



National Importance Programme: Lithic Sites Assessment 7046

Final Report



Oxford Archaeology North

February 2015

Issue No: 1602

OA North Job No: L10783

English Heritage

Title	NATIONAL IMPORTANCE PROGRAMME PILOT: LITHIC SITES ASSESSMENT, 7046
Project Number	7046
Author	Antony Dickson, Barry Bishop, Jamie Quartermaine
Derivation	Preceded by <i>National Importance Programme Pilot: Lithic Sites Assessment, 7046, Project Proposal</i> (July 2014)
Origination date	December 2014
Reviser	n/a
Date of this, latest, version	February 2015
Version	1.2
Status	Final
Summary of changes	Revisions from EH and other contributors addressed
Circulation	English Heritage: Carrie Cowan, Helen Keeley, Gareth Watkins
Required action	Comments
File name/location	X:\Jamie\PROJECTS\10783 EH NHPP 7046 national importance (t16954)
Approval: Rachel Newman (Senior Executive Officer, Publication and Research)	
On behalf of English Heritage	

Oxford Archaeology North

Mill 3, Moor Lane Mills
Moor Lane
Lancaster
LA1 1QD
t: (0044) 01524 541000
f: (0044) 01524 848606

© Oxford Archaeology Ltd 2015

Janus House
Osney Mead
Oxford
OX2 0EA
t: (0044) 01865 263800
f: (0044) 01865 793496

w: www.oxfordarch.co.uk
e: [oanorth@oxfordarch.co.uk](mailto: oanorth@oxfordarch.co.uk)

Oxford Archaeology Limited is a Registered Charity No: 285627

Disclaimer:

This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Oxford Archaeology being obtained. Oxford Archaeology accepts no responsibility or liability for the consequences of this document being used for a purpose other than the purposes for which it was commissioned. Any person/party using or relying on the document for such other purposes agrees, and will by such use or reliance be taken to confirm their agreement to indemnify Oxford Archaeology for all loss or damage resulting therefrom. Oxford Archaeology accepts no responsibility or liability for this document to any party other than the person/party by whom it was commissioned.

CONTENTS

CONTENTS.....	1
SUMMARY.....	3
ACKNOWLEDGEMENTS.....	4
1 INTRODUCTION.....	5
1.1 Project Summary.....	5
1.2 Project Background.....	5
1.3 English Heritage.....	6
1.4 Local Authorities.....	6
1.5 Business Plan.....	7
1.6 Parameters of the Project.....	9
1.7 Desk-based Study.....	9
2 CUMBRIA.....	12
2.1 The Lithic Resource.....	12
2.2 Case Study: Stainton West, Carlisle, Cumbria.....	14
2.3 The Neolithic Axe Factories of Great Langdale and Scafell Pike.....	17
3 EAST ANGLIA.....	20
3.1 The Lithic Resource.....	20
3.2 Case Study: Grime's Graves, East Anglia.....	22
4 PROBLEMS AND ISSUES.....	26
4.1 Defining and Designating Lithic Scatters.....	26
4.2 The Existing Guidance for the Designation of Lithic Sites.....	27
4.3 Other Criteria for the Designation of Lithic Sites.....	28
4.4 Lithic Scatters and Regional Research Agendas.....	29
4.5 Other Artefact Scatters/Sites and the Existing Legislation and Guidance.....	29
4.6 The Management of Lithic Scatters by Curators and Within Stewardship Schemes.....	30
4.7 English Heritage's Role.....	31
5 RESULTS.....	32
5.1 Introduction.....	32
5.2 Lithic Sites: Identification and Recording.....	32
5.3 Lithic Sites and the Planning Process.....	33
5.4 Managing Lithic Sites.....	33
6 RECOMMENDATIONS.....	35
6.1 Introduction.....	35
6.2 Lithic Scatters.....	35

6.3 Landscapes of Extraction.....	35
6.4 Predictive Modelling and Landscape Characterisation.....	35
7 CONCLUSIONS.....	36
7.1 Summary.....	36
8 BIBLIOGRAPHY.....	37
ILLUSTRATIONS.....	42

LIST OF TABLES

Table 1: The lithic assemblage from Stainton West, by artefact and raw material type.....	16
-------------------------------------------------------------------------------------------	----

SUMMARY

A desk-based study has been undertaken by OA North in response to a call for project proposals by English Heritage. The project (Project No 7046) takes lithic sites as the focus of study. The majority of these are considered to be ‘sites without structure’, and cannot, legally, be scheduled under the terms of the 1979 Ancient Monuments and Archaeological Areas Act. However, in accordance with the National Planning Policy Framework, if they can be demonstrated to be of National Importance, they are to be accorded equal significance with Scheduled Monuments and treated as if they have designated status. Specifically, the project has investigated how such sites can be identified, mapped and managed. Cumbria forms the principal study area, with a secondary comparator study undertaken for East Anglia.

The project, having collated information on the lithics of Cumbria and East Anglia, culminated with a very valuable seminar in September 2014, at which the issues were discussed. This was recorded and extensive notes were transcribed and distributed to the contributors for comment. This report arises directly from these events.

The report sets the scene by reference to the lithic resources within each study area, highlighting the quantitative and qualitative extent of the known resource and placing it within a regional landscape context. For each study, area attention is focused on particular lithic sites through the means of case studies. The case studies provide a forum for a discussion of the problems and issues encountered when defining a lithic site as being of national importance. These problems and issues are addressed in detail and a series of methodologies are proposed which could be applied to lithic resources in order to consider them applicable as sites of national importance. In order to test some of these methodologies, a series of recommendations has been made for further work on the sites discussed in the case studies. All of the project objectives were successfully met, and a way forward has been indicated.

ACKNOWLEDGEMENTS

Oxford Archaeology North would like to thank English Heritage for commissioning the work and, in particular, Carrie Cowan and Helen Keeley for advice and support throughout the project. This report was written by Antony Dickson, with major contributions by Jamie Quartermaine and Barry Bishop. The illustrations were produced by Mark Tidmarsh. Fraser Brown managed the project and edited the report with Rachel Newman. Profound thanks are extended to the seminar attendees (Barry Bishop (independent); Mark Brennand (Cumbria County Council); Fraser Brown (OA North); Peter Cherry (independent); Carrie Cowan (English Heritage); Antony Dickson (OA North); John Hodgson (Lake District National Park Authority); Rachel Newman (OA North); Jamie Quartermaine (OA North); Adrian Tindall (independent)) whose insightful observations and comments provided the content on which this report is based. Klara Spandl is also thanked for her helpful support.

1 INTRODUCTION

1.1 PROJECT SUMMARY

- 1.1.1 This document describes the results of a desk-based study that has been developed by OA North in response to a call for project proposals by English Heritage. The project (Project No 7046) takes lithic sites as the focus of study. The majority of these are considered to be 'sites without structure', and cannot, legally, be scheduled under the terms of the 1979 Ancient Monuments and Archaeological Areas Act. However, in accordance with the National Planning Policy Framework (NPPF; DCLG 2012), if they can be demonstrated to be of National Importance (NI), they are to be accorded equal significance with Scheduled Monuments and treated as if they have designated status (English Heritage 2000, 7).
- 1.1.2 Specifically, the project has investigated how such sites can be identified, mapped and managed. Cumbria forms the principal study area (*Section 2*), with a secondary comparator study undertaken for East Anglia (*Section 3*). The rationale that informs this selection is developed in the Business Case (*Section 1.5*). In addition, the methodologies used in the desk-based study are detailed in *Section 1.7*, and selected case studies for each study region are provided (Cumbria: *Sections 2.2 and 2.3*; and East Anglia: *Section 3.2*). The problems and issues raised by the project are discussed (*Section 4*), followed by the results (*Section 5*). Recommendations for further work to be undertaken in response to the findings of the project are presented (*Section 6*) and a review of the success of the project is included in *Section 7*.

1.2 PROJECT BACKGROUND

- 1.2.1 In response to a call for project proposals by English Heritage (National Heritage Protection Plan (NHPP): The National Importance Programme), Oxford Archaeology North was commissioned to undertake a pilot study for the National Importance Programme, Lithic Sites Assessment (OA North 2014, Project 7046). The project proposed consideration of lithic sites in Cumbria as the main focus area, with those in East Anglia included as a comparator, with both areas having a range of lithic resources, including extraction sites, that can be assessed in relation to the main aims and objectives of the National Importance Programme (NIP). To that end, a desk-based investigation and consultation was designed to identify and characterise the lithic resource, examine how lithic sites are presently ascribed national importance in Cumbria and East Anglia, and whether this is sufficient to afford protection to the resource. Drawing on available information from published sources, such as *Managing Lithic Scatters* and the relevant English Heritage Scheduling Selection Guides (English Heritage 2000; 2012), the project has considered approaches to identifying significance for designation purposes and has examined whether the existing guidelines provide an adequate framework for such. The study is predicated, out of necessity, on known sites, but has also considered mechanisms for identifying, characterising, defining and classifying other as yet unknown artefact scatters and sites.
- 1.2.2 Based on the results of the preliminary studies, an agenda, outlining the main points, was drawn up and disseminated to all interested parties associated with the project. A seminar

was then called (30th September 2014), which was attended by representatives of English Heritage, Cumbria County Council's Historic Environment Services (CCCHES), the Lake District National Park Authority (LDNPA), Oxford Archaeology (OA) and independent researchers. The seminar included a series of short presentations detailing the results of the desk-based consultations on the lithic resources from Cumbria and East Anglia. This was followed by a wider-ranging discussion, which sought to define issues raised during the presentations and how they might be addressed, with an aim of establishing criteria for identifying, defining, ascribing and registering lithic sites as being of national importance. The discussion also approached the evaluatory and management principles deemed necessary to define the significance of lithic sites, and examined how these approaches might be employed through the planning process.

- 1.2.3 The seminar was audio-recorded and a transcript of the recording was produced. This transcript was then disseminated to all attendees and they were asked to comment on any part of the transcription that they felt warranted further clarification. The final transcription and comments have been drawn together in order to produce the bulk of the discussion contained within this report, and are noted and lodged within the project archive.

1.3 ENGLISH HERITAGE

- 1.3.1 Due, in part, to upcoming changes to a number of existing management schemes and the implementation of new guidance, English Heritage recognises the need to explore how local authority archaeologists might be helped to create a shared mechanism, to identify and manage archaeological sites of national importance. English Heritage recognises that there are many sites that are of national importance which have not been scheduled, and would like to implement protocols to ensure that such sites are afforded the same consideration in the planning process as scheduled monuments. However, designation of sites as nationally important will not replace scheduling, which will still be maintained. Furthermore, it is recognised that there are many other undesignated sites that are of lesser importance, that will require consideration in the planning process, and there are other undesignated sites which will be of national importance, but are not yet recognised as such or even known of. Therefore, there is a need to explore methodologies for identifying sites of national importance.

1.4 LOCAL AUTHORITIES

- 1.4.1 Within Cumbria, very little scheduling has taken place recently, but listing of buildings has happened more frequently. Therefore, both the LDNPA and CCCHES recognise that there is a need for guidance for designation of sites as nationally important, and they are happy to support the approach, seeing it as a more effective process if not simply threat-led. However, both authorities also recognise that there are issues surrounding designation for national importance, and its relationship with existing scheduling protocols, particularly in regard to being able to demonstrate the national importance of a site, when a scheduling precedent had not already been set. There is also a difficulty in identifying specific criteria from Historic Environment Records (HERs) in order to apply designation to a site. In addition, although it is possible to identify certain lithic sites which would warrant investigation in order to define them further against criteria, this would be time-consuming and costly. Therefore, there are concerns over the availability of resources to implement

any new guidance within the existing HERs.

1.5 BUSINESS PLAN

- 1.5.1 The evidence for earlier prehistoric activity (dating to the Palaeolithic, Mesolithic and Neolithic periods) very often solely, or primarily, comprises occurrences or distributions of worked lithic artefact types (henceforth referred to as 'lithic scatters'), and this is frequently also the case for Bronze Age activity. Sometimes these scatters can signal the presence of, as yet undetected, below-ground archaeological features and assemblages of charred or waterlogged palaeoenvironmental material. Lithic scatters are problematic from a heritage resource management and development management perspective, because the standard archaeological methodologies presently employed are often not sufficiently subtle to ensure the effective identification and characterisation of them (Last 2009, 4). This can either lead to an unquantified loss of important archaeological evidence, or the under-estimation of the magnitude of a site's scale and importance, leading to missed research opportunities or, in a planning/development context, potentially avoidable expense, delay and inconvenience. The need for the development of suitably-sensitive archaeological methodologies, geared to identifying and characterising lithic scatters, has recently been identified within English Heritage's *Mesolithic Research and Conservation Framework* (Blinkhorn and Milner 2014).
- 1.5.2 At the heart of the problem lies the issue of site visibility, as prehistoric sites, other than large-scale settlements or monuments, can be difficult to identify (Hey and Lacey 2001) without major landscape-scale intervention (Lewis *et al* 2010). As such, they can be vulnerable to destruction or damage by development, agricultural practices, or environmental processes. In the case of lithic scatters, this problem is further compounded, as archaeological intervention (trench evaluation, strip and record and area excavation) can actually result in the destruction of the resource – specifically in the case of scatters within the active topsoils, buried soils or on the interface with the geology. Even when lithic scatters are successfully located by archaeological survey, it can be difficult correctly to assess their extent, integrity (whether they are *in situ* or not and have a meaningful distribution), complexity, scale, date and importance. This has been recently and very notably demonstrated in at least two instances of major lithic scatters (at Stainton West, Cumbria (Brown *et al* in prep), and Bexhill, Sussex (B Williams *per comm*)). In both cases, some lithic material was identified at evaluation, but, upon excavation, significant lithic scatters numbering in the hundreds of thousands of pieces were revealed.
- 1.5.3 Paradoxically, when a lithic scatter is most visible to archaeological prospection techniques, for example, when identified in the ploughsoil by fieldwalking, the archaeological stratigraphy that originally contained the material may already have been damaged or destroyed. This is not to say that such sites lack value, as they may constitute the only surviving evidence for past activity and, if systematically retrieved, lithic material may still be highly informative, even when from a secondary context. Conversely, where alluvium or colluvium mantles sites, or when they have otherwise escaped disturbance, lithic scatters may not be evident within the upper layers or soil strata, and may be undetectable to non-intrusive survey.
- 1.5.4 Cumbria seems particularly suitable for a pilot study to explore these issues in the context of the National Importance Programme because it is widely representative of the national

situation at large, containing a range of diverse environments, in which lithic scatters occur, and that are subject to a variety of different land management practices and development threats. These include potential early Holocene offshore sites; coastal littoral zones, where dune encroachment and erosion are both issues; lowland floodplains and river valleys; peatlands (upland peat and lowland raised bogs); land farmed as pasture, leys, arable and forestry; and the Lakeland fells, which notably contain the Langdale / Scafell Pike axe-production sites. The East Anglian study area includes a range of other contrasting environments, including the Fens; the east coast; and river gravel sites, and it is an area beset by particularly heavy pressures from development, quarrying and agriculture.

- 1.5.5 There is a developed regional research framework and strategy for the North West in place (Brennand 2006; 2007) that has identified specific agendas relating to lithic artefacts (Hodgson and Brennand 2007). The county has a long and established tradition of the study of prehistory, and regional studies have made major contributions to the fields of lithic study and to the survey of prehistoric sites in general. The late Clare Fell built on a long antiquarian tradition, perhaps most famously with her work on the Langdale axe factories (Bunch and Fell 1949; Fell 1950), a study which was subsequently further progressed by others (Claris and Quartermaine 1989; Bradley and Edmonds 1993). Indeed, Langdale seems particularly pertinent to the National Importance Programme, as it is specifically mentioned by it, and has been used previously as a case study for the Heritage Protection Review in 2006 (Historic Environment Conservation 2006) to establish the potential for designation of the internationally important sites under the then proposed Heritage Protection legislation. Extensive programmes of fieldwalking have been undertaken by the Cherry family (*eg* Cherry and Cherry 2002), and more recently in the Eden Valley by Penrith Museum's *Living Among the Monuments* project (Clarke *et al* 2008), which have recovered rich lithic assemblages. The information from the fieldwalking surveys is augmented by that from other programmes of survey (*eg* Hodgkinson *et al* 2000; Quartermaine and Leech 2012) and lithic sites identified by fieldwalking in the coastal littoral zone have been subject to seminal programmes of research excavation (Bonsall *et al* 1994). A recent commercial excavation, undertaken by Oxford Archaeology, at Stainton West, Carlisle (OA North 2011) identified the largest lithic assemblage to be excavated in the north of England to date, and provides good baseline data to inform the study from a number of perspectives.
- 1.5.6 East Anglia has a rich lithic resource representing the procurement, production and use of lithic material from the Lower/Middle Palaeolithic period through to at least the Early Iron Age (Glazebrook 1997). The Palaeolithic material tends to be associated with the gravel river terraces in major valley systems (Wymer 1998), usually buried at depth and often only encountered during development, or by research excavations (Medlycott 2011), although coastal sites are also known. The Mesolithic occupation record is dominated by lithic scatters, often mixed with material of later date (Edmonds *et al* 1999), some of which are large and extensive, such as Somersham (Medlycott 2011, 6) and Over Quarry (Evans and Vander Linden 2008). A more extensive use of the landscape by communities is apparent during the Neolithic period and Early Bronze Age. Settlement is attested to by lithic scatters to the east of the fenland basin (Hall and Coles 1994; Bishop 2012) and at prominent locations along the fen edge and main river channels, with particularly large concentrations of lithic material being known at Soham and Ramsey (Edmonds *et al* 1999).

Prehistoric pit sites are especially common in Norfolk (Garrow 2006), with many being discovered initially as lithic scatters during preliminary investigations prior to large-scale development-funded excavations. In addition to settlement sites and the widespread monument record, lithic procurement sites are also represented in the region. Definite quarries have been recorded at Grime's Graves and another potential site at Buckenham Tofts, along with a scatter of dubious sites, the interpretation of which as quarries is based on the presence of surface finds, with no conclusive evidence for mining so far identified (Russell 2000, 54). Similar to the situation with Cumbria, the Eastern Counties Regional Resource Assessment and Research Framework (Glazebrook 1997; Brown and Glazebrook 2000; Medlycott 2011) has promoted the significance of the lithic resource as integral towards developing an understanding of settlement patterns across all periods in East Anglia.

1.6 PARAMETERS OF THE PROJECT

- 1.6.1 The current project is part of a wider scheme involving seven pilot projects, which have been commissioned by English Heritage to provide more information and greater clarity as to how national importance works within the NPPF (DCLG 2012), and where it does not. In that respect, this project is an information-gathering exercise in relation to how guidance for national importance can be applied, used and implemented in regard to lithic sites and extraction sites, particularly within Cumbria and East Anglia. The results of the project will be considered in tandem by English Heritage with those from the other pilot projects, in order to consider problems and issues encountered during the undertaking of the pilot studies. Although the present project is specifically aimed at defining how guidance for national importance can be applied to certain site types, any results and methodologies will also be considered in terms of how transferable to other kinds of sites they are.
- 1.6.2 The case studies in this project have been selected to offer a range of variables, which can be used to test the existing criteria used for guidance for designation as nationally important. Thus, by their very nature, they also offer an opportunity to consider new methodologies that might be needed to promote a site's national importance during the planning process. In that respect, both study areas contain extensive lithic sites located within a variety of landscapes and topographical settings, and archaeological contexts. Both also contain large, important extraction sites; however, only an element of Grime's Graves, in East Anglia, has scheduled status (*Section 3.2*). The axe-production sites centred on Langdale, Cumbria (*Section 2.3*), will also be considered as an example of the difficulties that can be encountered when attempting to designate national importance to a spatially extensive site.

