

Staffordshire National Mapping Programme Phase 1 Eastern River Confluences

Project Design

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Archaeological Research
Services Ltd



Ridge and furrow at Marchington Industrial Estate (formerly a WW2 military camp), East Staffordshire NMR
RAF/58/1289 F21 57 09-OCT-1953 English Heritage RAF Photography.

Compiled By:

Dr Robin Holgate
Archaeological Research Services Ltd
7 Angel House
Portland Square
Bakewell
Derbyshire
DE45 1HB

Tel: 01629 814540
Fax: 01629 814657
Email: robin@archaeologicalresearchservices.com
Web: www.archaeologicalresearchservices.com

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CONTENTS

1. BACKGROUND	5
1.1 Introduction	5
1.2 The archaeology of Staffordshire	6
1.3 Archaeological research priorities for Staffordshire	8
1.4 Selection and description of the area to be examined	8
2. BUSINESS CASE	12
2.1 Why the project should be undertaken at this time	12
2.2 Relevance of the project to national and English Heritage policies	12
2.3 Why the project should be undertaken by the proposed project team	13
2.4 What will be the public benefit	14
3. RESEARCH AIMS AND OBJECTIVES	15
3.1. Aims	15
3.2 Objectives	15
4. PROJECT SCOPE	16
5. INTERFACES	17
6. PROJECT OUTPUTS	18
7. METHODS STATEMENT	20
7.1 Project Strategy	20
7.2 Stage 1: Aerial photograph interpretation and mapping	20
7.3 Stage 2: Transfer of mapped data and incorporation into a GIS	33
7.4 Stage 3: Supply and integration of NMP data within the Staffordshire HER	33
7.5 Stage 4: NMP report production	33
7.6 Stage 5: Recommendations for heritage protection/ development control	33
7.7 Stage 6: Dissemination	33
7.8 Stage 7: Review	34
7.9 Stage 8: Project archive	34
8. RESOURCES AND PROGRAMMING	35
8.1 Management Structure and Accommodation	35
8.2 Core Project Team	35
8.3 Products	36
8.4 Task list	36
8.5 Health and safety	38
8.6 Security copying and back up procedure	39
8.7 Archive deposition	39
8.8 Copyright	39
8.9 Timetable	39
8.10 Communications	41
8.11 Project review	41
8.12 Budget	42
9. BIBLIOGRAPHY	44
APPENDICES	46

EXECUTIVE SUMMARY

This project comprises a new National Mapping Programme (NMP) project focused on Staffordshire and will directly contribute to activity 3A4 (Identification of terrestrial assets via non-intrusive survey) of the National Heritage Protection Plan, as well as contributing to measures 2D1 (Agricultural and forestry impacts) and 2D4 (Mineral extraction impacts) and 5C1 (Enhancing capabilities of historic environment records) (English Heritage 2011). Staffordshire has experienced very little in the way of NMP coverage: yet it is a county with a rich archaeological resource which also faces a variety of impacts. One of the most significant impacts affecting archaeology in the county is mineral extraction. The bulk of the resource for this project is aimed at mapping and identifying heritage assets over the key sand and gravel and coal-producing areas, as well as the agricultural landscapes in the west of the County, and a sample of the sandstone areas. The project can also be informed by the Aggregates Resource Assessment for the county which is currently being undertaken. Aerial photographic mapping will include Scheduled Monuments (SMs) and information on these sites will allow the Heritage at Risk Register to be updated for the relevant SMs and assist in future COSMIC assessments. This will strengthen the evidence base for informing future conservation and management of heritage assets in Staffordshire and will help to manage and mitigate against the various threats that impact upon its landscapes.

The resulting information from this project will be made available to English Heritage's Designation Team, planners, curators and the public as part of the NRHE and the Staffordshire HER record. Dissemination of the project's results will be given at English Heritage's annual NMP conference and made available through web pages and regional publications.

The project will be managed and delivered by Archaeological Research Services Ltd in partnership with Staffordshire County Council's Historic Environment Section. The mapping will be executed by the team who worked on the adjacent Derbyshire National Mapping Programme Project and who have developed knowledge and expertise of the Trent Valley landscape and its surrounding geologies. The project will be undertaken in two phases. Phase 1 is timetabled to run for 10-11 months commencing March 2013 and finishing in January 2014, and will consist of mapping two blocks in the east of the county totaling 265 km²" Phase 2, due to run from February/March 2014 to Autumn 2014, comprises two further blocks totaling up to c.150 km² in the west of the county, although the precise location of the Phase 2 areas would be specified as part of an updated project design to be produced towards the end of Phase 1.

1. BACKGROUND

1.1 Introduction

Staffordshire boasts a wide range of landscape types and geologies (Cox 2004) which have greatly influenced past occupational, agricultural and industrial exploitation in the county. This has resulted in a rich and diverse cultural heritage, ranging from the camps and tools of pre-agriculture hunter-gatherer groups and the late prehistoric ritual complexes populating the Trent Valley, through to the Great War training camps on Cannock Chase and later Cold War defences at Featherstone. In total, Staffordshire has 280 Scheduled Monuments (NHLE August 2012) while the Historic Environment Record (HER) holds over 17,600 records for the county. Where natural resources are concerned, Staffordshire can be divided loosely into four quarters. In the west agriculture has and continues to play an important role in the local economy. To the south rich woodlands, coupled with coal and ironstone seams, allowed the development of glass working, iron working and mining from the late medieval period onwards. In the east the agriculturally-rich river valleys of the Trent and Dove have attracted a considerable amount of aggregate extraction in more recent times. Pastoral agriculture was prevalent in the north, although a mixed subsistence form of agriculture did develop in areas such as the Churnet Valley where industry was also located. Quarrying also occurs in the north of the county and, during the 18th and 19th centuries, hard rock was quarried for dimension stone and limestone (largely for processing in nearby limekilns).

In recent years, the extraction of mineral resources has resulted in a range of significant archaeological and palaeontological discoveries. Near the confluence of the Trent-Tame rivers in the valley of the River Trent, the remains of a Woolly Rhinoceros (*c.*40,000 years old) were found during quarrying operations at Whitemoor Haye (Buteux and Chapman 2009, 42-3). This discovery highlights the potential for human activity in the area during the Pleistocene period and also points to favourable conditions for the survival of such remains. Nearby a rich ceremonial and burial landscape has been uncovered at Catholme, including cursus, henges, pit alignments and barrow cemeteries (*op cit*, 55-91). This pattern is now being mirrored along the River Dove where a small Late Neolithic cremation cemetery and a Bronze Age burnt mound have recently been uncovered. Archaeological work in advance of quarrying in the Trent-Tame confluence has also revealed evidence of the late prehistoric and Romano-British landscape in the area, coupled with an Anglo Saxon cemetery and settlement at Catholme (*op cit*, 93-158): the only recorded evidence in Staffordshire for formal settlement outside the principal burhs during this period. However, apart from this area of south-east Staffordshire, the county has not experienced significant archaeological investigation.

Being geologically diverse (Cox 2004) the county has important reserves of aggregate in the form of sand and gravel deposits along the river valleys of the Trent and Dove, two significant coal fields, one in the north around Stoke and one in the south around Cannock, together with a variety of sandstones which is exploited for both dimension stone and as crushed rock for aggregate. Most of the sand and gravel areas of the Trent Valley outside Staffordshire have undergone NMP analysis (including in Derbyshire, Nottinghamshire, Leicestershire and South Yorkshire) but the upper Trent in Staffordshire has yet to be examined and this project would seek to identify the archaeological resource along the valley up to and beyond Stone, resources permitting. Quarrying operations can offer the opportunity to further understanding on a scale seldom offered by other forms of 'development'. Indeed, results from the Trent Valley have informed Environment Agency work in their flood defence schemes on the River Tame in Staffordshire. This has resulted in the discovery of a further burnt mound and Late Neolithic

remains. It is strategically important that this area is investigated under the NMP so that consistent archaeology and minerals guidance can be produced for the whole Trent Valley.

In order to enhance the current baseline knowledge of many of the mineral-producing areas of Staffordshire and better protect and understand the condition of heritage assets, it is considered an important priority to increase the number of mapped archaeological features in order to inform on the type, scale and form of archaeology that can be anticipated on different mineral-bearing landforms. Staffordshire HER's low level of baseline data for some areas of the county (in particular the more rural, western half of the county where there has been much lower levels of archaeological survey and intervention) is also impacting on the ability to provide management advice for schemes such as Environmental Stewardship. Therefore, the project also aims to enhance coverage within these areas. Four target areas have been identified (see Figure 1): the Abbots Bromley area, the Weaver Hills and the Kidsgrove and Talke area focus on key mineral deposits within the County under threat from existing or potential new mineral schemes, while the area north of Gnosall has been targeted to assess the potential for NMP to improve data coverage for the less well studied areas of the county.

In effect, this project is designed to improve the management and understanding of the historic environment of Staffordshire by production of up-to-date aerial photographic transcription to National Mapping Programme standards in order to identify, delimit and accurately locate archaeological sites within the county. This information will then be used to enhance the Staffordshire HER and inform the future management and conservation of these heritage assets. The project will build on the experience gained from NMP projects in adjacent areas (e.g. Derbyshire Aggregates Assessment Project) and elsewhere in the UK, as well as the current Worcestershire & Staffordshire Aggregates Assessment Project commissioned by English Heritage and being undertaken by Worcestershire Archaeology (which, whilst it does not involve any aerial photography mapping work, includes enhancement of HER records from the National Forest NMP data). The project is scheduled to be undertaken in two phases: Phase 1 is timetabled to run for 10-11 months commencing in March 2013 and finishing in January 2014 whilst Phase 2 is due to run from February 2014 to Autumn 2014.

1.2 The Archaeology of Staffordshire

The earliest settlement remains currently known in Staffordshire are the final Upper Palaeolithic material from Ossum's Cave, Elder Bush Cave and Thor's Cave in the Staffordshire Peak District (Garwood 2011, 22). There is a relatively low density of Mesolithic material from the county compared with other parts of Britain, recovered from both surface and rock shelter sites (Garwood *op cit*, 27-28), but this is likely to reflect the limited nature of investigation that has taken place to date (Garwood *op cit*, 31).

The earliest monuments that have been identified in Staffordshire include the causewayed enclosures at Alfrewas and Mavesyn Ridware and the 'long' or 'mortuary' enclosure at Mavesyn Ridware, located just a few kilometres apart in the upper Trent valley (Garwood *op cit*, 36-7), along with the group of cursus monuments and the timber circles at Catholme at the Trent-Tame confluence (Buteux and Chapman 2009, 63-8), the latter constituting a distinctive 'ceremonial landscape'. Over 250 round barrows/cairns and ring ditches have been recorded, with a major concentration of round barrows/cairns in the Staffordshire Peak District and a large concentration of ring ditches in the Trent and Tame valleys (Garwood *op cit*, 69). The concentration of sites in north-east Staffordshire is clearly part of the densely clustered and extensive Peak District group of monuments, where it has been suggested that round barrows are either situated around localised 'cultivation zones' or on ridge- or hill top locations overlooking upland pasture (Barnatt and Collis 1996). Discrete clusters of ring ditches appear to

occur at intervals of c.12-30 kms along river valleys in central and southern England, and the Trent/Tame ring ditch cluster may fit this pattern.

For the Later Bronze Age 21 burnt mounds have been identified in Staffordshire, mostly in the central part of the county. In addition, two flat cremation cemeteries and a series of pit alignments have been investigated in the Trent and Tame valleys. Settlement sites, though, have so far proved elusive (Hurst 2011, 104). The Iron Age is represented by at least seven hillforts, which are fairly evenly distributed, although there is an apparent absence in the Staffordshire Peak District (Hurst 2011, 107). Field systems surviving as earthworks which could date to the Later Bronze Age and Iron Age lie in the vicinity of the Manifold Valley in the Peak District, whilst cropmark sites of later prehistoric (and Romano-British) field systems occur on the terraces of the Rivers Trent and Tame and their tributaries. The distribution of Later Bronze Age and Iron Age artefact find-spots, though, are much more widespread than the known location of hillforts and fieldsystems (Wardle 2003).

Romano-British occupation of Staffordshire is mainly evident in the form of military, urban and villa sites. There are seven Roman forts, five of which have *vici*: Greensforge, Penkridge, Wall, Rochester and Chesterton-Holditch. The seven known villa sites, which occur in the southern half of the county, are mostly situated close to a Roman road (Esmonde Cleary 2011, 128). Many of the earthwork and cropmark fieldsystems which are considered to originate in the Later Bronze Age and Iron Age could also date to the Romano-British period. At present, there is no evidence of Roman lead mining in the Staffordshire Peak District: nor is there evidence for exploiting the north Staffordshire iron fields (Esmonde Cleary 2011, 129-30). The ceramic relations of the Staffordshire sites that have been excavated (e.g. Rocester) appear to lie to the east and south (Derbyshire, Mancetter products) rather than to the West (Severn Valley wares) (Esmonde Cleary *op cit*, 143) although, as in the Iron Age, it is likely that Staffordshire sites accessed salt originating from the North Cheshire Plain.

