site prior to the construction of the pipeline. Precise excavation strategies for dealing with such archaeological remains will depend on site-specific factors. It is usually preferable to preserve significant archaeological deposits (such as settlements and burials) *in-situ*, by modifying the course of the pipeline.

Stage 6 Watching Brief (during construction)

A permanent-presence watching brief takes place during the construction of the pipeline. As a minimum, this consists of archaeological monitoring of all topsoil stripping and pipeline trench excavations. Archaeological deposits identified are ideally preserved *in situ*, or can be recorded by excavation.

Stage 7 Post-Excavation (Archive, Report and Publication)

A post-excavation programme for dealing with all records of investigated archaeological remains and recovered artefacts usually follows each of the stages outlined above. This includes the collation and cataloguing of all site records, the processing, conservation and cataloguing of artefacts, the production of an archive report, and, where appropriate, the drafting of articles for publication.

APPENDIX D

Specialist reports

Assessment of the pottery

Alan Vince

INTRODUCTION

One hundred and forty two sherds of pottery recovered from fieldwalking along the line of a pipeline were submitted to the author by Network Archaeology Ltd for identification and assessment. They come from 29 separate plots (Table 1).

The pottery ranged in date from the Roman period to the 19th or 20th century but there were no sherds dating between the Anglo-Saxon and the high medieval periods (ie 5th to early 14th centuries). None of the pottery found appears to indicate the location of settlements and is probably present as a result of the manuring of fields with 'night soil' and farmyard manure.

Table 1

Sitecode	RPOT	LMED	PMED	EMOD	Grand Total
1			2	5	7
2				1	1
5	2	1	4		7
12			9	1	10
13			1		1
23	1		7	3	11
24	1	2	6		9
25			3		3
28			2		2
32			5	2	7
33			2		2
37				1	1
38				1	1
40			1		1
43			5	1	6
44		1			1
46			1		1
52			2	3	5
55		2	1		3
57			1	1	2
60			1		1
61			11	1	12
64		1			1
65	2	3	5	2	12
67			2	1	3

68			1		1
71			1	6	7
82		3	6	2	11
83		1	7	5	13
Grand Total	6	14	86	36	142

DESCRIPTION

Roman (1st to 4th centuries)

Six sherds of Romano-British pottery were recovered. Those from Plots 5, 23 and 24 were very abraded and impossible to identify in detail. Those from Plot 65, however, were in better condition and included a greyware jar rim and a Severn Valley ware tankard rim.

Late Medieval (later 14th to early 16th centuries)

Fourteen sherds of medieval pottery were recovered. They are of two types. The first is Malvern Chase medieval glazed ware (HERB4, Vince 1977;Vince 1985). The second is a local red earthenware (MEDLOC). In both colour and texture, this fabric is very similar to the Malvern Chase ware but it contains a higher quantity of rounded quartz sand and no examples of igneous and metamorphic rocks from the Malvern hills. A very similar fabric was recently studied by the author at Beaudesert Castle, Henley in Arden, where it was used to produced the 15th-century roof furniture (Vince 2002) and it is clearly a local Warwickshire fabric. It may be that this pipeline runs along the approximate boundary between the market areas of these two wares but the total quantity of finds is too small to prove this point (Table 2).

Very few of the Malvern Chase wares had diagnostic features but those that did include a lid-seated cooking pot or (more probably) handled pipkin, wide, plain strap handles and flat-topped jug rims. These are features of the industry from the later 14th century onwards. The MEDLOC sherds are probably of similar date but there is no independent corroboration of this.

Table 2

Plot	HERB4	MEDLOC	Grand Total
5	1		1
24	2		2
44	1		1
55		2	2
64		1	1
65	1	2	3
82	1	2	3
83	1		1

Post-medieval (mid 16th to mid 18th centuries)

Eighty-six sherds dating between the middle of the 16th and middle of the 18th century were recovered (Table 3).

They are of eight ware types which can be roughly divided into an early post-medieval group dating from the mid 16th century to the mid 17th century and a later post-medieval group dating from the later 17th to the mid 18th centuries. The earlier group consists of Cistercian wares (CSTN), Malvern Chase Pink ware (HERB5), Martincamp earthenware (MART) and Staffordshire coarseware pancheons (STCOAR PANC). Twenty-nine sherds of this group were found in total, spread across 15 plots. It may be significant that the two sherds of Malvern Chase Pink ware were found on plots that did not produce the Staffordshire Coarseware (Plots 5 and 65). However, the thin spread of material (no plot produced more than five sherds!) makes any conclusions highly tentative.

The later group consists of the remaining Staffordshire Coarsewares (STCOAR), Staffordshire Coarsewares with semi-stoneware bodies (STBU), Staffordshire mottled glazed ware (STMO), Staffordshire Redwares (STRE) and Westerwald stoneware (WEST). There were 57 sherds in this group from 20 separate plots. The largest collection came from Plot 61, which produced the full range of wares. The lack of Staffordshire slipwares, either wheelthrown (STSL) or press-moulded (STCO and STEM) is remarkable but whether this is a reflection of relative poverty or the specialized function of the sites from which this pottery was derived (or even recovery policy!) is not known.

The range of forms present in these two groups is interesting since it shows a major shift between the two periods. This is, in part, due to the assignment of every pancheon to the earlier period but must in part be a true reflection of a change in pottery use in this area (Table 4).

Table 3

Sitecode	CSTN	HERB5	MART	STBU	STCOAR	STMO	STRE	WEST	Grand Total
61	1			1	6	1	1	1	11
82			1	1	4				6
12	1			1	7				9
65	2	1		1	1				5
24					6				6
83	1				5		1		7
23					7				7
5		2			2				4
32	1				4				5
43					5				5
25					2		1		3
55					1				1
1					2				2
52					2				2
67					2				2
28					2				2

33				2				2
71				1				1
57	1							1
13				1				1
40				1				1
46				1				1
60				1				1
68	1							1
Grand Total	8	3	1	4	65	1	3	1	86

The pancheon is sometimes thought to have had an industrial fuction, to separate and then float off the cream from milk. By contrast, the later post-medieval group contains sherds of flowerpot, from five separate plots (12, 13, 60, 61 and 71). In urban assemblages late 17th/18th-century flowerpots are interpreted as evidence for the growing of plants for display and recreation but given the depressed picture of life which this pottery indicates it may be that they are related to market gardening.

Table 4

Form	epmed	lpmed	Grand Total
PANC	18		18
CUP	4		4
BOWL	2	33	35
JAR	2	7	9
FLASK	1		1
JAR/CUP	1		1
JUG	1	2	3
CHP/POSS		3	3
FLP		8	8
POSS		2	2
TANK		1	1
TANK?		1	1
Grand Total	29	57	86

Early Modern (late 18th century and later)

Thirty-six sherds of early modern pottery were recovered from the pipeline (Table 5). Most of these wares are likely to date to the 19th century: there are, for example, only two sherds of Creamware.

As in the later post-medieval group, there is a concentration on several sites of flowerpots with 11 sherds, from 6 plots (12, 23, 37, 52, 67 and 71). The range of wares and forms found is wider than in previous periods although in most cases we have no clue as to where these were produced since they are factory products. Only two sherds of Derbyshire stoneware can be provenanced.

Table 5

Sitecode	CONP	CREA	DERBS	ENGS	ENPO	LPML	OCNCBW	PEAR	TPW	WHITE	Grand Total
1	1						1	1	2		5
2									1		1
12						1					1
23				1		2					3
32			1					1			2
37						1					1
38									1		1
43										1	1
52						1			2		3
57										1	1
61				1							1
65		1								1	2
67						1					1
71					1	5					6
82			1						1		2
83		1							3	1	5
Grand Total	1	2	2	2	1	11	1	2	10	4	36

ASSESSMENT

The average sherd weight and condition of the pottery suggests that most of it could have been in the ploughsoil for a considerable period. This might indicate that it was brought onto the sites with night soil or farmyard manure, or it might indicate that the pottery comes from sites which have been ploughed-out. In no case is the concentration of finds high enough to suggest that the finds indicate a settlement site.

The finds indicate that there is an unequal distribution of Roman pottery, with only 4 plots producing sherds (Plots 5, 23, 24 and 65). Late medieval potsherds are twice as common and come from eight plots. In no case are there more than three late medieval sherds from a plot. Post-medieval sherds are much more common but again this is expressed more by their presence on more plots rather than in higher concentrations in any plot. The maximum number of sherds per plot is 11 but the average is only 3.8 sherds per plot (including only those plots on which post-medieval pottery was present). Finally, there are 16 plots on which pottery definitely dating to the late 18th century or later have been found, an average of 2.25 sherds per plot and a maximum of 6 sherds.

None of the potsherds is of individual interest although as a group they are useful in showing that in the late medieval period this area was the boundary between the Malvern Chase pottery industry and a contemporary Warwickshire industry producing very similar wares (Vince 1977). Later on, the area was supplied by midlands industries exploiting Coal Measure clays and there are no examples of wares from industries to the south or east (such as Ashton Keynes, Potterspury or Brill). This suggests that whereas the medieval supply pattern ran east-west, along the Warwickshire Avon, the later supply was from the north. Thus, this part of Warwickshire was receiving Staffordshire coarsewares earlier and in greater frequencies than sites in the Severn Valley (1984;Vince 1983). This change seems to have taken place during the latest phase of the Malvern Chase industry in the mid 16th to early 17th centuries and is thus not related to the construction of canals which link the Warwickshire Avon to the Birmingham area and thus to Staffordshire, since these are considerably later.

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Appendix One

Plot	Find No	Transect	PERIOD	cname	subfabric	Form	Nosh	NoV	Weight	Description	Part	Use	Condition
5	320	D	RPOT	RPOT?		-	1	1	8		BS		VABR
5	786	C	RPOT	RPOT?		-	1	1	1		BS		VABR
82	511	C	EMOD	DERBS		BLACKLEADING BOTTLE	1	1	10	BRISTOL GLAZED INT	BS		
82	063	B	lpmed	STCOAR		BOWL	1	1	10	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS		SPALLED
82	063	B	lpmed	STCOAR		BOWL	1	1	7	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS		
83	079	B	lpmed	STCOAR		BOWL	1	1	6	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS		
32	117	B	lpmed	STCOAR		BOWL	1	1	42	BROWN SLIPPED INT AND EXT;INT GLAZE	BS		
33	120	A	lpmed	STCOAR		BOWL	1	1	42		BS		SPALLED
33	124	B	lpmed	STCOAR		BOWL	1	1	102	LARGE VESSEL	R		SPALLED
28	1514	A	lpmed	STCOAR		BOWL	1	1	4	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS		ABR
43	157	C	EMOD	WHITE		BOWL	1	1	2		BS		
61	229	D	lpmed	STCOAR		BOWL	1	1	6	BROWN GLAZED INT	BS		VABR
23	263	E	lpmed	STCOAR		BOWL	1	1	5		BS		ABR

24	265	E	lpmed	STCOAR		BOWL	1	1	13		B	SCRATCHED GLAZE	
24	269	E	lpmed	STCOAR		BOWL	1	1	61		R		
1	292	C	lpmed	STCOAR		BOWL	1	1	8	SHELL-EDGED	BS		
1	293	C	lpmed	STCOAR		BOWL	1	1	6		BS		
5	319	D	epmed	HERB5		BOWL	1	1	18		R		VABR
5	325	C	lpmed	STCOAR		BOWL	1	1	9	INT BROWN SLIP UNDER PLAIN GL	BS		
12	337	B	lpmed	STCOAR		BOWL	1	1	6	BROWN SLIPPED EXT;GLAZED INT	BS		
12	338	B	lpmed	STCOAR		BOWL	1	1	15	BROWN SLIPPED EXT;GLAZED INT	BS		
82	510	C	lpmed	STCOAR		BOWL	1	1	4	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS		CHIPPED
32	553	E	lpmed	STCOAR	SCRATCHED GLAZE	BOWL	1	1	32		BS		
32	555	E	lpmed	STCOAR		BOWL	1	1	20	BROWN SLIPPED EXT;INT GLAZE	BS		
40	566	A	lpmed	STCOAR		BOWL	1	1	15		BS	SCRATCHED GLAZE	
65	614	A	lpmed	STCOAR		BOWL	1	1	11	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS		SPALLED
61	656	A	lpmed	STCOAR		BOWL	1	1	86	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	B		CHIPPED
23	710	B	lpmed	STCOAR		BOWL	1	1	10	INT GL	B	SCRATCHED GLAZE	

23	710	B	lpmed	STCOAR	BOWL	1	1	19		BS		SPALLED
23	711	B	EMOD	ENGS	BOWL	1	1	40	TURNED EXT;CONICAL FORM	BS		
23	712	B	lpmed	STCOAR	BOWL	1	1	2		BS		SPALLED
23	714	E	lpmed	STCOAR	BOWL	2	2	6		BS		
24	717	B	lpmed	STCOAR	BOWL	1	1	12	INT GL OVER BROWN SLIP;EXT BROWN SLIP	BS	SCRATCHED GLAZE	SPALLED GLAZE
24	720	A	lpmed	STCOAR	BOWL	1	1	4		BS		
24	727	A	lpmed	STCOAR	BOWL	1	1	1		BS		
1	741	E	EMOD	NCBW	BOWL	1	1	4	WHITE SLIP LINES	R		
5	772	A	lpmed	STCOAR	BOWL	1	1	29	INT BROWN SLIP UNDER PLAIN GL	BS		SPALLED
5	774	A	epmed	HERB5	BOWL	1	1	17	INT BROWN SLIP UNDER PLAIN GL	BS		VABR
12	798	E	lpmed	STCOAR	BOWL	1	1	15	BROWN SLIPPED EXT;GLAZED INT	BS		
12	799	E	lpmed	STCOAR	BOWL	1	1	1	BROWN SLIPPED EXT;GLAZED INT	BS		SPALLED GLAZE
25	285	D	lpmed	STRE	CHP/POSS	1	1	2	BLACK GLAZE INT AND EXT;ROLLED-OUT RIM	R		
32	554	E	lpmed	STCOAR	CHP/POSS	1	1	18	OVAL HANDLE;INT AND EXT BLACK GL	BS		
43	594	B	lpmed	STCOAR	CHP/POSS	1	1	17	INT AND EXT BROWN SLIP AND BLACK GLAZE	BS	SCRATCHED GLAZE	
32	115	B	epmed	CSTN	CUP	1	1	6	FLARING BODY	BS		

12	338	B	epmed	CSTN		CUP	1	1	3		BS	
65	616	A	epmed	CSTN	S RQ >1.0MM;S R FE >3.0MM	CUP	1	1	26	FOOTRING AND RIBBED BODY;INT AND EXT BLACK GL	B	
57	674	B	epmed	CSTN		CUP	1	1	13		B	CHIPPED
1	740	E	EMOD	TPW		CUP	1	1	5		B	
61	668	E	EMOD	ENGS		FLAG	1	1	48	BRISTOL GLAZE;BROWN EXT;CLEAR INT	H	
24	269	E	RPOT	RPOT		FLANGED BOWL	1	1	3		BS	VABR
82	512	C	epmed	MART	LIGHT RED EARTHENWARE	FLASK	1	1	2		BS	
71	089	B	EMOD	LPMLOC		FLP	1	1	4	POSSIBLY MADE IN A MOULD?	R	
71	090	A	EMOD	LPMLOC		FLP	2	2	36	POSSIBLY MADE IN A MOULD?	B	
71	090	A	EMOD	LPMLOC		FLP	1	1	3	POSSIBLY MADE IN A MOULD?	R	
60	1002	C	lpmed	STCOAR		FLP	1	1	2	PLAIN	R	
52	1015	B	EMOD	LPMLOC		FLP	1	1	2		BS	
61	219	D	lpmed	STCOAR		FLP	1	1	1		BS	
23	262	D	EMOD	LPMLOC		FLP	1	1	12		BS	
12	333	A	lpmed	STCOAR	LIGHT PINK	FLP	1	1	4	PLAIN, UNGLAZED	B	
12	334	A	lpmed	STCOAR	LIGHT PINK	FLP	1	1	4	PLAIN, UNGLAZED	BS	
12	336	B	EMOD	LPMLOC		FLP	1	1	7		R	

71	534	E	EMOD	LPMLOC		FLP	1	1	1	POSSIBLY MADE IN A MOULD?	BS		
71	536	C	lpmed	STCOAR		FLP	1	1	3	PLAIN UNGLAZED	BS		CHIPPED
67	548		EMOD	LPMLOC		FLP	1	1	5		R		
37	564	A	EMOD	LPMLOC		FLP	1	1	4		BS		
61	657	B	lpmed	STCOAR		FLP	1	1	9	BROWN SLIPPED INT AND EXT	R		CHIPPED
23	704	A	EMOD	LPMLOC		FLP	1	1	4		BS		
13	791	B	lpmed	STCOAR		FLP	1	1	9	UNGLAZED;HOLE AT BASE ANGLE;BROWN SLIPPED INT AND EXT	B		
12	807	D	lpmed	STCOAR		FLP	1	1	5	UNGLAZED;UNSLIPPED	BS		
32	114	B	EMOD	DERBS		INKWELL	1	1	12		BS		
28	1513	C	lpmed	STCOAR		JAR	1	1	8		BS	SCRATCHED GLAZE	
65	186	D	RPOT	RPOT	GREY;SVW	JAR	1	1	4	HOOKED RIM	R		
65	188	E	epmed	CSTN	S RQ >1.0MM;S R FE >3.0MM	JAR	1	1	6		BS		
61	231	E	lpmed	STBU		JAR	1	1	20	INT AND EXT BLACK GLAZE	BS		
23	264	E	RPOT	RPOT		JAR	1	1	5		BS		ABR
24	270	E	LMED	HERB4		JAR	1	1	7		BS		ABR
82	518	C	lpmed	STBU		JAR	1	1	7	BROWN SLIPPED INT AND EXT;INT AND EXT BROWN GLAZE	BS		
68	605	D	epmed	CSTN	S RQ >1.0MM;S R FE >1.0MM	JAR	1	1	8	BLACK GLAZED INT AND EXT	BS		

65	634	C	lpmed	STBU		JAR	1	1	18	INT BLACK GL	BS	
23	713	B	lpmed	STCOAR	DK GREY SEMI-STONEWARE;CF STBU	JAR	1	1	11		BS	
24	726	A	lpmed	STCOAR		JAR	1	1	2	GLAZED INT AND EXT	BS	
12	799	E	lpmed	STBU		JAR	1	1	29	INT GLAZE	BS	
61	665	B	epmed	CSTN		JAR/CUP	1	1	5	FLARING EVERTED RIM	R	
65	187	D	EMOD	WHITE		JAR/TPOT	1	1	2	LIGHT BLUE GLAZE INT;MOULDED EXT WITH LIGHT BROWN GLAZE ON BODY AND DARK BLUE ON HORIZ RAISED BAND	BS	
83	075	A	lpmed	STRE		JUG	1	1	3	INT BROWN SLIP;BLACK GLAZED EXT AND DRIBBLES INT	BS	
83	086	A	LMED	HERB4		JUG	1	1	14	PLAIN STRAP HANDLE	H	ABR
32	112	A	EMOD	PEAR		JUG	1	1	2	INDUSTRIAL SLIP	BS	SPALLED
44	147	D	LMED	HERB4		JUG	1	1	22	STRAP HANDLE;CUGL	H	CHIPPED AND ABR
65	175	E	LMED	HERB4		JUG	1	1	4	FLAT-TOPPED RIM	R	ABR
65	179	C	LMED	MEDLOC	CF BEAU MTILE1	JUG	1	1	4	EXT GL	BS	ABR
64	196	A	LMED	MEDLOC	CF BEAU MTILE1	JUG	1	1	3	EXT GL	BS	VABR
55	251	A	LMED	MEDLOC	CF BEAU MTILE1	JUG	1	1	30	ROD HANDLE	BS	VABR
24	268	E	LMED	HERB4		JUG	1	1	1		BS	ABR

82	508	D	LMED	MEDLOC	CF BEAU MTILE1	JUG	1	1	5	GLAZE SPOTS ON UNDERSIDE OF FLAT BASE	B	
83	522	D	epmed	CSTN	S RQ >1.0MM;S R FE >1.0MM	JUG	1	1	23	FOOTRING BASE;EXT BROWN GLAZE OVER BROWN SLIP;WIRE-CUT (STRAIGHT) BASE	B	
67	541	C	lpmed	STCOAR	A RED CLAY PELLETS >1.0MM	JUG	1	1	4	MAY BE A LATE MEDIEVAL WARE?;BROWN SLIPPED INT AND EXT;EXT BROWN GL	BS	
65	626	E	LMED	MEDLOC	CF BEAU MTILE1	JUG	1	1	41	PLAIN STRAP HANDLE	H	ABR
55	695	B	LMED	MEDLOC	cmw	JUG	1	1	6	BROWN GLAZE (ADDED IRON?) EXT	BS	ABR
5	779	B	LMED	HERB4		JUG	1	1	5	RUNNELS OF CUGL EXT	BS	ABR
82	509	D	LMED	MEDLOC	M RQ >1.0MM;S A WHITE CLAY PELLETS >2.0MM	JUG?	1	1	2		BS	VABR
83	081	A	epmed	STCOAR		PANC	1	1	4	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS	CHIPPED
83	082	A	epmed	STCOAR		PANC	1	1	6	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE;EXT LIGHT BROWN GLAZE	BS	ABR
83	083	A	epmed	STCOAR		PANC	1	1	16	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS	CHIPPED

83	084	A	epmed	STCOAR		PANC	1	1	32	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	B		CHIPPED
43	159	D	epmed	STCOAR		PANC	1	1	40		BS		ABR AND SPALLED GLAZE
43	161	D	epmed	STCOAR		PANC	1	1	10		BS		ABR
43	163	E	epmed	STCOAR		PANC	1	1	13		R		ABR
43	164	E	epmed	STCOAR		PANC	1	1	48		BS		ABR
61	223	D	epmed	STCOAR		PANC	1	1	52	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	R		CHIPPED
25	280	C	epmed	STCOAR		PANC	1	1	10	BROWN SLIPPED INT AND EXT;BROWN GL INT	BS		
25	282	C	epmed	STCOAR		PANC	1	1	16	BROWN SLIPPED INT AND EXT;BROWN GL INT	B	SCRATCHED GLAZE	
82	527	C	epmed	STCOAR	M R FE >1.0MM	PANC	1	1	14	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS		ABR
67	547		epmed	STCOAR		PANC	1	1	4	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	BS		
46	599	C	epmed	STCOAR		PANC	1	1	74	BROWN SLIPPED INT AND EXT;INT BLACK GLAZE	R		CHIPPED
65	615	A	epmed	HERB5		PANC	1	1	8	PLAIN INT GL	BS	SOOTED EXT	

61	669	E	epmed	STCOAR	PANC	1	1	26	BROWN SLIPPED INT AND EXT;INT BROWN GLAZE	R	CHIPPED
52	691	A	epmed	STCOAR	PANC	1	1	64	INT AND EXT BROWN SLIP;INT BLACK GLAZE	BS	
55	695	B	epmed	STCOAR	PANC	1	1	17	BROWN SLIPPED INT AND EXT;INT BLACK GLAZE	BS	SPALLED GLAZE
82	506	E	LMED	HERB4	PIP	1	1	8	BROWN SLIPPED AND PLAIN GLAZED INT AND EXT	R	
83	080	B	EMOD	TPW	PLATE	1	1	2		BS	SPALLED
83	082	A	EMOD	WHITE	PLATE	1	1	1	DARK RED BANDS AROUND RIM	R	
71	090	A	EMOD	ENPO	PLATE	1	1	19	MOULDED RIM	PROF	
57	1004	A	EMOD	WHITE	PLATE	1	1	4		BS	
52	1007	B	EMOD	TPW	PLATE	1	1	5		BS	SPALLED
52	1012	B	EMOD	TPW	PLATE	1	1	1		BS	
38	128	B	EMOD	TPW	PLATE	1	1	5		BS	
65	175	E	EMOD	CREA	PLATE	1	1	1		BS	SPALLED
1	291	C	EMOD	PEAR	PLATE	1	1	2		BS	
82	511	C	EMOD	TPW	PLATE	1	1	1		BS	
83	523	C	EMOD	TPW	PLATE	1	1	4		R	SPALLED
83	524	C	EMOD	TPW	PLATE	1	1	6		R	CHIPPED
1	744	D	EMOD	TPW	PLATE	1	1	2		BS	
2	757	C	EMOD	TPW	PLATE	1	1	3	WILLOW PATTERN	R	SPALLED

												GLAZE
52	235	E	lpmed	STCOAR	CREAM BODY	POSS	1	1	14	FOOTRING;INT AND EXT BROWN SLIP;INT BLACK GLAZE	B	
61	658	B	lpmed	STMO		POSS	1	1	2		BS	
83	076	A	EMOD	CREA		TANK	1	1	1		BS	SPALLED
61	217	E	lpmed	WEST		TANK	1	1	12	B/H JOIN WITH 'RAT TAIL'	BS	
65	612	A	RPOT	RPOT	SVW;OXID	TANK	1	1	16	GROOVE BELOW RIM	R	ABR
61	232	B	lpmed	STRE		TANK?	1	1	9	BROWN GLAZED INT	BS	
1	742	E	EMOD	CONP		TPOT LID	1	1	21	DEEP COBALT BLUE BAND AROUND EDGE	BS	

Assessment of the Ceramic Building Material

Alan Vince

INTRODUCTION

Six hundred and fifty-six fragments of ceramic building material, representing 641 individual objects and weighing in total 34.634 Kg were recovered from fieldwalking along the line of the QKC02 pipeline in Warwickshire. The tile includes a single fragment of late medieval or early post-medieval date and the remainder probably all dates to the post-medieval or later periods.

