ARCHAEOLOGICAL WATCHING BRIEF – Phase 2

Hindlow Quarry, Buxton, Derbyshire

ARS Report Nº: 2022/146
OASIS ID: Archaeol5-506615

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An Archaeological Watching Brief (Phase 2) at Hindlow Quarry, Buxton, Derbyshire

ARS LTD REPORT 2022/146

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Planning Reference:	CHA/1156/23 (reviewed 1998)
Local Authority:	Derbyshire County Council
Site central NGR:	SK 08935 68272
OASIS ID:	Archaeol5-505615

EXECUTIVE SUMMARY

Project Name:	Hindlow Quarry, Buxton, Derbyshire
Site Code:	HQB_22
Planning Authority:	Derbyshire County Council
Planning Reference:	CHA/1156/23 (reviewed 1998)
Location:	Buxton, Derbyshire, SK37 8TG
Hard Geology:	Bee Low Limestone Formation
Superficial Geology:	None recorded
Soil Type:	Very acidic, loamy upland soils with a wet peat surface
NGR:	SK 08935 68272
Date of Fieldwork:	10/04/22-20/07/22
Date of Report:	November 2023

An archaeological watching brief was undertaken at Hindlow Quarry by Archaeological Research Services Ltd (ARS Ltd) on behalf of Tarmac Cement and Lime Ltd (the Client) during April to July 2022. The purpose of the watching brief was to record any archaeological and paleoenvironmental remains that survived on the site according to the Written Scheme of Investigation (Jacklin 2021a) prepared for this work. The work was carried out in order to fulfil Condition 43 of the 1998 Review of old Mineral Permissions (ROMP) of the 1957 planning permission (CHA/1153/23).

Previous works at the site include an archaeological desk-based assessment (Brown 2020) that identified numerous heritage assets within the proposed development area from a wide range of periods, including two limekilns. The site also had significant potential for evidence of early prehistoric activity in the area, in addition to lead mining activity related to 19th century Brierlow mine.

A geophysical survey conducted in 2021 identified a density of anomalies which are likely natural fissures and depressions within the underlying limestone geology. However, features were also detected which may relate to medieval and post-medieval industrial activity for example lead mining, small-scale quarrying, and lime production (Durkin 2021).

This phase of fieldwork (Phase 2) was prompted by the upcoming extension of works within the quarry, and follows on from an initial phase of strip, map and sample work (Phase 1) conducted in February 2021 (Jacklin 2021). During the works conducted in Phase 1, 10 badger setts were also removed from the development area. No archaeological remains were encountered during the works.

The area subject to watching brief during the Phase 2 works comprised Field numbers 3, 5, 7 and 9, an area immediately to the north and north-east of Phase 1. The removal of topsoil and subsoil in spits revealed two natural features, two heavily truncated features that likely form part of a larger curvilinear ditch and an assemblage of 19 lithics, largely dated to the Mesolithic period.

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1.1 Background and Scope of Work

1.1.1 Archaeological Research Services Ltd (ARS Ltd) was commissioned by Tarmac Cement Ltd (the Client) to undertake a strip, map and sample watching brief at Hindlow Quarry, Buxton, Derbyshire (Figure 1) during Phase 2 ground works, prompted by the upcoming extension of works within the quarry. This phase follows on from the Phase 1 watching brief (Jacklin 2021), preceded by a geophysical survey (Durkin 2021) and earlier desk-based assessment (Brown 2020).

1.1.2 Hindlow Quarry had been in operation since the early 20th century. The most recent scoping report for the forthcoming Review of old Mineral Permissions (ROMP) states that:

> *'The quarry was established during the first half of the twentieth century, with the single planning permission for the site, CHA/1156/23, being granted in 1957. Production of stone was suspended in 1988 although the quarry processing plant has continued to be operational since that time initially utilising onsite stockpiles of stone and, more recently, limestone imported from Tunstead Quarry.'*

1.1.3 Under Schedule 13 of the Environment Act (1995), planning permission CHA/1156/23 was reviewed under the Review of old Mineral Permissions (ROMP) procedures and is currently controlled by the conditions imposed in 1998 as part of that review. Condition 43 of the planning consent required that:

> *'The developer shall make arrangements for archaeological observation and recording to take place during the development of the remaining undisturbed areas of the site. Details of those arrangements shall be submitted for approval in writing of the Mineral Planning Authority at least three months before any works commence on these areas.'*

1.1.4 An archaeological desk-based assessment (DBA) was produced as part of the environmental Statement Cultural Heritage Chapter for the Environmental Impact Assessment accompanying the ROMP application. The DBA (Brown 2020) identified numerous heritage assets surviving withing the ROMP application site that are yet to be extracted. Most notably remains associated with the 19th century course of Cromford & High Peak Railway, in addition to lead mining remains of the 19th century Bierlow Mine, and two limekilns. The DBA also identified a high potential for previously undiscovered evidence of prehistoric activity. Possible Neolithic settlement evidence was recorded during a topsoil strip at Brierlow Quarry immediately to the north of the PDA in 2015, and the presence of large barrows such as Dow Low and Brier Low located to the west.

1.1.5 The DBA recommended that a phased scheme of archaeological investigation is agreed in consultation with Derbyshire County Council's County Archaeologist that included:

> *'A geophysical survey of all suitable areas within the ROMP application site where future extraction and other ancillary activities that would have an impact upon heritage assets (such as Soil Storage and Screening Bunds, Stocking Area and the Permitted North Eastern Landform) are proposed. Based upon the results of this fieldwork, further appropriate evaluation and mitigation strategies can then be developed, which might include such methodologies as earthwork survey and*

historic building recording, fieldwalking, test pitting, geochemical analysis, evaluation trenching, strip, map and sample excavation and watching briefs'.

1.1.6 A geophysical survey undertaken in 2021, over 54.3 hectares across 22 agricultural fields and two sports pitches, revealed magnetic anomalies across the survey area. Though difficult to interpret, it was thought these may be related to archaeological material. A number of the anomalies were also likely to be natural (a result of soil filled fissures and depression in the underlying limestone). Additionally, the survey revealed the probable remains of a significant post-medieval track in Field 41, likely to have provided the main access to Hindlow Lime Works in the early part of the 20th century, and a section of possible double-ditched trackway in Field 35. Based on the survey results, surviving archaeological remains that might be encountered were likely to be a result of medieval or post-medieval industrial activity including lead mining, small scale quarrying and lime production as well as ancient systems of land division/agriculture (Durkin 2021).

1.1.7 In 2021, ARS Ltd conducted Phase 1 monitoring works as part of a watching brief (Jacklin 2021). This involved continuous archaeological monitoring during soil stripping at the western extent of the PDA, covering an area of approximately 1.6 hectares (Figure 1 and 2). The designated area was divided into two fields; field 1 to the south and field 2 to the north-east. Field 1 had its topsoil and subsoil stripped in the 1980s, with much of it being used for quarry operations. Field 2 remained undisturbed and exhibited extensive rooting. Alongside the supervised stripping of field 1 and field 2, ARS Ltd also monitored the removal of a total of 10 badger sets. No archaeological features or deposits were encountered during these works.

1.1.8 In 2022 ARS Ltd undertook the Phase 2 watching brief comprising the continuous archaeological monitoring of the soil stripping operations within the PDA and recording of any archaeological remains revealed during that process. The area subject to the Phase 2 watching brief were located in the western area of the Quarry, just south-west of the mineral rail line, and included Field numbers 3, 5, 7 and 9 (Figure 2). The works were undertaken in accordance with the Written Scheme of Investigation (Jacklin 2021a; Appendix III), and took place between April 10th 2022 to July 20th 2022.

Site name: Hindlow Quarry, Buxton
Date: November 2023
Drawn by: JD
Scale: Varies

- High Peak District
- Hindlow Quarry
- Watching Brief area, Phase 2
- Watching Brief area, Phase 1
- Field boundary walls and numbers
- Mineral track following course of former railway
- Sports pitch - included in survey area

Figure 1: Site Location

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Figure 2: Area of archaeological watching brief phase 2, showing features and distribution of flint finds

- Watching brief phase 2 area
- Woodland
- Dewpond
- Features
- Natural features
- Watching brief phase 1 area
- Flint findspots (Mesolithic)
- Flint findspots (Mesolithic/EN)
- Flint findspots (Mesolithic or LN/EBA)
- Flint findspots (LN/EBA)

0 25 50 75 100 m

N

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1.2 Site Location and Description

1.2.1 Hindlow Quarry is one of four large limestone quarries (i.e. Hillhead, Brierlow and Dowlow) that lie close to the A515 Buxton to Ashbourne road. The 'red line boundary' of the quarry is outlined in Figure 1, and incorporates the boundary of the PDA and the area(s) subject to the watching brief. The north-eastern boundary of the quarry is the A515 Buxton to Ashbourne Road, and the south-western boundary is a green lane which runs along the southern edge of all three quarries. The site, centered on NGR SK 08935 68272, and positioned between 394.00m to 413.00m AOD is located approximately 4km from Buxton on Sterndale Moor, immediately between Bierlow Quarry to the north-west, and Dowlow quarry to the southeast.

1.2.2 Hindlow quarry, which has a surface area of 132ha, is bisected into two parts by a railway line. The extraction area lies to the west of the railway and measures approximately 67ha. To the east of the railway is the quarry's approved tipping area.

1.2.3 The PDA subject to the Phase 2 watching brief is located toward to southwestern area of the quarry, south-west of the mineral rail line and to the north, north-west of the Phase 1 works.

1.3 Geology and Soils

1.3.1 The underlying solid geology of the PDA consists of the pale grey Bee Low Limestone Formation; sedimentary bedrock formed approximately 331 to 337 million years ago in the Carboniferous Period when the local environment was dominated by shallow carbonate seas (Cranfield University 2023). No superficial deposits were recorded on site although head deposits laid down by the Devensian glaciation at the end of the Pleistocene are recorded some 700m to the south west.

1.3.2 The soils of the PDA are classified as *Soilscape* 16; very acidic, loamy upland soils with a wet peaty surface (Cranfield University 2023).

1.4 Archaeological and Historical Background

1.4.1 The archaeological and historical background for the site is detailed in the Desk Based Assessment (Brown 2020), summarised in the WSI (Appendix III), and briefly recapped here:

Prehistoric

1.4.2 The earliest evidence for human activity in the area surrounding Hindlow Quarry dates from the Palaeolithic to the Bronze Age and was identified at Fox Hole Cave, near the summit of High Wheeldon Hill, c. 1.3km southwest of the Development Area (DA). Excavations of deposits within the cave recovered Late Upper Palaeolithic flint and antler artefacts associated with a hearth, and split horse and red deer bone. Mesolithic, Neolithic, Beaker and Bronze Age material has also been recovered from the cave. Further Mesolithic chipped stone artefacts were recovered during archaeological evaluations immediately to the north of the DA at Brierlow Quarry.