At the end of the Romano-British period Staffordshire straddled the division between *Britannia Prima* and *Maxima Caesariensis*, and thus appears to have been positioned between the pagan and increasingly Anglo-Saxon eastern part to the south-east and the Christian and Romano-British people to the west. Known pagan burials are concentrated in the east of the county in barrows in the Staffordshire Peak District and in cemeteries in the Trent Valley (Hooke 2011, 150). In the early/middle Anglo-Saxon period the pagan burials in Peak District barrows and the Trent Valley cemeteries within south-east Staffordshire clearly represent the western extreme of a mostly East Midlands distribution. At present there are virtually no finds of the Anglo-Saxon period in rural settlement contexts in the county: evidence for settlement is largely limited to the excavations at Catholme. Here, the Romano-British settlement pattern appears to continue into the Anglo-Saxon period with an agglomeration of farmsteads eventually forming a small village which eventually went out of use sometime between the late 9th and 13th centuries (Hooke *op cit*, 155). In the early medieval period dispersed farmsteads are apparent across Staffordshire but with increasing nucleation in the more heavily populated areas of intensive crop-growing from about the 8th or 9th century (Hooke *op cit*, 156). Place-name evidence indicates a high degree of British survival in the county. Urban centres became established, partly as defended sites during the Danish invasions but also as trade and markets developed (Hooke *op cit*, 157). Tamworth was the accepted 'capital' of Offa in the 8th century, with the ecclesiastical centre at Lichfield. Aethelflaed fortified Stafford in the early 10th century and, with the establishment of the midland counties, Stafford took on the administrative role of county town.

At the time of Domesday there were no large towns and the county was heavily wooded, with livestock raising the dominant agricultural regime. The medieval period, though, was one of expansion and internal colonisation. The large areas of surviving ridge-and-furrow also testify to

an expansion of arable farming, and enclosure of areas of waste land is known to have occurred by the 17th century (Phillips and Phillips 2011, 40). Ironworking was established in the late 12th and 13th centuries along the Staffordshire/Cheshire border and in the Churnet Valley around Cheadle, on Cannock Chase and on both the North and South Staffordshire coalfields. Indeed, the bloomeries used for smelting iron in the Churnet Valley, where there was ample wood for charcoal in the vicinity, are possibly the first to be established outside the Surrey/Sussex Weald. By the 17th century South Staffordshire had concentrations of charcoal-fired blast furnaces (Hooke 2006, 167-8). In the late medieval period the glass industry migrated to the South Staffordshire coalfields and elsewhere, notably around Rugeley, Abbots Bromley and near Eccleshall. In the 17th century, glassworkers moved to the Ambleside and Stourbridge area on the Staffordshire/Worcestershire border (Hooke 2006, 166). The 17th century saw the initial rise of the ceramic industry in north Staffordshire, followed by the move towards mass production on an industrial scale in the early 18th century. Coal was being extracted in both the South and North Staffordshire coalfields by the 13th century. Major developments in pottery manufacture in North Staffordshire and ironworking in South Staffordshire, coupled with the demand for fuel to drive the newly-developed steam engines, stimulated coal production in the mid-18th century, with the North Staffordshire and South Staffordshire districts rising to pre-eminence in the Midlands after the Industrial Revolution (Hooke 2006, 178).

1.3 Archaeological research priorities for Staffordshire

Regarding research priorities for Staffordshire identified in the West Midlands Regional Research Framework, “more emphasis needs to be placed on non-invasive mapping strategies” and “in general, the use of aerial photography needs to be encouraged” as “full use is not being made of the available resource” (Hodder 2011, 249-50). In addition, “the provision of high quality HER information for the entire region should be one of the major priorities of the West Midlands archaeological community. HERs should become pivotal in the creation of a research cycle within the West Midlands. Such a research cycle would mean that curatorial decisions are informed by a high level understanding of the resource and its potential; fieldwork and post-excavation is informed by an understanding of the context of any discoveries; and researchers at all levels can gain easy access to high quality data and synthesis” (Bryant and Shaw 2011, 244).

With regard to improving understanding of prehistoric Staffordshire “there is an urgent need to review the available air photographic record and for further aerial photographic survey, especially in major river valleys, areas that have received little attention in the past and/or where crop marks are rarely seen” (Garwood 2011, 42 and 62). “The detailed survey of uplands should be a priority for the future in areas that have not yet received attention, such as Staffordshire. And publication of previous survey carried out for the National Mapping Programme is to be encouraged” (Hurst 2011, 121).

For the post-Roman period, there is a need for “continued search for evidence of all forms of early medieval rural settlements with particular attention to sites where Roman and medieval settlements are juxtaposed”, along with a “need to record areas of specific land use such as early field systems” (Hooke 2011, 167).

1.4 Selection and description of the area to be examined

The study area will comprise approximately 16% of Staffordshire, which are targeted on important Scheduled Monument clusters and areas under threat primarily from aggregate and coal extraction.

The study areas were chosen in line with *A Strategy for the National Mapping Programme* (Horne 2009). Section 3.1.4 of the report emphasises the need for NMP projects to target “those areas

where the need is greatest and benefits are likely to be greatest; by balancing the needs of research, conservation management and threat...” (*ibid*, 17). The recommendations of the report also include encouraging projects to address significant gaps in geographical spread of NMP, which work with aggregate studies in areas affected by aggregates extraction and cover areas where arable farming is most intense (*op cit*, 18-24). The northern and western parts of Staffordshire are a significant gap in NMP coverage (*cf.* Section 3.1.8: *op cit*, 17-18); part of the HS2 railway is planned for south-east Staffordshire (Section 3.2.1: *op cit*, 18); an Aggregates Study of the threat to the gravels of river terraces is underway, including the Trent valley which extends on a north-west to south-east axis through the centre of Staffordshire – an area specified in Section 3.2.4 (*op cit*, 19); one of the areas of best quality agricultural land identified in Section 3.3.3 is the eastern part of Staffordshire (*op cit*, 19). Section 3.6.5 states that NMP should be targeted towards those areas where there is known to be good preservation of historic landscapes such as earthwork remains, but where current surveys are inadequate (*op cit*, 27). The most significant areas for this have proved to be those classified as poor quality agricultural land (such as the Staffordshire Moors) where farming has, as a result, been less destructive. Staffordshire would also benefit from NMP interpretation to act as an improvement to management schemes and to encourage further more targeted research, as has proven to be the case in areas where extensive management plans are in place (Section 3.6.7: *op cit*, 27).

The study areas were defined and agreed using 1km grid squares in discussion between the project partners (including members of Archaeological Research Services Ltd’s AP Mapping Team and Staffordshire County Council’s Historic Environment Section) and staff at both the English Heritage Aerial Investigation and Mapping Team and the English Heritage Local Team based on a detailed cover search.

The study areas for both Phase 1 and Phase 2 will sample different landscapes in four study blocks (Fig. 1). The four blocks chosen for aerial photograph transcription are as follows.

Block 1. Abbots Bromley Area (Aggregates). This area has been identified to join up with previous NMP work undertaken in the National Forest area, to give more comprehensive coverage along the Trent Valley (north of Rugeley) and to assess the potential for survival along the River Blithe. This includes the area to the north of Colton and east of the River Blithe where extraction may extend through future applications. It also includes part of the route of the proposed High Speed 2 rail network.

Block 2. The Weaver Hills (Primarily Dimension Stone). An area considered to be of high archaeological potential which is relatively poorly understood. At the heart of this area lies the Cauldon Low quarry site; further quarry extension applications are anticipated in this area. The area also incorporates the western side of the Dove valley, where recent archaeological work has demonstrated survival of late Prehistoric remains alongside the river within aggregate sediments.

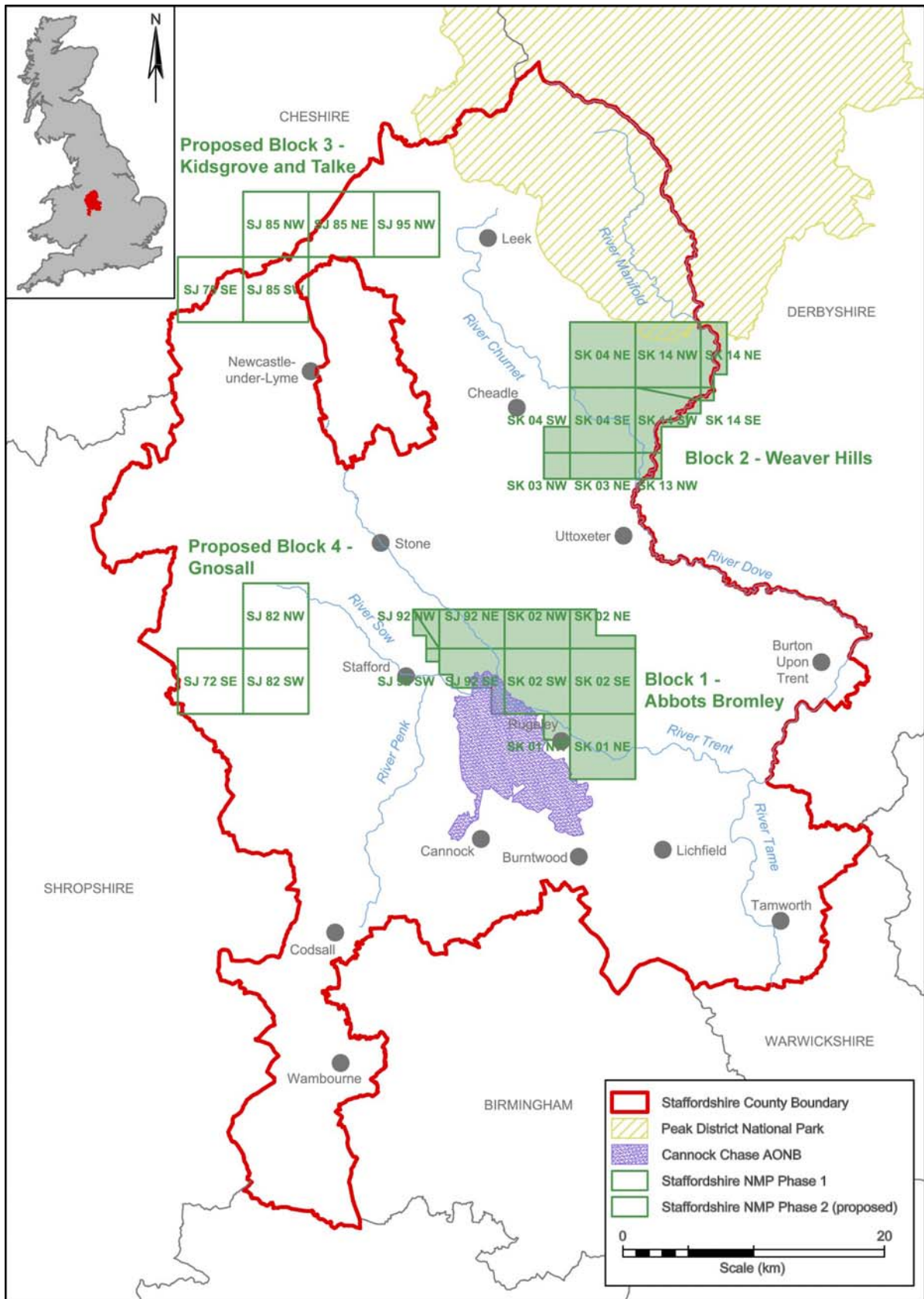
Block 3. Kidsgrove and Talke Area (Predominantly Coal). Recent discussions have raised the potential for coal extraction in this area. Little recent flying or aerial photographic assessment has been known to have been carried out in this area.

Block 4. Area to the North of Gnosall (Limited Data – also Building Stone). This focuses on an area where no aerial photographic assessment has previously been carried out and where HER coverage is limited meaning that relatively little is known about the nature and survival of heritage assets within this area. Dominated by the agricultural economy, this area is generally indicative of portions of Western Staffordshire where comparatively little development has

resulted in few archaeological interventions. NMP assessment in this area will enhance HER coverage, potentially leading to the provision of improved management advice to schemes such as Higher Level Stewardship as well as enabling more informed assessment of the potential impacts of rural development.

The project is to be undertaken in two phases. Phase 1 will focus on Blocks 1 and 2: the Abbots Bromley and Weaver Hills Areas. At this stage, it is envisaged that Phase 2 will cover Blocks 3 and 4: the Kidsgrove and Talke Area and the Area to the North of Gnosall. Phase 1 will form the first half of the project and is the subject of this project design. Phase 2 will form the second half of the project and is scheduled to proceed after the completion of Phase 1 in 2014. Each phase will form a standalone piece of work with a separate report produced at the end of each.

Figure 1. The study area: location of blocks 1 and 2 comprising Phase 1 and proposed blocks for Phase 2.



2. BUSINESS CASE

2.1 Why the project should be undertaken at this time

Although the HER provides reasonably comprehensive coverage for Staffordshire, there is currently a lack of up-to-date data from aerial survey. This paucity of aerial survey data detracts from the accuracy of HER data and from our current understanding of the survival and nature of Staffordshire's historic environment. This is particularly the case for Scheduled Monuments and those areas undergoing mineral extraction, cultivation or urbanisation. At the same time, opportunities for management within current agri-environment schemes, as well as development control requirements, have drawn attention to the need for a high-quality, mapped set of archaeological data derived from aerial imagery to enhance the existing HER and underpin informed decision-making and management of the archaeological resource. This project will also contribute to Heritage at Risk and future COSMIC initiatives by updating the 'at risk' register using remote monitoring of the condition of these sites.