METHODOLOGY

All of the fragments were examined under x20 magnification and unless clearly of modern date (ie late 19th or 20th century) were given a fabric code, starting with CBM01 and finishing with CBM15. The one exception is a fragment of Malvern Chase ridge tile, which was coded HERB4, based on the Hereford City fabric series ({Vince 1985 #83}). Where possible, the material was assigned to a form. Details were also recorded of the typology, evidence for manufacture (eg moulding sand or straw) and, if particularly noticeable, evidence for abrasion in the hope that this would give an indication of date.

Fabrics

The Malvern Chase ridge tile was recovered from Plot 5. Its fabric indicates that it dates from the later medieval period or early post-medieval period. Tiles with a pinker fabric were probably produced from the same period as pottery of this fabric, that is, from the middle of the 16th century, and this probably provides a *terminus ante quem* for the Plot 5 tile.

The remaining fabrics are all of types which have not been previously seen by the author, with the possible exception of CBM01, which is similar to the main fabric used in the 15th century at Beaudesert Castle ({Vince 2002 #44573}).

Most of the fabrics share characteristics and probably were all made from exposures of Mercian Mudstone (Keuper Marl). They vary in the amount of finely-dispersed carbonate in the groundmass and in their homogeneity. Fabric CBM03, however, not only never contains this carbonate but it also contains moderate rounded black concretions, presumably rich in iron and manganese, which are absent from the remaining fabrics.

The sand and gravel inclusions found in the fabrics are in the main likely to be of Triassic origin and include rounded grains with matt surfaces, indicative of desert conditions. There are, however, some larger inclusions, mainly of sandstone, which might be of earlier age, although even these are likely to have been incorporated into Triassic sandstones.

The U-sectioned land drains are mainly made from a fabric (CBM11) which contains sparse rounded voids which are probably not Triassic marl. The same material is present as moulding sand on many examples. In a few cases there is sufficient remains of the original inclusion (despite firing at temperatures in excess of 850 degrees C, at which point CaC03 breaks down) to indicate that they were oolitic limestone, and therefore of Jurassic age. Such inclusions are probably present in Warwickshire Avon gravels down river of the point at which the river cuts through the Jurassic ridge. They are probably not limited to the south side of the river, however.

CBM10 is unusual in that it contains what appears to be basic igneous rock temper. Such rocks outcrop in the Nuneaton area but no closer to southwest Warwickshire. Furthermore, the frequency of these inclusions does not suggest that the rock fragments were detrital in origin. Thin-section would allow the identification to be tested and might aid the identification of the source.

Three of the fabrics (CBM12, CBM13 and CBM14) have micaceous groundmasses. Micaceous clays of this type outcrop widely in the region, including probably the Mercian Mudstone, the Middle and Upper Lias clays and Devonian marls and glacial tills in the Welsh borderland. Thin-sectioning of the fabrics would probably allow the source to be more closely identified.

Table 6

Cname	Description	Total
CBM01	Few inclusions visible	42
CBM02	Calcareous groundmass	53
CBM03	Abundant rounded quartz sand; moderate black pellets	280
CBM04	Abundant rounded quartz sand without black pellets	2
CBM05	Marl pellets and moderate rounded quartz sand	63
CBM06	As CBM03 but with finer sand	3
CBM07	Marl pellets and sparse rounded quartz sand (this was actually a piece of burnt clay rather than ceramic building material)	1
CBM08	Calcareous groundmass with numerous red clay and yellow marl inclusions	2
CBM09	Moderate rounded quartz and red clay pellets	1
CBM10	Basic igneous rock fragments	1
CBM11	Blocky texture, some large marl lumps	58
CBM12	Silty micaceous groundmass	22
CBM13	Silty micaceous, calcareous groundmass with rounded quartz sand	14
CBM14	Silty micaceous groundmass with microfossils	2
CBM15	Moderate rounded voids	3
HERB4	Sparse angular acid igneous rock fragments	1
MOD	Various (not studied)	108
Grand Total		656

Forms

The majority of the collection consists of pieces of flat roof tile and bricks. There were, however, a number of fragments which did not easily fit into known types. They have thickened flanges, as with Romano-British *tegulae*, but can also show signs of curvature. Initially, these pieces were interpreted as being of Roman date, but their fresh appearance belied this interpretation and they are now considered to be fragments of land drains with a U-shaped cross-section and have been coded as 'U DRAIN' to distinguish them from the cylindrical pipe drains, which are also present.

Most of the other forms present are self-explanatory. Of note, however, is a fragment of a malt oven tile from Plot 1. These tiles were used to form the upper floor of a malt house and were pierced by numerous conical holes designed to allow hot gases to rise through the floor but to stop the germinated grain from falling through to the kiln below. The fabric of this example, CBM02, suggests that it is probably 19th or 20th century.

An interesting feature of the collection is the low quantity of pantiles. In most similar collections pantiles form a high proportion of the roof tiles. They came into use in England first in the later 17th century although they were used earlier in the Low Countries, and their use spread rapidly westwards. They are common, for example, in Somerset and Gloucestershire. Their absence in this collection suggests either that there is relatively little 18th/19th-century roofing tile in the collection or more likely that the use of flat tiles continued in this part of Warwickshire through the 19th century.

Table 7 Form Codes and the number of fragments of each type

Form	Description	Total
?	Unidentified	29
AIRBRICK	Brick with cylindrical holes to allow circulation of air	2
BRICK	Brick	147
BRICK/FLAT	Brick or flat tile	4
BRICK?	Possible Brick	7
CURV	Curved tile	18
DRAIN	Cylindrical drain	5
FCLAY/BRICK	Fired clay or brick	47
FLAT	Flat tile	355
FLAT/BRICK	Flat tile or brick	1
FLAT/CURV	Flat or curved tile	1
FLAT?	Possible flat tile	1
FLOOR	Floor tile	1
HIP/FLAT	Hip or flat tile	1
MALT OVEN TILE	Malt oven tile	1
PANT	Pantile	5
RIDGE	Ridge tile	3

U DRAIN	U-sectioned land drain	27
Grand Total		656

Dating

Southwest Warwickshire lies in a region of mixed traditions of ceramic building material use in the medieval and later periods. Far to the west and immediately to the south are areas in which flat ceramic roof tiles were not used until the later 16th century. The only medieval ceramic building materials in these areas were ridge tiles, finials and louvers (as at Hereford, {Vince 1985 #83}). Thin 'Tudor' bricks were being made at Malvern Chase before the dissolution and carried large distances, either overland or using the River Severn. In the lower Warwickshire Avon, and south Worcestershire, flat roof tiles seem to have a much earlier origin, perhaps even in the later 12th century, as at Newland in Pershore. Even here, however, one would not expect to find brick in use until much later, probably again the later 16th century. At Beaudesert Castle, which seems to have been abandoned shortly after a major rebuilding in the 15th century, there were plentiful flat roof tiles and hip tiles but no contemporary bricks. Thus, surrounding districts offer no clear guidance as to the date of introduction of flat roof tiles or bricks.

The following, therefore, is a speculative attempt to provide a sequence, which should be tested against stratigraphic evidence before being accepted as fact.

The earliest phase (Table 3) probably includes glazed and unglazed ridge tiles (HERB4 and CBM14). In addition, CBM01 is so similar to the main fabric at Beaudesert Castle in appearance that it too may have a later medieval origin (in which case the curved tile might be either a ridge or hip tile). Finally, the sandy fabric, CBM03, includes peg and nib holed examples which are indistinguishable from medieval examples elsewhere. It too may have medieval origins (even if the majority of the examples are much later).

Table 8

Cname	?	CURV	FLAT	FLAT?	HIP/FLAT	PANT	RIDGE	Grand Total
CBM01		1						1
CBM03	13	3	178	1	1	1		197
CBM14							2	2
HERB4							1	1
Grand Total	13	4	178	1	1	1	3	201

The next phase might be the introduction of handmade bricks and flat roof tiles in other fabrics (Table 4). Of these, CBM01 may actually be earlier. A starting date of late 16th century is therefore suggested for these types, with the proviso that individual examples might be centuries later.

Table 9

Cname	?	BRICK	BRICK/FLAT	BRICK?	FLAT	Grand Total
CBM01		7		1	30	38
CBM02		13			23	36
CBM03		73	4	4		81
CBM04					1	1
CBM05	2	3			50	55
CBM06					3	3
CBM08					2	2
CBM09					1	1
CBM10		1				1
CBM11				1	3	4
CBM12		5				5
CBM13		2		1	4	7
Grand Total	2	104	4	7	117	234

The few pantiles from the pipeline are clearly of later 17th-century or later date (Table 5).

Table 10

cname	PANT	Grand Total
CBM02	2	2
CBM04	1	1
CBM05	1	1
Grand Total	4	4

The malting oven tile is tentatively ascribed here to the later 18th century or later, as similar tiles were being made at Ashton Keynes in north Wiltshire in the later 18th century.

Fabrics in which U-sectioned field drains appear were probably in use during the earlier part of the 19th century, although it is possible that individual tiles were made later. It is possible that a number of the tiles coded here as curved, flat, flat or brick and flat or curved are actually just small pieces of these drains (Table 6).

Table 11

Cname	?	CURV	FLAT	FLAT/BRICK	FLAT/CURV	U DRAIN	Grand Total
CBM02						7	7
CBM05						2	2
CBM11						10	10
CBM12	2	1	7	1	1	5	17
CBM13						5	5

CBM15			1			2	3
MOD						2	2
Grand Total	2	1	8	1	1	33	46

Finally, the 108 modern fragments include examples which are probably later 19th century (for example frogged bricks), as well as 20th-century types such as the airbricks and a floor tile (Table 7).

Table 12

?	AIRBRICK	BRICK	CURV	DRAIN	FLAT	FLOOR	U DRAIN	Grand Total
2		2	43	1	5	52	1	2	108

Assessment

The ceramic building material consists of two classes of finds. Those which were actually used in the fields in which they were recovered, mainly land drains, and those which have been brought to the fields as refuse from activity elsewhere. There are no concentrations of finds which might indicate that the material came from buildings on the sites themselves. It is possible that there is a distinction to be drawn between the scraps of brick and tile which probably entered the fields along with manure or night soil and those which may have been dumped as hard core to form tracks and paths. This distinction, however, is best made by those with knowledge of the geography of the finds, although one could argue that large fragments of brick are more likely to have been used as hard core. Most of these are clearly modern bricks but there are some potentially earlier bricks of this kind, for example from Plots 2 and 3.

There is clearly potential in this part of Warwickshire to produce a useful typology of post-medieval ceramic building material, since there are differences in fabric, typology and dimensions which may either indicate chronological differences or reflect the practices of separate brickyards. There is some evidence for geographical variation in the distribution of the different fabrics but this may either reflect differences in the agricultural regime of the various fields (for example, whether or not they were within open fields, proximity to farms or villages and consequent differences in the use or source of manure, date of enclosure and the use of land drains). There are, however, so many variables that one would have to try and control some of these, through the study of ceramic building material in local vernacular housing. Nevertheless, the first step in working towards a better understanding of the ceramic building materials of the area would be to undertake scientific analysis of samples of each of the fabrics. This would both make a more objective record of the collection and allow the fabrics found here to be compared with those from Beaudesert Castle and from the Severn Valley so as to make it possible for other researchers to make use of the QKC02 data.

Analysis of Metallurgical Residues

Neil Fairburn

Introduction

Thirty six pieces of material from fifteen separate locations were submitted for analysis. The majority of the material has come from Post Medieval and Modern contexts. A few pieces suggest that there may have been some earlier activity. The results and recommendations are listed below:

Plot number	Find number	Transect	Description	Count	Weight (g)	Period
24	271	E	Tap Slag	1	44	medieval or earlier
32	115	B	Tap Slag	1	32	medieval or earlier
32	115	B	Low Density Slag	1	8	undetermined
32	116	B	Smithing PCB Slag	1	256	medieval or earlier
32	116	B	Smithing PCB Slag	1	168	medieval or earlier
40	568	B	Clinker	1	34	modern
40	567	A	Blast Furnace Slag	1	58	post-medieval
44	580	A	Concretion of non-metallurgical material	1	62	modern
44	023		Clinker	1	12	modern
49	024		Clinker	10	610	modern
61	221	D	Clinker	1	50	modern
61	667	F	Blast Furnace Slag	1	22	post-medieval
65	186	D	Blast Furnace Slag	1	104	post-medieval
82	073	A	Clinker	1	16	modern
82	072	C	Blast Furnace Slag	1	116	post-medieval
82	068	A	Low Densisty Slag	1	56	undetermined
83	079	B	Blast Furnace Slag	1	14	post-medieval

Blast Furnace Slag

Blast furnaces slags are very compact, but less dense than a similar sized shaft furnace slag. They are often glassy in appearance and range in colours from blue green ro grey brown.

These slags were often reused as hardcore for road metaling or scattered across fields to improve drainage. As the pipeline is situated close the well documented ironworking district of the Black Country, it is not surprising to find a lot of this material scattered about the fields.

Tap Slag

Characteristic finds from iron smelting sites from the Late Prehistoric period up until the 15th Century are pieces of slag with flat rounded bottoms and a contorted upper surfaces with flow patterns and are known as tap slags. The molten slag was drawn off through an arched opening at the bottom of shaft furnace and ran away in channels in which it solidified. Tap slag has a characteristic shape resembling a flow of lava.

The small quantity of tap slag found here would not indicate an ironworking site, as there are insufficient quantities of slag. It is possible that there may be an ironworking site within the vicinity, but not along the route walked. One of the major indicators of the presence of an iron-working settlement is the existence of sizeable deposits of slag and other rubbish. Many of these slag heaps were huge. At Beauport Park, Sussex, the slag is said to have covered 2 acres representing, possibly the third largest ironworking site in the Roman Empire.

The amount of slag on a site can also provide information about the processes taking place. Very few Prehistoric iron production sites have been located in Britain and Ireland and the largest at Crawcwellt, Wales has only about 5 tonnes of slag. Later, Roman and Medieval, sites can have upwards from one tonne to hundreds of tonnes of slag.

Clinker

A slag residue that is formed when clay and lime are burnt in a furnace or a boiler together. They are often associated with blast furnaces where limestone was used as flux. They are also associated with the use of poor quality coal that has been used in Early Farm Steam driven equipment and steam engines. These slags were often reused as hardcore for road metaling or scattered across fields to improve drainage.

Low Density Fluxed Lining Slags

The low density (fluxed lining) slag is usually described as fuel ash, but in fact it is the result of high temperatures which have caused the clay to become molten and drop away from the rest of the lining, forming the low density slag. They are not diagnostic of any particular process for they can result from any high temperature activity, including smelting and smithing. This type of slag is characterised by its low density and vitreous and vesicular material that is very friable and easily fragmented.

Smithing Slag

Amongst the recovered material were two pieces of Plano Convex Bottoms (PCB's) that are diagnostic of smithing. The smithing process produces as well as hammer scale and small slag spheres, residues that consolidate in the bottom of the hearth as PCB's and fayaltic slag

lumps. These are fayalitic slags and similar in composition to furnace slags but are distinguishable by their shape. These slags are sub-circular convex-convex shaped and usually magnetic. Their production is still poorly understood.

The presence of two small PCB's might indicate that there is a settlement or a structure nearby. Smithing was the most common metallurgical activity on a settlement site. Further investigative work should be carried out to try to identify a metalworking area. Ideally using non-invasive geophysics. Work by experimental archaeologists has shown the benefits of using geophysics to pinpoint metalworking sites.

Recommendations

It is suggested that plot 32 is closely scrutinised during the watching brief, and that further metallurgical assessment or analysis takes place should further material (e.g. PCBs) be found.

Assessment of the Fired Clay

Alan Vince

Introduction

Sixty eight pieces of fired clay were recovered from fieldwalking on the line of the QKC02 pipeline. They weigh in total 1.385 kg. A few fragments are definitely daub, and therefore likely to be of medieval or earlier date and few are possible brick fragments. The remainder appear to be accidentally fired subsoil fragments and probably result from some agricultural activity carried out *in situ.* Such material is known from fieldwork on the lines of several other pipelines and the identity of the process in which they were created, and their age, are both questions which at present cannot be answered.

Description

Most of the fired clay has a similar fabric, coded here FCLAY1. It contains sparse to moderate rounded quartz sand up to 1.0mm across, sparse rounded fragments of sandstones, up to 4.0mm across, sparse rounded fragments of red, iron-rich clay up to 3.0mm across. The groundmass contains sparse quartz silt and sparse calcareous microfossils. Organic inclusions are present but appear to be both larger and less frequent than that caused by the deliberate addition of straw or dung.

In two cases, a different fabric, containing few large inclusions with a variegated groundmass of micaceous clay, was evident (FCLAY2). One of these fragments is possibly an abraded piece of brick.

Both of these fabrics have similarities with those used for the production of the ceramic building material found on the pipeline, although the calcareous marl and calcareous groundmass found in some of those fabrics and interpreted as evidence of the use of Mercian Mudstone is absent from these clay fragments. The calcareous microfossils hint at the use of Jurassic clays whilst the quartzose inclusions are probably due to contamination with superficial detrital sands.

In many cases it is clear that the fragment has been burnt in its present amorphous state, since where the fragments are broken they often have a dark, carbon-rich core whereas the surfaces are oxidized and a uniform light brown colour. There are no certain examples of surfaces; no evidence for human working and only one fragment with signs of wattle impressions (Plot 65 B618).

Assessment

The fragment from Plot 65 is clearly from a wattle and daub structure. Such structures were produced from the prehistory through to the medieval period and without further evidence it is not possible to date the find. It may be significant, however, that the same field produced Romano-British pottery. The piece is unweathered and relatively large and may therefore indicate a structure on the site.

Plot 65 also produced the largest collection of amorphous fired clay, 661gm. Plots 61 and 65 were also the only fields where more than one fragment was picked up at any one time which again indicates activity on site rather than the material being burnt elsewhere and entering the field with manure or hard core. It is possible that excavation or magnetometry in the areas of

high concentration might reveal the source of the burnt material. The nature of the burning does not suggest that they originated from the burning of a subsoil or soil surface, since many of the pieces have oxidation on all sites and show no signs of a heat gradient. It is possible, however, that stubble burning in a ploughed field might produce amorphous fired clay lumps of this sort.

sitecode	trench	context	CLASS	cname	form	NOSH	WEIGHT
Pl44			23CBM	FCLAY1	FIRED CLAY	1	16
Pl44	E		138CBM	FCLAY1	FIRED CLAY	1	17
Pl44	B		577CBM	FCLAY1	FIRED CLAY	1	10
Pl52	E		243CBM	FCLAY1	FIRED CLAY	1	15
Pl52	E		246CBM	FCLAY1	FIRED CLAY	1	40
Pl52	D		681CBM	FCLAY1	FIRED CLAY	1	18
Pl60	E		671CBM	FCLAY1	FIRED CLAY	1	9
Pl61	D		224CBM	FCLAY1	FIRED CLAY	1	17
Pl61	C		225CBM	FCLAY1	FIRED CLAY	2	27
Pl61	C		652CBM	FCLAY1	FIRED CLAY	1	42
Pl69	C		657CBM	FCLAY1	FIRED CLAY	1	69
Pl61	B		661CBM	FCLAY1	FIRED CLAY	1	35
Pl61	A		662CBM	FCLAY1	FIRED CLAY	24	177
Pl65	D		182CBM	FCLAY1	FIRED CLAY	1	169
Pl65	D		190CBM	FCLAY1	FIRED CLAY	10	309
Pl65	B		618CBM	FCLAY1	DAUB/FIRED CLAY	1	53
Pl65	B		619CBM	FCLAY2	BRICK/FIRED CLAY	1	42
Pl65	B		620CBM	FCLAY1	FIRED CLAY	1	86
Pl65	B		621CBM	FCLAY1	FIRED CLAY	1	44
Pl64	B		201CBM	FCLAY1	FIRED CLAY	3	28
Pl64	B		202CBM	FCLAY1	FIRED CLAY	1	19
Pl64	B		205CBM	FCLAY1	FIRED CLAY	1	11
Pl64	E		628CBM	FCLAY1	FIRED CLAY	1	15
Pl64	C		635CBM	FCLAY2	FIRED CLAY	1	39
Pl67	A		101CBM	FCLAY1	FIRED CLAY	1	15
Pl67	B		103CBM	FCLAY1	FIRED CLAY	4	21
Pl68	E		601CBM	FCLAY1	FIRED CLAY	2	33
Pl71	B		88CBM	FCLAY1	FIRED CLAY	2	9

Assessment of the Stone Finds

Alan Vince

Introduction

Eleven fragments of stone from the line of the QKC02 pipeline in Warwickshire were submitted for identification and assessment.

Description

Nine of the fragments were from rounded pebbles and are probably natural inclusions in local gravels. They include a fossiliferous mudstone which may be of Palaeozoic age, a coarse-grained sandstone and a grey micaceous sandstone, both of probable Carboniferous age, fragments of Triassic sandstones and a fragment of White Lias. The latter is the largest piece and might have been used as building stone, although the triangular shape and weathered faces suggest not.

One fragment (from PL.64, D 633) is a burnt piece of Coal Measure shale and probably comes from domestic coal ash.

Two Lias limestone blocks, from PL.44 023, were probably used as sets in a road or trackway although they may have been laid in a yard. Such stone sets were in common use until their replacement by tarmac during the 20th century. They could be of any age from the 16th to the early 20th century (and indeed are now increasingly coming back into fashion).

Assessment

The stone finds are mostly natural pebbles. The exceptions indicate the use of Lias limestone (probably obtainable to the south of the Warwickshire Avon) and coal, both probably in the post-medieval or modern periods.

Assessment of the Small Finds

Alan Vince

Animal Bone

A single fragment of animal bone was recovered. Bone is unlikely to survive for long in an active ploughsoil and therefore this is either evidence for the recent disturbance of archaeological features or a fairly modern object.

Clay Pipes

Three fragments of clay pipe stem were recovered. The bore diameter of two of these (Plot 61 D224, and Plot 83 D528) suggest an early to mid 17th-century date and the third (Plot 83 D520) suggests a late 17th century or later date.

Copper Alloy

A single find, a modern cartridge case, was the only copper alloy artefact found during the fieldwalking.

Glass

Ten fragments of post-medieval and modern glass were found.

A fragment of light green window glass was found on Plot 1. Window glass of this colour is usually of 16th/17th-century date but is also usually highly weathered, whereas this piece is fresh. It may therefore be a piece of deliberately green-coloured window glass of 19th or 20th-century date.

Four fragments of dark green bottle glass were found, in Plots 12, 28, 32 and 61. That from Plot 12 is heavily weathered and abraded and is likely to be of mid/late 17th century date. The base from a square dark green bottle in weathered glass from Plot 61 is likely to be of 18th century date and is a relatively unusual find. This type is sometimes known as a case bottle because they were stored in a wooden box or case with a hinged lid. The remaining two pieces are from tall bottles of later 18th century or later date. A small scrap of bottle glass from Plot 32 is superficially similar to dark green bottles of 17th/18th-century date but is much lighter in colour. It is probably of early 18th century date.

Finally, two light green bottle fragments probably come from late 19th or 20th-century bottles, such as those used for ginger beer.

Iron

Two iron nails, of undatable (Roman to Modern) type were recovered during the fieldwalking.

worked flint

Two worked flints were recovered, both from Plot 32. That from C556 is a small core with scars from at least 7 blades. It is probably of Mesolithic date. The core has been broken some time after burial (the broken edge has less patina that the remainder). That from E551 is a heavily rolled pebble with some iron staining and possible working along one face. Since the working is also rolled, with the same patination and staining as the rest of the piece, this may be an artefact which has been subjected to river action. Alternatively, it may be that the 'working' is accidental chipping. Given the difference in condition it is unlikely that the two pieces are of similar age.