1.4.3 A Neolithic stone axehead and a further polish stone axehead were discovered prior to 1974 at Brierlow Grange Farm and 'Dowlow' respectively, both from within the PDA boundary though their precise find spots are unclear. Flint waste flake and core artefacts, suggesting Neolithic to Bronze Age flint working, were discovered during ploughing in 1898 at Brierlow Grange Farm, though again their location is uncertain. Further findspots for Bronze Age worked stone artefacts and lithic scatters are recorded within 1km of the DA.

1.4.4 Evidence for Late Neolithic-Early Bronze Age occupation was uncovered during topsoil stripping at Brierlow Quarry, c. 500m immediately northwest of the site. Twenty pits, post holes and tree-throw features (of which six contained pottery fragments of at least two Grroved Ware vessels and a Beaker) were recorded.

1.4.5 There is a wealth of evidence for Neolithic and/or Early Bronze Age activity in the form of the numerous barrows across the local landscape. Most of these were either investigated by the antiquarian Thomas Bateman in the 19th century and/or have been completely quarried away. The best surviving is the scheduled monument of Nether Low Barrow (NHLE 1011207), c. 1km north of the DA, where a various inhumation and a cremation were recorded along with 'large stag's horns'. At the large barrow of Brier Low, c. 165m north of the site Bateman discovered both a burial and cremation and a bronze dagger; the barrow was subsequently quarried away in the mid-20th Century. Dow Low barrow (HER MDR83) was depicted Ordnance Survey maps in the southern area of Hindlow Quarry itself, but destroyed by quarrying by 1955. A further smaller barrow (precise location unknown) is also assumed to have been destroyed.

1.4.6 There is no known evidence for later Bronze Age or Iron Age activity within 1km of the site.

Romano-British

1.4.7 The presumed course of the Roman road from Buxton to Derby, is thought to run 1.4km to the north-east. However, beyond occasional finds of individual finds (glass bead, pottery, bronze armlet) there is no further evidence for sustained Romano-British activity or settlement in the immediate vicinity.

Medieval

1.4.8 There is evidence that, when the Angles penetrated in the Peak District by the mid-7th century, they chose pre-existing burial grounds in which to bury their 'leaders'. Thomas Bateman writes of three barrows with Anglian presence in the region; their precise location is uncertain but the description seems to indicate that these would have been located in the area now occupied by Hindlow and/or Dowlow Quarries—possibly in the PDA. Anglian presence in the vicinity is also attested by the many place names containing the Old English element hlāw or 'mound, burial mound, hill'.

1.4.9 The area around the PDA seems to have been sparsely populated during the Early Medieval period. Earl Sterndale (possibly developed out of the 'lost' Domesday-recorded settlement of Soham in Hartington) is the only major medieval settlement within 1km of the site.

1.4.10 Medieval granges were established in remote areas of the Peak District by monastic orders from outside the region, reclaiming land from the wilderness, usually to rear sheep. No such granges are recorded in the Hindlow quarry area, which seems to have been common land during this period.

Post-Medieval

1.4.11 Following an 1804 Act of Parliament enclosing the parish of Hartington Upper Quarter, the enclosure map shows that the northern half of the quarry site occupied part of a large bounded area described as common land 'on Brierley' allotted to the Duke of Devonshire. Three newly surveyed closes had also been laid out within the southeastern half of the PDA, described as common land allotted 'On Dowlow'.

1.4.12 By 1825 Map Brierlow Grange Farm is seen on Greenwood's map, within the western area of the quarry. Although outside the PDA, activities associated with it would have occurred within the site, and various outfarm buildings were illustrated over the years. The map also depicts a railway, probably the original course of the Cromford and High Peak Railway, running from southeast to northwest. The newer course of the railway also traverses the area from southeast to northwest; the trackbed for this is still in use as the mineral railway for Dowlow, Hindlow, Brierlow and Hillhead Quarries.

1.4.13 The OS Old Series map of 1840 shows that Dowlow Moor had been enclosed into a series of regular fields, interspersed by small quarries and woodland plantations, with many dew ponds and six lime kilns (one towards the east of the DA), most now quarried away. Lime kilns are the most numerous class of feature recorded on the HER within 1km around the DA (23 examples), with outfarms/field barns and sheepfolds (one within the site) also well represented. Lead mining remains are also ubiquitous and numerous lead veins are recorded. One (apparently not particularly productive) vein was mined within the DA, and had an associated road utilising a new bridge over the railway.

Modern

1.4.14 By the time of the OS map of 1898 'Hindlow Lime Works' has been established within the southern part of the PDA, served by branch lines off the Cromford and High Peak Railway. The footprint of the quarry had expanded slightly by the time of the 1922 map, and by 1955 engulfed much of the southern half of the site, including the site of Dow Low round barrow.

1.4.15 The latter part of the 20th century saw the expansion of Hindlow Quarry decelerate. Extraction activities were suspended in 1988, though the processing plant remained operational, utitising stockpiles of stone and imported material. The Brierlow Grange Farm complex was completely demolished between 2006-2017 with the foundations of two minor outbuildings and a partially silted-up pond are all that remain.

2 Aims And Objectives

2.1 Regional Research Aims and Objectives

2.1.1 The proposed archaeological works had the potential to identify the presence of evidence pertinent to research objectives and overarching research themes identified in *East Midlands Heritage: An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (Knight *et al.* 2023). The aims and objectives of the archaeological watching brief are outlined in detail in the WSI (Appendix III), and are summarised below:

Mesolithic

> *2.2.2: How were sites distributed across low-lying and upland areas, and in particular how many sites might be concealed beneath alluvium, colluvium and other masking deposits or beneath the sea?*

Neolithic and Early to Middle Bronze Age

> *3.3.1: When was the transition from nomadic to semi-sedentary and sedentary communities and to what extent did this vary in different landscapes?*

Post-Medieval

> *8.4.4: What was the impact of industrialisation upon established settlement patterns and the rural landscape, and how did this vary regionally*?

Modern

> *9.7.3: How can we enhance our records of mines and surface features associated with extractive industry and their relationship to markets, settlements and transport?*

2.2 Fieldwork Aims and Objectives

2.2.1 The aims and objectives of the archaeological watching brief were outlined in detail in the WSI (Appendix III), and are summarised below:

- identify the presence/absence of archaeological features and deposits within the site;
- excavate and record all archaeological features and deposits encountered;
- sample sufficient of the archaeological features and deposits to establish relative sequence, likely dating and quality of preservation; and
- gather sufficient information to establish the character, extent, form, function and likely status of any surviving archaeological deposits.

3 METHOD STATEMENT

3.1.1 The methodology for the watching brief is set out in detail in the WSI (Appendix III), and summarised below:

3.1.2 The archaeological observation and recording involved the continuous monitoring of soil strips, removed by machine down the level of the upper horizon of the natural limestone or first archaeological horizon. The topsoil was managed and stored separately from the subsoil for future restoration works. All groundworks were undertaken by a suitable mechanical excavator fitted with a toothless ditching bucket.

3.1.3 Where significant features appeared, the works were moved into a strip, map and sample methodology, and hand-investigated. No plant or machinery were allowed to operate or transverse the site in the vicinity of observed archaeological remains until it was fully investigated and/or recorded.

3.1.4 The site was recorded in accordance with ARS Ltd's field recording manual. Archaeological features were mapped and drawn using suitable equipment, i.e., Leica SmartRover GPS unit with tolerance of 0.025m, and tied into the OS grid, supplemented with a photographic record. All spoil was visually scanned to recover small finds.

3.2 Professional Standards

3.2.1 The archaeological fieldwork was undertaken in accordance with the Chartered Institute for Archaeologists (CIfA) *Code of Conduct* (2021) and *Standard and Guidance for an Archaeological Watching Brief* (2020).

3.3 Health and Safety

3.3.1 All works were undertaken in full compliance with the Health and Safety at Work Act 1974 and with the Management of Health and Safety Regulations 1992.

3.3.2 A risk assessment (RA No. 23/22/B) was produced before commencement and was adhered to throughout the course of the fieldwork.

4 RESULTS

4.1 Overview

4.1.1 An overall plan of the Phase 2 watching brief area is presented in Figure 2. A context description table is contained in Appendix I and summary text descriptions of key features are presented below. Plans, section drawings and photographs are included in this section. Additional digital photographs are contained in the project archive.

4.2 Site Taphonomy and Condition of Preservation

4.2.1 The area subject to the watching brief consisted of a roughly L-shaped agricultural field measuring approximately 6.9ha with relatively freely draining topsoil, with patches of waterlogged ground throughout. A square copse of woodland, which was not excavated as part of this Phase 2 works, was located within the northeastern side of the watching brief area.

4.2.2 Before the commencement of stripping, a geological depression was noted in the southwest part of the field by the archaeologist in attendance. As noted in the results from the geophysical survey, it was not possible to attribute this to a specific anomaly in the geophysical data (Durkin 2021).

4.3 Results

4.3.1 The topsoil (001) consisted of a medium, mid-brown silty clay horizon with irregular inclusions of angular limestone blocks. The topsoil overlay the entire site with significant evidence of rooting throughout. The topspoil depth varied from 0.4m to 0.7m. A total of 19 chipped lithics were retrieved during stripping of the topsoil, including flakes, blades, cores, scrapers and a piercer (section 5).

4.3.2 The distribution of Mesolithic, Neolithic and Early Bronze Age flints across the site appears to be relatively even, though slightly more concentrated near the northeastern border of the archaeological works. Given the absence of stratified features in this area, it is not possible to conclude that the observed density of archaeological material is representative of concentrated prehistoric activity. Instead, it may be attributed to the likelihood of hill wash from the surrounding ridges.

4.3.3 The subsoil deposit (002) was a medium, light orange/yellow sandy clay with irregular angular limestone blocks and rooting. The subsoil varied in depth across the entirety of the site, measuring between 0.2m to 0.5m. The natural substrate (003) comprised a friable, mid-grey silty clay with well sorted limestone and gravel inclusions.

4.3.4 A total of four features, [004], [006], [008], and [010], were identified and further investigated. Following excavation, it was determined that sub-oval feature [004] was likely the cut of a treebole due to the high density of rooting, and well sorted mid-brown silty clay fill (005).

