
NORTH PENNINES ARCHAEOLOGY LTD

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**ARCHAEOLOGICAL
ASSESSMENT AND
RECORDING OF
THORNGREEN
LIMEKILN,
ALLENHEADS,
NORTHUMBERLAND**

**FOR
ALLENHEADS TRUST
LIMITED**

NY 845 466



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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

In August 2008, North Pennines Archaeology Limited were commissioned by Allenheads Trust Limited to undertake an archaeological desk top assessment and rectified photographic survey of Thorngreen Limekiln, Allenheads, Northumberland (NY 845 466) prior to the consolidation and interpretation of the Grade II listed structure.

A desk top assessment was undertaken prior to the building recording project, and this revealed that there has been a limekiln at Thorngreen since at least 1849, although this particular kiln was located on the triangular piece of land just to the west of the property 'Thorn Green'. The limekiln that is the subject of the present survey appears to have been constructed as a replacement at some point between c.1865 and 1899 possibly as a result of agricultural improvements and more efficient transport routes.

A consultation of the Historic Environment Record (HER) held by Northumberland County Council Conservation Team revealed that a majority of the known archaeological sites within a 1km radius of Thorngreen Limekiln were post-medieval in date and industrial in character.

The building survey revealed that Thorngreen Limekiln is a nice example of a later 19th century, presumed commercial, kiln which has some architectural detail, despite its utilitarian function. The kiln has double-pots, one of which has been used in the 20th century as shown by the brick lining, remains of modern brick walls on the top of the kiln, and surviving burnt lime within the drawing eyes of the eastern arch. This recent use may have been the result of increased agricultural activity following the Second World War and the introduction of the Lime Subsidy in the mid-20th century, which encouraged the use of lime on permanent grassland.

The kiln has clearly suffered some structural failure, but it appears that this is not a recent occurrence as the cracks are shown on elevation drawings dating to 1976. Rectified photographs and detailed elevation drawings, which show these structural faults, are included in the Appendix, in order to inform the subsequent consolidation works.

ACKNOWLEDGEMENTS

North Pennines Archaeology Ltd would like to thank Allenheads Trust Limited for commissioning the project.

North Pennines Archaeology Ltd would also like to extend their thanks to: Nick Best and Liz Williams of Northumberland County Council Conservation Team; and staff at Woodhorn Archives, Ashington, for their help during this project.

The archaeological assessment and rectified photographic survey was undertaken by Martin Railton and Fiona Wooler. The report was written by Fiona Wooler and edited by Martin Railton. The project was managed by Martin Railton, NPA Project Manager.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 In August 2008, North Pennines Archaeology Limited were commissioned by Allenheads Trust Limited to undertake an archaeological desk-top assessment and rectified photographic survey of Thorngreen Limekiln, Allenheads, Northumberland (NY 845 466) (Figure 1), prior to the consolidation and interpretation of the historic structure.
- 1.1.2 Thorngreen Limekiln (also known as Allenheads Slag Hill Limekiln) is a Grade II listed structure and is recorded on the County Historic Environment Record as HER ID 7090 (formerly NY 84 NW 10).
- 1.1.3 Northumberland County Council Conservation Team issued a brief for the archaeological assessment and recording of the limekiln, which was to be undertaken prior to the commencement of consolidation works¹.
- 1.1.4 The survey was carried out on 11th September 2008 by Martin Railton and Fiona Wooler.

1.2 SITE LOCATION, TOPOGRAPHY AND GEOLOGY

- 1.2.1 Thorngreen Limekiln is situated within the parish of Allendale in the Northumberland North Pennines Area of Outstanding Natural Beauty (AONB). The nearest settlement is Allenheads which is located approximately 2km to the south-east (Figure 1).
- 1.2.2 The limekiln is located just to the south of Thorn Green, on the north bank of Middlehope Burn which flows north-eastwards to join the River East Allen at Burnfoot. The structure is situated in a remote area which consists of enclosed fields and open moors. A bench-mark located on the northern end of the retaining wall for the loading ramp of the limekiln records a height of 384 metres above sea level.
- 1.2.3 The solid geology of the area consists of carboniferous limestone. Until relatively recently, limestone was amongst the most important of the bulk minerals within the north of England. It is used in cement and lime production, as road stone and railway ballast, and in powdered form for agricultural purposes. Limestone of high chemical purity was also used as a flux in the iron and steel works of Consett and Teesside².

¹ Best, N, 2008

² Taylor *et al* 1971, 92

2. METHODOLOGY

2.1 THE DESK-TOP ASSESSMENT

- 2.1.1 A desk-top assessment of the site of the limekiln and the immediate environs was undertaken prior to the on-site survey in order to provide a greater understanding of the industrial activity which was carried out at Thorngreen as well as in the vicinity. The assessment involved the consultation of documentary and cartographic sources which related to the site and its environs.
- 2.1.2 A search was undertaken of Northumberland County Council Historic Environment Record (HER) for known archaeological sites within a one kilometre radius of Thorngreen Limekiln. The locations of these sites are shown on Figure 3.
- 2.1.3 The local studies collection at Hexham Library and the Northumberland Collections at Woodhorn, Ashington were visited to gain information regarding the history of the site and its environs, including the consultation of published and unpublished material relating to mining activity in the area, agricultural activity and previous archaeological work which was relevant to the present study. Historical mapping was also consulted although this was restricted due to the lack of the relevant Ordnance Survey sheets at both Hexham Library and the Northumberland Collections at Woodhorn.
- 2.1.4 The results of the desk-top assessment are presented in Section 4 below.

2.2 THE RECTIFIED PHOTOGRAPHIC SURVEY

- 2.2.1 The aim of the building survey was to provide an accurate record of the existing structure, and to identify the origins, main phases of development and use of the building. The building survey was also to be used to inform the consolidation and restoration of the structure.
- 2.2.2 Detailed metric survey of all external building elevations was undertaken using rectified photography. These were surveyed using the Trimble 3605 Reflectorless Total Station, to form a framework for rectifying digital photographs of the building. The image rectification was undertaken using Monobild Software. The resulting rectified photographs (Figures 13 & 14) were then digitised in a CAD environment to produce stone-by-stone scale drawings of the building elevations (Figures 11 & 12).
- 2.2.3 A written record was made of all features identified during the recording of the limekiln. Both the written and the drawn records of the structure were carried out in accordance with *IFA Standards and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (2001).

2.3 THE PHOTOGRAPHIC RECORD

- 2.3.1 The photographic archive consists of the following:

- a series of 35mm black and white prints showing general views of the exterior of the limekiln and its setting,
- a series of digital views of the exterior of the limekiln and its setting, and specific details such as fittings, used within this report for illustrative purposes.

2.4 PROJECT ARCHIVE

- 2.4.1 The full archive of the desk-top assessment and rectified photographic survey has been produced to a professional standard in accordance with the recommendations in *Archaeological Archives: A Guide to Best Practice in Creation, Compilation, Transfer and Curation*³. The archive will be deposited within the appropriate local museum and a copy of the report given to the County Historic Environment Record, where viewing will be available on request.
- 2.4.2 Northumberland County Council Conservation Team and North Pennines Archaeology Limited support the Online Access to Index of Archaeological Investigations (OASIS) Project. The overall aim of the project is to provide an online index and access to the extensive and expanding body of grey literature created as a result of developer-funded archaeological work. Details of this project will be made available by North Pennines Archaeology Ltd as a part of this national project under the unique identifier **northpen3-48387**.

