

HIGH BLEAN LIME KILN, STAKE ROAD,  
BAINBRIDGE, NORTH YORKSHIRE

ARCHAEOLOGICAL AND  
WILDLIFE SURVEY



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On behalf of

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**ARCHAEOLOGICAL AND WILDLIFE SURVEY,  
HIGH BLEAN LIME KILN, STAKE ROAD,  
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**CONTENTS**

EXECUTIVE SUMMARY

1	INTRODUCTION.....	1
2	SURVEY RESULTS.....	4
3	DISCUSSIONS AND CONCLUSIONS.....	8
4	BIBLIOGRAPHY.....	10
5	ACKNOWLEDGEMENTS.....	11

Appendices

1	Photographic Record
2	Wildlife Survey Letter Report
3	YDNPA Project Brief
4	EDAS Methods Statement

## EXECUTIVE SUMMARY

In September 2011, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Mr Robert White, Senior Historic Environment Officer for the Yorkshire Dales National Park Authority (YDNPA), on behalf of Mr S Metcalfe, to undertake an archaeological and wildlife survey of High Blean lime kiln, Stake Road, Bainbridge, North Yorkshire (NGR SD 92418 86924).

An analytical archaeological record of the lime kiln has been produced, as well as a sketched topographical survey of the immediate surroundings. The wildlife survey took the form of a site visit and subsequent letter report, primarily to assess the kiln for the presence of bats. The work was required to inform proposed conservation works following the felling of a large ash tree which was growing on the upper part of the lime kiln.

The structure represents a typical Yorkshire Dales field kiln, and it bears some similarities with others recorded in the general area. The draw-hole arch faces north-west, and its corbelled form is of some local significance - there are a high proportion of corbelled designs within Wensleydale as compared to other parts of the Yorkshire Dales. However, without further detailed research, it is difficult to ascribe a firm date of construction. A comparison with other examples suggests that it may have been built during the late 18th century, and its design is of a type introduced in the 1780-90s. However, kilns of this type continued to be constructed into the mid 19th century. In addition, neither the High Blean kiln or the adjacent quarry are depicted on the Ordnance Survey 1st edition 1856 6" map, and it is named as being an 'Old Limekiln' in 1892. The presence of a drip course over the draw-hole arch might also suggest a fairly late date of construction. The combination of evidence currently available implies that the kiln dates to the later part of the 19th century.

The kiln is associated with what is assumed to be a contemporary quarry to the rear, although it could well have been worked for other purposes both before and after the kiln's construction; the size of the quarry could also indicate that the kiln was intensively used. Access to the kiln, both for bringing in fuel and taking away burnt lime, appears always to have been along a trackway from Stake Road although there is no trace of a loading ramp, and so it is not clear how the fuel was raised to the mouth of the bowl or pot.



# 1 INTRODUCTION

## Reasons and Circumstances for the Project

- 1.1 In September 2011, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Mr Robert White, Senior Historic Environment Officer for the Yorkshire Dales National Park Authority (YDNPA), on behalf of Mr S Metcalfe, to undertake an archaeological and wildlife survey of High Blean lime kiln, Stake Road, Bainbridge, North Yorkshire (NGR SD 92418 86924).
- 1.2 The project comprised a Level 3 analytical archaeological record (as defined by English Heritage) of the lime kiln, as well as a sketched topographical survey of the immediate surroundings. The wildlife survey took the form of a site visit and subsequent letter report, primarily to assess the kiln for the presence of bats. The work was required to inform proposed conservation works following the felling of a large ash tree which was growing on the upper part of the lime kiln. The scope of the project was defined by a brief prepared by the YDNPA and an EDAS methods statement (see Appendices 3 and 4). The recording work was funded by Natural England via Mr S Metcalfe, as part of an Environmental Stewardship special project.

## Site Location and Description

- 1.3 The High Blean lime kiln occupies a position at the bottom of the east side of a steep-sided gill, set in a tongue of land between Stake Road and Blean Lane, some 350m east of Semerwater at an elevation of c.290m AOD (see figures 1 and 2). The topographical sketch survey area, as discussed with the YDNPA, was bounded by Stake Road to the west and Blean Lane to the east, but extended no more than c.35m north and south of the kiln itself. The majority of the survey area was formed by steep east or west facing slopes, and was used as unimproved pasture at the time of survey.
- 1.4 The lime kiln is not listed as being of Special Architectural or Historic Interest, but it and an adjacent track are recorded on the YDNPA's Historic Environment Record (HER site MYD 44604). The adjacent limestone quarry is also recorded on the HER (site MYD 44603).

## Aims of the Project

- 1.5 The aims of the project, as defined by the YDNPA brief (see Appendix 3), were:
  - to complete a rapid examination of any known documentary references and sources relating to the kiln;
  - to create a full record of the kiln structure, including a full photographic survey and the preparation of a plan and elevations at 1:50; to inform any future consolidation works;
  - to carry out a walkover survey and sketch plot features onto an 1:2500 plan of the area, enlarged to 1:1000;
  - to prepare detailed consolidation specifications for the kiln;
  - to identify any wildlife species using the kiln.

## Survey Methodologies

- 1.6 As noted above, the scope of the archaeological and wildlife survey work was defined by a Natural England brief and an EDAS methods statement (see Appendices 3 and 4).

### *Documentary Research*

- 1.7 No documentary research, other than an assessment of existing information as was known to the owners and the YDNPA, was required as part of the survey work. A full list of sources consulted is given in the bibliography (Chapter 4 below).

### *Archaeological Field Survey*

- 1.8 A Level 3 archaeological survey of the kiln was undertaken; a Level 3 survey is an enhanced analytical record (English Heritage 2007, 23). A plan was produced at a scale of 1:50, together with a long section through the structure at the same scale. Partly using the information from the latter, a profile at a scale of 1:100 was also produced to show the kiln in relation to the quarry to the east and the beck to the west.
- 1.9 A sketched topographical survey was also made of the immediate area around the kiln in order to begin to place the structure within its landscape setting. A modern 1:1000 scale Ordnance Survey base was supplied by the YDNPA, which was used as the basis for the survey. Measurements were taken to known points such as field walls and wall lines, using traditional held-hand methods. Overall, the survey area measured c.90m north-south by a maximum of 70m east-west. The resulting survey was produced at a scale of 1:500 and presented as an interpretative hachure plan using conventions analogous to those used by English Heritage (2002, 14; 2007, 31-35); natural slopes were differentiated from man-made banks and scarps using English Heritage conventions. Smaller scale plans, at 1:10,000 and 1:2,500 scale, were used to put the survey area into context.
- 1.10 Each identified component or part of the survey area was photographed, with additional photographs being taken to illustrate specific well-preserved elements, details of specific parts and/or areas of erosion etc. More general photographs were also taken showing the landscape context of the survey area and the kiln. The colour photographs were produced using a digital camera with 10 megapixel resolution. English Heritage photographic guidelines were followed (English Heritage 2007, 14) and each photograph was normally provided with a scale, subject to access. A total of 59 photographs were taken. All photographs have been clearly numbered and labelled with the subject, orientation, date taken and photographer's name, and cross-referenced to a photographic register and digital files etc (see Appendix 1).
- 1.11 Sufficient written observations were made in the field to produce a detailed written account of the kiln and its setting. The descriptions include a preliminary interpretation of extant remains (e.g. dimensions, plan, form, function, date, sequence of development), locational information, mention of relevant documentary, cartographic or other evidence, and management details such as an assessment of current condition and threats.
- 1.12 Despite the project being commissioned in September 2011, the archaeological survey work had to wait until a large tree growing out of the kiln was cut down.

This was done in late January 2012, and the archaeological survey took place on 2nd February 2012, in light snow.

#### *Wildlife Survey*

- 1.13 The wildlife survey involved inspecting the kiln and surrounding area, primarily for bats but also for other fauna and flora, to confirm the presence or absence of protected species and other items of interest, and if present, to assess and inform any future repair programmes.
- 1.14 A daytime inspection was undertaken on 10th January 2012. The structure was comprehensively searched with the aid of ladders and a Clulite Lamp (1,000,000 candle power). Evidence for the presence of bats included live bats within small cracks, staining around roost entrances with oil from the bats fur, and/or the presence of bat droppings. Constraints of the survey included the sub-optimal time of year that the survey was undertaken; bats are most active between mid-April to September and are less likely to be detected at other times of the year. In addition, bat droppings from roosts within crevices in the external walls of the kiln (and also on the adjacent mature ash tree) could have been washed away by rain and wind prior to the survey taking place.

#### **Report and Archive**

- 1.15 This archive report forms a detailed written record of the kiln and its surroundings from the sources of information set out above, cross-referenced to the drawn and photographic record, and wildlife survey. It describes the surviving kiln and other site elements, and analyses their form, function, history, and sequence of development, as far as is possible using the previously gathered information. The kiln is also placed within its historical, social and agricultural context (where possible), using the available documentary and secondary evidence. This report also includes a summary of the results from the wildlife survey, while the full unedited Wildlife Survey letter report appears as Appendix 2.
- 1.16 The full project archive, comprising paper, magnetic and plastic media, relating to the project has been ordered and indexed according to the standards set by the National Archaeological Record (EDAS site code HBB 12). It was deposited with the YDNPA HER on completion of the project.

## 2 SURVEY RESULTS

### Introduction

- 2.1 The results arising from the archaeological and wildlife survey of the lime kiln and the adjacent area are described below. The plan form and structure of the pond are discussed first, followed by a circulation description. Reference should also be made to the survey drawings (see figures 4 to 6), and the photographic record which appears as Appendix 1; photographs are referenced in the following text in bold type with square brackets, the numbers before the stroke representing the film number and the number after indicating the frame e.g. [1/32].

### Review of Existing Knowledge

- 2.2 The kiln has not been the subject of any detailed previous survey. The kiln was initially identified on aerial photographs as part of the former RCHME Yorkshire Dales Project in 1989-92 (YDNPA HER MYD44604). A field visit was carried out in July 2006, as part of a wider survey of lime kilns in the area, but the kiln was not located, although limestone quarrying in the area was noted; it is possible that the wrong location was inspected (Yorkshire Dales Lime Kiln Survey, Bainbridge 19). A further visit in October 2009, as part of a walkover survey of the area, noted that the kiln was almost complete and in good condition. It was recorded as being a rounded kiln, built into the gill side and constructed of local dressed sandstone, with a corbelled arched draw hole opening; unusually, the bowl had not been infilled and the lining was mostly intact (YDNPA HER MYD44604).
- 2.3 Neither the kiln nor the adjacent quarry is shown on the Ordnance Survey 1856 6" map (sheet 66, surveyed 1854), although another "Limestone Quarry" is shown further to the north (see figure 3). However, the kiln, quarry and access track are depicted on the Ordnance Survey 1892 25" map (sheet 66/14, surveyed 1892); the kiln is shown as a circular feature with a central hole and named as "Old Limekiln", and the access track follows a sinuous route north-west across the adjacent watercourse to Stake Road (see figure 3). The complex is similarly depicted on the subsequent Ordnance Survey 1912 25" edition (sheet 66/14, revised 1910). This might suggest that the kiln was built between 1854 and 1892, although not all extant lime kilns are depicted on the Ordnance Survey 1850s 6" maps (see Chapter 3 below).

### The Landscape Setting of the Lime Kiln (see figure 4)

- 2.4 As has been noted in Chapter 1 above, the lime kiln occupies a position at the base of the east side of a steep-sided gill, set in a tongue of land between Stake Road and Blean Lane, some 350m east of Semerwater at an elevation of c.290m AOD [1/598 to 1/602].
- 2.5 The principal approach to the lime kiln, both on foot and presumably also by cart, is a well graded trackway on the west slope of the gill. The trackway [1/626, 1/643, 1/655 and 1/656] first becomes visible a short distance to the east of the existing gateway into the field containing the lime kiln. It follows a gently curvilinear route south for c.50m, and is terraced into the steep east-facing natural slope here, with steep scarps to both sides (see plate 1). Just before the trackway reaches the beck, there is a platform [1/670] terraced into the natural slope to its immediate west. This platform is sub-rectangular in plan and is aligned almost north-south; it measures c.4m long by c.1m wide, with a base set c.1.5m above the level of the trackway.

