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Derbyshire and Peak District Aggregates Assessment Project

Aerial Survey Mapping Summary Report

National Mapping Programme

Aggregate Levy Sustainability Fund: Project Number 5707

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Archaeological Research Services Ltd

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APPENDIX 4 MONUMENT TYPES USED IN THE PROJECT 49

1 SUMMARY

This report describes the specification and methodology for the mapping and recording, followed by an overview of the results of the Derbyshire and Peak District National Mapping Programme (NMP) project. This aerial survey mapping project forms part of the wider Derbyshire and Peak District Aggregates Assessment Project (D&P AAP), funded by English Heritage (EH) through the Aggregate Levy Sustainability Fund (ALSF) (5707 MAIN).

Digital maps at a nominal scale of 1:10,000 and supporting records were produced to NMP standards for an area of 376km² (35 part OS 1:10,000 quarter sheets). Mapping started on 5th May 2009 and was completed by 15th June 2010. The aerial photography mapping and interpretation component of the project was done by Archaeological Research Services (ARS) Ltd.

The project mapped and recorded archaeological sites varying in date and type from prehistoric enclosures to twentieth century military remains. Records for 862 new sites, with further 256 enhancements to existing records, were input to the National Monuments Record (NMR) database AMIE.

2 ACKNOWLEDGEMENTS

The project was undertaken by Archaeological Research Services Ltd (ARS Ltd) in partnership with Derbyshire County Council Historic Environment Record (HER) and the Peak District National Park Authority (PDNPA); their contribution being the provision of Historic Environment Records (HER) data, access to their air photo collections and repositories for the project's GIS. Additional HER data was supplied by Staffordshire and Leicestershire County Council for the small part of the project area lying within these Authorities.

The project was carried out in collaboration with Cambridge University's Unit for Landscape Modelling, their contribution being the loan of aerial photographs from the Cambridge University Collection of Air Photos (CUCAP). Thanks also to the NMR Enquiry and Research Team and Air Photography library staff for their support throughout the project.

Roger J C Thomas, English Heritage's Military Support Officer, provided guidance and supplied additional material such as historical military maps in aid to the interpretation of complex military sites.

3 INTRODUCTION

The D&P AAP is a desk-based survey that aimed to produce outputs which will assist and improve the management of pressures on the historic environment caused by past, present and future extraction of aggregates in Derbyshire and the Peak District. The project was built on the experience gained from previous aggregate management projects in the UK (Passmore et al. 2002; Waddington and Passmore 2005).

The D&P AAP survey area was purposely chosen to complete the work commenced by the Derbyshire and Peak District HER Enhancement Project in 2007/2008 funded by EH through ALSF and the Trent Valley Geoarchaeology Project. The aerial survey component of the project consists of 376km squares (Fig 1), which focuses on areas identified through consultation with County and Peak District National Park Authority (PDNPA) Mineral Plans and with senior staff from English Heritage including the Aerial Survey and Investigation team. In addition to the Trent Valley gravels, sample areas based on the location of current and future extraction areas were included. The portion of the Middle Trent was previously mapped as part of the National Forest Mapping Project (Macleod 1995) and was not mapped as part of this project (Fig 2).

This aerial survey mapping project (AMIE Event UID: 1500146) represents one element of the D&P AAP project. The standards adopted are those of the NMP which are intended to produce a comprehensive record of the archaeology of England, from prehistory to modern times, through the interpretation, mapping and recording of all archaeological features visible as earthworks, cropmarks, parchmarks, soilmarks and structures on aerial photographs.

This interim report provides a brief overview of the results of the aerial survey mapping element of the project. A more detailed and comprehensive archaeological report will be produced by Jim Brightman (ARS Ltd) for the D&P AAP.

4 PROJECT MANAGEMENT

The project was funded by English Heritage and undertaken by Archaeological Research Services Ltd.

Jim Brightman (ARS Ltd) was the Project Officer for the overall D&P AAP. Magnus Alexander (EH) was the Project Assurance Officer and Dave MacLeod (EH) the NMP Quality Assurance Officer. Members of the mapping team were: Cinzia Bacilieri (ARS Ltd) as the AP Project Manager and David Knight, Tara-Jane Sutcliffe and Shona Williams as the Aerial Photography Officers.

The ARS team carrying out the aerial survey mapping were based with EH's Aerial Survey & Investigation team in York. Cinzia Bacilieri provided quality assurance for the air photo mapping phase of the project. Cinzia Bacilieri, David Knight, Tara-Jane Sutcliffe (April – June 2010) and Shona Williams (May – October 2009) carried out the air photo mapping and recording. Yvonne Boutwood and Matt Oakey (EH) provided training and support, offering advice on matters of interpretation, mapping, recording and NMP standards. Members of EH Aerial Survey and Investigation team also carried out NMP quality assurance checking to ensure that the work was carried out to NMP standards: approximately 5% of the work of each ARS Ltd team member was checked.

The project ran for 14 months and started on 5th May 2009 and mapping and recording was completed by 15th June 2010.

5 SCOPE OF THE SURVEY

5.1 Geographical Scope

The aerial photographic interpretation and mapping focused on selected aggregate producing areas within the county of Derbyshire and the Peak District National Park. It also takes in small parts of Nottinghamshire and Leicestershire (Fig 1). To the east the project area overlapped with that previously mapped by the Nottinghamshire NMP Project (Event No.1360986; HEEP Project No: 2900) (Deegan 1999); to the south it adjoined the National Forest NMP Project (Event No. 924111) (Macleod 1995) (Fig 2). Both projects were hand transcribed and available in raster formats, so features that overlapped along the project boundaries were remapped from available from photography for this project, to provide a digital format.

The project area fell over two whole and 33 part 1:10 000 scale map quarter sheets (Appendix 1). The project area totalled 376 square kms, which is equivalent to 15 whole 1:10 000 scale map quarter sheets.

The survey area was divided into 4 blocks to assist management of the aerial photography loans from the NMR photo library.

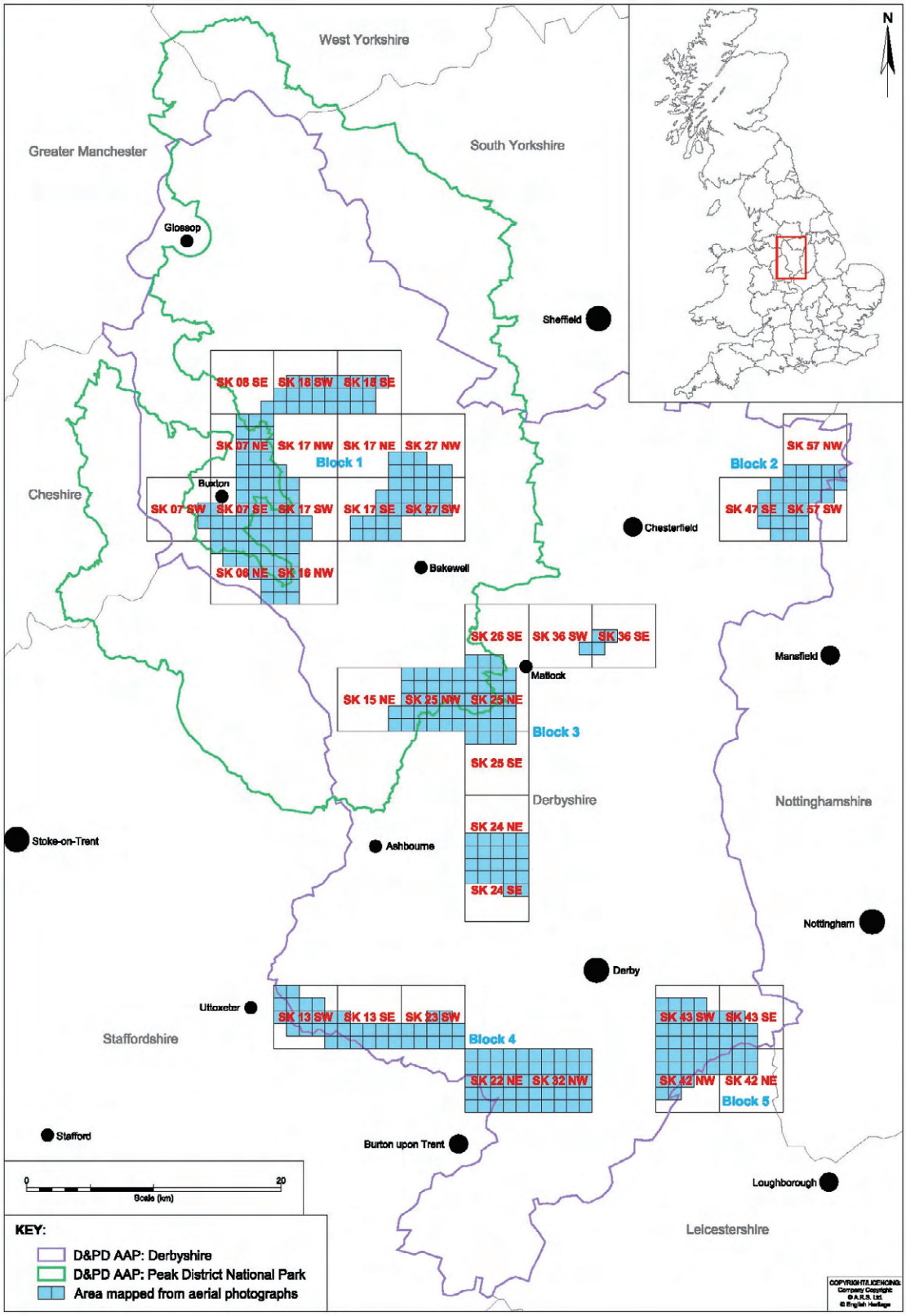

Figure 1 - Aerial Survey Mapping Project area

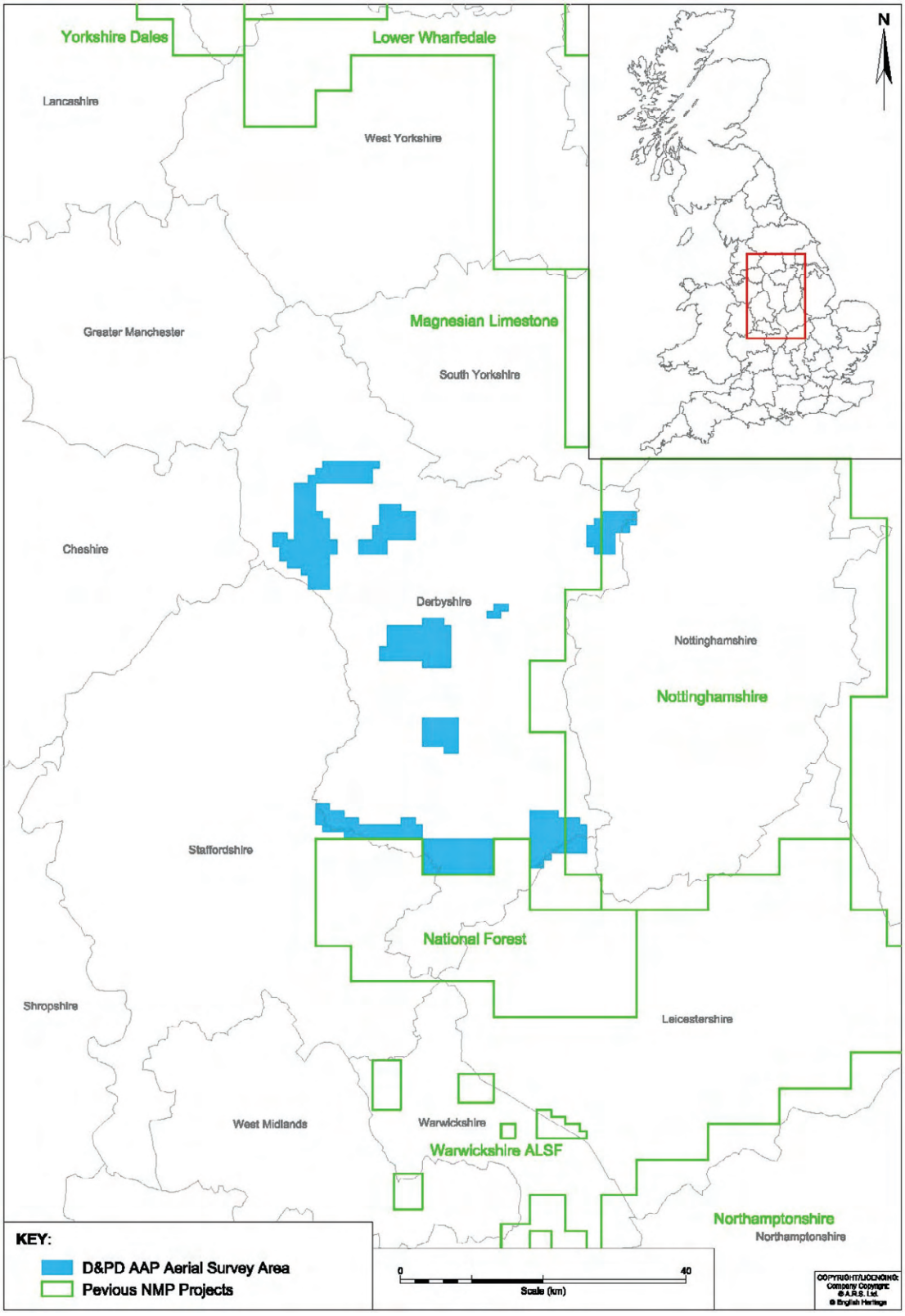

Figure 2 - Locations of previous National Mapping Programme Projects

5.2 Geology

The study area comprised a sample of those areas within the county of Derbyshire and the Peak District National Park which contain, or have in the past contained, aggregates.

Derbyshire and the PDNP are drained by two principal river systems, those of the Derwent and Dove, both of which ultimately drain southwards into the Trent. Large-scale sand and gravel extraction takes place along the course of the Trent valley whilst hard rock extraction is heavily concentrated on the Carboniferous Limestone plateau that forms the central area of the PDNP.

5.3 Archaeological Scope

The project adhered to those adopted for the NMP, which aims to increase our understanding of the historic environment. All probable and possible archaeological features visible on air photographs as cropmarks, soilmarks, parchmarks, earthworks and structures were identified, interpreted, mapped and recorded. The NMP Sphere of Interest (Boutwood and Winton 2004) documents the scope of the NMP; the main aspects relevant to this project are summarised below.

5.3.1 Earthwork archaeology

All extant earthworks identified as archaeological in origin were mapped. When available RCHME/EH ground survey plans were used to assist and enhance the air photograph interpretation and mapping. If the quality of photography was not sufficient to depict individual earthwork features these were mapped as an extent of area.

5.3.2 Levelled archaeology

All cropmarks, soilmarks and parchmarks identified as archaeological in origin were mapped.

5.3.3 Post medieval and modern field boundaries

Field boundaries that have been removed (upstanding or levelled), but are depicted on first edition Ordnance Survey or later edition maps, were generally not mapped. However, where they occurred with newly identified field boundaries, which were not depicted by the Ordnance Survey, then some were mapped to provide a wider context for the field systems.

5.3.4 Medieval and post medieval ridge and furrow

A simple graphical depiction for ridge and furrow, outlining the extent of area and the direction of ploughing were delineated. The state of preservation was evaluated from the latest available

photography and distinguished in the AutoDesk Map layers, between areas that were extant earthworks and those that were levelled or showing as cropmarks.

5.3.5 Industrial features and extraction

Widespread and common small-scale (less than 0.5 hectares) extraction of stone resources was generally not mapped unless it impinged on existing archaeological features or was associated with limekilns. Quarries (greater than 0.5 hectares), collieries or open cast mining complexes, lead, coal and fluorspar workings were mapped and recorded mostly as an extent of area, irrespective if they were depicted on any Ordnance Survey map. Explicit features within these complexes, such as tramways, mine shafts and shaft mounds, trackways and extant buildings were generally not mapped (with the exception of maps SK17NE, SE27NW, SE 27NE & SK27SW where more detail was mapped at the start of the project). Dispersed extractive pits, mine shafts and shaft mounds located outside these complexes were depicted as seen. Urban industrial sites were not mapped.

5.3.6 20th Century military features

Former First and Second World War military sites and installations were mapped. Extensive military complexes and sites and airfields were outlined as an extent of area. Significant features within these areas were mapped either as seen or schematically, according to the quality of the available photography. Small size installations such as pill boxes or military buildings of unknown function were generally mapped.