1.7 DESK-BASED STUDY

- 1.7.1 As part of the research undertaken for this project, the HER held at CCCHES (Cumbria County Council Heritage Environment Service), Kendal, was consulted in order to define the extent of the recorded lithic resource for the area of Cumbria under their jurisdiction. Various searches of the HER identified 215 records that were registered as lithic sites (*ie* records with more than one lithic entry). The Lake District National Park Authority (LDNPA) HER was not consulted, since desk-based research has identified that, apart from small assemblages of struck lithics recovered during archaeological interventions in the

central fells, such as those recovered during development at Waterhead, Ambleside (Hodgson and Brennand 2006, 3), large lithic sites have not yet been identified. The exception to this are records relating to a group of lowland sites situated between Eskmeals and Silecroft. These sites are extensively reported on in various papers (Cherry 1963; 1969; Cherry and Cherry 1986; 1987a), and two sites have seen excavation (Bonsall 2007). In total, the LDNPA sites form a corpus of 70.

- 1.7.2 Of the Cumbria County Council (CCC) sites, 45 records had a Mesolithic reference and 29 additional sites are known from the LDNPA (Fig 1). These ranged in assemblage size from several pieces to a small number of sites composed of several thousand pieces: for example Monk Moors 1, Eskmeals, contained 2588 struck lithics (Bonsall 2007). The latter site and another at Williamson's Moss, Eskmeals, had been subjected to excavation (*ibid*). The majority of the Mesolithic lithic sites have coastal locations, with a small number of inland sites also being recorded.
- 1.7.3 Fifty-one CCC and nine LDNPA records have a Neolithic reference (Fig 2). Several large sites are represented, especially some of those on Walney Island, in the south of the county. A few of the sites, particularly those on the Limestone Uplands, are associated with surface finds of prehistoric pottery, suggesting the possible survival of sub-surface structures. The majority of the Neolithic sites enjoy coastal locations, but inland ones are also known. It appears that the majority, if not all, of the sites have not seen excavation. Furthermore, the locations of most axe finds are not included in the results, as they quite often represent a single find spot.
- 1.7.4 For the Bronze Age, 25 records have been identified by CCC and four by the LDNPA (Fig 3). They do not, however, include those representing single find spots of arrowheads and axe types, which would have nearly doubled the number. The sites follow a similar distribution to those accorded a Mesolithic and Neolithic reference. A few sites also have pottery sherds associated as surface finds, but almost none has been subjected to excavation.
- 1.7.5 Ninety-four CCC and 28 LDNPA records have an unknown or undated reference (Fig 4), and these include sites which are mixed and do not clearly contain any reference to any of the main periods. In terms of spatial distribution, the majority are located in areas, or sometimes within close proximity to sites, which have been ascribed a date reference. It is worth noting that a small number of the sites do contain diagnostic arrowheads, which could be used to assign them to period groups.
- 1.7.6 A number of problems can be identified with the HER records and the search criteria used to create the individual period lists outlined above. The search criteria used to generate the lists initially brought through duplicate records, which needed to be accounted for before definitive lists could be produced. This undoubtedly reflects the mixed nature of the sites. Very few of the lithic sites have been the subject of detailed lithic analysis, and very few have been dated scientifically. Some sites, especially those in sand dune contexts, are either undergoing coastal erosion or are under threat from such processes. This is particularly relevant to sites on Walney Island and dune sites at Drigg, Eskmeals and in the Duddon Estuary. Finally, the overall distribution reflects where research has been undertaken and there is a need for this to be expanded into other areas in order to understand the spatial representation of the existing record. The *Living Amongst the Monuments* fieldwalking survey in the Eden Valley (Clarke *et al* 2008) has done just this, as all available fields were

surveyed and the results recorded, regardless of the quantities of lithics recovered. Within the project transect, this shows that the few assemblages containing significant numbers of struck lithics do indeed reflect a true spatial representation of occupation activity.

- 1.7.7 No similar desk-based survey was undertaken for East Anglia. This was because sufficiently complete and up-to-date information, for comparative purposes, had been collated previously by Barry Bishop during the course of his PhD (Bishop 2012).

2 CUMBRIA

2.1 THE LITHIC RESOURCE

- 2.1.1 For a large county, with few conurbations creating extensive development, the absence of universities associated with an archaeological research background, a valley and upland topography dominated by central and eastern mountain ranges, and an agricultural economy primarily given over to stock-rearing and management, there is a relatively extensive lithic resource registered for Cumbria. Lithic sites associated with excavated contexts are relatively rare in the county (although there are exceptions; for example, see *Section 2.2*; Bonsall 2007), however, and the majority of the lithic resource relates to surface-collected assemblages. Moreover, small-scale fieldwalking surveys have been undertaken in many parts of the county, where conditions allow (for example, see Fell and Caruana 1982), but much of the resource relates to specific areas of the landscape (Fig 5). Those include southern Cumbria, the south-west Cumbrian coastal plain, the Solway Plain in the north of the county, the eastern limestone uplands and several areas in the Eden Valley. Furthermore, some lithic sites are known from the Pennine foothills; yet, beyond the extraction sites centred on Langdale, very few sites, or for that matter find spots, are recorded for the central fells (Hodgson and Brennand 2006). It is also of note that the majority of the lithic sites are recorded from fieldwalking surveys and collecting activity confined to the mid- to late twentieth century.
- 2.1.2 The lithic resource in south Cumbria is mainly derived from cave sites and fieldwalking surveys. Much of the material from the cave sites has not been published extensively; consequently, little is known regarding the contextual integrity and extent of this material. Suffice it to say that diagnostic struck lithics dating to the Palaeolithic period through to the Bronze Age have been recorded (*ibid*). In addition to the struck lithics, worked bone, skeletal material, ceramics and metal objects have been recovered from cave contexts, extending the date of activity at some sites into the later prehistoric period (Evans 2008). Lithic material recovered during fieldwalking surveys generally fares little better in terms of publication, but a recent project focused on the Furness Peninsula recovered a relatively large lithic collection, dated by technological characterisation to the Late Mesolithic period through to the Early Bronze Age (*ibid*). In addition, an assemblage of, predominantly, Late Mesolithic struck lithics was recovered during the excavation of a Bronze Age site, at Levens Park, at the head of the Kent Estuary (Cherry and Cherry 2000). Furthermore, mixed lithic sites containing diagnostic Mesolithic, Neolithic and Bronze Age material have been identified as eroding from the sand dunes on Walney Island and the Duddon estuary (Johnson 2009, 218). Those sites are under constant threat from coastal erosion and some have already suffered greatly from the effects of the deflation and blow out of sand dunes. For example, the HER record for North End Haws Settlement on Walney Island (1496) contains the following comment:

‘Monitoring of the dune face in December 2013 suggests that up to 5m of material has been eroded away by recent storm activity. Some former ground surfaces are apparently visible in the dune face, represented by a grey sand horizon overlying a clean sand deposition’ (D Coward pers comm).

- 2.1.3 A large and spatially extensive lithic record exists for the south-west Cumbrian plain, mainly due to the endeavours of the Cherry family, whose surface collection survey amassed a large lithic collection (Cherry 1963; 1965; 1967; 1969; 1982; Cherry and Cherry 1973; 1983; 1984; 1985; 1986; 1987a). An extensive programme of fieldwalking was undertaken between 1962 and 1980, which included the survey of ploughed fields and erosion scars. In areas where significant lithic collections were identified, repeat visits were made when fields were ploughed in subsequent years, with the objective of securing the largest sample possible. Although the fieldwork was never a planned scientific transect survey, it resulted in the collection of a large sample of lithics (c 60,000), collected from over 180 separate lithic sites, containing material from the Late Mesolithic period through to the Bronze Age, and covered an area stretching from St Bees Head in the north to Silecroft in the south. The sites are mainly concentrated at three main locations: St Bees; between Nethertown and Seascale; and Eskmeals. They are notable for the inclusion of a large number of lithic scatters with Late Mesolithic/Early Neolithic technological affinities (Dickson and Cherry forthcoming), and two sites at Eskmeals have been the subject of excavation (Bonsall 2007). Those at Eskmeals are also susceptible to coastal erosion and this represents the destruction of a significant lithic resource.
- 2.1.4 The lithic resource recorded for the Solway Plain is predominantly the result of two main fieldwalking surveys: during research into prehistoric and Romano-British settlement (Bewley 1984); and a programme of fieldwalking undertaken under the auspices of the English Heritage-funded North West Wetlands Survey (Hodgkinson *et al* 2000). Although both surveys identified a relatively large number of lithic sites, some associated with former wetland environments, assemblage numbers are low in comparison to those from elsewhere in the county. Nevertheless, sites, and find spots, dating from the Late Mesolithic/Early Neolithic period through to the Bronze Age, are recorded, with a particular concentration of sites on the Abbeytown Ridge. Moreover, the lithic resource of the area has been significantly added to by the excavation of the multi-period site at Stainton West near Carlisle (*Section 2.2*). This excavation produced an extensive lithic record, mainly attributable to a Late Mesolithic occupation phase, which has added significantly to our knowledge of stone-working traditions in the area (Brown *et al* in prep).
- 2.1.5 A relatively extensive surface collection survey has been carried out on the eastern limestone uplands, resulting in the compilation of a significant flaked lithic assemblage of c 15,000 pieces from 150 different locations. The survey was undertaken by the Cherry family between 1980 and 1995 (summarised in Cherry and Cherry 1987b) and the collection methodology closely followed that employed on the south-west coast; however, the survey relied more heavily on the collection of struck lithics from areas of discrete ground disturbance. Particular concentrations of lithic sites are recorded from Shap, Crosby Ravensworth, Orton and Crosby Garrett (*ibid*). Although the assemblages include mixed lithic material, diagnostic pieces indicate occupation spanning the Late Mesolithic period through to the Bronze Age. A recent technological assessment of several of the assemblages, initially dated to the Late Mesolithic/Early Neolithic period, has confirmed extensive technological and diagnostic affinities attributable to that date, and it appears that there was a significant Mesolithic/Early Neolithic presence in the area (Dickson and Cherry forthcoming). Similarly, a significant amount of lithics with a late Neolithic/Early Bronze Age technological character is also recorded, and, in some cases, finds of pottery

sherds associated with the struck lithics confirm this, particularly for the Crosby Ravensworth area (Cherry and Cherry 1987b, appendix I). More recent surface collection surveys have been carried out by members of Shap Local History Society and Lunesdale Archaeology Society in the same area, but the results of this work have not yet been reported on or accessioned with the HER (M Brennand *pers comm*).

- 2.1.6 The lithic resource in the Eden Valley mainly stems from two research projects. Caroline Skinner (2000) undertook fieldwork in a study area centred on the River Lyvennet and tracts of the landscape to the south-west and north-east, taking in the foothills of the Pennines, the valley of the Eden and the southern fringes of the limestone uplands. Her methodology included four sub-site pollen-sampling locations at Bank Moor, Temple Sowerby, Howgill Castle and Great Rundale, at which she also undertook intensive archaeological investigation, including fieldwalking (*op cit*, chapter 5). Additionally, in the mid-2000s, as part of Penrith Museum's *Living Among the Monuments* (LAM) community project, a fieldwalking survey was undertaken in the middle reaches of the Eden Valley (Clarke *et al* 2008). The aims of the project were focused towards understanding the development of the Neolithic and Bronze Age settlement pattern of the area, specifically the landscape association of potential occupation sites with ceremonial monuments. The project practised total artefact retrieval and each find was located by handheld GPS. In total, 213 fields were surveyed and 3518 struck lithics were recovered. Both of the aforementioned projects recorded significant lithic concentrations at several locations. A mixed assemblage was recorded at Temple Sowerby by Skinner (2000, 132-57), and technological analysis indicated elements of stone-working traditions spanning the Late Mesolithic/Early Neolithic period and Late Neolithic/Early Bronze Age, while at Great Rundale, in the Pennine foothills, a relatively large lithic site, composed of various types of flint and chert, was recorded (*op cit*, 162). Based on a technological assessment of the assemblage, Skinner (*op cit*, 172) assumed that it was Late Mesolithic/Early Neolithic in date (*op cit*, 157-68). Although much analysis remains to be carried out on the lithic component of the LAM project, initial assessment indicates technological and diagnostic material reconcilable with Late Mesolithic to Bronze Age stone-working traditions. A concentration of lithic sites has also been recorded in fields within the environs of the confluence of the Rivers Eamont and Eden. Two of those sites contain significant amounts of debitage and diagnostic lithics associated with a Late Mesolithic/Early Neolithic technology (Clarke *et al* 2008). It should be noted that none of the material from either of these surveys has yet been accessioned with the HER. Furthermore, the LAM project also recovered a significant amount of other artefact types, including ceramics, metal objects and modern material.

2.2 CASE STUDY: STAINTON WEST, CARLISLE, CUMBRIA

- 2.2.1 The circumstances surrounding the discovery, and subsequent excavation, of Stainton West appear to be particularly pertinent to the aims and objectives expressed in this report, in relation to the designation of sites of national importance. An archaeological assessment of Stainton West was undertaken by OA North (in its former guise as the Lancaster University Archaeological Unit (LUAU 1996)) in 1996, as part of the wider Environmental Impact Assessment (EIA) associated with the construction of the Carlisle Northern Development Route (CNDR). The EIA concluded that further field evaluation was necessary to determine the full potential of the archaeology along the route. Subsequently, between

1996 and 2005, the Carlisle Archaeological Unit (CAU) and CFA Archaeology undertook various evaluations of different parts of the scheme (OA North 2011). It did not prove possible to gain access to Stainton West until 2005, when it was subject to trench evaluation (CFA 2005). The evaluation retrieved eight worked lithics from the topsoil, provisionally dated to the Late Neolithic period (HER 41362), and, in one trench, a preserved root from an oak tree. Some of the naturally deposited sediments were interpreted as silting within a palaeochannel. Generally, the geology was shown to comprise deposits of alluvial sediment.

- 2.2.2 On the basis of this information, the site at Stainton West was originally identified by the project brief (CCCHES and English Heritage 2009) as an area for strip and record. This phase of works was duly undertaken by OA North in 2009 and resulted in a major prehistoric find, the scale and significance of which was unforeseeable at the start of the project. Upon excavation, it was found that the site comprised features and an extensive lithic assemblage, associated with a complex sequence of deposits within a palaeochannel, spanning the Late Mesolithic period to the Bronze Age (OA North 2011; Fig 6).
- 2.2.3 Stainton West is perched on an early Holocene terrace, above the present floodplain of the river Eden (Plate 1), and 2km north-west of Carlisle (NY 37594 57137). The earliest radiocarbon date from the terrace as a whole, a single assay of 8720–8450 cal BC (9320±40BP; SUERC-33917), is from residual charcoal within the primary fill of the ditch of a probable hengiform monument, approximately 150m to the north of the main site. It is possible that this carbon indicates burning of vegetation or other activity by humans at this early time, although there was no clearly contemporary cultural material in close association with it.
- 2.2.4 The deposits filling the palaeochannel contained a particularly well-preserved palaeoenvironmental assemblage, including deposits of waterlogged wood, pollen, other plant remains and insects. At various horizons within the channel, from a range of prehistoric periods, lithic, wooden and ceramic cultural material was recovered. Radiocarbon dating suggests that the earliest deposits in the channel formed in, at least, the later Mesolithic period (the earliest date is 5550 cal BC, from a radiocarbon-dated dendrochronological sequence). The wood in the earliest part of the sequence had been used by beavers to construct an arrangement of dams and lodges. Some of the wood had been burnt, tree-felling debris was also present, and a small lithic assemblage, at the same level, provided further evidence that humans were active there at this time. Sealing these early deposits, and pre-dating a phase of Early Neolithic activity in the channel (radiocarbon dates suggest this activity commenced *c* 3800 cal BC), are alluvial deposits associated with wooden debris yielding a dendrochronological sequence spanning the period 4466-4144 cal BC (Brown *et al* in prep).
- 2.2.5 Adjacent to the channel was an extremely rich, largely *in situ*, assemblage of worked lithic material (*c* 303,970 pieces; Table 1; Fig 6). Detailed lithic analysis, undertaken on a sample of the assemblage, indicates a predominantly narrow blade, small geometric microlith, Late Mesolithic technology. Archaeological features associated with this lithic scatter included tree throws, hearths and stakehole structures that probably indicate a contemporary settlement. Radiocarbon dating of these features has proved difficult, as very little organic material survives, but several radiocarbon dates have been obtained that indicate that the majority of the activity probably took place in the range of *c* 5000-*c* 4000 cal BC.

	Brown flint	Cannot determine	Chalcedony/agate	Chert	Good-quality brown chert	Grey flint	Other	Pebble flint	Pitch-stone	Quartz	Radiolarian chert	Tuff	Totals	% of Total
Blade chip	281	915	114	4665	210	142	25	7630	44	22	107	133	14288	4.70
Broad blade	910	498	95	2774	121	177	35	4166	11	4	104	169	9064	2.98
Chunks	118	910	112	4379	74	91	94	3112	17	22	85	148	9162	3.01
Core	162	69	67	1281	45	53	27	1332	3	10	41	39	3129	1.03
Irregular flake	417	1684	171	4807	141	168	45	6068	26	12	173	210	13922	4.58
Microlith	193	354	90	1329	191	53	6	3346		4	196	136	5898	1.94
Narrow blade	705	1141	165	5374	204	266	56	8116	51	9	143	178	16408	5.40
Pebble	1	3	10	66			5	152	1			8	246	0.08
Regular flake	1508	2578	371	10784	435	539	157	18416	32	18	292	513	35643	11.73
Retouched blade	147	12	7	84	6	20	2	223	4		15	15	535	0.18
Retouched chunk	2	2	1	12				2			2		21	0.01
Retouched core	4	1		8	2	1		19					35	0.01
Retouched flake	108	13	10	89	17	26	4	239	7	1	20	8	542	0.18
Small flakes	1521	21758	62	61863	58	2042	1228	105331	37	76	681	155	194812	64.09
Utilised blade	67	1		8	1	19		64			2	2	164	0.05
Utilised chunk								1					1	0.00
Utilised flake	33	1	2	6	1	8		43		1	3	2	100	0.03
Totals	6177	29940	1277	97529	1506	3605	1684	158260	233	179	1864	1716	303970	
% of Total	2.00	9.85	0.42	32.09	0.50	1.19	0.55	52.06	0.08	0.06	0.61	0.56		

Table 1: The lithic assemblage from Stainton West, by artefact and raw material type

2.2.6 Associated with the Mesolithic lithic scatter were smaller quantities of material representative of later stone-working traditions. This was probably associated with a wooden platform and other structures constructed in and on the margins of the palaeochannel during the Early Neolithic period, at *c* 3800 cal BC. Apparently deposited in the channel at this time was a small flaked lithic assemblage, several polished stone axeheads, and a large number of partially flaked cobbles, and coarse stone tools. In addition to the lithic finds, pottery fragments were also recovered, as was an assemblage of worked wood, including two 'tridents' and a paddle handle, as well as wood-working debris. Periods of alluvial and organic deposition occurred into the later Neolithic period through to the Bronze Age/Iron Age. These natural events seem interspersed with human activity, tangibly realised through the construction of several burnt mounds, dating from the Late Neolithic period and the Bronze Age.