2.2 Relevance of the project to national and English Heritage policies

2.2.1 The National Planning Policy Framework

The project, through enhancing the current baseline knowledge of the county's heritage assets, will contribute to the goal of achieving sustainable development as set out in the National Planning Policy Framework which requires that "Each local planning authority should ensure that the Local Plan is based on adequate, up-to-date and relevant evidence about the economic, social and environmental characteristics and prospects of the area" (DCLG 2012, paragraph 158).

2.2.2 The National Heritage Protection Plan

This project directly contributes to English Heritage's National Heritage Protection Plan (2012) under the following measures.

- Measure 3 'Understanding: recognition and identification of the resource'. Within this Measure the project will specifically deliver against activity 3A4 'Identification of terrestrial assets via non-intrusive survey' by way of Protection Result 3A4.2: 'Identification and mapping from aerial photograph/lidar mapping to provide base level protection' (English Heritage 2012, 46).
- Measure 2 'Threat: assessment and response'. Within this Measure the project will deliver against activity 2D1 'Agricultural and forestry impacts', by way of Protection Result 2D1.1: 'Robust risk data and migration strategies for rural archaeological heritage' (English Heritage 2012, 31), and activity 2D4 'Mineral extraction impacts', by way of Protection Result 2D4.1: 'Better informed impact risk assessments for extraction areas' (English Heritage 2012, 35).

The project will also contribute to the following measures.

- Measure 5 'Responses: Protection of Significance'. Within this Measure the project will explore ways in which it can deliver against activity 5A1 'Strategic Designation Programme', by way of Protection Result 5A1.1: 'Appropriate national designation of priority heritage assets' (English Heritage 2012, 80).

Staffordshire is a county where identification of historic environment assets by non-intrusive survey is poor and thus there is a real risk of losing nationally-significant landscapes and assets

before even knowing what is at risk. This project is not only examining areas not already covered by the National Mapping Programme and where substantial gaps in our knowledge exist but also focusing on landscapes where threat from agricultural intensification, mineral extraction and strategic development (e.g. the High Speed 2 rail network) is greatest. This project, by undertaking interpretation and mapping from aerial imagery to National Mapping Programme standards for areas of Staffordshire, will result in the identification of particularly significant or threatened locations and provide candidates for local or national designation and Environmental Stewardship schemes, thereby improving protection outcomes for historic environment assets in Staffordshire.

2.2.3 Strategic Framework for Historic Environment Activities and Programmes in English Heritage (SHAPE)

The project will help deliver English Heritage's Strategic Framework for Historic Environment Activities and Programmes in English Heritage (2008) by directly contributing to the following objectives.

- Corporate Objective 1A 'Ensure that our research addresses the most important and urgent needs of the historic environment' by delivering against Research Programme A1 – 'What's out There?: Defining, characterising and analysing the historic environment'. Sub-Programme 11111.110: Understanding Place: new historic assets discovered from remote sensing surveys (English Heritage 2008, 14).
- Corporate Objective 3B 'Ensure that the condition of the most significant parts of the historic environment is recorded and monitored to enable their better protection' by delivering against Research Programme A1 – 'What's out There?: Defining, characterising and analysing the historic environment'. Sub-Programme 32111.110: National Mapping Programme: recording and mapping archaeological landscapes using aerial photographs (English Heritage 2008, 57).
- Corporate Objective 4A 'Help local authority members and officers develop the skills, knowledge, advice and capacity to make the most of their historic environment' by delivering against Research Programme B3 – 'Understanding the needs: Delivering "sector intelligence"'. Sub-Programme 41123.110: Researching Local Authority priorities and requirements (English Heritage 2008, 65).

2.3 Why the project should be undertaken by the proposed project team

In collaboration with other Local Authorities, Archaeological Research Services Ltd has already successfully delivered similar projects including the Derbyshire NMP Project, the North York Moors NMP Project, Milfield Geoarchaeology Project, the Till-Tweed Project, the North East Coast Rapid Coastal Zone Assessment and the North West Coast Rapid Coastal Zone Assessment projects. The project team includes a highly-experienced work group that has already undertaken exactly this kind of work in neighbouring Derbyshire, as well as the North York Moors and North East and North West coasts. Collectively, the project team has also developed experience, knowledge and expertise of Trent Valley archaeology and its landscapes. The project team is thus ideally suited to delivering the project for the following reasons.

- Archaeological Research Services Ltd has excellent project management and technical skills specific for a project of this sort having successfully undertaken the above-mentioned projects. These projects required liaison and close co-operation with local authorities in order to meet the needs of the specific HERs of each county. In addition the projects involved installing the data, providing technical support as well as

undertaking the digital aerial photograph interpretation, GIS creation and manipulation of data together with the development of widely endorsed/acclaimed management and research frameworks (e.g. Waddington and Passmore 2006; Passmore and Waddington 2009).

- The in-house knowledge of the Staffordshire area which will be provided by Stephen Dean and Suzy Blake will ensure that the resulting new data will be able to be incorporated into the HER and the full benefit of this new information brought into the management process. This will ensure that monument protection is underpinned by informed decision making geared around a solid and well-structured evidence base.

The key stakeholders will be English Heritage, Staffordshire County Council Historic Environment Section, Archaeological Research Services Ltd, key developers (e.g. the minerals industry), farmers and other landowners.

2.4 What will be the public benefit?

The benefits of the project will be spread across a variety of stakeholders, ranging from English Heritage and Staffordshire County Council to the minerals industry and landowners. The key public benefits resulting from this project are as follows.

- Improved knowledge, and accurate mapping, of Staffordshire's heritage.
- Improved conservation of Staffordshire's heritage as a result of better-informed decision-making.
- Minimising the loss of heritage assets as a result of large-scale development by avoiding heritage assets recognised from aerial photographs.
- Informing Higher Level Stewardship agreements in order to better conserve archaeological sites and landscapes.
- Gaining data on the condition and change over time to Scheduled Monuments in order to help conserve them better for future generations to enjoy.

The additional body of detailed and comprehensive data created by the project will also create fresh Big Society and research possibilities for those involved in education or research, whether academic or amateur. Local communities will also be encouraged to use this new data to advance research within Staffordshire, which in turn will further improve understanding and add to the enjoyment of the landscape by residents and visitors to the county.

3. RESEARCH AIMS AND OBJECTIVES

3.1 Aims

The project aims are as follows.

3.1.1 Identify the archaeological resource through mapping and interpretation from aerial imagery to National Mapping Programme standards and use this information to inform and improve protection outcomes for historic environment assets in areas of Staffordshire, particularly in archaeologically-sensitive areas under direct threat of mineral extraction.

3.1.2 Enhance understanding of Scheduled Monuments and landscapes for areas of Staffordshire through mapping and interpretation from aerial imagery to National Mapping Programme standards in order to develop and implement appropriate management strategies for these heritage assets.

3.2 Objectives

The project objectives are as follows.

3.2.1 Produce a digital transcription of aerial photographic data with associated interpretations for areas of Staffordshire where little is known due to a lack of prior research (e.g. the coal field areas), identifying previously unknown sites and recording, characterising and analysing heritage assets for the county.

3.2.2 Integrate the results of **3.2.1** into the NRHE and the Staffordshire HER.

3.2.3 Use PGA orthophotography to monitor the latest condition and management issues relating to Scheduled Monuments, particularly those in remote locations.

3.2.4 Contribute to protecting Staffordshire's heritage assets through production of a report of the aerial photographic data which can be used as a basis for the management of Staffordshire's heritage assets.

3.2.5 Explore ways in which the project can compile information to inform H@R, Designation Base and other relevant initiatives.

3.2.6 Contribute to achieving the research priorities regarding aerial photographic mapping identified in the West Midlands Regional Research Strategy (Watts 2011) through production of a report of aerial photographic data which can be used as a basis for future archaeological research.

3.2.7 Disseminate information derived from the project locally, regionally and nationally through talks, publications and existing web-based interfaces.

4. PROJECT SCOPE

The study area for the entire project will comprise approximately 16% of Staffordshire which are targeted on important Scheduled Monument clusters and areas under threat primarily from aggregate and coal extraction.

The project is scheduled to be undertaken in two phases. At this stage, it is proposed that the first phase will cover approximately two-thirds of the study area, which will be targeted at vulnerable areas and areas where there are known to be key concentrations of SMs. The study area has been delimited in detail using 1km grid squares as part of the project design phase in discussion with Staffordshire County Council, the Aerial Survey and Investigation Team at English Heritage and the English Heritage Local Team.

It is intended to map four blocks, two blocks in each phase of the project, which have been outlined in Fig. 1. There will be no duplication with previous transcription work and the blocks have been carefully located so as to produce contiguous recording areas within each block. These blocks cover areas of the county which had not been investigated at all by any previous NMP work.

The digital transcription work is entirely desk-based, although it is proposed to visit a very small number of sites on the ground to check on specific details relating to the identification, condition and recording of these sites. No new aerial photography is planned as part of this project.

The project will produce a GIS theme which will be used to enhance the Staffordshire HER, enabling a much-improved and more informed response within the planning process, as well as facilitating research.

The scope of Phase 1 is outlined in detail in this Project Design; an updated Project Design will be produced when Phase 2 of the project is commissioned.

5. INTERFACES

The key project interfaces are as follows.

- The Worcestershire & Staffordshire Aggregates Resource Assessment commissioned by English Heritage and being undertaken by Worcestershire Archaeology: it is due for completion in 2014.
- The completed Derbyshire Aggregates Resource Assessment (Bacilieri & Knight 2010; Brightman and Waddington 2011).
- Previous NMP work undertaken in the National Forest area which is currently being included in Her records as part of the Worcestershire & Staffordshire Aggregates Resource Assessment.
- English Heritage's Heritage at Risk project.
- The data could also inform management advice for future Higher Level Stewardship scheme applications.
- The integration of data into the NRHE.
- The potential project looking at the integration of NMP data within the county HER being led by Graham Tait at Devon County Council.
- Any commercial or research fieldwork projects which may take place during the course of this project.

6. PROJECT OUTPUTS

The main outcome of the project will be a more accurate and comprehensive record than currently exists of the surviving archaeology in mineral-producing areas of Staffordshire. This information will then underpin informed management and decision-making in relation to future management and conservation of the historic environment. Staffordshire County Council will gain significant HER enhancement together with the identification of new sites resulting from the aerial photographic transcription work.

This project will provide the following physical outputs.

- NRHE event record (product P1, Appendix 4).
- Geo-referenced digital map (product P2, Appendix 4) from the aerial photograph transcription process showing all archaeological features visible on aerial photographs and other remote sensed data.
- NRHE monument quality-assured database record (products P3 & P4, Appendix 4) of the location, indexed classification, archaeological description and analysis, and main sources for all archaeological sites visible on aerial photographs and other remote sensed data.
- NMP summary report (product P5, Appendix 4) with an overview of the archaeology recorded by the project, analysing character, diversity, distribution and associations in the landscape, which will also be made available in accessible .pdf format for online dissemination.
- MoRPHE End of Project Report (product P6, Appendix 4).
- HER enhancement (product P7, Appendix 4): GIS data in Staffordshire HER compliant format (.shp files) for use by the Staffordshire County Council Historic Environment Section that contains the associated data tables, including extended records, together with the mapped data so that it can be integrated into the Staffordshire HER. The Archaeological Research Services Ltd mapping team is trained in inputting data into the NRHE database. Time has been built in to allow for quality assurance by the Aerial Investigation and Mapping Team and independently by the Heritage Data Management Territorial Co-ordinator, Petra Wade, who will check a sample of records and provide feedback as appropriate. The GIS data produced by the project will be supplied to the Staffordshire HER in a format that is acceptable to them to ease integration into their GIS. At present this involves outputting the Aerial Photographic Mapping extended records via Discoverer into a spreadsheet format. The spreadsheet format is then edited and integrated in Microsoft Access to produce a form that can be queried to produce data outputs like those already produced by HER data queries. Additionally ESRI shape files, with associated data tables, for the mapped aerial photographs will be supplied. These datasets are linked together by the Monument UID (Monarch) number. Where relevant existing HER Monument records will be cross-referenced with NMP data by including a field in the database and GIS files for the HER Monument UID. HER data will be supplied as GIS shapefiles by Staffordshire HER to the mapping team at the start of the project to facilitate this cross-referencing.
- Recommendations for heritage protection/ development control in the form of a spreadsheet, including statements on monument condition or landscape change, resulting in potential additions to the National Register and local list (product P8, Appendix 4).
- A note for the Staffordshire Archaeological and Historical Society's Newsletter and/or the CBA West Midlands' 'West Midlands Archaeology' (product P9, Appendix 4). The data will also be made available online through the Staffordshire HER via the Heritage Gateway and through the English Heritage Pastscape website.

- A talk to the annual NMP conference will be prepared and given by project staff and, if the opportunity arises in Phase 1 of the project, to the Staffordshire Annual History Day and the Trent Valley Geo-archaeology annual conference (product P10, Appendix 4).
- Project archive (product P11, Appendix 4) retained by either English Heritage or Staffordshire HER and submission of a corresponding OASIS record.