5.3.7 Buildings

The foundations of buildings visible as cropmarks, soilmarks, parchmarks, earthworks, or ruined stonework were mapped, except when they were depicted on first edition Ordnance Survey or later edition maps. Standing roofed or unroofed buildings or structures were generally not recorded unless they had a particular association in the context of industrial or military remains. Medieval ruined castles and monastic sites previously recorded, extensively surveyed and mapped by the Ordnance Survey were generally mapped as an extent of area.

5.3.8 Geomorphological features or natural deposits

Geomorphological features, natural deposits, organic sediments and palaeochannel fills were not mapped. This is in line with normal NMP methodology.

5.4 Sources

All readily available air photographs were consulted held in three main collections, of which the National Monuments Record (NMR) was the prime source. A search for photographs identified 2,412 specialist obliques and 5,540 vertical prints for the project area. The vertical photographs held by the NMR comprised mainly of RAF and Ordnance Survey sorties, with some Meridian Airmaps Ltd photographs, which together ranged in date from 1943 to 1995. The specialist oblique photographs ranged in date from 1949 to 2007; these included specialist military photographs and those from recent reconnaissance.

Additionally, 733 specialist obliques were consulted from the Photograph Library of Cambridge University Collection of Air Photographs (CUCAP), administered by the Unit for Landscape Modelling (ULM). The CUCAP collection holdings for this project were quantified using the online catalogue (www-arcis.geog.cam.ac.uk). Shona Williams and David Knight (ARS Ltd) administered the loan liaison between the project and ULM.

Further AP collections such as the Peak District National Park and Nottingham Trent & Peak Archaeology were also consulted but only a few of the latter photographs were used for the project.

Orthophotography supplied to English Heritage by Next Perspectives™ through the Pan Government Agreement (PGA), ranging in date from 1999 to 2007, and Google Earth™ imagery was used for the mapping.

Other forms of remote sensing imagery (e.g. Lidar) were not used during the mapping phase of the project. Lidar tiles in JPEG format available from the Environmental Agency through English Heritage did not cover the project area in full and the low resolution was not useful for mapping the archaeology.

5.5 Monument data

The National Monuments Record database AMIE was consulted as was the relevant HER (Derbyshire, Staffordshire and Leicestershire) data for each quarter sheet during the course of mapping and recording. Where possible, concordance between HER data and AMIE monument records was made.

6 METHODOLOGY AND RECORDING

6.1 Mapping Methods

Mapping methods were in accordance with practices developed for the National Mapping Programme (NMP) (Winton 2010). All air photographs were examined under magnification and stereoscopically where possible. Oblique and vertical photographs were scanned at a suitable resolution, normally between 300-500dpi, and rectified using appropriate software (AERIAL 5.29). OS MasterMap® 1:2,500 digital maps were used for control and as a base for mapping in AutoDesk Map 3D 2008. Height data used to create Digital Terrain Models to improve the accuracy of the photo rectification was provided by English Heritage (Licensed to English Heritage for PGA through Next Perspectives™). Accuracy for the OS MasterMap® map is in the order of ±2.5m or higher and rectification of photographs is normally within ±2m.

Rectified images were output from AERIAL in uncompressed TIF format at a resolution of 600dpi and a scale of 1:10,000. Mapping conventions and the layer structure used in the AutoDesk Map drawing files is summarised in Appendix 2. Within the AutoDesk Map drawing files the interpretation of the features was recorded in an attached data table (Appendix 3).

6.2 Recording Practice

All mapped features were recorded in the English Heritage NMR database, AMIE. This was routinely consulted and monument data from EH's GIS was downloaded for use in the AutoDesk Map environment. The Ordnance Survey First Edition and later mapping was routinely consulted as an aid to interpretation and mapping. Reports of previous archaeological investigations in the project area were consulted, where they were published and readily available. The latest photography, which was generally the PGA orthophotography or Google Earth™ imagery, was used to record the latest evidence for the monuments in AMIE. All the AMIE monument types used for this project are listed in Appendix 4.

6.3 Data Archive and Dissemination

Copyright of the aerial survey mapping and associated AMIE records produced by the project resides with EH. Licence to use the data has been extended to ARS Ltd.

6.4 Project Archive

This project produced 35 AutoDesk Map drawing files, one for each part 1:10,000 quarter sheets (Appendix 1). The parent collection number is EHC01/151 and collection numbers for each map

are listed in Appendix 4. Copies of the digital drawing files are deposited in the archive of the NMR. Aerial Survey York and Swindon also retain copies of the digital files, for day to day access.

The newly created and amended monument records form part of the national monuments database AMIE, which are downloaded into the English Heritage webGIS.

This aerial survey mapping report will be deposited in the NMR archive in Swindon.

6.5 Project Dissemination

Copies of the AutoDesk Map drawing files have been supplied to ARS Ltd. These will be incorporated within the wider D&P AAP project GIS and shared with the project partners (Derbyshire County Council Historic Environment Record, the Peak District National Park Authority and English Heritage).

All AMIE records have been supplied to ARS Ltd in Portable Document Format (.pdf). This project also used Oracle Discoverer Plus Version 9.0.4.45.04 to output the AMIE record data in EXCEL spreadsheet format.

The analysis and results from the aerial survey mapping described in this summary report will be integrated within the final project report.

7 SUMMARY OF PROJECT RESULTS

The following is intended to provide a brief overview of the aerial survey mapping results. A comprehensive analysis of the monuments in a broad archaeological landscape context has not been attempted here, as this will be provided in the more comprehensive archaeological report produced by Jim Brightman (ARS Ltd) for the full extent of the D&P AAP area.

For the aerial survey mapping project a total of 862 new records were created and amendments were made to 256 records in the AMIE database. In other words, 77% of the records for this project were new to the NMR. This summary provides an overview of the archaeology of the area as evidenced by the aerial survey record (Fig 3).

The predominant forms of evidence in the survey area were structures, earthworks and cropmarks, including parching. Soilmarks were not explicitly differentiated from cropmark sites in the record but it was noted that very few were encountered on the available photography used.

Dating of monuments recorded from aerial photographs relied on recognising morphologically characteristic forms. Other sources of archaeological and historical data have been consulted to complement the aerial survey evidence and aid interpretation. The data is discussed chronologically to provide 'period' overviews, spanning the millennia from the Neolithic to the twentieth century. In the text sites are referred to by their NMR Unique Identifier Number (UID), which is used in the attached data tables in the AutoDesk Map drawings (Appendix 3). Additionally site names in the scheduled monument records are used or alternatively the parish location is used. The monument types recorded by this project in AMIE and in the AutoDesk Map drawing attached data tables, are in accordance with EH's AMIE Monument Recording guidelines and thesaurus, which are listed in Appendix 4.

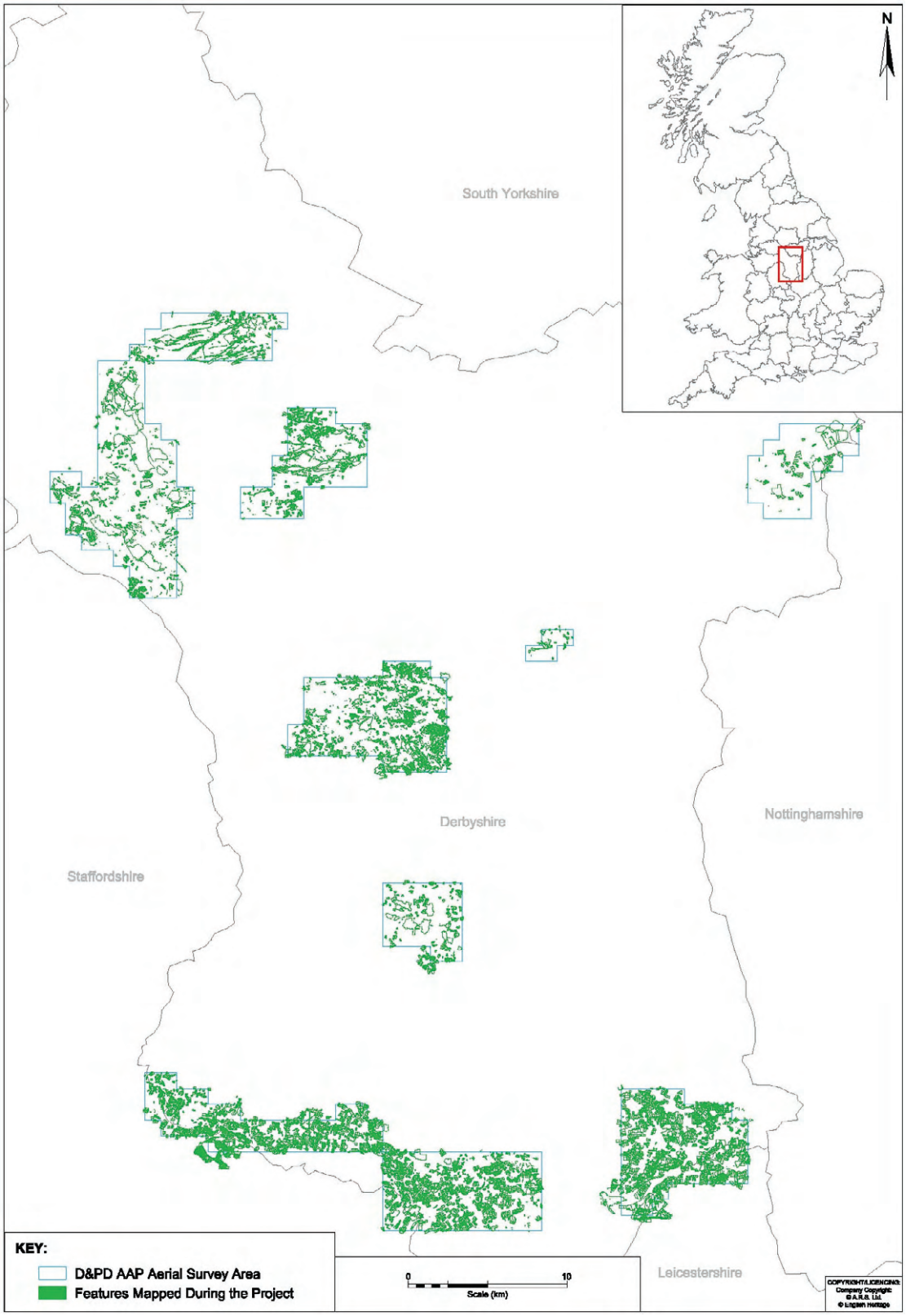

Figure 3 - Archaeological sites mapped as part of the Derbyshire and Peak District Aggregates Assessment

7.1 Prehistoric

7.1.1 Neolithic and Bronze Age

The Peak District has a large concentration of prehistoric sites, many of which are of Neolithic or Bronze Age in origin. These consist primarily of funerary or monuments of a ritual nature.

The majority of the early evidence was seen on the gravels of the Trent Valley (Fig 37); the main concentrations of which centre around the Potlock (1212767) and Aston (315329) Cursus', both of which had been previously recorded (Fig 36). Both cursus' extend approximately parallel to the River Trent and are respectively aligned East-North-East to West-South-West and Southwest to Northeast. The Aston cursus is approximately 1800m long, while the incompletely visible Potlock Cursus (Fig 4) measures at least 913m and possibly up to 1100m or more. The Potlock cursus is consistently a little over 70m in width while the Aston Cursus, over most of its length is between 95m – 105m wide, narrowing to c.79m at its southern terminal.

Figure 4 - Potlock Cursus, Findern (1212767)

NMR CAP 7908/UCAP6367 30-JUN-1975 © ULM

Both monuments are surrounded and overlain by a range of cropmarks showing complex multiphased activity, representing field systems and enclosures, settlement sites and funerary

monuments. Potlock alone displays potentially up to six phases of activity, the latest of which may be as late Romano-British in origin. The Potlock cursus follows a straight course and is inconsistently visible, possibly due to later disturbance, by ridge and furrow for example, or perhaps because some of the gaps in the monument's outer ditch were deliberately left undug. Neither terminal is visible for this monument, though it is reasonable to suggest that the eastern-most terminal of the cursus is obscured by a post medieval field boundary as the distinct and clear cropmarks in the adjacent field display no evidence for the continuation of any of the cursus linears.

Figure 5 - Aston Cursus, skirting earlier barrow, Aston upon Trent (315329)

BCL21 25-JUN-1970

Aston Cursus (315329) (Fig 5) also follows a straight course and is defined by a single ditch of at least two metres width. Approximately 75% of the ditch was interpretable from the cropmark evidence and there is no trace of any upcast bank or banks. The northern terminal is incompletely visible but at its southern end the cursus ditch describes two sharp right angle turns to form a neatly squared off terminal. Close to this terminal on the north side, the ditch was interrupted by a causeway of c.8 m width. This was the only deliberate gap identified in the cursus ditch. On the north side of the cursus near the southern terminal, the ditch encountered and apparently respected an earlier barrow by incorporating a c.25% arc of the barrow ditch before resuming its

original alignment. The 25m diameter barrow, and an adjacent, smaller barrow, may therefore have been deliberately brought within the cursus. In the central section of the cursus there are several other funerary monuments, some of which, like the small group of square barrows (Fig 6), are clearly later in date. Two larger circular features, both 38m in diameter and one with two concentric ditches, are presumably also the remains of barrows. Whether these were also incorporated into the cursus or were subsequently placed within it is unclear but if these barrows were already placed in the landscape at the time of the cursus construction they could have been the primary factor in deciding the cursus alignment.

Figure 6 - Iron Age square barrows located within Aston Cursus (315329)

AFY45 07-JUl-1962

In the more northern and upland regions of the study area the Neolithic survival is primarily as earthworks such as the previously recorded Bull Ring henge in Dove Holes (Fig 35) (305997), a Class II henge (Fig 7). The Bull Ring, now scheduled, consists of a circular enclosure defined by a ditch and external bank. Two causewayed entrances are visible directly opposite one-another at the north and south of the monument. The feature has a maximum external diameter of 85m with an internal platform of 44m by 50m in dimension.

The internal ditch and platform of the monument have been damaged by a small area of extraction, and the site as a whole lies within 4m of an extensive area of limestone quarrying (1504545). Traces of post medieval ridge and furrow ploughing occur within the henge interior (1504204).

Figure 7 - Bull Ring Neolithic Henge (305997)

NMR 20083/19 15-SEP-2004 © English Heritage. NMR

The Bull Ring significantly resembles the henge at Arbor Low, which did not fall into the study area, but it is not just in the uplands that these features are visible. The henge at Round Hill (313105) (Fig 8, 35) lies only 1.4km east of the Potlock cursus, and is visible as a cropmark, defined by a broad-ditched curvilinear enclosure with two approximately opposed entrances to the north-west and south-east. The ditch measures between 5m and 9m in width, with the entire enclosure having maximum internal dimensions of 66m by 73m. The southern half of the henge is irregular in plan, possibly partly through disturbance from a later double-ditched trackway (313176) and a post medieval field boundary (1518316). Central to the henge lies a large earthwork barrow of Neolithic or Bronze Age date, suggesting evidence of reuse of the site for a funerary function. This feature has a maximum diameter of 33m.

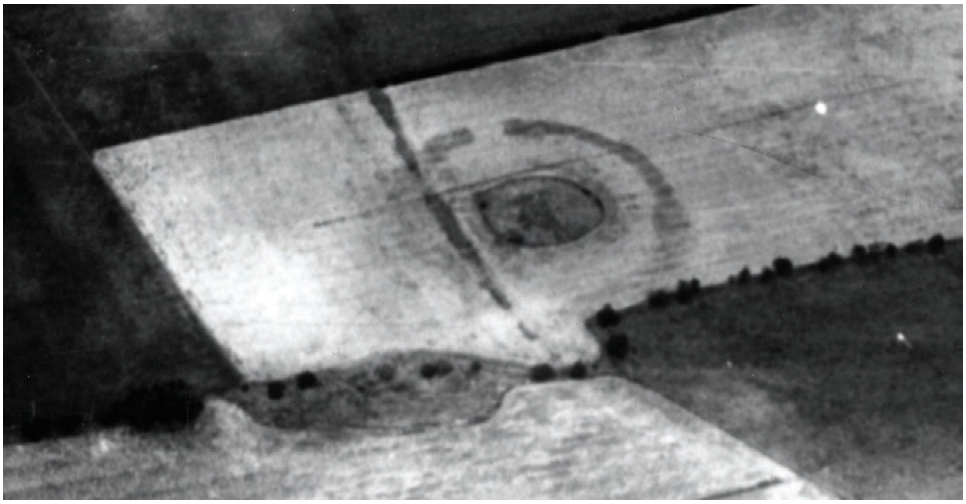

Figure 8 - Round Hill Neolithic Henge, Twyford (313105)

NMR 4380/N33 19-JUN-1990 © Crown copyright. NMR

Funerary monuments are the most common Neolithic and/or Bronze features found within the study area; the earthworks elements of which are again located on the limestone plateau to the north-west of the study area. These focus on two chambered round cairns at Minning Low Hill (310760) (Fig 9) and Five Wells near Taddington (309273) (Fig 10).