2.2.7 As the spatial distribution of the material had the potential to contain valuable information, it was recovered by the whole-earth sampling of each stratigraphic context within the 886 1m² grid squares that the scatter extended over within the site boundaries. The *c* 270,000 litres of sediment sampled in this manner was wet sieved to 2mm, employing a system imported from the Netherlands (Plate 2), enabling all lithic material to be recovered. Some 200,000 pieces comprise debitage smaller than 10mm, with the remainder, including 5898 microliths, being suitable for detailed analysis. The lithic material, alongside the rest of the project archive, has been recorded onto an online database, so that the results can be made widely available for future study. Post-excavation analysis has confirmed the spatial

integrity of the assemblage, with *in-situ* reduction sequences being identified, and some zonation becoming apparent within the lithic distribution.

- 2.2.8 Given the spatial integrity of the Mesolithic lithic assemblage, this could relate to a single episode, or a sequence of closely related periods, of occupation. This occupation took the form of habitation in semi-permanent structures, most likely during the spring and summer months (which could be inferred from the results of microwear analysis) and the spatial designation of activities. This is represented by a probable midden in the middle of the site, and concentrations of lithic working areas, defined by spatially discrete knapping episodes, particularly in the south-west part of the site. Structures, sometimes representing the reworking of natural features, are attested to from across the site and are often associated with concentrations of struck lithics.
- 2.2.9 Wide varieties of raw materials were utilised on-site, including large quantities of pebble flint and chert, supplemented by smaller amounts of other flint types, tuff, chalcedony/agates and pitchstone. Much of the other flint types, some of the cherts and the pitchstone were procured from regions to the north and north-east of Cumbria. This indicates far-reaching patterns of movement or extended social connections with other communities in the north of England by those occupying Stainton West. All raw material types were utilised for microlith production.
- 2.2.10 The date, size and good preservation of the Stainton West assemblage, as well as the extended sequence of activity it represents, make it one of the most important early prehistoric sites investigated within the North West, and indeed, nationally, to date. It should also be of general interest to researchers of the Mesolithic and Neolithic periods and of the Bronze Age.
- 2.2.11 The site also demonstrates the difficulties of identifying archaeological sites within flood-plain environments. Even if it had been ploughed, fieldwalking would not have readily identified the importance of the site, due to the fact that the lithic assemblage and associated structures were buried under alluvial and colluvial deposits. This in turn raises issues regarding the level of archaeological prospection that would be needed to evaluate such sites efficiently, in order to manage them effectively at the pre-determination and/or post-determination stages of the planning process. Such work can be expensive, requiring experienced, technical input from various specialists. Evaluation can also be intrusive, affecting the integrity of the resource, which could lead to problems regarding the future management of the site. Furthermore, due to the fact that only an, in effect random, sample area of the site was excavated, determined by the working width of the road scheme, the extent of the resource is unknown, and defining this should be seen as essential in regards to the future management of the site. Additionally, potential difficulties, stemming from the lack of moderation afforded to Local Planning Authorities (LPAs) under current guidance schemes (for example Selected Heritage Inventory for Natural England (SHINE; ALGAO 2014)), regarding the resource's management in relation to agricultural stewardship, is also of concern.

2.3 THE NEOLITHIC AXE FACTORIES OF GREAT LANGDALE AND SCAFELL PIKE

- 2.3.1 The Neolithic axe-working sites that have been identified around the summits of the Lakeland Central Massif (Fig 7) are of direct relevance to the present study. These are

known as the Langdale Axe Factories because the early discoveries were of substantial sites around the Langdale Pikes (Bunch and Fell 1948). Over 580 sites have been identified (Claris and Quartermaine 1989), which vary from small workings for individual axes to very extensive quarry sites, and with each year more are revealed, as footpath erosion and sheep scrapes result in the loss of the turf that covers buried working floors (Fig 8). The Neolithic waste material on the summits is measurable in thousands of metric tons and the axe products of this industry are found throughout Britain and Ireland; it was the most productive of all of the Neolithic stone axe factories by a substantial margin (*c* 40% of all stone axes, with 1612 axes identified in 1988 (Clough and Cummins 1988)). The condition of the axe-working sites is variable; some are in excellent condition and, despite no longer being covered by turf, are almost as they were left some 5000 years ago; others, though, are being rapidly degraded by humans, sheep and water erosion. The sites have been called 'Neolithic axe factories', and undoubtedly they were worked in the Neolithic period, with the peak of production later in that period (Bradley and Edmonds 1993), but there is also evidence for tools being made using the distinctive Group VI rock during the Bronze Age (for example, there are Group VI wristguards; Woodward *et al* 2006), and there are also a few tantalising dates that suggest woodland clearance episodes in Langdale that date to the Mesolithic period, which could be an indication of some very early activity, if not of tool-working (OA North 2004).

- 2.3.2 The enormous scale of production, and the potential implication of a trading and distribution system, has huge implications for an understanding of Neolithic society, and the industry can unequivocally be described as being of national importance, indeed, of international importance. None of the production sites, however, are scheduled as ancient monuments, despite three attempts in the past to have them designated (Historic Environment Commission 2006). The first attempt was championed by Tom Clare (formerly the Cumbria County Archaeologist) in the early 1980s, but this was rejected on the grounds that the archaeological sites were not adequately enough located to enable scheduling. This prompted a survey by the Cumbria and Lancashire Archaeological Unit (now OA North) and the National Trust in 1984/5 (funded by English Heritage), which produced accurate mapping of the sites exposed at that date across the whole of the Central Massif (Claris and Quartermaine 1989; Fig 7). The completion of the survey prompted a second attempt to schedule the axe-production sites, in early 1988, but this was again rejected, this time because the proposed areas for scheduling were fairly large, comprising whole axe-production groups, rather than individual axe-production sites, and because there were concerns that the sites comprised mobile antiquities rather than structural monuments. No attempt was made at that stage to resubmit an application for scheduling, because it would have meant that only a limited number of quarry sites (Plate 3), which could justifiably be described as structures, would have been designated.
- 2.3.3 The third attempt to schedule was in 2005, when the axe factories served as a pilot study and test-bed for the development of management and designation options, undertaken as part of the Heritage Protection Review (HPR), which was intended to inform the compilation of a White Paper for the proposed Heritage Protection Bill (Department for Culture, Media and Sport 2007). In the event, the Bill was not given Parliamentary time, and the designation proposals for the axe factories and other pilot studies were never implemented. To develop ideas for the HPR pilot study, a committee was established, combining representatives of English Heritage, LDNPA, and the National Trust, with OA

North as consultants, which had as a remit to consider a broad range of management options for the sites, and these were intended to be fully inclusive. One of the issues for the development of designation options was site visibility; while in some areas, notably on Scafell Pike, there is no turf cover and visibility of working floors is very good, indeed exceptional, on the northern side of the Langdale Pikes, there is considerable peat- and turf cover (Plate 4), and in these areas sites are often only revealed as a result of erosion, or of archaeological investigations, such as test pitting (OA North 2009; Bradley and Edmonds 1993).

- 2.3.4 To ensure total inclusion of the resource, a wide landscape approach to its management was proposed, which entailed the establishment of a very large Heritage Partnership Agreement (HPA), encompassing much of the Lakeland Central Massif and all of the known axe-working sites. This study area had an irregular shape, following the line of the outcrop of tuff and the topography, and at its greatest extent was 10 x 6km, but because of its irregularities covered an area of only about 35 square kilometres. The HPA is a non-statutory agreement, which sets out an understanding of the significance of the heritage asset and serves as a management tool for the overall resource. As such, it provided a management umbrella for the wider group of smaller Heritage Assets that were to be submitted for designation (English Heritage 2006). As well as the axe-production sites, the HPA also included other sites within the area, such as shielings and ring cairns. Within the HPA, there were 11 Heritage Asset Records (HAR) proposed, including each of the main axe-production areas. One of these (HAR 1000/08) encompassed the extent of the Great Langdale Neolithic stone-axe factories, extending from Martcrag Moor to Stickle Tarn, and included 25 site groups and 230 axe-working sites that had been identified by the earlier surveys (*ibid*; Claris and Quartermaine 1989).
- 2.3.5 While there is a considerable need for the sites to have statutory protection, this would not need to be through the planning process, as the sites are, for the most part, on open moorland above 600m AoD and are not likely to be subject to development. However, there are considerable threats from visitor pressure, over-stocking and natural erosion, and this is effectively illustrated by two photographs of the South Scree gully, which show that the scree, in which Neolithic waste material is predominant, dropped by about 2m between 1948 and 1989 (Plate 5). The status of the sites is important, and designation would aid the necessary ongoing management of the resource, which has some of the highest visitor pressures of anywhere in the Lake District. It should also provide the means to protect sites, and enable funding to conserve threatened sites. The provision of national importance status for the landscape needs both to enable protection of the fragile resource, but should also not be too prescriptive, such that it could impede the implementation of management strategies to stabilise vulnerable sites.
- 2.3.6 The establishment of national importance for the sites also needs to recognise that the axe-factory sites are part of a wider landscape, within which there were quarrying and extraction activities that were directly or indirectly associated with the horseshoe-shaped band of outcropping source rock that extends around Langdale, via Bowfell and Scafell Pike, to Glaramara (Fig 7). However, there were also processing areas, sometimes set back from the main extraction sites, temporary settlement sites, and communication routes. The establishment of national importance status needs to incorporate sufficiently large areas to allow for the documented resource, but also the material that is almost certainly currently buried beneath turf and peat.

3 EAST ANGLIA

3.1 THE LITHIC RESOURCE

- 3.1.1 The focus of the project was in Cumbria, but it was considered useful to consider a brief impression of the lithic scatters from a contrasting region, in order to highlight commonalities as well as differences that may help to inform discussions of the key issues being addressed by the project. This account therefore represents a brief review of the character and value of lithic scatters from East Anglia, and also some of the problems surrounding their recognition and wider appreciation.
- 3.1.2 East Anglia in its strictest sense encompasses the three counties of Cambridgeshire, Norfolk and Suffolk (Fig 9). As a broad characterisation, and certainly when compared to upland areas such as Cumbria, it might be regarded as low lying, intensively farmed and, at least in places, densely settled. It has probably seen relatively large population densities throughout much of prehistory, and this has resulted in it having a rich archaeological heritage. Its geological conditions mean that, as a raw material, flint is available across most of the region, albeit in many different forms and qualities.
- 3.1.3 The recording of lithic scatters has always been an important element of archaeological work in East Anglia. The extreme antiquity of humanity was posited in the late eighteenth century, with the discovery of handaxes at Hoxne in Suffolk, and from that time on places such as the Breckland and the eroding Fens have been favourite hunting grounds of antiquarians, who have amassed vast collections of flint implements. For the most part, these collections are poorly provenanced and highly selected. Some, however, such as Sturge's collection of around 100,000 pieces, have seen their way into museums and their study has contributed significantly to much of what is currently understood of lithic typology, technology and distribution (*eg* Clark 1929; 1935; Evans 1897; Green 1980; Healy 1996; Smith 1931).
- 3.1.4 This interest in, and the recognition of, the importance of artefact scatters led to one of the largest archaeological surveys undertaken in Britain when, during the 1980s, over 250,000ha were fieldwalked as part of the Fenland Project (Hall and Coles 1994). This resulted in the identification of over 2500 'sites' and the recognition of an almost continuous spread of lithic material across the landscape (*op cit*, 8). The accumulated data represent a vast resource but, with a few notable exceptions (*eg* Edmonds *et al* 1999; Healy 1991), it has seen little subsequent detailed analysis.
- 3.1.5 The work of the Fenland Project highlights some of the difficulties inherent in the ways that lithic scatters might be defined and understood. The Fenland is an embayment that filled in with alluvium over many millennia, and contains a complex series of buried land surfaces that preserve both scatters within relict soil horizons and structural remains, such as postholes, pits and hearths. The scatters often have a close integrity with the structures, and the values of both are co-dependent; as such, it becomes problematic to differentiate scatters from contextualised lithics. Although these are buried soils, similar problems occur elsewhere, as scatters within modern topsoils are also often related to sub-surface remains, although any relationships remain an unknown unless excavation is undertaken.
- 3.1.6 Perhaps more of a pressing issue is the problem of management; how buried lithic scatters

are identified and recorded. In the Fenland, scatters associated with ancient landscapes are gradually being exposed as the present-day ground surface is deflated through cultivation and dewatering, but this represents a paradox: we only become aware of the potential of these landscapes as they are destroyed. Without prompt excavation, what may have been complex and highly informative palimpsests of past activity quickly becomes homogenised scatters of only the most durable items, with an almost total loss of context.

- 3.1.7 East Anglia is currently witnessing an unprecedented rate of development, with new housing, commercial ventures and infrastructure springing up around many of its towns and villages. Consequent commercially-led archaeological projects are providing dozens, if not hundreds, of new lithic assemblages each year. Whilst recovered under controlled conditions, probably the majority still comprise residually deposited material akin to scatters. All of these assemblages represent an important resource for understanding the archaeology of the region, but development is not proceeding at an even pace. Certain ‘hotspots’, particularly southern Cambridgeshire and the environs of some of the major towns such as Norwich or Peterborough, are providing the bulk of new assemblages. Other areas, including the more rural locations on the central Anglian claylands, are seeing much less development, and this is leading to a skewing of our knowledge of the complete landscape.
- 3.1.8 All of these factors have resulted in the HERs for the three counties amassing over 15,000 records that mention either ‘lithics’ or ‘flint’. These include everything from assemblages acquired under controlled archaeological conditions to antiquarian donations and pieces picked up by the public. The vast majority of records refer to single implements or small collections, with little associated contextual information. The records have been generated over a long period of time and, despite constant attempts to update the entries, many inconsistencies remain; details are often partial or lacking, and sometimes even misleading. Whilst these short-comings make it difficult to use the records as a straightforward research tool, they represent an enormous quantity of data of vital importance, both as a first step for research and as a management tool.
- 3.1.9 The archaeological resource represented by lithic scatters in East Anglia is clearly substantial and indicates a near-continuous presence of lithic material across the landscape. Traditionally, however, they have been seen as a low-quality resource of only secondary importance to other avenues of research. Hall and Coles, for example, talked about the problems in separating ‘background noise’ from ‘real’ archaeological sites in the Fenland (1994, 8, 25).
- 3.1.10 However, in the experience of the author (Barry Bishop), their usefulness is manifold. At a practical level, scatters are an indication of prehistoric activity that can be used to help inform curators making development and planning-control decisions. Whilst many problems surrounding their use are recognised, in East Anglia at least they are employed routinely, and sometimes actively evaluated, such as through planning conditions that stipulate the systematic test-pitting and sieving of topsoils (*eg* Austin and Sydes 1998).
- 3.1.11 Scatters can also be a powerful research tool. For some periods, particularly early prehistory, they represent more-or-less the only evidence available. Even during later periods, scatters are probably the most commonly encountered evidence for settlement and may also provide indications of practices not represented by the structural record, such as surface middening. Without taking into account the presence of scatters, false impressions

may be created concerning the nature and chronology of activity (eg Healy 1983; 1987). Importantly, projects that combine the study of surface-derived lithics along with the structural record can provide powerful and much more nuanced accounts of settlement routines and practices (eg Tabor forthcoming).

- 3.1.12 Moving beyond the limitations of individual sites, however, the sheer ubiquity of lithic material across East Anglia allows for much broader considerations of landscape occupation (cf Barrowman 2003). The spread of lithic material is near continuous, but at markedly different densities and with constant changes in composition, such as in the chronological range and the techno-typological 'signature' of assemblages. By recording variance in lithic assemblages and relating this to the changing character of the landscape, it becomes possible to see not only how settlement was structured spatially, but also allow for understandings of how landscapes may have been perceived and thus inhabited in a cultural sense (eg Barrett 1999; Edmonds 1997; Ingold 1993; Thomas 1996).
- 3.1.13 In short, the evidence from East Anglia shows the considerable potential that 'poorly contexted lithic scatters' have to enhance not only the management of the archaeological resource within the planning system, but also to contribute directly to an understanding of the past, including aspects that cannot be met through traditional site-based archaeology alone. However, it also demonstrates that challenges remain in attempting to define, identify, record and interpret lithic scatters, and failure to do these adequately means that their appreciation and ultimately their management and protection must remain at risk (see Section 3.2, discussing the lithic scatters around Grime's Graves in the Breckland).

3.2 CASE STUDY: GRIME'S GRAVES, EAST ANGLIA

- 3.2.1 The project seminar on 30th September 2014 recognised the significant research potential of lithic scatters, particularly when considered at a landscape scale, but also that there remain considerable obstacles in their definition, identification and management. It was also agreed that the testing of hypothetical case studies could be useful in focusing debate on how areas known to contain important lithic scatters might be defined and thereby better protected. One such area is the landscape surrounding the flint-mining complex at Grime's Graves in Norfolk. In order to explore the potential and problems of how a lithic site of national importance might be defined with respect to the area around Grime's Graves, three areas at nested scales have been described and evaluated.
- 3.2.2 The first area worthy of consideration is the scheduled site itself (SM 1003619). This is under the guardianship of English Heritage and consists of c 400 crater-like earthworks set within a scheduled area of 37ha (Fig 10). The site is also designated a Site of Special Scientific Interest and a habitat for rare plants and fauna.
- 3.2.3 The scheduling covers two fields donated to the nation in the 1930s. Visible earthworks occupy around a quarter of the area, although further mines and quarries, along with associated palimpsests of knapping scatters (the 'workshop floors'), are present throughout. The site has seen nearly 150 years of archaeological investigation and is extensively published (eg Barber *et al* 1999; Longworth *et al* 2012; Longworth and Varndell 1996; Mercer 1981). It is clearly of national and even international importance and, being scheduled, has full legal protection. Even were it not already scheduled, the presence of structures in the form of earthworks would make it a prime candidate for inclusion.

However, if scheduling was not an option, the archaeologically proven presence of often-dense, overlapping and *in-situ* knapping scatters across the area would make this a clear candidate for being considered as a lithic site of national importance.

3.2.4 The second scale for consideration includes an area with a radius of *c* 1km surrounding the scheduled site, which is principally owned by the Ministry of Defence and Forestry Commission (Plate 6). Due to its current and previous history of land use, it has witnessed virtually no earlier archaeological investigations until it was subjected to a detailed survey as part of a PhD project, which included the examination of museum collections, fieldwalking, ground-penetrating radar survey and excavation (Bishop 2012). The investigations resulted in the identification of a more-or-less continuous series of scatters of lithic material across the area, dating from the Mesolithic period through to the end of the Bronze Age. The evidence demonstrates that flint extraction and flint-working sites continued beyond the boundaries of the scheduled site in some directions for at least 1km and probably further. It significantly alters how Grime's Graves is perceived, as this changes it from being an important site to it being part of a much larger landscape of extraction. It also invites comparisons with the extensive stone quarrying seen at places such as Langdale (*Section 2.3*). The evidence from the surveys also demonstrates that the intensity and types of activities closely correlate to a number of factors, including specific geological conditions and landforms. Additionally, it has also provided important evidence on how the landscape was used over several millennia and how this contributed to Grime's Graves emerging where and when it did.