³ Brown, D.H, 2007

3. PREVIOUS WORK

3.1 PREVIOUS BUILDING SURVEYS

- 3.1.1 In 1976, the Department of Adult Education at the University of Newcastle undertook a survey of the limekiln and produced elevations, plan and sectional elevation of the two-pot, two-arch commercial limekiln. The original drawings are housed in the Northumberland Collections at Woodhorn under Reference NRO 2038/RD 33-50, which also includes elevations and plans of other limekilns in the area, such as Swinhope Row Lime Kiln, Black Cleugh Lime Kiln and Intakehead Lime Kiln, as well as some farm and industrial buildings located in Northumberland. The Thorngreen Lime Kiln is referred to as ‘New Lime Kiln’ on these drawings as opposed to the old lime kiln formerly located just to the south of the property of Thorn Green. The drawing for the south facing, or main, elevation which includes the two arches shows that in 1976 some failure had existed in the masonry above the eastern draw arch. A small building is shown on the location plan to the south of the present kiln against a boundary wall; however neither the boundary wall nor the small building were extant at the time of the present site survey.
- 3.1.2 During 2000, Lancaster University Archaeological Unit conducted a survey of lime kilns in the Northumberland and North Pennines Area of Outstanding Natural Beauty (AONB), mostly in an area of Tynedale concentrated north-west of Alston. The survey was commissioned by Northumberland County Council as a tool for management and to help in decisions on grant allocation⁴. The limekiln at Thorn Green was included within the survey, which described it as a *‘double-pot kiln, probably built to burn continuously with the pots running in alternation. A double-pot kiln would be more expensive to build and operate, and presumably reflected considerable demand for its product in the mid-nineteenth century when it was built’*⁵. Thorngreen Limekiln was the only one visited during the survey which had more than one pot. It was also believed to have been a later example and was considered to be well-preserved.

⁴ LUAU 2000

⁵ *Ibid*, Page 18

4. HISTORICAL CONTEXT

4.1 PUBLICATIONS

- 4.1.1 The history of Allendale, the parish in which the small community of Allenheads is located, is inextricably linked with lead mining. Lead was one of the very first metals to be discovered and used, with small pieces known from pre-Roman burials, but commonly used during the Roman period in Britain for pipes and cisterns, as sheet lead roofing and baths, and for coffins. During the medieval period lead was only used in relatively small quantities for roofing churches and some other buildings. Its use increased from the late 16th century with the building of great houses, for roofing, gutters and downpipes, for water storage cisterns and piping, and in window frames. The great age of British lead mining, however, was the 18th and 19th centuries, when Britain was the world's main producer and developed new techniques of mining and smelting⁶.
- 4.1.2 Unlike iron ore, which can be found in most parts of England, lead ore occurs in mineral veins and only in a limited number of mineralised areas. It tends to be confined to a few geological horizons, nearly all occurring in the Carboniferous series, which form the backbone of the upland regions of the Pennines⁷.
- 4.1.3 The earliest records of lead mining in Hexhamshire date from the 13th century, when as early as 1230 Archbishop Grey leased a mine, although the exact location is not known. In 1518, Thomas, Lord Dacre, leased the Hexhamshire lead mines for 99 years, whilst the earliest record for lead mines in the Allendales is 1547, when a mine in East Allendale was farmed out to a John Shele. During the 17th century several surveys were undertaken of lead mines in East Allendale, and in the same century the parish of Allendale, including its mineral rights, passed to the Blakett Beaumonts⁸.
- 4.1.4 The earliest known method of smelting lead was described by Mr Westgarth Forster: *'Piles of stones were placed round a fire, on the western brow of an eminence (as that is the most prevalent wind of the north), as near as possible to the mouth of the mine; these stones were so placed as to leave certain holes or openings, to answer both the purpose of flues and the admission of the air; the fuel was supplied from the neighbouring woods, which on that account have obtained the name of Hag Hill or Hag Bank....this method may be considered as the first essay of smelting lead ore'*. These primitive constructions are known as *boles* or *bayle hills*, and Hinds notes that in the late 19th century one such example was still visible on the left bank of the East Allen, just below the Allen smelting mill⁹.
- 4.1.5 At Allenheads, the earliest workings are probably by the side of the Allenheads to Rookhope road. In 1684, Blakett drove the Haugh Level, which started from the side of the river below Dirt Port and stretched for a distance of one mile. Water pumped out of the mine, together with the water used to drive the four waterwheels within the

⁶ Willies, L, 1982, Pages 3-4

⁷ Raistrick, A and Jennings, B, 1965, Page xiii

⁸ Fairburn, R.A, 2000, Page 10

⁹ Hinds, A.B, 1896, Page 9

mine, was discharged down the level to the River East Allen. This is believed to be one of the earliest long adit-levels in the region¹⁰. Allenheads Mill was probably built by Blakett c.1700 to smelt his Allendale ores. In 1792 it had four ore-hearths, by c.1806 the mill had a roasting furnace, three ore-hearths and a slaghearth. The mill closed in 1870 and was dismantled soon after. All that remains on the site now are the ruins of the horizontal flue and the remnants of two peat houses, one of which has been rebuilt as a barn¹¹. The lead-dressing floor at Allenheads (NY 803 455) was described by Atkinson as probably one of the most prosperous of the 19th century lead mining sites in the north of England¹².

- 4.1.6 In the early 19th century, the inhabitants of Allendale parish were described as being thinly scattered, with many of them being employed in the lead mines. They were noted to *'possess a house and a small plot of land, with the right of common, which privilege renders their circumstances more easy and comfortable than those of the miners of adjoining parishes'*¹³. Philipson refers to some miners having a small farm where they kept from one to three head of cattle, a few sheep, with a right of common, and a pony to work on the farm and to ride to market¹⁴.
- 4.1.7 Writing in 1855, Whellan described Allenheads as: *'the highest inhabited place in England, and situated about 8 miles south of Allendale, [it] was formerly a distinct parish and in its neighbourhood are several lead mines, in the working of which the inhabitants are principally engaged. The surrounding country is extremely desolate and mountainous'. 'This parish contains very extensive lead mines, the principal of which are at Coalcleugh and Allenheads, where there are several levels, nearly a mile in length, excavated to communicate with the mines under the hills. There are also several works for grinding and washing the lead ore, and for separating it from the stone, or spar, to which it adheres. From these cleaning houses, the lead is carried to the smelting mills, where it undergoes the process of refining, and the silver, which is generally found in greater or less quantities, is extracted. The hills, by which this dale is surrounded, abound with grit-limestone of a dark blue colour and the mountain of Kilhope Law, which extends from Coalcleugh to the extremity of the county, may be distinctly perceived from the sea at Tynemouth Bar, a distance of 50 miles'*¹⁵. The lead from Allenheads mines *'at one time yielded one seventh of the total amount produced in the kingdom'*; however, in 1886 the industry was described as being in a *'very depressed state'*¹⁶.
- 4.1.8 The transport of iron ore to the smelting mills, prior to the first half of the 19th century, was undertaken by ponies or 'galloways'. This was the only means of carrying lead ore and coal over the moors due to the lack of proper roads. The cost of transport rose during the winter when the ground was soft, as each pony had to carry a lighter load which meant more ponies were required. Coal for smelting the iron ore at Allenheads was brought in from Greymare Colliery located to the east¹⁷. In the article *'Lead*