7. METHODS STATEMENT

7.1 Project Strategy

In order to enhance the current baseline knowledge of many of the mineral-producing areas of Staffordshire and better protect and understand the condition of heritage assets, it is considered an important priority to increase the number of mapped archaeological features in order to inform on the type, scale and form of archaeology that can be anticipated on different mineral-bearing landforms. Staffordshire HER's low level of baseline data for some areas of the county (in particular the more rural, western half of the county where there has been much lower levels of archaeological survey and intervention) is also impacting on the ability to provide management advice for schemes such as Environmental Stewardship schemes. The project, in addition, thus aims to enhance coverage within these areas.

The mapping methods used for this project will follow those used by Archaeological Research Services Ltd for the North York Moors National Mapping Programme 2. The method details are set out in full in this section and will adhere to both English Heritage's NMP methodology and to the *Standards for National Mapping Programme Projects 2012* (Winton 2012).

7.2 Stage 1: Aerial photograph interpretation and mapping, and supply of data to the English Heritage Archive and NRHE (Objectives 3.2.1, 3.2.2, 3.2.3, 3.2.4)

7.2.1 Geographical and physical scope

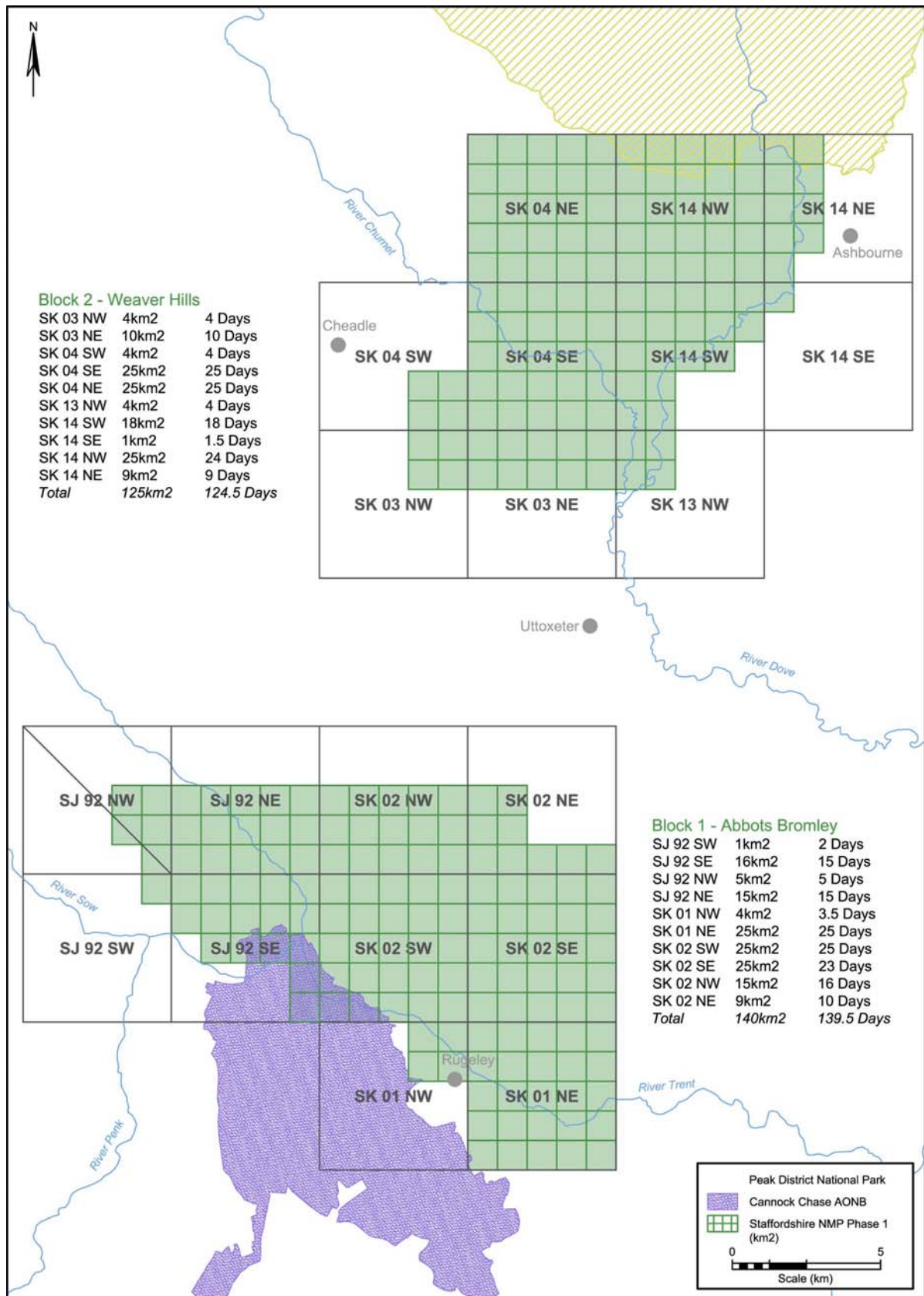
This element of the project is concerned with producing accurate mapping and a record of all archaeological features from all periods that can be identified within the defined study area in accordance with Objective 3.2.2 above (Fig. 1). This work will add to English Heritage's National Mapping Programme (NMP) which aims to produce a comprehensive map of the archaeological resource in England, using information from aerial photographs. The aerial photograph element of this project will identify, interpret and record all probable and possible archaeological features that are visible on air photographs as cropmarks, soilmarks, parchmarks, earthworks or upstanding structures such as pillboxes. A manual for the National Mapping Programme project outlines aspects that are pertinent to this particular project and are summarised below.

The air photo mapping element of this project will consist of whole 1km squares that have been identified for the study area as shown on Fig. 1 and outlined above. Together these amount to an area of 264 km². This will meet the requirements of English Heritage's National Mapping Programme (NMP), using the same methodology and scope as the NMP. If good progress is made in mapping the areas identified in the time envisaged, additional areas may be mapped as part of this project.

The project will also use Environment Agency Lidar raster files for the project area, which are available at 2m resolution. Although the poor resolution may reduce their effectiveness in lowland environs, the fact that they are geo-referenced and do not require rectification means that they are relatively quick and easy to use for the identification of low earthworks, e.g. ridge and furrow. These may help supplement or provide corollary information in support of the identification, mapping and description of sites from aerial photographs.

A quantification has been undertaken of the number of days that will be required to undertake the mapping of each area of 25 square kilometres (Table 7) and this is illustrated in Fig. 2. This quantification was undertaken by Archaeological Research Services Ltd in consultation with the Aerial Investigation and Mapping Team based upon the photographic coversearches, HER and NRHE data.

Figure 2. Blocks 1 and 2 detail.



A detailed coversearch has been made of the aerial photograph collection held by The English Heritage Archive. This has revealed that the numbers of aerial photographs held by the Archive for the proposed study area are as follows for the respective blocks (this does not include photographs where the centre-point falls outside the study area). Staffordshire HER holds copies of oblique aerial photographs from the NMR and CUCAP, as well as vertical runs from 1963, 1971, 1981, 1991, 2000 and 2006-10 but no other aerial photographs.

7.2.2 Quantification of aerial photographs

The aerial photograph coverage for Phase 1 is quantified in Tables 1 & 2.

Table 1. Block 1 – Abbots Bromley Coversearch

Quarter Sheet	km ²	Maps	Vertical	Oblique	Total	per km ²
SJ 92 SW	1	part	124	2	126	126
SJ 92 SE	16	part	487	95	582	36.38
SJ 92 NW	5	part	152	0	152	30.4
SJ 92 NE	15	part	171	46	217	14.47
SK 01 NW	4	part	287	12	299	74.75
SK 01 NE	25	full	469	295	764	30.56
SK 02 SW	25	full	315	45	360	14.4
SK 02 SE	25	full	192	11	203	8.12
SK 02 NW	15	part	145	13	158	10.53
SK 02 NE	9	part	118	22	140	15.56
Total	140		2460	541	3001	21.44

Table 2. Block 2 – Weaver Hills Coversearch

Quarter Sheet	km ²	Maps	Vertical	Oblique	Total	per km ²
SK 03 NW	4	part	98	0	98	24.5
SK 03 NE	10	part	167	41	208	20.8
SK 04 SW	4	part	197	0	197	49.25
SK 04 SE	25	full	286	66	352	14.08
SK 04 NE	25	full	376	65	441	17.64
SK 13 NW	4	part	134	21	155	38.75
SK 14 SW	18	part	276	10	277	15.39
SK 14 SE	1	part	62	4	66	66
SK 14 NW	25	full	201	47	248	9.92
SK 14 NE	9	part	221	43	264	29.33
Total	125		2018	297	2315	18.52

7.2.3 Quantification of monument records

The HER monument data for Phase 1 was filtered in order to remove those classes that do not fall within the scope of the NMP (Tables 3 & 4).

Table 3. Block 1 – Abbots Bromley

Quarter Sheet	km ²	Maps	NRHE	HER	Total
SJ 92 SW	1	part	0	0	0
SJ 92 SE	16	part	50	153	203
SJ 92 NW	5	part	4	25	29
SJ 92 NE	15	part	27	89	116
SK 01 NW	4	part	12	116	128
SK 01 NE	25	full	63	176	239
SK 02 SW	25	full	22	154	176
SK 02 SE	25	full	19	192	211

SK 02 NW	15	part	12	64	76
SK 02 NE	9	part	7	23	30
Total	140		216	992	1208

Table 4. Block 2 – Weaver Hills

Quarter Sheet	km ²	Maps	NRHE	HER	Total
SK 03 NW	4	Part	2	25	27
SK 03 NE	10	Part	25	172	197
SK 04 SW	4	part	0	6	6
SK 04 SE	13	part	43	275	318
SK 04 NE	25	full	50	174	224
SK 13 NW	4	part	13	62	75
SK 14 SW	18	part	30	132	162
SK 14 SE	1	part	0	16	16
SK 14 NW	25	full	41	275	316
SK 14 NE	9	part	26	73	99
Total	125		230	1210	1440

The following two tables (5 & 6) quantify the HER monument data for Phase 1 and assess the current known density of monuments.

Table 5. Block 1 – Abbots Bromley

Quarter Sheet	km ²	HER	Monument density (per km ²)	Potential no. of aerial sites (cropmarks/earth works/structures)	Aerial sites as % of total	No. of findspots & artefact scatters
SK 02 NW	15	64	4.3	23 (2/17/4)	36	0
SK 02 NE	9	23	2.6	10 (0/7/3)	44	4
SK 02 SW	25	154	6.2	66 (9/30/27)	43	5
SK 02 SE	25	192	7.7	52 (2/32/18)	27	24
SK 01 NW	4	116	29	31 (2/9/20)	27	1
SK 01 NE	25	176	7	60 (20/14/26)	34	13
SJ 92 NW	5	25	5	7 (0/5/2)	28	1
SJ 92 NE	15	89	5.9	47 (4/28/5)	53	5
SJ 92 SW	1	0	0	0 (0 / 0 / 0)	0	0
SJ 92 SE	16	153	9.6	72 (10/22/40)	47	1
Total	140	946	6.8	340 (47/146/147)	36	54

Table 6. Block 2 – Weaver Hills

Quarter Sheet	km ²	HER	Monument density (per km ²)	Potential no. of aerial sites (cropmarks/earth works/structures)	Aerial sites as % of total	No. of Findspots and artefact scatters
SK 14 NW	25	275	11	118 (1/102/15)	43	69
SK 14 NE	9	73	8.1	30 (0/13/17)	41	9
SK 14 SW	18	132	7.3	42 (0/16/26)	32	13
SK 14 SE	1	16	16	7 (0/2/5)	44	0
SK 13 NW	4	62	15.5	21 (4/10/7)	34	9
SK 04 NE	25	174	7	72 (0/50/22)	41	19
SK 04 SW	4	6	1.5	4 (0/2/2)	67	0
SK 04 SE	25	275	11	99 (1/26/72)	36	18
SK 03 NW	4	25	6.3	3 (0/2/2)	12	19
SK 03 NE	10	172	17.2	67 (4/51/12)	39	61
Total	125	1167	9.3	440 (8/260/172)	38	217

An estimated timescale can be given based on the experience of the rates of mapping and recording in the recent North York Moors National Park National Mapping Programme undertaken by Archaeological Research Services Ltd (Table 7). This has been adjusted according to the density of NRHE records and aerial photography.

Table 7. Quantification of person days to complete mapping

Block	Quarter Sheet	km ²	Estimated days	Allocated*
1	SJ 92 SW	1	2	2
1	SJ 92 SE	16	15	15
1	SJ 92 NW	5	5	5
1	SJ 92 NE	15	15	15
1	SK 01 NW	4	4	3.5
1	SK 01 NE	25	25	25
1	SK 02 SW	25	25	25
1	SK 02 SE	25	25	23
1	SK 02 NW	15	15	16
1	SK 02 NE	9	9	10
2	SK 03 NW	4	4	4
2	SK 03 NE	10	10	10
2	SK 04 SW	4	4	4
2	SK 04 SE	13	13	14
2	SK 04 NE	25	25	25
2	SK 13 NW	4	4	4
2	SK 14 SW	18	18	18
2	SK 14 SE	1	1	1.5
2	SK 14 NW	25	25	24
2	SK 14 NE	9	9	9
	Total	194	194	194

* adjustment made on basis of density of NRHE records and aerial photography

Figure 3. Distribution of English Heritage Archive vertical and oblique photography for Block 1.