- 2.6 The trackway once crossed the beck via a small bridge, probably comprising little more than flagstones laid across a culverted section of the beck (see plate 2). This structure has been largely destroyed, although there is still a concentration of larger flagstones in this area [1/641, 1/665 and 1/666], including possible facing stones on one side of a culvert that was under 1m wide at this point. There are several further locations to the north-east of this crossing point, but outside the survey area, where it appears that the beck may once have been crossed by artificial structures [1/671 and 1/672]. After crossing the beck, the trackway continued south-west for a further 10m, running into a narrow leveled area on the immediate east side of the beck [1/642]. This area may have been used for offloading materials brought in by horse and cart such as fuel for the kiln, and also for taking away processed lime.
- 2.7 Above the kiln, there is a broadly level area c.4m in width, and then the base of a prominent limestone quarry is entered. It is difficult to see how material was brought to the top of the kiln, as no loading ramp leading from the area below is visible, and so it is assumed that the bulk of the limestone that was burnt was obtained from this quarry; other elements of the charge were presumably brought up by hand from below.
- 2.8 The quarry is sub-rectangular in plan, aligned north-east/south-west, measuring c.25m long by 8m wide. The principal feature of the main quarrying area is the working face on the south-east side (see plate 3). This face stands up to 6m in height [1/645 to 1/647] and retains evidence for almost horizontal bedding planes within the rock, averaging c.1m in height. The working face is near vertical in most places, but in some sections it has a very shallowly stepped profile, stepping backwards from the base to the top in a series of very shallow benches, sometimes coinciding with the horizontal bedding planes. The form of the quarry is of the "hillside type", as defined by the English Heritage Step 3 MPP report for the quarrying industry, with the vertical scale being benched (Richardson & Trueman 1997, 8-9). No drill marks or other similar features are visible in the working face, and so it is assumed that the rock was split and extracted using hand tools and wedges. At either end of the quarry, soil, overburden and waste has been thrown up to create prominent curvilinear banks [1/648], but there are no associated spoil heaps or other structures.
- 2.9 Above the working face, the remains of a ruined drystone wall are visible [1/653 and 1/654], built to prevent stock falling over the upper edge of the face; this wall is depicted on the Ordnance Survey 25" maps. There is also evidence for further quarrying in this area, although on a much shallower scale than the working associated with the lime kiln. There are at least three distinct areas of quarrying, each formed by a slightly curvilinear north-west facing scarp [1/650, 1/651 and 1/659] standing up to a maximum of 1.20m in height. The largest area has a shallow sub-rectangular depression to the immediate north-west, running parallel to the base of the scarp (see plate 4). This quarrying is all well vegetated, with no visible working faces or associated spoil.

### **The Lime Kiln** (see figures 5 and 6)

#### *Archaeological survey*

- 2.10 The lime kiln is set into the base of the steep north-west facing slope on the east side of the beck, and stands up to 5.30m high (see plate 5). The upper part is formed by the circular mouth of the pot or bowl. Later collapse and lateral movement, particularly pressure from the tree (cut down just prior to survey)

growing on the south-west side, has caused the mouth to assume a sub-circular plan, although the original diameter was c.2.10m [1/631, 1/632, 1/634, 1/636, 1/637 and 1/640] (see plate 9). The interior is visible to a depth of just over 2m, and is lined with thinly coursed sandstone rubble partly vitrified, particularly to the south-west side and upper areas. Where the interior has collapsed on the northern side, the lining can be seen to be c.0.30m wide, with rubble infill behind. The upper area of the kiln around the mouth of the pot or bowl has an average width of 1.50m [1/627 to 1/629, 1/660 and 1/662].

- 2.11 The main visible element of the body of the kiln is the western face of the outer shell, which is broadly curved in plan and measures 5.50m across its widest point (see plate 6). The outer shell is built of unmortared, coursed squared local sandstone; the courses are generally shallower to the lower part of the case, but become wider as they rise, especially above the level of the draw-hole arch. The western face of the kiln is quite markedly battered, stepping back a total of c.1.10m from base to top.
- 2.12 This face contains the draw-hole arch [1/603 to 1/608 and 1/611]. The arch is 1.8m wide and corbels inwards steeply to form a pointed head, flattened at the very apex, and with a total height of 2.15m (see plate 7). From the draw-hole arch, the internal walls of the kiln taper outwards very slightly at first, but then begin to gently curve inwards towards the rounded back-section of the interior, which is 1.40m wide. The north internal wall [1/612 and 1/613] of the kiln contains a small recess, 0.30m square in plan and 0.20m high, the base of which is set 0.49m above the existing internal floor level, and perhaps once housing a candle or lamp. There may be a second, similar recess set just above the first, although this is probably the result of a stone having fallen out. The south internal wall [1/619 to 1/621] is blank. The rounded back-section of the interior is corbelled inwards as it rises [1/615 to 1/618]; there is no sign of a draw-hole, although this may be obscured either by collapse at the base or the existing earth floor of the draw-hole arch (see plate 8). However, the remains of a poking hole may be visible at c.1.70m above the internal floor level. As has been already noted, the internal floor of the draw-hole arch was formed by earth at the time of the survey, and the original floor covering is not certain. Over the internal floor, the sides of the draw-hole arch are corbelled inwards to meet a flattened apex bridged by flagstones [1/622 to 1/624].
- 2.13 There is a shallow projecting drip course placed immediately above the draw-hole arch in the western face of the kiln [1/609 and 1/610], and indeed extending for a short distance to either side of it. There is no convincing evidence that there was ever a lime shed or other structure attached to the front of the kiln, as is sometimes the case, although the drip course may have made it easier to temporarily close or seal the draw-hole arch.

#### *Wildlife survey*

- 2.14 The following text provides a summary of the results of the Wildlife Survey undertaken by EINC in January 2012. The full unedited letter report appears as Appendix 2.
- 2.15 Many crevices that were suitable for bat entry into potential bat roosts were identified in the external and internal walls of the kiln where mortar had mostly fallen out between the stonework. However, no signs of actual bats were recorded.

- 2.16 In terms of other fauna and flora, a woodcock was disturbed from resting inside the lower part of the kiln, indicating that this bird may use this generally undisturbed site as an occasional winter roost. Woodcock are listed 'Amber List' Birds of Conservation Concern and are categorised as a Species of European Conservation Concern. In addition, two small bird nests were located in the internal south and north-facing walls within the lower part of the kiln. Finally, much of the kiln's stonework was covered by a range of bryophytes, ferns and higher plants. Ferns included dense patches of common polypody *Polypodium vulgare* on the east-facing external wall above the main opening, and also one small tuft of maidenhair spleenwort *Asplenium trichomanes* on the external south-elevation wall. The latter was initially identified as *A. trichomanes ssp. quadrivalens*, which is the more common form of maidenhair spleenwort found on calcareous substrates.
- 2.17 No evidence for bats was recorded in any part of the lime kiln and bats are therefore likely to be absent from this structure. However, this interpretation must be treated with some caution as bats often use roosts temporarily during the active season (mid-April to September), and such use can only be identified through a series of exit surveys throughout this period.
- 2.18 The wildlife impacts of the proposed repair and consolidation work is predicted to be negligible. Nevertheless, there is still a very low risk that bats could be present in the structure. In addition, the removal of the mature ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna*, which would both host numerous insects and so provide an important source of food for bats, will result in a small reduction of this food source. Finally, evidence of winter roosting and nesting birds was recorded within the kiln and several plant species were identified on the stonework, and these may also be negatively affected by the proposed works. To offset these risks, a series of mitigation measures have been recommended.

### 3 DISCUSSION AND CONCLUSIONS

- 3.1 Without further and most probably very detailed documentary research, which may not be conclusive, it is not possible to speculate as to the date and purpose of the shallow workings above the main quarry associated with the lime kiln. It is assumed that the main quarry is contemporary with the kiln, although it could well have been worked for other purposes both before and after its construction.
- 3.2 It is also difficult to assign a firm date to the lime kiln and its associated quarry without further research. Recent comprehensive research across the Yorkshire Dales has established that the early use of lime to improve land (and thus also the burning of lime) was much more widespread than has generally been appreciated, but nevertheless there was a significant increase in the construction of kilns during the 18th century, many of them associated with the process of parliamentary enclosure (Johnson 2002, 14-24). However, from the mid 19th century, the dominant position of lime as a soil improver came under pressure from other materials and this, combined with the severe agricultural depression during the later 19th century and a decline in the demand for lime mortar, meant that most field and small-scale commercial kilns had been abandoned by the end of the century (Johnson 2010, 234-235).
- 3.3 The fact that neither the kiln nor the associated quarry are shown on the Ordnance Survey 1st edition 1856 6" map may well suggest that they post-date the mid 19th century. However, extant kilns are not always marked on these maps. Of the 1,649 lime kiln sites researched by Johnson (2010, 249-250), 84% were marked on the maps in one way or another. Of the remaining 16%, it was assumed (with some reservations) that they must either have totally disappeared by the time that the Ordnance Survey visited, that they were built after the maps were surveyed, or that they had been missed by the surveyors. Although the Ordnance Survey map evidence needs to be treated with caution, other detail shown on the map is correct (e.g. field boundaries and water course); it is therefore likely that both the kiln and quarry post-date the mid 19th century.
- 3.4 The design of the kiln's bowl is also not particularly helpful when trying to establish a date for construction. The cross-section of the kiln, with the bowl placed at its widest point and with vertical sides immediately beneath, is similar to a design illustrated by Marshall in 1788 (Marshall 1788, 338-339). The elliptical nature of the bowl had the effect of throwing the heat back into the burning material, rather than to the sides, but the cylindrical form at the top allowed heat to escape (Johnson 2002, 42). This type of kiln was introduced in the 1780-90s, although many kilns continued to be constructed in this style into the mid 19th century (Johnson 2010, 235-236). The presence of a drip course over the draw-hole arch might also suggest a late 19th century date, and the size of the adjacent quarry could indicate that the kiln was intensively used.
- 3.5 As might be expected, the High Blean kiln does bear some similarities with others recorded by Johnson. The draw-hole arch faces north-west, within the range of directions from which the dominant wind blows, which influenced the rate at which the charge within the kiln burned (Johnson 2010, 245). The corbelled form of the draw-hole arch is also of some local significance, as it was discovered that there were a high proportion of corbelled designs within Wensleydale as compared to other parts of the Yorkshire Dales (Johnson 2010, 253).
- 3.6 Access to the lime kiln, both for bringing in fuel and taking away burnt lime, always appears to have been along the trackway from Stake Road although, as there is no



trace of a loading ramp, it is not certain exactly how the fuel was raised to the mouth of the bowl or pot.