Coal

Four fragments of burnt coal were recovered from Plot 49. Their cindery appearance suggests the use of an enclosed firebox and subsequently a modern date.

Assessment

The only small finds of significance from the QKC02 pipeline are the worked flints from Plot 32, which indicate possible Mesolithic activity. The core should be illustrated.

sitecode	trench	context	description	CLASS	cname	form	NOSH	PART	WEIGHT	CONDITION	USE	SUBFABRIC	DATE
Pl83	C	521		ANBN	ANBN		1		6	ABR			
Pl32	E	551	ROLLED PEBBLE WITH SOME IRON STAINING;WORKING ALONG ONE EDGE	STON	STON	TOOL?	1		30			FLINT	
Pl32	C	556	USED TO PRODUCE AT LEAST 7 BLADES	STON	STON	CORE	1		23	WHITE PATINA;BROKEN IN HALF		FLINT	
Pl49		24		STON	STON		4		14		BURNT	COAL/SHALE	19.2
Pl61	D	22417	TH C		CLAY PIPE	CLAY PIPE	1	STEM	3				
Pl83	D	52817	TH C		CLAY PIPE	CLAY PIPE	1	STEM	3				
Pl83	D	520	L17TH C+		CLAY PIPE	CLAY PIPE	1	STEM	1				
Pl1	D	745	UNUSUALLY FRESH CONDITION SO MIGHT BE MORE RECENT DELIBERATELY COLOURED RATHER THAN 16/17TH C		PMGL	WIND	1		1	UNWEATHERED		LTGR	16.2
Pl12	B	337	SHAFT AND GLOBE OR LATER		PMGL	BOT	1	B	15	VABR;V WEATHERED		DKGR	17.2
Pl28	A	1020	TALL BOTTLE		PMGL	BOT	1	BS	6			DKGR	18.2
Pl32	A	112			PMGL	BOT	1	BS	3			LTGR	19.2
Pl32	B	114	LOOKS LIKE A L17TH/M18TH C BOTTLE FRAG BUT MUCH LIGHTER COLOUR		PMGL	BOT	1	BS	2	WEATHERED		LTGR	17.2

Pl32	B	115TALL BOTTLE	PMGL	BOT	1BS	15	DKGR	18.2
Pl52	C	FLAT MATT BASE AND ROUNDED, 1507POLISHED FRONT	PMGL	?	1BS	6	LTBL	
Pl82	B	61	PMGL	BOT	1BS	1	LTGR	
Pl61	C	653SQUARE BOTTLE	PMGL	BOT	1B	26	DKGR	18.1
Pl82	D	516	PMGL	BOT	1BS	30	LTGR	19.2

Report on Archaeogeophysical Survey

Bartlett-Clark Consultancy

Summary

This geophysical survey forms part of the archaeological evaluation which is being undertaken by Network Archaeology Ltd. of the route of the proposed Lower Quinton to King's Coughton pipeline in Warwickshire.

The techniques employed for the survey were magnetic susceptibility surveying, which may indicate the presence of past settlement sites or other areas in which soil magnetic properties have been affected by human activities, and magnetometer surveying.

The magnetometer survey was arranged as a 15m wide sample strip extending along the proposed pipeline. This provided full coverage of the route, except for a few inaccessible or obstructed locations. A survey of this kind gives a detailed record of magnetic features or disturbances intersecting the route, and allows subsurface features to be identified more reliably than would be the case for an unrecorded magnetometer scan.

The survey produced some limited positive findings, and identified a number of sites at which further investigation may be relevant. Some of these may prove to be archaeologically unproductive, but cannot be excluded from consideration on the survey evidence alone. The soils and geology along the route appear to provide generally satisfactory conditions for the magnetic detection of archaeological features, and therefore the comparative lack of findings from this survey could indicate a genuine absence of significant concentrations of substantial or detectable archaeological sites or remains.

Summary of Findings

This list notes the more significant findings from the magnetometer survey of this pipeline route. The grading (1-4) given alongside each entry refers to the reliability of the geophysical evidence rather than the archaeological significance of the findings.

Grade 1: Distinct magnetic anomalies of probable archaeological origin.

Grade 2: Magnetic anomalies possibly including natural or recent disturbances, but which could in part be archaeologically significant.

Grade 3: Weak or isolated features; not necessarily archaeologically significant.

Grade 4: Strong magnetic anomalies of probably recent or natural origin.

Field numbers as listed below are based on the numbering scheme as used by Network Archaeology.

Plot	Description	Grade of confidence
3	Isolated magnetic anomalies, possible natural silted hollows near River Arrow	3
7	Alignment of disturbed readings. Possible boundary or Trackway	3
8	Possible ridge and furrow (in field with raised Susceptibility)	3
9	Isolated pit-like feature	3
14	Dispersed magnetic noise (possible infilling near former pond and railway ?)	3-4
18	Linear disturbance - interference from overhead cable	4
20	Possible ridge and furrow (near cropmarks)	3
28	Possible weak linear feature and some small anomalies	2-3
29	Parallel linear disturbances - field drains ?	3
31	Parallel linear disturbances - field drains ?	3
32-33	Possible ridge and furrow.	2
35-36	Interference from overhead cable	4
36	Possible ridge and furrow, and a few weak pit-like disturbances	3
37	Small area of magnetic disturbance - possibly near site of house (DBA:CA)	3/4
38	Possible ridge and furrow	3
40	Some magnetic interference, but no clear features in field with earthworks. (DBA:FL)	3/4
41	Ridge and furrow (or path DBA:CY ?)	2-3
49	Ridge and furrow, or field drains	2
51	Isolated pits near boundary	3
52	Linear features - probably field drains	2-3
55	A few pits/hollows near boundary. (Near river: c.f. field 3.)	3
57	Two pit-like anomalies in area of high susceptibility, and disturbed area at south of field (near farm buildings: DBA:FC)	3
64	Weak linear disturbance - possible former hedge line	3
65	Scattered weak disturbances in area of high susceptibility readings, and ridge and furrow. Field is near earthworks (DBA:EX), although little response in 66	2
67-68	Ridge and furrow	2
71-72	Ridge and furrow, or field drains	2
74-75	Some strong anomalies, but no clear plan of features; perhaps irregular infilling / leveling ? (Near ponds.)	2
78-79	Minor disturbances near boundaries	3
80	Minor irregular disturbances in area of raised susceptibility	3
81	Strongly disturbed area - perhaps infilled pond or hollow, and spread of debris	4
82	Possible ridge and furrow, or field drains + Very weak/uncertain linear or angled feature	3
84	Disturbed area in corner of field	4
85	Disturbance near pipeline	5

Introduction

This geophysical survey forms part of the archaeological evaluation which is being undertaken of the route of the 18 km route of the proposed Lower Quinton to King's Coughton gas pipeline in south Warwickshire. The survey was commissioned by Network Archaeology Ltd. on behalf of Montgomery Watson Harza, Mc Alpine - PPS Pipelines, and Transco.

The proposed route extends from King's Coughton AGI (SP 082598) at the NW end, passes immediately to the east of Alcester, and continues across the Rivers Alne and Avon to the Lower Quinton AGI (SP 482181), which is some 6km SW from Stratford-upon- Avon.

Geology and survey response

The geology of the route and archaeological background to the project are described in the Desk Based Assessment prepared by Network Archaeology (Report 291, October 2002). The underlying solid geology of much of the route is composed of mudstones and shales of the Lower Lias. Additionally, there are areas of Keuper Marl (at the SE end), and other sandstone and marl outcrops. Soils derived from shales and sandstones are not necessarily highly responsive to magnetometer surveys, but these conditions are modified by the presence of drift deposits. These include post-glacial clay and silt Head deposits along almost the entire route, alluvium in river valleys, and limited areas of River Terrace deposits. It is probably these drift deposits, and particularly their sand and gravel content, which accounts for the relatively high level of magnetic susceptibility readings. The susceptibility readings, with localised exceptions, are generally in a range (from 10-30 x 10^{-5} SI) which is usually sufficient for a satisfactory magnetic response to be obtained from any detectable archaeological features which are present.

Drift deposits of glacial origin do, however, present the difficulty that they may contain naturally magnetic stones of igneous origin. Such stones may cause magnetic anomalies similar to those produced by small silted pits or other archaeological features. It is therefore possible that scattered magnetic stones (as well as bricks and small iron objects) could account for some of the smaller pit - like features which are noted at various locations in the survey.

A magnetometer survey even in not fully responsive soil conditions may still detect intrinsically magnetic hearths or pits, provided they are not too deeply buried, and it is therefore likely that some indication will be obtained of the presence of the more significant settlement or industrial sites, even if the overall ground plan of such sites is incomplete. (Certain other categories of archaeological features, including graves and cemeteries, are difficult to detect by geophysical methods even in favourable conditions.)

The magnetic anomalies which have been outlined on the enclosed plots are therefore those for which an archaeological origin cannot be wholly excluded, although they may also include some of the categories of extraneous features as noted above.

Anomalies which are strong or narrow in profile, asymmetrical, or which have a prominent negative peak are likely to be caused by buried stones, bricks or iron objects and have been excluded as far as possible from the interpretation. The distribution and degree of clustering of the features, and correlations between magnetometer and susceptibility findings, as well as other archaeological evidence, are all relevant in reaching an interpretation. The anomalies as outlined are intended to signify the approximate distribution and extent of areas of potentially significant activity, but it is not always practical to indicate all individual features. Areas of more concentrated activity are marked by cross hatching, rather than as clusters of individual features.

Archaeological background

Previously recorded archaeological findings from the route, as noted in the Desk - Based Assessment, include at least two nearby Roman sites, and four or more Deserted Medieval villages. There are, however, very few findings suggesting activity or remains of Iron Age or earlier prehistoric periods. There are various undated crop marks and enclosures or linear features along the route, as well as extensive areas of medieval field systems, which are marked by crop mark ridge and furrow.

Survey Procedure

The survey was carried out using the two techniques of magnetometer and magnetic susceptibility surveying. These provide complementary data, but they will not necessarily detect the same features or disturbances. The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the underlying natural subsoil. It also detects the thermo-remnant magnetism of fired materials, notably baked clay structures such as kilns or hearths. Burning associated with past human occupation enhances the magnetic susceptibility of topsoil, increasing the magnetometer response from ditches and pits, and also making it possible to locate sites by magnetic susceptibility measurements on the superficial topsoil. Susceptibility surveying can therefore be used to obtain a broad indication of previously occupied or disturbed areas, although the readings may be affected by a number of non-archaeological factors, including geology and land use.

The magnetometer survey was arranged as a 15m wide strip centred on the proposed pipe alignment, or an approximately 36% sample of the 42m wide working width. The

magnetometer survey was carried out using fluxgate magnetometers, and the results are presented as graphical or x-y trace plots and as grey scale plots on figures 46 - 57. These plots show the readings after standard processing operations including adjustments to the line spacing to correct for variations in the instrument zero setting, and numerical smoothing to reduce background noise levels. Outlines and cross hatching indicating selected magnetic anomalies of potential interest have been added to the graphical plots.

The susceptibility survey was based on readings taken at 12.5m intervals along two transects using Bartington MS2 susceptibility meters with the MS2D field probe. The initial susceptibility readings are displayed as strips of shaded squares of density proportional to the readings at 1:2500 scale on figures 25 - 45. The interpretative outlines as shown on the magnetometer plots have been added in red to these drawings at reduced scale to provide a summary of the survey findings

The survey was positioned in each field by reference to OS co-ordinates measured from the 1:2500 strip maps, and located with a sub-1m accuracy GPS system. This method allowed a series of intermediate markers as needed for the magnetometer survey to be placed rapidly across each field. Details of the GPS co-ordinates of the end points of individual magnetometer survey blocks, which may be required for relocating the survey findings, can be supplied on request.

Results

The survey location is shown on figures 25 - 45 at 1:2500 scale. These maps are based on digital mapping supplied to us following the survey, and show the fields numbered following the scheme as used by Network Archaeology. The maps run from left to right in sequence from the NW (King's Coughton) to SE (Lower Quinton). The magnetometer plots (figures 46 - 57) follow the same sequence. The data plots are separated at boundaries and changes of direction. The findings are described below in sequence according to the field and map numbers.

Figures 25 - 28 (Fields 1 - 20)

The main area of archaeological concern in these fields (from the western end of the route to east of the River Alne) lies in fields 1 and 2, which are located immediately to the north of a crop mark site (WSMR 4646). Enclosures and a pottery scatter suggest this was a Roman settlement, but the magnetometer plots from these fields are almost entirely blank, and the susceptibility readings are low and uniform. It therefore appears unlikely that any significant Roman activity extends as far north as the proposed route. There are some broad pit-like magnetic anomalies near the River Arrow in field 3. Such features, perhaps representing naturally silted hollows, are often found in alluvial deposits near rivers, and are seen at such locations elsewhere in the survey.

There is an irregular linear alignment of magnetic anomalies of a kind which could indicate a former boundary (or perhaps a field drain) in field 7. Cropmark linear features have previously been recorded in field 8 (WSMR 2047), and the susceptibility readings here are raised. The magnetometer survey, however, shows only faint markings possibly indicating ridge and furrow. The pit-like features outlined in field 9 are too isolated to be interpreted with any confidence.

Field 14 contains an area of densely scattered small anomalies, possibly extending for a short distance into field 16, but with no individually identifiable larger anomalies or linear features which would suggest the site is archaeologically significant. Field 14 lies close to a former pond (DBA:BQ), and it is perhaps possible there has been some nearby infilling or leveling. The disturbances as indicated in field 16 lie near to the former railway. Field 16 also shows a slight increase in susceptibility readings, but this does not correlate with the magnetic activity. The site of Kinwarton Manor House (WSMR 1567) lies immediately to the south of field 16, but no associated activity appears to have been detected by the survey.

It is perhaps possible that the magnetic disturbances in field 14 and susceptibility response in field 16 are both natural, and could correspond to a deposit of magnetically responsive gravel soil.

There are pit-like features similar to those seen in field 3 near to River Alne in field 17. A linear marking in field 18 appears to be electrical interference from overhead power lines, which can affect the magnetometers. There are crop marks (WSMR 6963) near field 20, but the magnetometer plot shows only possible ridge and furrow.

Figures 29 - 32 (Fields 21 - 37)

There are only isolated anomalies which could represent magnetic stones or small iron objects in fields 21 - 27. A medieval pottery scatter was noticed in fields 23-24 during the survey, but there are no individually interpretable magnetic anomalies. Field 25 was newly ploughed, and was not surveyed. In field 28 there is an increased concentration of anomalies and a possible linear feature. This combination could make the field a candidate for further investigation, but there is no associated susceptibility anomaly, as would be expected if this were an ancient settlement site. Field 29 contains irregular linear markings, perhaps indicating clinker-filled land drains. If so, the magnetic anomalies in field 28 could perhaps derive from plough - damaged remains of such drains. Other such linear markings are seen in field 31, and more positively in 32 - 33.

Fields 32 - 33 gave particularly high susceptibility readings, although the values remain high until field 37, and also for much of the remainder of the route. Flint flakes (WSMR 7273) have previously been recorded in field 32, but the susceptibility response here and in 33 is perhaps more likely to relate to nearby former farm buildings (DBA:CN and DBA:CI). The linear magnetic anomalies in 32 and 33 show more continuity than in fields 29 and 31. It could therefore be that ridge and furrow is present here and is responding strongly in the highly magnetic soil. An area of strong interference in field 35 is again caused by power cables.

A combination of linear markings and other anomalies in the remainder of field 36 could perhaps indicate that this is a site of some archaeological potential, but it remains possible, as in field 28), that these effects are caused by field drains, perhaps together with ridge and furrow.

A small area of magnetic disturbance (shaded) in field 37 corresponds to a susceptibility anomaly, and could perhaps relate to a former house (DBA:CA).

Figures 33 - 36 (Fields 38 - 52)

There are linear markings (drains or cultivation) in field 38. Magnetic anomalies in field 41 correspond to a susceptibility effect, and may relate to a path (DBA:CY), but a track in field 42 (DBA:CX) was not detected. Field 45 was newly ploughed and was surveyed by susceptibility only. High readings at the foot of the slope probably reflect the topography.

Field 49 gave high susceptibility readings, and correspondingly strong ridge and furrow (as in 33). Magnetic disturbances at the south end of field 49 (49B) are adjacent to the former railway. Linear markings in 52 could indicate both ridge and furrow and land drains.

Figures 37 - 41 (Fields 53 - 69)

The pit - like features in 55 lie immediately adjacent to the River Avon (as seen also in fields 3 and 17). A disturbed area in 57 could relate to former farm buildings (DBA:FC). Susceptibility readings are also high in this field.

A slight general increase in magnetic activity in field 62 does not correspond to any susceptibility effect, and could perhaps be natural. In field 64 there appears to be ridge and furrow, together with an irregular linear feature in the centre of the field. This could perhaps be a former boundary. Field 65 contains more ridge and furrow, together with some scattered weak magnetic anomalies. Susceptibility values in this field are higher than nearby. The central area of this field could perhaps therefore be placed on a short list of sites for potential further investigation, although the individual magnetic anomalies do not display any very conclusive archaeological characteristics.

There is distinct ridge and furrow in parts of field 67 and in 68.

Figures 42 - 45 (Fields 70 - 85)

Ridge and furrow was detected in fields 71 - 72, and particularly so in field 71 where susceptibility values are high. Pit - like responses were seen in 74 -75, but they lie near to a pond in 74, and a stream in 75. They appear to be rather too broad and irregular to be archaeologically significant, and the susceptibility values here are low.

The susceptibility values increase in field 79, where there are minor magnetic disturbances near the western boundary. Such activity is present also in field 80, but with no linear or other features which would suggest this is an archaeological site.

The strength of the magnetic disturbances in 81 suggests this could be recent infilling or leveling. There may also be clinker-filled land drains here and in field 82. A possible angled linear feature in section 82B of the survey could perhaps be part of an enclosure, but is perhaps more likely to relate to land drains. There is possibly ridge and furrow in 83. Disturbed areas in 84 and 85 are probably, as in field 81, of recent origin.

Conclusions

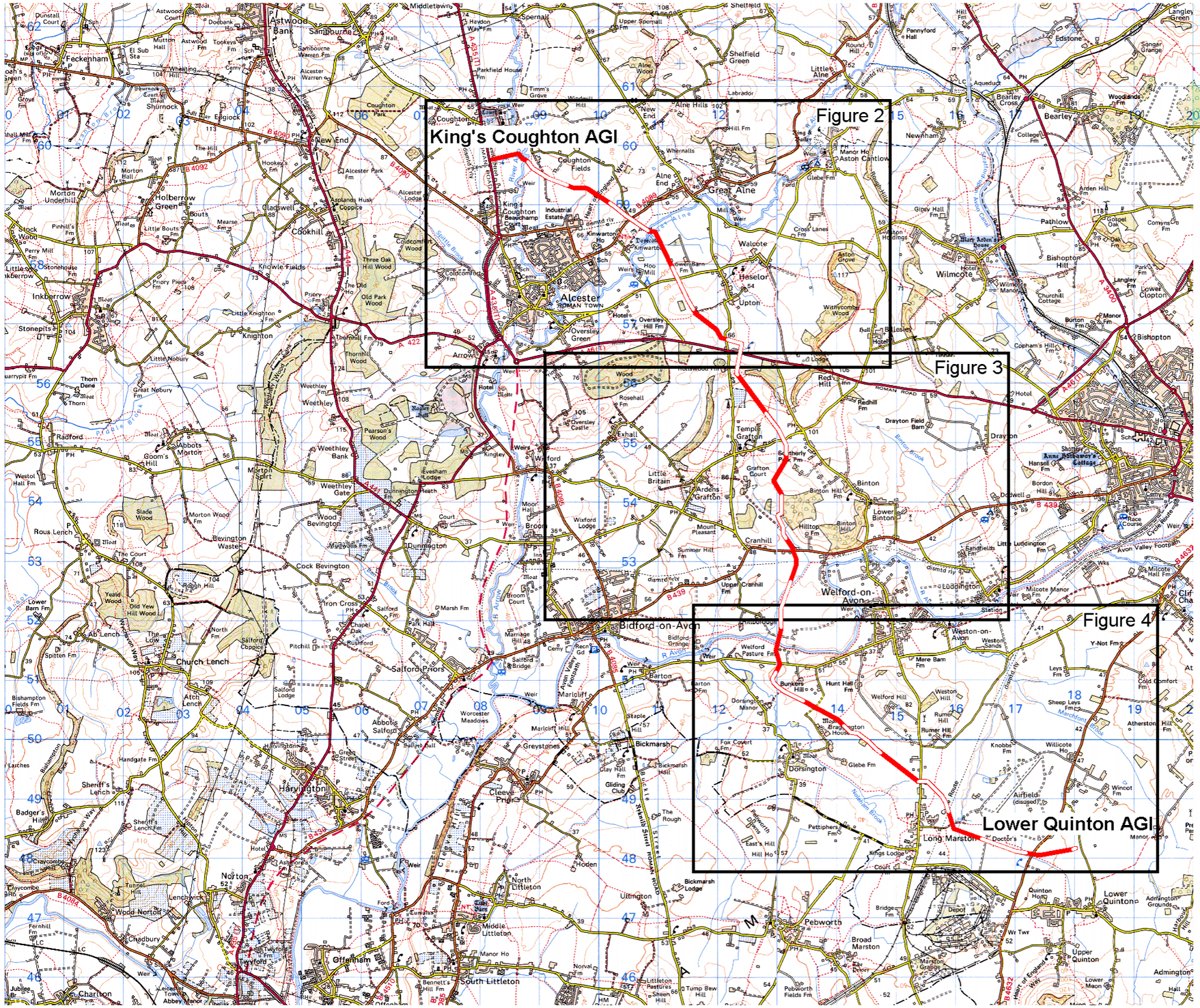
A clearly detectable archaeological site is usually characterised by a combination of geophysical responses. A pattern of ditches or enclosures may be combined with other more localised magnetic anomalies, or there may be both magnetic and susceptibility effects, particularly if settlement or industrial remains are present. Unusually few such potential sites have been detected in this survey, although there are some borderline cases, and strong magnetic responses were obtained at a number of locations. The widespread response to ridge and furrow, and the often quite high susceptibility readings suggest conditions along much of the route should be quite favourable for detection of any significant archaeological sites which are present.

There were a few sites at which a potentially significant combination of responses was obtained (perhaps including fields 28, 36, 65 and 80), but at none of these do the magnetic anomalies form a clearly identifiable or interpretable plan. It may be the case that various nearby Roman and DMV sites do not directly intersect the route, and other recorded crop marks and enclosures may not be associated with detectable archaeological features. The presence of clinker - filled land drains in several cases suggests a source of nearby magnetic disturbance which could account for some of the more uncertain survey results.

Findings from the survey otherwise include possible former boundaries or track ways (fields 7, 64), disturbances near former buildings (37, 57), and widespread ridge and furrow.