4.3.5 A possible north-east to south-west aligned linear anomaly [010] identified during the subsoil strip was excavated at its south-west terminus (Figure 3). It had extremely uneven sides and base, with a mid red-brown silty clay fill with large limestone inclusions (011). It was determined to be a natural geological linear (fissure), and an example of number of geological linear identified across the PDA in the geophysical survey (Durkin 2021).

Figure 3. South-west facing section of fissure [010]. Looking north-east, 0.2m scale.

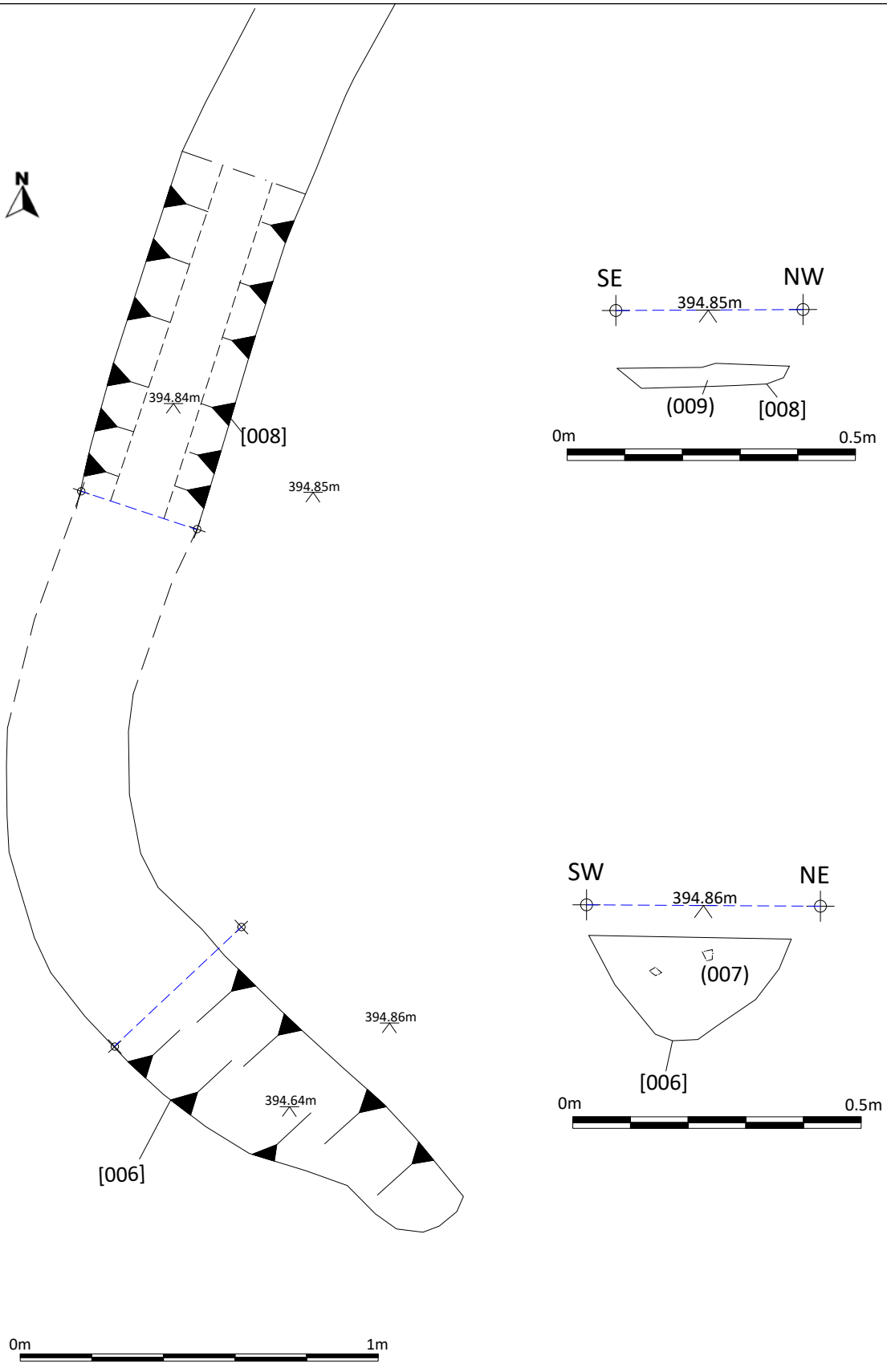
Curvilinear ditch [006] and [008]

4.3.6 A curvilinear feature was exposed during the topsoil strip on the south-west side of the of the excavation area (Figure 4 to 6). It was investigated in two slots, [006] and [008]. The terminus [006] was excavated to a length of 1.00m, to 0.20m in depth and 0.40m in width. The sides were steeply sloped with a concave base, and the feature had been heavy truncated due to plough damage on its south-east side. It was filled by a friable, mid-grey brown silty clay (007) with significant rooting.

4.3.7 A further 1.00m slot [008] within the same curvilinear feature was excavated immediately to the north of [006]. The ditch measured 0.38m wide and 0.04m deep. Both ends of the feature were heavily truncated. It was filled by a friable textured mid-grey silty clay (009), similar to fill (007) of ditch [006].

Figure 4. South-east facing section of ditch terminus [006]. Looking north-west, 0.2m scale

Figure 5. North facing section of ditch [008]. Looking south, 0.2m scale



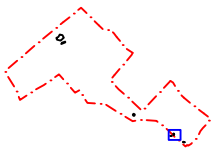
Site name: Hindlow Quarry, Buxton
Date: 13/11/23
Drawn by: CLH & JD

Figure 6. Sections and plan of [008] and [006]

Limit of Excavation

Section Line

Proposed extent



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5 Specialist Assessment and Analysis

5.1 Lithics

Dr Robin Holgate, MCIfA, FSA

5.2 Introduction

5.2.1 A total 19 chipped lithics weighing 173.26g were retrieved during stripping of the topsoil (001) down to the surface of the subsoil (Table 1). The material is unpatinated and all pieces are in fresh condition. The location of each find was recorded, and then bagged and given a unique find (SF) number. A catalogue with details of each individual lithic was produced (Table 2). Measurements are given for complete pieces only in accordance with lithic recording conventions (Saville 1980).

Flakes	4
Blades	5
Bladelets	2
Cores (with flake removals)	2
Cores (with bladelet removals)	2
Cutting blades	2
Discoidal scraper	1
Piercer	1
TOTAL	19

Table 1. The lithic Assemblage

5.3 Chronology

5.3.1 About a third of the assemblage, comprising debitage resulting from blade and bladelet production, is Mesolithic in date (*c.*11700 - 4000 cal BC). The remainder of the assemblage comprises Neolithic and Early Bronze Age (*c.*4000 - 1700 cal BC) debitage and implements, including a discoidal scraper and piercer, mostly made from flint imported to the site.

5.4 Distribution

5.4.1 About half of the chipped lithic material was recovered from (mostly) the north-east part of the site.

5.5 Raw Material

5.5.1 The lithic raw material is of two types: flint and chert. Artefacts made from flint comprise three-quarters of the assemblage (15 pieces) and artefacts made from chert comprise the remainder of the assemblage (4 pieces). Two-thirds of the assemblage (13 pieces) has varying amounts of cortex.

5.5.2 The flints were mostly fashioned on dark brown, brown and light grey-brown nodular flint, sometimes with grey cherty mottles. Cortex, where present, is thin and abraded, indicating that the flint originated from glacial outwash deposits in river valleys, probably those on the eastern and western flanks of the Peak District massif, or possibly from the Trent Valley to the south. The chert is dark brown, dark grey or grey in colour. Chert can be found as a naturally occurring rock within the underlying Carboniferous Limestone solid geology.

5.6 Flaking and Manufacture

5.6.1 Two main strategies were pursued on working flint at the site. The first involved detaching blades and bladelets from cores using mainly soft hammers; care was taken to prepare the platform edge of the cores by abrasion prior to flaking and the width of butts on the resulting removals was minimal. Three of the cores that were recovered had been flaked in this fashion. The second flint-working strategy, which was in common usage from the Late Neolithic period onwards, involved detaching flakes from cores using hard, probably stone, hammers without abrading the platform edges of the cores in between detaching each flake. Two of the flakes removed from cores in this way were then fabricated with invasive retouch on the dorsal surface into a discoidal scraper and abrupt retouch to create a piercer.

5.7 Types

5.7.1 The number of implements in the lithic assemblage totals four pieces (nearly a quarter of the assemblage). The implements comprise two Mesolithic cutting blades, a Late Neolithic/Early Bronze Age discoidal scraper and a Neolithic/Early Bronze Age piercer.

Figure 7: The humanly-struck flints

Figure 8: Late Neolithic-Early Bronze Age flint piercer and scraper

5.8 Discussion

5.8.1 The Mesolithic debitage is likely to have been discarded in the course of sporadic short-stay, specialised activities undertaken at the site, for example the hunting of animals. The Neolithic-Early Bronze Age flints are indicative of either occupation or some form of activity in the vicinity of the site during this period.

5.9 Recommendation

5.8.1 Given that limestone extraction is due to continue at the quarry it is recommended that the chipped lithic assemblage is retained for further analysis.

SF No.	Material	Colour	Cortex present	Type	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
1	Flint	Light grey-brown	Tertiary	Scraper - discoidal	38	15	3	3.7
2	Chert	Dark brown	Secondary	Core - 2 opposing platform bladelet	31	15	15	13.56
3	Flint	Dark brown	Secondary	Blade fragment				2.62
4	Chert	Brown	Secondary	Core - 1 platform flake	21	22	12	7.66
6	Chert	Grey	Secondary	Core - 1 platform bladelet	52	41	22	43.5
7	Chert	Dark grey	Secondary	Bladelet fragment				1.57
8	Flint	Dark brown with grey cherty mottles	Secondary	Flake	34	23	6	4.52
9	Flint	Dark brown	Tertiary	Blade fragment				1.76
10	Flint	Dark brown	Secondary	Flake	36	40	10	18.59
11	Flint	Dark brown	Secondary	Blade fragment				1.93
12	Flint	Light grey brown with cream cherty mottles	Tertiary	Blade - edge utilised	38	15	3	3.7
13	Flint	Light grey brown with cream cherty mottles	Tertiary	Blade fragment - edge utilised				1.55
14	Flint	Dark brown	Tertiary	Core - 2 platform flake	33	29	32	44.2
15	Flint	Dark brown with cream cherty mottles	Tertiary	Piercer	54	22	8	9.63
16	Flint	Dark brown	Tertiary	Bladelet fragment				0.74
17	Flint	Dark brown	Secondary	Flake fragment				0.13
18	Flint	Dark brown	Secondary	Blade fragment				0.5
19	Flint	Dark brown	Secondary	Blade fragment				0.7
20	Chert	Dark brown	Secondary	Flake	28	29	6	0.9

Table 2. The lithic Assemblage by context

6 Discussion

6.1.1 No archaeological remains were uncovered during the watching brief.

6.1.2 The phases of development at Hindlow Quarry had the potential to expose archaeological remains from various periods. The DBA highlights the significance of evidence for early prehistoric human activity within Fox Hole Cave 1.3km to the south-west and Neolithic/Early Bronze Age barrows, such as Cronkston Low bowl barrow approximately 1km to the south-west (Jacklin 2021b). Any features and deposits uncovered were considered to have the potential for regional significance (Brown 2020). Additionally, although features likely related to post-medieval lead mining visible in Field 10 were outside the boundary of Phase 1 and Phase 2, the watching briefs had the potential to increase our understanding of the anomalies.