Figure 9 - Chambered round cairn, Minning Low Hill (310760)

NMR 17395/0 05-OCT-1999 © English Heritage. NMR

Minninglow is thought to be the largest chambered cairn in Derbyshire, being sub-oval in plan with maximum dimensions of 42m north to south and 34m east to west. The cairn of Five Wells

appears to be much more defined, being circular in plan with two visible cists in the centre. This cairn measures 22.6m in diameter. The air photograph evidence for both features shows extensive disturbance from extraction or post medieval field boundaries.

Figure 10 - Chambered round cairn, Five Wells (309273)
NMR 20940/56 09-SEP-2009 © English Heritage. NMR

The study encompassed over 110 further barrows and cairns of varying types and sizes, most of which have been previously recorded (e.g. 306287, 309122, 1200552 etc) (Fig 34), The most definitively Neolithic in date is Harrod Low long barrow (306292), which is visible as an extant elongated mound measuring 42m in length. The remainder of the barrows and cairns have been placed in to a Bronze Age or Neolithic/Bronze Age date range. During the mapping, existing records of ground surveys and excavations were routinely consulted via AMIE and the HER datasets to differentiate cairns from barrows when appropriate.

7.1.2 Later prehistoric / Roman

Due to the complexity of the archaeological landscape of Derbyshire, and in particularly of the Trent Valley (Fig 37), dating from a pure morphological analysis was not always attempted thus specific chronology such as Bronze or Iron Age was only generally entered for previously recorded monuments. A broader date range of 'Later prehistoric' (-4000 to 43 B.C.) was used particularly for sites showing complex phasing. These sites primarily centre around the cursus' of Potlock and Aston. The sites consist of extremely complex multiphased field systems, enclosures, trackways, funerary monuments and settlement (Fig 36-38). Elements of some of these features, such as the trackway complex at Willington (1519847) (Fig 38), illustrate a possible alignment with the cursus

and association with barrows, and therefore could be much earlier in origin. Whereas a potential settlement site consisting of small curvilinear enclosures, interpreted as round houses, with associated enclosures and a cropmark field system (313133) is probably more likely Iron Age/Roman in date.

Small cropmark square enclosures have been interpreted as Iron Age square barrows, some of which are clustered to form cemeteries (1211329) (Fig 6). Other less obvious isolated features were recorded as square enclosures (e.g. 313163) as were a series of enclosures visible in what are thought to be field system complexes (964820, 1517747).

Figure 11 - Iron Age hillfort of Fincop (309164)

NMR 20492/53 09-NOV-2005 © English Heritage. NMR

Falling within the survey area is the Bronze Age/Iron Age hillfort of Fin Cop (309164) (Fig 11, 39). This large enclosure occupies the high ground above the River Wye, opposite the junction of Monsal Dale and Taddington Dale in the heart of the Peak District. The hillfort consists of a huge earthwork bank, up to 15m in width, part of which has an external ditch and outer rampart. Much of the natural defence of the fort to the west is formed by the natural steep scarp forming the west face of Monsal Dale. The previously unrecorded western and northern ramparts of the fort were identified as part of this project. These banks, of approximately 9m width at their widest, fall outside the previously scheduled area of the fort. An entrance is located towards the centre of the

eastern rampart. Overall the hillfort has maximum internal dimensions of 129m by 304m, and encloses an area measuring 4.4ha. Much of the southern half of the hillfort, both along the ramparts and internally has been mutilated by subsequent ridge and furrow (1501140), post medieval limestone quarrying (1465160) and numerous extraction pits (1501137).

Further evidence of possible prehistoric fortification was seen in the form of a palisaded enclosure near Castleton (309533). As a contrast to Fincop this enclosure is highly irregular in plan. It is defined by a stony bank incorporating natural stone outcrops and measures 52m by 56m internally. A distinct entrance is visible on the south side.

As previously mentioned, a number of cropmark complexes along the Trent Valley, some of which may date to the Iron Age and Roman periods (Fig 36-38), were recorded during the project. Many of these complexes follow patterns of curvilinear and rectilinear enclosures with abutting field boundaries or ditched trackways (e.g. 313176, 1518513). Other examples incorporate distinct pit alignments. In some cases these alignments form the field boundaries themselves (1518725, 313184). To the north-east of Twyford a previously unrecorded multiple ditch system is visible as three parallel ditches (1517176) (Fig 38) which is attributed to being later prehistoric or Iron Age in date.

Figure 12 - Iron Age/Roman farmstead, Egginton (1516513)

NMR 4952/10 13-JUL-1992 © Crown copyright. NMR

Cropmarks of a complex, multi-phased Iron Age/ Romano British field system and nucleated settlement were recorded at Egginton (1516513) (Fig 12). The rectilinear elements of the settlement lie over the southern end of a large curvilinear enclosure covering approximately 0.6ha. This enclosure is similar in shape and size to others in the area (151897, 313191) and may represent an earlier phase of settlement, but It is located in close proximity to a Bronze Age barrow cemetery and may be associated with these ritual and burial monuments as suggested elsewhere in the Trent Valley.

The upland limestone environment presents a different type of Iron Age/Roman settlement and activity. A farmstead on the valley slopes above Wensley (1362072) consists of a large banked and ditched enclosure 86m by 110m approached by a trackway running up slope on the south side of Wensley (Fig 13). Within its perimeter a number of possible building platforms were evident. The site lies in an area of post-medieval lead mining (1509926) and extensive medieval ploughing (1510168).

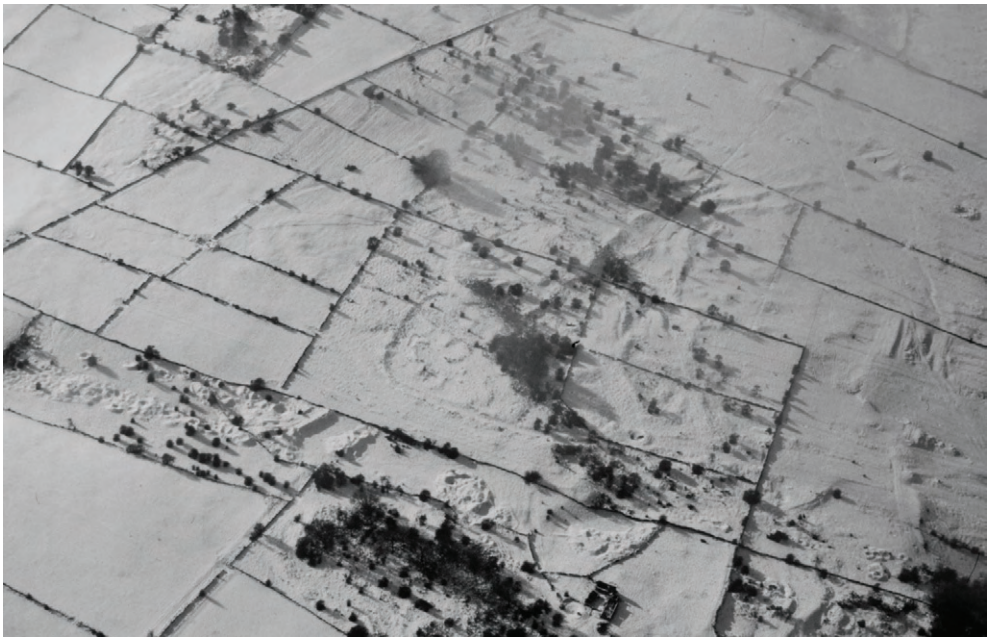

Figure 13 - Iron Age farmstead, Wensley (1362072)
NMR 17436/9 17-FEB-2000 © English Heritage. NMR

The coaxial field systems visible in the High Peak at Cowlow (309345) (Fig 14, 39) and Staden Low (306152) and in the Derbyshire Dales (1501198, 1151119) survive as extensive embanked earthworks, often impacted on by localized quarrying or lead mining (1502884, 1501191). The largest of these at Cowlow consisted of a network of adjoining rectilinear field enclosures measuring from 25 to 90m in length, predominantly elongated down slope. The cropmark evidence

for the field systems in the Trent Valley suggests the presence of both coaxial and less ordered systems but often these are too fragmentary for further analysis.

Figure 14 - Romano-British co-axial field system and post medieval limekilns, Cowlow (309345)

NMR 1583/36 15-SEP-1979 © Crown copyright. NMR

Figure 15 - Iron Age / Roman enclosure, Old Bolsover (1501278)

NMR CCX 3207/29 22-JUL-1986

The magnesian limestone belt revealed only a handful of cropmarks. The background pattern of the geology can make cropmark interpretation difficult, as noted at Bolsover where a D-shaped ditched enclosure is recorded (1501278) (Fig 15). The Nottinghamshire NMP Project (Deegan 1999), undertaken between 1991 and 1996, mapped the archaeology of this area and the D&P AAP provides an update. In some instances additional archaeology was mapped, and in others fragmentary features previously drawn were re-evaluated as potential geology and not included in the mapping.

7.2 Roman

Apart from those sites alluded to under 7.1.2 that may belong to the Roman period, this project recorded two military sites of the period; the previously well-studied Flavian fort, Navio (309471) (Fig 16) and an enclosure at Sawley (315582) previously recorded as a fortlet. Navio Roman fort has a well preserved earthwork rampart enclosing a little over 1ha. Two opposing entrances are visible to the north-west and south-east, from the latter of which a possible road extends to the south for nearly 120m (1326340). The fort appears to have sustained some damage from medieval ridge and furrow (1507505) (Fig 40). The Sawley site, although considered to only be a fortlet, also encloses an area of nearly 1ha (Fig 40). This possible fort comprises of an internal rampart with an outer ditch. The eastern of the fort appears to have an external rampart and ditch. An internal ditch may suggest a robbed out internal wall to the fort. The only evidence for a possible entrance is a 7.5m wide gap in the inner ditch along the west face of the fort. A possible titulum is visible

directly opposed to this gap. Additionally, a series of banked and ditched linears extending across the centre of the fortlet were also identified but it was impossible to discern whether these were associated with the fort or represented later ridge and furrow disturbance.

Figure 16 - Navio Roman Fort (309471)

NMR 17200/17 16- NOV-1998 © Crown copyright. NMR

Earthwork remains of Roman roads were recorded at Hope (1326340), Longcliffe (1511914), Ivonbrook Grange (1511994), New Mills (1326356), but most extensively between Harpur Hill and Sparklow where a substantial, though intermittently visible, length of The Portway Roman Road was recorded over nearly 8km.

7.3 Medieval and Post Medieval

The predominant features of the medieval landscape are the open field systems of ridge and furrow (Fig 17), seen in high concentration in the Trent Valley area (Fig 41), and only 37% of which was found to be extant on the latest available photography.

Figure 17 - Earthwork remains of medieval ridge and furrow, Doveridge (1517671)
NMR RAF/541/215 3154 15-DEC-1948 English Heritage (NMR) RAF Photography

Other evidence for medieval cultivation was encountered during the project in the form of lynchets (Fig 42), almost entirely located in the Derbyshire Dales, as seen for example around Little Longstone (1501054), Ashford in the Water (309191), Ballidon (1511623) and Ible (1511712). A good example of well preserved lynchets and cultivation terraces can be seen at Mount Pleasant (3111306, Fig 18). Impinging onto this monument were the earthwork and buried remains of the Mount Pleasant lead mines (1149140) with shaft mounds and two large rakes seen cutting across the medieval rural landscape.

Figure 18 - Medieval lynchets and post medieval lead rakes, Mount Pleasant (1149140)

NMR 17299/1 05-OCT-1999 © English Heritage. NMR

A wide spread of medieval nucleated settlements were recorded during the project (Fig 43-45), including previous known sites such as Blackwell (309354) (Fig 19, 44), Chelmorton (308618) (Fig 44) and Little Wilne (315646). Other settlements such as Doveridge (1517673) (Fig 20) and Stenson (1517137) (Fig 45) were previously unrecorded. In many instances the medieval remains are located adjacent to modern settlement, possibly indicating shrinkage or relocation of the settlement.

Most of the settlements are defined by platforms, enclosures, field boundaries and hollow ways but more extensive sites such as Stenson illustrate complex water management as a series of interconnecting water channels. Similarly the settlement at Mercaston (1510845) (Fig 43) displays a number of adjacent fishponds, probably associated with Mercaston Hall. Most of the sites were associated with medieval ridge and furrow and in some cases the respective ploughing headlands. Differing forms of settlement in the forms of granges were recorded at Mouldridge Grange Farm (1381097) (Fig 44), Belph Grange (318349), Aldwack (1511977) and Roystone Grange (1149287).

Figure 19 - Medieval settlement, Blackwell (309354)

NMR SK 1271/9 NMR 20627/14 03-NOV-2006 ©

In a defensive context a number of moated sites were recorded, for example at Foston (1517336), Willington (1516289), Snitterton (311321) and Draycott (307359). The Willington moat (Fig 20) is defined by an earthwork ditch enclosing an area measuring 54m by 74m with an associated fishpond on its northern side. The moat was destroyed by 20th century sand and gravel extraction, as were many of the other sites recorded in South Derbyshire.

Figure 20 - Medieval moat, Willington (1516289)

NMR RAF/CPE/UK/1865 6043 02-DEC-1946 English Heritage (NMR) RAF Photography

The largest medieval defended site rcovered by the project was Peveril Castle in Castleton (309632) (Fig 21). This site has already been well documented and recorded, but the survey examined elements of the earthwork detail such as the outer bailey defences (1512508) and the Earl's Road braided trackway (1506981) to the south-west of the castle. Additionally elements of the town's defences were also mapped (309539), visible as earthwork banks and ditches.

Figure 21 - Peveril Castle with associated bailey and trackways (309632).

NMR 20450-18 09-NOV-2005 © English Heritage. NMR

A number of sites were recorded as medieval/post medieval in date. An example is the settlement found north of Lockington (1517775) (Fig 22), where a complex of ditched rectilinear enclosures are visible as earthworks with dimensions measuring anywhere between 5m and 60m. Evidence for building platforms was also visible. To the west there is evidence of an associated ridge and furrow field system and a hollow way (1517740).

A similar site with possible medieval origins was newly recorded to the east of Willington (1517155). This site consists of a very large 'C' shaped banked building platform measuring 41m by 46m with a complex of surrounding banks and ditches forming small rectilinear enclosures and a hollow way. It was discovered on mid 1940s vertical photography, though subsequently the platform element of the site has been completely destroyed by the migration of the River Trent.

The remainder of features placed under the medieval/post medieval bracket were for the most part field boundaries, displaying similar attributes to post medieval enclosure fields, but with possible medieval origins, such as at Weston Underwood (1510818) and Snitterton (1509982).