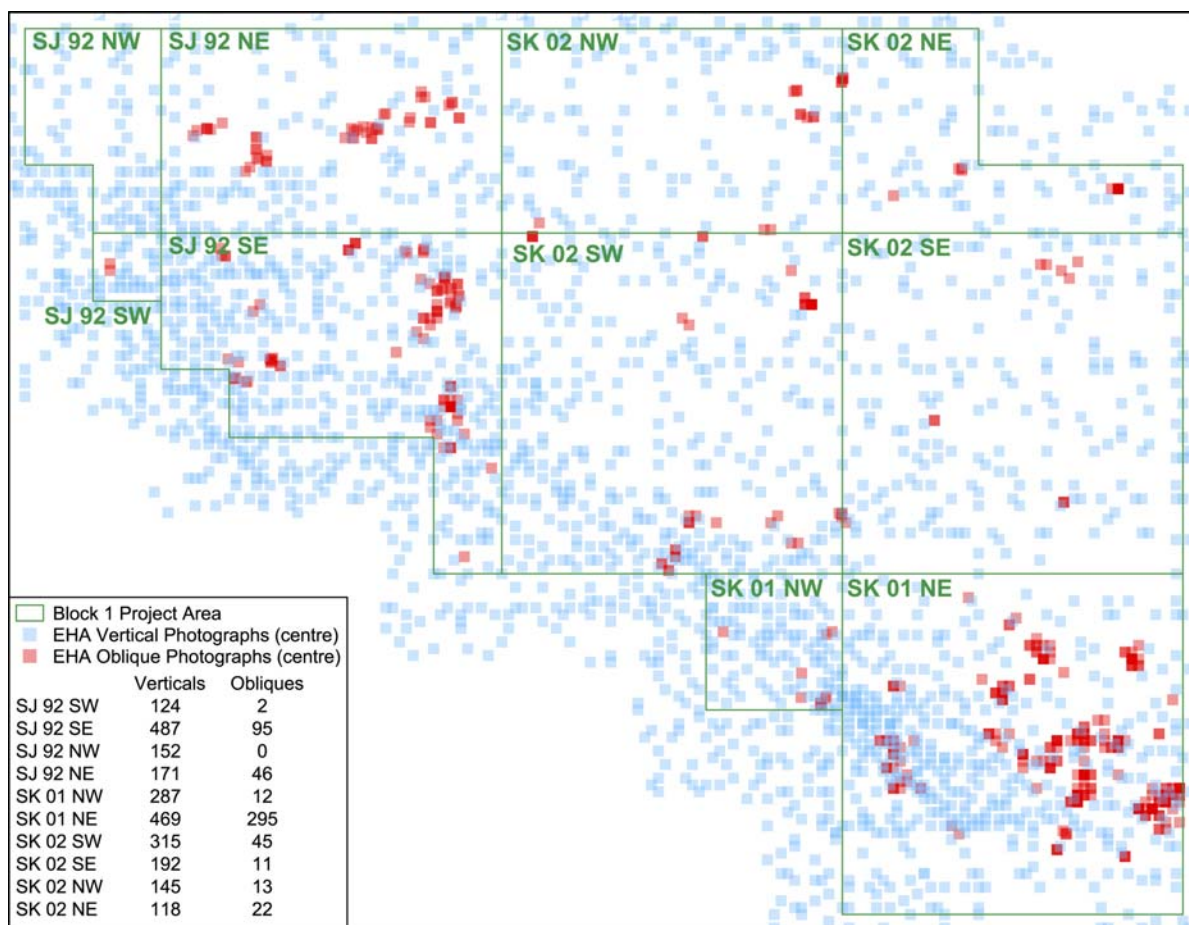


Figure 4. Distribution of English Heritage Archive vertical and oblique photography for Block 2.

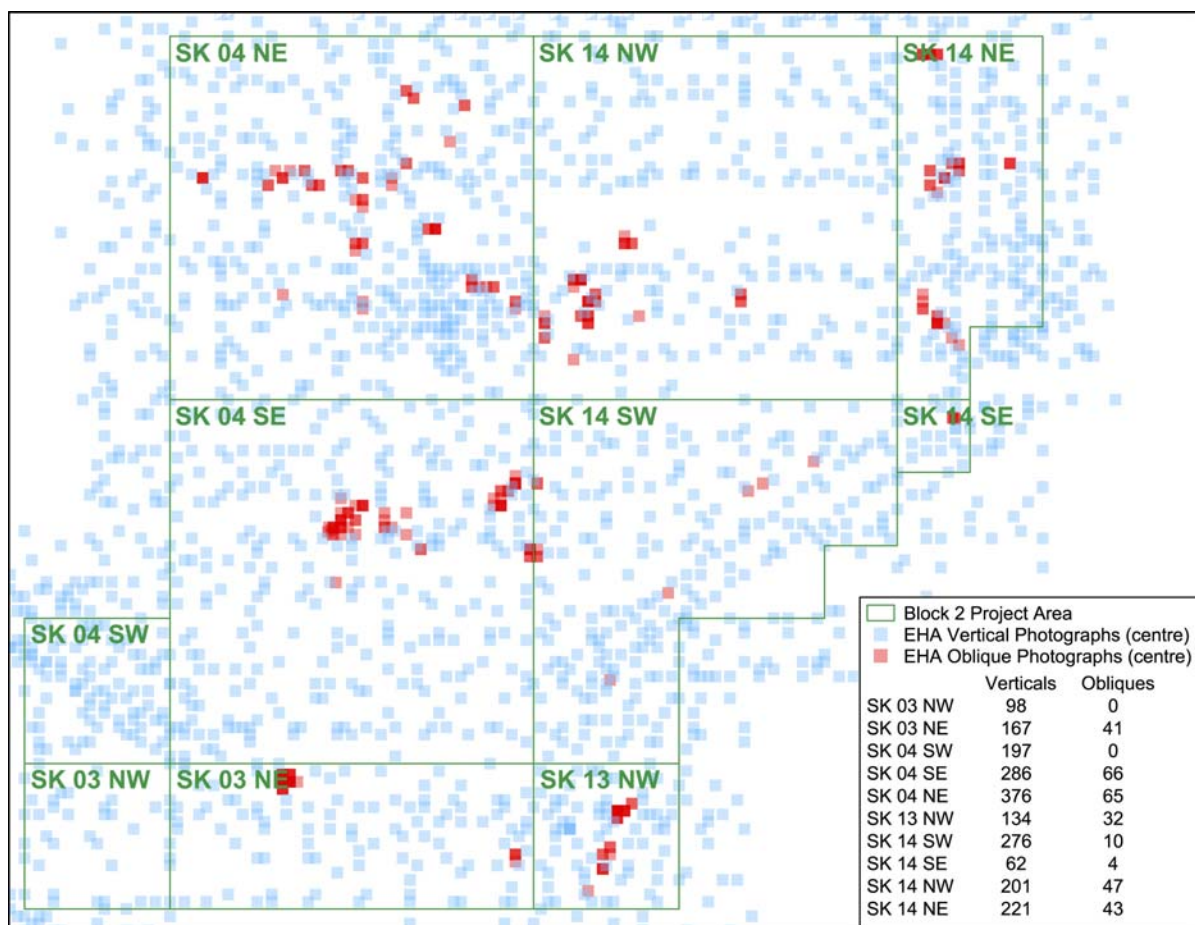


Figure 5. Distribution of current National Record for the Historic Environment (NRHE) and Historic Environment Records (HER) for Block 1, overlaid on photographic cover.

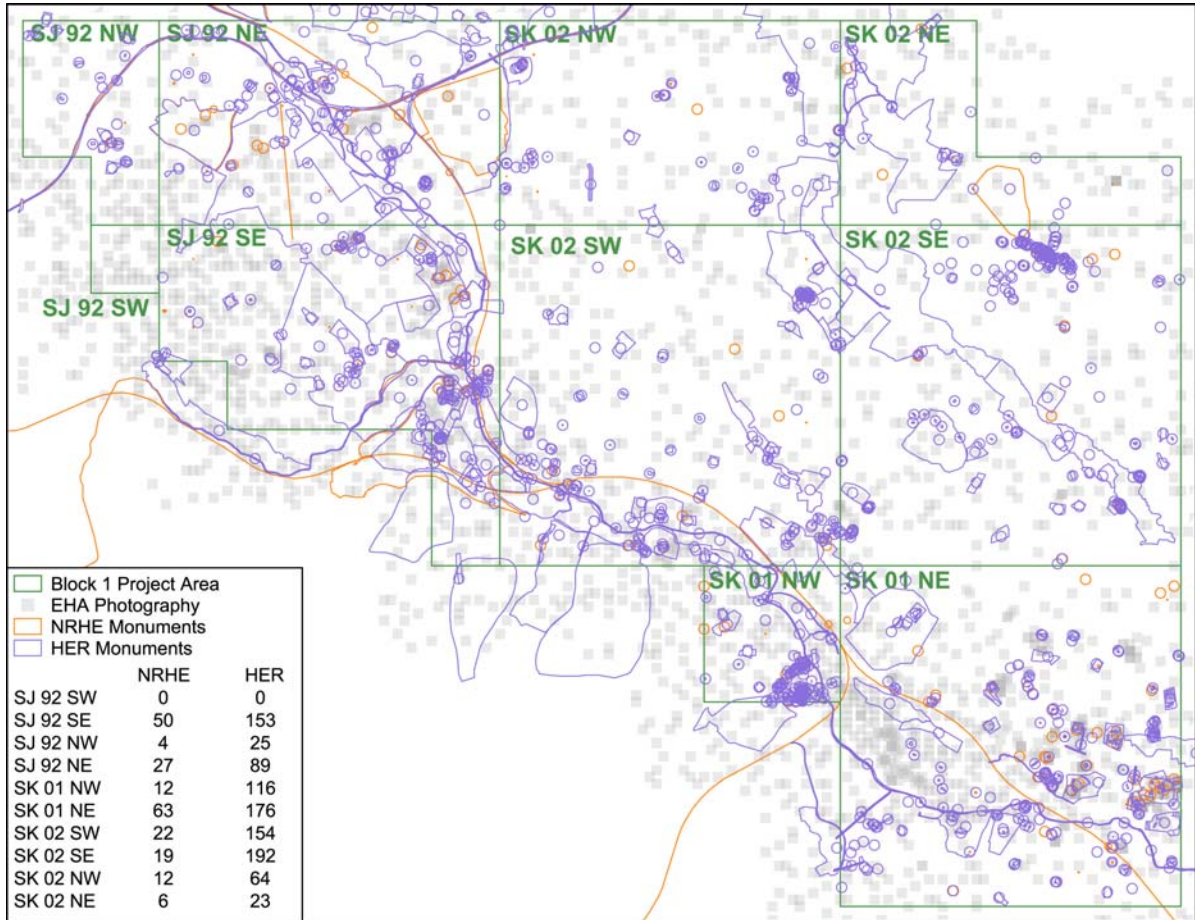
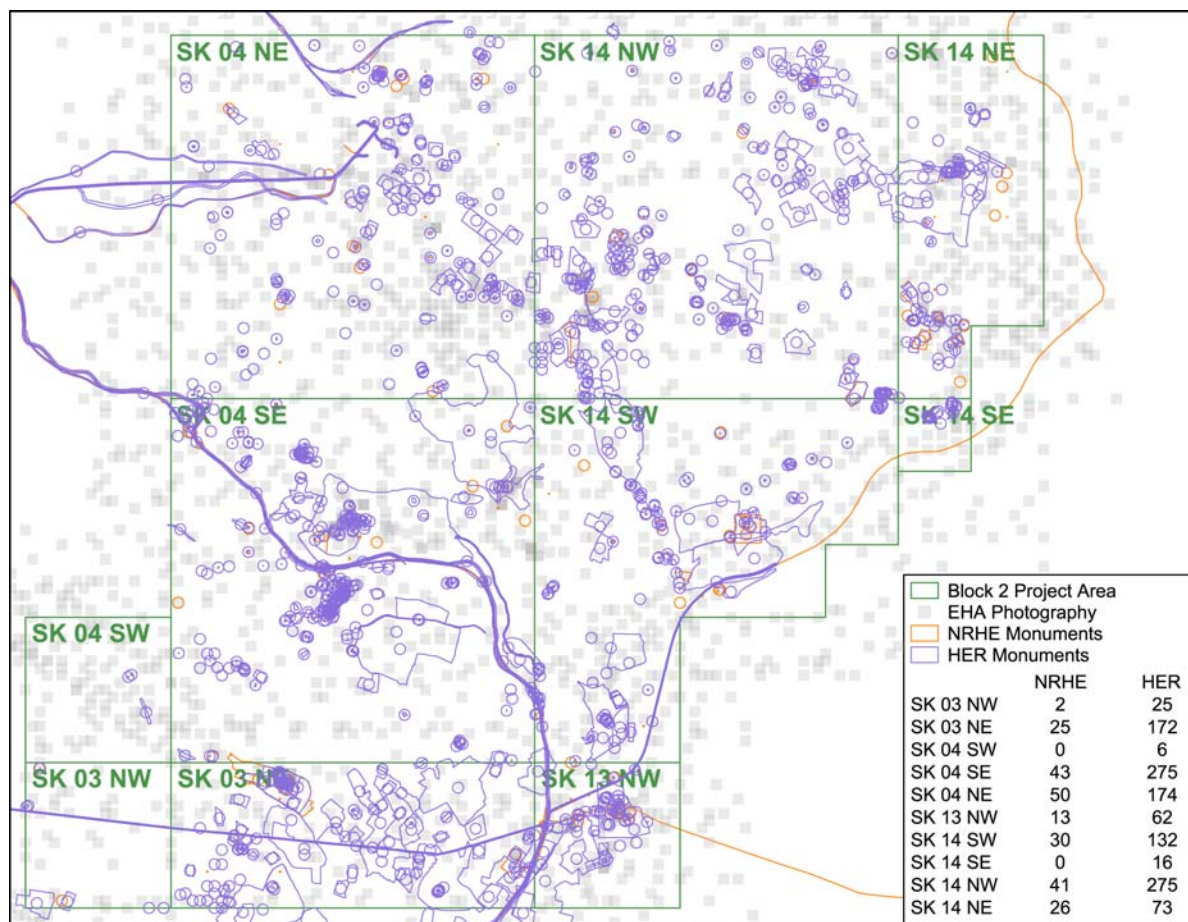


Figure 6. Distribution of current National Record for the Historic Environment (NRHE) and Historic Environment Records (HER) for Block 2, overlaid on photographic cover.