¹⁰ Fairburn, R.A, 2000, Page 12

¹¹ *Ibid*, Page 37

¹² Atkinson, F, 1974, Page 226

¹³ Parson and White, 1828, Page 400

¹⁴ Philipson, R, 2006, Page 11

¹⁵ Whellan, W, 1855, Pages 817 and 820

¹⁶ Bulmer, T.F (Ed), 1886, Page 385

¹⁷ Coombes, L.C, 1958, Pages 248-249

Mining in East and West Allendale, Coombes includes an illustration showing the roads built around 1828, and the possible routes of earlier carrier ways and Galloway routes. The modern road from Nenthead, past Coalcleugh to Allenheads appears to be shown as one of these earlier routes, and this is the road beside which Thorngreen Limekiln is located. From the 1820s roads were constructed linking Weardale (to the south) with Allenheads, and Coalcleugh to Thornley Gate, amongst others. This construction of infrastructure allowed for the break down of the isolation of these mining communities¹⁸.

- 4.1.9 The village of Allenheads grew as a result of lead mining in the area. By the mid-19th century the industry reached its peak resulting in a bustling community with shops, churches, sports clubs, agricultural shows and literary societies. In 1851, the population was 759 (137 families). By 1870, however, cheap imports of lead caused a rapid decline, and many miners emigrated to the colonies. Following the closure of the smelt mill in 1870, Swinhope Mine closed in 1872¹⁹, although Allenheads mine lasted until 1896. In 1990, the population of the village was under 200²⁰. There was a brief respite in the 1970s when British Steel re-opened the Beaumont Mine in search of fluorspar; however by 1980 the last 22 men were laid off²¹.
- 4.1.10 The closure of the mines and the collapse of the lead trade deprived most of the local population of their livelihood in an area where other forms of employment were few and absorption into agriculture was limited²². The high altitude and poor soil has historically meant that little could be grown in the form of crops; consequently sheep farming and beef rearing were more suited to the terrain. Bailey and Culley, writing in 1794 noted that the western part of Northumberland (excepting a few intervening vales) was *'an extensive scene of open, mountainous district, where the hand of cultivation is rarely to be traced'*²³. Hinds, however, appears to suggest that at least some land was formerly ploughed in Allendale, as he refers to the abandonment of tillage land to grass being stimulated by the closing of the lead mines and the consequent reduction of the rural population²⁴. It is possible, however, that he is referring to land north of Allenheads, where the author has observed the shallow earthworks from ploughing in fields on both sides of the River Allen during a site visit to The Hagg, south of Allendale.
- 4.1.11 It has already been noted that many miners also had smallholdings. Dixon observes that around Allenheads, many of these part-time farmers had limited grazing rights or 'stints' in the enclosed pastures or allotments of Fawside, Byrehope, West End and the Park. It was not necessarily possible, however, to rely solely on agriculture to replace income from mining, and many smallholders turned to other part-time work as shown in trade directory evidence, for example in an 1886 directory, there are listed names with the description 'farmer and dealer in meal', 'farmer and blacksmith', and 'farmer and shoemaker'. The only means of safeguarding agriculture in the area around Allenheads was the merging of holdings into larger units, thereby leaving former

¹⁸ Coombes, L.C, 1958, Pages 258-260

¹⁹ Dixon, H, 1974, Page 70

²⁰ Allenheads Trust 1990

²¹ Derounian, J (Ed), 1992, Page 34

²² Coombes, L.C, 1958, Page 269

²³ Bailey, J and Culley, G, 1794, Page 5

²⁴ Hinds, A.B, 1896, Page 13

dwelling houses to fall into decay²⁵. Dickinson writing in 1884 refers to the annual sheep and cattle fair at Allenheads, held on the 3rd Friday in September; this provides some indication of the type of agricultural economy in existence in the area at the end of the 19th century.²⁶

- 4.1.12 In 1792 an act of parliament was obtained for ‘enclosing, allotting and stinting’ Hexhamshire and Allendale Commons, which contained around 40, 231 acres as well as for laying out public roads and opening quarries on this extensive tract ‘a 16th of which was awarded to the possessors of the manorial privileges as a compensation for their right to the soil, and for their consent to division and enclosure of these wastes’²⁷. Pawson noted that a distinctive feature of the Allendale and Hexhamshire areas was the ‘stinted’ pastures, or grazing rights on the common grazing. A stint is a grazing unit of the common land on which up to five adult sheep may be grazed and extending to an area of between five and seven acres. The farms in the area, certainly in the 1960s, still possessed many stints (which were often indicated in the letting or sales particulars) and these could be bought or rented from other stint occupiers²⁸.
- 4.1.13 One distinctive feature of the area around Allenheads is the drystone walls of the field boundaries and sheep folds. Bailey and Culley noted that the advantages of enclosing land: ‘principally arise from separating lands of different qualities, which can, by these means, be employed in such culture, or depastured by such stock, as the occupier thinks most suitable; and, where sheep are kept, they feed with more facility and readiness, being freed from the whims of the shepherd and the teasings of his dog; and, be separating the dry ground from the wet, a stock-master has it more in his power to avoid that fatal malady, the rot’²⁹. Bailey and Culley also noted the advantages of spreading lime on fields, not just to encourage the growth of cereal crops, but also to produce better quality grass for pasture. Writing in 1794 they noted that the main way of burning lime in Northumberland was in a draw-kiln, in the form of an inverted cone, with two or three vents for drawing out the lime, and admitting air. On the land, the burnt lime would have been laid in heaps of three or four cart-loads, and as soon as the clods were ‘fallen, slaked or reduced to the state of quicklime, it is spread evenly upon the land, and harrowed and ploughed in as soon as possible after’³⁰.
- 4.1.14 To create a product which can be spread on agricultural land as a fertiliser, limestone had to be burnt to produce quicklime, which was subsequently mixed with water to produce slaked or hydrated lime. This was undertaken in stone-built lime kilns, a distinctive feature of the North Pennines. Lime kilns consist of inverted cone into which alternate layers of limestone and fuel were placed. Once lit at the base, the fire gradually moves up the inside of the kiln and the burnt lime is drawn out of the bottom. As well as being used as a fertiliser, quicklime could also be utilised, for example, in the construction of buildings as it could be slaked with an excess of water to form lime putty; it was used as a disinfectant; as a flux in the iron and steel

²⁵ Dixon, H, 1974, Page 71

²⁶ Dickinson, G, 1884, Page 18

²⁷ Whellan, W, 1855, Page 817

²⁸ Pawson, H.C, 1961, Page 83

²⁹ Bailey, J and Culley, G, 1794, Page 62

³⁰ *Ibid*, Page 133

industries and as a bleach in papermaking. But the main function of lime kilns was the production of lime for fertiliser. The term *liming* generally refers to the application of calcium compounds to the soil. Calcium is essential for plant growth, but the principal effect of liming is to neutralise soil acidity³¹. The earliest form of lime kiln in the north Pennines was the ‘sow’ or ‘clamp’ kiln, which were little more than a large hollow in a hillside. Clamp kilns are known to have been in use in the area until the end of the 19th century, but according to Robertson there are no known remains in the area³². Many of the lime kilns which survive were constructed by individual farmers to burn limestone for use on their own land. More formally designed kilns are visible by the side of country lanes; these were built by landowners for their tenants’ use and for commercial sales. Robertson refers to the lime kiln at Allenheads, as one such example³³. In his publication *Limekilns of the North Pennines*, Robertson includes photographs of Thorngreen Limekiln, and on one photograph an axle with pulley wheels is shown fixed close to the top of the interior of the right-hand draw arch³⁴.