6.1.3 The natural features identified during the Phase 2 watching brief, treebole [004] and natural fissure [010], are not unexpected. The natural fissure is typical of numerous examples of linear features visible in the geophysical survey data (Durkin 2021).

6.1.4 Due to a lack of material evidence from the potential curvilinear ditch feature, [006] and [008], it is not possible to attribute it to any specific research framework. Truncation due to plough damage was also observed, and whilst this is unlikely to be entirely responsible for the lack of identifiable archaeology across the site, ploughing activities may have damaged and/or removed discrete features such as pits/postholes and shallow gullies. The absence of any significant archaeological resource from within the watching brief area may thus be attributed to the use of the land as pasture and speaks to its agricultural use throughout the years up to the modern era.

6.1.5 The easily fractured nature of the underlying Bee Low limestone geology also means that geological activity, such as that which formed the linear fissures, may have damaged bedrock-cut features.

6.1.6 The finds from Phase 2 included 19 chipped lithics, that were all recovered from insecure and unstratified contexts. Due to the unstratified nature of the finds, they cannot be used to characterise the extent of human activity within the PDA. Similar to the natural accumulation deposit (003), the flint deposition on the north-east part of the PDA could have been part of a natural process, with flint parts washing down the main slope of the field. Despite the inability to characterize the site, these lithics provide a solid indication of Mesolithic, Neolithic, and Early Bronze Age activity in the immediate area.

6.1.7 The results of the Phase 2 watching brief do not differ dramatically from the stripping monitored in 2021 (Jacklin 2021). Similar to the works conducted in 2021, a significant density of rooting was present within overlying topsoil, presumably due to agricultural activity/trees in the recent past. The depth of topsoil (0.4m-0.7m) and subsoil (0.1m and 0.2m) within field 2 stripped during 2021 is also very similar to those stripped in 2022. The curvilinear ditch exposed in 2022 constitutes the only identified possible archaeological remains from both phases.

6.1.8 No further research objectives were identified during the works, and no updates to the East Midlands Historic Environment Research Framework (EMHERF) are required. Retention of the lithics for further analysis is advised.

7 Publicity, Confidentiality and Copyright

7.1.1 Any publicity will be handled by the client.

7.1.2 ARS Ltd will retain the copyright of all documentary, photographic and video material under the Copyright, Designs and Patent Act (1988).

8 Statement of Indemnity

8.1.1 All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

9 Archive

9.1.1 A paper and digital archive will be prepared by ARS Ltd, consisting of all primary written documents, plans, sections, photographs and electronic data, which will be deposited with Buxton Museum and Gallery (2016) *Procedures for the Deposition of Archaeological Archives from Derbyshire at Buxton Museum and Art Gallery*. (Accession number: DERSB'2022.33).

9.1.2 The archive will follow the recommendations provided by CIfA's (2020) '*Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives'*, and the Society of Museum Archaeologists' (1993) '*Selection, Retention and Dispersal of Archaeological Collections. Guidelines for use in England, Wales and Northern Ireland*'.

9.1.3 All artefacts and associated material will be cleaned, recorded, properly stored and deposited in the archive.

9.1.4 A set of annotated, illustrative pictures of the site, excavation and features is contained within the digital archive.

9.1.5 An OASIS online record http://ads.ahds.ac.uk/project/oasis/ has been initiated and completed for this work and all parts of the OASIS online form completed for submission to the HER. This will include an uploaded pdf version of the entire report. The site has produced a paper and digital archive which will be deposited, along with this report, in digital form with Archaeological Data Service (ADS). In addition, a copy of this report will be deposited with Derbyshire County Council Historic Environment Record (HER).

10 Acknowledgements

10.1.1 ARS Ltd would like to thank Tarmac Ltd for the commission of this project.

11 REFERENCES

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APPENDIX I CONTEXT DESCRIPTION TABLE

Context	Type	Description	Length (m)	Width (m)	Depth (m)	Finds
001	Topsoil	medium mid-brown silty clay, irregular limestone inclusions, significant rooting	covering entire site	covering entire site	0.4 to 0.7	19 chipped lithics
002	Subsoil	underlying (001). Medium light brown/orange-yellow sandy clay, irregular limestone inclusions and rooting	covering entire site	covering entire site	0.2 to 0.5	-
003	Natural	Underlying (002) friable mid-grey silty clay	covering entire site	covering entire site	-	-
004	Cut	Cut of tree bowl	0.34	0.15	0.21	-
005	Fill	Fill of tree bowl, significant rooting, well sorted, mid-brown silty clay	0.34	0.15	0.21	-
006	Cut	Cut of ditch terminus	1.00	0.40	0.25	-
007	Fill	Fill of ditch terminus [006], mid-grey silty clay	1.00	0.40	0.25	-
008	Cut	Cut of ditch	1.00	0.34	0.14	-
009	Fill	Fill of ditch [008], mid-grey silty clay	1.00	0.34	0.14	-
010	Cut	Cut of natural feature	0.62+	1.00	0.37	-
011	Fill	Fill of [010], mid red-brown silty clay with large limestone inclusions	0.62+	1.00	0.37	-
012	Bedrock	Bee Low limestone bedrock geology underlying (003)	observed in patches across site	-	-	-

APPENDIX II OASIS FORM

Summary for archaeol5-506615

OASIS ID (UID)	archaeol5-506615
Project Name	Watching Brief at Hindlow Quarry, Buxton
Sitename	Hindlow Quarry, Buxton Phase 2
Activity type	Watching Brief
Project Identifier(s)	
Planning Id	CHA/1156/23
Reason For Investigation	Planning requirement
Organisation Responsible for work	Archaeological Research Services Ltd
Project Dates	11-Apr-2022 - 20-Jul-2022
Location	Hindlow Quarry, Buxton Phase 2 NGR : SK 08935 68272 LL : 53.2114374276678, -1.86766781348419 12 Fig : 408935,368272
Administrative Areas	Country : England County : Derbyshire District : High Peak Parish : Hartington upper Quarter
Project Methodology	Archaeological observation and recording involving the continuous monitoring of soil stripping by machine down to the level of surviving archaeological horizon, or the upper horizon of the limestone. Machining will stop at the appropriate shallower level. If archaeological features are identified, these will be cordoned off and a strip , map and sample excavation will be carried out. At each subsoil horizon, the surface will be scanned for the presence of archaeological features and deposits. The areas will be cleaned using hand tools to expose the nature and extent of any archaeological features uncovered. Any features will be recorded.
Project Results	
Keywords	
Funder	
HER	Derbyshire County Council - unRev - STANDARD
Person Responsible for work	
HER Identifiers	
Archives	

APPENDIX III WRITTEN SCHEME OF INVESTIGATION

Hindlow Quarry, Buxton, Derbyshire

Written Scheme of Investigation for Phase 2 Archaeological Works

June 2021

Angel House, Portland Square, Bakewell, Derbyshire, DE45 1HB

www.archaeologicalresearchservices.com

Prepared on behalf of:	Tarmac: A CRH Company
Date of compilation:	June 2021
Compiled by:	Adrian Jacklin PCIfA
Planning Reference:	CHA/1156/23 (reviewed 1998)
Planning Authority:	Derbyshire County Council
Site central NGR:	SK 08935 68272

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1 INTRODUCTION

1.1 Project and Planning Background

1.1.1 This Written Scheme of Investigation (WSI) has been prepared by Archaeological Research Services Ltd (ARS Ltd) on behalf of Tarmac: A CRH Company. It details a scheme of archaeological works to take place during the extension of Hindlow Quarry in satisfaction of conditioned planning consent for developments at Hindlow Quarry, Buxton, Derbyshire. This WSI confirms the phase 2 scheme of archaeological observation and recording, following on from the initial works that took place in February 2021 (Jacklin 2021).

1.1.2 Hindlow Quarry has been in operation since the early 20th century. The most recent scoping report for the forthcoming Review of old Mineral Permissions states the following:

> "*The quarry was established during the first half of the twentieth century, with the single planning permission for the site, CHA/1156/23, being granted in 1957. Production of stone was suspended in 1988 although the quarry processing plant has continued to be operational since that time initially utilising onsite stockpiles of stone and, more recently, limestone imported from Tunstead Quarry.*
>
> *Under Schedule 13 of the Environment Act (1995) planning permission CHA/1156/23 was reviewed under the Review of old Mineral Permissions (RoMP) procedures and is currently controlled by the conditions imposed in 1998 as part of that review.*"

1.1.3 Condition 43 of the 1998 planning permission is as follows:

> *"The developer shall make arrangements for archaeological observation and recording to take place during the development of the remaining undisturbed areas of the site. Details of those arrangements shall be submitted for approval in writing of the Mineral Planning Authority at least three months before any works commence on these areas."*

1.1.4 Archaeology is a material consideration in the planning process. As such the archaeological works will be carried out in accordance with *National Planning Policy Framework (NPPF)* paragraph 199 (MHCLG 2019, 56) *'to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible*.'

1.1.5 This WSI confirms the nature of the archaeological works to be undertaken by ARS Ltd at Hindlow Quarry, comprising archaeological observation and recording scalable to a strip, map and sample excavation methodology dependent on the presence and density of archaeological features and deposits that might be revealed during soil stripping in the proposed development area (PDA). This document has been compiled in accordance with guidance from the County Archaeologist for Derbyshire County Council (DCC).

1.1.6 An archaeological assessment (Brown 2020) and geophysical survey (Durkin 2021) were undertaken recently at Hindlow Quarry for the RoMP, and archaeological observation and recording were undertaken during soil stripping of the phase 1 area in February 2021 (Jacklin 2021). The results of these works are detailed in section 2.

1.2 Site description

1.2.1 The 'red line boundary' of Hindlow Quarry is outlined in red in Figure 1, incorporating the boundary of the development area which is outlined in purple (Figure 1), and encompasses an area of approximately 132 hectares (ha). The development area is centred at NGR SK 08935 68272.