## 4 BIBLIOGRAPHY

### Primary sources

1856 Ordnance Survey 6" to 1 mile map sheet 66 (surveyed 1854)

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### Secondary sources

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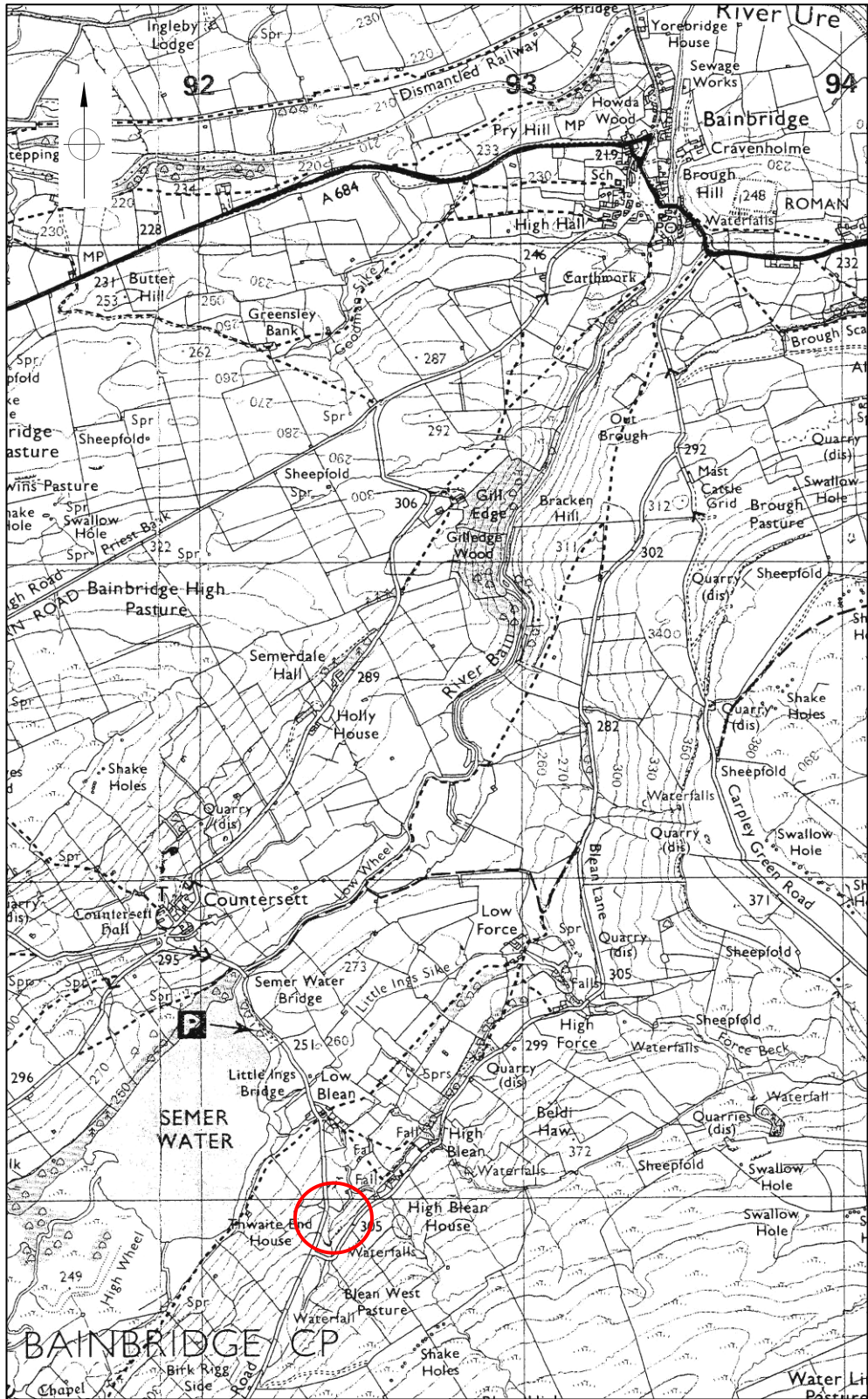
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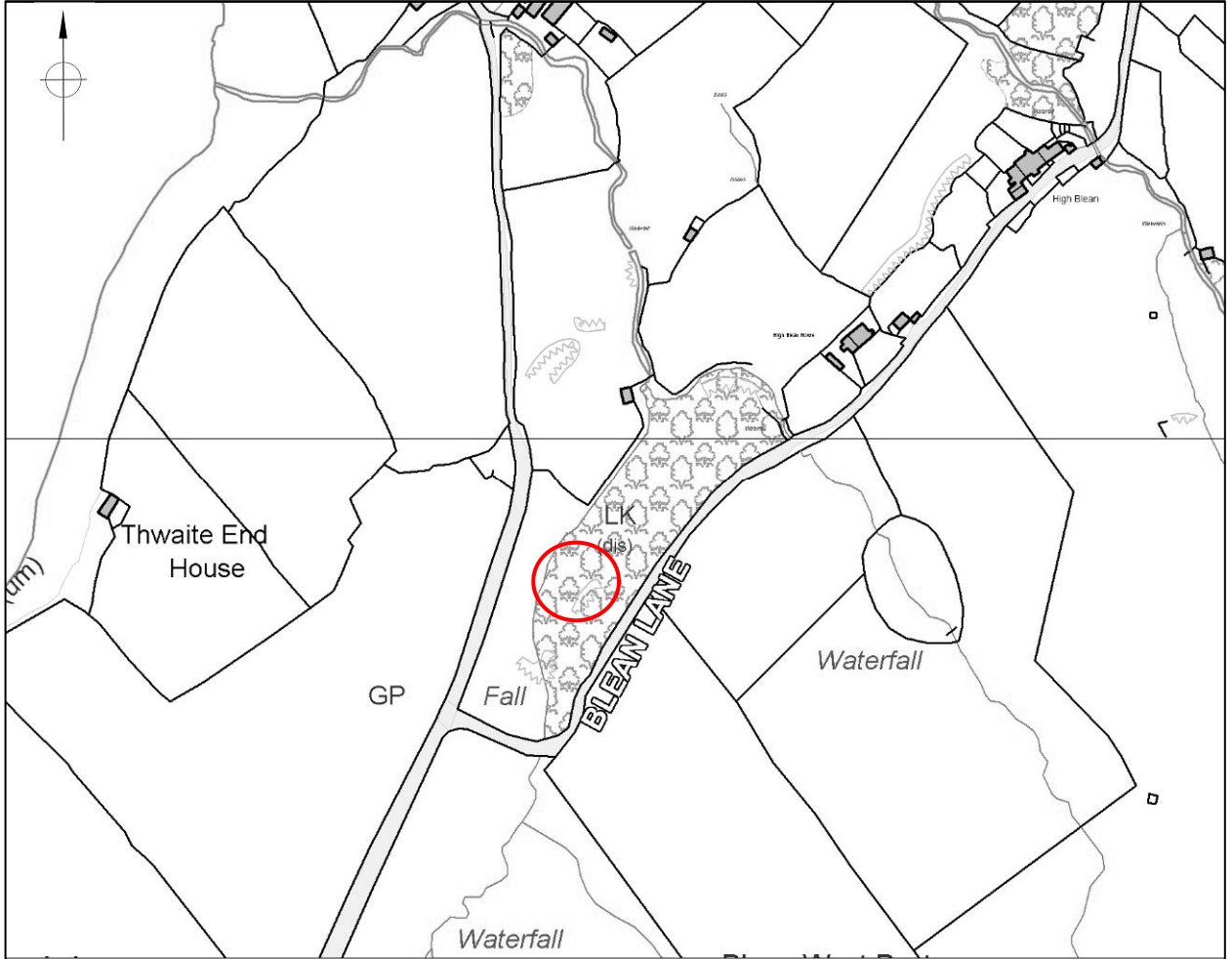
## **5 ACKNOWLEDGEMENTS**

- 5.1 The archaeological and wildlife survey of the High Blean lime kiln was commissioned by the landowner, Mr S Metcalfe, through the Yorkshire Dales National Park Authority. EDAS would like to Mr Metcalf and Robert White of the YDNPA for their assistance and co-operation in carrying out the survey work.
- 5.2 The archaeological survey was undertaken by Shaun Richardson, assisted by Richard Lamb. Shaun Richardson also produced the site archive and a draft report. The wildlife survey was undertaken by Dr Madeline Holloway of Ecological Information Network Consultants (EINC), who produced the stand-alone wildlife letter report. Robert White kindly commented on a draft report. The final report was produced and edited by Ed Dennison of EDAS, with whom the responsibility for any errors remains.



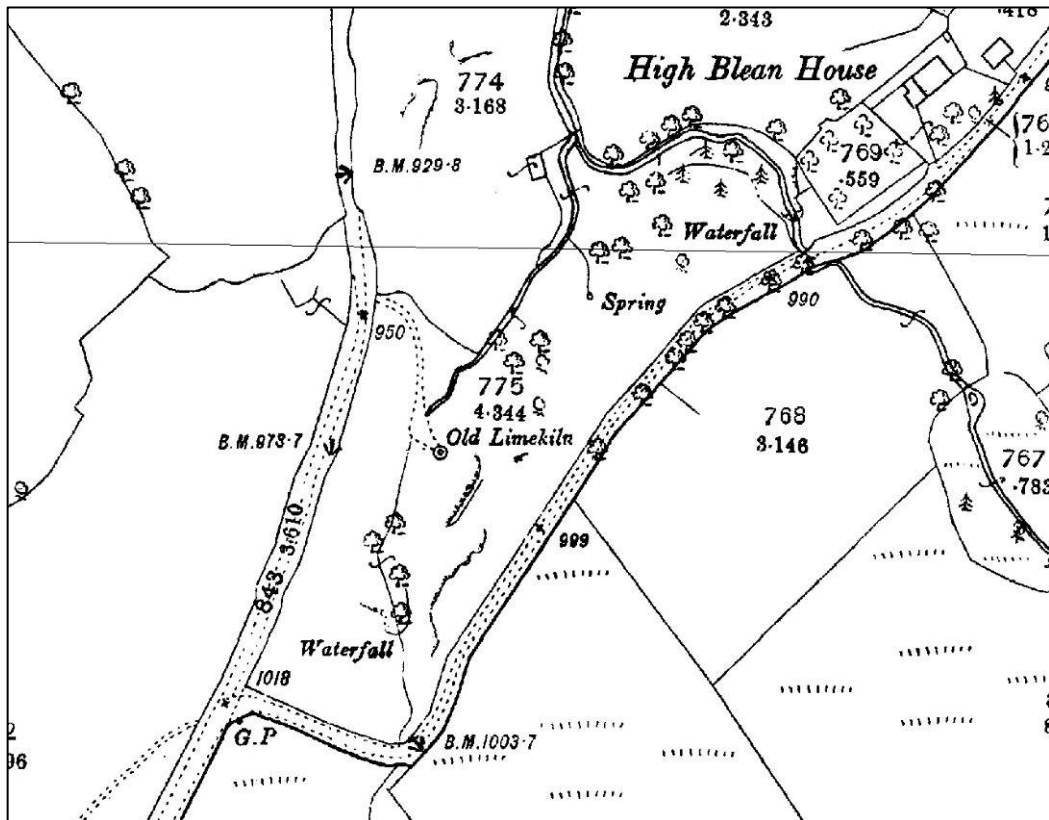
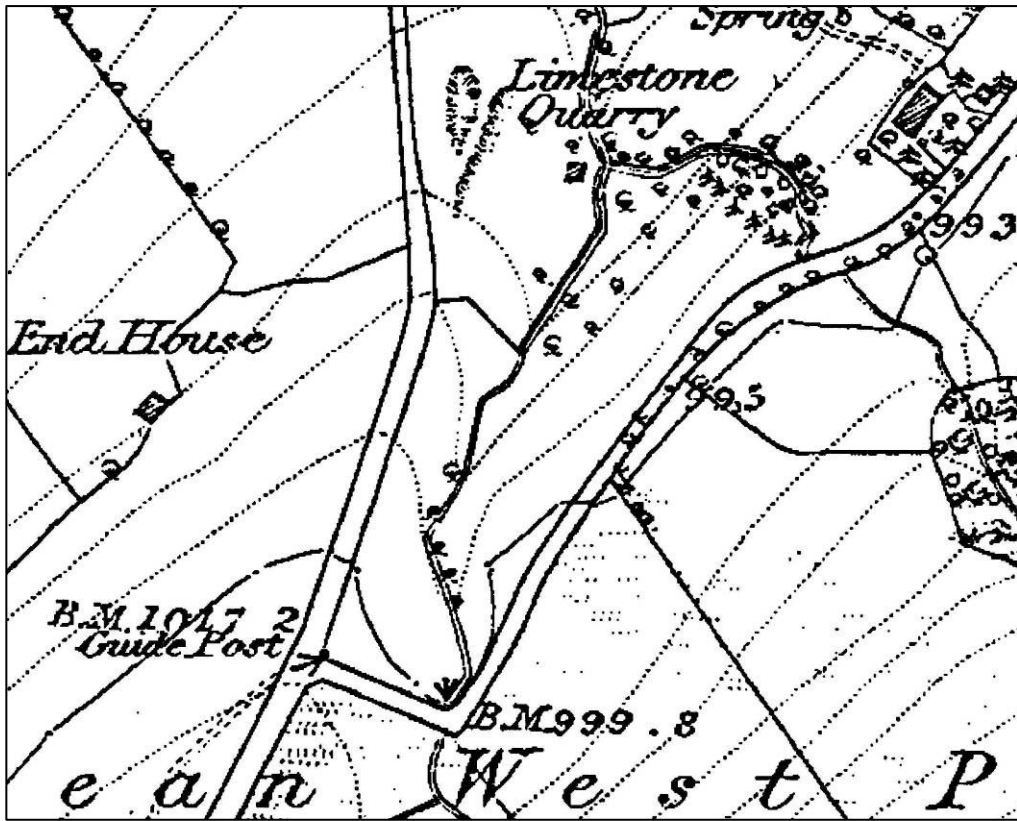
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PROJECT		HIGH BLEAN LIME KILN	
TITLE		GENERAL LOCATION	
SCALE	NTS	DATE	APR 2012
EDAS		FIGURE	1



Map base provided by YDNPA.