APPENDIX E

Figures 1 - 57



N

0 2.5 5km

1: 75 000

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Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure1.wor

Rev 00

Transco

Lower Quinton to
King's Coughton Pipeline

network

TITLE: Figure 1
Location of proposed pipeline
and figures 2-5

260 000 N

258 000 N

408 000 E

410 000 E

414 000 E

King's Coughton AGI

COUGHTON CP

GREAT ALNE CP

ASTON CANTLOW CP

KINWARTON CP

ALCESTER CP

HASELOR CP

001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032

Proposed pipeline

Archaeology found

None	Grade D

Surveys

- FRS
- FRS & FWS
- FRS, FWS & GS
- Uncorroborated DBA sites

N

0 1000 2000m

1: 20 000

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Rev	Date	Description	Drn	Chk	App
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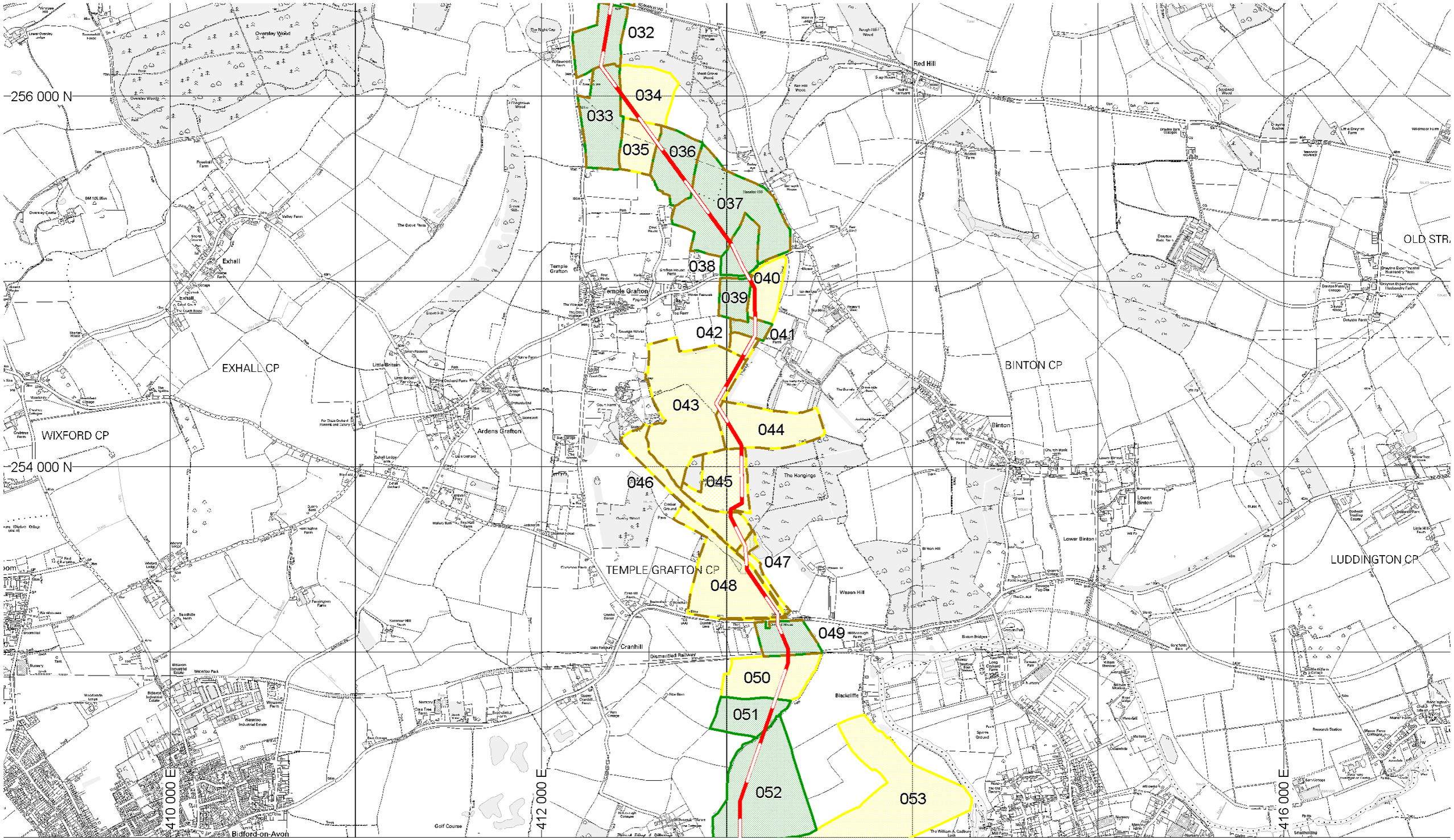
Lower Quinton to King's Coughton Pipeline

TITLE: Figure 2 Field survey summary

Filename: qkc\stage3\figure2.wor

Rev 00



Proposed pipeline

Archaeology found

None	Grade D

Surveys

FRS

FRS & FWS

FRS, FWS & GS

Uncorroborated DBA sites

N

0 1000 2000m

1: 20 000

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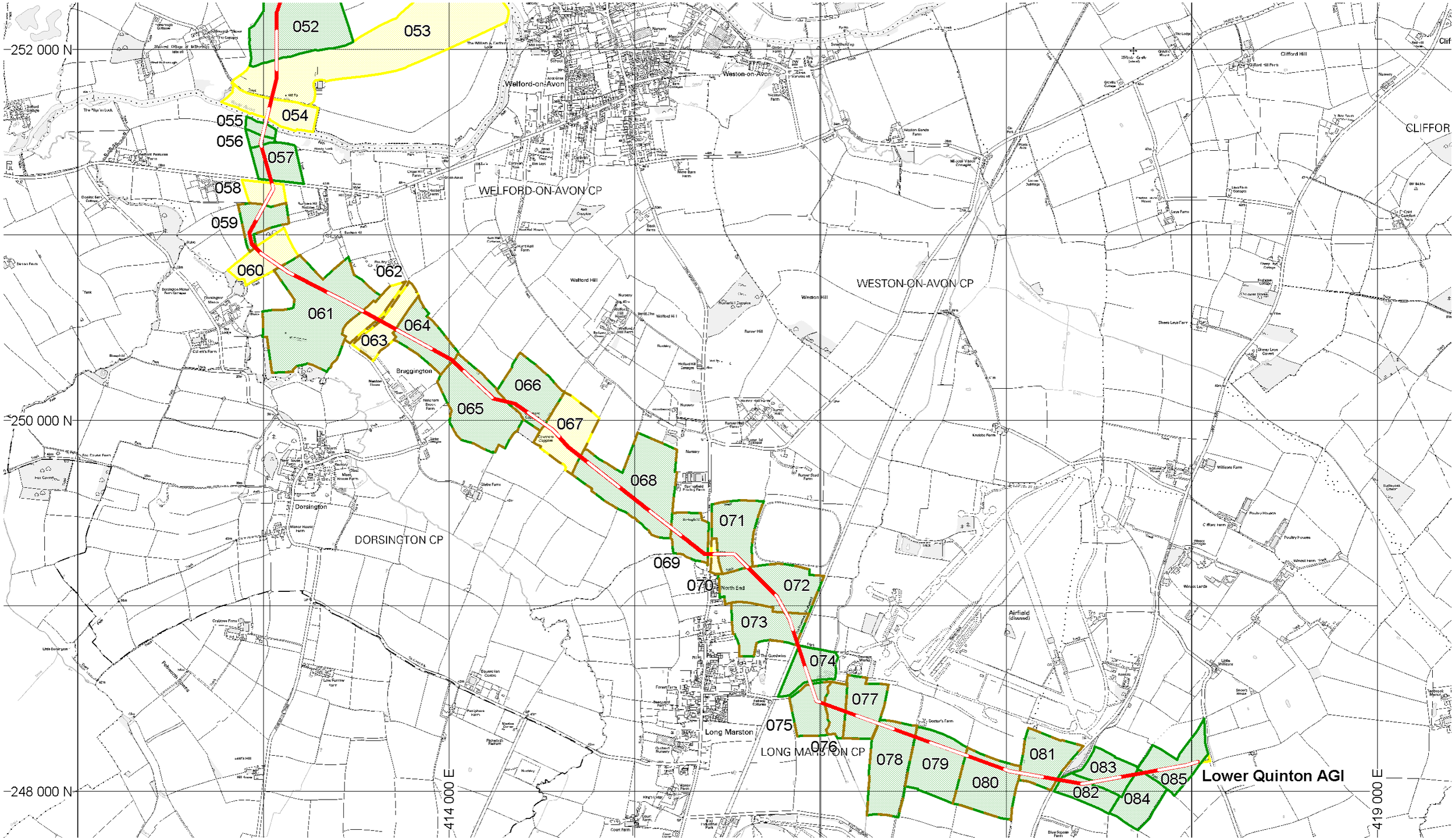
Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 3 Field survey summary

Filename: qkc\stage3\figure3.wor

Rev 00



Proposed pipeline

Archaeology found

None	Grade D	
		FRS
		FRS & FWS
		FRS, FWS & GS
		Uncorroborated DBA sites

Surveys

N

0 1000 2000m

1: 20 000

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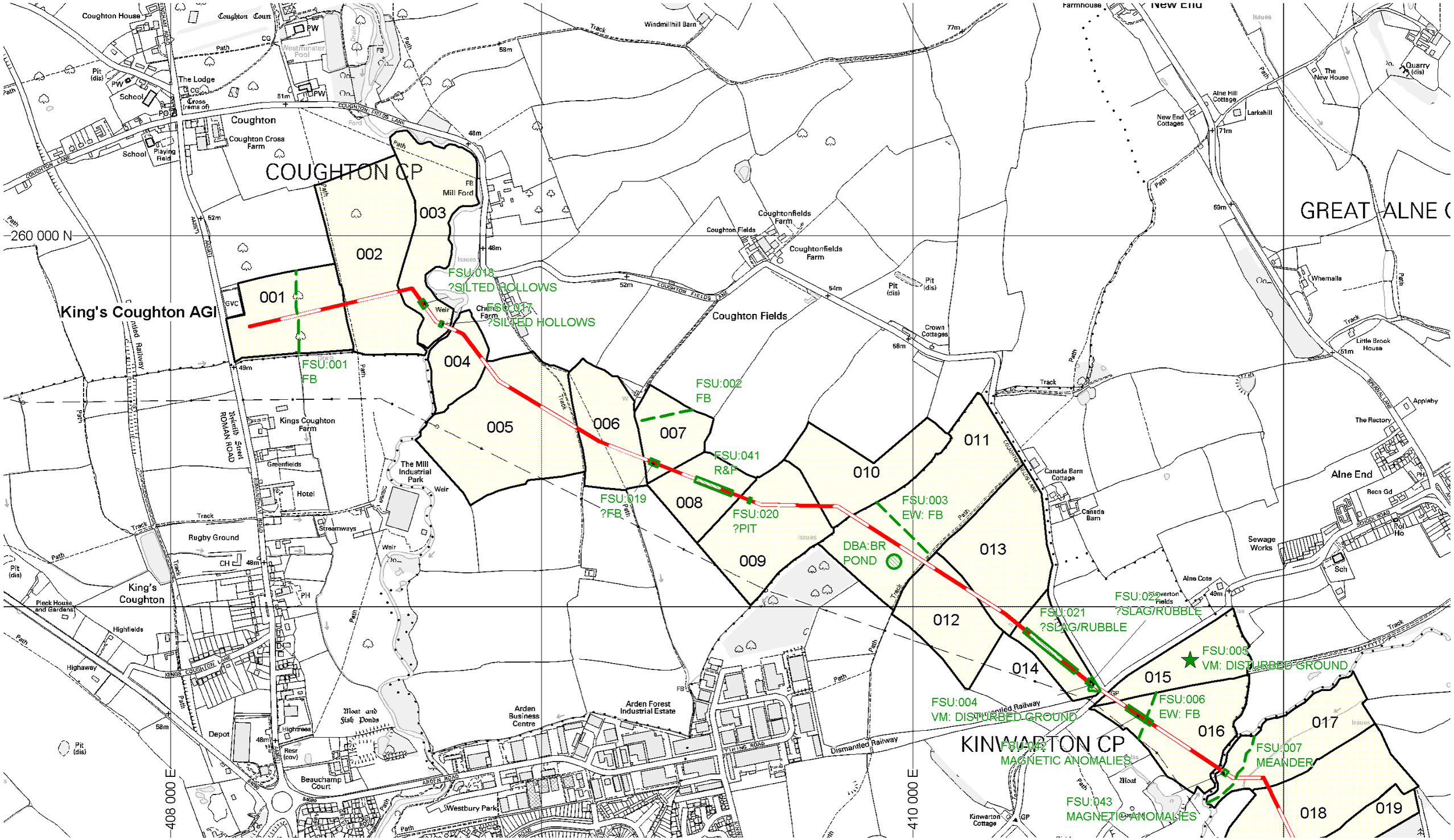
Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 4 Field survey summary

Filename: qkc\stage3\figure4.wor

Rev 00



Proposed pipeline

Plot

Field survey data

Grade D

N

0 500 1000m

1: 10 000

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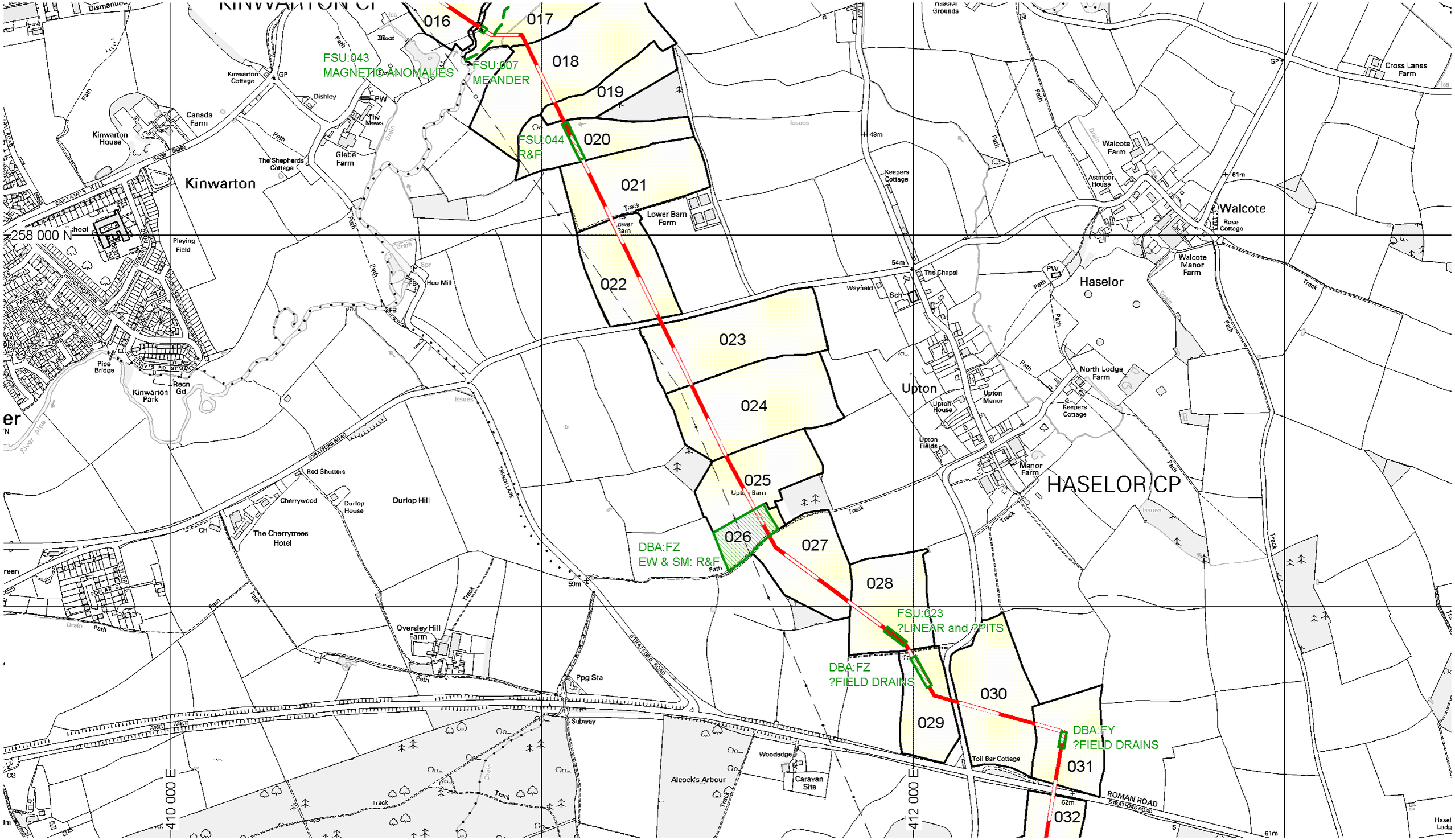
Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 5
Field survey data

Filename: qkc\stage3\figure5.wor

Rev 00



Proposed pipeline

Plot

Field survey data

Grade D

N

0 500 1000m

1: 10 000

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Rev	Date	Description	Drn	Chk	App
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Filename: qkc\stage3\figure6.wor

Rev 00

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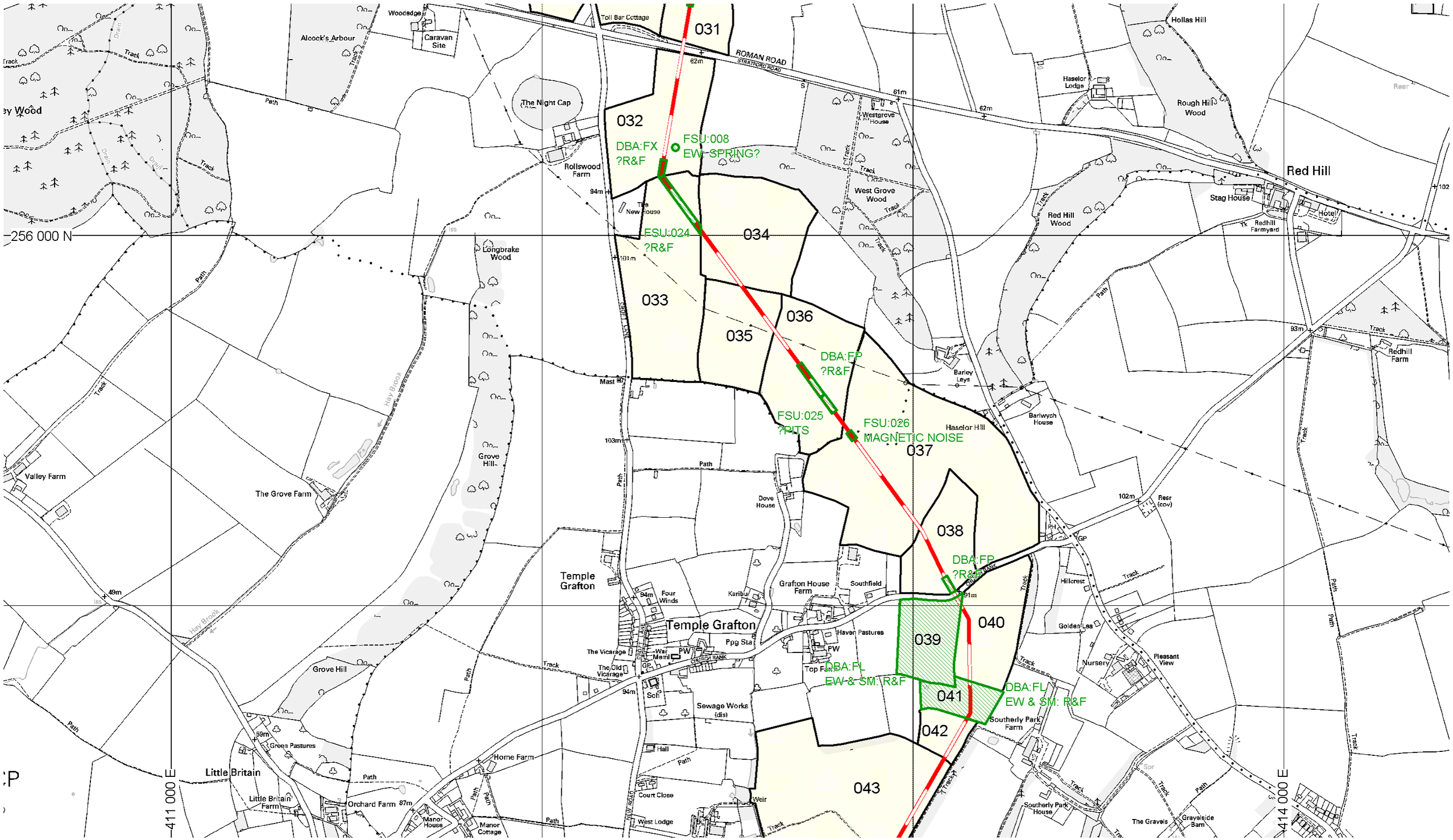
Lower Quinton to King's Coughton Pipeline

TITLE: Figure 6
Field survey data



Proposed pipeline

Plot

Field survey data

Grade D

N

0 500 1000m

1: 10 000

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Rev	Date	Description	Drn	Chk	App
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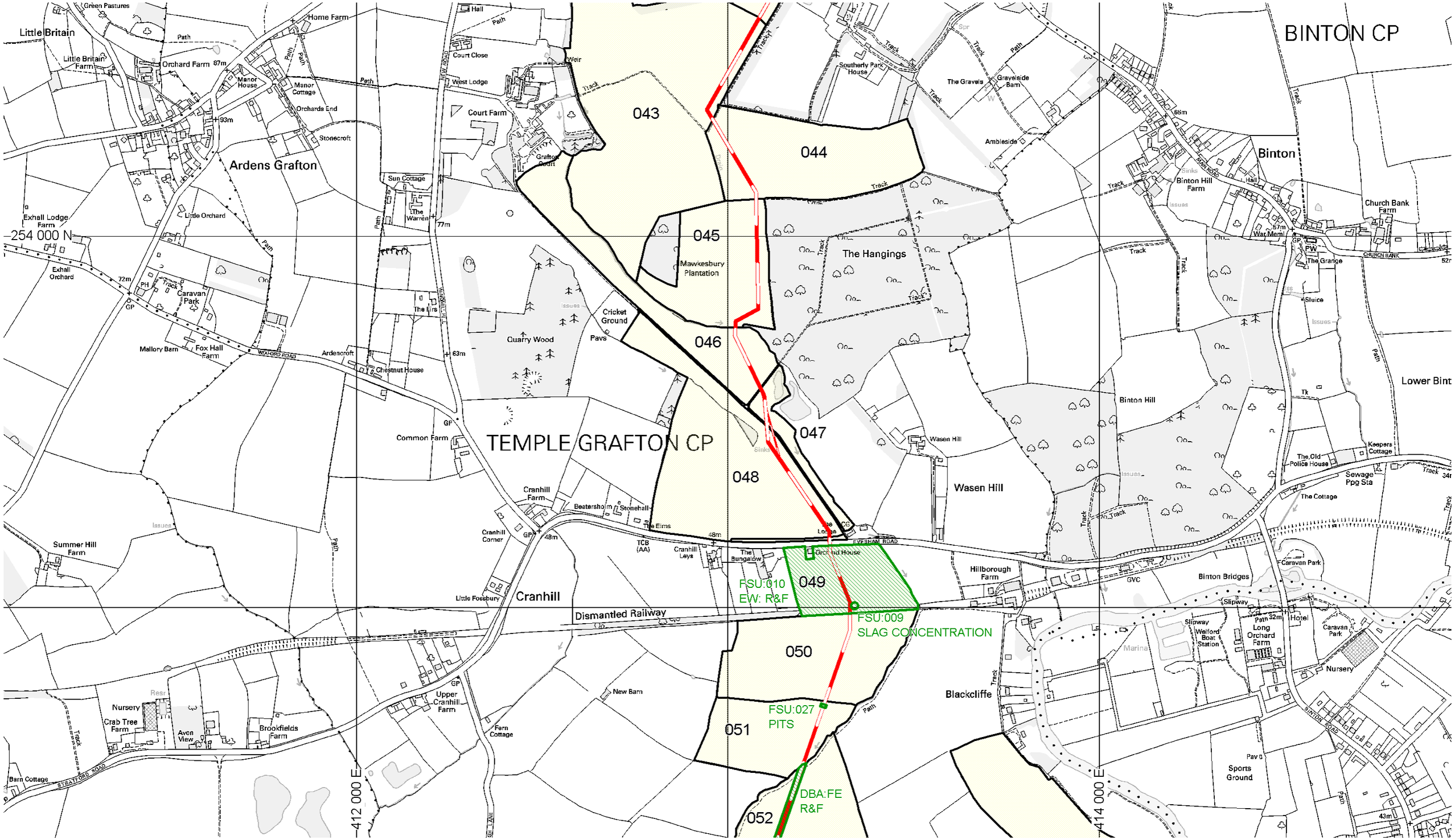
Lower Quinton to King's Coughton Pipeline

network

TITLE: Figure 7
Field survey data

Filename: qkc\stage3\figure7.wor

Rev 00



Proposed pipeline

Plot

Field survey data

Grade D

N

0 500 1000m

1: 10 000

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Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Transco