- 4.1.15 The siting of a limekiln was important; it needed to be close to the source of the raw material, i.e. limestone, and source of fuel. Transportation of the finished product needed to be considered, certainly if it was being sold commercially, and they may often have been located close to water so that the lime could be slaked on site, although the LUAU survey suggests that this was not apparently vital to the operation³⁵. Wind direction may also have been a consideration in the orientation of the main elevation which contains the draw arch or arches.
- 4.1.16 According to Robertson the limekilns of the North Pennines are typical of those found anywhere in the country. The design was in widespread use from around the mid-18th and was basically the same 200 years later. Documentary sources and contemporary descriptions of the industry are sadly rare, consequently many limekilns are difficult to date because of the continuity of building methods, materials and design³⁶. Atkinson includes Thorngreen Limekiln in his gazetteer of industrial sites in north-east England. He described it as: *‘A pair of lime kilns, probably of the early 19th century, but showing signs of fairly recent use, stands adjoining the road to the west of Allenheads. Above, a cutting runs back to a small quarry alongside the road. The kilns stand a few feet above the stream. This is an interesting construction and one may note the batter of the lower part of the stonework and the string course near the top. The two entrances to the lower part of the kiln are in good condition and a semi-circular vertical pillar can be seen as strengthening between the pair of grates’*³⁷.
- 4.1.17 As well as the stone-built limekilns and drystone walls, isolated houses are also a feature of the area around Allenheads, many of which have been abandoned possibly as a result of the collapse of lead mining, or due to small farms taking up land to create a larger unit as already noted. Many of these isolated houses would have been occupied by miners; however there were dwellings in existence in the Allen valley before the height of the lead mining industry. Shielings and bastle houses have been

³¹ Williams, R, 1989, Page 9

³² Robertson, A, 1999, Page 11

³³ *Ibid*, Page 1

³⁴ *Ibid*, Page 12

³⁵ LUAU, 2000, Page 7

³⁶ Robertson, A, 1999, Page 5

³⁷ Atkinson, F, 1974, Page 227

identified through the work of the RCHME³⁸ and Peter Ryder (1996); shielings being the dwellings of pastoral people during seasonal transhumance, and the bastles being defensible structures inhabited by people along the Scottish border. The large parish of Allendale contains around 40 bastles or allied building types³⁹, however they appear to be located north of Allenheads along the Allen valley, with none noted in either publication at Allenheads itself or in the immediate vicinity although this does not mean that they don't exist, later remodelling of some properties may hide earlier fabric. The nearest bastle appears to be located at Knockburn, some 4km to the north of Thorngreen Limekiln. Bastles generally date to the late 16th or first half of the 18th century, although Annat Walls south of Alston is a late example with a date stone of 1707⁴⁰.

- 4.1.18 One perhaps unexpected event revealed during the desk-top assessment was the crashing of an RAF Hurricane in 1941 which flew into the ground just north of the Allenheads to Nenthead Road, a short distance past the cattle grid: *'the wreckage was strewn over the fell on the south side of the road. Sergeant Band, the pilot, was killed instantly. His parents later visited the area and erected a small memorial to their son at the spot where he was killed'*. In the same year a Luftwaffe aircraft released a bomb which landed on the north side of the Ninebanks Road, just before the drop down to Hawkshead Burn, which produced a crater 30ft in diameter and 2ft deep⁴¹.
- 4.1.19 Writing in 1961 with reference to the Allendale and Haltwhistle areas, Pawson noted that during the Second World War, some land was ploughed but shortage of equipment, the altitude and comparatively short growing seasons were not favourable to cropping other than oats and green crops. He did note, however, that one of the most beneficial changes that had occurred within the last 20 years (i.e. between c.1940 and 1960) had been the increased use of lime encouraged by the Lime Subsidy both on permanent grassland and that ploughed for re-seeding. The main source of agricultural income (in 1961) was observed to have been from milk production with poultry and sheep⁴².

³⁸ Ramm, H, *et al* 1970

³⁹ Ryder, P, 1996, Page 13

⁴⁰ *Ibid*, Page 4

⁴¹ Pears, B, 1993, Pages 2-3

⁴² Pawson, H.C, 1961, Page 82

4.2 CARTOGRAPHIC SOURCES (MAPS)

- 4.2.1 The collections of maps at Hexham Library and Woodhorn were examined for any which were pertinent to the study area. Neither Hexham Library nor Woodhorn had either the 6" or 25" scale sheets of the First Edition Ordnance Survey maps. Due to the high cost of obtaining copies of maps from Woodhorn, it was found necessary to select those cartographic sources which best showed the site of Thorngreen Limekiln and its environs.
- 4.2.2 The earliest map consulted during the desk-top assessment was Armstrong's map of Northumberland 1769. The area showing Allenheads and Allendale is reproduced in Figure 4. A lead mill is annotated to the north-west of Allenheads and some properties are shown to exist at Thorn Green, although the reliability of this map with regard to individual properties needs to be considered. No lime kiln is marked at Thorngreen, however the scale of this map does not allow for smaller structures to be necessarily shown.
- 4.2.3 Fryer's Map of Northumberland produced in 1820 is at a small-scale and is therefore not useful in identifying individual properties or showing the location of lime kilns which may have existed at this date. It does, however, annotate Scotch Meadows, as well as Middlehope and Pryhouse, located to the south-west of the site of the Thorngreen Limekiln. The lead mills and chapel to the north of Allenheads are shown, as well as properties at Dirt Pot. The triangular piece of land which is located immediately to the west of Thorn Green appears to be shown (Figure 5).
- 4.2.4 The earliest large-scale map consulted was the Allendale Tithe Map of 1849 (Figure 6). A lime kiln is shown located within the triangular piece of land to the west of Thorn Green. Properties at Pryhouse and Middlehope are shown to the west, either side of Middlehope Burn, as well as the location of Burnfoot and the Smelt Mill. There is no lime kiln annotated in the location of Thorngreen Limekiln.
- 4.2.5 Figure 7 is an extract from a plan of Allendale Parish produced in 1861, from an *Actual Survey made by T J Bewick, J Whitfield, and W Sparke, under the direction of T Sopwith, Chief Agent*. The properties of Scotch Meadows, Thorngreen, Low Scotch Meadows and Slag Hill are clearly marked, and the lime kiln on the triangular piece of land continues to be shown in the same location. On the opposite side of the road to the lime kiln, hatching appear to represent a Thorngreen quarry. A small square structure is shown on the north bank of Middlehope Burn; this may be the sheep fold which is shown on later maps and is still extant.
- 4.2.6 The 6" scale Second Edition Ordnance Survey map of 1899 has been included to show the extent of the industrial activity which has taken place in and around Thorngreen Limekiln, although many of the workings are by this date marked as 'old' (Figure 8). Although it is not marked, the limekiln at Thorngreen, which is the subject of the present survey, now appears to be shown along with a track way of some kind extending from the quarry to the north to the top of the kiln. The properties to the west and south-west of the limekiln, such as Scotchmeadows, Low Scotchmeadows and Coalburn, are linked by footpaths, with a further footpath leading from the top of the limekiln towards Low Scotchmeadows.