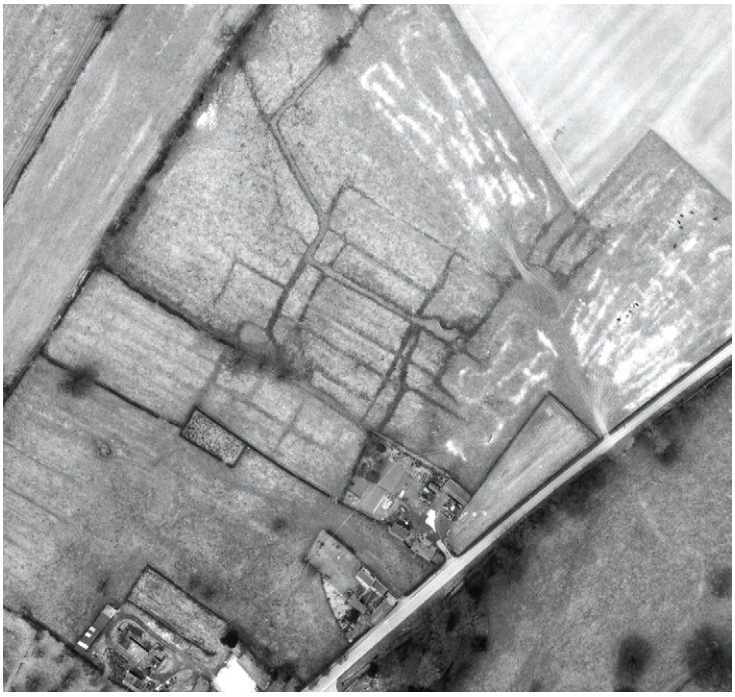

Figure 22 - Medieval/ post medieval settlement, Lockington (1517775)

NMR MAL/68011 0037 13-MAR-1968 © Reserved

7.4 Mineral and stone extraction

The remains of extensive mineral extraction, primarily lead with small areas of coal mining, is evident across the upland northern parts of the project area. Most dates to the post medieval period, but with the potential of some medieval origins. In the 20th century many of the lead rakes were reopened and deepened for fluorspar extraction. The uplands also produced a great deal of evidence for stone extraction, primarily limestone. The extraction in the lowland valley of the Trent centred around sand and gravels (Fig 46).

7.4.1 Lead and coal mining

The character and scale of lead extraction varies from rakes, adits, shafts with associated shaft mounds, open cast workings, spoil heaps and further associated features such as leats and lead processing areas. The focal points for lead extraction were north-west of Bradwell Moor (1506848, 1315300, 1507819), Longstone (Fig 47) and Middleton Moors (1500303, 1500465, 1163463) and the Bonsall Mines (Fig 23) in the Derbyshire Dales (310655), all showing extensive rake activity; and the Gang Mine between Middleton and Cromford (310658) and Hopton (1111761) (Fig 24) which display extensive shaft and shaft mound activity.

Figure 23 - Bonsall Lead Mine (310655)

NMR 17841/16 16-JUN-2003 © English Heritage. NMR

Figure 24 - Lead workings and mine shafts with shaft mounds, Hopton (1111761)

NMR 17919/5 24-JUL-2003 © English Heritage. NMR

Only three large-scale colliery complexes were recorded in the project, primarily located in the north-east of the study area, such as Whitwell Colliery (1501256) and Creswell Colliery (932545), covering an area of approximately 75.4ha. The smaller Coal Hills Quarry is located in the Dales at Wirksworth, with an area of approximately 11.2ha.

7.4.2 20th Century Fluorspar workings

Localized areas of fluorspar workings were recorded where existing lead rakes were re-opened as opencast workings. A clear distinction between the areas of fluorspar and lead mining was not always possible. Examples are seen at Bradwell (1507830), Great Longstone (1500545, Fig 25, 47) and superimposed onto Masson Hill Loft Mine (1461959).

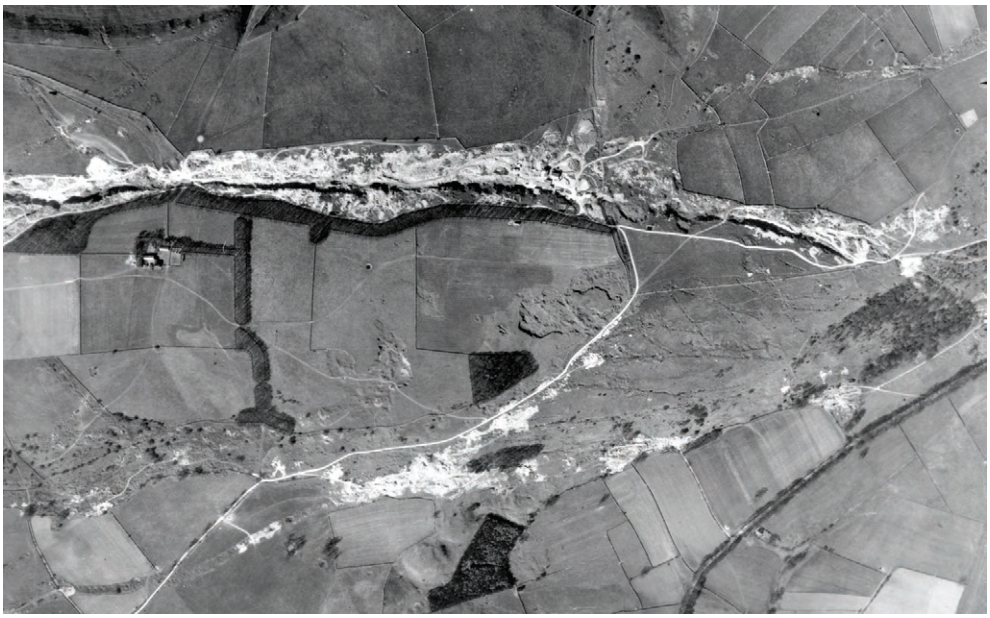

Figure 25 - 20th Century fluorspar workings, Great Longstone (1500545)

NMR RAF/CPE/UK/2598 3098 16-APR-1948 English Heritage (NMR) RAF Photography

7.4.3 Stone Extraction

The most prevalent mapped industrial features were quarries. At the level of recording for NMP mapping the type of resource being extracted was only noted when identified on Ordnance Survey maps or by previous records. For example 63 large-scale quarrying sites were mapped, ranging from post medieval to 20th century in date. A further 548 quarries ranging in sized from 0.5ha to 227ha were identified more specifically as limestone extraction (e.g. Wormhill 1502363) (Fig 26), primarily through Ordnance Survey map regression. In addition to that several clusters of small-scale quarries were found widespread across the Derbyshire Dales (e.g. 1503071, 1503330 and 1511502) and High Peak areas (e.g. 1506317, 1465004 and 1502627), often associated with post medieval lime kilns. Associated with this limestone extraction is the cement works at Castleton (1507791).

Figure 26 - Limestone Quarry, Wormhill (1502363 and 1502894)

NMR 20256/2 22-JUN-2005 © English Heritage. NMR

A total of 313 lime kilns were identified during the project (Fig 48), all of which were dated to the post medieval period. Varying forms of kiln were recorded, surviving as earthworks and structures. A particular type of earthwork lime kiln consisting of the kiln shaft surrounded by half-moon shaped spoil heaps (Fig 27) was identified in the area south-west of Buxton (1465004). These were found in association within extensive areas of shallow limestone extraction at Buxton and Hartington Upper Quarter (1502139) and lime works (1506308).

The photographic evidence shows how the sands and gravels of the Trent Valley have been extensively exploited as an aggregates resource in the twentieth century. Extensive areas of extraction located between Long Eaton and Shardlow (1518922, 1518389, 1517781), have removed entire agricultural and archaeological environments. Once exhausted these quarries measuring up to 130ha in area were often returned to agricultural use. Some attempt to differentiate between gravel (e.g. 1517068, 1517072 and 1517033), sand (1511974 and 1511868) and clay (942855) pits was made though this was not always possible.

Figure 27 - Buxton Lime Works (1465004)

NMR 20083/29 15-SEP-2004 © English Heritage. NMR

7.5 20th Century Military Features

The most informative photography for mapping military remains is undoubtedly the M-Series taken in the early 1940s. It is unfortunate that the NMR photo library does not hold the negatives to these prints and therefore their loan outside the archive is restricted. The images were supplied as laser scans rather than the original prints and the inevitable reduction in quality was also compounded by the scanning and rectification process. It was felt that much more could have been made of this important resource if the original prints (52 in total) were scanned at a high resolution and supplied digitally.

7.5.1 World War I

The project found very little evidence on the available photography (earliest 1940) for activity related to the First World War. This may be in part due to continuity of use, or re-use of sites during the Second World War, effectively masking or removing any traces of earlier military activity. Only one recorded survival of practice trenches probably dating to this period was found at Donington Park where the zigzagging earthwork remains were photographed in 1945 within a Second World War training site and military depot (1518757) (Fig 28).

Figure 28 - Possible First World War practice trenches, Castle Donington (1518757)

NMR RAF/106G/UK/581 3019 02-AUG-1945 English Heritage (NMR) RAF Photography

7.5.2 World War II and 20th Century

The emphasis for Second World War activity appears to have centred around urban and industrial areas and their surroundings.

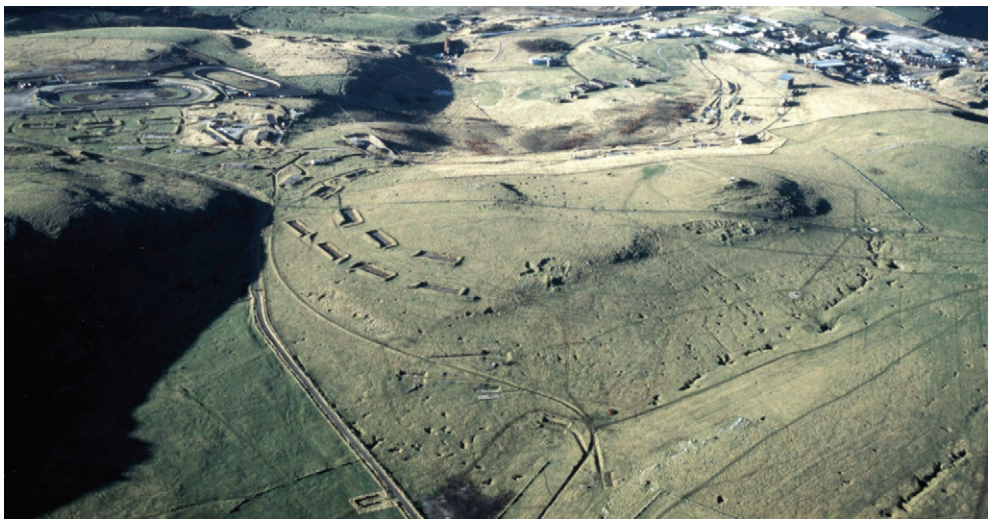

Figure 29 - Second World War Buxton bomb storage (630579)

The largest sites of military origin mapped during the project were the depots and research sites. For example the site at Buxton (630579) (Fig 29) was opened in June 1927 as RAF 28 Maintenance Unit Bomb Store Depot and to later became part of the newly created Health and Safety Executive's Research and Laboratory Services Division. Remains of the bomb storage and anti blast walls are still extant.

The most extensive depot was recorded between Marchington and Draycott in the Clay (1412676) (Fig 50), This site consisted of ordnance storage facilities, accommodation and a vast road and rail network connecting the depot to the civil transport infrastructure. The depot covered over 260ha by the end of the Second World War, but soon afterwards appears to have fallen into disrepair. A later, smaller camp was built on part of the site, some of which is still extant. Other depots are visible at Hilton (1517065) (Fig 30) and Donington Park (1518757).

Figure 30 - Second World War military depot, Hilton (1517065)

NMR RAF/106G/UK/721 4048 26-AUG-1945 English Heritage (NMR) RAF Photography

The project recorded many military sites of different function that presented several phases of construction and use. In the post-war years building complexes were sometimes demilitarized and subsequently re-used for different purposes. Sudbury (1139076) (Fig 31) was initially built at the beginning of the 1940s as a military hospital for D-day but later used to hold prisoners of war as Camps 23, 1004 and 1023, indicating the changing roles of the site during the world conflict.

Figure 31 - Second World War military hospital and associated POW camps, Sudbury (1139076)
NMR RAF/541/215 3161 15-DEC-1948 English Heritage (NMR) RAF Photography

The remains of a bombing decoy (1468930) were recorded at Ambaston. Remains of these ephemeral and often short-lived sites can be hard to detect on aerial photographs. Ambaston was part of the 'C-series' of civil decoys aimed to deflect enemy bombing from the Rolls Royce factory in Derby. The decoy is a 'QL' decoy, which simulated marshalling yard lights and factory lighting to replicate the Rolls Royce site during a poor blackout.

A ‘stop line’ consisting of ten pillboxes (e.g. 1420516-9, 1420001) and ten ‘V’ slit trenches (1517689) was recorded to the north and north-west of the Marchington camp, on the west bank of the River Dove,

Air defence sites were also recorded in the study area, for example two searchlight batteries (1518209, 1518666) (Fig 49). The westernmost of the two, Elveston (1518209), was created to serve the nearby heavy anti-aircraft battery Derby DNH4 (1412124). These monuments have been partially or totally destroyed by gravel extraction. Additionally a total of 153 air raid shelters were mapped, ranging from civilian earthwork and concrete types, most commonly visible in industrial or urban areas (e.g. 1518680, 1518195) to specific military forms integrated in to camps and airfields (e.g.1517295).

7.5.3 The Cold War

Other than the previously mentioned Second World War sites which saw continued use into the post war period the only other site of specific post war function was a Royal Observer Corps post at Broadlow Farm in Peak Dale (1412117), which saw service between 1959 and 1991.

7.6 Features of Uncertain date

A number of sites were recorded as of uncertain date due to either poor aerial photographic quality, their poor preservation, or simply that the features were not characteristic of any one particular period or function (Fig 51).

The majority of the sites were visible as cropmarks and appeared to be ditches and field boundaries. Some of these sites lay in areas of known prehistoric or Roman activity or the medieval/ post medieval rural landscape, but no physical or typological relationships could be discerned, therefore dating was difficult (e.g. 1503002, 1430654, 1518689). Additionally background geology, especially in the magnesian limestone belt, made interpretation of cropmark features difficult (e.g. 310185, 1516459, 1517338).

7.7 Discussion

The Derbyshire and Aggregates Assessment Project was divided into a number of geographical and topological regions, concentrating on the aggregate removal hotspots, and therefore the nature of the archaeological record differed considerably throughout the survey. However the diversity of results from the Neolithic to the 20th century remained prevalent throughout.

The Neolithic and Bronze Age periods have been primarily seen to concentrate on ritual and funerary sites, and although the density of these features is greater in the southern river basins, there is a far higher proportion of earthwork survival in the northern upland areas of the survey. This earthwork survival can almost entirely be attributed towards medieval, post medieval and 20th century farming practices. The upland limestone areas of the peak district are still focussed on pastoral farming and the earthwork evidence for ridge and furrow is minimal, hence the much greater survival of earthwork monuments, even of Neolithic date such as The Bull Ring and Five Wells chambered round cairn. However over 73% of the surveyed ridge and furrow, primarily of medieval date, was located in the south of the survey area on the sands and gravels of the river valleys. In this region, primarily along the length of the River Trent, the later prehistoric survival is almost entirely as cropmarks.

Possible evidence for Neolithic and Bronze Age settlement was also well distributed across the survey regions, but for the most part the greater evidence for later prehistoric settlement was visible as cropmark iron age enclosures, round houses and field systems along the banks of the Rivers' Trent and Dove. The dense cropmarks in these areas displayed complex multi-phased activity, most of which concentrating around the Neolithic cursus monuments.

As anticipated prior to the outset of the project, a number of industrial activities have had a dramatic impact on the archaeological environment. The landscape in the north-west of the survey area, between Buxton and Bakewell, has been riddled with lead extraction, mostly in the form of rakes, some extending for over 4km in length. Although most of these lead workings appear to have been abandoned by the mid 19th century, some of the larger veins were reopened, widened and deepened in the 20th century for Fluorspar. As much of this extraction took place prior to the earliest aerial photography we do not know what monuments may have been destroyed. Limestone extraction also poses a threat in this area (Fig 32).

Figure 32 - Bronze Age round barrow threatened by quarrying, Hope (309451)

NMR 17209-64 16-NOV-1998 © English Heritage. NMR

In the south, vast areas of recent sand and gravel extraction have removed entire monuments ranging from a later prehistoric double ditched enclosure near Barrow upon Trent (313177) to the medieval settlement of Little Wilne (315646). The impact of mineral extraction is not confined to the surface as is illustrated by subsidence at Pearson Plantation (Fig 34). The aerial photographic record has also illustrated nature's impact on the archaeology, for example where the migration of the River Trent has removed a 45m long medieval earthwork platform.

Figure 33 - Subsidence caused by subterranean mining activity, Middleton.