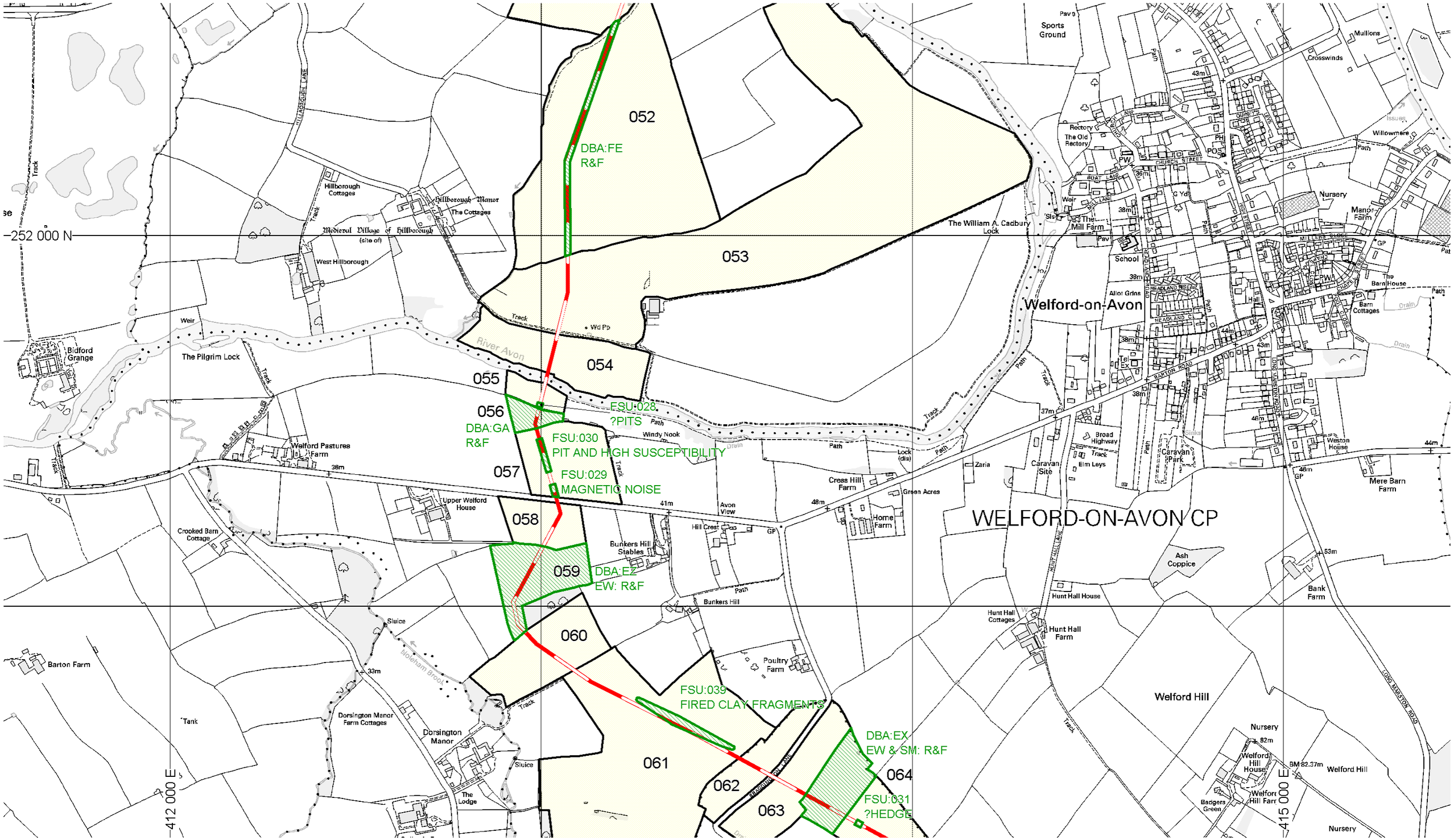
Lower Quinton to King's Coughton Pipeline

network

TITLE: Figure 8
Field survey data

Filename: qkc\stage3\figure8.wor

Rev 00



Proposed pipeline

Plot

Field survey data

Grade D

N

0 500 1000m

1: 10 000

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Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

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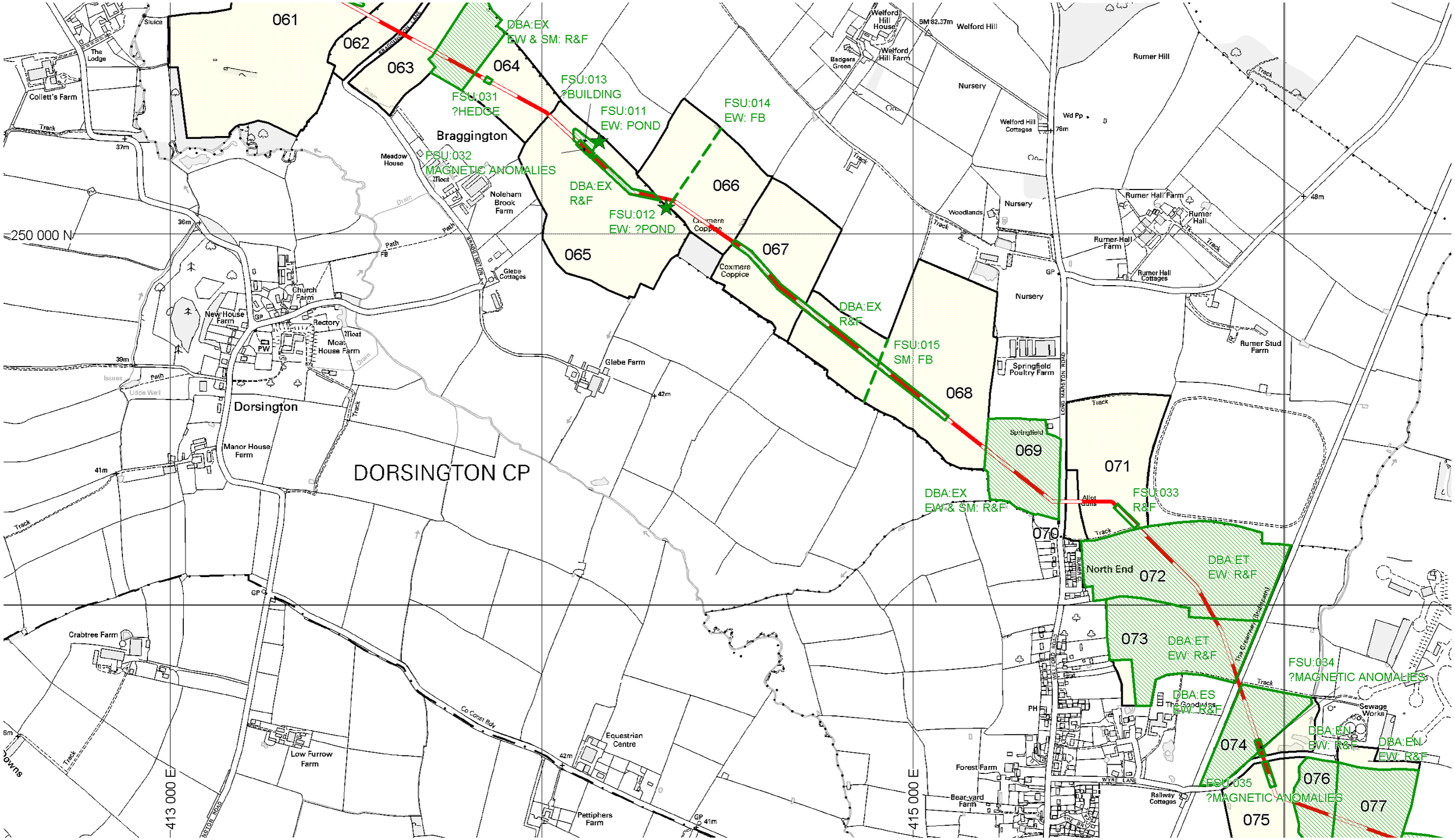
TITLE: Figure 9 Field survey data

Filename: qkc\stage3\figure9.wor

Rev 00



Proposed pipeline

Plot

Field survey data

Grade D

N

0 500 1000m

1: 10 000

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Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

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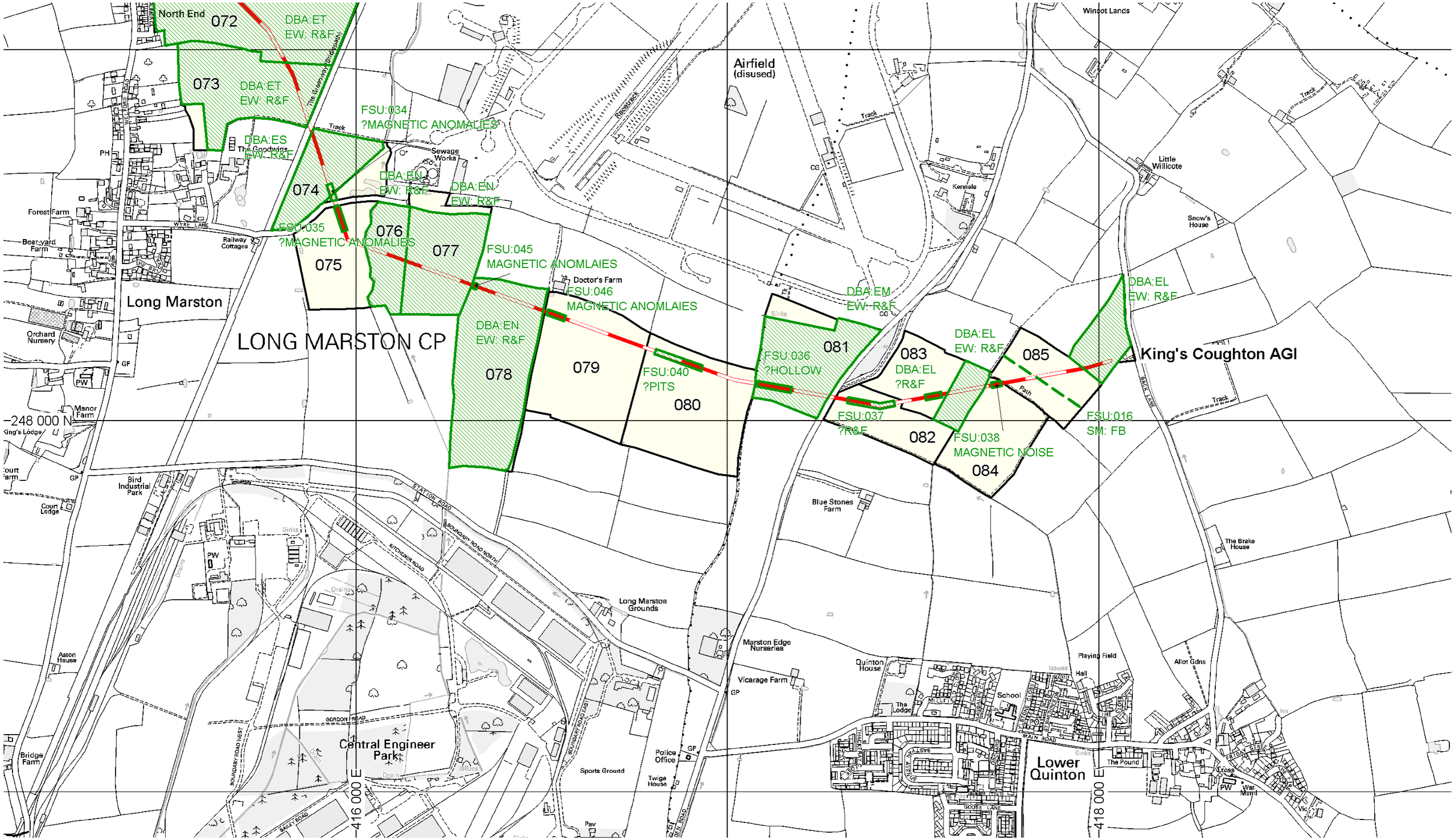
network

TITLE: Figure 10 Field survey data

Filename: qkc\stage3\figure10.wd

Rev 00



Proposed pipeline

Plot

Field survey data

Grade D

N

0 500 1000m

1: 10 000

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Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

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King's Coughton Pipeline

network

TITLE: Figure 11
Field survey data

Filename: qkc\stage3\figure11.wc

Rev 00

260 000 N

King's Coughton AGI

001

002

003

004

005

006

007

008

010

408 200 E

409 000 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Transco

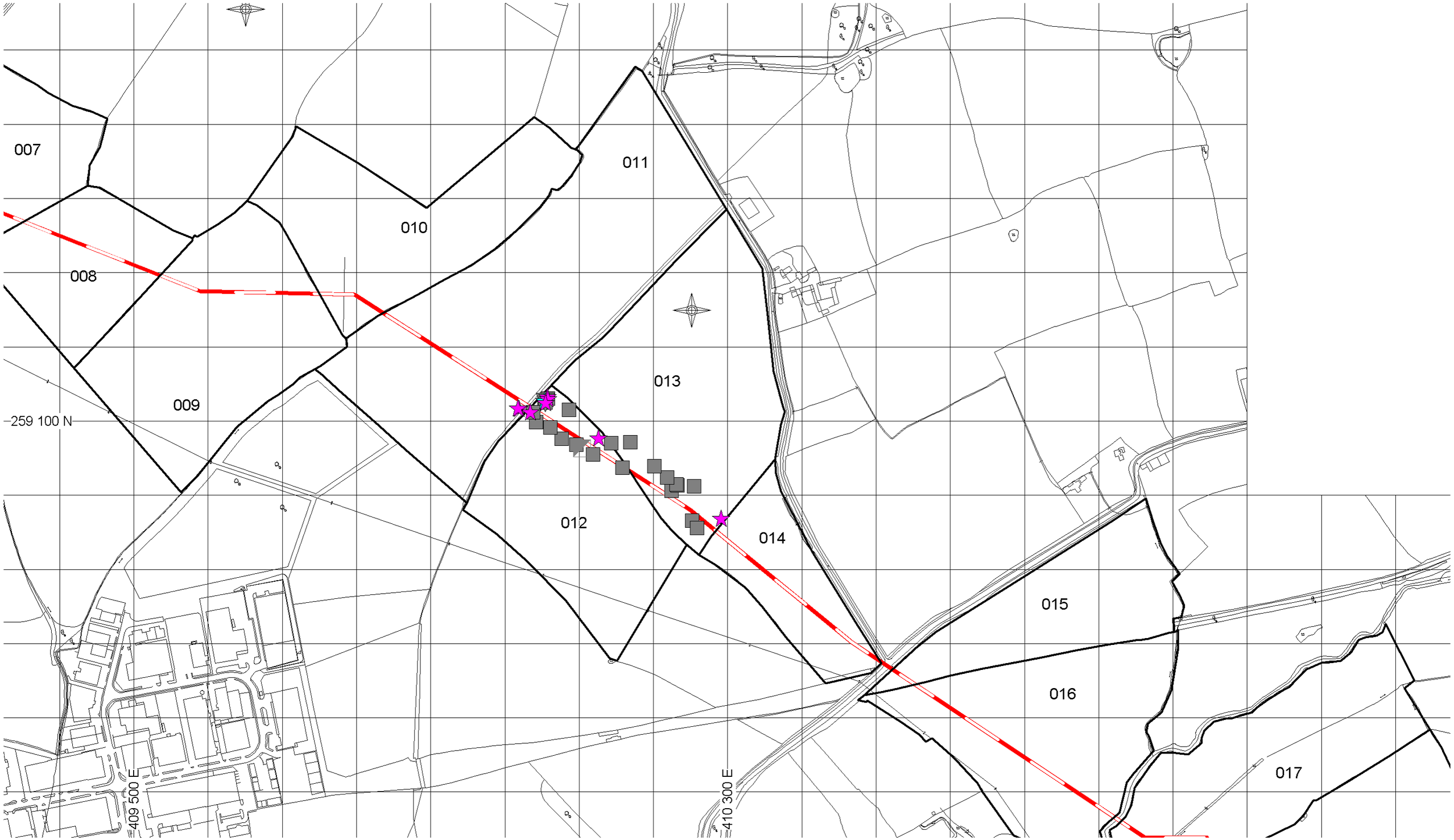
Lower Quinton to King's Coughton Pipeline

netwark archaeology

TITLE: Figure 12
Distribution of artefacts found by fieldwalking survey

Filename: qkc\stage3\figure12.wo

Rev 00



Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure13.wo

Rev 00

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 13
Distribution of artefacts found by fieldwalking survey

017

018

019

020

021

022

023

024

258 100 N

410 400 E

411 200 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined
- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass
- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 14
Distribution of artefacts found by fieldwalking survey

Filename: qkc\stage3\figure14.wc

Rev 00

024

025

026

027

028

029

030

031

032

257 000 N

411 000 E

411 800 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure15.wd

Rev 00

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 15
Distribution of artefacts found by fieldwalking survey

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined
- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass
- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 16
Distribution of artefacts found by fieldwalking survey

Filename: qkc\stage3\figure16.wd

Rev 00

037

038

039

040

041

042

043

044

254 900 N

412 400 E

413 600 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure17.wc

Rev 00

Transco

Lower Quinton to King's Coughton Pipeline

TITLE: Figure 17
Distribution of artefacts found by fieldwalking survey

043

044

045

046

047

048

253 800 N

412 400 E

413 600 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure18.wc

Rev 00

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 18
Distribution of artefacts found by fieldwalking survey

049

050

051

052

053

252 700 N

412 800 E

414 000 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure19.wc

Rev 00

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 19
Distribution of artefacts found by fieldwalking survey

052

053

054

055

056

057

058

059

060

251 600 N

412 800 E

414 000 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

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Lower Quinton to
King's Coughton Pipeline

netwark archaeology

TITLE: Figure 20
Distribution of artefacts
found by fieldwalking survey

Filename: qkc\stage3\figure20.wo

Rev 00

060

061

062

063

064

065

066

067

250 500 N

413 000 E

414 200 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure21.wo

Rev 00

Transco

Lower Quinton to King's Coughton Pipeline

TITLE: Figure 21
Distribution of artefacts found by fieldwalking survey

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure22.wd

Rev 00

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 22
Distribution of artefacts found by fieldwalking survey

071

070

072

248 900 N

073

074

075

076

077

078

079

415 500 E

416 900 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure23.wo

Rev 00

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 23
Distribution of artefacts found by fieldwalking survey

077

078

079

080

081

082

083

084

085

Lower Quinton AGI

248 200 N

416 600 E

418 000 E

Proposed pipeline

Plot

N

0 100 200m

1: 5000

Field walking data

- Romano-British
- Medieval
- Post-medieval
- Modern
- Undetermined

- Bone animal
- CBM
- Clay heat affected
- Clay pipe
- Flint knapped
- Glass

- Metal
- Organic carbonised
- Pottery
- Production waste
- Stone heat affected
- Stone worked

Rev	Date	Description	Drn	Chk	App
00	28/11/02	First draft	AH	--	--

Filename: qkc\stage3\figure24.wc

Rev 00

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Lower Quinton to King's Coughton Pipeline

TITLE: Figure 24
Distribution of artefacts found by fieldwalking survey

N

1

2

3

4

5

King's Coughton

Lower Quinton →

40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 1 - 5

(with interpretation of magnetometer survey)

1:2500

0 100m

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Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 25
Geophysical Survey

N

← King's Coughton

Lower Quinton →

6

6

7

8

9

10

40 x 10^{-5}SI
(volume susceptibility)

Magnetic
susceptibility
survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 6 - 10

(with interpretation of magnetometer survey)

1:2500

0 100m

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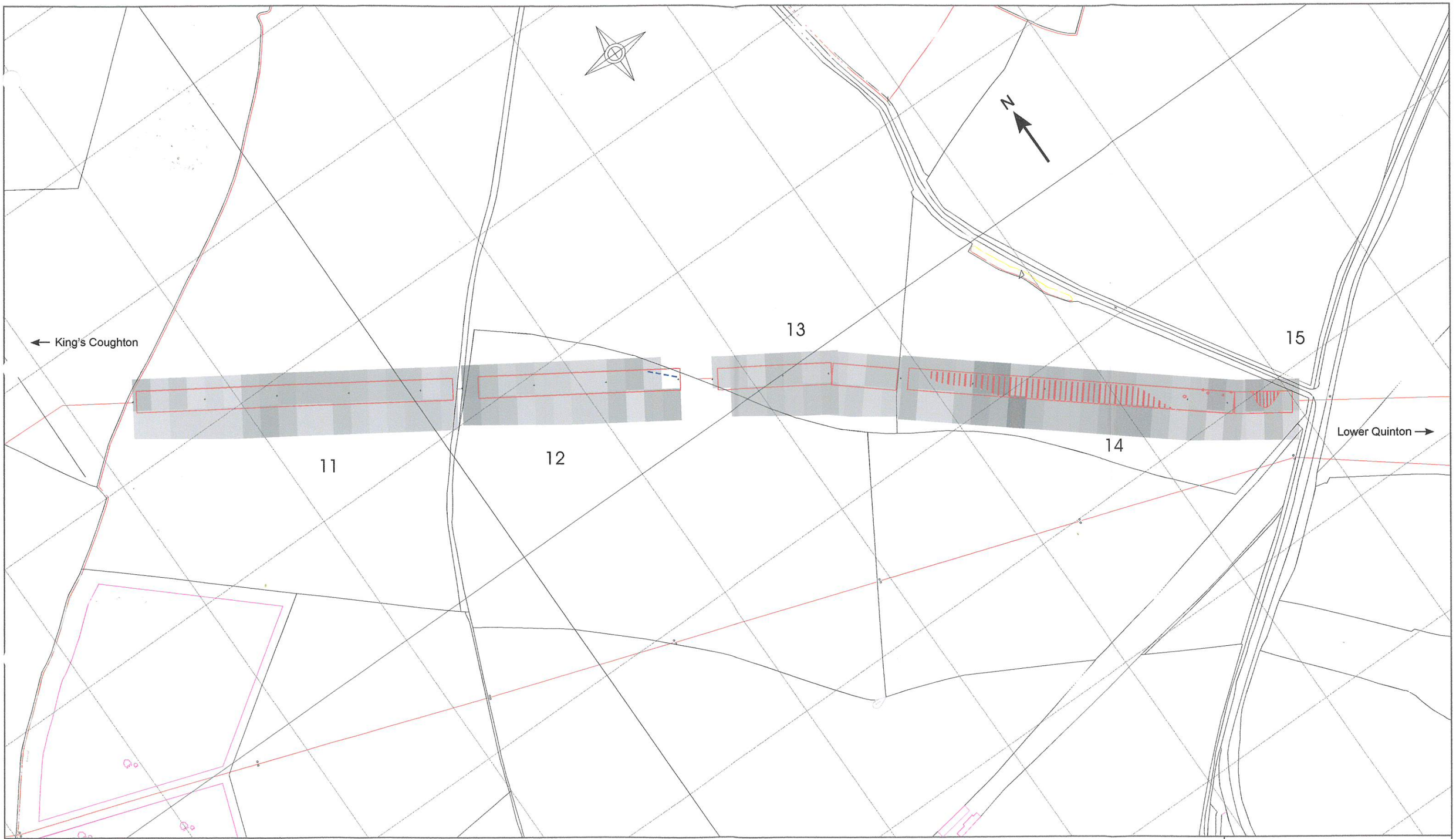
King's Coughton Pipeline

network archaeology

TITLE: Figure 26
Geophysical Survey



40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

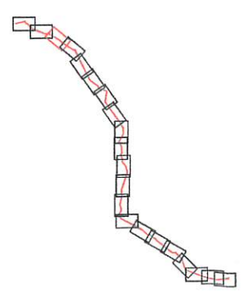
Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 11 - 14

(with interpretation of magnetometer survey)

1:2500

0 100m



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for: Network Archaeology Ltd

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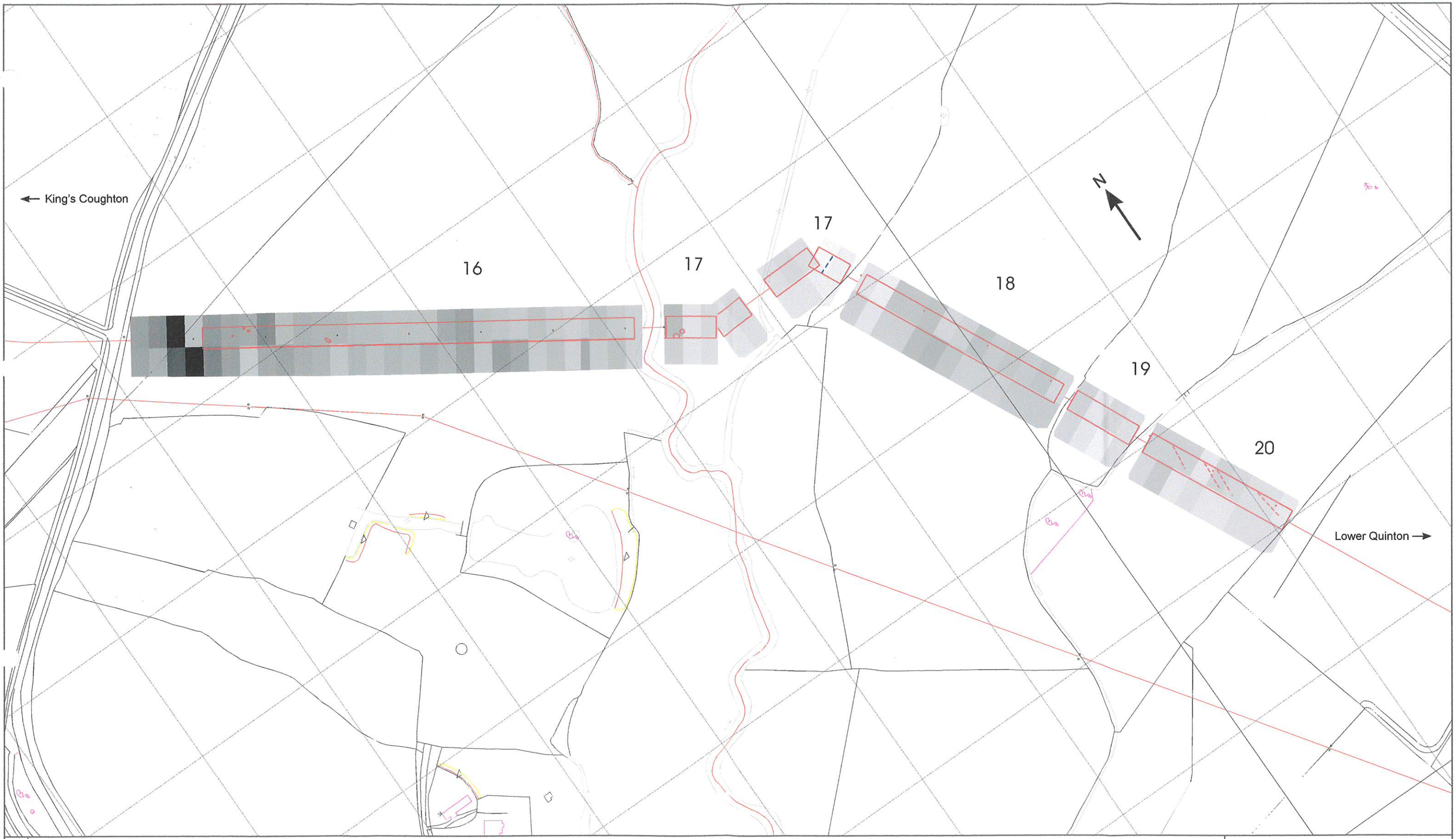
network archaeology