- 4.2.7 The larger-scale version of the Second Edition Ordnance Survey map (25”) clearly shows the limekiln, which is labelled, along with Thorngreen Quarry and the rail track which leads from the quarry to the top of the kiln (Figure 9). A boundary appears to be shown just to the west of the limekiln, along with a small structure. The sheep fold is also marked on this map. The older limekiln located on the triangular piece of land is no longer shown; therefore it is possible that Thorngreen Limekiln replaced this earlier structure, albeit in a different location.
- 4.2.8 The quarry, limekiln and associated rail track all still appear to be operating in the 1950s, as a map of 1958 shows all these features, none of which are marked as ‘old’ (Figure 10).

4.3 HISTORIC ENVIRONMENT RECORD (HER)

- 4.3.1 The HER database maintained by Northumberland County Council at Morpeth was consulted to provide information on known archaeological sites within a 1km radius of Thorngreen Limekiln. 32 sites were identified and these are listed in Appendix 1 and their locations shown on Figure 3. Of these 32 sites, only one may have date to the medieval period (AD 1066 to 1540), which is Site 18 Dirt Pot, for which there is documentary evidence of settlement at the site.
- 4.3.2 The remainder of the HER sites date to the post-medieval period (AD 1541 to 1900), although it is possible that some of the quarrying or mining sites may have been in use much earlier but any evidence for this may have been obliterated by later workings.
- 4.3.3 It is interesting to note that 12 of the HER sites are quarries, highlighting the industrial nature of the area around Thorngreen Limekiln. Many of these quarries are marked on historical Ordnance Survey maps (See Figures 8 and 10 for example). By 1899, many of the quarries around Allenheads are annotated on the Ordnance Survey maps as ‘old’.

5. RESULTS

5.1 INTRODUCTION

5.1.1 Thorngreen Limekiln is located on the north side of the Middlehope Burn, with its main façade facing south-east. The road from Allenheads to Nenthead is located immediately to the east, crossing the burn over Wainford Bridge. The ground level rises steeply from the burn towards the property of Thorn Green (Plate 1). The site of Thorngreen Quarry was obvious, although the ground immediately south of the quarry, and which presumably formed part of the quarry site, appears to have recently been ploughed.

5.2 THE LIMEKILN

5.2.1 Thorngreen Limekiln is constructed of coursed and well-dressed masonry blocks, standing to a height of *c.* 7m, and is rectangular in plan. The main façade has two draw arches, both with segmental heads constructed from 32 ‘voussoirs’, measuring *c.* 2.2m in height and 2m wide (Plate 2). The edges of the south-east elevation taper outwards towards the bottom, this gives the structure architectural detail but it is presumably a practical feature which gives the kiln stability. Along the top of the limekiln are the remains of a string course constructed of thinner, regular sandstone blocks, which also provides a hint of architectural detail. The masonry of the limekiln has clearly suffered some failure, as shown by the blocks which have dropped over the right-hand (east) draw arch. Along the base of the south-east elevation of the kiln is a plinth of two courses which measures *c.* 47cm in height in the section between the two draw arches (Plate 3).

5.2.2 The two arches in the south-east elevation, known as the draw arches, protected the ‘eyes’ from the weather. These ‘eyes’ are small apertures at the base of the kiln which were used to start the fire to burn the lime, and from which the resulting material was extracted (Plates 4 and 5). The arches have barrel-vaulted ceilings of well coursed masonry. At the rear of each arch the two draw eyes have iron frames that remain *in-situ* (Plate 6). Between each of these draw eyes is a semi-circular columns of masonry which presumably provided structural support for internal dividing walls at the base of the pots (Plate 6). Above each of the draw eyes are small, square stoke holes, which would have allowed the lime burner to ‘riddle’ or stir the burning lime to prevent blockages (Plate 6).

5.2.3 The draw eyes in the right-hand arch display evidence of fairly recent use, as the remains of burnt lime is visible at the base of each eye. The eyes measure approximately 46cm square; this measurement was taken from one of the eyes in the left-hand arch which was free of recently burnt lime. Concrete blocks and timber remain *in-situ* at the entrance of this archway, possibly relating to some form of support for containers into which the burnt lime could be transferred, or the remains of a slaking pit. In the side walls of this archway are wood-lined holes which appear to

relate to a former pulley that is shown on a photograph included in Robertson's publication *Limekilns of the North Pennines*⁴³ (Plate 7).



Plate 1 – Thorngreen Limekiln as seen from the opposite side of Middlehope Burn looking north-west towards the property of Scotchmeadows

⁴³ Robertson, A, 1999, Page 12



Plate 2 – South-east elevation (Scale = 2m)



Plate 3 – Section between the two draw arches showing plinth at base of elevation (Scale = 1m)



Plate 4 – Left-hand draw arch which protects the two draw eyes (Scale = 2m)



Plate 5 – Right-hand draw arch showing the two draw eye and modern concrete blocks in the foreground (Scale = 2m)



Plate 6 – Detail of the two draw eyes with iron frames, the semi-circular support for the pot and the remains of the most recent lime burning (Scales = 1m each)



Plate 7 – Right-hand draw arch, showing concrete blocks and wood-lined hole for former pulley (Scale = 2m)

- 5.2.4 The south-west elevation faces the valley of Middlehope Burn. This elevation clearly shows how the kiln had been constructed into a slope (Plate 8). Only two of the rectangular stones which formed part of the string course at the top of the kiln remain. At the base of this elevation is a square block of masonry, which may have been part of this string course. This block still retains pieces of lead set in grooves on each side which presumably have been used to fix the block to the ones either side along the course (Plate 9).
- 5.2.5 The north-east elevation retains most of its string course at the top of the wall. Large cracks are also visible in this elevation highlighting the need for consolidation work, which has been recommended since at least 1989 (HER 7090) (Plate 10). To the northern side of this elevation is a vertical construction break between the main kiln structure and the masonry retaining wall, which has partly collapsed (Plate 11).
- 5.2.6 The retaining wall held back the ground which formed the loading ramp, over which limestone from the quarry to the north was transported into the two pots in the top of the kiln (Plate 12). At one time a short tramway, within a cutting, was located along the top of this ramp (HER 7090) however there was no evidence for this surviving at the time of survey. A square, brick-built pier remains on the top of the retaining wall; which appears to have formed part of a safety fence for the most recent use of the kiln (Plate 13). On one of the blocks that make up the retaining wall, there is a bench mark (Plate 14).
- 5.2.7 The top of the limekiln could be accessed via the ramp already noted. At the time of the survey the pots were fenced off for safety reasons. The precarious nature of the masonry and the open pots meant that photography was slightly restricted. It was possible to note, however, that the limekiln has two oval pots (Plate 15), making this a unique example amongst those surveyed by LUAU in Northumberland and the North Pennines AONB. According the LUAU survey, a double-pot kiln would have been expensive to build and operate and presumably reflected the considerable demand for the product⁴⁴.
- 5.2.8 The eastern pot, still retains its lining which consists of brick laid with the headers (short end of brick) facing inwards (Plate 16). This brick lining presumably relates to the last phase of lime burning undertaken in the 20th century. It would appear that a short wall existed around the top of this pot constructed of brick and concrete, although only a small section remains between the two pots (Plates 15 and 16).
- 5.2.9 The western pot has clearly not be used as recently as the one to the east, as little remains of an internal lining, although the short brick wall already noted does appear to also have encircled the top of this pot, possibly during the kilns most recent use for safety purposes (Plate 17).
- 5.2.10 The pots of a limekiln were loaded with alternate layers of limestone, which had been broken into manageable lumps (usually about 9” cubes), and coal, which were fed into the top of the pot and lit from the eyes below. The mixture would burn for about four or five days, following which the lime would be raked out from the eyes and the ‘clots’ loaded directly onto carts for spreading on the fields. If wood had been used as