NMR MAL/75048 67 15-JUL-1975 © Reserved

The quality of the aerial photograph coverage has a huge impact on aerial survey mapping. In the case of this assessment the vertical and oblique photographic coverage of the project area was particularly extensive; although it should be noted that towards the south of the project area the volume of oblique photography, both recent and military, diminished,. This was also true of the early RAF vertical photography and perhaps led to a negative bias in the number of military sites mapped.

In addition to the mapping, the air photo analysis helped to identify threats and assess a monuments' latest condition particularly important for sites located in proximity to still active aggregate extraction areas. Although this is not the primary aim of the NMP, looking at recent photography can help us to understand changes in the landscape, monitor and assess current monument condition and assist in the informed managment of protect sites under threat from quarrying, extraction and opencast mining.

As for general NMP practice, natural features were not included in the mapping but evidence of these were used to put the archaeology into context. For example the medieval and modern settlement of Elmont flanks the course of an old river bed which was seen as both cropmark and earthwork remains. Linear features visible on the edge of the old river course were thus interpreted as the remains of a medieval dam and associated features (1501314). Other aspects of the Derbyshire Resource Assessment Project will specifically include a geo-archaeological assessment and evaluation of landform settings and potential archaeological associations.

A number of sites seem worthy of further study. Included in this may be sites of uncertain date; prehistoric sites with little or no previous background study; the Roman fortlet at Sawley, which is comparable in size to Navio; and the immense cropmark complexes following the Rivers' Dove and Trent. Further research is already undergoing at Fin Cop hillfort by ARS Ltd, in conjunction with the Longstone Local History Group which will pull in aspects of the aerial survey analysis.

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APPENDIX 1 1:10,000 MAP SHEETS

MAP	BLOCK	AUTHOR	DATE OF COMPLETION	Km Squares	Collection No EHC01/151; AF00017
SK 06 NE	**1**	CINZIA BACILIERI	27/07/2009	13	MD002545
SK 07 NE	**1**	SHONA WILLIAMS	19/08/2009	15	MD002543
SK 07 SE	**1**	CINZIA BACILIERI	23/09/2009	20	MD002544
SK 07 SW	**1**	CINZIA BACILIERI	21/09/2009	2	MD002546
SK 08 SE	**1**	SHONA WILLIAMS	30/09/2009	1	MD002542
SK 16 NW	**1**	SHONA WILLIAMS	25/08/2009	10	MD002550
SK 17 NE	**1**	CINZIA BACILIERI	01/07/2009	2	MD002552
SK 17 NW	**1**	SHONA WILLIAMS	12/08/2009	1	MD002548
SK 17 SE	**1**	DAVID KNIGHT	09/07/2009	13	MD002553
SK 17 SW	**1**	DAVID KNIGHT	05/08/2009	12	MD002549
SK 18 SE	**1**	DAVID KNIGHT SHONA WILLIAMS	20/10/2009	10	MD002551
SK 18 SW	**1**	SHONA WILLIAMS	30/09/2009	14	MD002547
SK 27 NW	**1**	CINZIA BACILIERI	14/09/2009	6	MD002554
SK 27 SW	**1**	SHONA WILLIAMS	30/06/2009	12	MD002555
SK 47 SE	**2**	DAVID KNIGHT	15/07/2009	8	MD002565
SK 57 NW	**2**	SHONA WILLIAMS	09/07/2009	5	MD002567
SK 57 SW	**2**	CINZIA BACILIERI	14/07/2009	15	MD002566
SK 15 NE	**3**	CINZIA BACILIERI	15/01/2010	2	MD002556
SK 24 NE	**3**	DAVID KNIGHT	01/02/2010	10	MD002559
SK 24 SE	**3**	DAVID KNIGHT	05/01/2010	12	MD002558
SK 25 NE	**3**	CINZIA BACILIERI	16/11/2009	20	MD002561
SK 25 NW	**3**	CINZIA BACILIERI	27/01/2010	25	MD002557
SK 25 SE	**3**	CINZIA BACILIERI	07/12/2009	4	MD002560
SK 26 SE	**3**	CINZIA BACILIERI	03/12/2009	3	MD002562
SK 36 SE	**3**	DAVID KNIGHT	23/10/2009	3	MD002564
SK 36 SW	**3**	DAVID KNIGHT	22/10/2009	1	MD002563
SK 13 SE	**4**	CINZIA BACILIERI	30/04/2010	11	MD002569
SK 13 SW	**4**	DAVID KNIGHT	12/05/2010	16	MD002684
SK 22 NE	**4**	CINZIA BACILIERI	31/03/2010	25	MD002687
SK 23 SW	**4**	CINZIA BACILIERI	19/04/2010	12	MD002686
SK 32 NW	**4**	DAVID KNIGHT	16/06/2010	25	MD002572
SK 42 NE	**4**	TARA J SUTCLIFFE	14/05/2010	6	MD002692
SK 42 NW	**4**	TARA J SUTCLIFFE	04/06/2010	15	MD002691
SK 43 SE	**4**	DAVID KNIGHT	01/06/2010	8	MD002690
SK 43 SW	**4**	CINZIA BACILIERI	28/05/2010	19	MD002689

APPENDIX 2 AUTODESK MAP LAYERS AND DRAWING CONVENTIONS

Layer Name	Layer content	Attached data tables	Layer colour	Line type
0	None (AutoDesk Map 3D 2008 requirement)	none	7 (white)	CONTINUOUS
BANK	Closed polygons for features such as banks, platforms, mounds and spoil heaps	MONUMENT	1 (red)	CONTINUOUS
BANKFILL	Solid fill for BANK layer polygons	MONUMENT	1 (red)	
DITCH	Closed polygons for cut features such as ditches, ponds, pits or hollow-ways	MONUMENT	3 (green)	CONTINUOUS
DITCHFILL	Solid fill for DITCH layer polygons	MONUMENT	3 (green)	
EXTENT_OF_AREA	Closed polygons outlining complex or extensive remains such as mining or military installations	MONUMENT	8 (grey)	DASHEDX2
GRID	grid lines at 1km intervals	NONE	7 (white)	CONTINUOUS
MONUMENT_ POLYGON	Closed polygons encircling all the features recorded within a single AMIE record	MONUMENT	7 (white)	CONTINUOUS
RIGARREWK	Polyline showing the direction of ploughing of extant ridge and furrow	MONUMENT	4 (cyan)	CONTINUOUS
RIGARRLEVEL	Polyline showing the direction of ploughing of levelled or cropmark ridge and furrow	MONUMENT	6 (magenta)	ACAD_ISO03W100
RIGDOTSEWK	Closed polygon defining the furlongs or extent of area of extant ridge and furrow	MONUMENT	4 (cyan)	DOTX2
RIGDOTSLEVEL	Closed polygon defining the furlongs or extent of area of levelled or cropmark ridge and furrow	MONUMENT	6 (magenta)	DOTX2
STRUCTURE	Closed polygons for built features including concrete, metal and timber constructions such as military installations	MONUMENT	9 (grey)	CONTINUOUS
STRUCTUREFILL	Solid fill for STRUCTURE layer polygons	MONUMENT	9 (grey)	
THACHURE	Polyline T-hachure convention to schematize sloped features indicating the top of slope and direction of slope	MONUMENT	5 (blue)	CONTINUOUS

APPENDIX 3 AUTODESK MAP DATA TABLES

MONUMENT DATA TABLE

The Monument Data table consists of five fields that were input directly through AutoDesk Map 3D 2008. The content of these fields follows those that are entered in the National Monuments Record Database AMIE.

FIELD NAME	FIELD CONTENT	Sample data
MONARCH	AMIE Unique Identifier (UID)	1465004
PERIOD	Date of features (EH Thesaurus)	POST MEDIEVAL
TYPE	Monument type (EH Thesaurus)	LIME WORKS
EVIDENCE	Form of remains (EH Thesaurus)*	EARTHWORK
PHOTO	NMR or other reference for the photograph from which the feature was mapped and the date of photography	NMR RAF/CPE/UK/2598 4171 16-APR-1948

* In AutoDesk Map environment this field describes the form of remains visible on the air photographs used for mapping whilst in AMIE it illustrates the monument most recent evidence as seen on the latest air photographs, this in accordance with AMIE Monument Recording guidelines.

APPENDIX 4 MONUMENT TYPES USED IN THE PROJECT

AIR RAID SHELTER
AIRFIELD
AUGUSTINIAN GRANGE
BAILEY
BANK (EARTHWORK)
BARBED WIRE OBSTRUCTION
BARROW
BARROW CEMETERY
BELL BARROW
BOUNDARY BANK
BOUNDARY DITCH
BOWL BARROW
BRICKWORKS
BUILDING
BUILDING PLATFORM
CAIRN
CASTLE
CEMENT WORKS
CHAMBERED ROUND CAIRN
CIRCULAR ENCLOSURE
CLAY PIT
COLLIERY
CRUSHING CIRCLE
CULTIVATION TERRACE
CURSUS
CURVILINEAR ENCLOSURE
D SHAPED ENCLOSURE
DAM
DITCH
DYKE
EMERGENCY WATER SUPPLY
ENCLOSURE
EXTRACTIVE PIT
FIELD BOUNDARY
FIELD SYSTEM
FIRING RANGE
FISHPOND
FLUORSPAR MINE
FLUORSPAR WORKINGS
FORT
FORTLET
GRANGE
GRAVEL PIT
HEAVY ANTI AIRCRAFT BATTERY
HENGE
HILLFORT
HOLLOW WAY
HORSE WHIM
HOUSE PLATFORM
LEAD MINE
LEAD RAKE
LEAD WORKINGS
LEAT
LEVELLED EARTHWORK
LIME KILN
LIME WORKS
LIMESTONE QUARRY
LONG BARROW
LYNCHET
MILITARY BUILDING
MILITARY CAMP
MILITARY DEPOT
MILITARY HOSPITAL
MILITARY ROAD
MINE SHAFT
MINERAL EXTRACTION SITE
MOAT
MOUND
NARROW RIDGE AND FURROW
OBSERVATION POST
ORDNANCE FACTORY
PALISADED HILLTOP ENCLOSURE
PILLBOX
PIT
PIT ALIGNMENT
PLATFORM
PLOUGH HEADLAND
POND
PRISONER OF WAR CAMP
QUARRY
RAILWAY
RAKE
RECTILINEAR ENCLOSURE
RESEARCH STATION
RESERVOIR
RIDGE AND FURROW
ROAD
ROUND BARROW
ROUND CAIRN
ROYAL OBSERVER CORPS SITE
SAND AND GRAVEL EXTRACTION SITE
SAND PIT
SAND WORKINGS
SANDSTONE QUARRY
SEARCHLIGHT BATTERY

SETTLEMENT
SEWAGE WORKS
SHAFT
SHAFT MOUND
SHALE QUARRY
SHRUNKEN VILLAGE
SPOIL HEAP
SQUARE ENCLOSURE
STANDING STONE
STOCK ENCLOSURE
STRIP LYNCHET

TOWN DEFENCES
TRACKWAY
TRAMWAY
TRENCH
VENTILATION SHAFT
WATERMILL
WEAPONS PIT
WINDING CIRCLE
WRECK

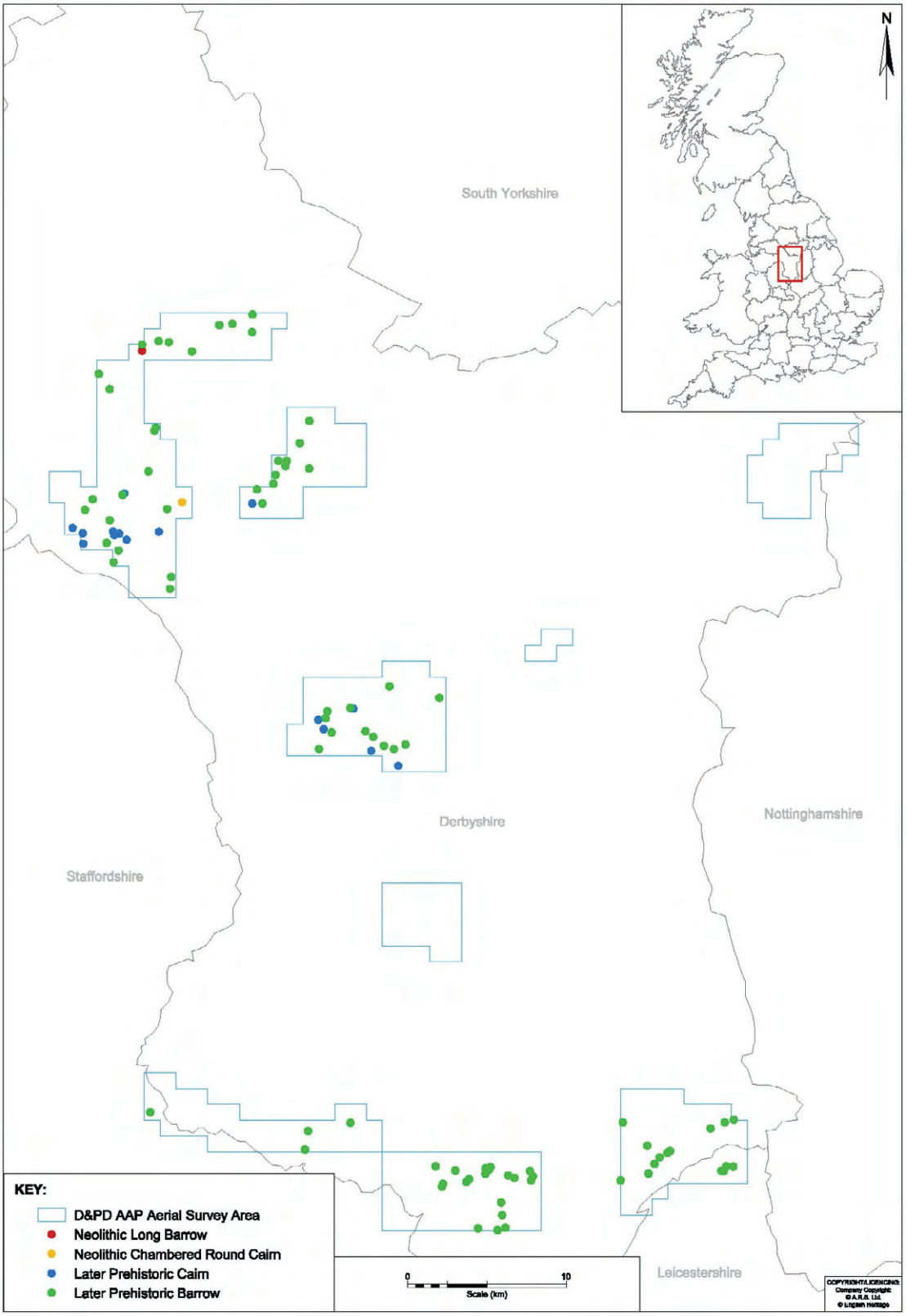

Figure 34 - Later Prehistoric Funerary Monuments

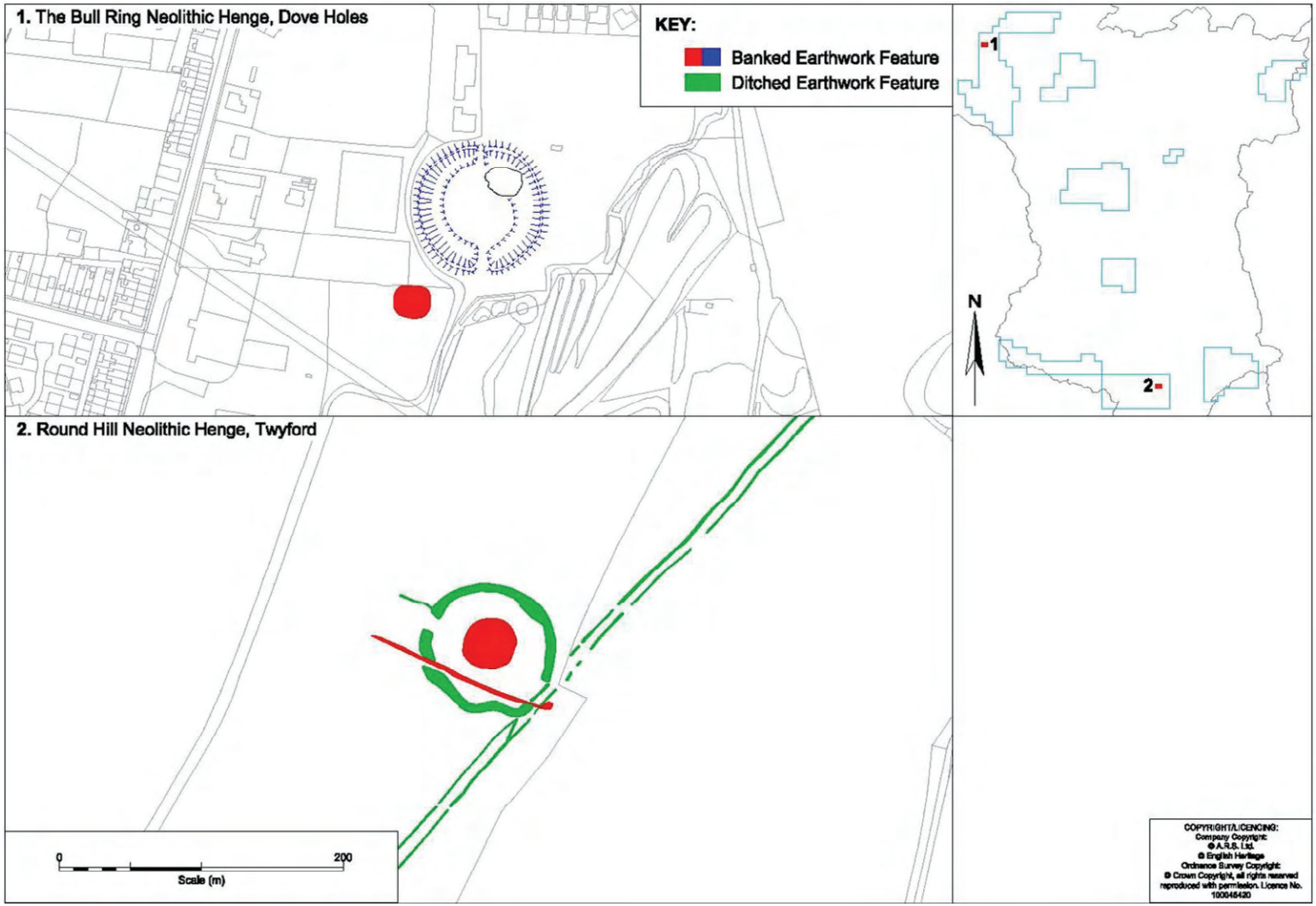

Figure 35 - Neolithic Henges: The Bull Ring (305997) and Round Hill (313105)