Cover searches for Blocks 1-2 present a rough estimate of the coverage, but does not include prints which have yet to be accessioned. The English Heritage Archive is unable to provide exact listings for blocks until these are extracted from the photo library and issued.

The distribution of English Heritage oblique and vertical photography is shown in Fig. 2, which was supplied by Archive Services based on the coversearch results. Fig. 3 shows the quantification layout of monument data based on NRHE, HER and Scheduled Monument records plotted against the photographic distribution with, as far as practicable, records relating to finds or sites outside the sphere of interest of the NMP removed so as not to inflate the quantification (e.g. small find locations). The quantification of person days required to undertake the mapping was produced under EH guidance using the figure of 1 day per km² and, drawing on the experience of the North York Moors Mapping Programme 2, adjusted for those maps where aerial photograph and record density is highest.

The Cambridge University Collection of Aerial Photography, housed by the Cambridge University Department of Geography, has 165 photographs for Block 1 and 116 for Block 2, totalling 281. Arrangements will be made to loan these photographs for mapping (the current cost of a loan is £50 plus postage for up to 100 photographs). These totals are considered to be in line with usual expectations for the size of area to be covered by the project.

The Environment Agency 2D Lidar raster tiles (supplied in 2008 in jpeg format) cover approximately 140km² of Block 1 and 83km² of Block 2.

All probable and possible archaeological features visible on air photographs as cropmarks, soilmarks, parchmarks, earthworks and structures will be interpreted, mapped and recorded. The NMP Sphere of Interest (Chapter 5: Winton 2012, 11-15) documents the scope of the project. Previous surveys, early cartography and additional sources may be used to aid mapping and interpretation. The main aspects are summarised below.

Earthwork Archaeology

Extant earthworks, identified as within the sphere of interest will be mapped. When available RCHME/EH ground survey plans will be used to assist and enhance the air photograph interpretation and mapping. If the quality of photography is not sufficient to depict individual earthworks features then these will be mapped as EXTENT OF FEATURE.

Levelled Archaeology

All cropmark, soilmark and parchmark features within the NMP sphere of interest will be mapped.

Ridge and furrow

A simple graphical depiction will be used for ridge and furrow: outlining the extent of the feature and the direction of the ploughing.

Industrial Features and Extraction

Widespread and common small-scale extraction (less than 0.5 hectares) will generally not be recorded, unless the extraction impinges on existing archaeological features or is visible in conjunction with associated elements, e.g. limekilns. Earthwork features within these complexes, such as spoil heaps, will be mapped and recorded. Early edition Ordnance Survey maps will be used to assist interpretation and mapping where necessary. Urban industrial sites will generally not be mapped.

20th Century Military Features

In general military sites and installations will be mapped in detail. However, as many sites of this period and function were by nature short-lived and transitory, emphasis will be placed on the identification and general extent of activity. Where extensive sites, such as airfields, are considered too numerous to be practical to map in detail they will be outlined. Significant features within outlined areas will be mapped either “as seen” or schematically. Installations such as pill boxes will be mapped.

Buildings

Building remains and/or foundations observed as cropmarks, soilmarks, parchmarks, earthworks or ruined stonework will be mapped and recorded, except where they are depicted on first edition Ordnance Survey or later edition maps or are out of the sphere of interest. Upstanding buildings, roofed or unroofed, will not generally be mapped, unless they are placed in the context of military or industrial remains.

Post-medieval and modern field boundaries and drainage ditches

Former field boundaries and drainage ditches, whether upstanding or levelled, that are extant on earlier photographs, first edition Ordnance Survey or later mapping will generally not be recorded. However, where they occur in the context of a monument, such as a field system or settlement, which is not visible on other sources they will be mapped to provide the wider view.

Parkland, landscaped parks, gardens and country houses

Earthwork and levelled landscape and garden features associated with this category will be mapped when not visible on early Ordnance Survey maps. Modern park and garden features will not be mapped.

Urban Areas

Archaeological features of the pre-urban landscape will be mapped and recorded.

Transport

Major transport features will not be mapped unless in the archaeologically significant context of industrial or military remains.

Geological features

In general geological features will not be recorded. Where natural features cause confusion with archaeological monuments they will be mentioned in the record text, but will not be mapped.

7.2.4 Sources to be consulted for the project

Air photographic prints available for examination and/or loan in national and local collections will be consulted for this project.

Use of existing NRHE and HER data

The NRHE and relevant HER data will be consulted for each quarter sheet during the course of transcription and recording.

Other cartographic and documentary sources

Reports of previous archaeological investigations in the project area will be consulted, where they are published and readily available. The Ordnance Survey First Edition and later mapping will be routinely consulted as an aid to interpretation and rectification, together with on-line resources such as Google Earth remote sensing data.

7.2.5 Interpretation, rectification and mapping

Map Sources

The principal source of control information will be the Ordnance Survey MasterMap® 1:2500 scale mapping (subject to availability). Significant landscape changes will necessitate, on occasion, the use of other available map editions and scales or even other accurately rectified air photographs. Digital Terrain Models will be derived from PGA orthophotography imagery (5m vertical interval, 1:10,000 scale).

The Air Photographs

All air photographs to be consulted will be examined, under magnification and stereoscopically where possible. Appropriate photographs will be selected for transcription (rectification and mapping). Permission to scan the photographs will be sought from the copyright holders at the outset of the project. Where this is not forthcoming relevant information and control will be traced from the photographic prints on to acetate sheets and these will be scanned and rectified instead. Copies will be used for the purposes of mapping only and will not be retained or form part of the project archive.

Rectification

The selected photographs (or acetate overlays) will be scanned at a suitable resolution, normally between 300 and 350 dpi. These images will be rectified using AERIAL5.29 or similar software and the Ordnance Survey data. Where control cannot be obtained from the Ordnance Survey Data, PGA raster tiles will be used instead. Digital Terrain Models will be used where

appropriate as these improve the accuracy of rectification across uneven ground. The aim will be to produce mapping of an accuracy that coincides closely with that of the base maps used, thereby allowing a good registration between the two sets of data.

Mapping

The rectified and geo-referenced images will be imported into an AutoCAD Map 3D 2008 drawing. The required information will then be traced from the rectified photograph or overlay into the standard NMP Layers using the established NMP conventions (see Table 8). All polygons will be closed to allow the data to be GIS-ready upon completion of the project. Fills will no longer be used. All line types will be continuous.

Layer Name	Layer content	Attached data tables	Layer colour
0	Non-standard NMP layer None (AutoDesk Map 3D 2008 requirement)	none	7 (white)
BANK	Closed polygons for features such as banks, platforms, mounds and spoil heaps	MONUMENT	1 (red)
DITCH	Closed polygons for cut features such as ditches, ponds, pits or hollow-ways	MONUMENT	3 (green)
EXTENT_OF_FEATURE	Closed polygons outlining complex or extensive remains such as mining or military installations	MONUMENT	30 (orange)
GRID	Non-standard NMP layer grid lines at 1km intervals	none	7 (white)
MONUMENT_POLYGON	Closed polygons encircling all the features recorded within a single NRHE record	MONUMENT	7 (white)
RIDGE_AND_FURROW_AREA	Polyline outlining a block of ridge and furrow	MONUMENT	4 (cyan)
RIDGE_AND_FURROW_ALIGNMENT	Polyline showing the direction of ploughing in outlines of extant ridge and furrow	MONUMENT	4 (cyan)
STRUCTURE	Closed polygons for built features including concrete, metal and timber constructions such as military installations	MONUMENT	190 (purple)
THACHURE	Polyline T-hachure convention to schematize sloped features indicating the top of slope and direction of slope	MONUMENT	5 (blue)

Table 8: AutoCAD map layer content and drawing conventions for NMP.

Recording strategy

There are two strands to the NMP recording strategy. The main strand is the creation of new, or enhancement of existing, monument records in English Heritage's National Record of the Historic Environment (NRHE) database. The NMP-generated entries or enhancements for each monument or monument group in this database record the key locational information, the monument types present and their dating, the nature of the evidence, a free text description of the monument or monument group, the source of record information (i.e. photograph and any bibliographic or cartographic references) and administrative details such as concordance with HER records, record authorship, and links to events and archives (see Table 9).

The second strand to the recording strategy was designed to assist in the management and querying of the actual map data in the AutoCAD Map 3D 2008 environment and English Heritage's Geographical Information System (GIS). Within the AutoCAD Map 3D 2008

environment a summary of selected database information is attached to each feature (see Table 10).

NMR (AMIE) data fields	Comment
NMR Unique identified	Numeric field
NMR number	E.g. SK 14 NW 146
Recording Role	Archaeological recorder: NMR
Location: Civil parish	E.g. Abbots Bromley
Location: District	E.g. East Staffordshire
Location: County/Unitary Authority	E.g. Staffordshire
OSGB grid reference	Centre / Point (8 figure) Linear (2 sets of 8 figure) Area (6 figure) Locality (4 figure)
Alternative Monument Names	Free text
Summary	Free text field max. 2000 characters
Monument Periods	EH Thesaurus. Multiple entries
Monument Types	EH Thesaurus. Multiple entries
Evidence Type	EH Thesaurus. Multiple entries
Parent Monuments	Numeric field
Child Monuments	Numeric field
Other Identifiers Identity Method Value	HER Monument UID in the appropriate format E.g. MonUID (Staffordshire) HER MonUID
Associated Monuments Associated monument NMR UID Associated monument NMR no. Type of association	Free text Numeric field E.g. SK 05 SW 1 Closed list – normally GAS (General Association) or REF (is referred to by)
General Descriptive Text	Long text description
Sources	Free text aerial photograph reference E.g. NMR SK 0220/7 (17616/8) 25-JUL-2001
Roles attached to monument	Accumulative list of data inputters i.e. will include all the roles not just the API
Related Event Records	Numeric field, e.g. 1520679
Related Archive File Number Principal Items	Parent collection number, e.g. AF00291 Quarter sheet collection number, e.g. MD002706

Table 9: NRHE data fields completed by NMP projects.

FIELD NAME	FIELD CONTENT	Sample data from the North York Moors
MONARCH	NRHE Unique Identifier (UID)	1569611
PERIOD	date of features (EH Thesaurus)	POST MEDIEVAL
NARROW TYPE	monument type (EH Thesaurus)	BOUNDARY BANK
BROAD TYPE	Monument type (parent term) (EH Thesaurus)	GRANGE
EVIDENCE 1	Form of remains (as mapped) (EH Thesaurus)	EARTHWORK
PHOTO 1	NRHE or other reference for the photograph from which the feature was plotted and its date of photography	NMR RAF/58/1576 F21 35 23-SEP-1954
EVIDENCE 2	Form of remains (latest evidence) (EH Thesaurus)	LEVELLED EARTHWORK
PHOTO 2	Form of remains (latest evidence) (EH Thesaurus)	Next Perspectives PGA Tile Ref: SE6498 13-MAY-2009
HER NO.	Staffordshire HER Monument UID	MST12345

Table 10: attached Monument Data Table. The Table consists of five fields which are input directly through AutoCAD Map 3D 2008. The contents of these fields duplicate the related fields in NRHE.

7.3 Stage 2: Transfer of mapped data and through Discover programme and incorporation into a GIS (Objectives 3.2.2, 3.2.3)

A comprehensive GIS database of the NMP mapping results will be formulated by merging the mapping with the NRHE Discoverer output. This will be incorporated into the Staffordshire HER at the end of the project mapping.

7.4 Stage 3: Supply and integration of NMP data within the Staffordshire HER (Objectives 3.2.2, 3.2.3)

The NMP data will be migrated into the Staffordshire HER. The migration of new data will be undertaken by ExeGesIS SDM, while concordance between NMP data with existing HER records will be undertaken by the HER Officer at Staffordshire County Council. Validation of all new and concorded records will also be undertaken by the HER Officer.

7.5 Stage 4: NMP report production (Objectives 3.2.2 - 3.2.6)

The results will be collated and reported on in a Phase 1 NMP report. The report will be prepared as an accessible pdf file which will document the aims, methods and results of the aerial photographic mapping. Subject to appropriate approvals, it will be illustrated with examples of aerial photograph images and transcriptions showing key types of sites of different periods and in different landscape settings. After being quality assurance checked, the report will be made available on line and will be distributed to English Heritage Teams and deposited with the Staffordshire County Council Heritage Environment Section, as well as the Staffordshire Archaeological and Historical Society and other organisations with an interest in the project.