1.2.2 Hindlow Quarry is one of four large limestone quarries (the others being Hillhead, Brierlow and Dowlow Quarries) which lie *c.*4km to the south of Buxton and close to the A515 Buxton to Ashbourne road. The site is situated between Brierlow Quarry to the north-west and Dowlow Quarry to the south-east, and abuts both. The north-eastern boundary of the quarry is the A515 and the south-western boundary is a green lane which runs to the rear of the three quarries. The Quarry, which has a surface area of 132ha, is bisected into two parts by a railway line. The development area lies to the west of the railway and measures 26.5ha. To the east of the railway is the Quarry's approved tipping area. The site abuts the A515 opposite Sterndale Moor and is screened from the road by a belt of tree planting.

1.2.3 The development area is located in the western area of the Quarry just south-west of the mineral rail line and highlighted in purple (Figure 1). The area was the subject of a geophysical survey undertaken by ARS Ltd in January 2021 (Durkin 2020) and a plan summarising the interpretation of the anomalies recorded during the survey is appended as Figure 3. The fields are undisturbed, although field 3 contains a tree plantation.

1.3 Geology and soils

1.3.1 The solid geology of the PDA comprises limestone of the Bee Low Limestone Formation; sedimentary bedrock formed approximately 331 to 337 million years ago in the Carboniferous Period when the local environment was dominated by shallow carbonate seas (BGS 2021). Superficial deposits are not recorded for the site (ibid).

1.3.2 Soils of the PDA are defined as very acidic, loamy upland soils with a wet peaty surface (CU 2021)

2 Archaeological and Historical Background

2.1 The earliest evidence for human activity within the area of the Quarry, which dates from the Palaeolithic to the Bronze Age, was identified at Fox Hole Cave (NHLE 1011922; HER 6801), near the summit of High Wheeldon Hill (Brown 2020).

2.2 There is a wealth of evidence for the Neolithic and/or Early Bronze Age within the area, predominantly in the form of a series of barrows which were investigated in the 19th century by Thomas Bateman. A surviving example of this is Cronkston Low bowl barrow (HER 6846; NHLE 1017540), located *c.*1km to the south-west. Further

barrows are identified on 19th century mapping, but have mostly been destroyed by quarrying.

2.3 The Roman Road from Buxton to Derby, variously known as 'The Streets', is located *c.*1.4km to the north-east.

2.4 At least 24 lime kilns are recorded on the HER within the area, and are present on 19th and 20th century Ordnance Survey (OS) mapping. Stone for the construction of the kilns would have been supplied by the numerous limestone quarries in the area, including Hindlow.

2.5 Greenwood's Map of 1825 depicts Brierlow Grange Farm within the western area of the quarry. The majority of the farmstead itself should lie outside of the PDA (Figure 2), although agricultural activity associated with the farmstead could be encountered within the area to be stripped.

2.6 The fields to be stripped (field numbers 2, 3, 5, 7, 9, 11a) were subject to a geophysical survey in January 2021 (Figure 3). The geophysical survey identified anomalies within these fields, although these were considered to provide limited evidence of archaeological activity (Durkin 2021, 17-18). However, this does not necessarily represent an absence of archaeological activity in these fields, and it only through intrusive archaeological fieldwork can the presence or absence of archaeological remains in this area can be confirmed (*ibid*.).

2.7 Archaeological monitoring and recording was carried out during the phase 1 soil strip in February 2021 (Jacklin 2021) covered the area of the tree plantation to the south-east of field 3 (Figure 2). The plantation was established from at least 1879-1880. No archaeological remains were found.

3 Aims and Objectives

3.1 Regional Research Aims and Objectives

3.1.1 The proposed archaeological works have the potential to identify the presence of evidence pertinent to research objectives and overarching research themes identified in *East Midlands Heritage: An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (Research Frameworks 2021). Relevant research aims and objectives for the prehistoric (*c.*10,000BC-*c.*AD43), Romano-British (AD43-*c.*410), Post-Medieval (1485-1750) and Modern (1750 to present) periods include the following.

Mesolithic

- 2.2.2: How were sites distributed across low-lying and upland areas, and in particular how many sites might be concealed beneath alluvium, colluvium and other masking deposits or beneath the sea?

Neolithic and Early to Middle Bronze Age

- 3.3.1: When was the transition from nomadic to semi-sedentary and sedentary communities and to what extent did this vary in different landscapes?

Romano-British

- 5.4.3: How did rural settlements relate to each other and to towns and military sites, and how may this have varied regionally and over time?

Post-Medieval

- 8.4.4: What was the impact of industrialisation upon established settlement patterns and the rural landscape, and how did this vary regionally?

Modern

- 9.7.3: How can we enhance our records of mines and surface features associated with extractive industry and their relationship to markets, settlements and transport?

3.1.2 It may be that other research themes come to the fore when the archaeological works are undertaken; these aims and objectives will therefore be revisited both during and after fieldwork in order that they may be updated as necessary.

3.1.3 Provision should be made for updating *the East Midlands Historic Environment Research Framework* (EMHERF) where the results of a fieldwork project contribute towards agenda topics. This should be done using the interactive digital resource at https://researchframeworks.org/emherf/ and noted explicitly in the conclusions of the relevant report.

3.2 Fieldwork Aims and Objectives

3.2.1 The aims and objectives of the archaeological monitoring and recording will be to:

- identify the presence/absence of archaeological features and deposits within the site;
- record all archaeological features and deposits encountered;
- sample sufficient of the archaeological features and deposits to establish relative sequence, likely dating and quality of preservation;
- gather sufficient information to establish the character, extent, form, function and likely status of any surviving archaeological deposits with a view to evaluating their significance and potential to inform the aims and objectives outlined in section 3.1 of this document.

3.2.2 Should significant archaeological remains be encountered during the observation phase of the works then a strip, map and sample excavation methodology may be implemented where the main objectives will be to:

- excavate and record the archaeological features and deposits encountered;
- establish a relative chronological sequence and if possible a dating framework for excavated deposits and features;
- establish the character, extent, form, function and likely status of surviving archaeological deposits to inform the research aims outlined in section 3.1.

4 METHODOLOGY

4.1 Coverage

4.1.1 Archaeological works will be confined to the area to be stripped as shaded in pink (Figures 2 & 3: 6.87ha) and will take the form of archaeological observation and recording that is scalable up to a strip, map and sample excavation where required. Archaeological observation and recording will involve the continuous monitoring of soil stripping, removed by machine down to the level of any surviving archaeological horizon or the upper horizon of the limestone, whichever is the shallower as outlined in section 4.3 below.

4.1.2 If a cluster or clusters of archaeological features are identified during monitoring, as exemplified by an area enclosed by linear or circular features or an area of multiple features which could be contemporary of the same period (as could potentially be the case within the two areas outlined in pink in Figure 3), then the area(s) will be cordoned off and, in consultation with the DCC County Archaeologist, subjected to a strip, map and sample excavation methodology as outlined in section 4.4 below.

4.2 General statement of practice

4.2.1 All elements of the archaeological watching brief will be carried out in accordance with the Chartered Institute for Archaeologists' (CIfA's) *Code of Conduct* (2019a) and *Standard and Guidance for an Archaeological Watching Brief* (2020a). All elements of any strip, map and sample excavation will be carried out in accordance with CIfA's *Standard and Guidance for Archaeological Excavation (2020b).*

4.2.2 All staff employed on the project will be suitably qualified for their respective project roles and have substantial experience of archaeological excavation and recording.

4.2.3 All staff will be made aware of the archaeological importance of the area surrounding the site and will be fully briefed on the work required by this specification. Each member of staff will be fully conversant with the aims and methodologies of the archaeological works and will be given a copy of this WSI to read.

4.2.4 All ground works covered under this specification will be undertaken by a suitable mechanical excavator fitted with a toothless ditching bucket operating under continuous archaeological supervision.

4.2.5 ARS Ltd will ensure that plant or machinery will not be operated in the immediate vicinity of any archaeological remains until they have been recorded.

4.2.6 Contractors and plant operators must notify any observations of archaeological remains immediately to the archaeologist on site. The developer will make provision for the necessary archaeological investigation (fieldwork, post-excavation analysis, reporting and archive deposition).

4.2.7 Regular contact will be ensured between ARS Ltd and the site project manager to ensure that ARS Ltd is kept up to date with site works and given the

chance to respond appropriately and in line with the requirements of the DCC County Archaeologist.

4.2.8 All site operations will be carried out in a safe manner in accordance with ARS Ltd's health and safety policy. A risk assessment will be prepared before commencement on site.

4.2.9 The on-site archaeologist will be given, at his/her request, the opportunity to stop site work to investigate potential archaeological features. Adequate time will be negotiated and allowed for recording any such features.

4.2.10 The site will be recorded in accordance with ARS Ltd's field recording manual.

4.3 Archaeological observation and recording

4.3.1 This will involve continuous monitoring during ground works.

4.3.2 Excavation will be undertaken by a suitable mechanical excavator fitted with a toothless ditching bucket or by hand.

4.3.3 Excavated spoil will be scanned visually to recover small finds. Finds so recovered will be recorded with their location of origin ascribed. Finds will be retained and recorded.

4.3.4 Where archaeological features and/or deposits are identified during the monitoring, then a sufficient quantity of the said features will be investigated by hand to allow their possible date, nature and degree of survival to be ascribed.

4.3.5 A written, drawn and photographic record will be maintained during the monitoring. All archaeological remains will be recorded and/or retrieved.

4.3.6 If continuous significant archaeological features are identified during the watching brief, such as an enclosure and associated features or multiple features of the same period in the same area, then the methodology will be scaled up to a strip, map and sample approach for the area of significant archaeology. The area of the strip, map and sample will be cordoned off and kept separate from the area of the archaeological watching brief as outlined in section 4.1 above.

4.4 Strip, Map and Sample Excavation

4.4.1 Any area targeted for strip, map and sample excavation will be excavated down to the level of any surviving archaeological horizon under the supervision of a suitably qualified and experienced archaeologist.

4.4.2 The sequence of stripping will involve the removal of topsoil to expose the upper horizon of any underlying subsoil(s). At each subsoil horizon the surface will be visually scanned for the presence of archaeological features or deposits. Provision should be made to strip at a bespoke level should archaeology be encountered within the subsoil sequence. Should no archaeological features or deposits be observed then subsoils can be removed down to the upper horizon of the mineral that is due to be extracted. It is not necessary to monitor removal of the mineral unless mining remains have been identified that extend into this horizon.

4.4.3 All areas will be appropriately cleaned using hand tools to expose the full nature and extent of archaeological features and deposits.