TITLE: Figure 27
Geophysical Survey



40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

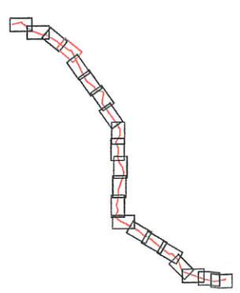
Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 16 - 20

(with interpretation of magnetometer survey)

1:2500

0 100m



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network archaeology

TITLE: Figure 28
Geophysical Survey

← King's Coughton

21

22

23

24

Lower Quinton →

N

40 x 10^{-5}SI
(volume susceptibility)

Magnetic
susceptibility
survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 21 - 25

(with interpretation of magnetometer survey)

1:2500

0 100m

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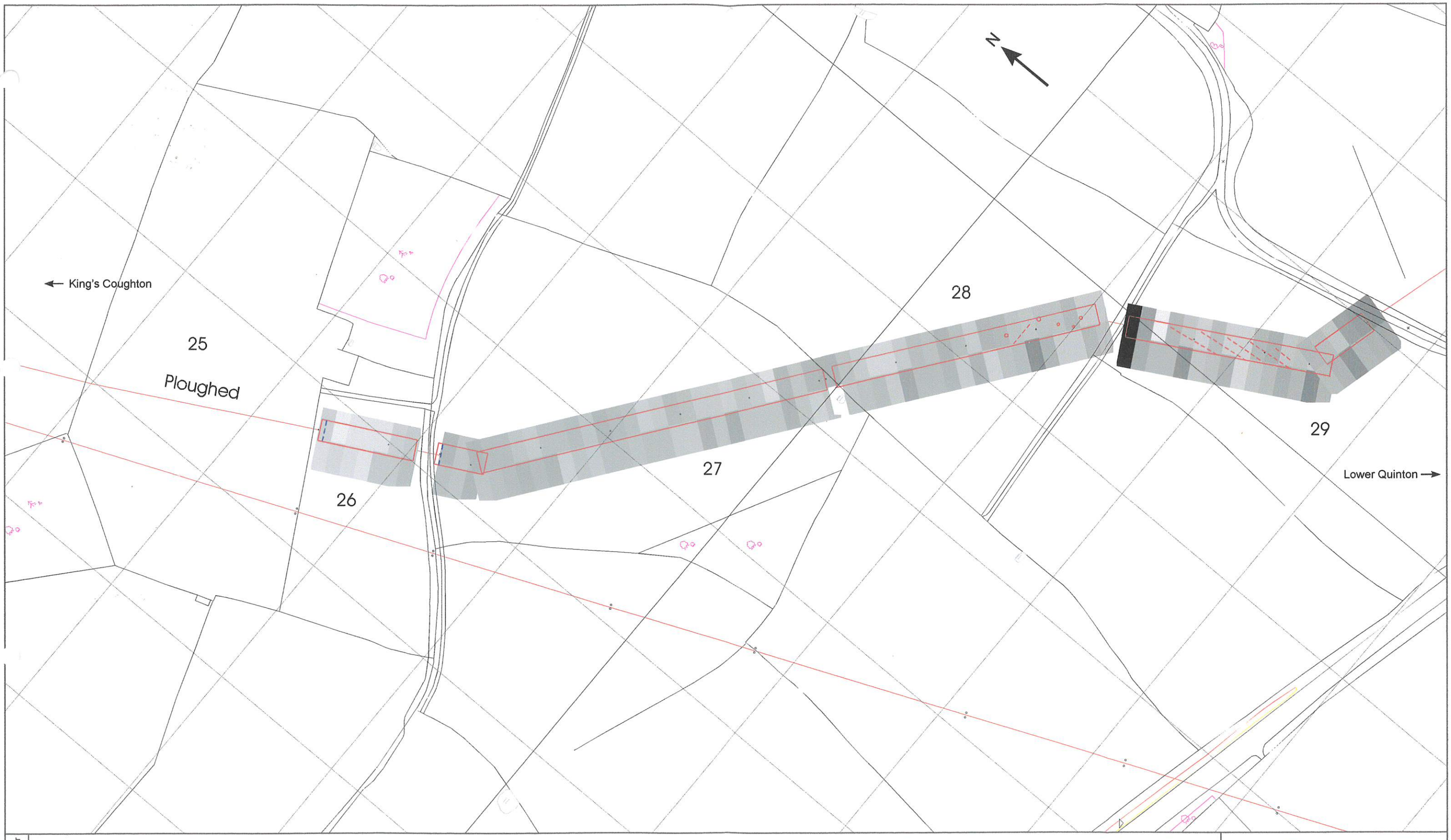
King's Coughton Pipeline

network archaeology

TITLE: Figure 29
Geophysical Survey



40 x 10^{-5}SI (volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 25 - 29

(with interpretation of magnetometer survey)

1:2500

0 100m

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network archaeology

TITLE: Figure 30 Geophysical Survey

N

31

30

32

slope

33

34

← King's Coughton

Lower Quinton →

40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 30 - 34

(with interpretation of magnetometer survey)

1:2500

0 100m

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Filename: LQK\plans\map31.cdr

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network archaeology

TITLE: Figure 31
Geophysical Survey

N

← King's Coughton

35

36

37

Lower Quinton →

40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 35 - 37

(with interpretation of magnetometer survey)

1:2500

0 100m

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Lower Quinton to
King's Coughton Pipeline

network archaeology

TITLE: Figure 32
Geophysical Survey

40

Maize

41

39

38

42

43

N

Filena. .. LQK\plans\map33.cdr

Rev 01

40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Surveyed by: Bartlett-Clark Consultancy (01865 200864)
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Magnetic Susceptibility Survey - Fields 38 - 43

(with interpretation of magnetometer survey)

1:2500

0 100m

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 33
Geophysical Survey

N

44

45
Ploughed

46

Lower Quinton →

← King's Coughton

40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

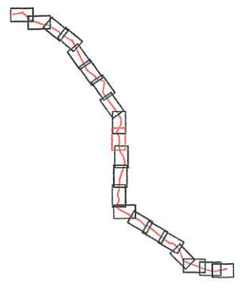
Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 44 - 46

(with interpretation of magnetometer survey)

1:2500

0 100m



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Filena... LQK\plans\map34.cdr

Rev 01

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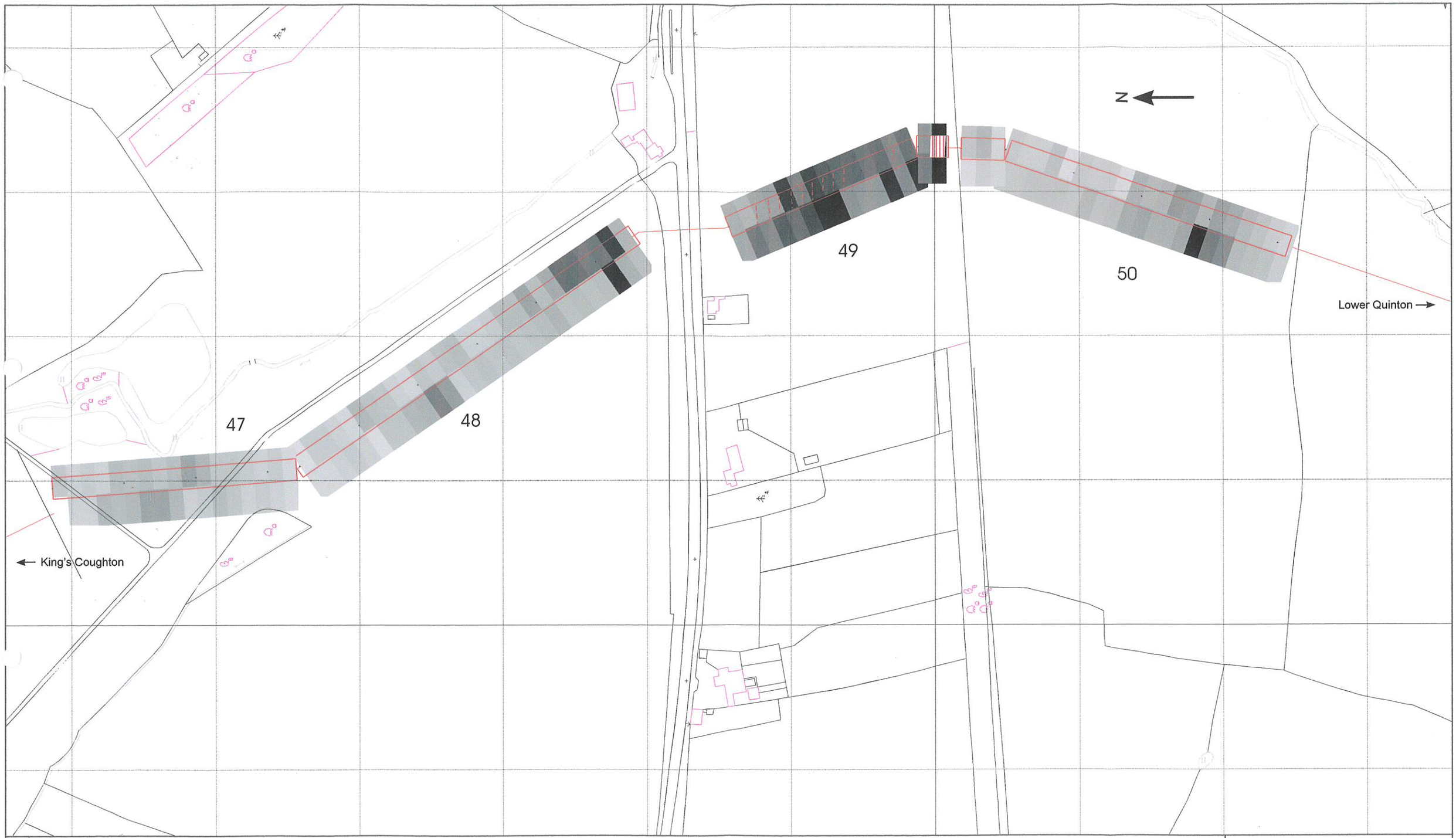
Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 34
Geophysical Survey



40 x 10^{-5}SI (volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 47 - 50

(with interpretation of magnetometer survey)

1:2500

0 100m

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Filena... LQK\plans\map35.cdr

Rev 01

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Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 35 Geophysical Survey

N

← King's Coughton

51

52

Lower Quinton →

40 x 10^{-5}SI (volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 51 - 52

(with interpretation of magnetometer survey)

1:2500

0 100m

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Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 36 Geophysical Survey

Filena... LQK\plans\map36.cdr

Rev 01

N

← King's Coughton

53

54

Overgrown

55

56

57

58

59

Lower Quinton →

40 x 10^{-5}SI (volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 53 - 59

(with interpretation of magnetometer survey)

1:2500

0 100m

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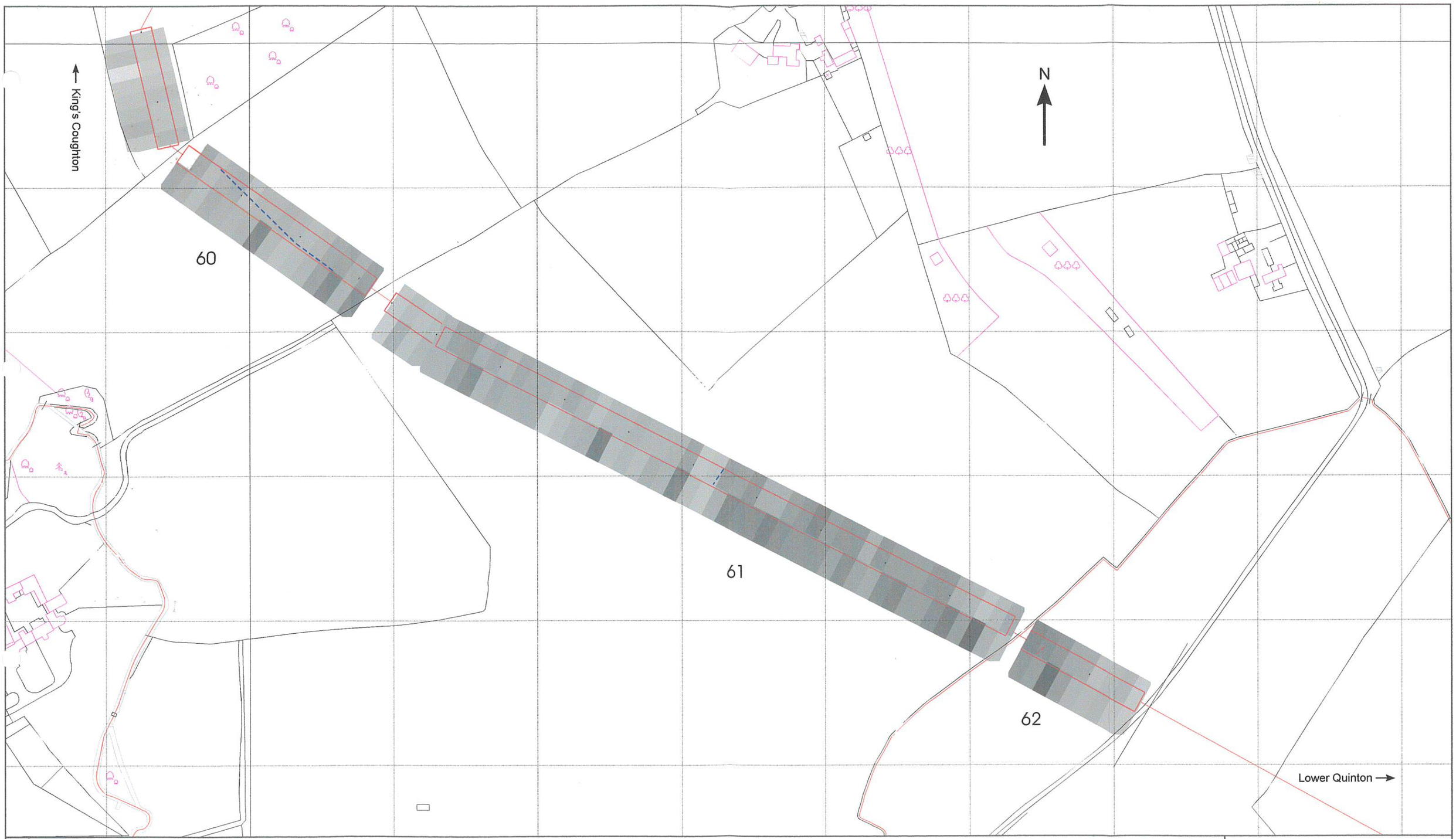
Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 37 Geophysical Survey

Filena. . LQK\plans\map37.cdr

Rev 01



40 x 10^{-5}SI (volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 59 - 62

(with interpretation of magnetometer survey)

1:2500

0 100m

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Filena. .. LQK\plans\map38.cdr

Rev 01

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Lower Quinton to King's Coughton Pipeline

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TITLE: Figure 38 Geophysical Survey

N

← King's Coughton

63

64

65

Lower Quinton →

40 x 10^{-5}SI
(volume susceptibility)

Magnetic
susceptibility
survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 63 - 65

(with interpretation of magnetometer survey)

1:2500

0 100m

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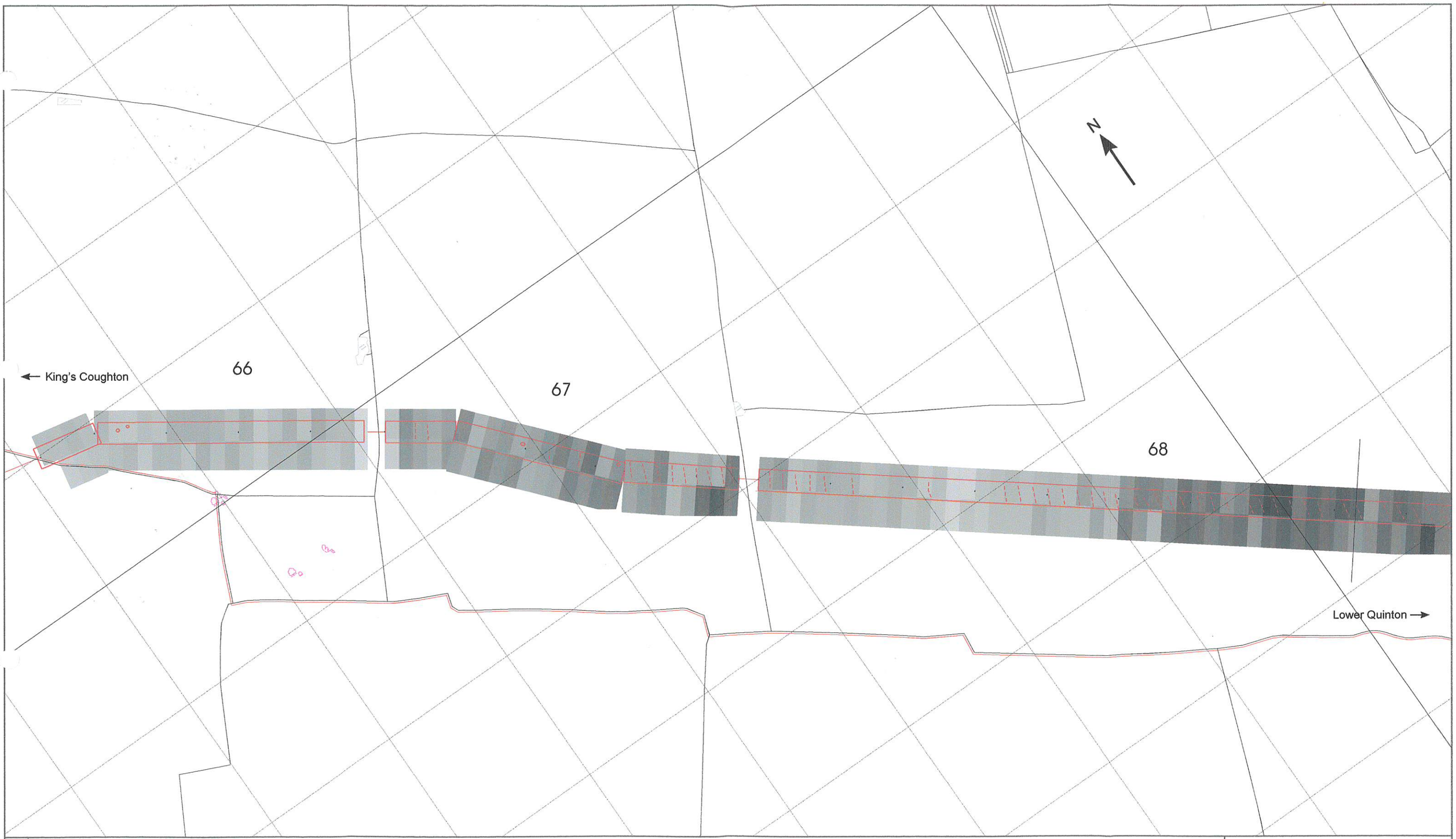
Transco

Lower Quinton to
King's Coughton Pipeline

network archaeology

TITLE: Figure 39
Geophysical Survey

Rev 01 Filena . LQK\plans\map39.cdr



40 x 10^{-5}SI (volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 66 - 68

(with interpretation of magnetometer survey)

1:2500

0 100m

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Lower Quinton to King's Coughton Pipeline

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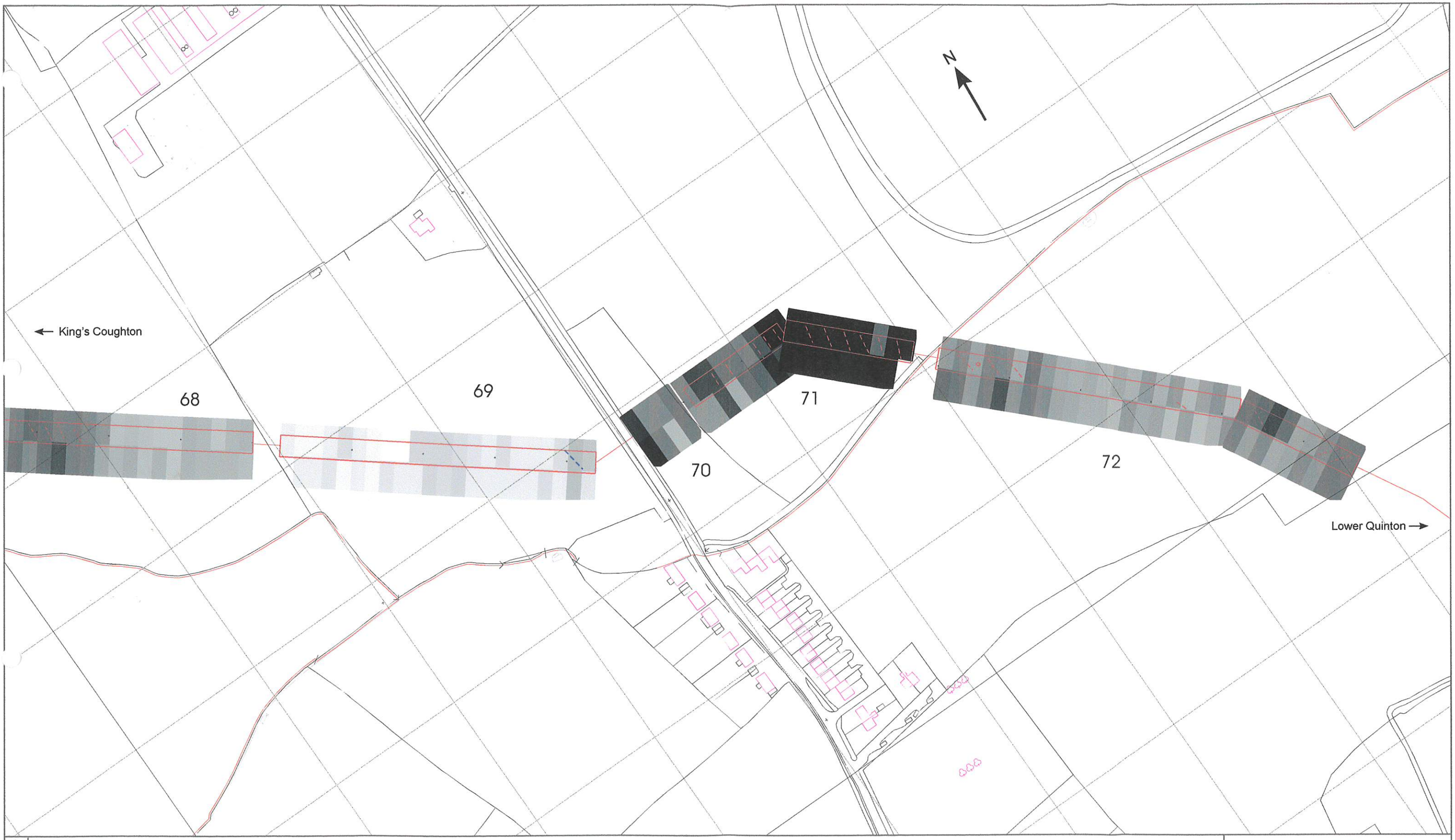
TITLE: Figure 40 Geophysical Survey