PROJECT		HIGH BLEAN LIME KILN	
TITLE			
SITE LOCATION			
SCALE	NTS	DATE	APR 2012
EDAS		FIGURE	2

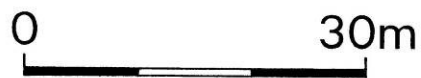
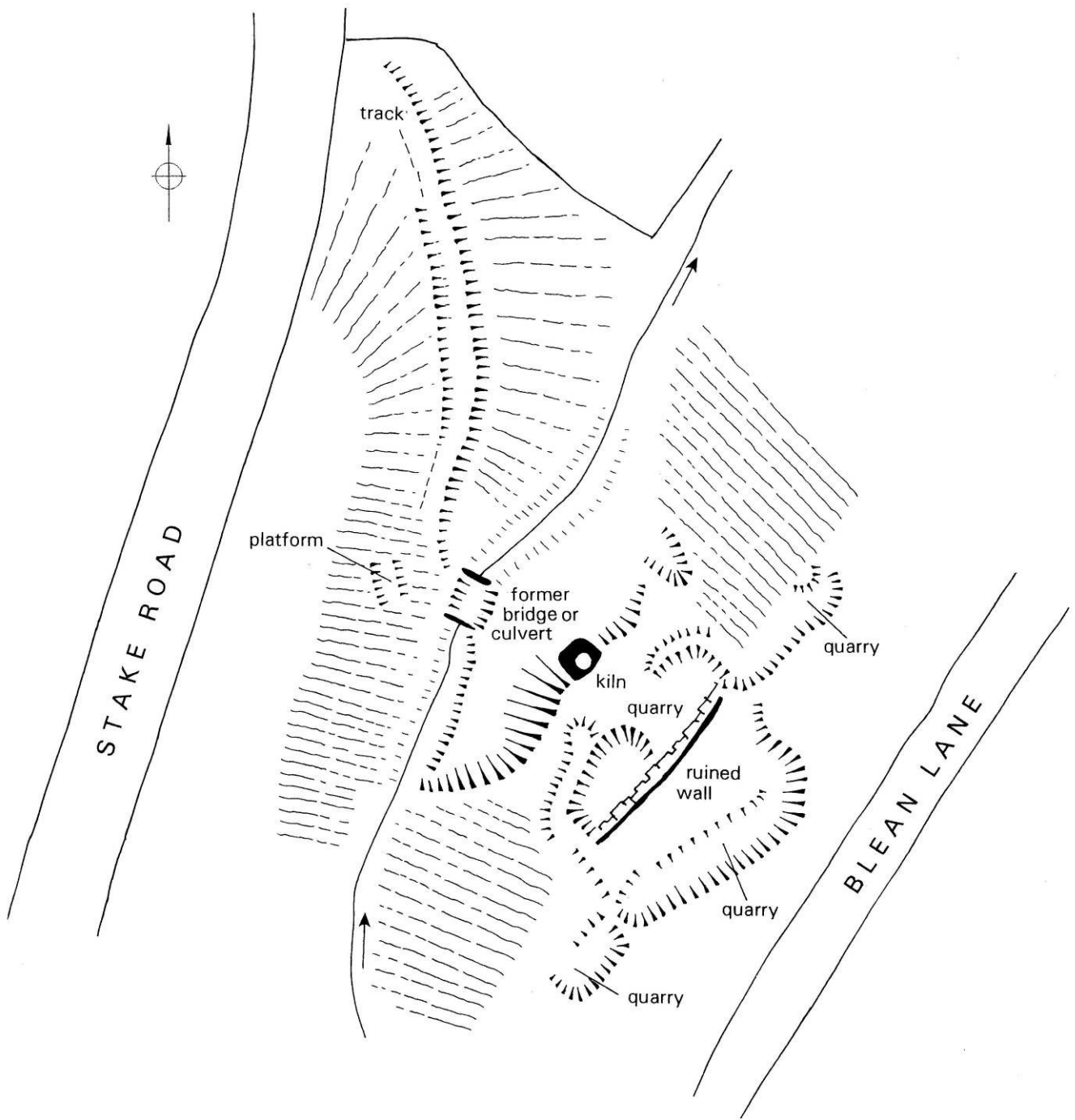


Top: Ordnance Survey 1856 6" to 1 mile map sheet 66 (surveyed 1854).

Bottom: Ordnance Survey 1892 25" map sheet 66/14 (surveyed 1892).

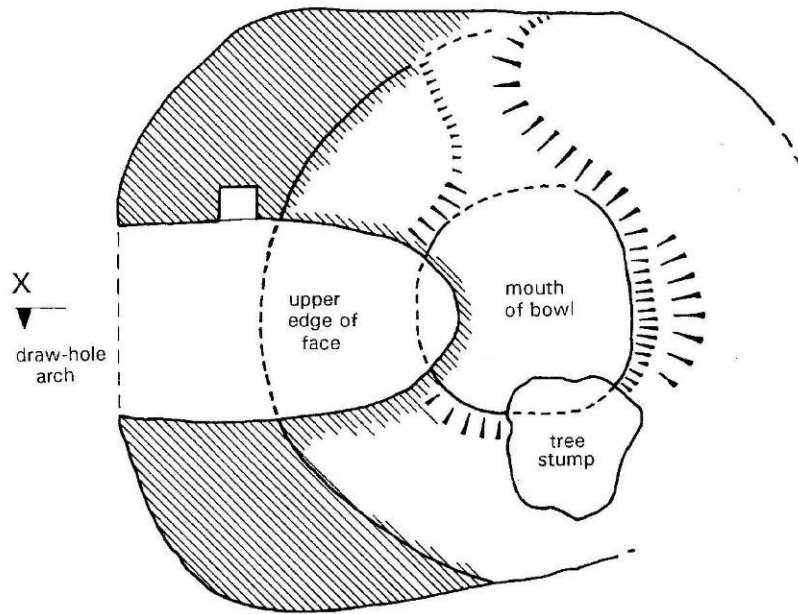


PROJECT		HIGH BLEAN LIME KILN	
TITLE			
HISTORIC MAPS			
SCALE	NTS	DATE	APR 2012
EDAS		FIGURE	3



PROJECT		HIGH BLEAN LIME KILN	
TITLE		SKETCH EARTHWORK SURVEY	
SCALE	NTS	DATE	APR 2012
EDAS		FIGURE	4

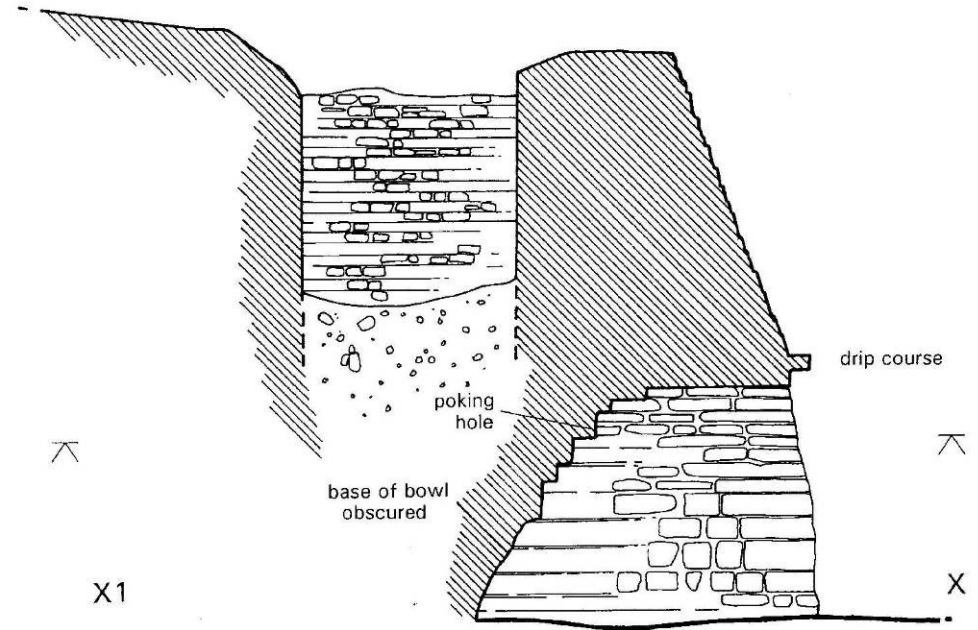




Plan



X1

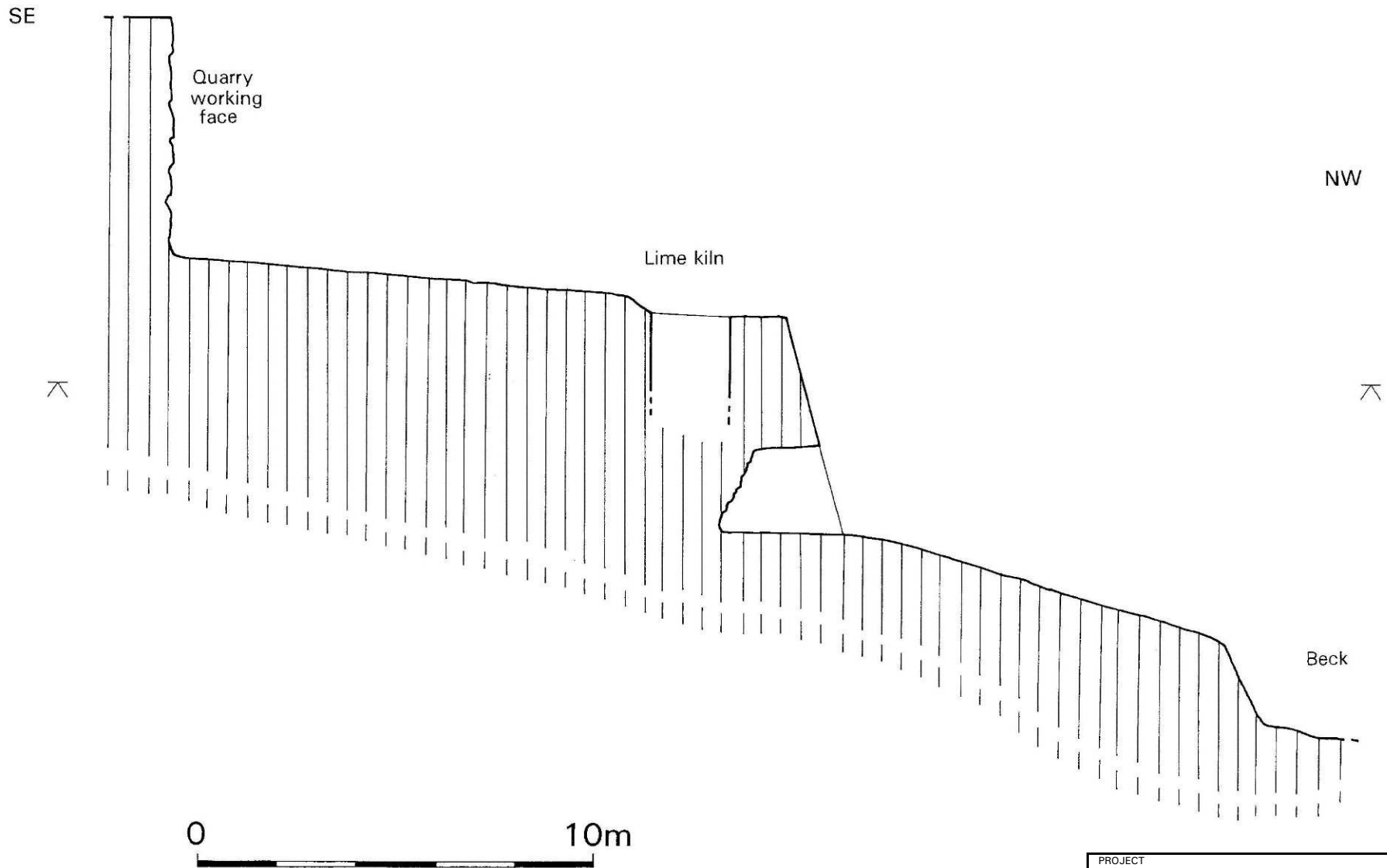


Section



PROJECT		HIGH BLEAN LIME KILN	
TITLE		PLAN AND SECTION	
SCALE	AS SHOWN	DATE	APR 2012
	EDAS	FIGURE	5





PROJECT		HIGH BLEAN LIME KILN	
TITLE		PROFILE THROUGH SITE	
SCALE	AS SHOWN	DATE	APR 2012
EDAS		FIGURE	6



Plate 1: View of access track, looking NW (photo 1/643).