4.4.4 Archaeological features will be mapped/drawn using suitable equipment, i.e. Leica SmartRover GPS unit with a tolerance of 0.025m, and tied into the OS grid, supplemented with a photographic record.

4.4.5 Once the area has been stripped, cleaned and recorded as outlined in sections 4.4.1-4.4.4 above, consultation, if necessary, will take place with the DCC County Archaeologist to identify and agree further excavation/recording strategy/sign-off.

4.5 Sampling, Faunal Remains, Human Remains and Treasure

4.5.1 This section outlines sampling methodologies to be utilised during the watching brief and, if necessary, strip, map and sample excavation.

4.5.2 A minimum bulk sample of 40 litres will be taken from sealed and stratigraphically secure deposits, that are adjudged to have the potential to provide environmental evidence relating to diet and economy, dating evidence or land use regime. A 100% bulk sample of the deposit will be taken if the deposit is less than 40 litres in volume.

4.5.3 In the case of waterlogged or anaerobic deposits a minimum sample size of 20 litres will be taken.

4.5.4 Should a sequence of superimposed deposits of note be present, column sampling may be considered.

4.5.5 Samples will be assessed by a suitable specialist and provision will be made for scientific dating, where justified against the project aims.

4.5.6 Where there is evidence for industrial activity, macroscopic technological residues (or samples of them) will be collected by hand. Separate samples (*c.*10ml) will be collected from micro-slags (hammer scale and spherical droplets) in accordance with *Archaeometallurgy: Guidelines for Best Practice* (Historic England 2015a) and *Archaeological Evidence for Glassworking* (Historic England 2018a).

4.5.7 Samples will be taken for scientific dating (such as radiocarbon dating) in specific circumstances that will apply where dating by artefacts is insecure or absent.

4.5.8 Appropriate consideration will be given to the need for any geoarchaeological assessment of buried soils and sediment sequences exposed. Where said is necessary these will be inspected and recorded on site by a recognised geoarchaeologist as field inspection may provide sufficient data for understanding site formation processes. The procedures and techniques presented in *Geoarchaeology: Using earth sciences to understand the archaeological record* (Historic England 2015b) will be applied. Samples for laboratory assessment will be collected where appropriate, following discussion with the DCC County Archaeologist.

4.5.9 Sampling strategies for wooden structures should follow the methodologies presented in *Waterlogged Wood: Guidelines on the recording, sampling,*

conservation and curation of waterlogged wood (English Heritage 2010). For other waterlogged organic finds, guidance provided by Historic England's *Waterlogged Organic Artefacts. Guidelines on their Recovery, Analysis and Conservation* (2018b) will be followed.

4.5.10 Should other types of environmental deposits be encountered, appropriate specialist advice will be sought and an appropriate sampling strategy devised. Samples will be assessed by a suitable specialist with provision for further analysis as required. Advice from the Historic England Science Advisor will be taken as appropriate.

4.5.11 In all instances sampling strategies will be in accordance with guidelines issued by Historic England's *Environmental Archaeology: A Guide to the Theory and Practice Methods, from sampling and recovery to post excavation* (Campbell *et al*. 2011) and will be targeted in order to explore the levels and types of preservation present.

4.5.12 Any human remains will initially be left *in-situ,* covered and protected. Removal will be undertaken, if deemed necessary, once a Coroners licence has been obtained in accordance with the relevant Ministry of Justice regulations, in line with current guidelines (English Heritage 2004; APABE/Historic England/Church of England 2017; Mitchell and Brickley 2017) and in discussion with the County Archaeologist for DCC.

4.5.13 All finds that may constitute 'treasure' under the Treasure Act, 1996, will be removed to a safe place and reported to the local Coroner in accordance with the Treasure Act (DCMS 2008). The Portable Antiquities Liaison Officer will also be notified.

HM Coroner

Dr Robert Hunter
5-6 Royal Court
Basil Close
Chesterfield
Derbyshire
S41 7SL
Tel: 01246 201391

Finds Liaison Officer

Dr Maria Kneafsey
Museum and Art Gallery
The Strand
Derby
Derbyshire
DE1 1BS
Tel: 01332 641 903
E-mail: Maria@derbymuseums.org

4.5.14 The DCC County Archaeologist will also be notified and, if necessary, a site meeting arranged to determine if further investigation in the vicinity of the find spot is required.

4.6 Recording

4.6.1 The site will be recorded in accordance with the ARS Ltd's field recording manual and will include as a minimum context record sheets, an accurate site plan and record photography even where no archaeological features are present.

4.6.2 The site will be accurately tied into the National Grid and located on a 1:2500 or 1:1250 map of the area. The site will be recorded using a single context planning system in accordance with the ARS Ltd field recording manual.

4.6.3 A full and proper record (written, graphic and photographic as appropriate) will be made for all work, using pro-forma record sheets and text descriptions appropriate to the work. Accurate measured scale plans and section/elevations will be drawn where required at the appropriate scale and in accordance with best practice. In addition to relevant illustrations, provision for rectified photographic recording shall be made, if deemed necessary.

4.6.4 A plan of the excavated areas will be maintained, features, notes and section lines recorded. All drawings will be carried out at an appropriate scale and all contexts will be recorded using a single context recording system.

4.6.5 Sample representative levels will be taken to record the maximum depth of excavation and/or natural should no archaeological features be uncovered.

4.6.6 The stratigraphy of the site will be recorded even where no archaeological deposits have been identified.

4.6.7 All heights above sea level will be recorded for all deposits and features in metres above Ordnance Datum (aOD).

4.6.8 A full photographic record will be compiled using a digital camera, a Fuji XP90 with a 16.4 MP resolution, and a register of all photographs will be kept. The photographic record will encompass all encountered archaeological entities. In addition, key relationships between entities, where these help demonstrate sequence or form, will also be photographed. A clearly visible, graduated metric scale will be included in all record shots. A supplementary record of working images will be taken to demonstrate how the site was investigated and what the prevailing conditions were like during excavation.

4.6.9 A stratigraphic matrix will be compiled for all areas where superimposed archaeological deposits, features or structures are encountered.

4.7 Finds Processing and Storage

4.7.1 All finds processing, conservation work and storage of finds will be carried out in accordance with the CIfA (2020c) *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* and the UKIC (1990) *Guidelines for the Preparation of Archives for Long-Term Storage.*

4.7.2 Artefact collection and discard policies will be appropriate for the defined purpose.

4.7.3 Bulk finds which are not discarded will be washed and, with the exception of animal bone, marked. Marking and labelling will be indelible and irremovable by abrasion. Bulk finds will be appropriately bagged, boxed and recorded. This process will be carried out no later than two months after the end of the excavation.

4.7.4 All small finds will be recorded as individual items and appropriately packaged (e.g. lithics in self-sealing plastic bags and ceramic in acid-free tissue

paper). Vulnerable objects will be specially packaged and textile, painted glass and coins stored in appropriate specialist systems. This process will be carried out within two days of the small find being excavated.

4.7.5 Metal finds will be sampled, processed and analysed in line with *Archaeometallurgy: Guidelines for best practice* (Historic England 2015a), and *Guidelines on the X-radiography of archaeological metalwork* (English Heritage 2006a). Any waterlogged artefacts or ecofacts will be sampled, processed and analysed using *Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood* (English Heritage 2010) and *Waterlogged Organic Artefacts. Guidelines on their Recovery, Analysis and Conservation* (Historic England 2018b).

4.7.6 Artefacts, ecofacts and deposits suitable for dating purposes will be identified and obtained in line with *Dendrochronology: Guidelines on producing and interpreting dendrochronological dates* (English Heritage 1998), *Archaeomagnetic Dating: Guidelines on producing and interpreting archaeomagnetic dates* (English Heritage 2006b), and *Luminescence Dating: Guidelines on using luminescence dating in archaeology* (English Heritage 2008).

4.7.7 During and after the excavation all objects will be stored in appropriate materials and storage conditions to ensure minimal deterioration and loss of information (including controlled storage, correct packaging, and regular monitoring, immediate selection for conservation of vulnerable material). All storage will have appropriate security provision.

4.7.8 The deposition and disposal of artefacts will be agreed with the legal owner and the Buxton Museum & Art Gallery prior to the work taking place. All finds except treasure trove are the property of the landowner.

4.7.9 All retained artefacts and ecofacts will be cleaned and packaged in accordance with the requirements of the Buxton Museum & Art Gallery.

4.8 Post-excavation and reporting

4.8.1 Following completion of the fieldwork, ARS Ltd will undertake a programme of post-excavation assessment and analysis as appropriate. The aims of the post-excavation phase of the project are to:

- Prepare an orderly archive of the records of the fieldwork.
- Clean, conserve and prepare artefacts/ecofacts for long term museum storage.
- Undertake specialist analysis and reporting as appropriate.
- Prepare a report describing the archaeological findings (see below), including the significance of the archaeological deposits discovered and which place the understanding of the site in its local and wider context.

4.8.2 The following sequence of post-excavation tasks will be undertaken: the preparation of the archive; post-excavation assessment and analysis as appropriate; preparation of a report for publication; the deposition of the finds and the archive in

the appropriate museum. ARS Ltd will complete an on-line OASIS form for this fieldwork. ARS Ltd is a registered contractor on the OASIS system.

4.8.3 Following completion of the fieldwork, ARS Ltd will produce a report which will include the following.

- Non-technical executive summary
- Introductory statement
- Aims and purpose of the project
- Methodology
- A location plan showing all excavated areas and any archaeological features with respect to nearby fixed structures and roads
- Illustrations of all archaeological features with appropriately scaled hachured plans and sections
- An objective summary statement of results
- Conclusions
- Supporting data – tabulated or in appendices to include
    - Specialists Reports
    - Structural and Stratigraphic details
- Index to archive and details of archive location
- References
- Statement of intent regarding publication
- Confirmation of archive transfer arrangements
- A copy of this WSI and OASIS form

4.8.4 One bound copy of the final report with a digital copy of the report in PDF/A format on disk will be deposited with the Derbyshire HER. A copy of the report will be uploaded as part of the OASIS record (see below) for online access via the Archaeological Data Service.

5 Monitoring Arrangements

5.1 ARS Ltd acknowledges that it is the responsibility of the DCC County Archaeologist to monitor the archaeological works. Reasonable notice, no less than 5 working days, shall be provided before the commencement of works and to arrange monitoring visits.

Steve Baker
Archaeologist for Derbyshire County Council
Derbyshire County Council

County Hall
Matlock

DE4 3AG
Tel: 01629 539773

5.2 ARS Ltd will liaise with the DCC County Archaeologist at regular intervals throughout the course of the work.

5.3 The client will afford reasonable access to the DCC County Archaeologist or his representative, for the purposes of monitoring the archaeological mitigation.