3.2.5 Taken together, the evidence from the surveys would provide compelling reasons for treating the environs of Grime's Graves as a lithic site of national importance, forming a buffer zone surrounding the scheduled site. While under the existing criteria for designation, the present evidence, when considered alongside other parameters such as professional judgement and comparison with similar sites, provides a solid basis from which to suggest that the environs beyond the current scheduled site should be considered as a site of national importance, it is recognised that several issues could be addressed in order to strengthen the case:

- the surveys, whilst widespread, have only covered a small percentage of the area. In order to gain a robust understanding of the archaeology, such as might withstand challenges in a court of law, considerable further survey work should be undertaken;
- the extents of the areas where intensive extraction occurred, since this almost certainly continues beyond the survey limits, although there is little idea of how far at present;
- the evidence often comprises small and dispersed quantities of lithic material, and the individual findspots are frequently unimpressive and by themselves of limited value; it is only when taken together that a comprehensive picture of past activity can be drawn;
- intensive flint working was not conducted evenly across the landscape, but was concentrated within certain geological/topographical zones. This presents a problem of how the 'negative evidence' should be dealt with. Some areas, such as the miners' campsites, may contain much lower densities of flintwork, but they are

nonetheless vital in understanding how the whole prehistoric landscape worked.

3.2.6 The third area to be considered encompasses the central Breckland (Fig 11). This includes at least one very probable mining site at Buckenham Tofts, some 6km north-east of Grime's Graves (Fig 9). Additionally, there are several sites where antiquarian accounts or the presence within museums of extensive lithic collections indicate that this landscape may contain a series of extraction or axe-manufacturing sites. These demonstrate, perhaps not surprisingly, a close affinity with specific geologies, particularly the Brandon Flint Series that was also targeted at Grime's Graves. These can be seen as part of a much wider landscape of flintworking, which is a defining feature of the Breckland and an acknowledged part of its character (*eg* Clarke 1925; Matless 2008). The HERs for Norfolk and Suffolk contain hundreds of records that indicate the importance of obtaining and working flint across the area. This landscape can easily be recognised as a nationally important asset and at least parts of it are worthy of consideration as lithic sites of national importance. However, as with the environs of Grime's Graves, a number of issues would need to be addressed before blanket protection could be afforded:

- whilst lithic sites in the central Breckland are a distinctive part of its character, there are no obvious boundaries, and thus defining the extent of any area or areas of national importance would remain problematic;
- with the exception of Grime's Graves, none of the possible extraction sites has seen any detailed archaeological excavation, and consequently very little is known of their character or chronology. Similarly, most of what is known of the Breckland surface scatters comes from poorly provenanced and highly selected antiquarian collections. Without further information, requiring much more extensive fieldwork and research, problems could be foreseen in trying legally to enforce protection over much of the area.

3.2.7 Grime's Graves is justifiably regarded as nationally important and it is consequently protected through scheduling under the 1979 Ancient Monuments and Archaeological Areas Act (SM 1003619). However, it is clear that comparable archaeological remains form a continuum that extends beyond the scheduled site, and these are afforded no protection. Significant extraction sites and lithic scatters are also present more widely in the central Breckland and, collectively, these may also be regarded as nationally important. One means of extending protection could be through a broader area designation of national importance that encompasses lithic scatters, although a number of issues would need addressing. There is currently inadequate knowledge of the extent and character of the area's archaeology and a research programme would need to be implemented in order effectively to identify, define and manage nationally important sites. A further issue surrounds the legislative framework protecting archaeological remains. Land use in the Breckland is dominated by military training, forestry operations and arable cultivation, which fell outside the National Planning Policy Framework (NPPF; DCLG 2012). To achieve effective protection, lithic sites of national importance would need to be integrated into existing planning regimes. Whilst there exist strong commitments to the historic environment (*eg* Forestry Commission 2011), there is also a lack of resources needed for their full implementation. Adequate protection of the area's nationally important archaeology will only be afforded with additional expertise and research strategies that actively seek to identify and define vulnerable remains, along with firm policies that

mitigate for their protection when identified. This need is particularly acute when the remains are not obvious or easy to understand without specialist knowledge, such as lithic scatters.

4 PROBLEMS AND ISSUES

4.1 DEFINING AND DESIGNATING LITHIC SCATTERS

- 4.1.1 Within the areas considered by the project, and the case studies, lithic sites exist as a variety of type sites. Fully excavated sites are extremely rare, and by this very act, they are no longer under threat and therefore do not require designation of importance to inform their management. However, more often than not, excavated lithic sites are the result of partial excavation, often identified within the confines of a commercial project, and are therefore representative of a larger site area (*Sections 2.2 and 3.2*). In that respect, it could be assumed that excavated lithic sites can lend themselves favourably to assessment as sites of national importance, due to the information garnered during excavation and post-excavation analysis. However, this is not always the case, especially when attempting to define the extent of a site and its potential association with others within a wider landscape setting. Additionally, lithic sites are frequently damaged as a result of anthropogenic and natural causes, such as those that erode from relict soil horizons (see *Section 3.1.5*) and those affected by coastal erosion (see *Section 2.1.2*). Without archaeological intervention, such sites can suffer complete destruction, or more often, become scatters of disassociated artefacts without an archaeological context. It is variations of the latter which are the most common lithic site type encountered, and these are known as lithic scatters.
- 4.1.2 By their very nature, lithic scatters represent disturbed sites. Conventionally, they represent worked stone, usually suspended in modern topsoil deposits, which have been liberated from their original archaeological context. In that respect, they may be a surface signature of a site which still survives as a group of sub-surface features or, conversely, they may represent the only evidence for past activity. This may be due to the complete destruction of once-associated features, or they may represent worked stone that was never contained within archaeological features. Furthermore, lithic scatters nearly always represent a palimpsest of activity, sometimes containing several technologies from different archaeological periods. Consequently, the value of lithic scatters, as a source for investigating past behaviour, has been questioned. However, in many cases, especially for sites dating from the Palaeolithic period through to the Bronze Age, lithic scatters are likely to represent the only available archaeological evidence of past activity and, therefore, represent an important resource that should be accorded archaeological significance.
- 4.1.3 The majority of Cumbrian lithic sites, and indeed those from East Anglia, conform to these general statements, and many are recorded as surface scatters, the original context of which is difficult to define on the basis of their current HER record. Very few of the lithic scatters from both study areas have seen detailed technological analysis, although some projects have sought to address this (for example, see *Section 2*; Dickson and Cherry forthcoming; Clarke *et al* 2008; Evans 2008). Furthermore, the majority are mixed scatters ranging in size from a few artefacts to several thousand and are a reflection of the research interests of collectors, rather than a real representation of the spatial extent of any one particular settlement pattern. One exception to the issues set out above is the site at Stainton West, which was initially identified as a lithic scatter during evaluation, and upon excavation turned out to be an important site type for the Mesolithic/Early Neolithic transition in

north-west England, comprising a large lithic assemblage associated with sub-surface features and a range of palaeoenvironmental deposits (*Section 2.2*; Brown *et al* in prep).

- 4.1.4 Due to the intangible nature of most lithic sites, there are also wider issues regarding their potential designation as nationally important: is it possible to determine how important an individual site is and does the identification of sites as being nationally important work to the detriment of sites of perceived lesser significance? For example, individual lithic sites have the propensity to be associated chronologically and spatially with a wider occupation pattern, that was played out at a landscape level. Therefore, sites that have the potential to be part of that activity could all be regarded as nationally important, as they have the possibility to inform on the various components of a wider social pattern. This could involve a range of site types, in a variety of topographical locations and environmental conditions. This is exemplified by all the case studies (*Sections 2.2, 2.3 and 3.2*). At Stainton West, a significant part of the site is dated to the Late Mesolithic period, and therefore its regional context becomes paramount in regards to its wider contextualisation. This becomes even more pertinent when the range of raw materials and their potential procurement strategies are considered. Additionally, research into the existing lithic record for the Mesolithic period in Cumbria (Dickson and Cherry forthcoming) has highlighted the potential for communities to have had access to different sources of raw material from different parts of the region and beyond, possibly indicating the existence of territories. It can therefore be argued that a site's potential to be nationally important has to be considered at a wider level of significance, but this can only be done when sufficient evidence, derived from detailed technological analysis, can be applied to a variety of lithic sites. At Grime's Graves, a similar situation exists, whereby research has identified that the site belongs to a wider 'landscape of extraction' (*Section 3.2*), which continues beyond the current confines of the scheduled area into the wider East Anglian landscape. In that respect, there is potential for the existence of a large number of similar and associated lithic sites that should also be considered for designation as nationally important, but this can only be established by further research, survey and excavation.

4.2 THE EXISTING GUIDANCE FOR THE DESIGNATION OF LITHIC SITES

- 4.2.1 Guidance for the designation of national importance for lithic sites, but with particular relevance to lithic scatters, has been published by English Heritage. Initially, this was published in *Managing Lithic Scatters*, where a list of six criteria was drawn up in order to assist in the identification of nationally important lithic scatters (English Heritage 2000, 7):
- 1 Can the site's boundaries be identified?
 - 2 Does the quality/type of the artefacts from a recent collecting episode indicate that they were recently derived from sub-surface features?
 - 3 Has any additional investigative work been undertaken, which indicates the presence of structures?
 - 4 Does any part of the site remain undisturbed?
 - 5 Has any technological analysis been undertaken which can be used to date and interpret the site?
 - 6 Is there any diversity in technology and diagnostic artefact composition to indicate

phases of repeated occupation and/or differences in activity?

- 4.2.2 At the time of this document's publication (2000), it was proposed that any site fulfilling three of the criteria could be deemed of national importance. This was followed by the publication of another English Heritage guidance document, the scheduling selection guide for sites of early human activity without structures (2012). This document argued that any site fulfilling four of the criteria should be considered of national importance. It also added an adjunct to the first criteria: that the extent of a lithic site should be known in order to make it a discrete entity and it should be composed of a significant concentration of material. If the updated criteria are considered in reference to the project study areas (bearing in mind that the document does allow for regional variation and the suggested satisfaction of the criteria are intended as a rule of thumb), then a number of issues come to the fore. The spatial extent and the physical mass of most sites would be difficult to determine from the HER records. For instance, the spatial extent of Stainton West is unknown and rectifying this should be seen as a priority if the site is to be considered as nationally important, especially in regards to its future management; the same can be said for Grime's Graves. There would also be considerable difficulty in gauging the eligibility of many lithic scatters recorded in HERs, in reference to the rest of the criteria. Moreover, in order to apply the criteria to the existing HER records of lithic scatters, a considerable amount of research, possibly including the revisiting of sites in the field, would need to be undertaken in order to apply them in a rigorous and structured manner across the record type.
- 4.2.3 This begs the question of the value of the criteria and their usefulness in regards to the designation of legacy artefact scatters as nationally important, and consequently as a manageable resource. At present, only partially excavated sites associated with large lithic assemblages, such as Stainton West, and surface-collected material from more recent surveys where appropriate project designs have been proposed and implemented, as well as published research, appear to be the most suitable resources where the criteria could be applied objectively. In that respect, pre-emptive guidance along the lines of that proposed in the English Heritage document *Our Portable Past* (2014a) would possibly offer a means to evaluate future lithic scatters as nationally important, by applying the existing criteria, once the relevant information has been accessioned in HERs.

4.3 OTHER CRITERIA FOR THE DESIGNATION OF LITHIC SITES

- 4.3.1 At the project seminar, it was commented on that the aims and objectives contained within the English Heritage Monuments Protection Programme (MPP; English Heritage 2014b) had some relevance to designating sites as nationally important. The fundamental aim of the programme was to make recommendations about the suitability of a site or sites to be accorded designation. The MPP ended when funds were mainly steered towards the creation of Heritage Protection Reform (HPR). This effectively left many projects incomplete, and decisions regarding the suitability of many sites as nationally important have not been made.
- 4.3.2 The main tenets of the MPP examined at the meeting were that it considered the group value and association of sites, a consideration that has already been argued for as being particularly relevant to lithic sites, and also that projects could involve undertaking research to further understanding of the significance of the resource in its own right, or

within an associated group of sites. It was acknowledged, and has been emphasised in the case studies (*Sections 2.2, 2.3 and 3.2*), that the existing criteria relating to lithic sites did not specifically promote these lines of investigation.

- 4.3.3 Additionally, several other existing programmes were also discussed in regards to their value in designating lithic sites. They included the Premier Archaeological Landscapes (PAL) scheme employed on Dartmoor (Dartmoor National Park Authority 2007), the English Heritage Register of Historic Battlefields (English Heritage 2015a; established 1995), guidance included in the designation of Grade II listed buildings, and the English Heritage Register of Historic Parks and Gardens (English Heritage 2015b; established 1983). It was acknowledged that these approaches to defining individual sites, and large areas of archaeological landscapes as important resources, also contained elements of methodologies which could be effective in helping to designate lithic sites, while also considering their wider landscape associations. Moreover, what is of relevance here is that there is *united* acknowledgement that the existing criteria are not wholly suitable and that elements of former and existing projects should be considered in the implementation of any new guidance documentation, and that a landscape approach is appropriate when considering a range of sites.

4.4 LITHIC SCATTERS AND REGIONAL RESEARCH AGENDAS

- 4.4.1 The North West Region and the East of England Archaeological Research Frameworks (Brennand 2006; 2007; Glazebrook 1997; Brown and Glazebrook 2000; Medlycott 2011) have highlighted the significance of lithic sites and their importance in regards to aiding an understanding of the development of settlement patterns, particularly those dating from the Palaeolithic period through to the Bronze Age. The frameworks have drawn attention to the strengths and weaknesses currently associated with known lithic sites (*eg* Hodgson and Brennand 2006) and advised on the work needed to enhance the resource, both for existing sites and those discovered through commercial projects, and independent research. Given that the recommendations are built on research specific to each region, it would be beneficial to consider them when considering a site or sites for designation as of national importance; that is to say, that they provide a benchmark from which the importance of sites, or a group of sites, can be assessed in relation to the wider research concerns of a specific region. For example, the post-excavation analysis of the Stainton West lithic assemblage took the recommendations relating to Cumbrian lithic sites (Hodgson and Brennand 2007) on board when proposing the work to be undertaken during the post-excavation analysis (Brown *et al* in prep).

4.5 OTHER ARTEFACT SCATTERS/SITES AND THE EXISTING LEGISLATION AND GUIDANCE

- 4.5.1 It is acknowledged that lithic assemblages are not the only concentration of archaeological material that can be encountered as artefact scatters and/or archaeological sites. For example, assemblages of pottery and ceramic building material, in association with other types of artefacts, along with scatters of discrete types of materials, such as metal-working slag and metal objects, can be encountered. In some instances, for example where there are concentrations of pottery or metal-working slag in association with landscape features, the presence of sub-surface structures can be anticipated, and this should make it easier to consider their designation as sites of national importance. Indeed, such sites (when they

can be deemed to form tangible or potentially tangible elements of the landscape) are afforded some protection and management under the tenets of the Selected Heritage Inventory for Natural England (SHINE; ALGAO 2014), whereby if the sites comply with existing criteria, they can be incorporated into an agri-environment scheme. It should be noted, however, that, presently, sites comprising solely artefact scatters that are not associated with any other landscape features are not eligible for SHINE funding. Concentrations of specific materials, such as those associated with warfare, are covered by the Battlefield Register. Similarly, finds of metal-working debris are also summarily covered by the Treasure Act 1996, and to a certain extent by the Portable Antiquities Scheme (English Heritage 2014a).

- 4.5.2 However, in many cases, concentrations of material from the ploughzone share many characteristics with lithic scatters and need to be covered by guidance and associated designation criteria. In that respect, any forthcoming guidance that is developed with lithic sites in mind should be sufficiently robust to include surface scatters of other material. This should also include an allowance for the consideration of a site's group significance on a landscape scale. Furthermore, if non-statutory lists of nationally important sites are to be implemented, then these should be extended to include other site types. Some of these would be relatively straightforward to designate, given their circumstances of survival, for example, specific quarry sites, especially those of a medieval or post-medieval date. Surprisingly, though, many prehistoric extraction sites, including the highly important axe-production sites, based on Langdale, in the central Lake District, are not scheduled and their status as sites of national importance are not considered in the guidance literature, due to the following reason:

'Too little is known at present about different types of prehistoric extraction site in other parts of the country, whether related to stone or metal ore extraction, to offer explicit guidance on national importance. It is probable that significant sites still await discovery' (English Heritage 2012, 12).

- 4.5.3 There now exists a large amount of documentation derived from research in and around the Langdales (eg Bunch and Fell 1949; Claris and Quartermaine 1989; Bradley and Edmonds 1993; Davis and Edmonds 2011) to the point where there is now a reasonable understanding of the extent and the structure of the archaeological landscape. The results of previous research are now in the public domain, which can be used when considering potential designation (*Section 2.3*). Not only is the site mentioned in the scheduling selection guide for sites of early human activity without structures (2012), it is also discussed briefly in the scheduling selection guide for industrial sites (English Heritage 2013, 3). The latter document provides a list of specific considerations associated with designating sites as of national importance, several of which appear to apply to Langdale (*op cit*, 14-15).

4.6 THE MANAGEMENT OF LITHIC SCATTERS BY CURATORS AND WITHIN STEWARDSHIP SCHEMES

- 4.6.1 At the moment, very little management or stewardship is accorded to lithic sites, particularly surface scatters (although it should be noted that this can vary from region to region), stemming from the fact that on the whole they are not designated as a significant resource, thus making it difficult for LPAs to argue a case for their management (M Brennan *pers comm*). Surface scatters are open to a number of damaging processes, such

as unsolicited collecting, and agricultural practices, including ploughing and drainage. Indeed, if lithic scatters are to be considered as worthy of designation as sites of national importance, then by association they should be afforded some measure of protection from such processes, and appropriate management schemes should be considered. Furthermore, lithic scatters, unlike some other types of artefact concentrations (those that can be associated with potential buried structures, for example, scatters of Roman *tesserae* liberated from a mosaic) are currently exempt from SHINE (ALGAO 2014). Given that SHINE is under reassessment, it seems an appropriate time to discuss the potential relationship between those lithic scatters which could be designated as nationally important and their management under some form of environmental stewardship.

4.7 ENGLISH HERITAGE'S ROLE

4.7.1 It has been acknowledged that there may be a need to update or augment existing criteria contained in selection guides compiled by English Heritage. In general, at the project seminar, it was felt that there would need to be more input from English Heritage, especially with regard to clarifying certain issues surrounding the definition of designation and its role within the existing legislation:

- there would be a need to make it clear that national importance is a non-statutory designation;
- and, to make designation viable, the clarification of the status of nationally important sites in the National Planning Practice Guidance (DCLG 2014) would be essential;
- a clear and workable list of criteria for designation would need to be compiled, officially approved, and published as guidance;
- if HERs are to be updated, then resources would need to be made available to LPAs in order to undertake research into which sites are suitable, and to compile and maintain lists of designated sites;
- and there would be a need for some form of official English Heritage endorsement of a site's designation as a site of national importance, in order to deter legal challenges and to make designation valid and appreciable to those involved in the planning process.