Plate 2: Ruined bridge or culvert, looking W (photo 1/641).





Plate 3: Working face of main quarry, looking NE (photo 1/645).



Plate 4: Shallow quarrying above main quarry, looking NE (photo 1/651).





Plate 5: View of lime kiln, looking SE (photo 1/600).



Plate 6: West face of kiln, looking E (photo 1/604).





Plate 7: Draw-hole arch, looking SE  
(photo 1/608).



Plate 8: Interior of draw-hole arch, looking E  
(photo 1/611).



Plate 9: Mouth of bowl and lining, looking NE (photo 1/637).

## APPENDIX 1

## PHOTOGRAPHIC CATALOGUE

Film 1: Colour digital photographs taken 2nd February 2012

<i>Film</i>	<i>Frame</i>	<i>Subject</i>	<i>Scale</i>
1	598	Lime kiln, looking SE	-
1	599	Lime kiln, looking SE	-
1	600	Lime kiln, looking SE	-
1	602	Lime kiln, looking SE	-
1	603	Lime kiln, western face, looking E	1m
1	604	Lime kiln, western face, looking E	1m
1	605	Lime kiln, western face, looking E	1m
1	606	Lime kiln, western face, looking NE	1m
1	607	Lime kiln, western face, looking SE	1m
1	608	Lime kiln, western face, looking SE	1m
1	609	Lime kiln, drip course over draw-hole arch, looking E	0.50m
1	610	Lime kiln, drip course over draw-hole arch, looking E	0.50m
1	611	Lime kiln, draw-hole arch, looking E	1m
1	612	Lime kiln, north internal wall, looking NE	1m
1	614	Lime kiln, north internal wall, looking NE	1m
1	615	Lime kiln, rounded east end of interior, looking E	1m
1	616	Lime kiln, rounded east end of interior, looking E	1m
1	617	Lime kiln, rounded east end of interior, looking E	0.50m
1	618	Lime kiln, rounded east end of interior, looking SE	0.50m
1	619	Lime kiln, south internal wall, looking S	1m
1	620	Lime kiln, south internal wall, looking S	1m
1	621	Lime kiln, south internal wall, looking S	1m
1	622	Lime kiln, corbelled roof over interior	-
1	623	Lime kiln, corbelled roof over interior	-
1	624	Lime kiln, corbelled roof over interior	-
1	626	Trackway, looking NW	-
1	627	Lime kiln, upper part, looking S	1m
1	628	Lime kiln, upper part, looking S	1m
1	629	Lime kiln, upper part, looking S	1m
1	631	Lime kiln, mouth of bowl and lining, looking SW	-
1	632	Lime kiln, mouth of bowl and lining, looking SW	-
1	634	Lime kiln, mouth of bowl and lining, looking NE	-
1	636	Lime kiln, mouth of bowl and lining, looking NE	-
1	637	Lime kiln, mouth of bowl and lining, looking NE	-
1	638	Lime kiln, mouth of bowl and lining, looking NE	-
1	640	Lime kiln, mouth of bowl and lining, looking SW	-
1	641	Ruined bridge / culvert, looking W	-
1	642	Trackway terminating on east side of beck, looking NW	-
1	643	Trackway, looking NW	-
1	645	Working face of associated quarry, looking NE	1m
1	646	Working face of associated quarry, looking NE	1m
1	647	Working face of associated quarry, looking SE	-
1	648	Bank around south-west end of associated quarry, looking NW	-
1	649	Bank around south-west end of associated quarry, looking NW	-
1	650	Shallow quarrying above main quarry, looking NE	1m
1	651	Shallow quarrying above main quarry, looking NE	1m
1	652	Shallow quarrying above main quarry, looking SW	-
1	653	Ruined wall around top of main quarry, looking SW	0.50m
1	654	Ruined wall around top of main quarry, looking SW	0.50m
1	655	Trackway, looking W	-
1	656	Trackway, looking W	-
1	659	Shallow quarrying above main quarry, looking SW	-
1	660	Lime kiln, upper part, looking N	1m
1	662	Lime kiln, upper part, looking N	1m
1	665	Ruined bridge / culvert, looking SW	1m
1	666	Ruined bridge / culvert, looking NE	1m
1	670	Platform, looking W	-



1	671	Possible structure across beck to N of survey area, looking SW	1m
1	672	Possible structure across beck to N of survey area, looking W	1m

Note: duplicate shots not printed as thumbnails





1-598.JPG



1-599.JPG



1-600.JPG



1-603.JPG



1-604.JPG



1-606.JPG



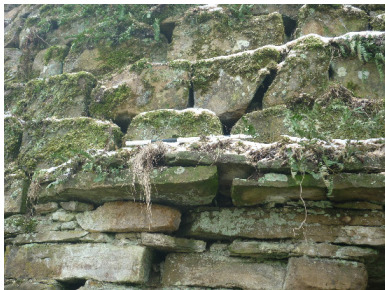
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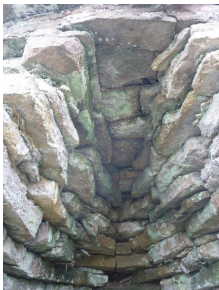
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## APPENDIX 2

## ECOLOGICAL INFORMATION NETWORK CONSULTANTS

Ed Dennison Archaeological Services Ltd.  
18, Springdale Way  
Beverley  
East Yorkshire  
HU17 8NU

24/2/12

Dear Ed

### **Re: Bat survey at High Blean Lime Kiln, Bainbridge, North Yorkshire**

At the request of Ed Dennison Archaeological Services Ltd., EINC undertook a bat survey of High Blean Lime Kiln, Bainbridge, North Yorkshire, on 10/1/12. The proposed work at this site is the safe removal of trees from the structure and the consolidation and possible interpretation of the lime kiln. The kiln occurs approximately thirty metres east of the Countersett to Stalling Busk Road, south of Low and High Blean Farms, within the parish of Bainbridge at grid reference SD 9241 8692. It is located within a grazed, semi-improved, pasture on the west-facing slope of a small gill that runs from Blean West Pasture, to Low Blean Farmhouse, and thence into Semer Water. The lime kiln is currently in good condition but is at significant risk of damage from tree and wind throw as shown in Plate 1. Finally, the source of limestone for High Blean kiln is a well preserved, quarried cliff faced located directly behind the kiln.

Bats are a protected species and this letter therefore describes the methodology and results of the bat survey together recommendations for measures to ensure the continued favourable status of the bat population in this locality.

#### *Bat Survey Methodology and Results*

A daytime inspection of High Blean Lime Kiln was undertaken on 10 January 2012 and the structure was comprehensively searched with the aid of ladders and a Clulite Lamp (1,000,000 candle power). Evidence for the presence of bats included live bats within small cracks, staining around roost entrances with oil from the bats fur and/or the presence of bat droppings. Constraints of the survey included the sub-optimal time of year that the survey was undertaken (bats are most active between mid-April – September and are less likely to be detected at other times of the year). In addition, bat droppings from roosts within crevices in the external walls of the kiln (and also on the adjacent mature ash tree) could have been washed away by rain and wind prior to the survey.

Many crevices that were suitable for bat entry into potential bat roosts were recorded in the external and internal walls of the kiln where previous mortar had mostly fallen out between the stonework, as illustrated in Plates 3 and 4. No signs of bats, however, were recorded in any of the crevices. Occasional small holes suitable for bat entry into potential bat roosts were also recorded in the mature ash *Fraxinus excelsior* tree located at the top of the kiln which was in the process of being felled at the time of survey (10/1/12). No signs of bats, however, were recorded on either this tree or the hawthorn beside the entrance to the kiln (Plate 2). The latter was also due to be felled and removed.

### *Other fauna and flora*

A woodcock was disturbed from resting inside the lower part of the kiln indicating that this bird may use this generally undisturbed site as an occasional winter roost (Cramp *et. al.* 1983). Woodcock are listed Amber List Birds of Conservation Concern and are categorised as a Species of European Conservation concern (Eaton *et. al.* 2009). In addition, two small bird nests were located in the internal south- and north- facing walls within the lower part of the kiln (Plate 5).

Finally, much of the stonework was covered by a range of bryophytes, ferns and higher plants. Ferns included dense patches of common polypody *Polypodium vulgare* on the east-facing, external, wall above the main opening and also one small tuft of maidenhair spleenwort *Asplenium trichomanes* on the external, south-elevation wall. The latter was initially identified as *A. trichomanes ssp. quadrivalens*, which is the more common form of maidenhair spleenwort found on calcareous substrates (Preston *et.al.* 2002) and its location is illustrated in Plates 6 and 7.

### *Evaluation*

No evidence of bats was recorded in any part of High Blean Lime Kiln and bats are therefore likely to be absent from this structure. This interpretation must be treated with some caution, however, as bats often use roosts temporarily during the active season (mid-April – September), and such use can therefore only be determined through a series of exit surveys throughout the active season.

### *Impact assessment*

Given the likely absence of bats from High Blean Lime Kiln the impact to the local bat population of the proposed repair and consolidation work is predicted to be negligible. Nevertheless, there is still a very low risk that bats could be present in the structure and, in addition, the existing mature ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna* are both host to numerous insects and therefore provide an important source of food for bats. Their removal from the kiln would result in a small reduction of this food source in the general locality. Finally, other wildlife using the kiln may also be negatively affected by the proposed works. For example, evidence of winter roosting and nesting birds were recorded within the kiln and several plant species were recorded on the stonework. To offset these risks, a series of mitigation measures are recommended.

### *Recommended mitigation measures*

- Whilst evidence of bats was not recorded during this survey it is nevertheless recommended that, wherever possible, work on the lime kiln should be undertaken during spring or autumn when bats would be able to feed during most nights but would either have not started, or would have finished, either breeding or hibernating. Autumn work is recommended since this also avoids impact to breeding and/or over-wintering birds.
- The contractor(s) should be informed of the very low risk of finding bats within crevices in the stonework of High Blean Lime Kiln and informed of what action to take should this be the case. Should bats be discovered then all works must be stopped immediately and Natural England informed for further advice.
- At least one Schwegler 1FF bat box should be placed in an adjacent tree before works start. This would ensure that an alternative roosting place is available should bats be indirectly

disturbed during the proposed restoration works. Alana Ecology Ltd ([www.alanaecology.com](http://www.alanaecology.com)) is a good supplier of such equipment and the correct siting of the bat box is important to increase chances of occupancy. The box should be sited approximately 4m from the ground with a clear flight path towards its entrance and, if possible, it should be sited with the front facing SW to SE, to ensure that it warms up during the day.