6 TIMETABLE, STAFFING AND RESOURCES

6.1 The outline timetable for the works is as follows. This will be updated as the project progresses.

Task No	Task	Proposed Commencement Date
1	Archaeological fieldwork	Upon approval of the WSI
2	Post excavation assessment including any specialist reporting required	Immediately follows Task 1
3	Report preparation and completion	Immediately follows Task 2
4	Archive preparation, completion and deposition	Immediately follows Task 3 and to be completed within 3 months

6.2 The Project Manager for the watching brief will be Karl Taylor MCIfA, Head of Field Archaeology, at ARS Ltd. The fieldwork Project Officer will be a suitably experienced Project Officer or Assistant Project Officer allocated from ARS Ltd core staff. Additional Archaeological Officers may be assigned to the site where appropriate.

6.3 ARS Ltd is a Registered Organisation with the Chartered Institute for Archaeologists (CIfA). Registered Organisations are continuously assessed to ensure that the highest standards of work are carried out, in line with the *Code of Conduct* of the CIfA (2019a). In addition to our management team, who have achieved the highest grade of corporate CIfA membership, many of our field staff also hold corporate grade membership.

6.4 Finds analysis will be carried out by appropriately qualified specialists as detailed, subject to availability.

- Flint and prehistoric pottery: Dr Robin Holgate MCIfA
- Romano-British pottery: Dr Phil Mills
- Samian ware: Dr Gwladys Monteil
- Medieval and post-medieval pottery: Dr Chris Cumberpatch/Dr Robin Holgate MCIfA

- Clay pipes, glass and metalwork: Mike Wood MCIfA
- Metalworking: Dr Roger Doonan
- Plant macrofossils and charcoals: Luke Parker
- Human and animal bone: Milena Grzybowska
- Radiocarbon dating: Prof Gordon Cook (SUERC)
- Finds conservation: Vicky Garlick (Durham University)

7 ARCHIVE DEPOSITION

7.1 Archive Selection Strategy

7.1.1 Selection of the working project archive will be guided by the aims and objectives as set out in this WSI (Section 3 above), the *East Midlands Heritage: An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (Research Frameworks 2021), and Museums of Derbyshire (2016) *Procedures for the Transfer of Archaeological Archives.*

7.2 Documentary Archive

7.2.1 All original documentary material created and collected during the archaeological works will be selected for inclusion in the final archive. Any duplicates (including photocopies) of original documents will not be included in the final archive, in line with Museums of Derbyshire (2016) *Procedures for the Transfer of Archaeological Archives from Derbyshire at Buxton Museum and Art Gallery.* Archive selection will also be guided by CIfA's (2019b) *Toolkit for Selecting Archaeological Archives.*

7.2.2 The deselected documents will be recycled, subject to final checks by ARS Ltd's Post-Excavation and Archives Supervisor.

7.3 Digital Archive

7.3.1 All digital data created over the course of this project will be collected, stored, and selected for final deposition in line with the project's Data Management Plan. The key types of digital data produced will include the following.

Type	Data
Text	Digital copies of the Written Scheme of Investigation and final report
Images	Site photography, scans of site drawings, graphics for reports, digitised drawings
Finds Data	Finds reports and tables, conservation records, images

7.3.2 Only final copies of any born digital data will be selected and deposited in the final project archive.

7.3.3 Digital data to be included in the final archive will be reviewed during the post-excavation and archiving phase of works.

7.3.4 The project manager and digital archive repository will be consulted on the fate of any deselected material. Deselected material is expected to include duplicates and any non-final versions of data. Digital photographs will be assessed during post-excavation works and selected in line with Historic England's *Digital Image Capture and File Storage* (2015c). The deselected material will be stored on the ARS Ltd server for a period before being reviewed and deleted.

7.4 Material Archive

7.4.1 The selection of material finds for final deposition in the archaeological archive will be decided in collaboration with the finds specialist during the post-excavation phase, based on addressing the aims and objectives of the project set out in this WSI, the *East Midlands Heritage: An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (Research Frameworks 2021), and Museums of Derbyshire (2016) *Procedures for the Transfer of Archaeological Archives from Derbyshire at Buxton Museum and Art Gallery.*

7.4.2 No material will be discarded without processing and recording. Deselected material can be retained as part of a handling or teaching collection, returned to the landowner, or discarded as agreed by the landowner, specialists, collecting museum and planning archaeologist.

7.5 Archive Deposition

7.5.1 Should the project produce no archaeologically significant finds, then it is not necessary to deposit an archive with the repository museum.

7.5.2 Should the archaeological evaluation produce archaeologically significant finds, a project archive will be prepared for deposition by ARS Ltd with a suitable repository museum, i.e. Buxton Museum and Art Gallery. This digital, paper and artefactual archive will comprise all the primary written documents, plans, sections, photographs and electronic data and an accompanying metadata statement.

7.5.3 High resolution digital photographs would, in discussion with the County Archaeologist for DCC, be submitted to the Archaeological Data Service (ADS) digital archive repository with the associated photographic registers and metadata. The digital archive will be prepared in line with current best practice as outlined in *Archaeology Data Service/Digital Antiquity Guides to Good Practice* (ADS/Digital Antiquity 2011).

7.5.4 One bound copy of the final report with a digital copy of the report in PDF/A format on disk will be deposited with the Derbyshire HER. A copy of the report will be uploaded as part of the OASIS record (see below) for online access via the Archaeological Data Service.

7.5.5 The archive will be deposited in line with *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation* (Brown 2007), CIfA's (2020d) *Standard and Guidance for the creation, compilation, transfer and deposition*

of archaeological archives, and Society of Museum Archaeologists (1993) *Selection, Retention and Dispersal of Archaeological Collections. Guidelines for use in England, Wales and Northern Ireland*. The archive will be deposited within two months of the completion of the report.

7.5.6 The DCC County Archaeologist and Museum Curator will be notified at the earliest opportunity should the site produce archaeologically significant, unusual, or unexpected finds.

7.5.7 The DCC County Archaeologist will be notified in writing on completion of the fieldwork with project dates for the completion of the report and deposition of the archive. The date for deposition of the archive and its contents will be outlined in the report and the DCC County Archaeologist informed in writing on final deposition of the archive.

7.5.8 All retained artefacts and associated material will be cleaned, recorded, properly stored and deposited in the archive.

7.5.9 A full set of annotated, illustrative pictures of the site, excavation, features, layers and selected artefacts deposited with the archive as digital images on disc.

7.5.10 At the start of work (immediately before fieldwork commences) an OASIS online record http://ads.ahds.ac.uk/project/oasis/ will be initiated and key fields completed on Details, Location and Creators forms. All parts of the OASIS online form will be completed for submission to the HER. This will include an uploaded .pdf

8 General Items

8.1 Health and Safety

8.1.1 All work will be carried out in accordance with The Health and Safety at Work Act 1974. Specific health and safety policies exist for all out workplaces and all staff employed will be made aware of the policy and any relevant issues. The particular risks involved with this project will be assessed, recorded and relevant mitigation measures put in place as part of a full risk assessment, which will be compiled in advance of fieldwork. ARS Ltd retains Citation as its expert health and safety consultants. The Health and Safety Officer for ARS Ltd is Mark Potter.

8.2 Insurance Cover

8.2.1 ARS Ltd has full insurance cover for employee liability (£10 million), public liability (£10 million), professional indemnity (£10 million) and all-risks cover.

8.3 Community Engagement and Outreach

8.3.1 Any opportunities for engaging the local community in any archaeological findings should be sought, for example a guided site tour and/or dissemination of information via ARS Ltd's website, social media and local media.

8.4 Changes to the Written Scheme of Investigation

8.4.1 Changes to the approved methodology or programme of works will only be made with prior written approval of the DCC County Archaeologist.

8.5 Publication

8.5.1 If significant archaeological remains are recorded, a summary of the project with, if appropriate, selected drawings, illustrations and photographs will be submitted within 2 years of the completion of the project to Derbyshire Archaeological Journal for publication and, potentially, other appropriate publications (e.g. Archaeology Conservation in Derbyshire). If no other publication is recommended, a brief site summary in text format will be provided for Derbyshire Archaeological Journal's annual fieldwork round-up. This will be sent to chriswardle01@btinternet.com at the same time as submitting the final report to Derbyshire HER.

8.6 Publicity and Copyright

8.6.1 Any publicity will be handled by the client. ARS Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

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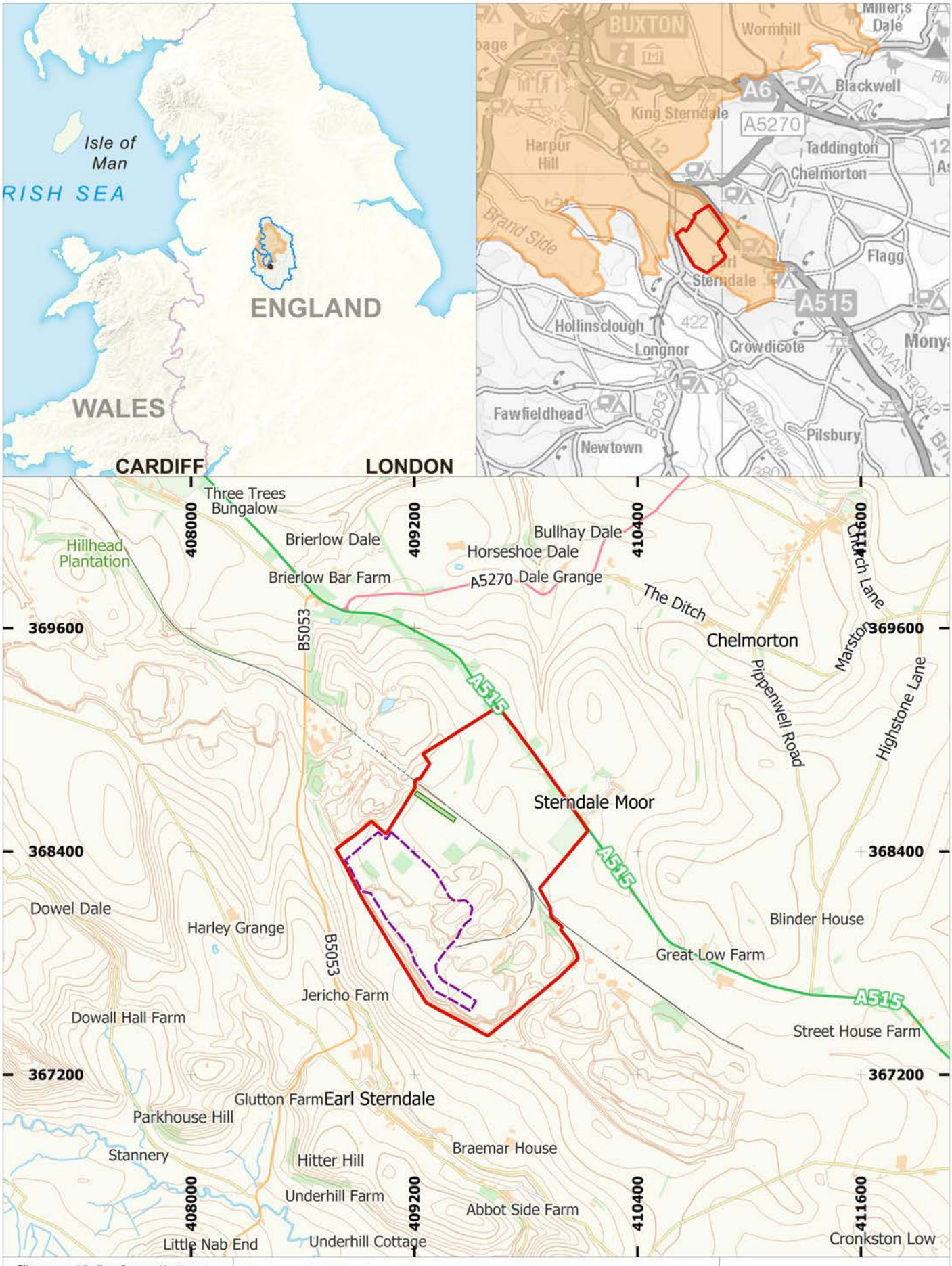
FIGURES