5 RESULTS

5.1 INTRODUCTION

- 5.1.1 It has become clear from the information presented in this report that, if lithic sites are to be considered for designation as sites of national importance, then several issues need to be considered during the process of arguing the case for new guidance.

5.2 LITHIC SITES: IDENTIFICATION AND RECORDING

- 5.2.1 Potentially, there is a need to review existing designation criteria in order to enhance guidelines to make them sufficiently robust so that they can be applied to all lithic site types. The case studies presented in this report (*Sections 2.2, 2.3 and 3.2*) have shown that, while it is comparatively straightforward to apply some criteria to lithic sites that have been sampled, by excavation or otherwise, it can be difficult in some instances to apply key themes. This is particularly relevant when defining the extent of a lithic site is considered. This has been highlighted as a specific concern, since the extent would need to be defined in order to designate a site effectively and manage it during the planning process. Such a review should take into consideration how methodologies can be devised to include existing HER records, particularly legacy collections that have seen very little analysis, but, as in the case of the evidence from Cumbria and East Anglia, which are acknowledged as containing significant and important information. Any review should also consider the means and methods as to how HER records can be updated to include proposed lists of nationally important lithic sites, and how they are to be compiled, maintained and officially approved. Furthermore, it is proposed that information relating to lithic sites contained within the Regional Research Frameworks (*eg Hodgson and Brennand 2006; Glazebrook 1997*) will have value when considering lithic sites as suitable for designation as nationally important.
- 5.2.2 Although setting and group value are recognised in some existing designation criteria (for example in the NPPF (DCLG 2012) and the Secretary of State's designation criteria for scheduling (DCMS 2013)), they are not specific criteria in guidelines relevant to lithic sites. It has been acknowledged in this study that lithic sites have great potential to be associated with other sites within a wider spatial context (for example, the Stainton West case study (*Section 2.2*)). In that respect, it is proposed that future guidance should make provision to determine the role of lithic sites, particularly surface scatters, within a landscape context. Consideration should be made as to how a site, or a group of sites (see *Section 3.2*), can be contextualised within a landscape characterisation, which, for example, could relate to chronology or function; and how a site or group of sites can be designated accordingly. It is acknowledged that there are inherent difficulties in this approach, especially in site information-gathering and that the potential exists for some sites to be included at the expense of others. However, during the project seminar, it was noted that several former and existing archaeological landscape classification schemes and protection programmes include methodologies for classifying sites within a group context (*Section 4.3.2*), and such an approach should be considered when developing future methodologies specifically designed for lithic sites.

5.3 LITHIC SITES AND THE PLANNING PROCESS

5.3.1 As things stand, there is no rigid methodology in place for dealing with lithic sites, particularly surface scatters, in the planning process, and it is usually left to the discretion of individual LPAs as to whether any form of evaluation and/or recording is undertaken during post-determination. If lithic sites are to be considered for designation, then it stands to reason that they should be afforded some kind of protection once they have been characterised as such. In that respect, methodologies would need to be implemented for dealing with lithic sites at the pre-determination stage of the planning process, as well as for sites which are discovered during archaeological evaluation.

5.3.2 For known lithic sites, methodologies could include:

- surface collection survey within the development area. The survey should include three-dimensional recording of finds, in order to define issues such as the extent of the resource and the presence of discrete distributions of artefacts within the wider resource, which could indicate the presence of buried structures;
- sample test-pitting of the resource within the development area;
- sample sieving of topsoil deposits within the development area. This could be implemented in tandem with other evaluation techniques, such as a test-pit survey or trial trenching;
- technological analysis of the lithic material recovered during the application of the above survey techniques. The results of the analysis should be produced as a report which details the physical quality of the struck lithics, technology and chronology. Report submission could be staged and used to inform the use of other evaluatory processes in a phased investigation.

5.3.3 For dealing with previously unknown sites, elements of the methodologies proposed above could be implemented as and when the circumstances of discovery dictate. Furthermore, predictive modelling or landscape characterisation projects could also be implemented to lessen the occurrence of encountering unknown sites during evaluation in advance of development. For example, the Stainton West site is situated on the floodplain of the River Eden. An assessment of the site, in regards to its position within the known Late Mesolithic/Early Neolithic occupation record, indicates a pattern of site distribution along major river valleys and subsidiary water sources (Dickson and Cherry forthcoming). Thus, any development taking place within a similar environment can be flagged as having the potential to have an impact on sites of a similar nature, with a strong potential to include preserved organic remains.

5.4 MANAGING LITHIC SITES

5.4.1 Lithic sites awarded national importance status will also need to be managed. Management plans should be considered to counteract the effects of impact from a number of threats, for example agricultural practices, recreational activities and the unsolicited collection of artefacts from lithic scatters. In terms of the impact from agriculture, a review of existing stewardship schemes should be undertaken. It has been noted that SHINE does not apply to lithic scatters (*Section 4.6.1*) and the potential to reverse this situation should be considered during the ongoing preparations for the construction of a new scheme. Recreational

activities can also have debilitating effects on lithic resources and should be considered in management plans. This is especially relevant to lithic scatters and extraction sites in Cumbria, where tourism and related activities have the potential to impact on specific resources. The unsolicited collecting of lithic material from artefact scatters is also a problem. Codes of best practice should be developed and promoted, perhaps via the Portable Antiquities Scheme and research-funding bodies, to ensure that all types of research are undertaken in a professional manner, and the results are not only accessioned in HERs, but recorded to a suitable level. Such an approach could be beneficial in the assessment of those lithic sites where little information is available, when considering classifying the resource as nationally important, and to help LPAs to maintain and update potential lists of important sites.

6 RECOMMENDATIONS

6.1 INTRODUCTION

- 6.1.1 Several specific research strands have been highlighted by this study, which could be considered as leading on from this project. The case studies (*Sections 2.2, 2.3 and 3.2*), in particular, have raised a number of issues in relation to applying designation for national importance.

6.2 LITHIC SCATTERS

- 6.2.1 One particular issue, common to many known lithic sites, is uncertainty regarding their extent, when determining this is critical for their effective designation and management. Stainton West presents an opportunity to field-test methodologies (*Section 5.3.2*) and develop rules of thumb for determining the extents of lithic sites within floodplain and alluvial environments. By undertaking a pilot project, comprising a shovel test-pit survey informed by a geoarchaeological desk-based study, in the environs of Stainton West, it should prove possible not only to define the extent of this nationally important site, but also to develop procedures, and establish a precedent, for helping to define the extent of similar lithic sites that might be identified elsewhere in the region and nationally.

6.3 LANDSCAPES OF EXTRACTION

- 6.3.1 Similarly, the Grime's Graves case study (*Section 3.2*) has drawn attention to the fact that a wider 'landscape of extraction' exists beyond the limits of the scheduled area. This site could also be used as a test study to evaluate the viability of using designation on a landscape scale. This could be achieved by a programme of research and field survey, and if the methodology and results are deemed successful, they could be rolled out to encompass other extraction sites, such as the Langdale axe-production sites, which are currently not afforded any protection.

6.4 PREDICTIVE MODELLING AND LANDSCAPE CHARACTERISATION

- 6.4.1 Predictive modelling and landscape characterisation have also been put forward as an effective means of defining landscapes, where the existence of lithic sites can be flagged, and used to influence decisions during the planning process and management (*Section 5*). The west coast of Cumbria has a plethora of Late Mesolithic/Early Neolithic sites associated with areas of apparent blankness where landscape conditions suggest the potential for the survival of undetected sites, particularly within the environs of former water bodies such as Ehenside Tarn and the Esk Valley. This area would, as such, seem to be an ideal test bed for developing methodologies for characterising such landscapes.

7 CONCLUSIONS

7.1 SUMMARY

- 7.1.1 The pilot study has been successful in providing an overview characterisation of the regional lithic resource in the Cumbrian and East Anglian research areas. In so doing, it signposts a way forward for undertaking this approach for other areas, should this be desirable. These contrasting regions include two of the most significant lithic procurement landscapes in England and exemplify very different situations with regard to their lithic resources (*Sections 2.1 and 3.1*). As such, the discussions undertaken at the day seminar and subsequently have not only enabled a thorough exploration of the issues pertinent to the identification, designation and management of nationally important lithic sites in the study regions, but also encapsulate the national situation with regard to this.
- 7.1.2 However, the discussions have also served to highlight the complexity and difficulty inherent in the management of lithic sites and their designation as being of national importance through statutory or non-statutory processes. This is due, in part, to their often being sites without structure and, therefore, excluded from designation under the 1979 Ancient Monuments and Archaeological Areas Act and agri-environment funding schemes (SHINE; ALGAO 2014), but also due to other problems that are intrinsic to lithic sites. It is clear that the present criteria and definitions used for assigning national importance to lithic sites need collating, updating and specifying with an English Heritage endorsement. Furthermore, methodologies and rules of thumb need to be developed to enable the definition of known lithic sites, in terms of their likely extents, that are sufficiently robust to stand up to scrutiny under the planning process. It is also apparent that the precise mechanism for the non-statutory designation of lithic sites needs further detailed consideration, as do the roles and responsibilities of English Heritage and other curatorial authorities. There are also questions regarding the resourcing of the non-statutory designation process and the capacity of LPAs to undertake this effectively. It is likely that further, more indepth, pilot studies will be required, and that specific guidance documents will need to be produced by English Heritage; it may also be the case that the wording of para 139 in the NPPF (DCLG 2012) will need to be revisited and made more explicit or more robust.
- 7.1.3 The recommendations that have emerged from this study suggest further potential pilot studies, perhaps targeted on the exemplary landscapes presented as case studies in this report. Such pilot studies could be used to develop practical methodologies for the definition of lithic landscapes, in a range of different situations, and establish precedents for the designation of lithic sites as being of national importance. They would also provide an opportunity to confront and work (hopefully to a successful resolution) through many of the issues flagged up by this initial study.

8 BIBLIOGRAPHY

- Association of Local Government Archaeological Officers (ALGAO), 2014 (December) Selected heritage inventory for Natural England, <http://www.algao.org.uk/england/agri-environment/els>
- Austin, L, and Sydes, R, 1998 Potential recognition: evaluating lithic scatters – curators' concerns, *Lithics*, **19**, 19-23
- Barber, M, Field, D, and Topping, P, 1999 *The Neolithic flint mines of England*, Swindon
- Barrett, JC, 1999 Chronologies of landscape, in PJ Ucko and R Layton (eds), *The archaeology and anthropology of landscape*, London, 21–30
- Barrowman, C, 2003 Lithic scatters and dynamic archaeology, in N Moloney and MJ Shott (eds), *Lithic analysis at the Millennium*, Univ College London Inst Archaeol Publ, London, 99-102
- Bewley, B, 1984 Survey and excavation on the Solway Plain, Cumbria (1982-1984), *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **84**, 19-40
- Bishop, BJ, 2012 *The Grime's Graves Environs Survey: exploring the social landscapes of a flint source*, Unpubl PhD Thesis, Univ York
- Blinkhorn, E, and Milner, N, 2014 *Mesolithic research and conservation framework 2014*, York
- Bonsall, C, 2007 Human-environment interactions during the Late Mesolithic of the Cumbria Coastal Plain: the evidence from Eskmeals, in P Cherry (ed), *Studies in Northern prehistory: essays in memory of Clare Fell*, Cumberland Westmorland Antiq Archaeol Soc, Extra Ser, **33**, Kendal, 25-43
- Bonsall, C, Sutherland, D, and Payton, R, 1994 The Eskmeals coastal foreland: archaeology and shoreline development, in J Boardman and J Walden (eds), *Cumbria field guide*, Quat Res Assoc, Oxford, 90-103
- Bradley, R, and Edmonds, M, 1993 *Interpreting the axe trade: production and exchange in Neolithic Britain*, Cambridge
- Brennand, M (ed), 2006 *The archaeology of North West England: an archaeological research framework for North Western England. Volume 1: resource assessment*, Archaeol North-West, **8**, Manchester
- Brennand, M (ed), 2007 *Research and archaeology in north-west England: an archaeological research framework for the North-West region. Volume 2: research agenda and strategy*, Archaeol North-West, **9**, Manchester
- Brown, F, Dickson, A, Gregory, R, and Zant, J, in prep The archaeology of the Carlisle Northern Development Route
- Brown, N, and Glazebrook, J (eds), 2000 *Research and archaeology: a framework for the Eastern Counties. 2: research agenda and strategy*, East Anglian Archaeol, Occ Pap, **8**, Norwich
- Bunch, B, and Fell, C, 1949 A stone axe factory at Pike of Stickle, Great Langdale, Westmorland, *Proc Prehist Soc*, **15**, 1-20

- CFA Archaeology (CFA), 2005 *Carlisle Northern Development Route: Parcels 27N and 41N, Stainton, Carlisle; archaeological evaluation*, unpubl rep
- Cherry, J, 1963 Eskmeals sand dunes occupation sites, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **63**, 31-52
- Cherry, J, 1965 Flint chipping sites at Drigg, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **65**, 67-85
- Cherry, J, 1967 Prehistoric habitation sites at Seascale, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **67**, 1-16
- Cherry, J, 1969 Early Neolithic sites at Eskmeals, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **69**, 40-53
- Cherry, J, 1982 Sea cliff erosion at Drigg, Cumbria: evidence of prehistoric habitation, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **82**, 1-6
- Cherry, J, and Cherry, PJ, 1973 Mesolithic habitation sites at St Bees, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **73**, 47
- Cherry, J, and Cherry, PJ, 1983 Prehistoric habitation sites in West Cumbria: Part I, the St Bees area and north to the Solway, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **83**, 1-14
- Cherry, J, and Cherry, PJ, 1984 Prehistoric habitation sites in West Cumbria: Part II, Nethertown to Seascale, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **84**, 1-18
- Cherry, J, and Cherry, PJ, 1985 Prehistoric habitation sites in West Cumbria: Part III, Drigg to Ravenglass, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **85**, 1-10
- Cherry, J, and Cherry, PJ, 1986 Prehistoric habitation sites in West Cumbria: Part IV, the Eskmeals area, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **86**, 1-18
- Cherry, J, and Cherry, PJ, 1987a Prehistoric habitation sites in West Cumbria, Part V: Eskmeals to Haverigg, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **87**, 1-10
- Cherry, J, and Cherry, PJ, 1987b *Prehistoric habitation sites on the limestone uplands of Eastern Cumbria*, Cumberland Westmorland Antiq Archaeol Soc, Res ser, **2**, Kendal
- Cherry, J, and Cherry, PJ, 2000 A Late Mesolithic assemblage from Levens Park, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **100**, 1-22
- Cherry, J, and Cherry, PJ, 2002 Coastline and upland in Cumbrian prehistory – a retrospective, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3 ser, **2**, 1-21
- Claris, PD, and Quartermaine, JA, 1989 The Neolithic quarries and axe factory sites of Great Langdale and Scafell Pike: a new survey, *Proc Prehist Soc*, **55**, 1-25
- Clark, JGD, 1929 Discoidal polished flint knives – their typology and distribution, *Proc Prehist Soc East Anglia*, **6**, 41–54
- Clark, JGD, 1935 Derivative forms of the petit tranchet in Britain, *Archaeol J*, **91**, 32–58
- Clarke, J, Dickson, AJ, Hamilton-Gibney, A, and Watson, A, 2008 *Fieldwalking in the Vale of Eden*, Penrith Museum: interim rep, **1**, unpubl rep
- Clarke, WG, 1925 *In Breckland wilds*, London

- Clough, THMcK, and Cummins, WA, 1988 *Stone axe studies 2: the petrology of prehistoric stone implements from the British Isles*, CBA Res Rep, **67**, London
- Cumbria County Council Heritage and Environment Service (CCCHES) and English Heritage (EH), 2009 *Annex 14 to Part 2B of Schedule 4 Archaeology*, in Connect CNDR, Construction Contract, unpubl doc
- Dartmoor National Park Authority, 2007 *The Dartmoor National Park management plan 2007-2012*, Bovey Tracey
- Davis, V, and Edmonds, ME, 2011 A time and a place for the Belmont Hoard, in V Davis and ME Edmonds (eds), *Stone axe studies*, **3**, Oxford, 167-86
- Department for Communities and Local Government (DCLG), 2012 *National Planning Policy Framework*, London
- Department for Communities and Local Government (DCLG), 2014 *Conserving and enhancing the historic environment*, London
- Department for Culture, Media and Sport (DCMS), 2007 *Heritage protection for the 21st century: White Paper*, London
- Department for Culture, Media and Sport (DCMS), 2013 *Scheduled monuments and nationally important but non-scheduled monuments*, London
- Dickson, AJ, and Cherry, PJ, forthcoming Recent research in the Mesolithic of Cumbria, CBA
- Edmonds, M, 1997 Taskscape, technology and tradition, *Analecta Praehistorica Leidensia*, **29**, 99–110
- Edmonds, M, Evans, C, and Gibson, D, 1999 Assembly and collection – lithic complexes in the Cambridgeshire Fenlands, *Proc Prehist Soc*, **65**, 47-82
- English Heritage, 2000 *Managing lithic scatters*, London
- English Heritage, 2006 *Heritage Partnership Agreement: Central Lakeland Neolithic stone axe factories, prehistoric ring cairns and medieval shielings*, unpubl doc
- English Heritage, 2012 *Designation scheduling selection guide: sites of early human activity*, London
- English Heritage, 2013 *Designation scheduling selection guide: industrial sites*, London
- English Heritage, 2014a *Our portable past*, London
- English Heritage, 2014b (December), Monuments Protection Programme, <http://www.english.gov.uk/mpp/mppa.htm>
- English Heritage, 2015a (February), Registered Battlefields, <http://www.english-heritage.org.uk/caring/listing/battlefields/>
- English Heritage, 2015a (February), Registered Parks and Gardens, <https://www.english-heritage.org.uk/caring/listing/registered-parks-and-gardens/>
- Evans, C, and Vander Linden, M, 2008 The Godwin Ridge, Over, Cambridgeshire: a (wet-) landscape corridor, *Notae Praehistoricae*, **28**, 47-54
- Evans, H, 2008 *The Neolithic and Bronze Age landscapes of Cumbria*, BAR, Brit Ser, **463**, Oxford