⁴⁴ LUAU, 2000, Page 18

a fuel, the ash (or potash) would be mixed with the lime, however this was not seen as a disadvantage for agricultural use⁴⁵.



Plate 8 – South-west elevation (Scale = 2m)

⁴⁵ Robertson, A, 1999, Page 7



Plate 9 – Dislodged sandstone block with the remains of lead set in grooves either side (Each red and white section of scale measures 20cm)



Plate 10 – North-east elevation showing structural defects (Scale = 2m)



Plate 11 – Vertical construction break between the kiln (left of photograph) and remains of retaining wall (Scale = 2m)



Plate 12 – View looking south from the road showing the level ramp leading to the top of the limekiln and the retaining wall



Plate 13 – One remaining brick pier along the top of the retaining wall which presumably relates to the more recent use of the kiln as a safety fence (Scale = 2m)



Plate 14 – Bench mark on one of the masonry blocks which make up the retaining wall of the loading ramp (Scale = 1m)



Plate 15 – View facing south-west showing the two pots in the top of the kiln. Note the brick-lining of the pot in the foreground and the remains of a modern brick and concrete wall between the two (Scale = 1m)



Plate 16 – View looking south-west of eastern pot showing the brick lining (Scale = 1m)



Plate 17 – View looking north-east of the western pot

- 5.2.11 The northern bank of Middlehope Burn, immediately to the south of the limekiln, was noted to consist of layers of slag and waste from the lime burning operations (Plate 18). A metal pipe protrudes from this bank; this was presumably used for drainage of the area in front of the draw arches (Plate 19).
- 5.2.12 To the west of the limekiln is a square structure consisting of short walls (the highest section presently standing to a height of *c.* 1.60m) with a single door in the south-west elevation (Plate 20). This is characteristic of a sheepfold, and it would appear that this particular example is shown on the 1861 map of Allendale Parish (Figure 7) consequently it pre-dates the limekiln. It is noticeable that the main elevation of the limekiln and the entrance to the sheepfold both face south-east suggesting that this was away from the prevailing winds.
- 5.2.13 On the opposite bank of Middlehope Burn, immediately to the south of Thorngreen Limekiln, a short section of stone lined channel was observed measuring approximately 40cm in width (Plate 21). The function of this channel is unclear, this was the only surviving section that could be observed, and it is not shown on historical Ordnance Survey mapping. It is presumed that it served as some form of drainage; however it does not appear to be related to the limekiln itself.



Plate 18 – View looking north-west from the south side of Middlehope Burn showing the stratigraphy of waste material from working of the kiln (Scale = 2m)



Plate 19 – View looking north-east showing the metal pipe protruding from the north bank of Middlehope Burn



Plate 20 – Remains of a sheepfold located to the west of Thorngreen Limekiln (Scales = 1m each)



Plate 21 – Section of stone-lined 'drain', south bank of Middlehope Burn (Scale = 1m)

6. CONCLUSION

- 6.1 The siting of limekilns was dependant on several factors; a good supply of limestone, close to a source of fuel, the existence of an earthen bank into which the structure could be constructed, availability of local labour force, good transport routes and close to a source of water to allow for slaking on site, although the LUAU survey has suggested that this was not always necessary⁴⁶. The construction of Thorngreen Limekiln appears to have considered all of these factors. The kiln is located immediately to the south of a quarry, which appears from cartographic sources to have existed prior to the construction of the kiln as shown on Figure 7, although presumably at this date it would have served the earlier kiln located just to the west of the property known as Thorngreen. Coal was available locally, as Robertson notes that in the North Pennines the regular strata of limestone/shale/mudstone/coal meant that a fuel supply was generally always close to hand⁴⁷. There would have been a supply of local labour, possibly farmers who burnt lime when farm work was relatively slack or roads were passable, or lead miners who may have worked the kilns 'in the summer months as a healthful change from their underground labours'⁴⁸. The siting of limekilns close to a water supply does not always appear to have been necessary, the relationship may have more to do with the need for a bank into which a kiln could be constructed. The earlier kiln just to the north, it must be noted, was not located beside a water supply. Thorngreen Limekiln is also situated beside the road from Allenheads to Nenthead, allowing for easier transportation of the burnt lime.
- 6.2 Thorngreen Limekiln was, according to cartographic evidence, constructed at some point between c.1865 and 1899. The LUAU survey suggested that purpose-built continuous kilns usually dated from the early decades of the 19th century when demand for lime was at its highest. Thorngreen Limekiln is referred to as an example of a double-arched kiln constructed by a large estate during this period, with Harsondale cited as another example⁴⁹. It is clear, however, from historical maps that Thorngreen Limekiln was constructed in the latter half of the 19th century, possibly due to more efficient road systems and the railways.
- 6.3 From the survey of the limekiln it is apparent that at least one of the pots has been in use relatively recently, as shown by the remains of burnt lime in the draw eyes and modern brickwork at the top of the kiln. This recent activity may have been due to the introduction of the Lime Subsidy in the mid-20th century and the need to bring more land into cultivation following the Second World War.
- 6.4 There was no evidence at the time of survey for the track way which linked the quarry to the north and the top of the limekiln, or for any form of track way at the base of the kiln leading to the road. There was also no evidence for the former boundary and small structure, which may have been a lime burners shelter, shown immediately to the west of the kiln on the Second Edition Ordnance Survey map of 1899 (Figure 9).

⁴⁶ LUAU, 2000, Page 7

⁴⁷ Robertson, A, 1999, Page 7

⁴⁸ Atkinson, F, 1974, Page 103

⁴⁹ LUAU, 2000, Page 9

- 6.5 Thorngreen Limekiln, with its twin pots, is regarded as an unusual example in the AONB, its listed status reflecting this. The kiln is constructed of well-dressed and coursed masonry, which along with the string course, gives the structure an architectural quality. Many of the surviving limekilns in the North Pennines are one-pot buildings used for small-scale lime burning for use on a single farmstead.
- 6.6 It is interesting to consider how the kilns must have looked whilst in operation, in particular when the lead mining and associated processes were active in the 19th century. Although lead mining and lime burning were not directly related, an active limekiln would have added to the industrial nature of the landscape by the smoke rising from the kiln pots, and from the smell and waste.
- 6.7 Limekilns are a visible reminder of the industrial past and of the agricultural practices which shaped the landscape of the North Pennines. As noted in the LUAU survey, limekilns can form key points of interest for tourists and the consolidation of the kilns for preservation and the erection of information boards can provide a valuable asset to the tourist economy of this area of Northumberland.