Site name: Hindlow Quarry, Hartington Upper Quarter, Derbyshire
Date: April 2021
Drawn by: ARJ
Scale: 1:27500 @ A4 (main map only)

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Figure 1: Site location

- Hindlow Quarry
- Development Area Boundary
- Proposed Soil Storage Bund
- High Peak District
- Peak District National Park

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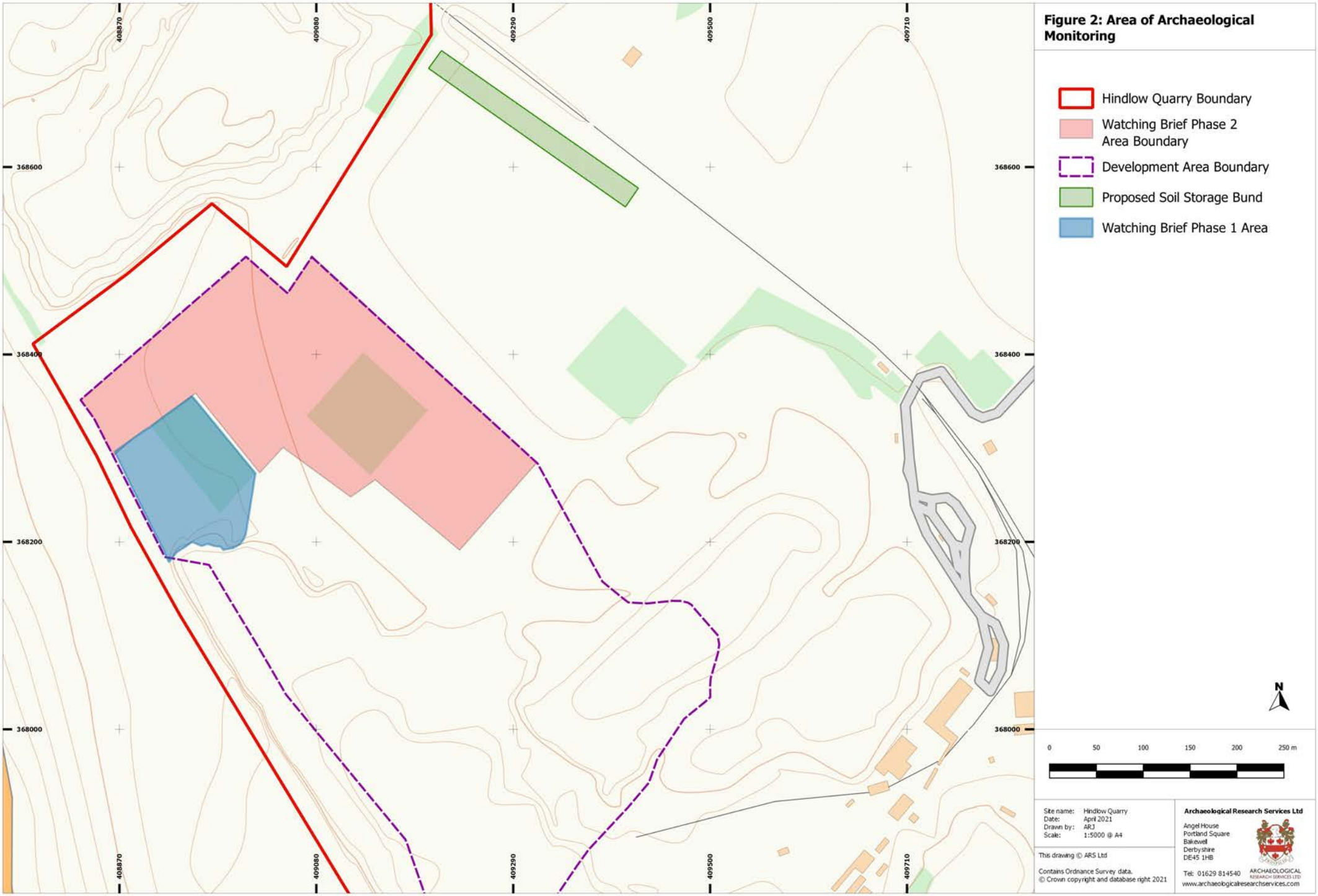
Figure 2: Area of Archaeological Monitoring
Hindlow Quarry Boundary
Watching Brief Phase 2 Area Boundary
Development Area Boundary
Proposed Soil Storage Bund
Watching Brief Phase 1 Area
N
0 50 100 150 200 250 m
Site name: Hindlow Quarry
Date: April 2021
Drawn by: ARJ
Scale: 1:5000 @ A4
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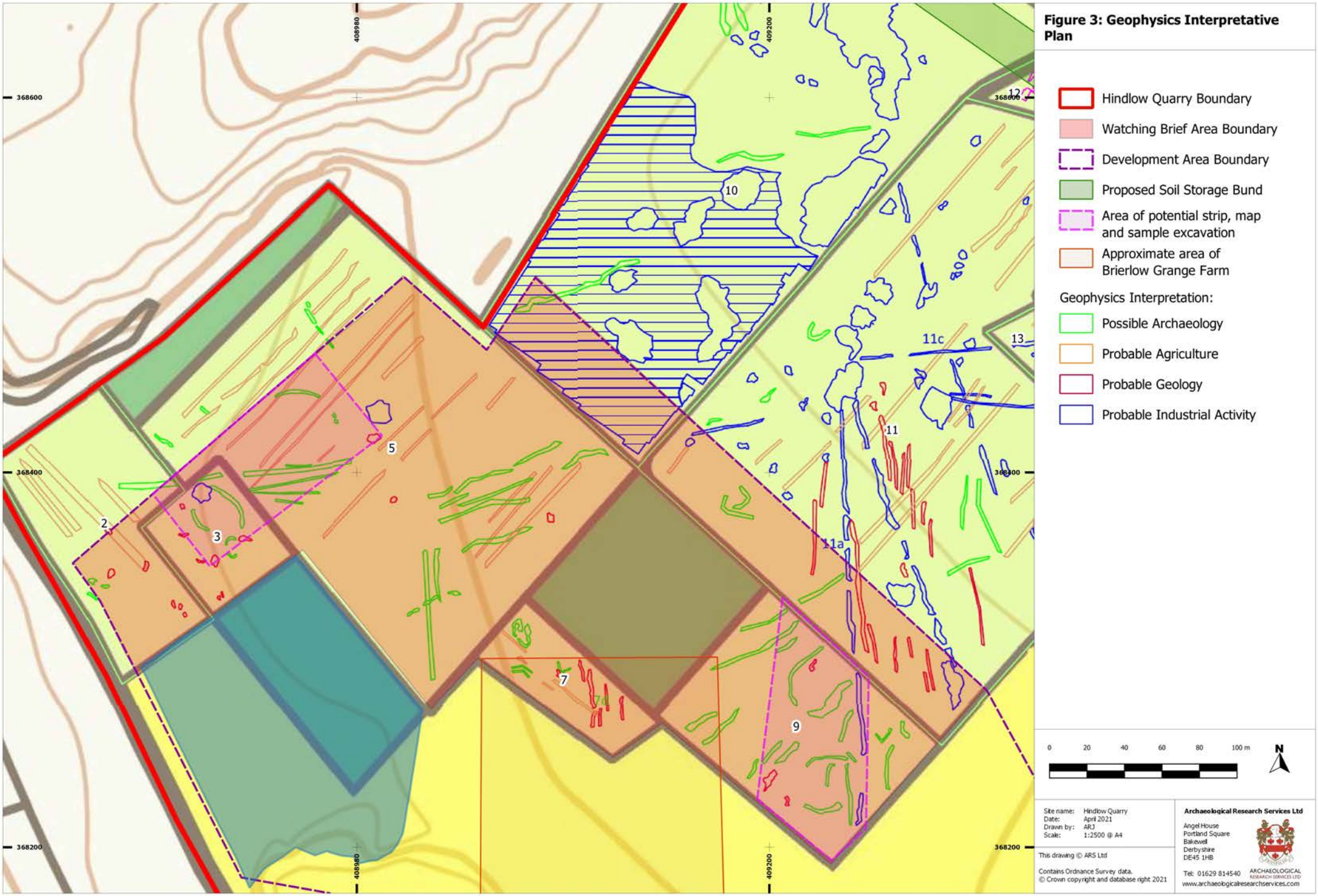
Figure 3: Geophysics Interpretative Plan
Hindlow Quarry Boundary
Watching Brief Area Boundary
Development Area Boundary
Proposed Soil Storage Bund
Area of potential strip, map and sample excavation
Approximate area of Brierlow Grange Farm
Geophysics Interpretation:
Possible Archaeology
Probable Agriculture
Probable Geology
Probable Industrial Activity
368600
408980
409200
368000
368400
368200
2
3
5
7
9
10
11
11a
11c
12
13
0 20 40 60 80 100 m
N
Site name: Hindlow Quarry
Date: April 2021
Drawn by: ARJ
Scale: 1:2500 @ A4
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