- Evans, J, 1897 *The ancient stone implements, weapons and ornaments of Great Britain*, London
- Fell, C, 1950 The Great Langdale stone axe factory, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **50**, 1-13
- Fell, C, and Caruana, I, 1982 Flints from Mooredale, Matterdale, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **82**, 195-7
- Forestry Commission, 2011 Forests and historic environment: UK forestry standard guidelines, Forestry Commission, Edinburgh, [http://www.forestry.gov.uk/pdf/FCGL003.pdf/\\$FILE/FCGL003.pdf](http://www.forestry.gov.uk/pdf/FCGL003.pdf/$FILE/FCGL003.pdf)
- Garrow, D, 2006 *Pits, settlement and deposition during the Neolithic and Early Bronze Age in East Anglia*, BAR, Brit Ser, **414**, Oxford
- Glazebrook, J (ed), 1997 *Research and archaeology: a framework for the Eastern Counties 1. resource assessment*, East Anglian Archaeol, Occas Pap, **3**, North Elmham
- Green, HS, 1980 *The flint arrowheads of the British Isles: a detailed study of material from England and Wales, with comparanda from Scotland and Ireland: Part I*, BAR, Brit Ser, **75**, Oxford
- Hall, D, and Coles, J, 1994 *Fenland survey: an essay in landscape and persistence*, Engl Heritage Archaeol Rep, **1**, London
- Healy, F, 1983 Are first impressions only topsoil-deep? The evidence from Tattershall Thorpe, Lincolnshire, *Lithics*, **4**, 28–42
- Healy, F, 1987 Prediction or prejudice? The relationship between field survey and excavation, in AG Brown and MR Edmonds (eds), *Lithic analysis and later British Prehistory: some problems and approaches*, BAR, Brit Ser, **162**, Oxford, 9–17
- Healy, F, 1991 Appendix 1: Lithic and pre-Iron Age pottery, in RJ Silvester, *The Fenland Project Number 4: The Wissey embayment and the Fen causeway*, Norfolk, East Anglian Archaeol, **52**, Dereham
- Healy, F, 1996 *The Fenland Project, Number 11: the Wissey embayment: evidence for pre-Iron Age occupation accumulated prior to the Fenland Project*, East Anglian Archaeol, **78**, Dereham
- Hey, G, and Lacey, M, 2001 *Evaluation of archaeological decision-making processes and sampling strategies*, Oxford Archaeol Monog, Oxford
- Historic Environment Conservation, 2006 *Heritage protection review: assessment of eight pilot projects for the Department for Culture, Media and Sport*, London
- Hodgkinson, D, Huckerby, E, Middleton, R, and Wells, C, 2000 *The lowland wetlands of Cumbria*, Lancaster Imprints, **8**, Lancaster
- Hodgson, J, and Brennand, M, 2006 *The prehistoric resource assessment*, in Brennand 2006, 23-57
- Hodgson, J, and Brennand, M, 2007 *The prehistoric period research agenda*, in Brennand 2007, 31-54
- Ingold, T, 1993 The temporality of the landscape, *World Archaeology: conceptions of time and ancient society*, **25** (2), 152–74
- Johnson, B, 2009 *North West Rapid Coastal Zone Assessment*, ARS Ltd Rep, **2009/53**, unpubl rep
- Lancaster University Archaeological Unit (LUAU), 1996 *Cumbria Northern Relief Road:*

archaeological assessment, unpubl rep

Last, J, 2009 *Developing principles of selection for designating lithic scatters*, unpubl rep

Lewis, J, Leivers, M, Brown, L, Smith, A, Cramp, K, Mepham, L, and Phillpotts, C, 2010 *Landscape evolution in the Middle Thames Valley: Heathrow Terminal 5 excavations Volume 2*, Framework Archaeol Monog, **3**, Oxford and Salisbury

Longworth, I, and Varndell, G, 1996 *Excavations at Grime's Graves Norfolk 1972–1976, Fascicule 5: mining in the deeper mines*, British Museum, London

Longworth, I, Varndell, G, and Lech, J, 2012 *Excavations at Grime's Graves Norfolk 1972–1976: Fascicule 6: exploration and excavation beyond the deep mines*, British Museum, London

Matless, D, 2008 Properties of ancient landscape: the present prehistoric in twentieth-century Breckland, *J Hist Geog*, **34**, 68–93

Medlycott, M, 2011 *Research and archaeology revisited: a revised framework for the east of England*, East Anglian Archaeol, Occas Pap, **24**, North Elmham

Mercer, RJ, 1981 *Grime's Graves, Norfolk: excavations 1971–72: Volume 1*, Dept Env Archaeol Rep, **11**, London

OA North, 2004 *Site 123, Harrison Coombe, Great Langdale*, unpubl rep

OA North, 2009 *Upland Peats managerial assessment: final report*, unpubl rep

OA North, 2011 *Stainton West, Carlisle Northern Development Route: archaeological assessment*, unpubl rep

Quartermaine, J, and Leech, R, 2012 *Cairns, fields, and cultivation: archaeological landscapes of the Lake District uplands*, Lancaster Imprints, **19**, Lancaster

Russell, M, 2000 *Flint mines in Neolithic Britain*, Stroud

Skinner, C, 2000 *Recognising and reconstructing prehistoric landscapes: a new case study from Eastern Cumbria*, unpubl PhD Thesis, Univ Leicester

Smith, RA, 1931 *The Sturge Collection: an illustrated selection of flints from Britain bequeathed in 1919 by W Allen Sturge, MVO, MD, FRCP*, British Museum, London

Tabor, J, forthcoming Early Neolithic pits and artefact scatters at North Fen, Sutton Gault, Cambridgeshire

Thomas, J, 1996 *Time, culture and identity: an interpretive archaeology*, London

Woodward, A, Hunter, J, Ixer, R, Roe, F, Potts, PJ, Webb, PS, Watson, JS, and Jones, MC, 2006 Beaker age bracers in England: sources, function and use, *Antiquity*, **80**, 530–43

Wymer, J, 1998 *Lower and Middle Palaeolithic: Region 8: East Anglian Rivers Rep*, **3**, Salisbury

ILLUSTRATIONS

PLATES

Plate 1: The Stainton West excavations on the River Eden floodplain

Plate 2: Wet-sieving sediments to retrieve worked lithics at Stainton West

Plate 3: One of the large quarry sites on Top Buttress that could potentially have been scheduled in 1988, as it was not a mobile antiquity

Plate 4: The Langdale Pikes, viewed from the north, showing the peat-covered area of Thunacar Knott, where substantial numbers of axe-production sites are obscured by the peat

Plate 5: Photographs of the South Scree cave site, taken in 1948 (Bunch and Fell 1949) and in 1989, showing a considerable drop in the level of the scree rich in axe waste

Plate 6: The forested landscape around Grime's Graves

FIGURES

Figure 1: Mesolithic lithic sites in Cumbria, identified by the desk-based study

Figure 2: Neolithic lithic sites in Cumbria, identified by the desk-based study

Figure 3: Bronze Age lithic sites in Cumbria, identified by the desk-based study

Figure 4: Undated lithic sites in Cumbria, identified by the desk-based study

Figure 5: Cumbrian sites and areas mentioned in the text

Figure 6: The palaeochannel, features and lithic scatter at Stainton West

Figure 7: Location of fine-grained tuff outcrop and the position of known axe-factory sites in the Langdale area

Figure 8: Great Langdale, showing both newly discovered and previously known archaeological sites

Figure 9: East Anglian sites and areas mentioned in the text

Figure 10: Grime's Graves, survey of flint mines and the scheduled area

Figure 11: Distribution of Neolithic flint sites in the Brecklands immediately surrounding Grime's Graves



Plate 1: The Stainton West excavations on the River Eden floodplain



Plate 2: Wet-sieving sediments to retrieve worked lithics at Stainton West



Plate 3: One of the large quarry sites on Top Buttress that could potentially have been scheduled in 1988, as it was not a mobile antiquity

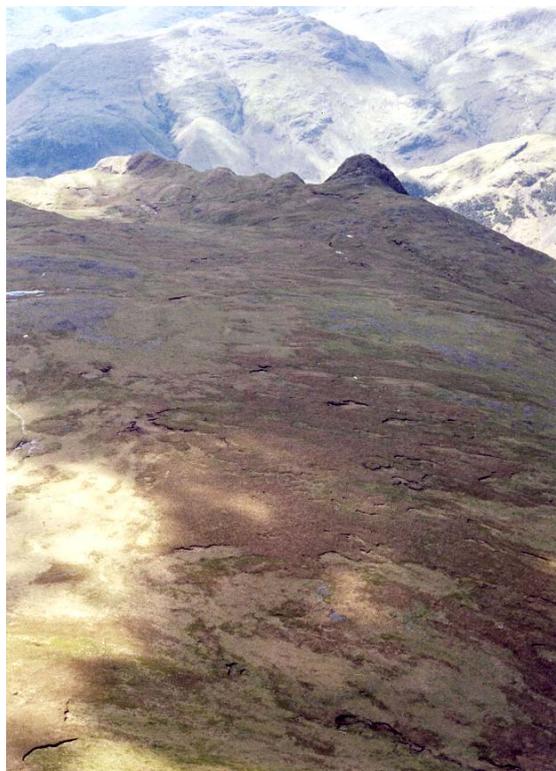


Plate 4: The Langdale Pikes, viewed from the north, showing the peat-covered area of Thunacar Knott, where substantial numbers of axe-production sites are obscured by the peat

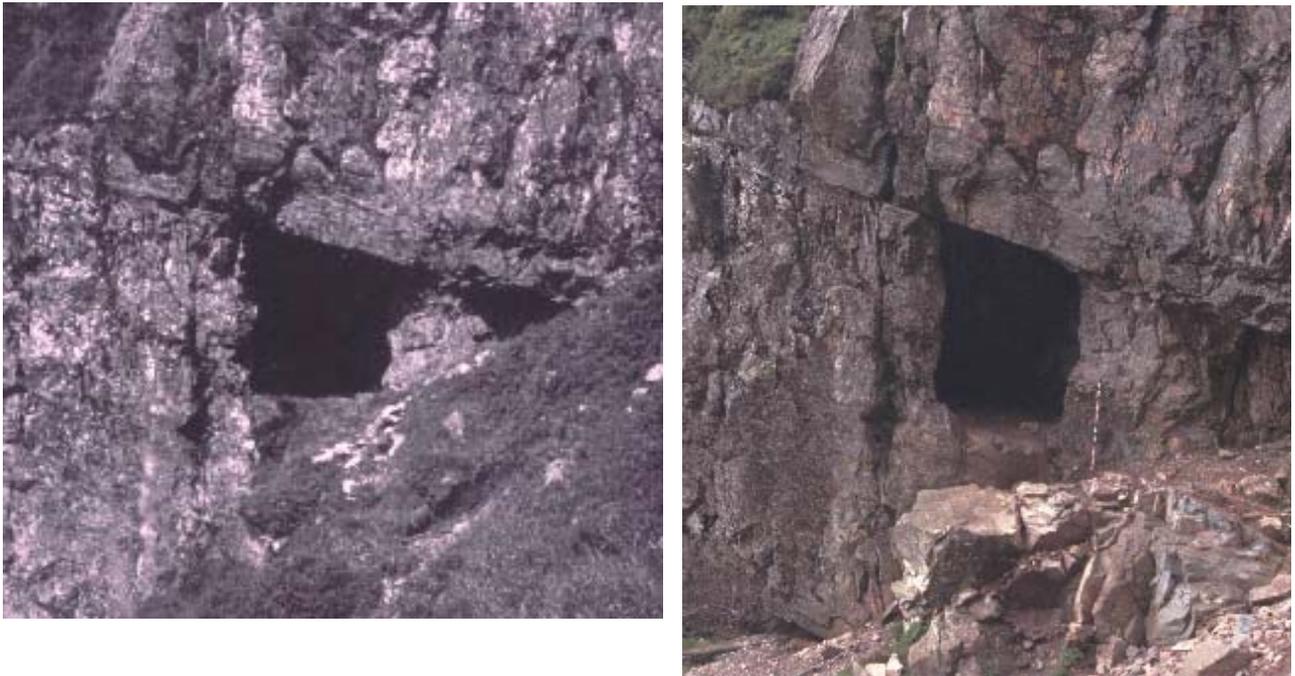


Plate 5: Photographs of the South Scree cave site, taken in 1948 (Bunch and Fell 1949) and in 1989, showing a considerable drop in the level of the scree rich in axe waste