Figure 36 - The Neolithic Cursus Monuments of Potlock (1212767) and Aston (1211265)

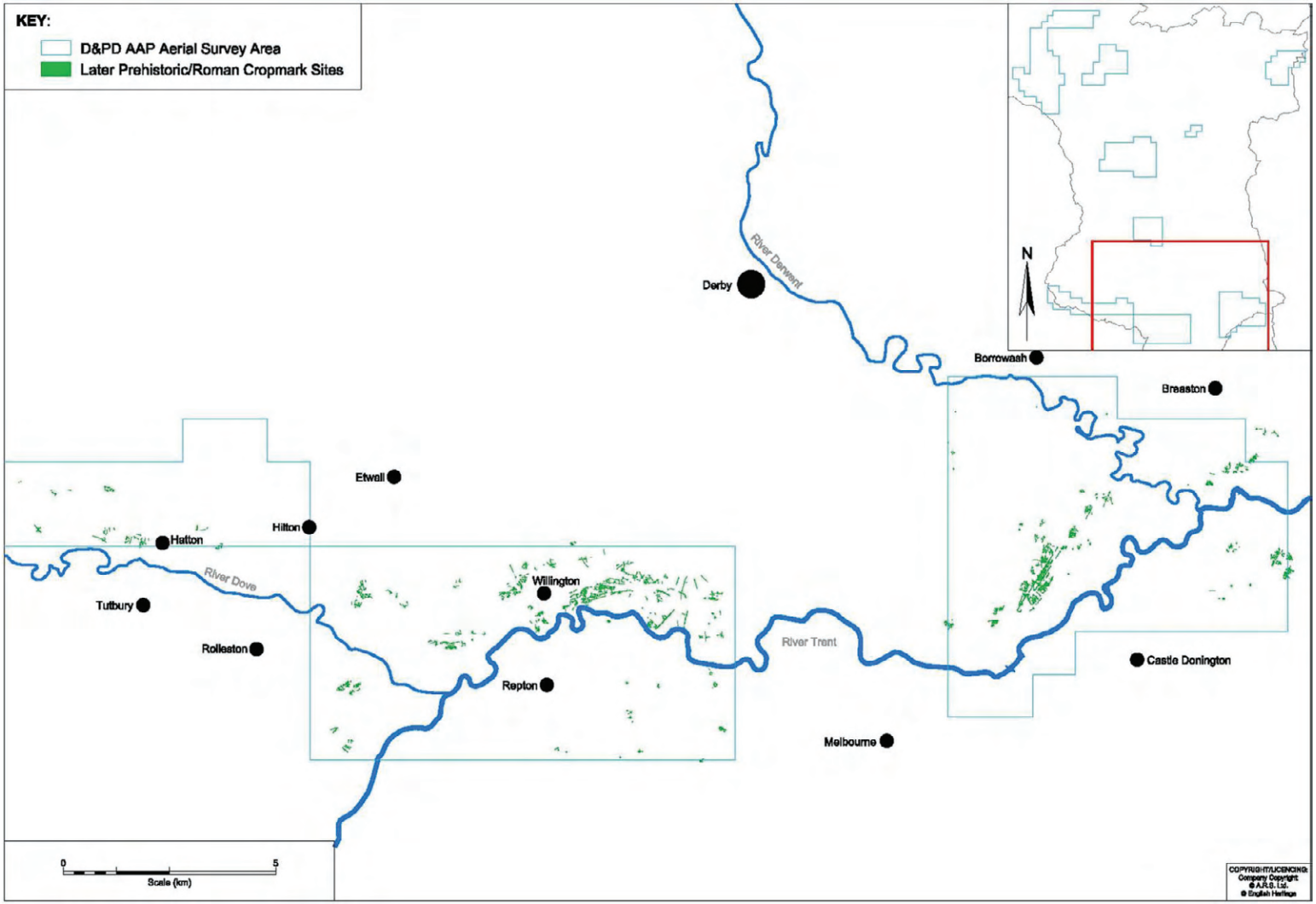

Figure 37 - Later Prehistoric and Roman Cropmark Distribution in Block 4

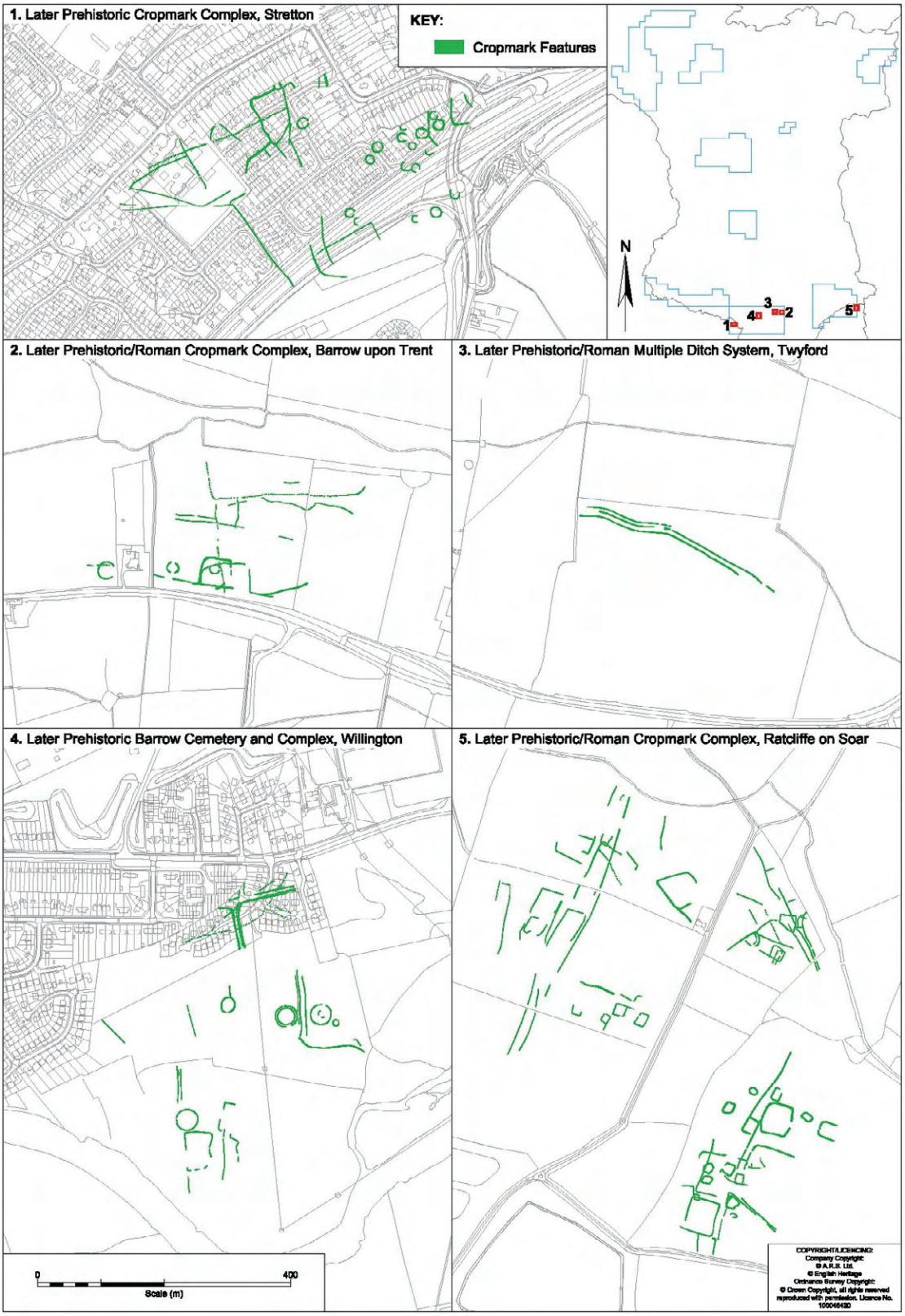

Figure 38 - Later Prehistoric and Roman Cropmark Sites

Figure 39 - Iron Age and Romano-British Settlement, Defence and Farming Practice

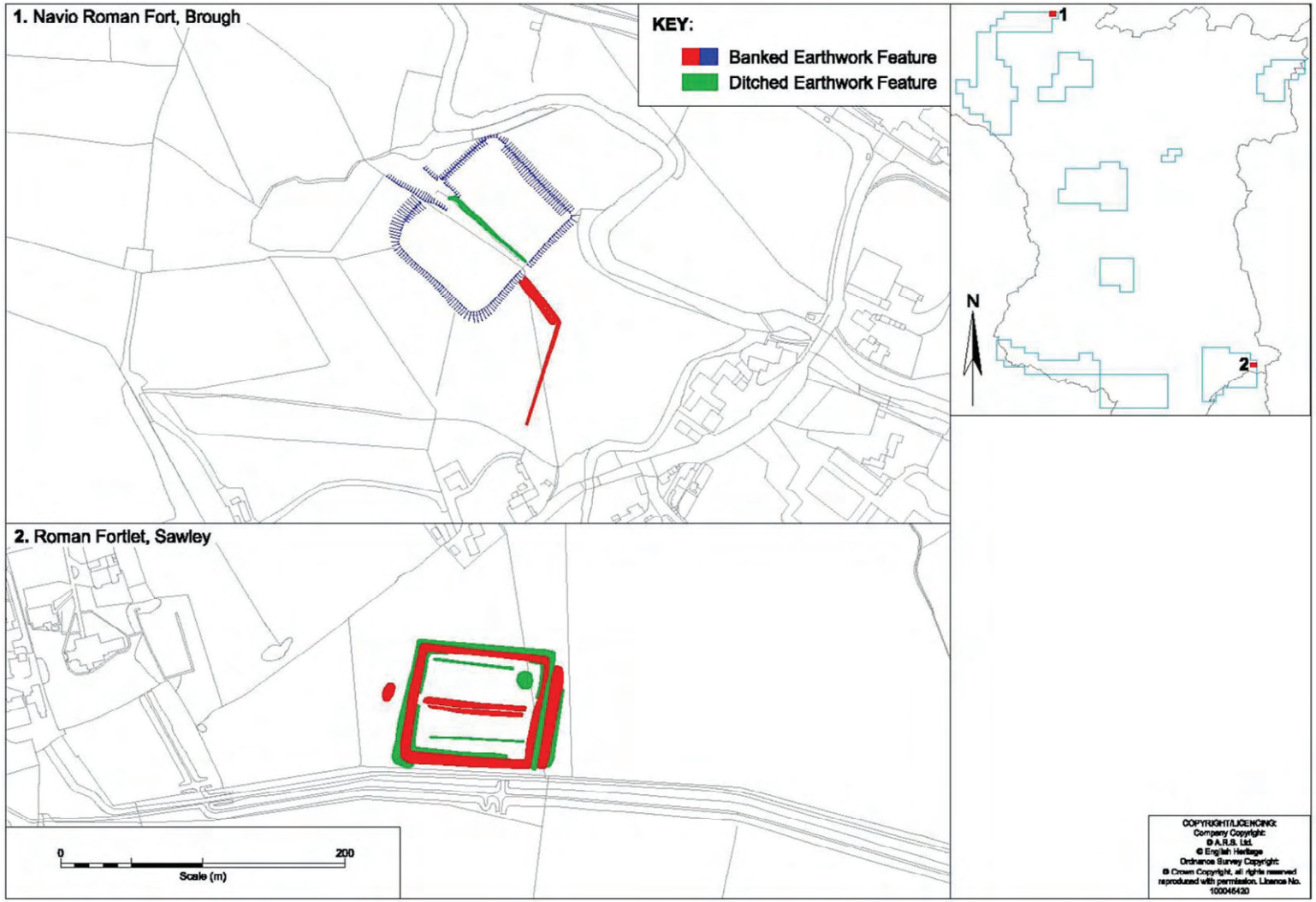

Figure 40 - The Roman Forts at Brough (309471) and Sawley (315582)