7.6 Stage 5: Recommendations for heritage protection/ development control (Objectives 3.2.4, 3.2.5)

2009 vertical imagery will be assessed to monitor condition and management issues relating to Scheduled Monuments, particularly those in remote locations with relevant information being recorded in a spreadsheet. The results will be used to update the HER and we are exploring ways with the Designation Team in which this project can inform H@R initiatives. The project team will also explore ways in which the project data can be used to inform the COSMIC initiative.

Summary data derived from the NMP records will be made for each SM in the project area in the form of output from the 'Discoverer' programme. The precise content will be agreed with the Designation Team during Liaison Group meetings once the project is underway, with the first meeting scheduled for mid-March 2013. These files will be supplied to the Designation Team to assist with the upgrade and modernisation of the Designation Base and will be supplemented by key case studies in 'Powerpoint' or equivalent.

7.7 Stage 6: Dissemination

A note will be produced for the Staffordshire Archaeological and Historical Society's Newsletter and/or the CBA West Midlands's West Midlands Archaeology. A talk will be prepared and given by project staff at the annual NMP conference and, if the opportunity arises in Phase 1 of the project, to the annual Staffordshire History Day and the annual Trent Valley Geo-archaeology Conference. The data will also be made available online through the Staffordshire HER via the Heritage Gateway and through the English Heritage Pastscape website.

7.8 Stage 7: Review

On completion of Phase 1 of the project, a review of the project to assess if all the objectives were achieved and review what went well, what did not go well and what we would do better in future projects will be undertaken. This will be written up in an End of Project Review. It will then be submitted to English Heritage, along with the Phase 1 NMP report, and included in the project archive. It will also be used to inform the production of an updated Project Design for Phase 2 of the project.

7.9 Stage 8: Project Archive

The digital mapping and associated records will be archived with either the English Heritage Archive or Staffordshire County Council HER as working digital records. No other archives are envisaged as resulting from this project. The NMP report (or a synthesis depending on available file space) will also be uploaded on to the OASIS system (the Oasis form will be completed at the outset of the project as normal) where it can be consulted on-line by the public as well as on the English Heritage web site.

8. RESOURCES AND PROGRAMMING

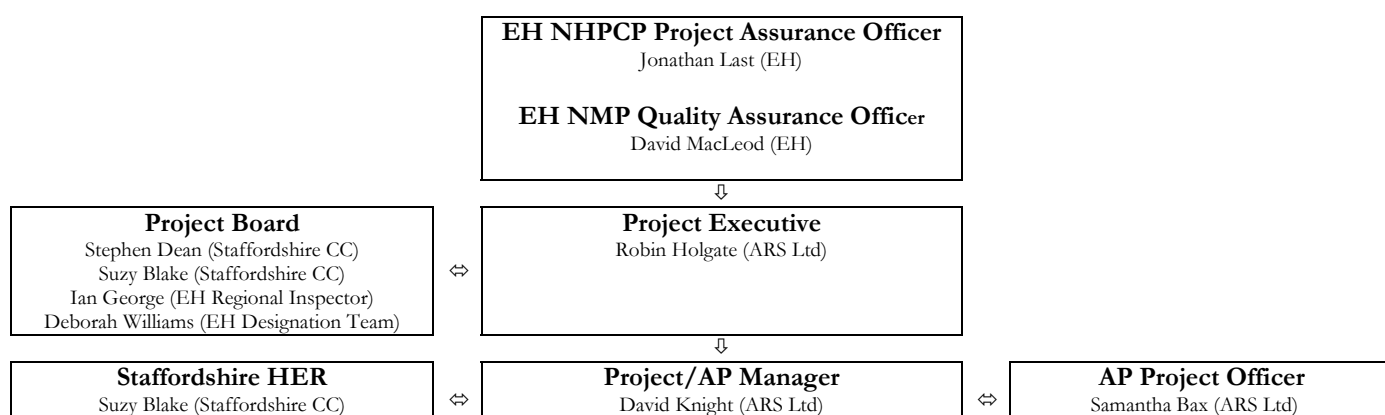
8.1 Management structure and accommodation

The project will be undertaken by Archaeological Research Services Ltd (ARS Ltd) in association with Staffordshire County Council Historic Environment Section. The project will be primarily managed and carried out by ARS Ltd.

The Project Executive will be Robin Holgate who has long-standing experience of assembling research teams to undertake large-scale projects and motivating, managing and monitoring teams throughout the duration of projects, with support from Clive Waddington as required. David Knight will perform the role of Project Manager for the project and, along with Samantha Bax, will make up the ARS Ltd team who will carry out the NMP work. The Project Manager will co-ordinate the project on a day-to-day basis.

Project assurance for English Heritage will be undertaken by Jonathan Last, whilst Dave MacLeod will have responsibility for quality assurance of the NMP product. The Project Board will comprise Ian George (English Heritage Regional Inspector), Deborah Williams (English Heritage Designation Department Team Leader – West), Stephen Dean and Suzy Blake (Staffordshire CC Historic Environment Section). Both Ian George and Deborah Williams were consulted in producing this Project Design.

The project will be run from the Bakewell office of ARS Ltd (Angel House, Portland Square, Bakewell, DE45 1HB) whilst, for NMR compliance, the aerial photograph component of the project will be undertaken at the offices of the English Heritage Aerial Investigation and Mapping Section at (37 Tanner Row, York, YO1 6WP). ARS Ltd already has a team of AP interpreters based in York (David Knight 3/5 time and Samantha Bax full time). Consultation with staff at English Heritage’s Aerial Investigation and Mapping Section has confirmed that space would continue to be available for this team and that they are supportive of aerial photographic mapping enhancement of this vulnerable area.



8.2 Core Project Team

The Project Team will comprise the following.

Robin Holgate	Project Manager	ARS Ltd
David Knight	Aerial Photograph Team Leader	ARS Ltd
Samantha Bax	Aerial Photograph Project Officer	ARS Ltd

The Project Liaison Group will include the following.

Jonathan Last	EH NHPCP Project Assurance Officer
Dave MacLeod	EH Quality Assurance of the NMP product
Ian George	EH Regional Inspector
Deborah Williams	EH Designation Team
Stephen Dean	Staffordshire CC Historic Environment Section
Suzy Blake	Staffordshire CC Historic Environment Section
Robin Holgate	ARS Ltd
David Knight	ARS Ltd
Samantha Bax	ARS Ltd

8.3 Products

The products of Phase 1 of the project will be as follows.

- NMP mapping of 265 km².
- A standalone NMP report will be produced summarising the results.
- Information will be fed into the Heritage at Risk Register for updates in the light of remote sensing data and observations made.
- The Staffordshire HER will be updated with the new project data.
- The English Heritage Archive will be updated with new project data.
- A talk will be delivered at the NMP conference.
- A short interim publication in the Staffordshire Archaeological and Historical Society Newsletter and/or the CBA West Midlands's 'West Midlands Archaeology'.

8.4 Task list

The table below documents each task of Phase 1 of the project and relates them to the specific objectives described above, in addition to the individuals who will carry them out. The tasks and their corresponding numbers relate directly to the task timetable. The numbers relating to the individuals and tasks are the number of person days to be spent on each task. The abbreviations used for each individual are as follows:

RH:	Robin Holgate (ARS Ltd)
DK:	David Knight (ARS Ltd)
SB:	Samantha Bax (ARS Ltd)
SS:	Sally Smith (ARS Ltd)
DM:	Dave MacLeod (EH Aerial Investigation and Mapping Section)
SBl:	Suzy Blake (Staffordshire CC Historic Environment Section)

Task No.	Objective Nos.	Task (see also Gantt Chart)	Performed by:	Days	
		Project start-up and management			
1	n/a	Project initiation (including informing project liaison team, supplying information for English Heritage NMP web page)	RH DK	0.5 0.5	
2	n/a	Administration (including documentation, staff management, procurement, communications, insurance, auditing, invoices, payroll)	RH DK SS	1 1 1	
3	n/a	Management of the project (including	RH	3	

		initiating loan of NRHE APs, dealing with queries/issues, internal quality control, keeping appropriate planning/monitoring records and production of highlight reports, managing meetings, managing supply of information for heritage protection, report checking and dissemination for public benefit)	DK	2	
4	n/a	Monitoring – formal English	RH	1	
		Heritage/Project Board meetings	DK	1	
		Stage 1: Aerial photograph interpretation and mapping, and supply of data to NMR and NRHE			
5	3.2.1	NRHE and CUCAP AP loans management (including undertaking a search of HER collection of aerial photographs and CUCAP and liaison with Staffs HER, NRHE, OS, CUCAP to refine copyright agreements)	SB DK	6 2	
6	3.2.2	Mapping and recording Block 1	SB DK	87 52.5	
7	3.2.2	Mapping and recording Block 2 NB At this stage, additional 40 days for SB and 22 days for DK for mapping either/or more squares in Blocks 1 & 2	SB DK	78 46.5	
8	3.2.2	Discoverer output	SB	2	
9	3.2.2	NMP quality assurance (of up to 5% of total project area)	DK DM	1	
10	3.2.1	Amendments arising from internal and external quality assurance	DK	1	
11	3.2.1	Liaison meetings (ARS Ltd Team and Aerial Survey English Heritage) and Liaison Group meetings (including Designation Team, all experts, HER).	DK RH	2 1	
12	3.2.1	Return of AP loans	DK SB	1 1	
		Stage 2: Transfer of mapped data through Discover programme and incorporation into a GIS			
13	3.2.2-3	Obtaining, formatting and interpreting all digital map data (including liaison with Staffs HER)	DK	2	
		Stage 3: Supply and integration of NMP data within the Staffordshire HER			
14	3.2.4	Produce concordance lists in Excel and data transfer by ExeGesIS to Staffordshire HER and data transfer by ExeGesIS	SB ExeGisIS	2	

15	3.2.4	Concordance of HER data (including amalgamating duplicate records and ensuring all new AP data is included in the Staffs HER)	SBI	10 (5 in-kind)	
		Stage 4: NMP report production			
16	3.2.2	Aerial Photograph NMP Phase 1 Management Report	SB DK	7 3	
17	3.2.2	Illustrations for Phase 1 Project Report	SB	5	
18	3.2.2	Selected field observation and photography visits	SB	2	
		Stage 5: Recommendations for heritage protection			
19	3.2.4	Establish mechanism for providing data regarding heritage protection and supply data on scheduled monuments to Inspector of Ancient Monuments/ Designation Team for feeding into Heritage at Risk database	DK SB	2 2	
20	3.2.6	Collate data on particular SM case studies to supply to Designation Team	SB	2	
		Stage 6: Dissemination			
21		Prepare and give presentation at NMP annual conference	SB DK	2 2	
		Stage 7: Review			
22		End-of-project (Phase 1) review and report production (what went well, what didn't, how to do better next time)	RH DK	0.5 0.5	
		Stage 8: Project Archive			
23	n/a	Collate Phase 1 archive & meta-data completion and checking	SB	0.5	
24	n/a	Archive deposition with ADS, OASIS and Staffs HER	SB	0.5	

8.5 Health and Safety

All work will be carried out in accordance with The Health and Safety at Work Act 1974. Most of the work for the project will be carried out at the offices of either Archaeological Research Services Ltd, English Heritage or Staffordshire County Council. Specific health and safety policies exist for all workplaces by the respective organisations and all staff employed will be made aware of the policy and any relevant issues, for example emergency evacuation procedures. Any particular risks involved with the project will be fully explained to all members of staff and risk assessments undertaken for all work. A Display Screen Equipment (DSE) self-assessment will be required for any new computer equipment or workstation used during the project. All site visits and attendance at dissemination events will be undertaken in accordance

with procedures for lone working, reporting and driving at work as set out in Archaeological Research Services Ltd's Health & Safety Manual issued to all staff.

8.6 Security copying and back-up procedures

All files used will be backed up on a daily basis by the servers at Archaeological Research Services Ltd or English Heritage. The main Archaeological Research Services Ltd server is housed in a secure off-site data centre and all information is backed up in real time to four file servers at different locations.

8.7 Archive deposition

On completion of the project all NMP data files created during the project will remain copyrighted to and in the possession of English Heritage. A project summary will be uploaded to the OASIS system and the pdf of the NMP report will be made available on line on the English Heritage web site. The digital aerial photograph mapping will be placed on the computer system of the Staffordshire HER together with backup copies on disc.

The results of this project will be archived with either English Heritage Archives or Staffordshire HER as appropriate. The air photographic datasets, for which English Heritage will have sole responsibility for their curation and archiving, will consist of the NMP standard map data (layered AUTOCAD MAP drawing with attached data tables) and entries to the English Heritage's NRHE database.

8.8 Copyright

Copyright of the NMP results of the project will reside with English Heritage. Licence to use the NMP data will be extended to all the project partners for ongoing and future research and investigations. Licence will only be granted to consultees only with the prior consent of the NRHE.

All other outputs will be the copyright of Archaeological Research Services Ltd and licence to use the data will be extended to English Heritage and the project partners.