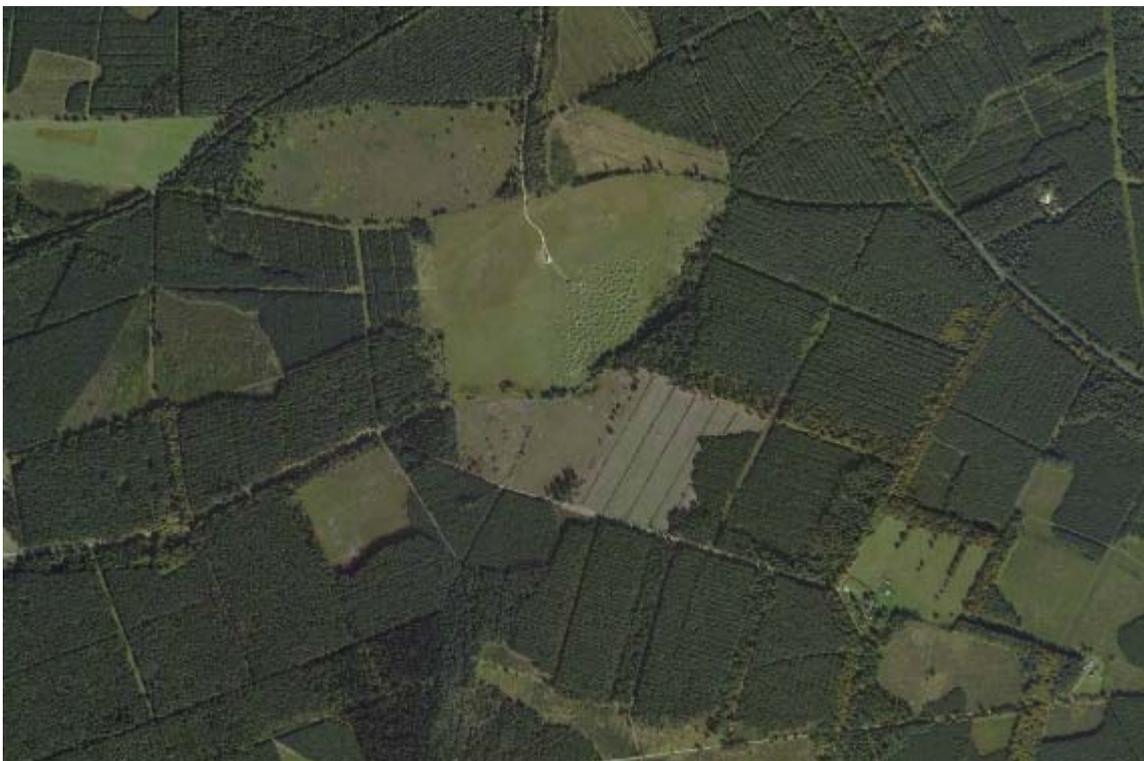


Plate 6: The forested landscape around Grime's Graves

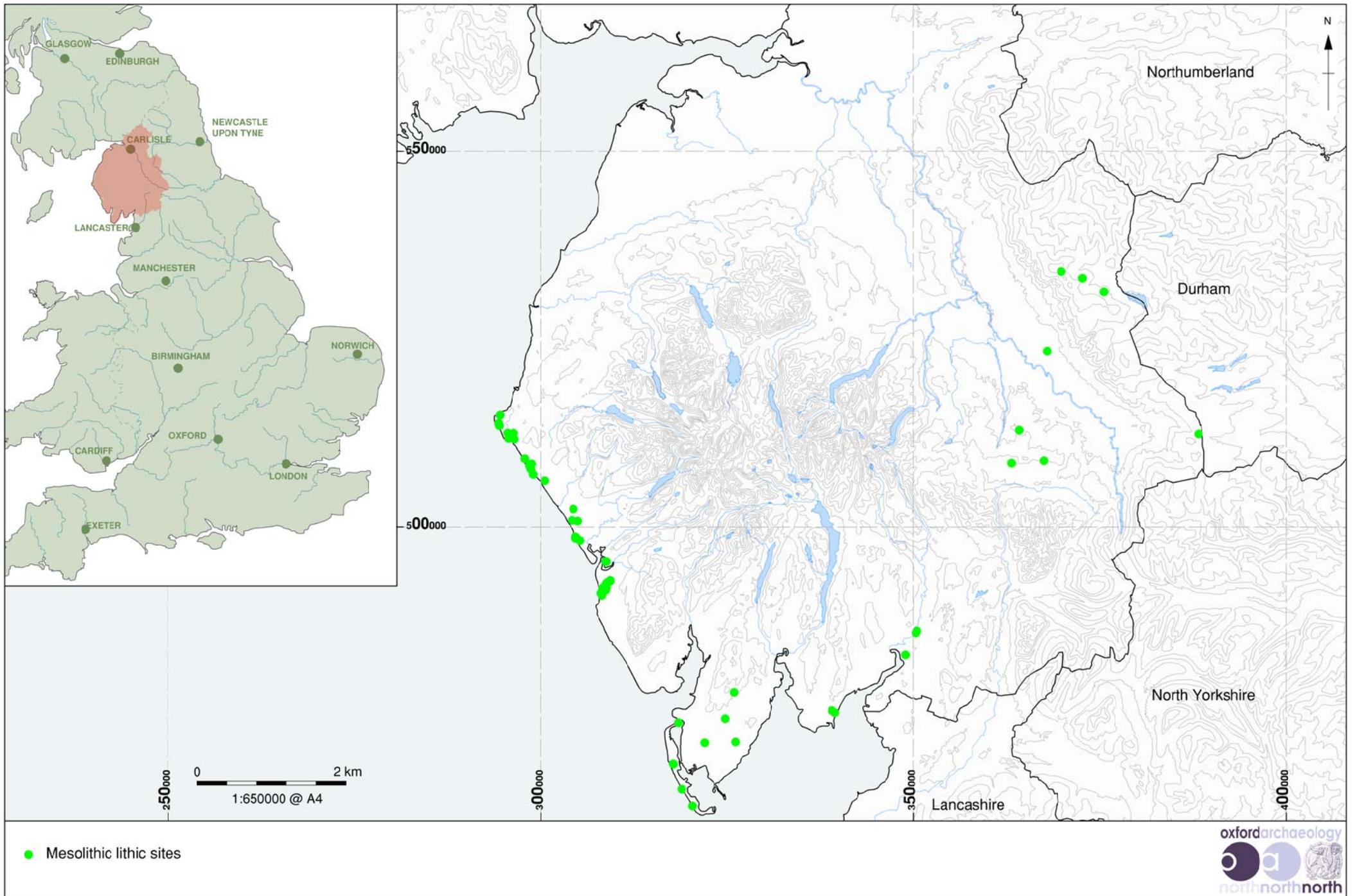


Figure 1: Mesolithic lithic sites in Cumbria, identified by the desk-based study

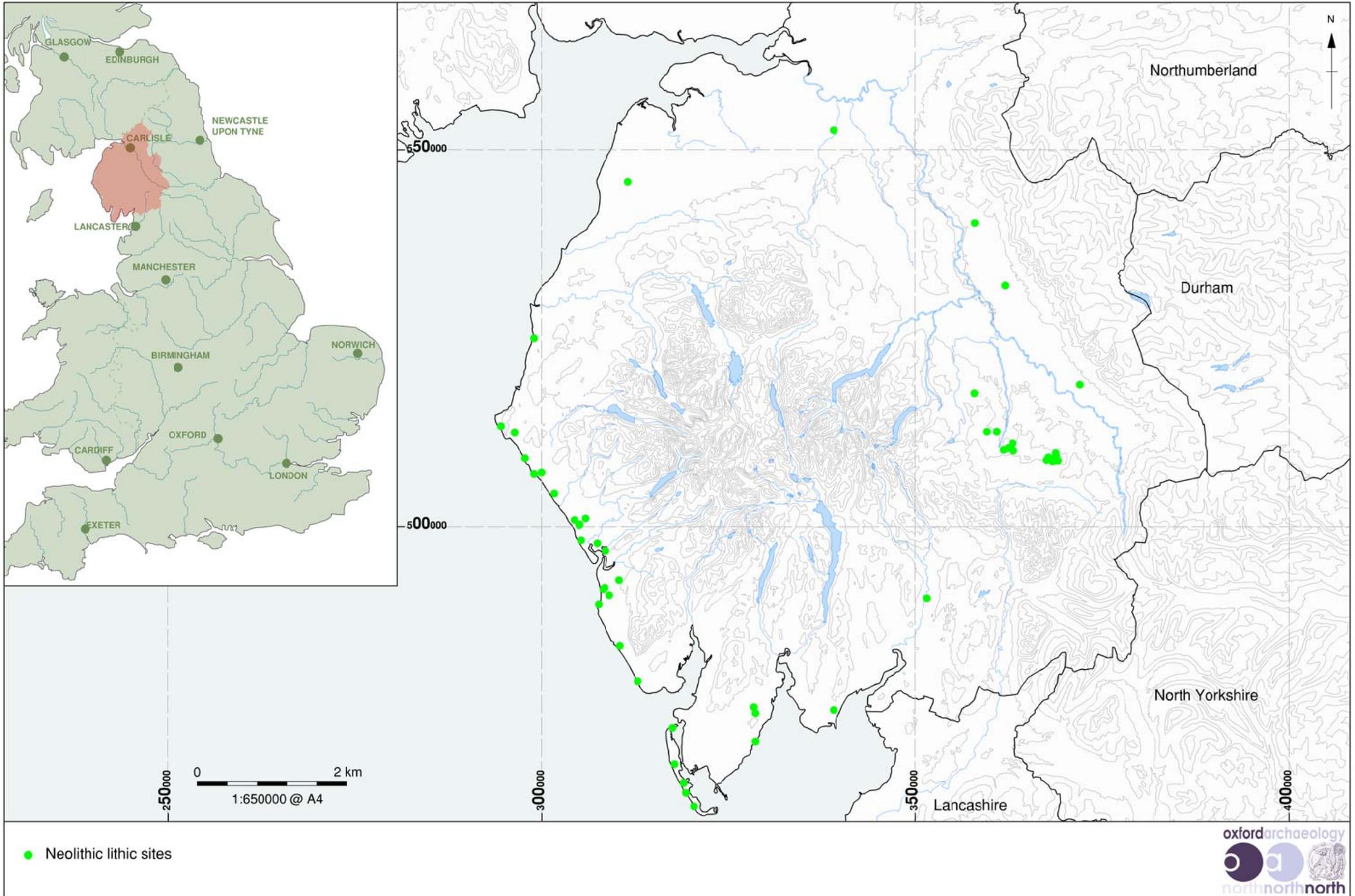


Figure 2: Neolithic lithic sites in Cumbria, identified by the desk-based study

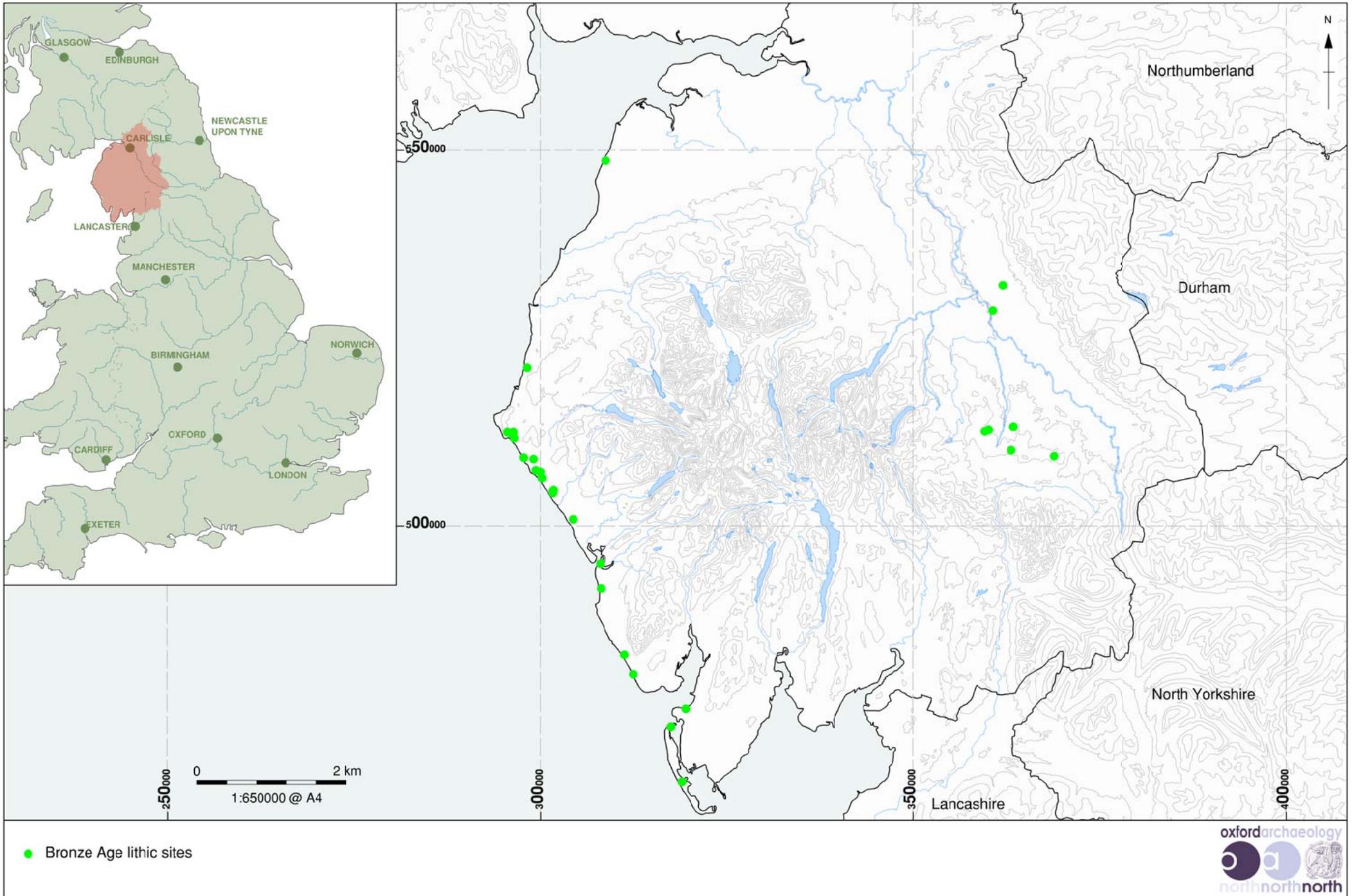


Figure 3: Bronze Age lithic sites in Cumbria, identified by the desk-based study

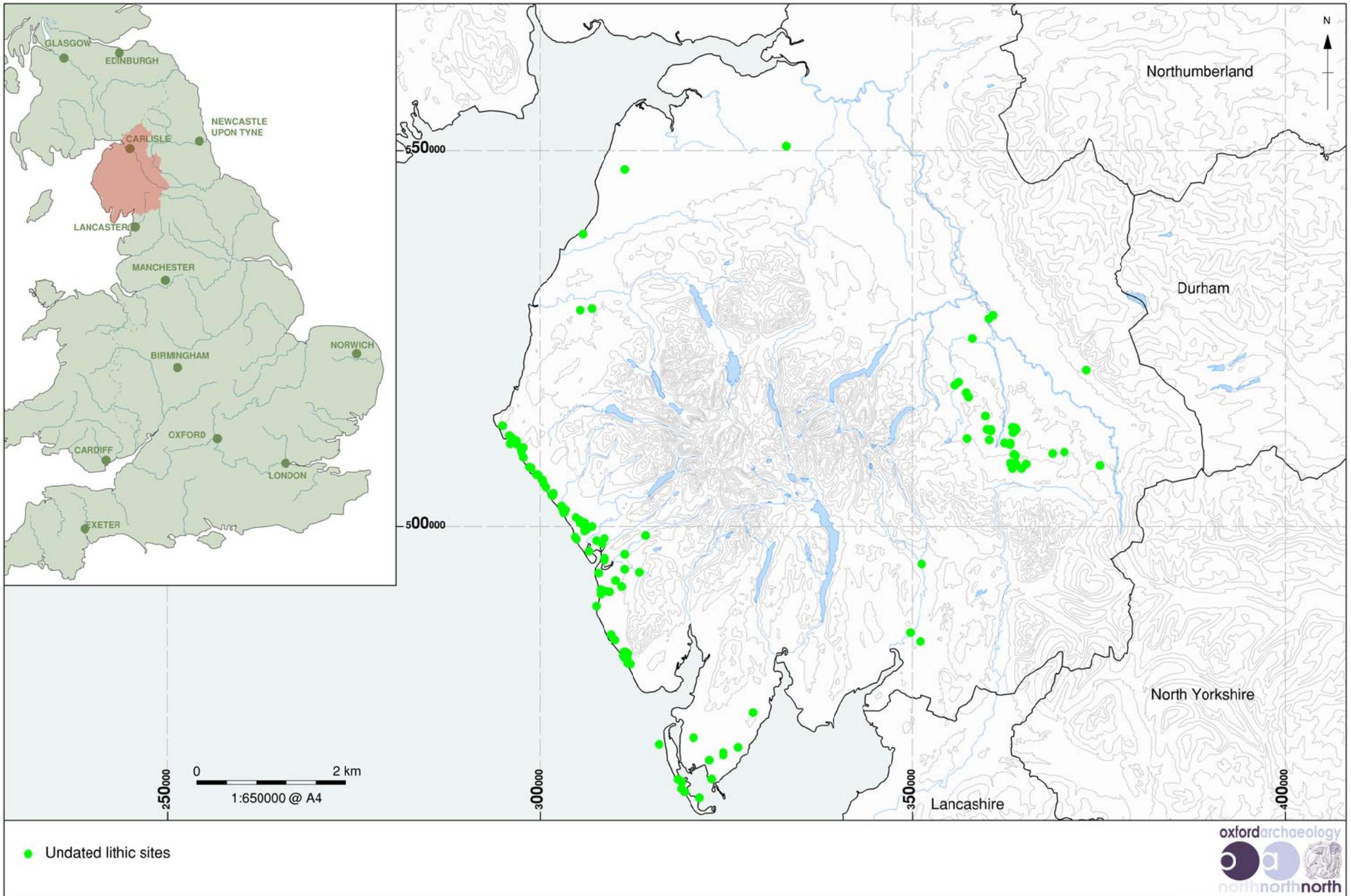


Figure 4: Undated lithic sites in Cumbria, identified by the desk-based study

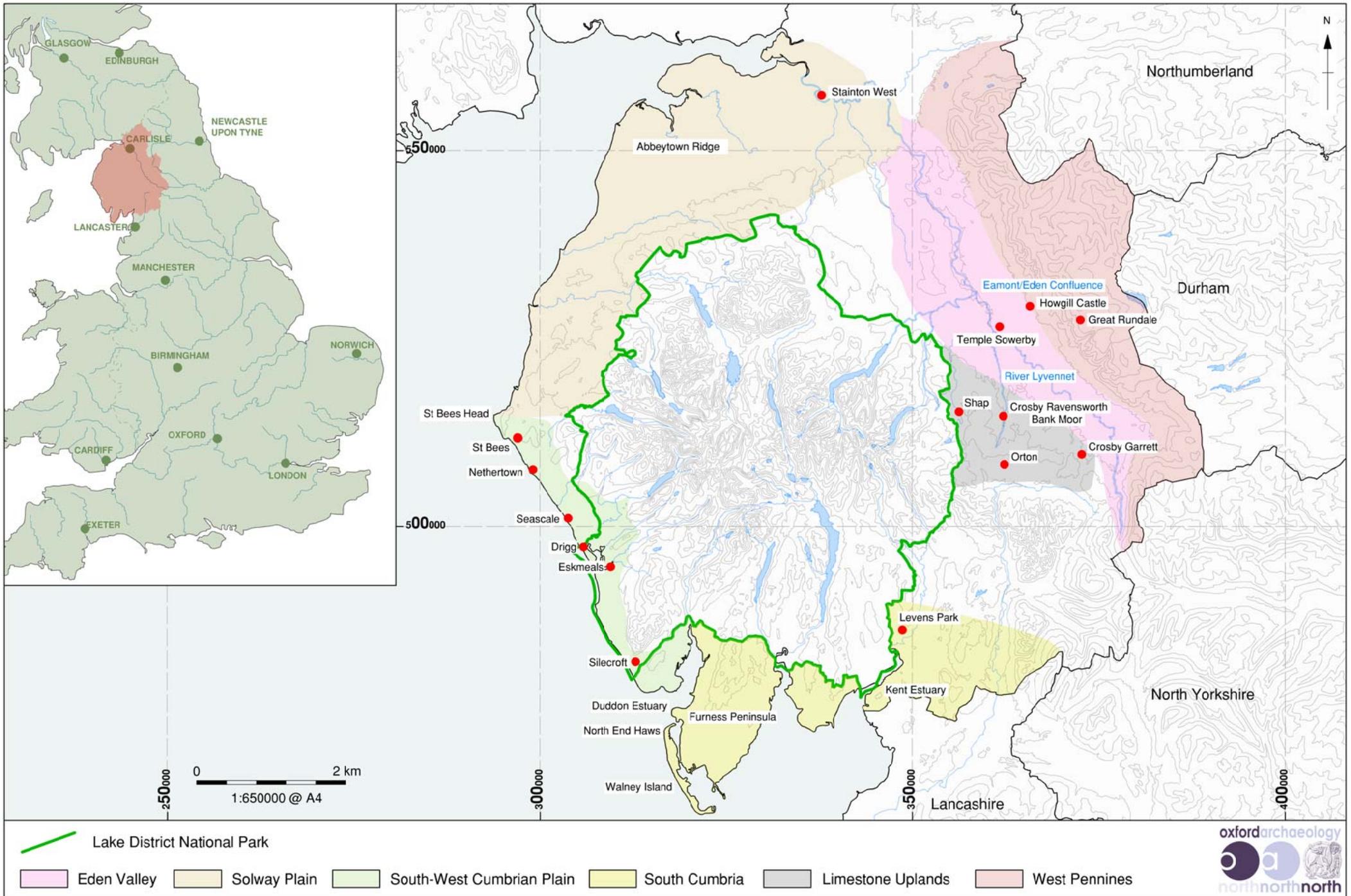


Figure 5: Cumbrian sites and areas mentioned in the text

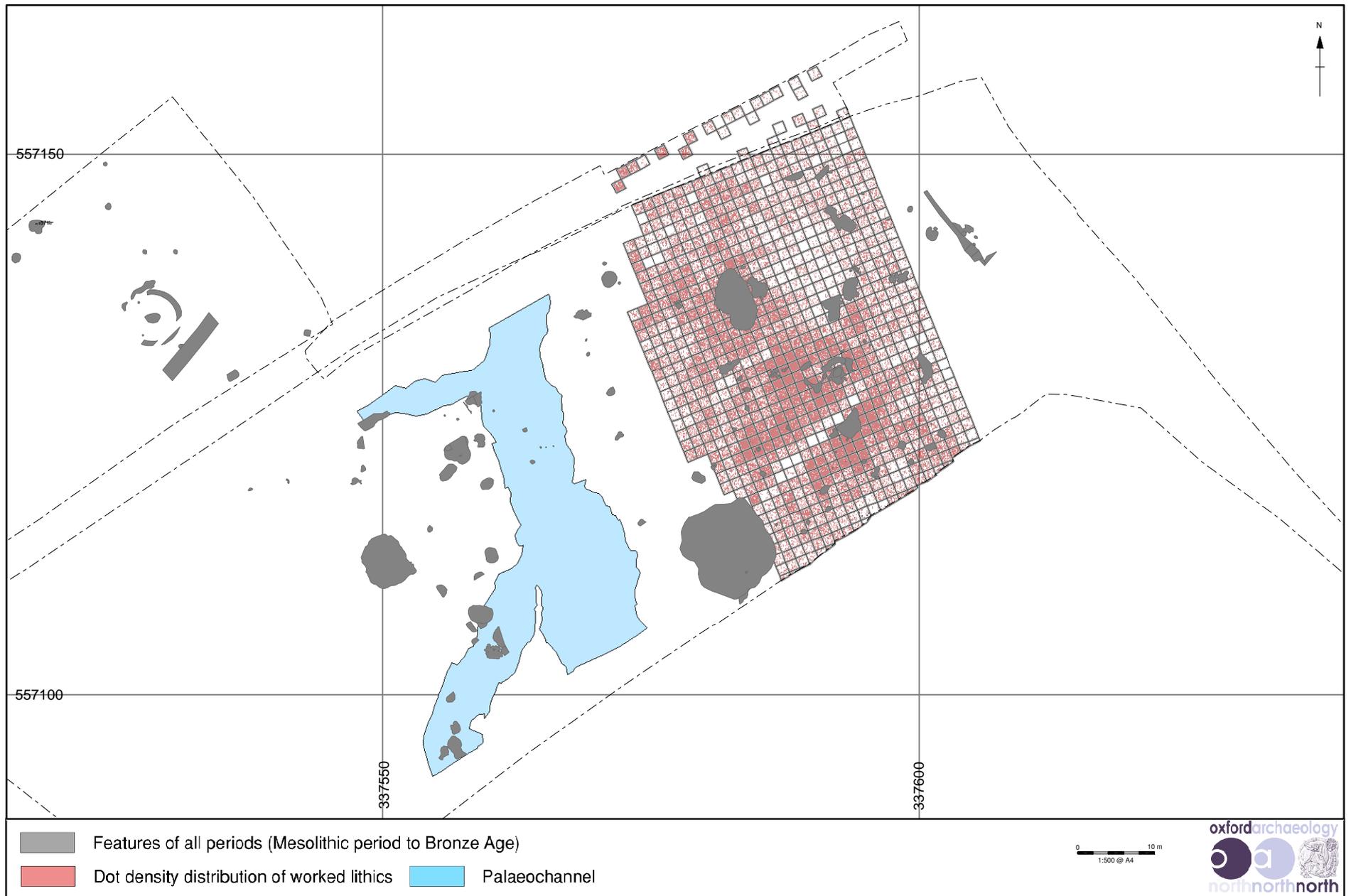


Figure 6: The palaeochannel, features and lithic scatter at Stainton West

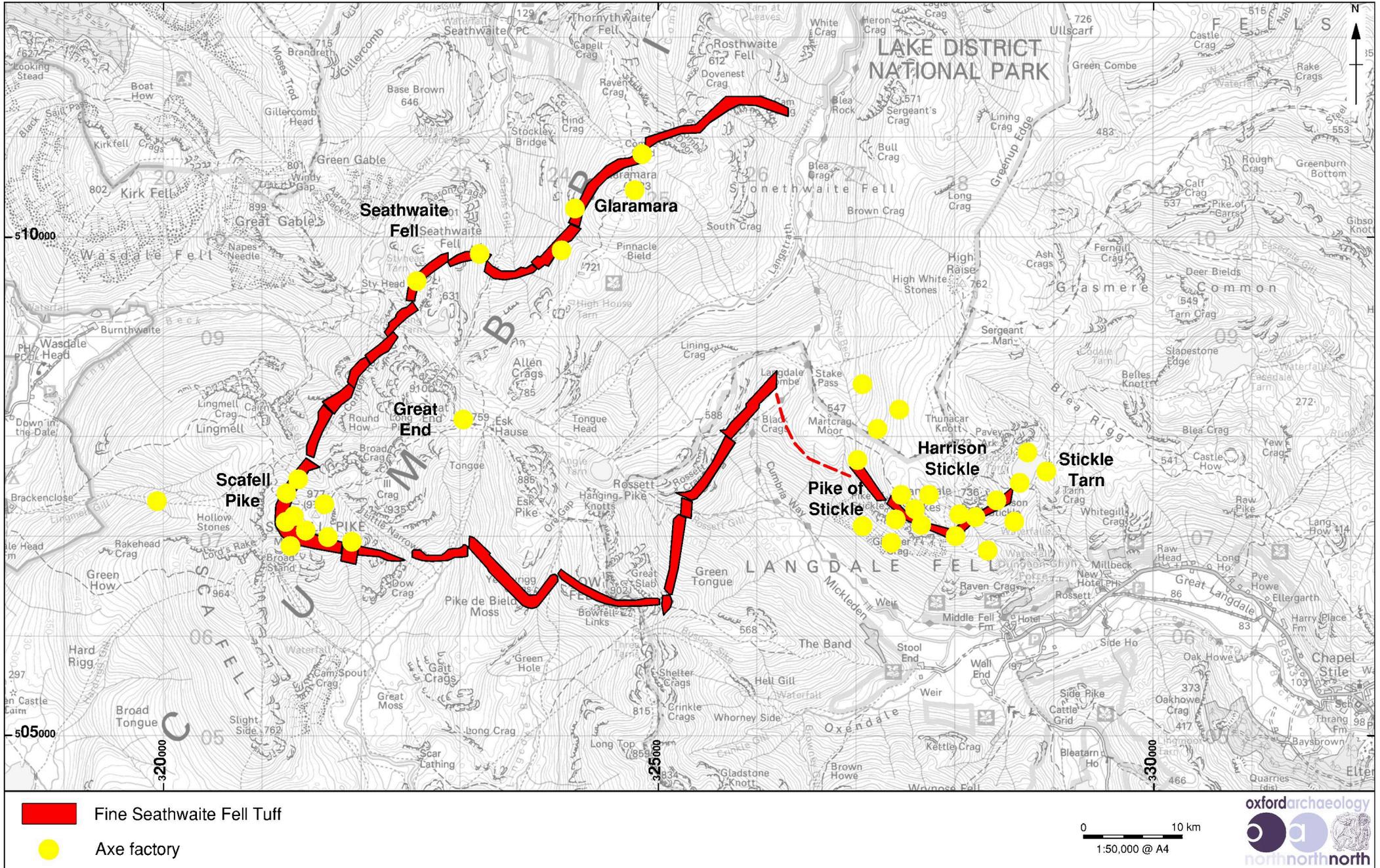


Figure 7: Location of fine-grained tuff outcrop and the position of known axe-factory sites in the Langdale area