Filena . LQK\plans\map40.cdr

Rev 01



Filena. . LQK\plans\map41.cdr

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40 x 10^{-5}SI (volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

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for: Network Archaeology Ltd

Magnetic Susceptibility Survey - Fields 68 - 71

(with interpretation of magnetometer survey)

1:2500

0 100m

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Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 41
Geophysical Survey

← King's Coughton

73

74

75

76

77

N

Lower Quinton →

40 x 10^{-5}SI (volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 73 - 77

(with interpretation of magnetometer survey)

1:2500

0 100m

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Files: . LQK\plans\map42.cdr

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Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 42 Geophysical Survey

N

Lower Quinton →

← King's Coughton

76

77

78

79

40 x 10^{-5}SI
(volume susceptibility)

Magnetic
susceptibility
survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

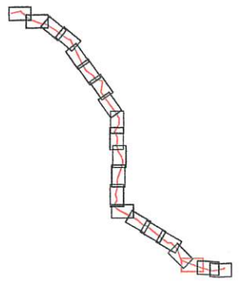
Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 76 - 79

(with interpretation of magnetometer survey)

1:2500

0 100m



Surveyed by: Bartlett-Clark Consultancy (01865 200864)
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Filena. . LQK\plans\map43.cdr

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Lower Quinton to
King's Coughton Pipeline

network archaeology

TITLE: Figure 43
Geophysical Survey

N

← King's Coughton

Lower Quinton →

80

81

82

40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

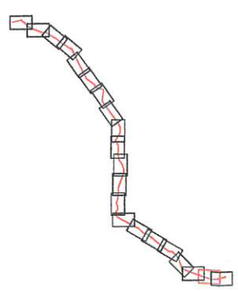
Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 80 - 82

(with interpretation of magnetometer survey)

1:2500

0 100m



Surveyed by: Bartlett-Clark Consultancy (01865 200864)
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Lower Quinton to King's Coughton Pipeline

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TITLE: Figure 44
Geophysical Survey

N

← King's Coughton

83

84

85

Lower Quinton

40 x 10^{-5}SI
(volume susceptibility)

Magnetic susceptibility survey

0

Magnetometer survey

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetic Susceptibility Survey - Fields 83 - 85

(with interpretation of magnetometer survey)

1:2500

0 100m

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Filena. . LQK\plans\map45.cdr

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Lower Quinton to King's Coughton Pipeline

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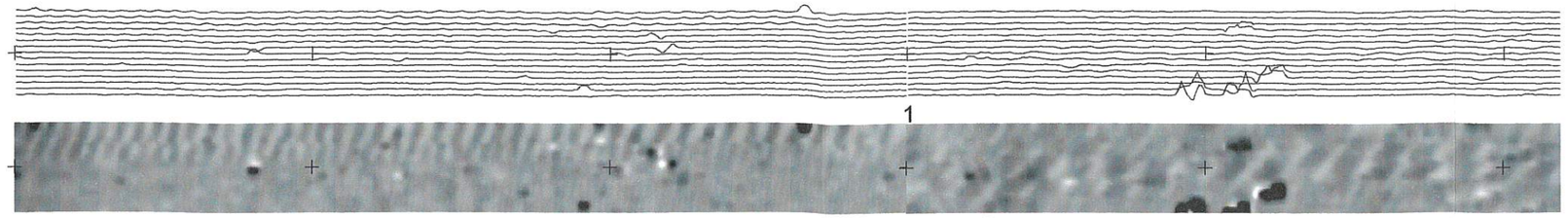
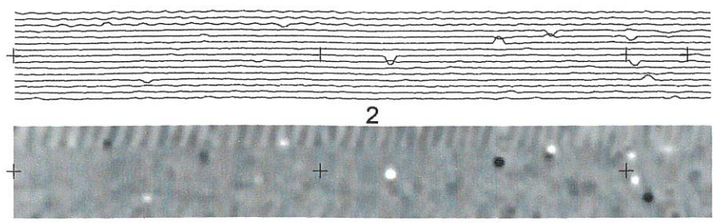
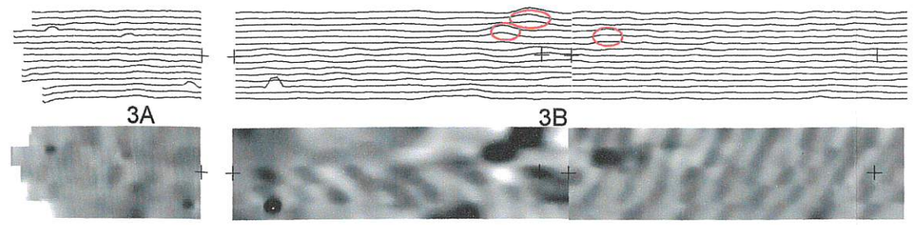
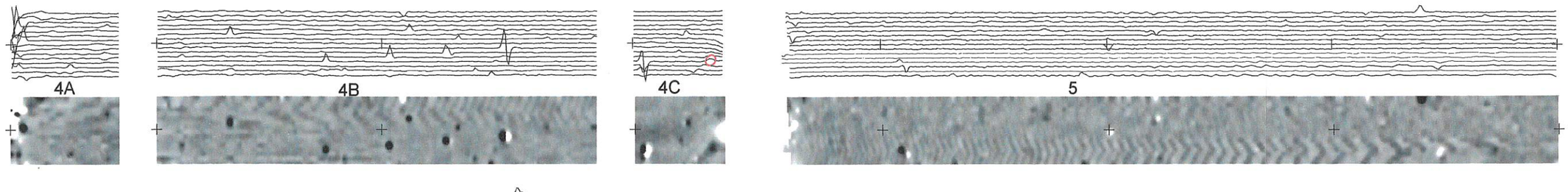
TITLE: Figure 45
Geophysical Survey

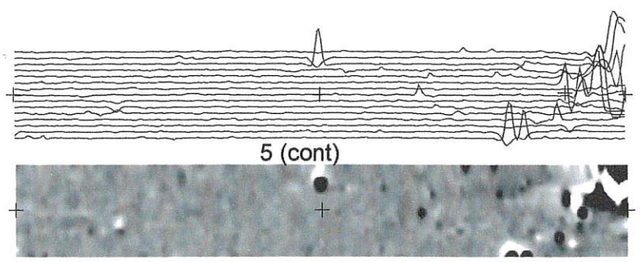
King's Coughton

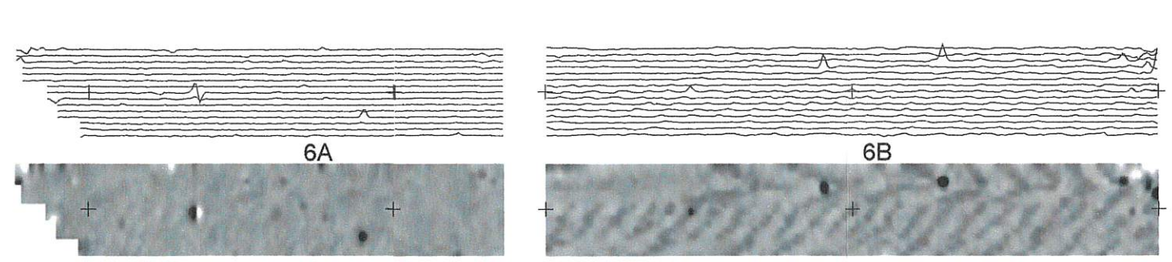


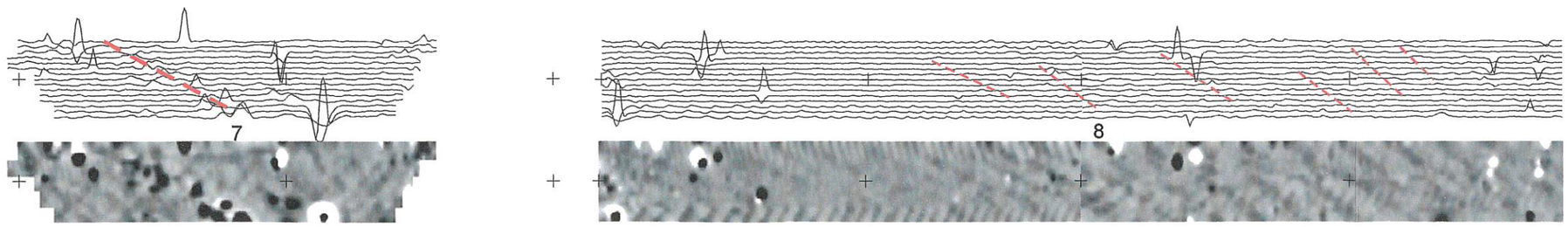












+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 1 - 8

1:1000

0 20 40 60m

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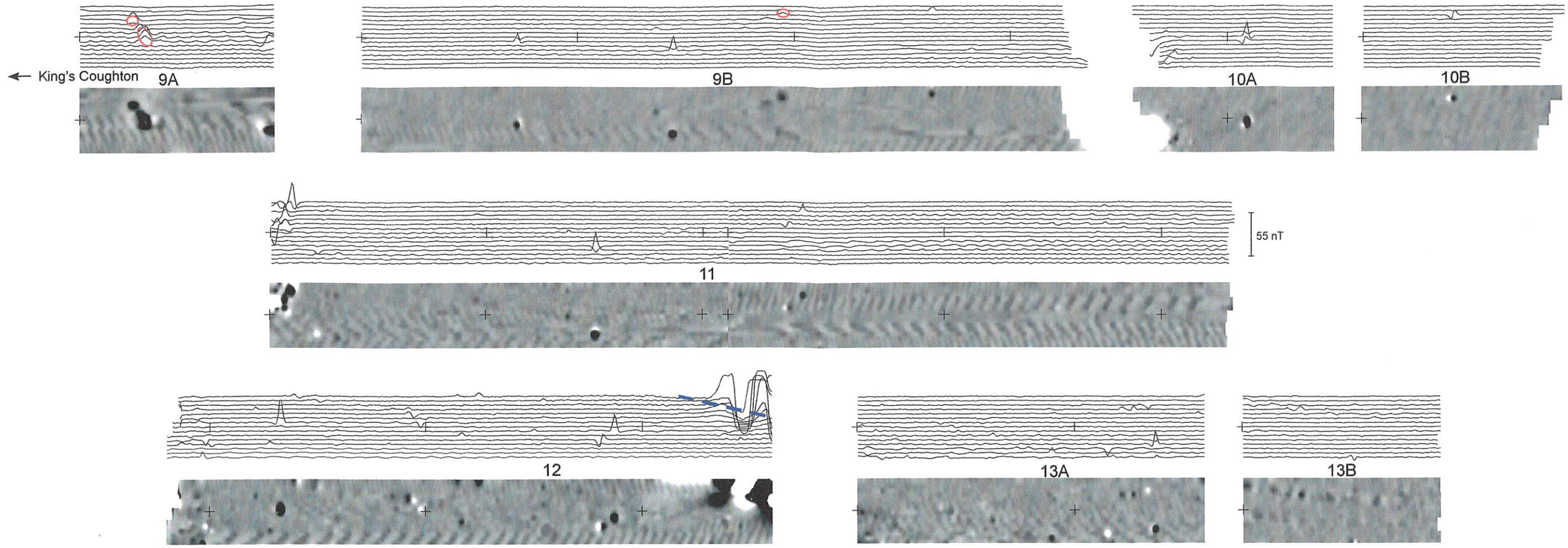
TITLE: Figure 46
Geophysical Survey



+2.8 nT
Magnetometer Survey
-2.6 nT

Magnetic anomalies
Linear magnetic anomalies
Pipe
Magnetically disturbed area

Magnetometer Survey - Fields 9 - 16

1:1000
0 20 40 60m

Rev	Date	Description	Drn	Chk	App

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File: ...e: LQK\planslp47.cdr
Rev 01

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TITLE: Figure 47
Geophysical Survey

+2.8 nT
Magnetometer Survey
-2.6 nT

Magnetic anomalies
Linear magnetic anomalies
Pipe
Magnetically disturbed area

Magnetometer Survey - Fields 17 - 24

1:1000

0 20 40 60m

Rev	Date	Description	Drn	Chk	App

Surveyed by: Bartlett-Clark Consultancy (01865 200864)
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File: LQK\planslp48.cdr
Rev 01

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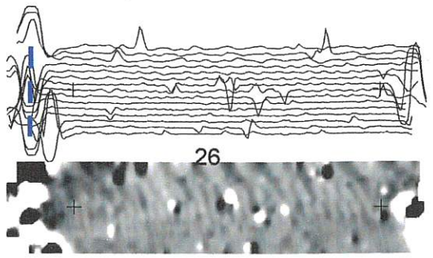
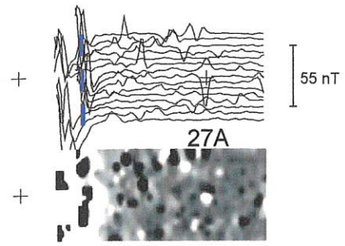
Lower Quinton to King's Coughton Pipeline

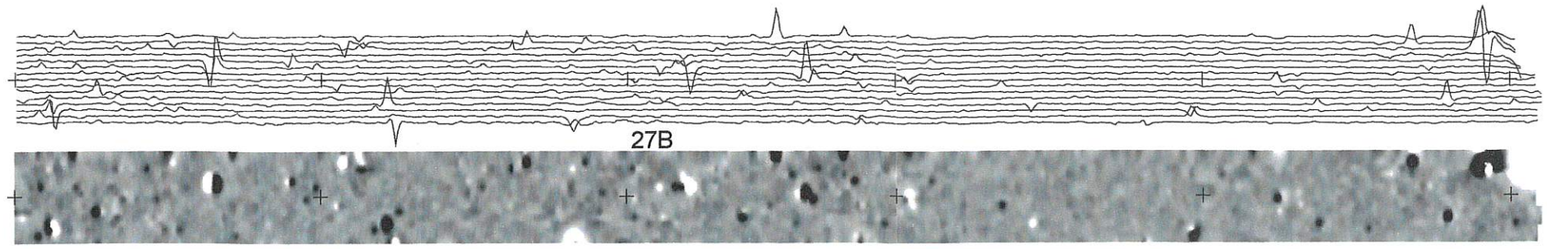
network archaeology

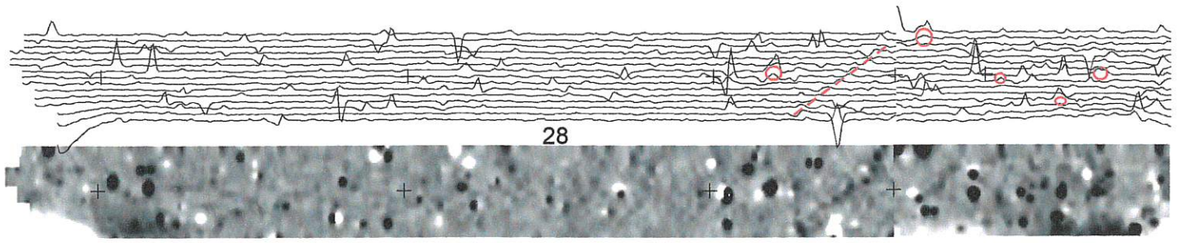
TITLE: Figure 48
Geophysical Survey

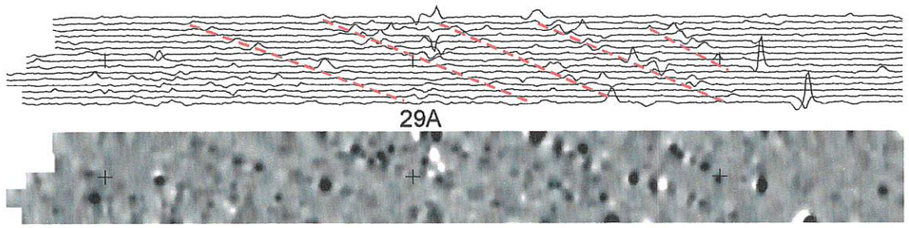
← King's Coughton

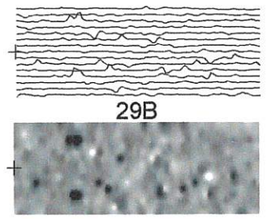


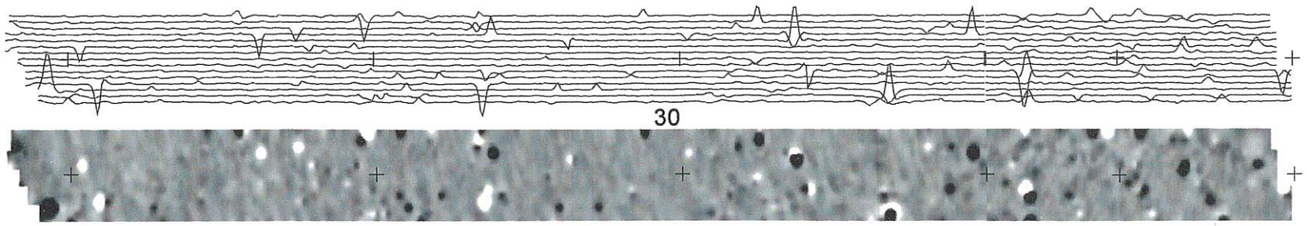


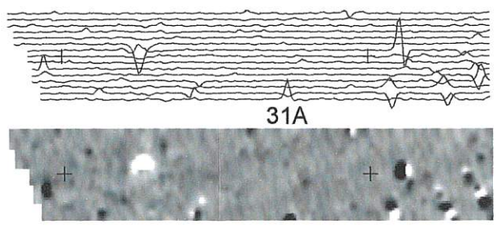


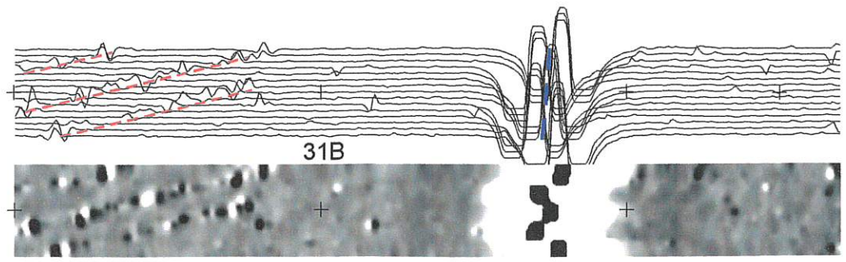


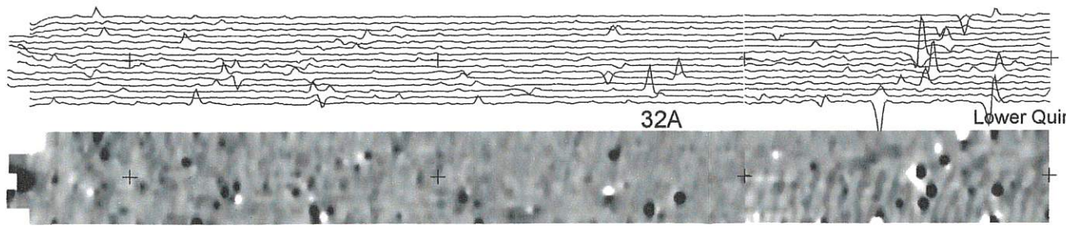












+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 26 - 32

1:1000

0 20 40 60m

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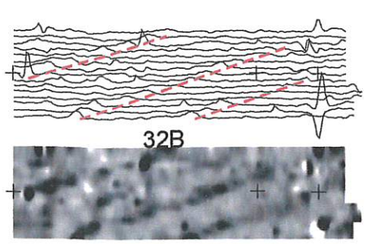
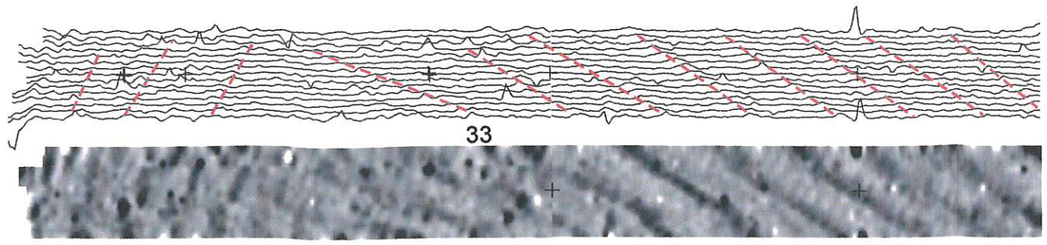
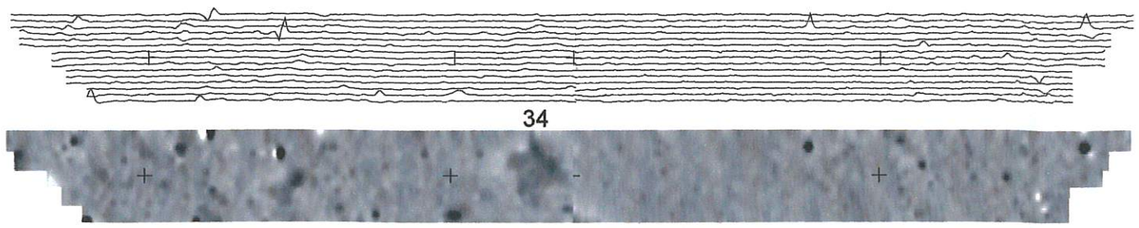
TITLE: Figure 49
Geophysical Survey

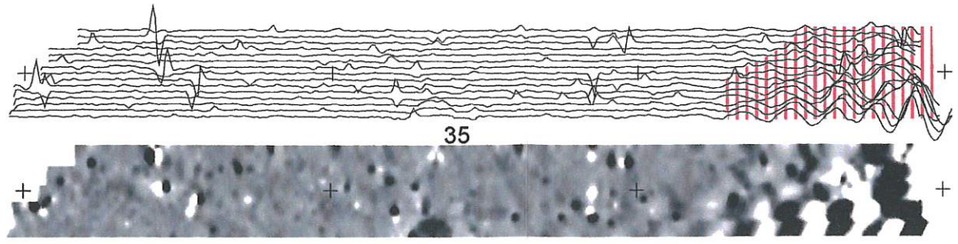
← King's Coughton

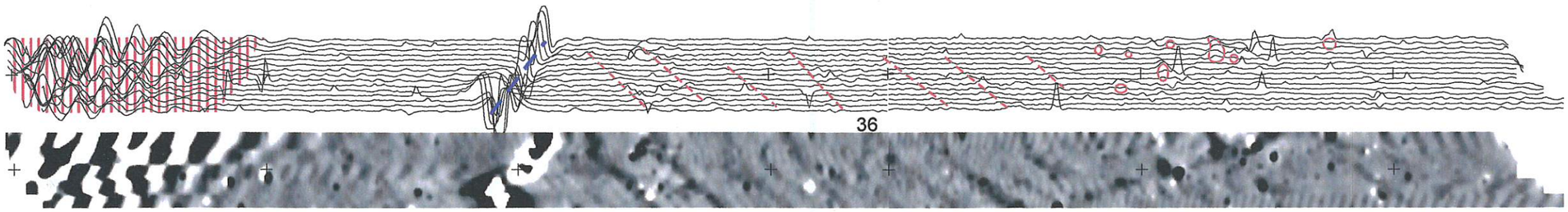
Slope not surveyed

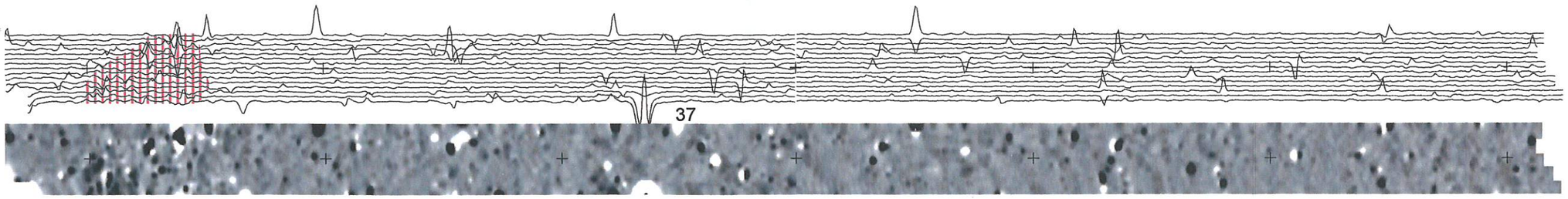


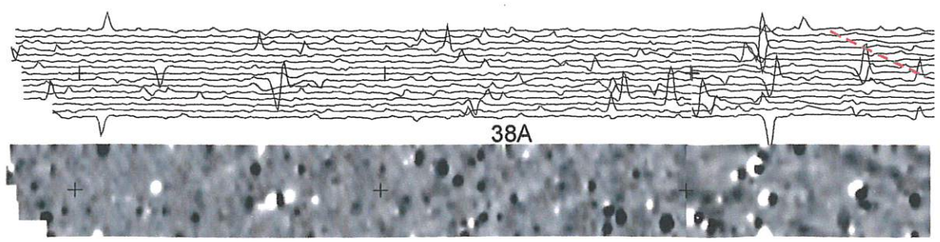


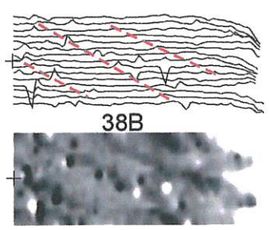












Lower Quinton →

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+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 32 - 38