8.9 Timetable

The project has been divided into two phases. Phase 1 is scheduled to run for 10-11 months starting in March 2013 and is due to be completed in January 2014. It is anticipated that Phase 2 will start in February/March 2014 and run to Autumn 2014.

It is intended to agree the project design and arrange the loan of aerial photographs from English Heritage Archives in February 2013. The gantt chart below summarises the projected timescales associated with the key tasks for Phase 1 of the project.

Task	Mar 2013	R 1	Apr	May	June	July	R 2	Aug	Sept	Oct	Nov	R 3	Dec	Jan 2014
Project start-up and management														
1. Project initiation														
2. Administration														
3. Management														
4. Monitoring														
Stage 1: Aerial photograph interpretation and mapping														
5. NRHE and CUAP loan management														
6. Mapping and recording Block 1														
7. Mapping and recording Block 2														
8. Discoverer Output														
9. NMP quality assurance														
10. Amendments from quality assurance														
11. Liaison meetings (ARS Ltd and EH Teams)														
12. Return of AP loans														
Stage 2: Transfer of mapped data														
13. Obtaining, formatting and interpreting all digital data														
Stage 3: Supply and integration of NMP data in Staffs HER														
14. Produce concordance lists/data transfer to Staffs HER														
15. Concordance of HER data														
Stage 4: NMP report production														
16. AP Phase 1 NMP Report														
17. Illustrations for Phase 1 NMP Report														
18. Selected field observations and photos														
Stage 5: Recommendations for heritage protection														
19. Supply data to Designation Team and H@R database														
20. SM summaries to Designation Team														
Stage 6: Dissemination														
21. Prepare presentation for NMP conference														
Stage 7: Review														
22. End-of-project review														
Stage 8: Project archive														
23. Collate archive and check														
24. Archive deposition														

8.10 Communications

The Project Team will communicate with each other regularly by email and telephone and there will be regular informal meetings of the staff of Archaeological Research Services Ltd. Three formal meetings have been provided for the Project Liaison Group to meet at the start and after completion of the mapping of each of the two blocks. Highlight reports and issues logs will be produced and supplied to the Project Liaison Group members for each formal review meeting and at the end of each stage.

An initial meeting has been arranged with the English Heritage Designation Team at the start of the project to discuss the mechanisms for reporting information on sites of national importance, in particular Scheduled Monuments where the extent of the site is perhaps not correctly defined and which require amendment, along with those sites which are manifestly of interest.

Contact will be made within the first month of the project for the GIS specialist to visit the HER to discuss the need for supplying data to the HER in detail. Regular contact will be maintained with the HER, potentially including a visit to the HER at an appropriate stage during the mapping of Block 1 to begin making arrangements for transferring data to the HER.

Communication with the English Heritage Local Team and Designation Team will be maintained by email and telephone throughout the duration of the project.

8.11 Project review

The proposed completion dates for the various project outputs will be diarised by both the Project Manager and the Project Executive at the outset of the project. Progress of the project will be reviewed continually on an informal basis by the Project Manager and the Project Executive (see task 3). The completion of the outputs (Appendix 4) will then be checked and reviewed, including quality assurance checks, at the review points.

There will be regular discussions between the staff of Archaeological Research Services Ltd (task 3) and English Heritage's Aerial Investigation and Mapping Team. There will also be three formal review points with the English Heritage Project Assurance Officer (see task 4). The formal reviews (R2 and R3) will be undertaken in the form of a meeting once each block of aerial photograph transcription is close to completion in order that all members of the Project Team, Project Assurance and Project Partners are informed of the progress of the aerial photograph mapping and other elements of the project. Any other interested stakeholders will also be invited to attend the meeting. Any essential amendments to the Project Design, if appropriate, will be agreed at that stage. Only the Project Executive, following consultation and with the express approval of English Heritage, will have the authority to amend the Project Design, timetable or cost of the project. Any additional risks identified will be entered in the Risk Log (See Appendix 1) and countermeasures to deal with such risks will be formulated. Any issues identified will also be entered in the Issues Log (see Appendix 2).

On completion of Phase 1, a review will be undertaken to assess if all the objectives were achieved and to review what went well, what did not go well and what we would do better in future projects will be undertaken. This will assist in producing the updated Project Design for Phase 2 of the project.

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APPENDIX 1

Risk Log

Risk No	Description	Probability	Impact	Countermeasures	Estimated time/cost	Owner	Date last reviewed
1	Project overrun	Low-Medium	High	Early agreement on how to access and view APs in archives and agree timetable for access to photographs in English Heritage Archives. Ensure Gantt chart adhered to. Good communication. The project Executive and Manager will be vigilant in relation to this risk. Methodological and scheduling issues will be dealt with at the earliest opportunity. Diligent time recording will be undertaken and regular communication maintained with EH at all times.	Unknown	Project Executive	
2	Aerial photographs produce more data than anticipated and therefore transcription takes longer than original estimate	Low-Medium	Medium	Base estimate on evaluation of NRHE coversearch, distribution of known archaeology and land use & previous experience. Monitor and manage progress with regular milestones set.	Unknown	Project Executive	
3	Difficulty obtaining aerial photographs	Medium	Medium	Make early contact with English Heritage Archives and other organisations with collections	Unknown	Project Manager/AP Manager	
4	Illness to key members of project team	Low-medium	Low	Make provision for back up members of staff – advertise if necessary.	Minimal	Project Executive	
5	Failure in computer equipment/loss due to fire/theft leading to loss of Data	Low	Low	Ensure all computers are properly and regularly backed up	Minimal	Project Executive	
6	Members of project team leave	Low	Low	Back up staff available and nominated in such an eventuality – advertise for new staff if necessary	Minimal	Project Executive	

APPENDIX 2

Issues Log

No.	Description	Raised by	Date raised	Resolution	Date last updated	Status	Priority

APPENDIX 3

Highlight Report

Date	
Circulated to	
Period covered	
Schedule Status	
Budget Status	
Resources	
Products and tasks completed during this period	
Products and Tasks to be completed during the next period	
Project Risks	
Project issues	

APPENDIX 4

Product Descriptions

The main product of the project will a more accurate and comprehensive record of the surviving archaeology in mineral-producing areas of Staffordshire and this information will underpin informed management and decision-making in relation to future management and conservation of the historic environment.

Staffordshire County Council will gain significant HER enhancement together with the identification of new sites resulting from the aerial photographic transcription work.

The products of the project will be:

- NMP mapping of an area of 265km² in Phase 1 and up to c.150km² in Phase 2
- A standalone NMP report will be produced summarising the results
- Information fed into the Heritage at Risk Register for updates in the light of remote sensing data and observations made
- The Staffordshire HER will be updated with the new project data
- The NMR will be updated with new project data

Product number	P1
Product title	NRHE Event Record
Purpose of the product	To signpost the project to potential users
Composition	Textual record identifying project area, location, specification, methodology, sources and project contact.
Derived from	Project Design
Format & presentation	Digital textual record
Allocated to	David Knight
Quality criteria and method	NMP standard applied, by checking
Person/ group responsible for quality assurance	NMP Project Assurance Officer
Person/ group responsible for approval	Robin Holgate
Planned completion date	December 2013

Product number	P2
Product title	Digital Map
Purpose of the product	Graphical archaeological record of features interpreted and mapped from aerial photographs.
Composition	A geo-referenced digital map of the form and extent of all archaeological features visible on aerial photographs, with attached data tables.
Derived from	Aerial photographs and lidar imagery
Format & presentation	AutoCAD Map 2008 DWG files
Allocated to	David Knight
Quality criteria and method	NMP standard applied, by sample checking
Person/ group responsible for quality assurance	Investigators and Senior Investigators, Aerial Survey & Investigation NMP Project Assurance Officer
Person/ group responsible for approval	Robin Holgate
Planned completion date	December 2013

Product number	P3
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Product title	NRHE Monument Database Record
Purpose of the product	Textual record of archaeological features, including air photograph interpretation (can also be output as excel table via Discoverer if required).
Composition	New and enhanced database records identifying the location, indexed classification, archaeological description and main sources, including aerial photographs.
Derived from	Aerial photographs and lidar imagery
Format & presentation	Digital textual record in .PDF format
Quality criteria and method	NMR standard, by sample checking
Allocated to	David Knight Sam Bax
Person/ group responsible for quality assurance	Investigators and Senior Investigators, Aerial Investigation & Mapping Team NMP Project Assurance Officer
Person/ group responsible for approval	Robin Holgate
Planned completion date	December 2013

Product number	P4
Product title	NMP Quality Assurance
Purpose of the product	Checking of mapping and recording to ensure that the interpretation and mapping meet NMP standards.
Composition	Quality assurance of up to 5% of the total project area, distributed across the project area, making amendments as required. In addition, checking sphere of interest/scope of the project as detailed in the Project Design and ensuring any variation from the PD is agreed and discussed with the NMP Quality Assurance Officer and the NHPCP Project Assurance Officer before implementation.
Derived from	Aerial photographs and lidar imagery
Format & presentation	Digital textual record in .PDF format
Quality criteria and method	NMR standard, by sample checking
Allocated to	David MacLeod David Knight Sam Bax
Person/ group responsible for quality assurance	Investigators and Senior Investigators, Aerial Investigation & Mapping Team NMP Project Assurance Officer
Person/ group responsible for approval	Robin Holgate
Planned completion date	January 2014

Product number	P5
Product title	NMP Summary Report
Purpose of the product	Dissemination of the project results.
Composition	A summary report recording the methods, scope and results of archaeological air photo interpretation and mapping, with a synthesis of the archaeology, analysing its character, diversity, distribution and associations in the landscape, highlighting opportunities and threats for heritage protection.
Derived from	Project mapping and database analysis and research
Format & presentation	Digital text with illustrations in .PDF format
Allocated to	e.g. Expert doing the work
Quality criteria and method	Editing text and comment
Person/ group responsible for quality assurance	NMP Project Assurance Officer Project Manager
Person/ group responsible for approval	Robin Holgate
Planned completion date	January 2014

Product number	P6
Product title	End of Project Review
Purpose of the product	Dissemination of project management and lessons learnt.
Composition	An overview summarising the Closure stage of the project (e.g. did the project achieve the stated aims and objectives) and recording any useful lessons learnt (e.g. what went well, what didn't go well, how to do things better next time) to aid future project management.
Derived from	Project meetings, liaison and documentation.
Format & presentation	Digital textual record in .PDF format
Allocated to	Project Manager and David Knight
Quality criteria and method	Editing text and comment by Team Experts
Person/ group responsible for quality assurance	Robin Holgate
Person/ group responsible for approval	Robin Holgate
Planned completion date	January 2014

Product Number	P7
Product title	HER enhancement
Purpose of the product	Enhance HER and underpin future conservation and management
Composition	Digital data, Autocad files, Access files and Excel spreadsheets
Derived from	Aerial photographs
Format and Presentation	.shp files, Excel spreadsheets, Access database and GIS dataset
Allocated to	ExeGesIS/ Staffordshire CC HER
Quality Criteria and method	In accordance with standard procedure of Archaeological Research Services Ltd and needs of Staffordshire CC HER
Person responsible for quality assurance	Suzy Blake
Person responsible for approval	Suzy Blake
Planned Completion date	January 2014

Product Number	P8
Product title	Recommendations for heritage protection
Purpose of the product	Recommendations for heritage protection/ development control, including statements on monument condition or landscape change, resulting in potential additions to the National Register and local list
Composition	Digital data, Autocad files, Access files and Excel spreadsheets
Derived from	Aerial photographs
Format and Presentation	.shp files, Excel spreadsheets, Access database and GIS dataset
Allocated to	Project Manager
Quality Criteria and method	In accordance with standard procedure of Archaeological Research Services Ltd and needs of North York Moors HER
Person responsible for quality assurance	Antony Brown/ Suzy Blake
Person responsible for approval	Robin Holgate
Planned Completion date	January 2014

Product Number	P9
Product title	Interim articles
Purpose of the product	Articles for Transactions of the Staffordshire Archaeological and Historical Society and Society newsletter and reports to go on appropriate websites, e.g. www.english-heritage.org.uk/professional/research/landscapes-and-areas/national-mapping-programme and www.archaeologicalresearchservices.com , to disseminate the results of the project.
Composition	Digital
Derived from	Data obtained from the project
Format and Presentation	Word document and web page
Allocated to	Project Manager
Quality Criteria and method	In accordance with standard procedure of Archaeological Research Services Ltd
Person responsible for quality assurance	Project Executive
Person responsible for approval	Project Executive
Planned Completion date	January 2014

Product Number	P10
Product title	Preparation of presentation to NMP conference
Purpose of the product	To disseminate information
Composition	
Derived from	Data obtained from the project
Format and Presentation	Oral
Allocated to	Project Manager
Quality Criteria and method	In accordance with standard procedure of Archaeological Research Services Ltd
Person responsible for quality assurance	Project Executive
Person responsible for approval	Project Executive
Planned Completion date	January 2014

Product Number	P11
Product title	Archive
Purpose of the product	Disseminate information
Composition	Electronic data and hard copy
Derived from	Data obtained from the whole project
Format and Presentation	Word document and GIS
Allocated to	Project Manager
Quality Criteria and method	In accordance with standard procedure of Archaeological Research Services Ltd
Person responsible for quality assurance	Project Executive
Person responsible for approval	Project Executive
Planned Completion date	January 2014