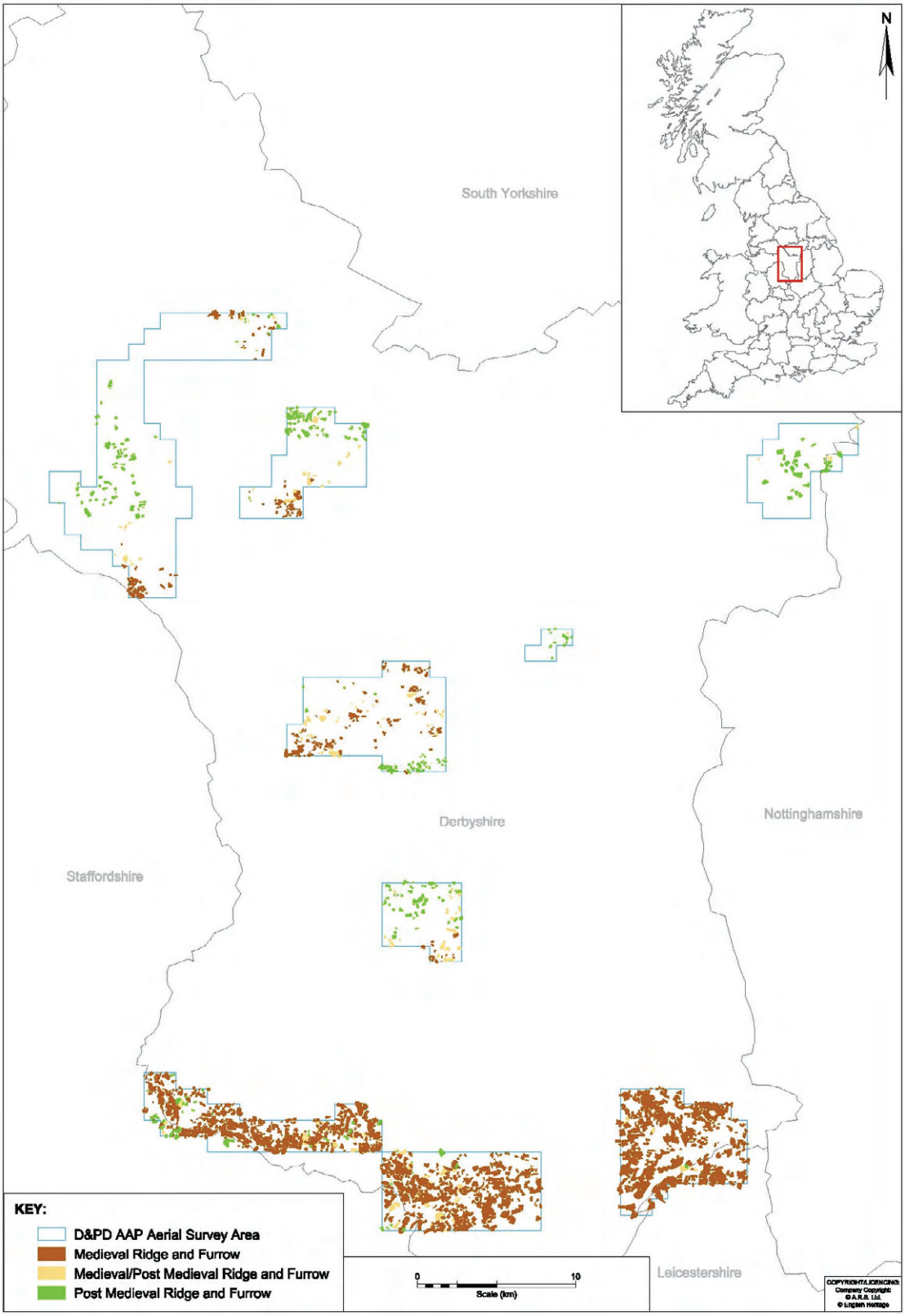

Figure 41 - Ridge and Furrow Distribution

Figure 42 - Medieval lynchets

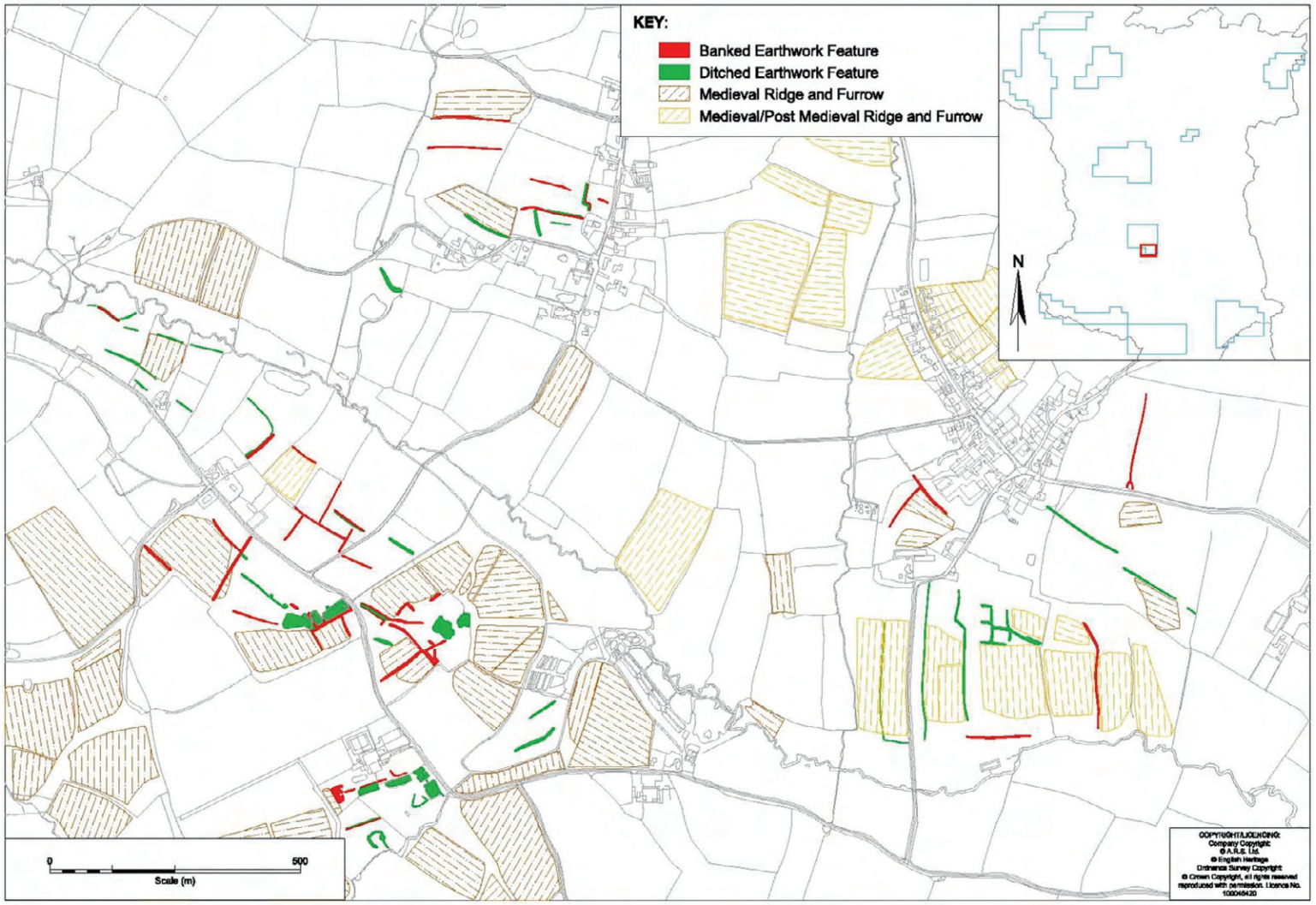

Figure 43 - Medieval Settlement at Mercaston (1510845)

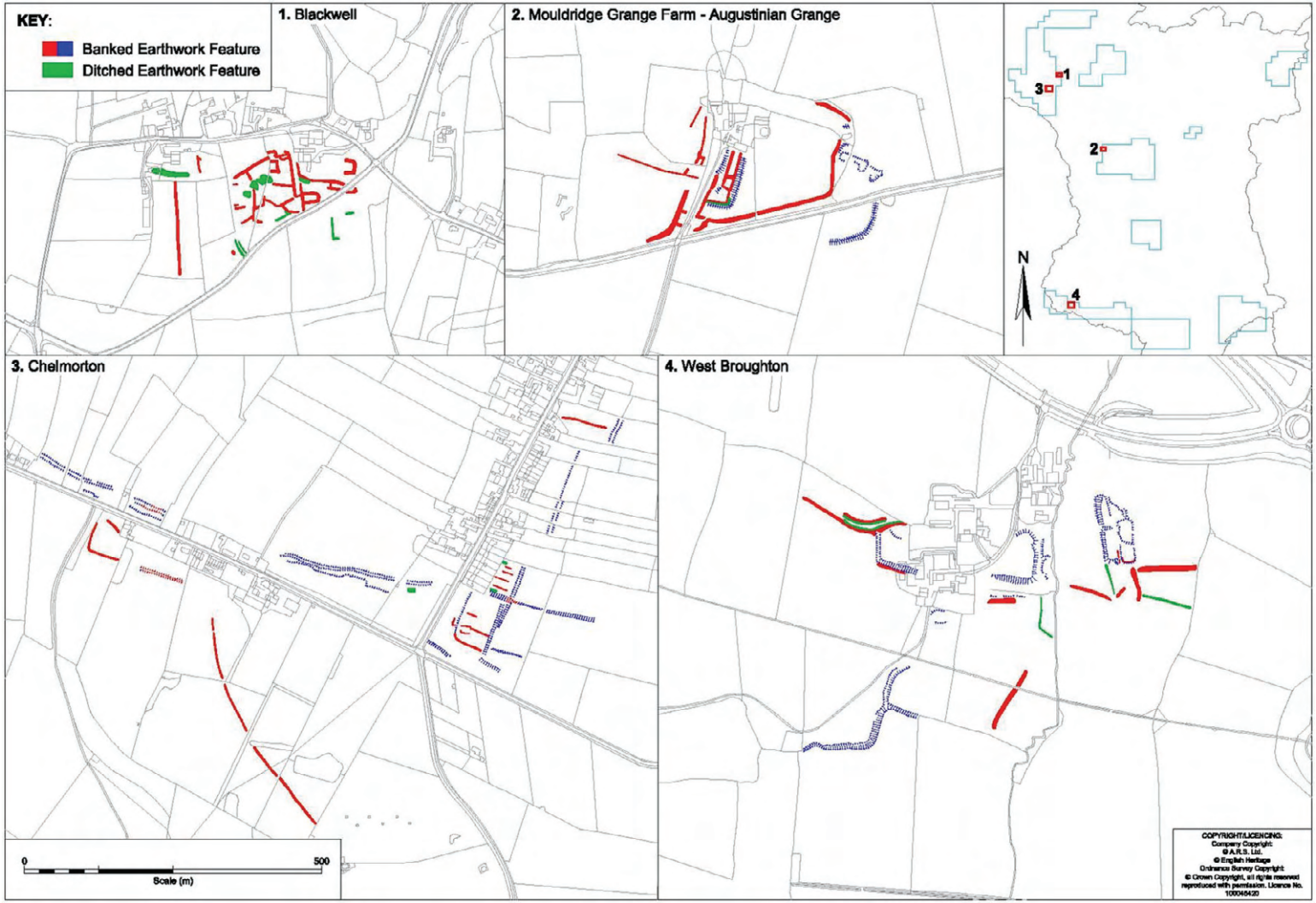

Figure 44 - Medieval Settlement

Figure 45 - Medieval Settlement and Water Management at Stenson (1517137)