- Several native ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna* trees should be planted in the adjacent pasture to replace (in the long term) the mature ash and hawthorn that will be removed from the lime kiln.
- Do not scrape the stone walls free of ferns and mosses etc. unless they require re-building. In particular, retain (if possible) the single specimen of maidenhair spleenwort *Asplenium trichomanes ssp. quadrivalens* on the external, south-elevation wall of the kiln as illustrated in Plates 6 and 7.

### *References*

Bat Conservation Trust (2007) *Bat Surveys: Good Practice Guidelines* Bat Conservation Trust

Cramp, S (ed.) (1983) *Handbook of the Birds of Europe the Middle East and North Africa* Oxford University Press

Eaton MA, Balmer DE, Conway GJ, Gillings S, Grice PV, Hall C, Hearn RD, Musgrove AJ, Risely K and Wotton S (2009) *The state of the UK's birds 2008*. RSPB, BTO, WWT, CCW, NIEA, JNCC, NE and SNH, Sandy, Bedfordshire.

English Nature (2004) *Bat mitigation guidelines* English Nature ISBN 1 85716 781 3

Preston, C.D, Pearman, D.A and Dines, T.D (2002) *New Atlas of the British & Irish Flora* Oxford University Press

Kind regards

*Madeline Holloway*

Madeline Holloway

**Plate 1** High Blean Lime Kiln – general view looking from east to west



Mature ash  
to be  
removed  
from the  
lime kiln

Quarried cliff  
face behind the  
kiln

**Plate 2** Main entrance into the kiln obscured by a mature hawthorn



**Plate 3** Internal stonework with many crevices suitable for bat entry into potential bat roosts



**Plate 4** Circular wall at the top of the kiln, below the mature ash: stonework with many crevices suitable for bat entry into potential bat roosts



**Plate 5** Bird nest recorded in the internal, north-facing, wall of the lime kiln



**Plate 6** A single tuft of maidenhair spleenwort was recorded on the external, south-facing wall



Location of a single tuft of maidenhair spleenwort



**Plate 7** Close-up of Plate 6



Location of a  
single tuft of  
maidenhair  
spleenwort

## **APPENDIX 3**

# YORKSHIRE DALES NATIONAL PARK AUTHORITY

High Blean Lime Kiln, Bainbridge  
SD92418692

## Survey and Consolidation



### 1. Summary

This document provides a specification for the survey, recording and preparation of consolidation specifications for a lime kiln at High Blean, Countersett. The project is part of an Environmental Stewardship special project that also includes the safe removal of trees from the structure and the consolidation and possible interpretation of the kiln.

### 2. Introduction

The lime kiln is located on the west-facing slope of a small gill that runs from Blean West Pasture, to Low Blean Farmhouse, and thence into Semerwater. The kiln lies on land belonging to Low Blean Farm.

As part of a Higher Level Environmental Stewardship scheme recently agreed for the holding, a special project is proposed to remove a tree from the bowl of the kiln which is potentially putting the kiln at risk of collapse and to consolidate the structure. A survey of the site and the preparation of consolidation specifications is therefore required. A separate contract is being let for tree felling.

The work will be funded by Natural England, through Environmental Stewardship, but project managed and monitored by the Yorkshire Dales National Park Authority on behalf of Natural England and the landowner.

The kiln is a well-preserved example of a small-scale industrial feature of the Yorkshire Dales landscape. Although currently in good condition, it is at significant risk of damage from tree wind throw. Preventative measures alongside consolidation should enable the preservation of this important landscape feature.

### **3. Location**

The kiln is situated at SD92418692 about 30m east of the Countersett to Stalling Busk Road, south of Low and High Blean Farms, within the parish of Bainbridge. It is within the side of a small gill, formerly wooded, which runs towards nearby Semerwater, now managed as semi-improved pasture land which is regularly grazed.

### **4. Ownership**

This land on which the kiln sits is privately owned by Mr Shane Metcalfe, and forms part of Low Blean Farm, Semerwater.

### **5. Access**

The kiln is accessible by foot from the nearby Stake Road, where there is roadside parking. The kiln is a short walk across the field, crossing the gill at a collapsed culvert. Vehicular access onto the site is difficult. Contractors wishing to visit the site should contact Mr Metcalfe on 01969 650436

### **6. Archaeological Interest**

Lime kilns are an important landscape feature within the Yorkshire Dales. Lime kilns were used to burn small pieces of limestone to produce quicklime, which, in the main was used for improving pasture and building purposes. Some earthwork kilns in the Yorkshire Dales have been dated to the 17<sup>th</sup> Century, but it is likely that lime burning was practised significantly earlier than this. A sow kiln in the Forest of Bowland was recently dated to the 13<sup>th</sup> Century, and it is probable that there will be Roman examples. By the mid 18th Century lime kilns similar to the High Blean example were becoming common in the Dales.

High Blean kiln is not shown on the 1<sup>st</sup> edition OS 6" map (1856), although it is not uncommon for kilns to be omitted from this mapping. The kiln is shown on both the 1<sup>st</sup> and 2<sup>nd</sup> edition OS 25" maps. On both of these maps it is marked as 'Old Limekiln' suggesting that by 1899 the kiln was out of use. The source of limestone for High Blean kiln is a well preserved, quarried cliff face located directly behind the kiln at SD92428690.

There are a series of earthworks and other features associated with the kiln in the immediate area. These include a trackway leading directly from the Stake Road to the kiln and a culvert where crossing the gill was made easier, and possible quarrying above the main quarry. It is possible other features will be identified as part of this survey.

### **7. Aims of the Project**

The main aims of the proposed work are as follows:

- (i) To complete a rapid examination of any known documentary references and sources relating to the kiln. The archive at the YDNPA will be made available to aid with this.

- (ii) To create a full record of the kiln structure, including a full photographic survey and the preparation of a plan and elevations at 1:50. This can then be used to inform any future consolidation works.
- (iii) To carry out a walk over survey and sketch plot features onto an 1:2500 plan of the area, enlarged to 1:1000.
- (iv) To prepare detailed consolidation specifications for the kiln.
- (v) To identify any wildlife species using the kiln.

It is recommended that before quoting for this work that all contractors make a preliminary visit to the site, not only to familiarise themselves with the remains, but to identify the extent of work required.

## **8. Outline Methodologies**

### (i) Documentary Research

Contractors should allow for a half day archival investigation into any historic sources in which the kiln or quarrying may be detailed. The contractor should identify and check relevant sources, including tithe and estate maps, where available.

### (ii) Photographic Survey

The photographic record should be made of all elevations of the kiln and other features from vantage points as nearly parallel as possible to the elevation being photographed (within the constraints of the site), together with close up photography of significant detail. The contractor should ensure that all visible elements of each elevation are recorded photographically; this may require photographs from a number of vantage points. A general external photographic record should also be made which includes oblique general views of the structures and features showing them in their setting.

### (iii) Walkover Survey

A careful walkover survey of the kiln, adjacent quarry and trackway sketching all archaeological activity onto enlarged 1:2500 Ordnance Survey mapping. An accompanying written gazetteer should provide an analysis of any earthworks, their function and significance. The survey should identify any earthwork phasing.

### (iv) Structural survey - Kiln

Plans and elevations at 1:50 or such other scale as is agreed with the National Park Authority. Stone by stone drawings are not required but all significant archaeological or architectural details should be recorded.

### (iv) Consolidation Specifications

These should identify all work necessary within the site to protect, secure and consolidate the kiln, to enable surviving features to withstand natural erosion and a low level of

agricultural grazing and visitor activity. The concept to be followed for the industrial remains is "consolidate as found" rather than restoration and rebuilding, other than for the quarry wall which will require rebuilding. If limited rebuilding is proposed as necessary to ensure the stability of the kiln this should be fully justified. It is anticipated that the proposed works will require the use of traditional methods of building using traditional materials and should normally be reversible. No demolition is to take place. Any proposals for rubble clearance should include archaeological supervision to allow for detailed recording.

Specifications should include provision for:

- Protection of site and structures
- Rubble clearance
- Repointing and rough racking
- Replacement, resetting and/or rebuilding
- Design and installation of any safety barriers etc if required
- Treatment of any metal work
- Treatment of any timber work
- Vegetation management
- Removal of any modern spoil and rubbish
- Rebuilding of the quarry wall
- Monitoring
- Site reinstatement

Four copies of a detailed document suitable for seeking competitive quotations for the work should be produced.

#### (v) Wildlife Survey

Identify the location of any wildlife species using the kiln, (either seasonally or throughout the year) and consider their requirements and mitigation in terms of the consolidation works that this project will identify. This element of the survey will need to consider the legal obligations under the relevant wildlife legislation, when compiling the specifications and scheduling of works.

If protected species are found, a license may be needed before work can take place. Certain species using a building may be protected under the UK Wildlife & Countryside Act (1981) and/or European wildlife legislation. Species lists can be found at:

<http://www.naturalengland.org.uk/conservation/wildlife-management-licensing/habsregs.htm>

or by contacting your local Natural England office.

## **9. Recording Methodology**

In accordance with national guidelines, drawings executed on site should be made either on polyester-based film (minimum thickness 150 microns) with polymer-bonded leads of an appropriate thickness and density, or on acid-free or rag paper. If finished drawings are generated by means of CAD or a similar proven graphics package, recorders should ensure that the software employed is sufficiently advanced to provide different line-weight

(point-size); this feature should then be used to articulate the depth of the drawings. What is required as an end product of the survey are well-modelled and clear drawings; ambiguous flat-line drawings should be avoided. Drawing conventions and information panels incorporating title, drawing number, keys, credits, date etc should conform to *Understanding landscapes: a guide to good recording practice* (English Heritage 2007). Line thicknesses and point sizes should be chosen to allow for ease of duplication and reduction

Any GIS files / CAD files are to be presented in a format to be agreed with the YDNPA HER to ensure integration with current HER records.

The general photographic guidelines given in *Understanding historic buildings: a guide to good recording practice* (English Heritage 2006) should be followed. Each photograph should normally be provided with a scale and the use of an identifier is recommended for detailed views.

Digital imagery, rather than conventional film photography, is acceptable for the photographic recording although medium resolution images (between 2mb and 5mb) are required as a minimum. Unedited images should be archived, preferably as tiff files, as well as processed images. A full image catalogue is required as part of the archive.

A structured gazetteer of numbered site components should be made to include a summary description and preliminary interpretation of extant remains (e.g. location, dimensions, plan, form, function, date, and sequence of development), mention of any relevant documentary evidence and assessment of current condition and threats. Data recorded should be compatible with the English Heritage *Thesaurus of Monument Types* and the YDNPA's exeGesIS HBSMR database.

## **10. Products**

### 10.1 Consolidation Specifications

Four hard copies and one pdf copy of a detailed document, illustrated as appropriate, suitable for seeking competitive tenders should be produced.

### 10.2 Survey report

The survey report should include the following:

- (i) Name of client.
- (ii) An outline of the project plan and objectives.
- (iii) Plans and elevations of the kiln
- (iv) A sketch plan of the project area.
- (v) A gazetteer of recorded archaeological features providing an analysis of their function and significance.
- (vi) A photographic record of the features recorded.
- (vii) Statement of methods used with reasoned explanation of any departure from standard procedures and details of any particular constraints under which the work was carried out.
- (viii) A concise interpretation of the lime kiln and associated earthwork remains.

- (ix) Results and analysis of the documentary research.
- (x) Summary of significance of findings.
- (xi) Notes and bibliography.
- (xii) List and key to drawings and photographs.
- (xiii) Names of staff involved and the parts played by each with the dates of fieldwork.
- (xiv) Acknowledgements

Two hard copies and one pdf copy of the survey report are required.

### 10.3 Archive

The long term care of the project archive must be provided for in accordance with the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* UKIC Archaeology Section (1990).