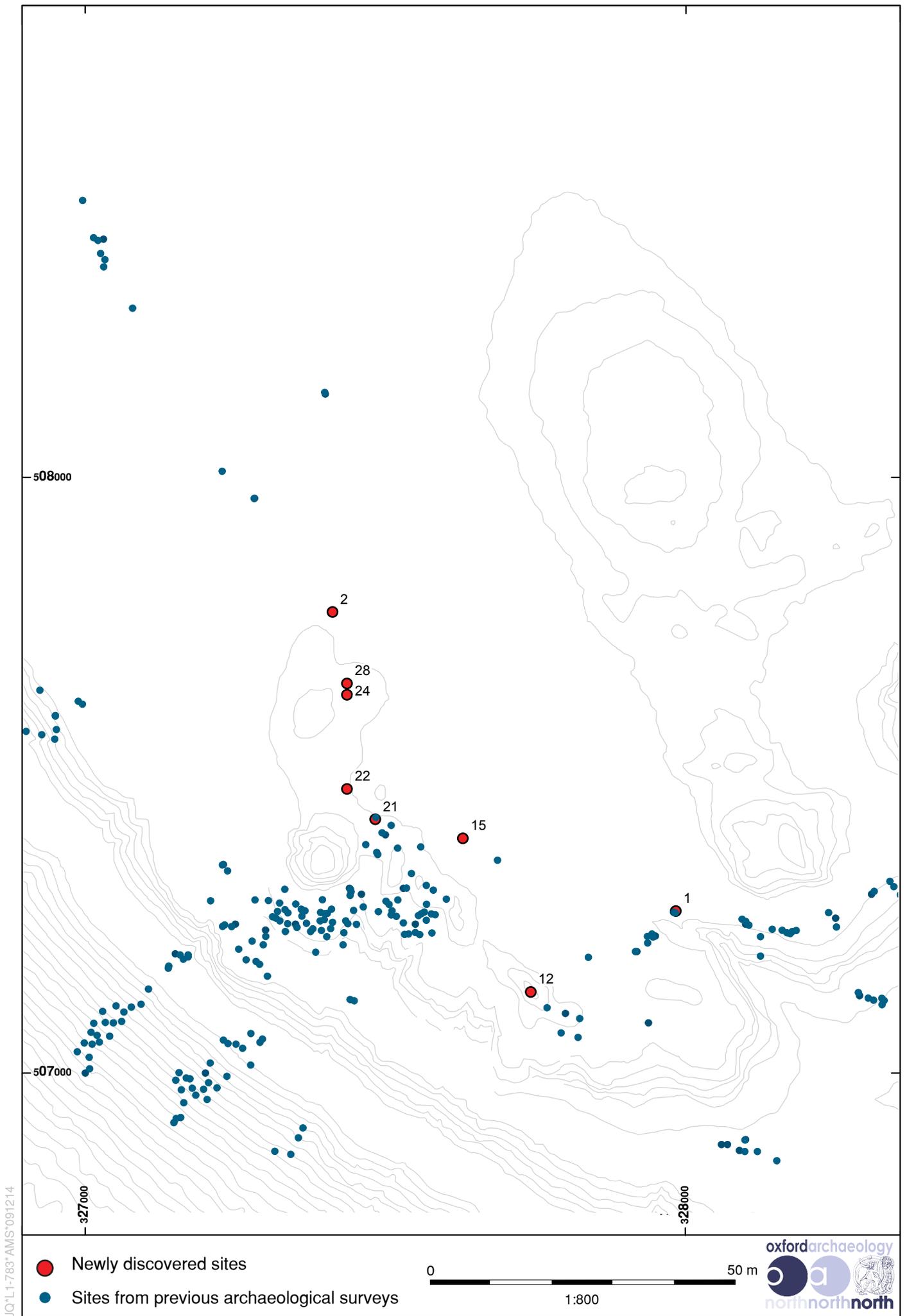


Figure 8: Great Langdale, showing both newly-discovered and previously known archaeological sites

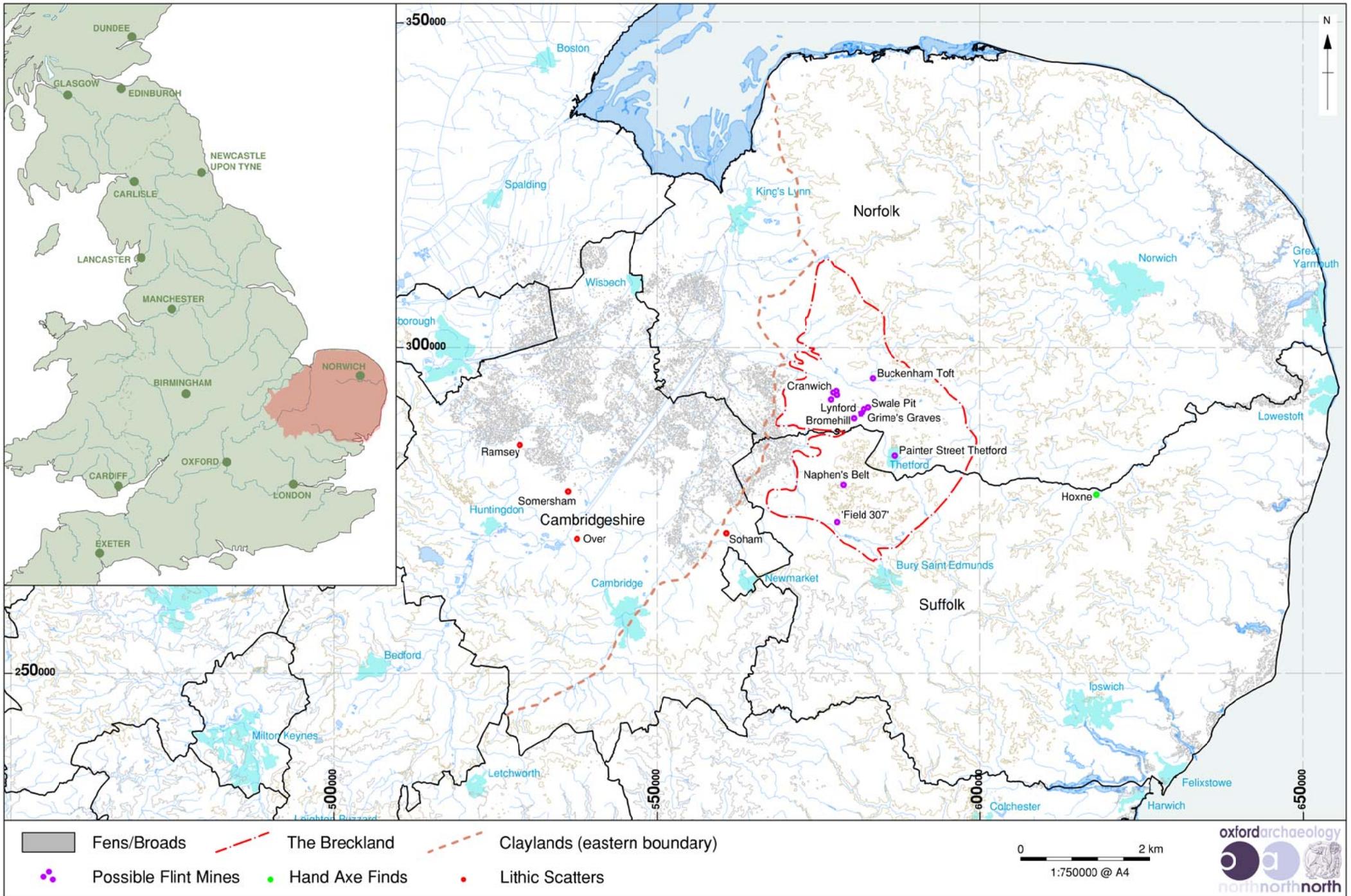


Figure 9: East Anglian sites and areas mentioned in the text

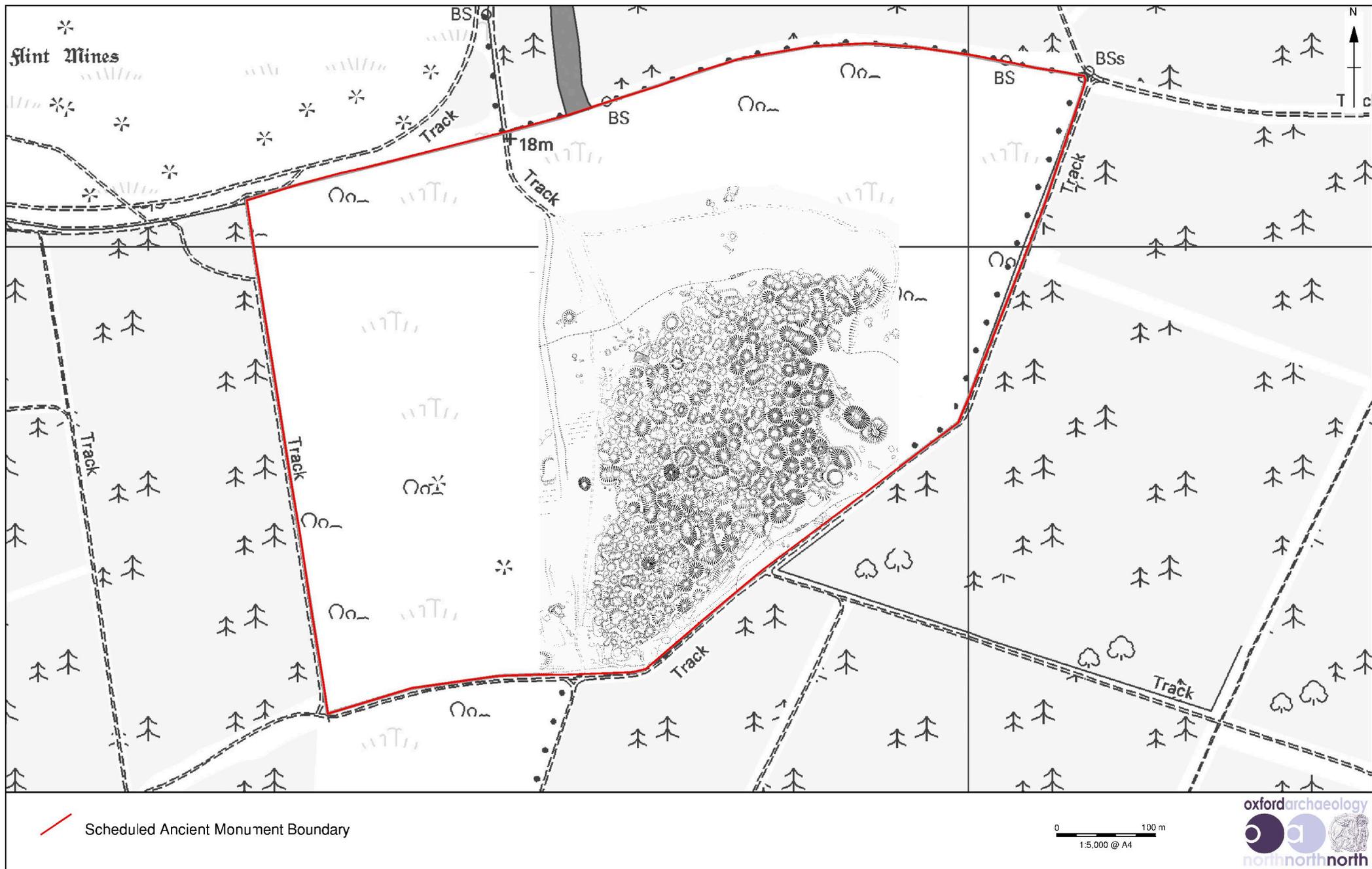


Figure 10: Grime's Graves, survey of flint mines and the scheduled area

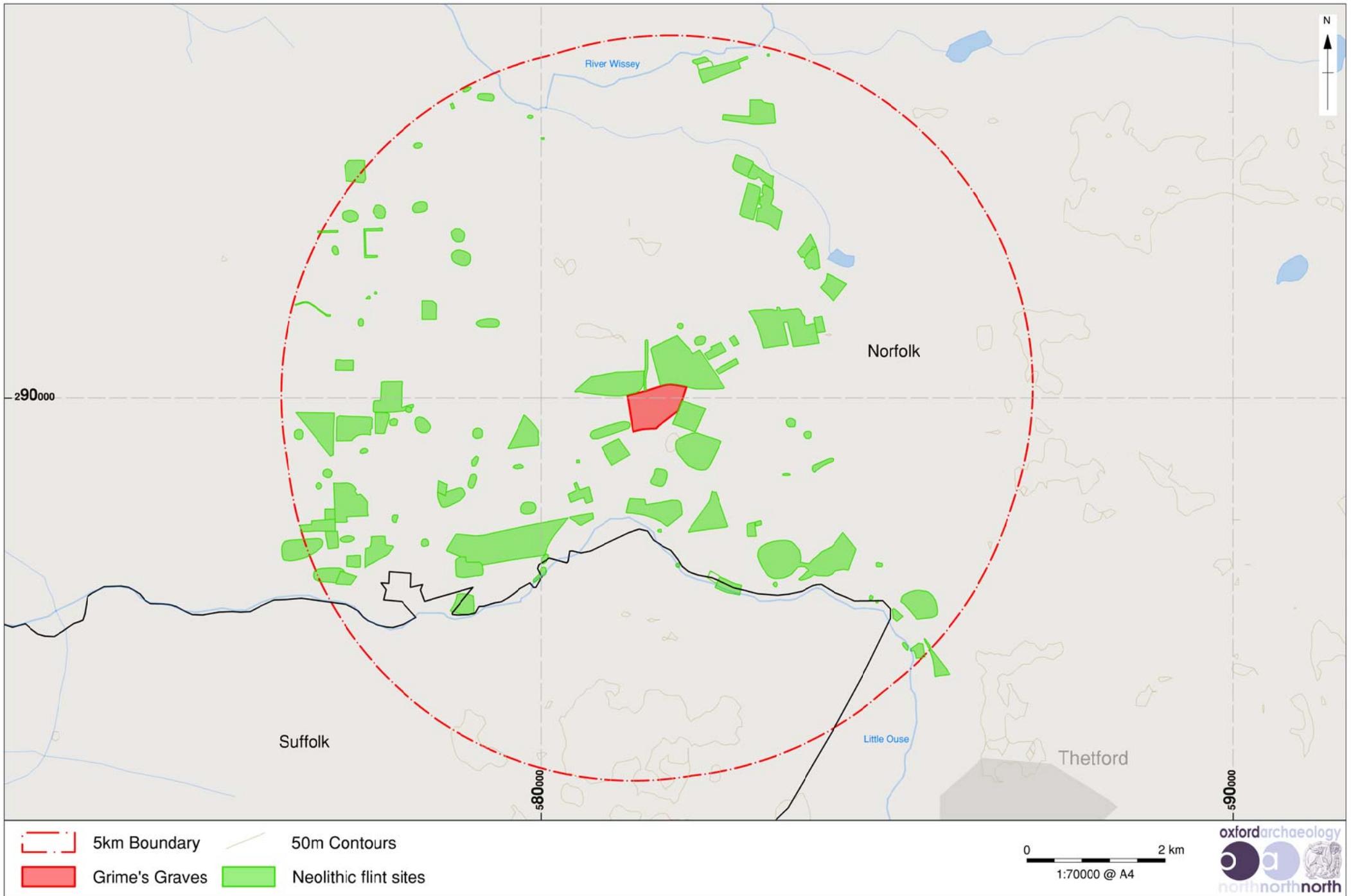


Figure 11: Distribution of Neolithic flint sites in the Brecklands immediately surrounding Grime's Graves



Mill 3
Moor Lane Mills
Moor Lane
Lancaster
LA1 1QD
t: (01524 541000
f: (01524) 848606
e: oanorth@oxfordarch.co.uk
w: www.oxfordarch.co.uk

Director and Chief Executive:
Gill Hey BA PhD MifA FSA

Private Limited Company Number: 1618597

Registered Charity Number: 285627

Registered Office: Oxford Archaeology Ltd.
Janus House, Osney Mead, Oxford, OX2 0ES