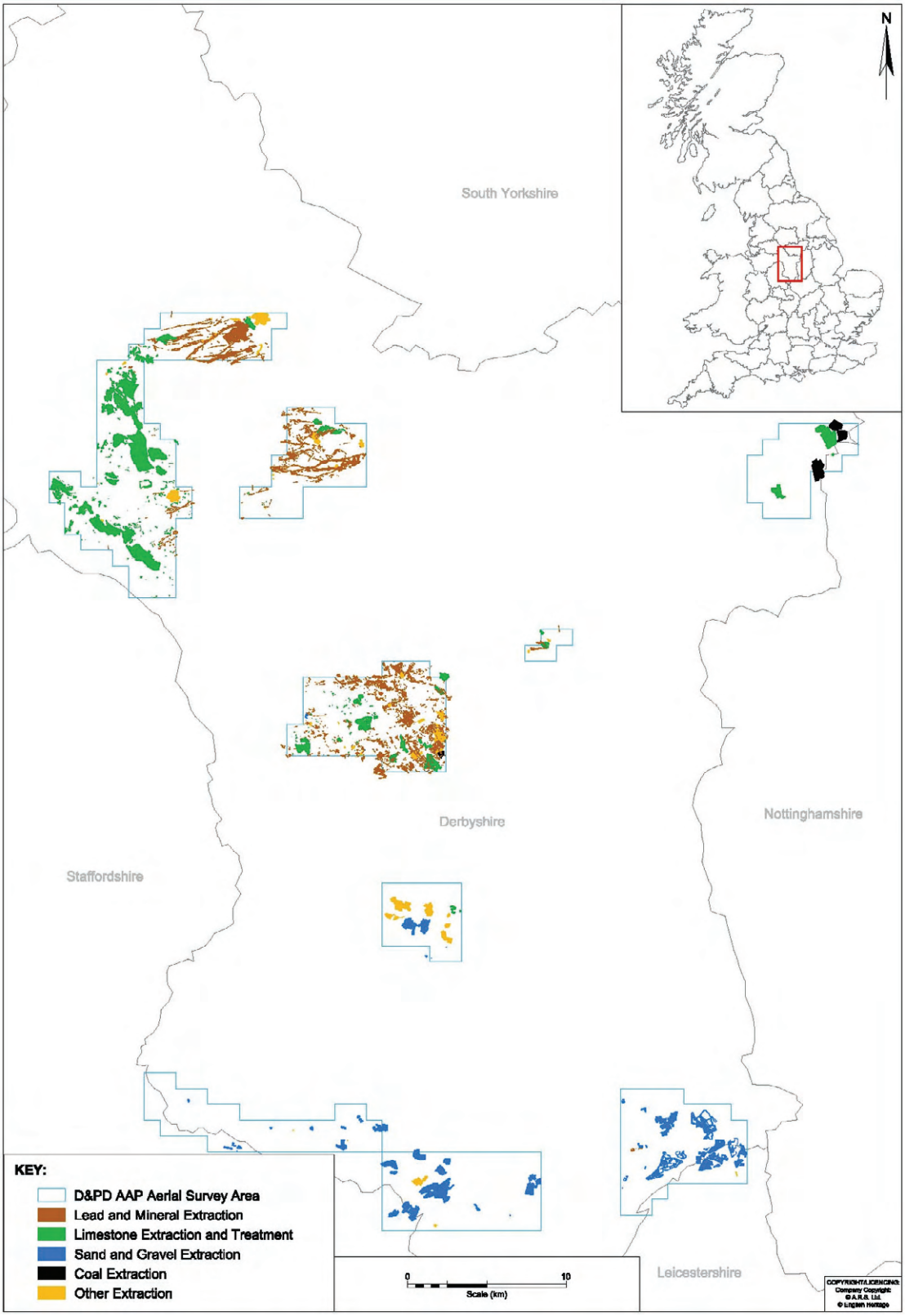

Figure 46 - Distribution of Industrial Activity

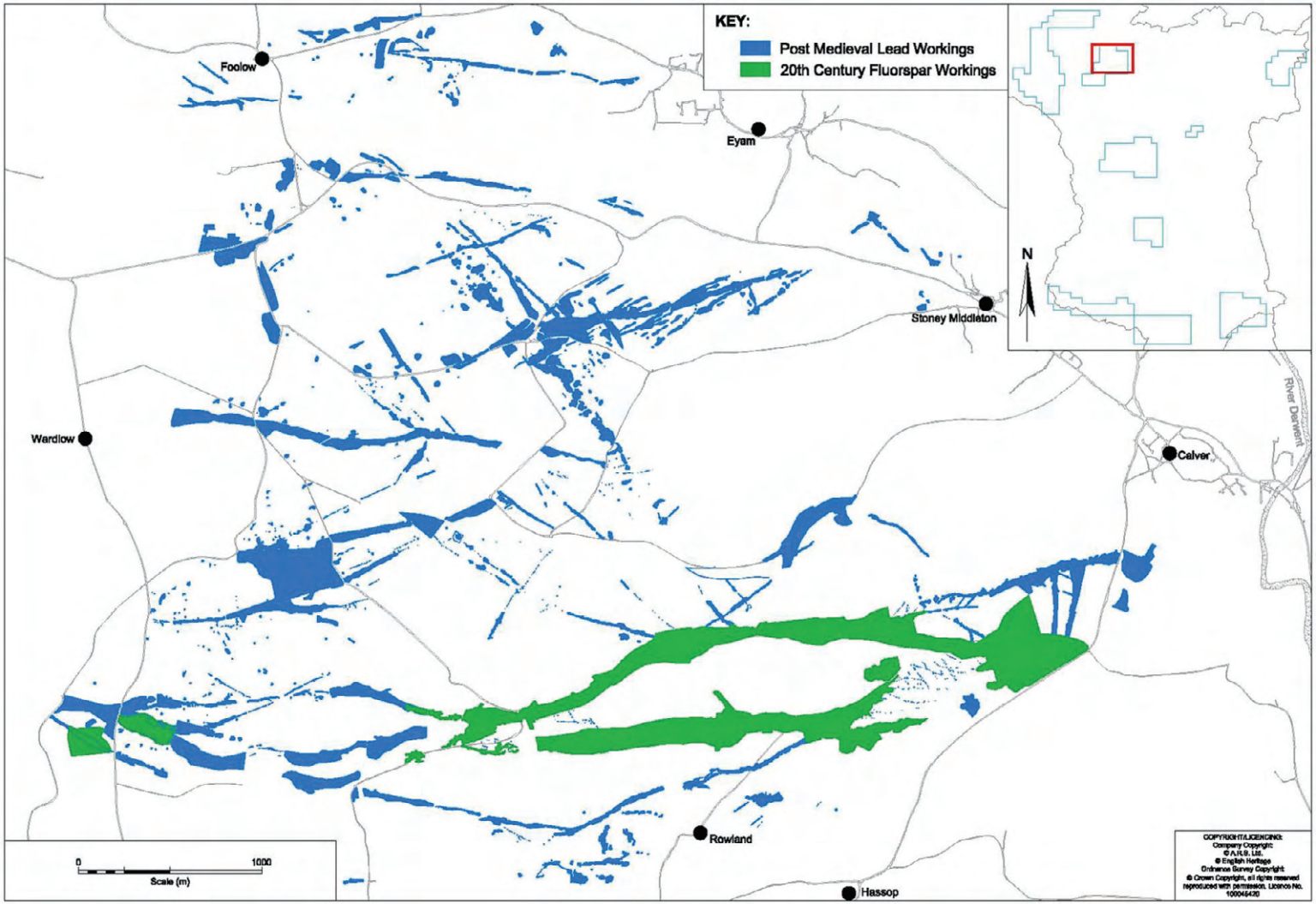

Figure 47 - Mineral Extraction at Longstone Edge

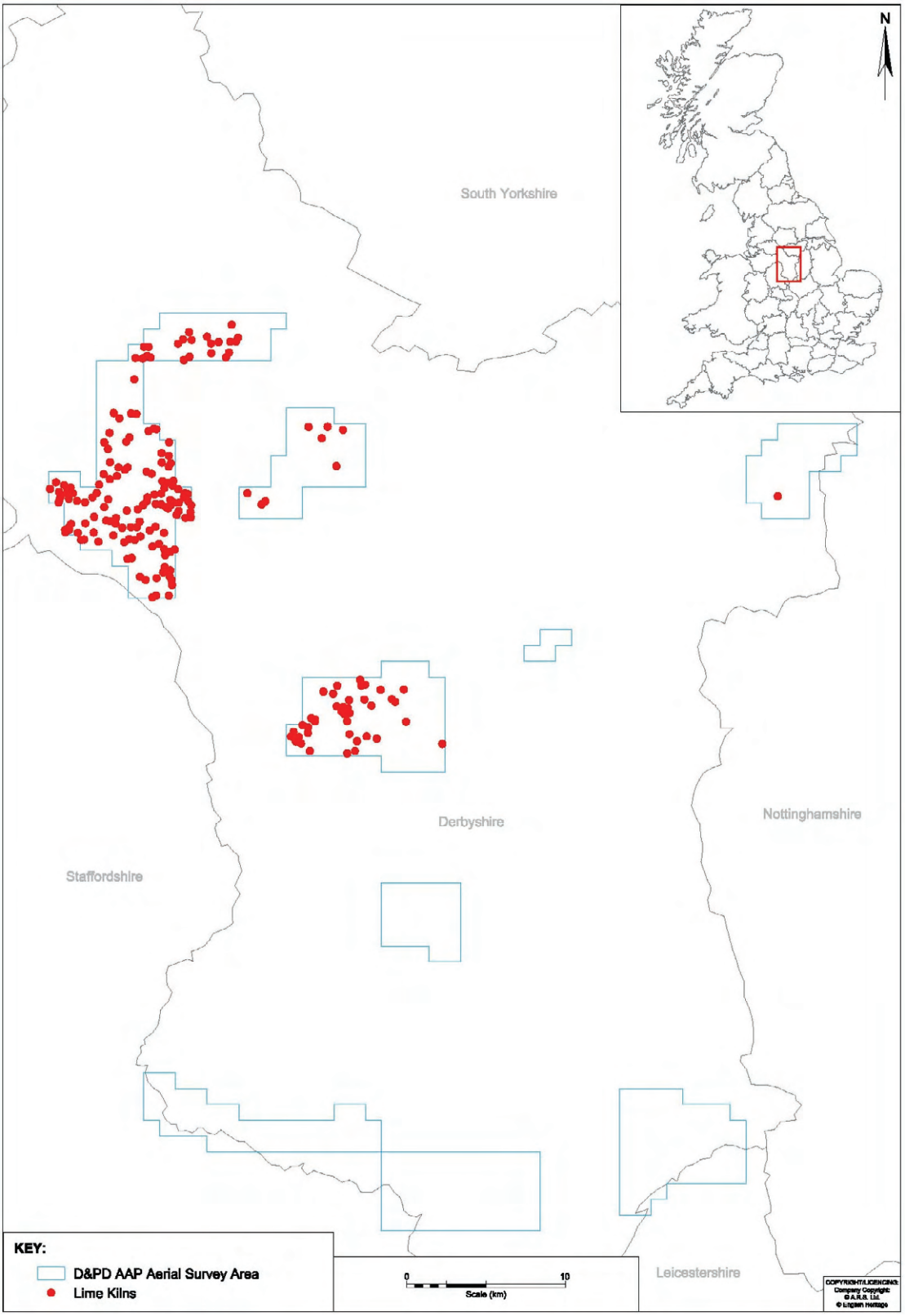

Figure 48 - Distribution of Lime Kilns

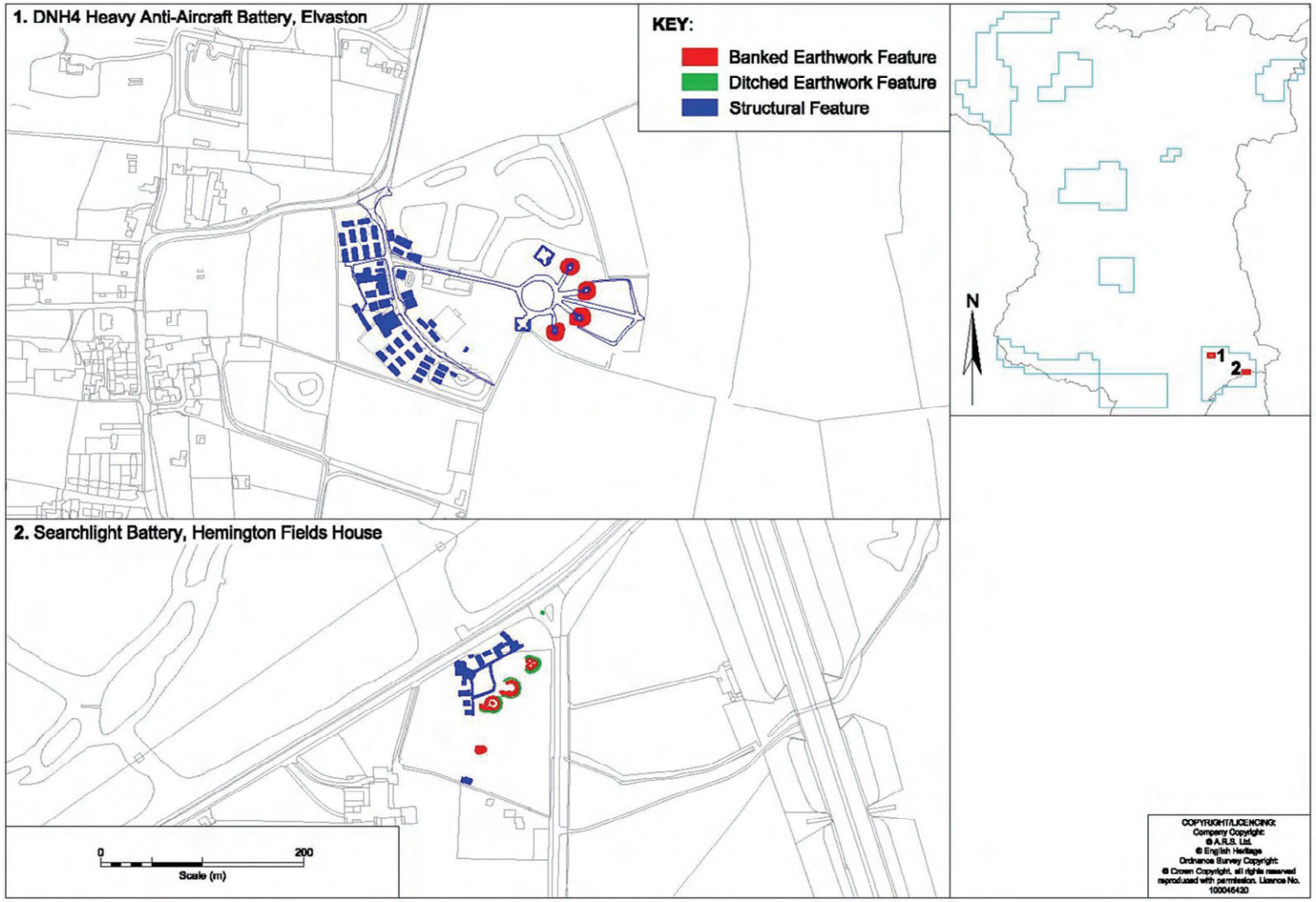

Figure 49 - Anti-Aircraft Defences of World War Two

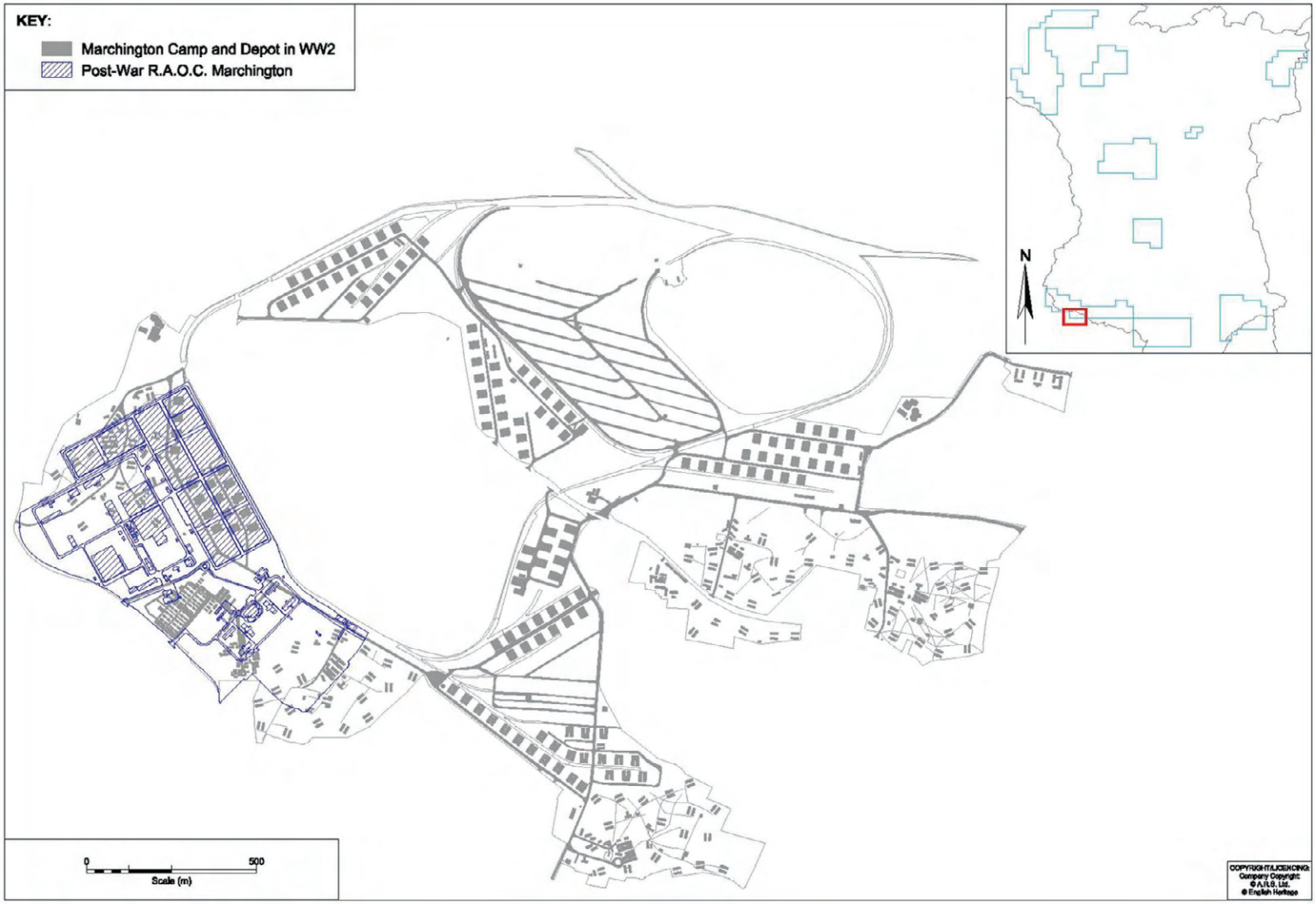

Figure 50 - A Second World War and Post-War Military Camp and Depot at Draycott in the Clay (1412676)

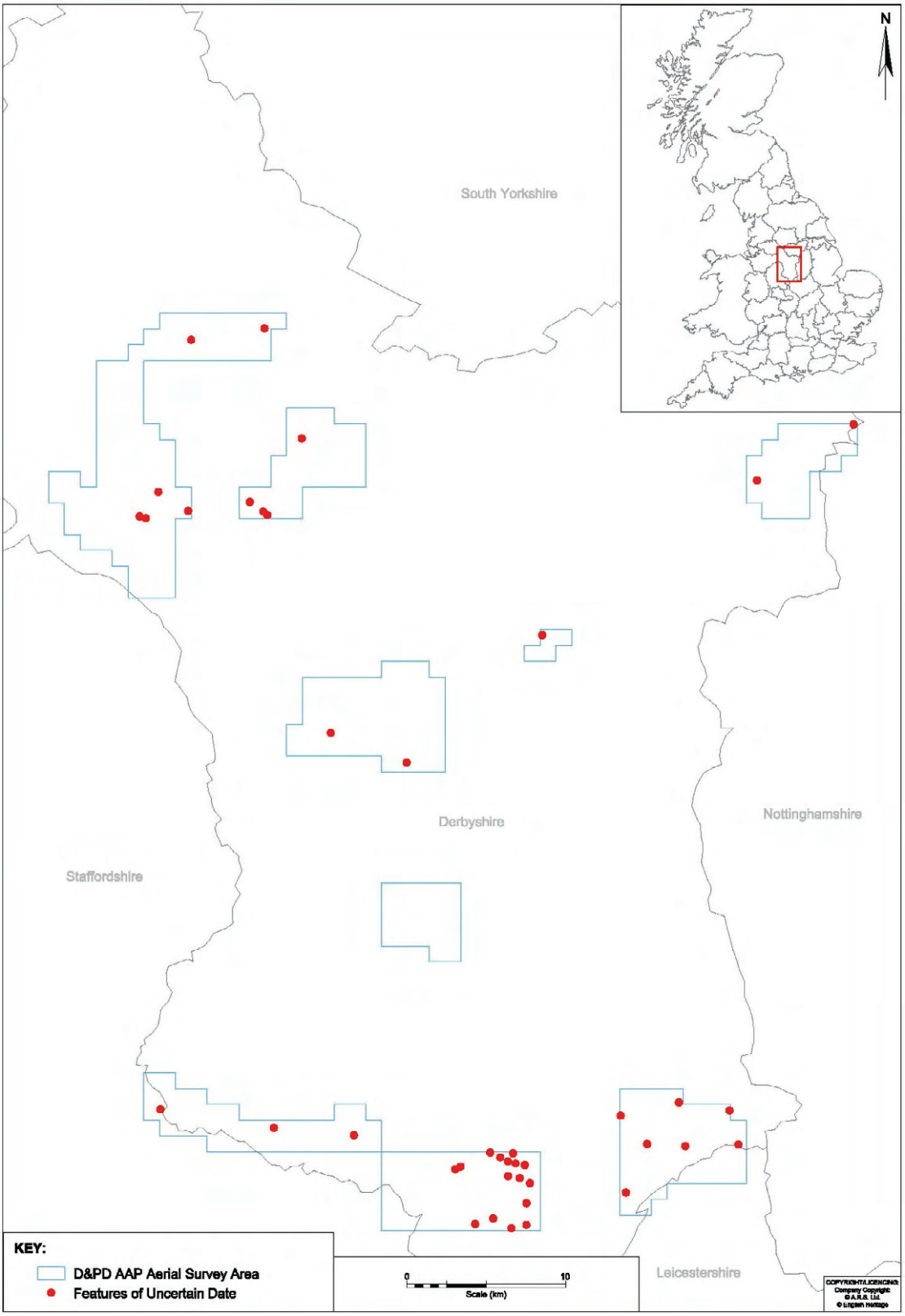

Figure 51 - Sites of Uncertain Date

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