As no excavated material is anticipated with the project archive it can be deposited with the Yorkshire Dales National Park Authority Historic Environment Record.

## 11. Costings and Quotations

All costings should include the following, clearly outlined:

- (i) Total staff costs.
- (ii) Total non-staff costs. i.e. Mileage, equipment, accommodation and subsistence.
- (iii) Included within all quotes should be provision for the production and publication of the final report, as well as suitable deposition of an archive, as detailed above.

All quotations should include:

- i) Outline method statement or schedule of works
- ii) Date when archaeological works can commence on site
- iii) Estimated timescale (number of days) to undertake the works on site
- iv) Details of professional personnel, including any subcontractors, who will be undertaking the archaeological works. The Contractor will be required to demonstrate, by providing CV's if requested, that the staff appointed to direct, supervise and work on this project have relevant experience of working on sites of this nature and are able to specify and carry out survey and , analysis to a professional standard. The Contractor, his staff and any sub-contractors will be expected to comply with relevant Codes of Practice of the Institute of Field Archaeologists.
- v) Date by which the report would be complete
- vi) Evidence of awareness of relevant Health and Safety legislation.

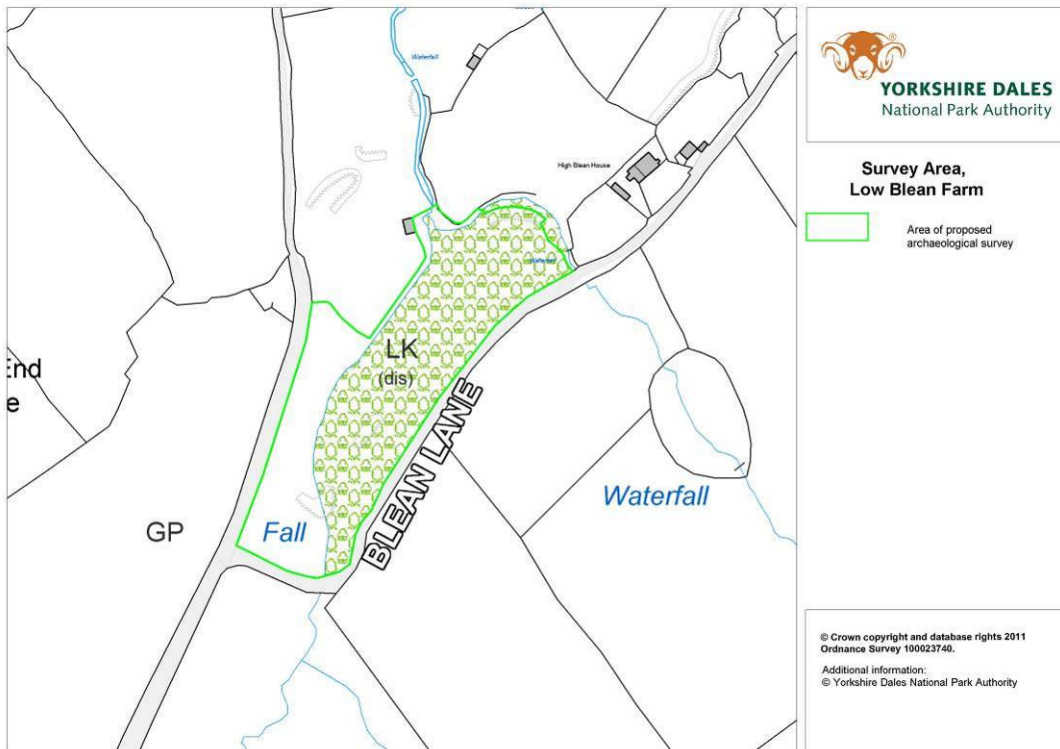
## 12. References

English Heritage, 2006, *Understanding historic buildings: a guide to good recording practice*



English Heritage, 2007, *Understanding landscapes: a guide to good recording practice*  
UKIC Archaeology Section, 1990, *Guidelines for the Preparation of Excavation Archives for Long Term Storage*





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22/06/2011

## **APPENDIX 4**

# ARCHAEOLOGICAL SURVEY AND CONSOLIDATION WORKS, HIGH BLEAN LIME KILN, COUNTERSETT, NORTH YORKSHIRE

## EDAS METHODS STATEMENT

### Introduction

A Level 3 archaeological survey (as defined by English Heritage 2007) is required of a ruined lime kiln at High Blean, Countersett, near Bainbridge, North Yorkshire (NGR SD 9241 8692 centred). The archaeological survey work is to be augmented by a wildlife survey and the preparation of a specification for consolidation. The extent of the project is defined by a brief produced by the Yorkshire Dales National Park Authority (YDNPA), and this detailed costed methods statement defines the work that EDAS will undertake if appointed to the project. The project, which will be funded by Natural England through the Higher Level Environmental Stewardship scheme, also includes the safe removal of trees from the structure and the consolidation and possible interpretation of the kiln.

### Background Information

#### *Site Location*

The kiln is situated at NGR SD 9241 8692 about 30m east of the Countersett to Stalling Busk Road, south of Low and High Blean Farms, within the parish of Bainbridge. It is within the side of a small gill, formerly wooded, which runs towards nearby Semerwater, now managed as semi-improved pasture land which is regularly grazed. The land on which the kiln sits is privately owned by Mr Shane Metcalfe, and forms part of Low Blean Farm, Semerwater.

The kiln is accessible by foot from the nearby Stake Road, where there is roadside parking. The kiln is a short walk across the field, crossing the gill at a collapsed culvert. Vehicular access onto the site is difficult.

#### *Archaeological Interest*

The kiln is a well-preserved example of a small-scale industrial feature of the Yorkshire Dales landscape. Although currently in good condition, it is at significant risk of damage from tree wind throw. Preventative measures alongside consolidation should enable the preservation of this important landscape feature.

Lime kilns were used to burn small pieces of limestone to produce quicklime, which was primarily used for improving pasture and building purposes. Some earthwork kilns in the Yorkshire Dales have been dated to the 17th century, but it is likely that lime burning was practised significantly earlier than this. A sow kiln in the Forest of Bowland was recently dated to the 13th century, and it is probable that there will be Roman examples. By the mid 18th century, lime kilns similar to the High Blean example were becoming common in the Yorkshire Dales.

The High Blean kiln is not shown on the Ordnance Survey 1st edition 6" map (1856), although it is not uncommon for kilns to be omitted from this mapping. However, the kiln is shown on both the 1st and 2nd edition Ordnance Survey 25" maps. On both these maps it is marked as 'Old Limekiln' suggesting that by 1899 the kiln was out of use. The source of limestone for High Blean kiln is a well preserved, quarried cliff face located directly behind the kiln at NGR SD 9242 8690.

There are a series of earthworks and other features associated with the kiln in the immediate area. These include a trackway leading directly from the Stake Road to the kiln and a culvert where crossing the gill was made easier, and possible quarrying above the main quarry. It is possible other features will be identified as part of the proposed archaeological survey.

## **Aims of the Project**

The aims of the project are:

- to complete a rapid examination of any known documentary references and sources relating to the kiln;
- to create a full record of the kiln structure, including a full photographic survey and the preparation of a plan and elevations at a scale of 1:50, which can then be used to inform any future consolidation works;
- to carry out a walkover survey and sketch plot features onto an 1:2500 plan of the area, enlarged to a scale of 1:1000;
- to prepare detailed consolidation specifications for the kiln; and
- to identify any wildlife species using the kiln.

## **Survey Methodologies**

A total of five elements are required to be undertaken as part of this project, namely documentary research and collation, walkover survey, building recording, wildlife survey, and the production of specifications for consolidation. In many cases, there are cross references and links between the various project elements, with some elements informing and determining the scope and scale of subsequent elements.

### *Documentary Research and Collation*

Information relating to the site and its immediate environs will be obtained from the YDNPA and English Heritage's National Monuments Record. It is expected that this information will comprise records/reports of any previous historic research and archaeological activity, aerial photographs, past management and land ownership records, and historic maps and plans. It is assumed that these organisations will not charge for any data supply, and that the YDNPA will be able to provide modern Ordnance Survey map bases. Other maps and plans, such as tithe, enclosure and estate, will be consulted if necessary.

Wherever possible, the above documentary research will be completed in advance of the topographical survey, so that it might inform and enhance the survey work.

Information from specialist consultees such as the North and East Yorkshire Ecological Data Centre and the North Yorkshire Bat Group will also be collated to inform the subsequent Wildlife Survey.

### *Archaeological Survey*

#### 1) Walkover survey

A walkover survey of the area around the kiln, to include the adjacent quarry and trackway, will be undertaken, sketching all archaeological earthworks and activity onto enlarged 1:2500 scale Ordnance Survey map bases. The resulting survey plan will be presented as an interpretative hachure plan using conventions analogous to those used by English Heritage (1999; 2002, 14; 2007, 31-35).



## 2) Building recording

A ground plan of the kiln, to also show the mouth of the pot at the upper level, will be produced at a scale of 1:50 by hand measurement, together with appropriate elevations. The plan will show all significant detail such as openings (blocked or unblocked), fittings, sockets etc, while the elevations will show all significant architectural and structural features such as construction detail, modifications and differences in fabric, and the any specific structural stones or dressings around openings and at corners; stone-by-stone drawings are not required. The elevation drawings will be marked with a common datum reduced to levels tied into a temporary site bench mark. All drawings will be produced according to the guidelines established by English Heritage (2006, 8-10 & 19-21), and will be keyed into the general walkover survey.

## 3) Photographs

Each site or component identified by the walkover survey will be photographed, subject to access and vegetation. All elements of the kiln will also be photographed, including all elevations and other features (from vantage points as nearly parallel as possible to the elevation being photographed within the constraints of the site), as well as close up photography of significant detail; this may require photographs from a number of vantage points. A general external photographic record will also be made which includes oblique general views of the structures and features showing them in their setting.

The colour photographs will be produced using a digital camera with 10 megapixel resolution. English Heritage photographic guidelines will be followed (English Heritage 2007, 14) and each photograph will normally be provided with a scale and identifier where required. All photographs will be clearly numbered and labelled with the subject, orientation, date taken and photographer's name, and will be cross-referenced to a photographic register, digital files etc.

## 4) Written accounts

Each identified individual site or component identified by the walkover and site surveys will be given a unique identifier number, and a detailed written description provided based on notes taken in the field. The structured gazetteer will take the form of pro forma record sheets compiled from an Access database. The description will include a preliminary interpretation of extant remains (e.g. dimensions, plan, form, function, date, sequence of development), locational information (including ten figure grid references obtained from the topographical survey, OS map bases or hand-held GPS systems), and mention of relevant documentary, cartographic or other evidence, and management details such as an assessment of current condition and threats. Data recorded will be compatible with the English Heritage *Thesaurus of Monument Types* and the YDNPA's exeGesIS HBSMR database.

### *Wildlife Survey: Bats*

All species of bats are fully protected under current legislation and so a systematic daytime inspection for any bats roosting in the kiln will be undertaken at some point between May-August. This is the time when bats are at their most active and hence most likely to be detected; sub-optimal times for such a survey occur the rest of the year, from September-April. Whilst it is unlikely that the kiln is used as a maternity roost, it is possible that it is used by occasional, single bats during the summer. The survey would therefore search for droppings beneath and/or within potential bat roost sites, such as any small holes/crevices between the stonework and all potential cracks would be searched with a video endoscope.

It is also possible that the kiln is used as a winter hibernation bat roost and, ideally, a winter bat roost survey should be undertaken at some point between December-February. In the first instance however, the proposed daytime inspection would identify potential summer and/or winter bat roost crevices. Thus, should the required consolidation works be necessary before a winter

survey could be undertaken, the wildlife report would be able to identify potential bat roost crevices for retention.

If located, the presence of bats will be considered in any proposed consolidation works, and their requirements and any mitigation will be identified (see Consolidation Specification below).