1:1000

0 20 40 60m

Rev	Date	Description	Drn	Chk	App

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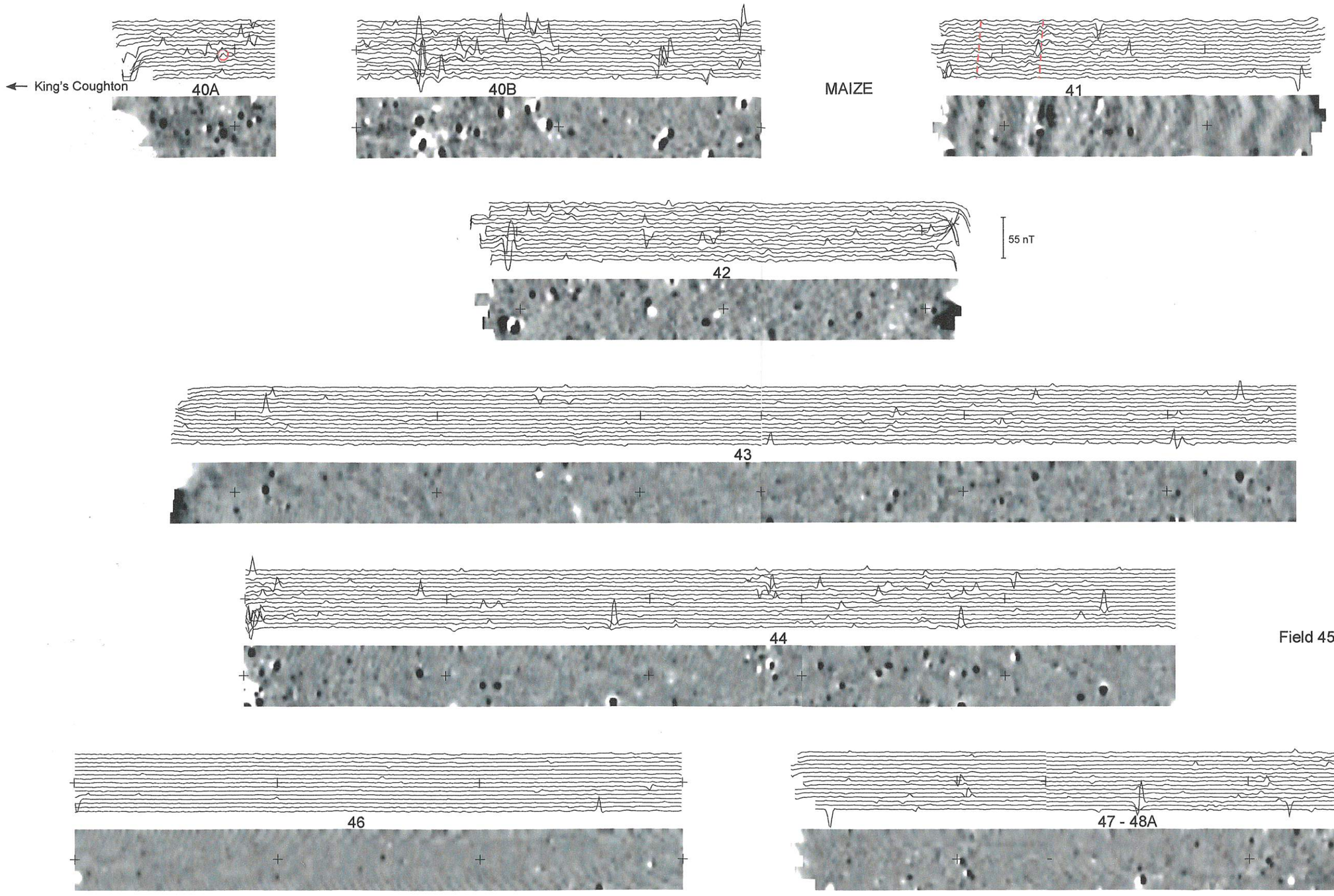
TITLE: Figure 50
Geophysical Survey



+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 40 - 48

1:1000

0 20 40 60m

Rev	Date	Description	Drn	Chk	App

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Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 51 Geophysical Survey

File: e: LQK\plansp51.cdr

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← King's Coughton

48B

49A

49B

50A

55 nT

50B

51

52A

52B

Lower Quinton →

+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 48 - 52

1:1000

0 20 40 60m

Rev	Date	Description	Drn	Chk	App

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File: LQKlplanstp52.cdr

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network archaeology

TITLE: Figure 52
Geophysical Survey

← King's Coughton

53

54

River Avon

55

56

57

58

55 nT

59A

59B

60

61A

61B

Lower Quinton →

+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 53 - 61

1:1000

0 20 40 60m

Rev	Date	Description	Drn	Chk	App

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for: Network Archaeology Ltd

File: LQK\plans\p53.cdr

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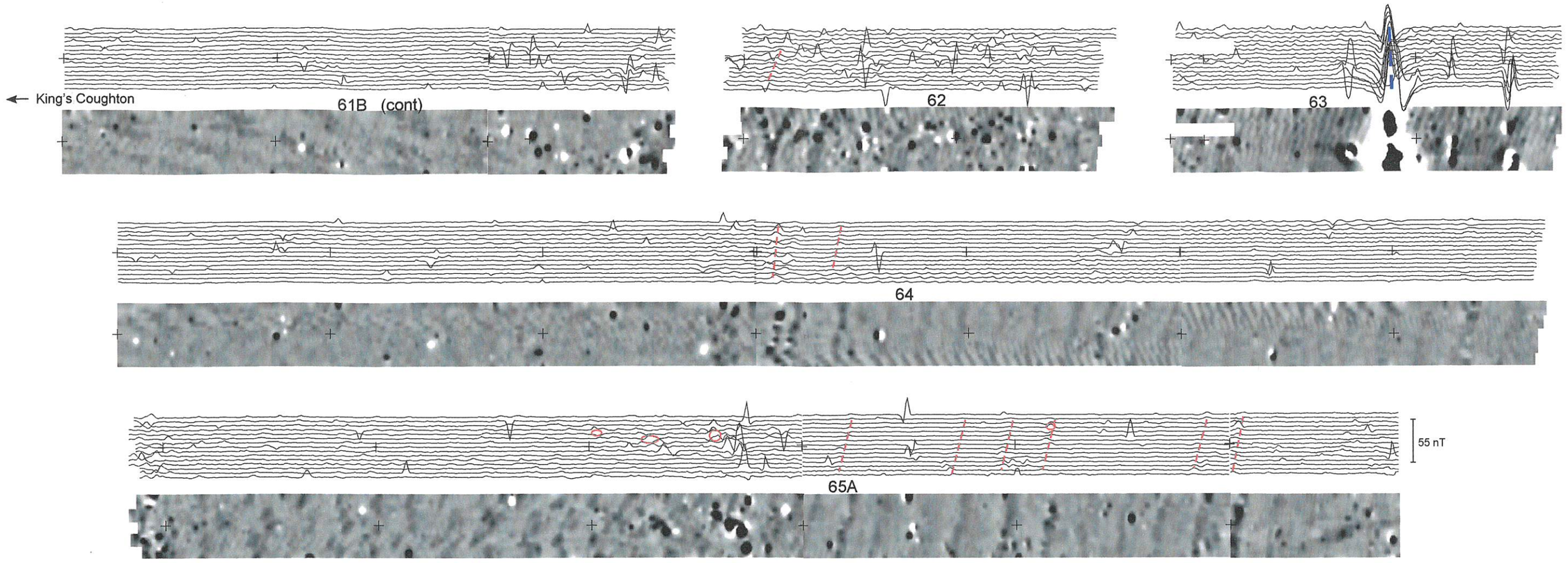
TITLE: Figure 53
Geophysical Survey



+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 61 - 67

1:1000

0 20 40 60m

Rev	Date	Description	Drn	Chk	App

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File: e: LQK\plans\p54.cdr

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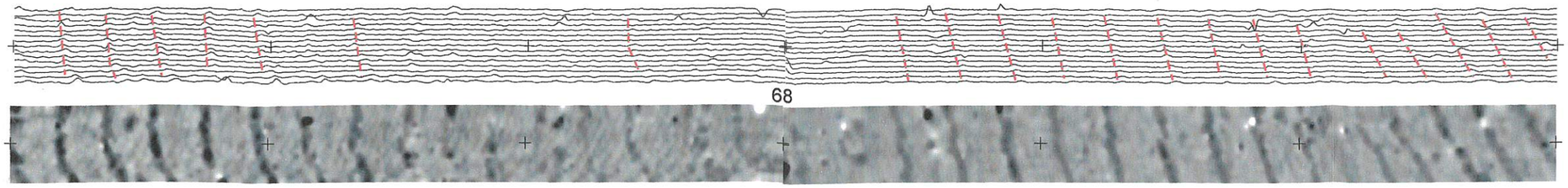
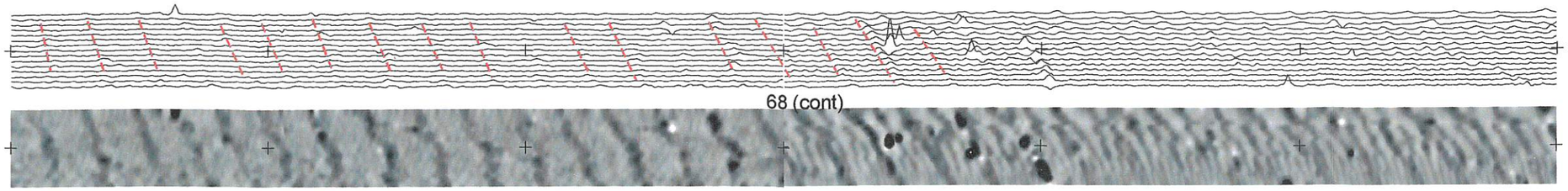
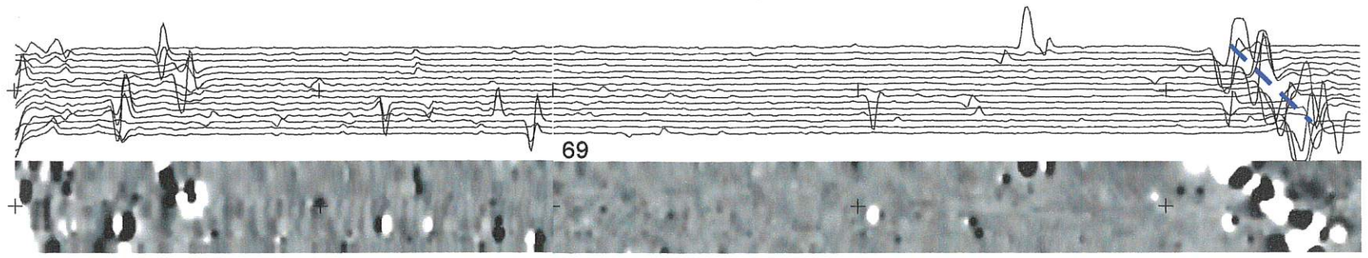
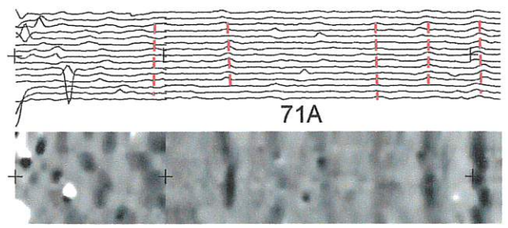
TITLE: Figure 54
Geophysical Survey

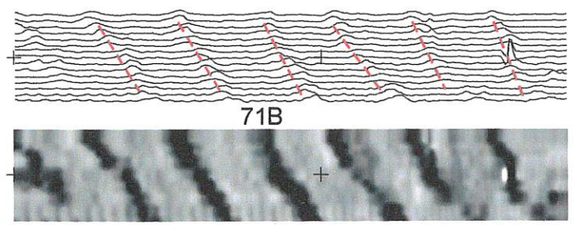
← King's Coughton

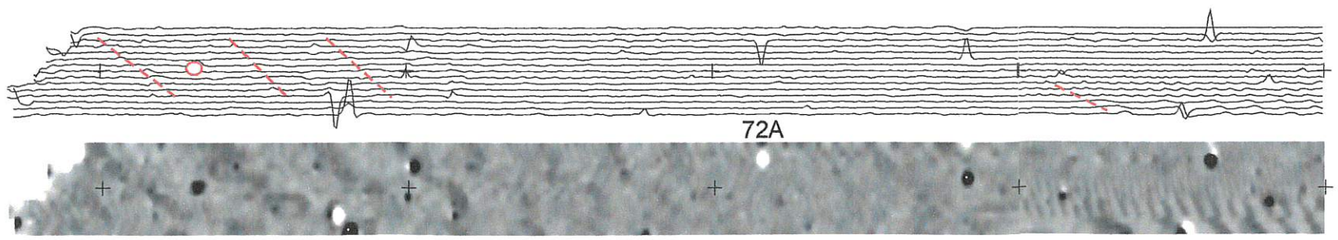


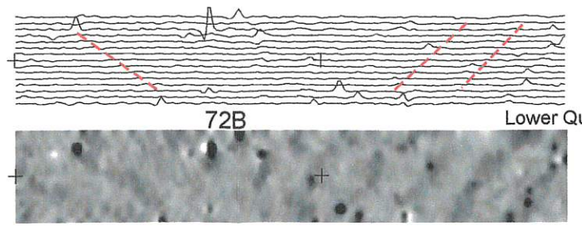












+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 68 - 72

1:1000

0 20 40 60m

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Lower Quinton to King's Coughton Pipeline

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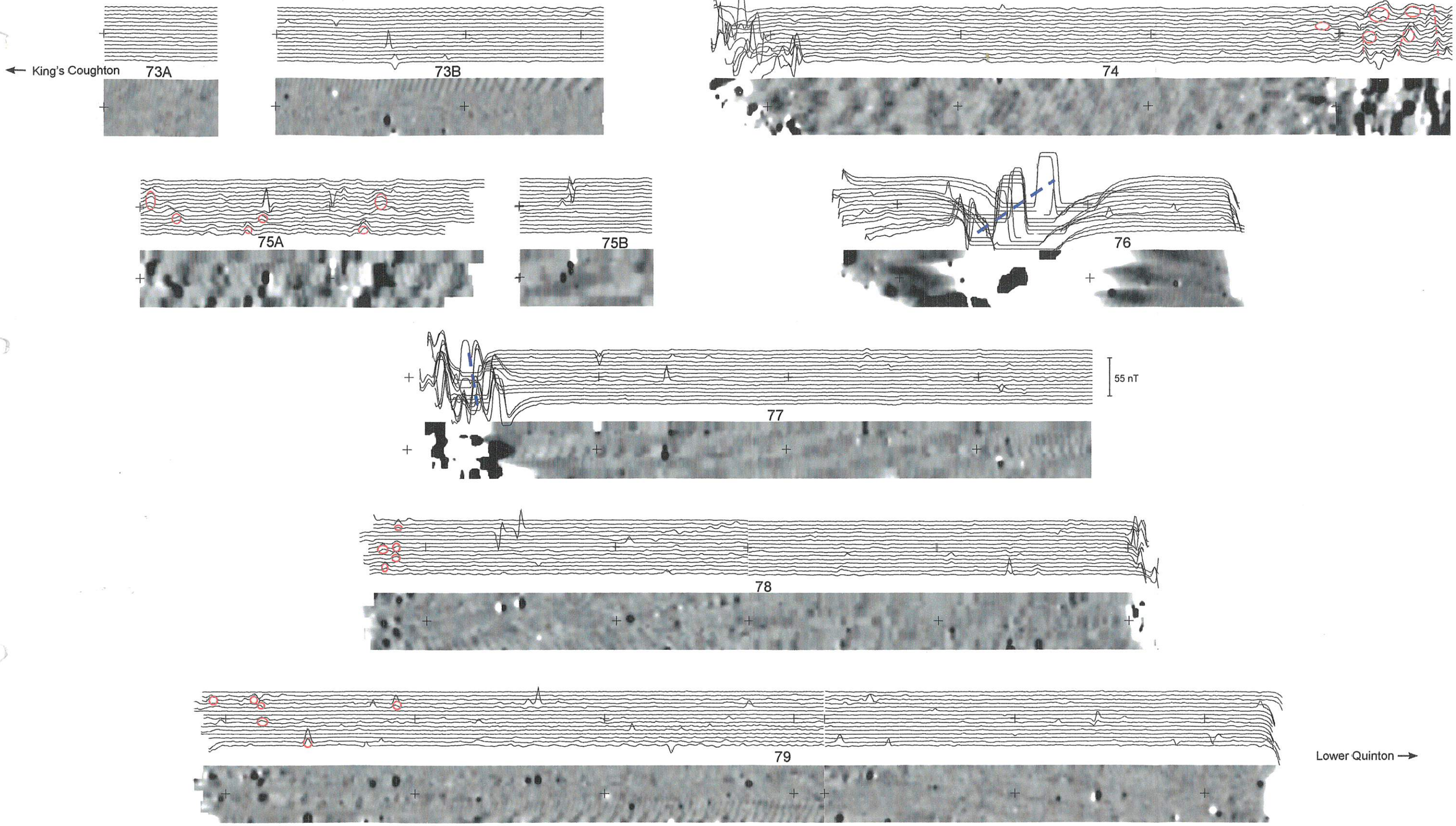
TITLE: Figure 55
Geophysical Survey



+2.8 nT
Magnetometer Survey
-2.6 nT

Magnetic anomalies
Linear magnetic anomalies
Pipe
Magnetically disturbed area

Magnetometer Survey - Fields 73 - 79

1:1000
0 20 40 60m

Rev	Date	Description	Drn	Chk	App

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for: Network Archaeology Ltd

File: LQK\plans\p56.cdr
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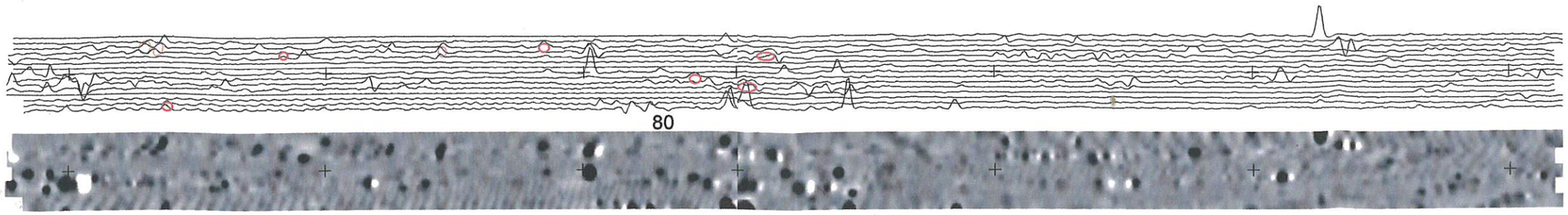
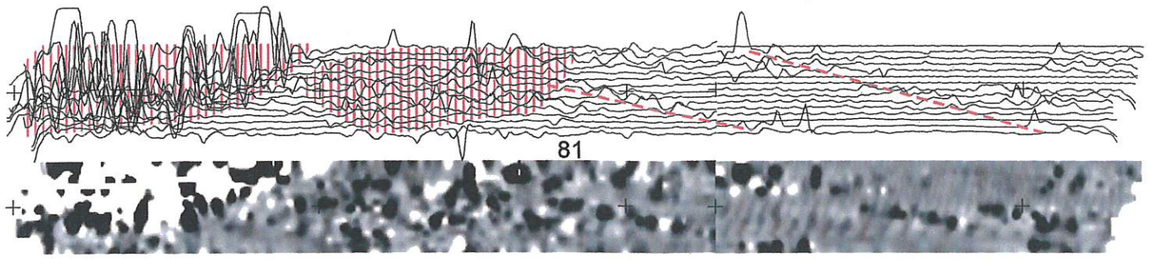
Lower Quinton to King's Coughton Pipeline

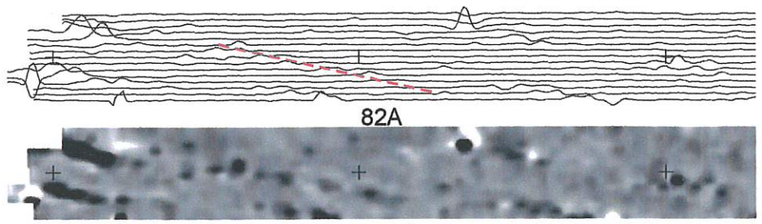
network archaeology

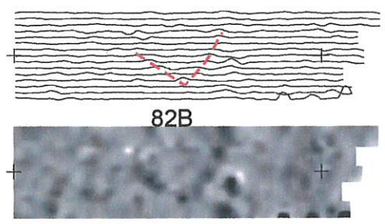
TITLE: Figure 56
Geophysical Survey

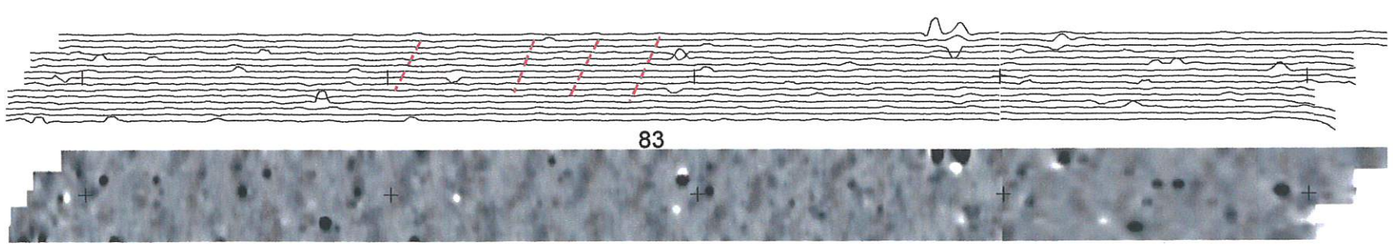
← King's Coughton

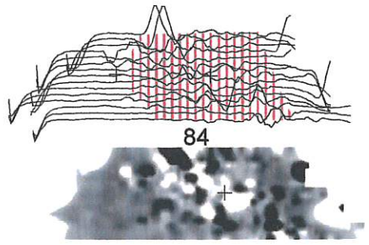


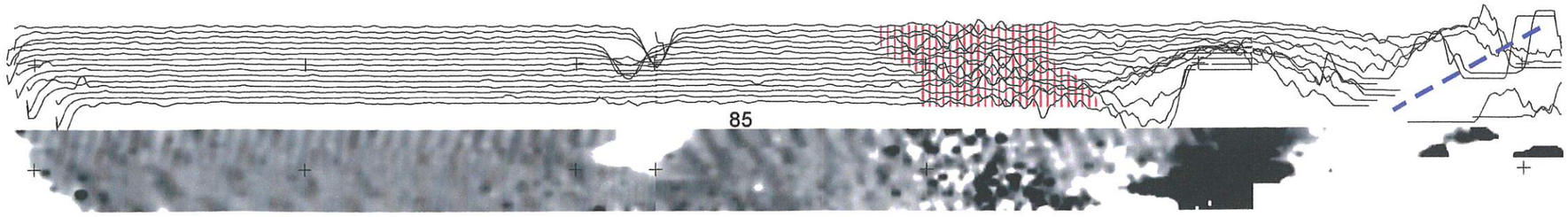












Lower Quinton →

+2.8 nT

Magnetometer Survey

-2.6 nT

Magnetic anomalies

Linear magnetic anomalies

Pipe

Magnetically disturbed area

Magnetometer Survey - Fields 80 - 85

1:1000

0 20 40 60m

Rev	Date	Description	Drn	Chk	App

Surveyed by: Bartlett-Clark Consultancy (01865 200864)
for: Network Archaeology Ltd

File: LQK\plans\p57.cdr

Rev 01

Transco

Lower Quinton to King's Coughton Pipeline

network archaeology

TITLE: Figure 57 Geophysical Survey