Depending on the initial daytime survey, a further nocturnal and/or dawn bat survey at the kiln may be required. Should bats be recorded, further work may also be required for the submission of an application for a licence to Natural England and administration of the licence conditions in respect of Bats. Such extra work would include the production of Method Statement (Documents 1 and 2) as well as a 'Reasoned Statement of Application', and it would also involve monitoring and site supervisory work as part of the licence conditions. These works are not currently included in this methods statement.

### *Consolidation Specification*

The 1:50 scale plan and elevation drawings, as well as the site photographs, will be used as a base for the production of a specification for the consolidation of the kiln. This specification will be informed by the building survey, and will incorporate where necessary any recommendations produced by the wildlife survey.

The specification will identify all work necessary to protect, secure and consolidate the structure to allow them to withstand natural erosion and a low level of agricultural grazing and visitor activity. The concept of 'consolidate as found' will be followed wherever possible, rather than restoration and rebuilding. However, it is accepted that some limited rebuilding may be required to secure the structural integrity of the structure and if so, appropriate justification will be made. It is anticipated that the proposed consolidation works will require the use of traditional methods of building using traditional materials and should normally be reversible. No demolition will be required.

Prior to consolidation work, some rubble clearance may be necessary to gain access to presently buried wall faces. In general, and unless otherwise specified, rubble will only be removed to ensure the successful consolidation of the wall tops and faces; it will not always be necessary to clear rubble down to turf or floor level. Any proposals for rubble clearance will include archaeological supervision to allow for detailed recording during and prior to the work, as necessary.

In general, the specification will provide for the protection of the site and structure, rubble clearance, repointing and rough racking, replacement, resetting and/or rebuilding, the design and installation of any safety barriers etc if required, treatment of any metal work, treatment of any timber work, vegetation management, the removal of modern spoil and rubbish dumps, archaeological and other monitoring, and site reinstatement.

The results of the wildlife survey will also be taken into account during the preparation of the consolidation specification. The results of the bat surveys will be available at least three months prior to the commencement of any restoration work to ensure that, should bats be recorded within any key structures, there is enough time available to apply for, and be granted, a Bat Licence from Natural England. The aim will be to ensure that an approved mitigation statement is available for the continued welfare of the existing local bat population, and that any unnecessary and costly delays to the possible commencement date(s) of the proposed restoration works are avoided.

### **Survey Products**

A number of separate products are required to be produced as part of this project.

## *Archaeological Survey Report*

An EDAS archive archaeological survey report for the site will be produced, based on the results of the documentary research and collation, the walkover survey and building recording, the wildlife survey, and the structured gazetteer of identified numbered components. The report will be a standard A4 typed and bound document, which will assemble and summarise the available evidence for the survey area in an ordered form, synthesise the data, comment on the quality and reliability of the evidence, and how it might need to be supplemented by further site work or desk-based research.

It is expected that the report will include (as appropriate):

- name of client and/or commissioning body;
- a contents list;
- acknowledgements;
- a non-technical executive summary;
- site code/project number;
- dates of fieldwork visits;
- national grid reference and address;
- overall site plan;
- statutory designations;
- a brief account of the project plan, research objectives, survey methodology, procedures and equipment used;
- details of the historical and archaeological background to the site;
- an account of the overall form and development of the site and of the evidence supporting any interpretation;
- preliminary conclusions, including an assessment of the importance of the findings in relation to the other remains on the site and in the region as a whole;
- details of any identified management issues and preliminary recommendations for improvement;
- a bibliography and list of sources consulted;
- selected colour digital images, at no less than 6" by 4";
- selected figures e.g. historic maps and plans, reduced to A4 or A3 size;
- final survey drawings, reduced to A4 or A3 size.

The survey report will also contain various appendices, including the structured gazetteer of sites/components, photographic registers and catalogues, and a copy of this Methods Statement, together with the details of any departures from that design.

One draft copy of the report will be made available for discussion with the YDNPA and/or Natural England prior to completion. Two copies of the final approved survey report will then be provided in hard copy format (comb bound reports) to the YDNPA, no later than eight weeks after the end of the on-site work unless otherwise agreed with the YDNPA. A CD containing an electronic copy of the report (as pdf files) and digital copies of the Access database and photographs will also be provided. There is currently no requirement for the data contained in the survey report or site gazetteer to be entered onto the YDNPA HER.

A summary of the results of the archaeological survey will be prepared for publication in British Mining, CBA Forum or any other appropriate journal or monograph as agreed with the YDNPA. It is also noted that a presentation at a day school on the historic environment of the Yorkshire Dales may also be required.

EDAS will license Natural England and the YDNPA for unrestricted use of all survey material, drawings, photographs and other products of the project on payment of final invoices. Information and plans etc resulting from the project (suitably acknowledged) may be used by these organisations for research reports, or any similar publications, and for use in any interpretative or publicity material, as well as being made available through the HER and its derivatives.



## *Archaeological Survey Archive*

A properly ordered and indexed project archive (paper, magnetic and plastic media) will be deposited with the YDNPA at the end of the project. It is expected that the archive will contain the following:

- copies of relevant documentary material, bibliographic, cartographic and pictorial sources, arranged in date sequence;
- survey control information, including a diagram showing traverses and control networks, coordinates of control points and survey stations, and digital survey data;
- field and final ink drawings (any drawn records will be presented as wet ink plots on standard "A" size matt surface stable polyester film sheets);
- written accounts and pro forma gazetteers;
- structured catalogues and indices;
- copies of digital photographs on CD, both processed and unedited images, as jpegs and tiff files;
- project management records;
- electronic copies of all reports, as pdf files.

## *Wildlife Survey Report*

The wildlife survey report will take the form of a letter report, which will summarise the value of the kiln for roosting bats according to their national, regional, district, parish and/or local ecological value and include the results of any previous data. It will include sections on the type of surveys undertaken (including a brief habitat description and an interpretation/evaluation of the results), an impact assessment (including long-term impacts etc) and a section on mitigation and compensation.

## *Consolidation Specification*

This stand-alone standard A4 typed and bound document will detail the work required to consolidate the lime kiln.

The specification will follow previous EDAS examples, and will include the following:

- an introduction;
- appropriate preliminaries detailing general contract issues, access to site etc;
- a general description of the site and details of the structures to be consolidated;
- a list of general consolidation requirements and procedures covering materials and workmanship (e.g. detailing the protection of the site, structures and wildlife, the principles of any rubble clearance, procedures to be followed during any repointing, methodologies for rough racking, stone replacement, resetting and/or rebuilding, details of mortar mixes, treatment of metal work and vegetation, procedures for monitoring and supervision, and requirements for site reinstatement);
- a schedule of work, i.e. specific consolidation requirements for the individual structures, illustrated by appropriate labelled drawings and photographs;
- any requirements and details of archaeological survey/recording required;
- appropriate Bills of Quantities and Schedule of Day Work rates.

As noted above, the Consolidation Specification will be informed by the preceding building and wildlife surveys. The results of the bat surveys will be available at least three months prior to the commencement of any restoration work to ensure that, should bats be recorded within any key structures, there is enough time available to apply for, and be granted, a Bat Licence from Natural England. The aim will be to ensure that an approved mitigation statement is available for the continued welfare of the existing local bat population, and that any unnecessary and costly delays to the possible commencement date(s) of the proposed restoration works are avoided.

One draft copy of the specification will be made available for discussion and agreement with the YDNPA and/or Natural England prior to completion. Four copies of the final approved specification will then be produced, to allow YDNPA to seek quotations from approved contractors.

## **OASIS Compliance**

EDAS subscribe to English Heritage's OASIS (Online Access to Index of Archaeological Investigations) project, and all EDAS projects are fully OASIS compliant. Prior to the start of the fieldwork, an OASIS online record will be initiated and key fields completed on Details, Location and Creators forms. All parts of the OASIS online form will be subsequently completed for submission to English Heritage and the HDNPA HER. This will include an uploaded pdf version of the entire report.

## **Health and Safety, and Insurance**

EDAS will comply with the Health and Safety at Work Act of 1974 while undertaking the project. A full copy of their Health and Safety Policy is available on request.

The site is privately owned and EDAS will indemnify the landowners in respect of their legal liability for physical injury to persons or damage to property arising on site in connection with the survey, to the extent of EDAS's Public Liability Insurance Cover (£5,000,000). A risk assessment will also be produced prior to any site work.

## **Staffing and Experience**

The project will be undertaken by EDAS, who are registered as an archaeological organisation with the Institute for Archaeologists. The project will be managed by Ed Dennison, Director of EDAS.

The documentary research and collation, and archaeological survey, will be undertaken by Shaun Richardson of EDAS, supported by Ed Dennison as appropriate. CV's have already been provided. Both have some 20 years experience in non-intrusive earthwork and topographical survey, and they have undertaken numerous walkover and detailed surveys of specific monuments/buildings and of areas of historic landscape throughout the Yorkshire Dales. These surveys have included buildings of all types, and in addition to identifying a wide range of archaeological remains, detailed management strategies and recommendations have been proposed. EDAS have also surveyed a number of lime kilns, either in isolation (e.g. Stoney Woods, West Burton) or as part of larger projects (e.g. Grane Gill Quarry, Low Abbotside).

The wildlife survey will be undertaken by Dr Madeline Holloway, Director of EINC (Ecological Information Network Consultants) based in Bradford. Dr Holloway (BSc, MA, MSc, PhD) is a full Member of the Institute of Ecology and Environmental Management (MIEEM), and she currently holds a bat handler's licence, a great crested newt licence, a white-clawed crayfish licence and a barn owl licence. She has worked with EDAS on numerous archaeological and architectural surveys, including those relating to the consolidation and repair of ancient monuments (e.g. Beever and Cockber mines, Sheriff Hutton Castle, Harewood Castle, Bolton Percy gatehouse, Wharram Percy farm barns, Colburn Hall). She has also undertaken Phase 1 habitat surveys of various lead-mining landscapes, including Gunnerside Gill in the Yorkshire Dales. Dr Holloway's CV has also been provided to YDNPA on previous occasions.

The specifications for consolidation and waste removal will be drawn up by Ed Dennison of EDAS. He has produced several similar documents in the past, including consolidation specifications for lead mining remains in Gunnerside Gill and Grassington Moor; this work also included obtaining tenders from appropriate contractors, monitoring the site work, undertaking archaeological recording during the site work, and reporting on the findings.

## **Programming**

The nature of the project means that some elements will need to be completed in advance of others, as some elements are determined by, and are dependent on, other work having been completed first.

The archaeological walkover survey and building survey will be undertaken first. Although there are no particular vegetational problems, such survey work is always best done in winter months when vegetation growth and sunlight is low. It is therefore proposed that these surveys will be undertaken in September/October 2011 (subject to weather conditions and land management regimes). The documentary research will also be undertaken during the same period.

The bat surveys are best undertaken between May and August, while sub-optimal times are from September to April. The timing of the project suggests that the bat survey will be done in September/October.

The archaeological survey report will be produced in November 2011, so that appropriate data can be fed into the consolidation and other specifications. It will be hoped that the specifications could be completed, and tenders obtained, by the end of December 2011.

The above timescales are all indicative, and could be shortened or expanded if necessary. The precise programme of survey work etc will depend on liaison with the YDNPA and Natural England.

## **Monitoring**

It is understood that the fieldwork, and the project as a whole, may be monitored at periodic intervals by the archaeological staff of the YDNPA. There will also be liaison meetings to discuss the draft report and specifications before final submission.

## **Modifications**

The programme of work outlined may be modified in accordance with the professional judgement of the staff undertaking the work, insofar as the overall provisions and objectives of this methods statement will not be changed. Any variations in the project will be discussed and agreed in advance with the YDNPA and Natural England.

## **References**

English Heritage 1999 *Recording Archaeological Field Monuments: A Descriptive Specification*

English Heritage 2002 *With Alidade and Tape: Graphical and Plane Table Survey of Archaeological Earthworks*

English Heritage 2006 *Understanding Historic Buildings: A Guide to Good Recording Practice*

English Heritage 2007 *Understanding the Archaeology of Landscapes: A Guide to Good Recording Practice*

Ed Dennison, EDAS  
28 July 2011