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APPENDIX 1: HER SITES

SITE NO.	HER ID	NAME	BRIEF DESCRIPTION	GRID REF	GENERAL PERIOD
1	7090	Allenheads Slag Hill Limekiln	Large limekiln, not shown on 6" OS 1865 map	NY 84550 46617	Post Medieval
2	7097	Thorn Green Limekiln	Grassy mound to east of Thorn Green quarry	NY 8455 4678	Post Medieval
3	7101	Bridge 100m south of Burnfoot	Grade II listed building, late 18 th or early 19 th c	NY 8496 4685	Post Medieval
4	7149	Quarries	Quarries	NY 8371 4643	Post Medieval
5	7150	Thorngreen Quarry	Limestone quarry with kiln	NY 8449 4675	Post Medieval
6	7163	Quarry	Quarry	NY 83984737	Post Medieval
7	7164	Quarry	Quarry	NY 8394 4723	Post Medieval
8	7171	Quarry	Quarry	NY 8399 4580	Post Medieval
9	7172	Quarry	Quarry	NY 8435 4586	Post Medieval
10	7174	Quarry	Quarry	NY 8371 4658	Post Medieval
11	7188	Peasmeadows Cottage ruin to south	Extended bastle, Grade II listed building, late 16 th or early 17 th c, remodelled in 19 th c	NY 85103 47158	Post Medieval
12	7193	Burnfoot Cockpit	Located by an early hollowed track and the River East Allen	NY 850 469	Post Medieval
13	7197	Dam and Sluice	Shown on OS 6" 1 st Edition 1865	NY 852 470	Post Medieval

SITE NO.	HER ID	NAME	BRIEF DESCRIPTION	GRID REF	GENERAL PERIOD
14	7212	Dam	Shown on OS 6" 1 st Edition 1865	NY 8507 4691	Post Medieval
15	7222	Quarry	Shown on OS 6" 2 nd Edition 1899	NY 8514 4648	Post Medieval
16	7223	Quarry	Shown on OS 6" 2 nd Edition 1899	NY 8511 4682	Post Medieval
17	7225	Quarry	Shown on OS 2 nd Edition 1899	NY 8516 4583	Post Medieval
18	7250	Dirt Pot	In a survy of 1547 of the manorof Hexham a tenement called <i>Dirtpotsheelee</i> is listed. There was a lead smelting mill at Dirt Pot	NY 85 46	Medieval Post Medieval
19	7251	Allenheads Lead Smelt Mill and Flue	Built by the Blacketts in the early 18 th c and by 1821 had 3 ore hearths, 1 roasting furnace and 1 slag hearth in operation. Mill closed in 1870	NY 8504 4641	Post Medieval
20	7257	Dodd Reservoir	Shown on 1 st Ed OS 1865	NY 8450 4599	Post Medieval
21	7268	Bethel Chapel (now Allenheads Lodge)	Former Primitive Methodist Chapel. Datestone 1848	NY 85329 46098	Post Medieval
22	7270	Allenheads Methodist Church	Wesleyan Methodist Chapel, dated 1900	NY 8522 4619	Post Medieval
23	7271	Allenheads Chapel	First Wesleyan Chapel in Dirtpot, founded in 1834, rebuilt in 1849 and abandoned in 1900	NY 85340 46141	Post Medieval
24	15231	Peasmeadows House	An early 19 th c house	NY 85164 47101	Post Medieval
25	15235	Mill Cottage, Dirt	An early 19 th c house	NY 85132	Post

SITE NO.	HER ID	NAME	BRIEF DESCRIPTION	GRID REF	GENERAL PERIOD
		Pot		46341	Medieval
26	15238	Burnfoot Farmhouse and attached barn	Late 17 th c house dated 1678 with the initials WD on a lintel. Remodelled in the late 18 th c and barn added in early 19 th c	NY 84976 46903	Post Medieval
27	15239	Hammershield Farmhouse and farm buildings	Mid-19 th century farmhouse and attached buildings	NY 84763 47113	Post Medieval
28	22677	Pony zig-zag from the Byerhope Beck	Line of a hollow way caused by ponies and pack horses involved in the transport of lead ore and fuel towards an area of quarrying	NY 85267 47035	Post Medieval
29	22845	Aqueduct to Dodd Reservoir	Line of aqueduct can be seen as an earthwork in recent (2001) aerial photographs	NY 84381 45670	Post Medieval
30	22846	Quarry, Allenheads Moor	Shown in mi-and later 19 th c mapping	NY 84665 45960	Post Medieval
31	22847	Quarry, Allenheads Moor	Recorded in earlier 20 th c mapping of area	NY 84791 45957	Post Medieval
32	22848	Sheep Fold	Recorded by mid-19 th c OS mapping	NY 84777 46381	Post Medieval

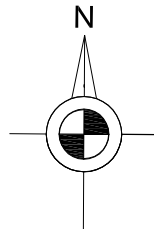
APPENDIX 2: FIGURES AND ELEVATIONS




North Pennines Archaeology Ltd
2008

PROJECT: Thorngreen Limekiln, Allenheads
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 REPORT No: CP 711/08
 CLIENT: Allenheads Trust Limited
 DRAWN BY: FW
 DATE: September 2008

LOCATION:

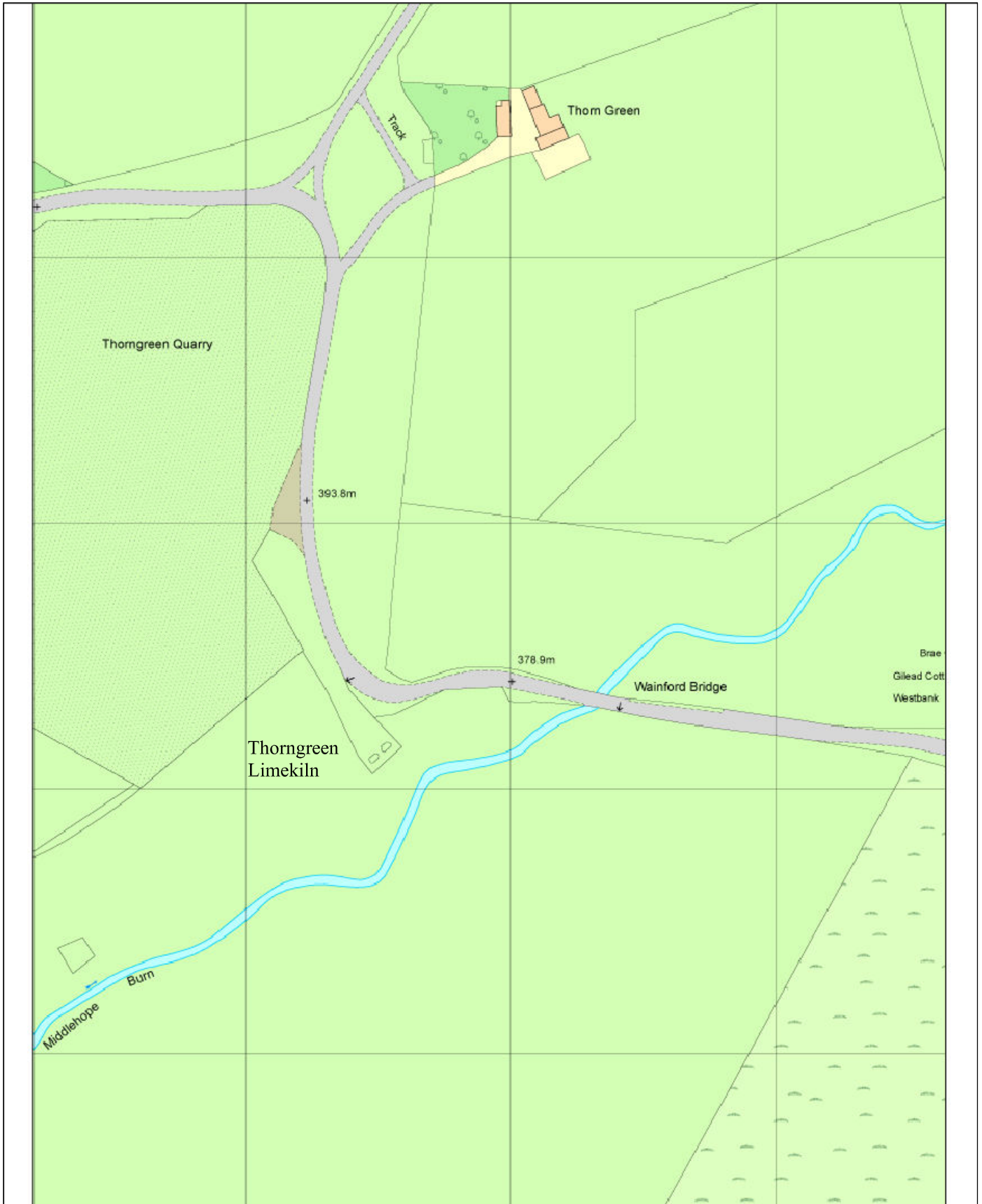


KEY:

 Site location

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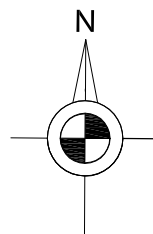
Figure 1: Site Location



North Pennines Archaeology Ltd
2008

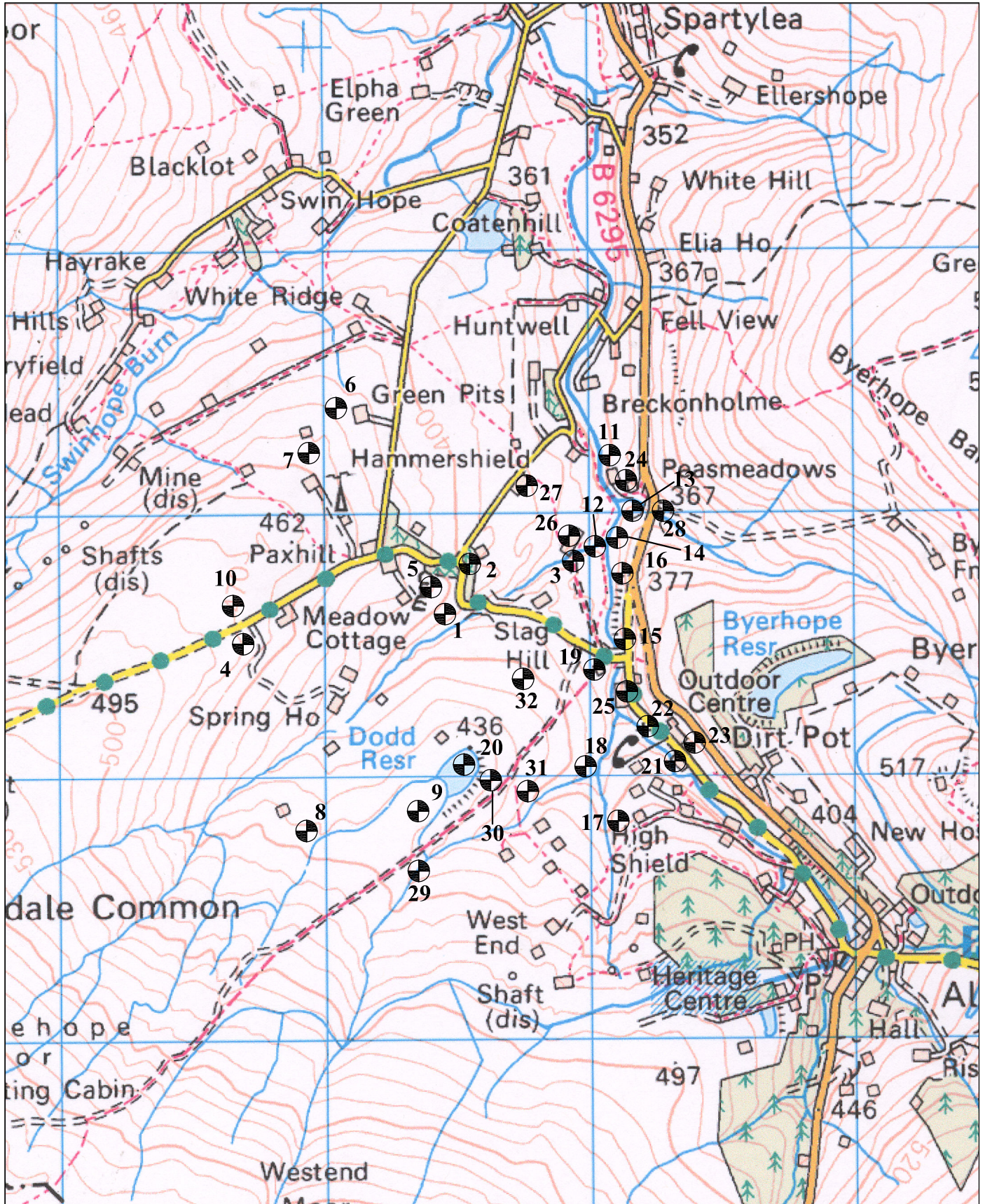
PROJECT: Thorngreen Limekiln, Allenheads
 SCALE: 1:2000 at A4
 REPORT No: CP 711/08
 CLIENT: Allenheads Trust Limited
 DRAWN BY: FW
 DATE: September 2008

LOCATION:



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Figure 2: Site Plan




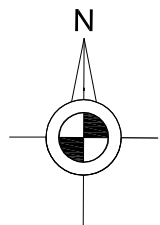

 <p>North Pennines Archaeology Ltd 2008</p>	<p>PROJECT: Thorngreen Limekiln, Allenheads</p> <p>SCALE: 1:20 000 at A4</p> <p>REPORT No: CP 711/08</p> <p>CLIENT: Allenheads Trust Limited</p> <p>DRAWN BY: FW</p> <p>DATE: September 2008</p>	<p>LOCATION:</p> 	<p>KEY:</p> <p> 1 HER Site and Site Number</p> <p><small>Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100014732</small></p>
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Figure 3: Location of HER Sites




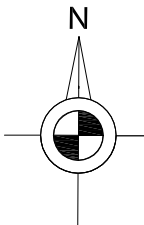
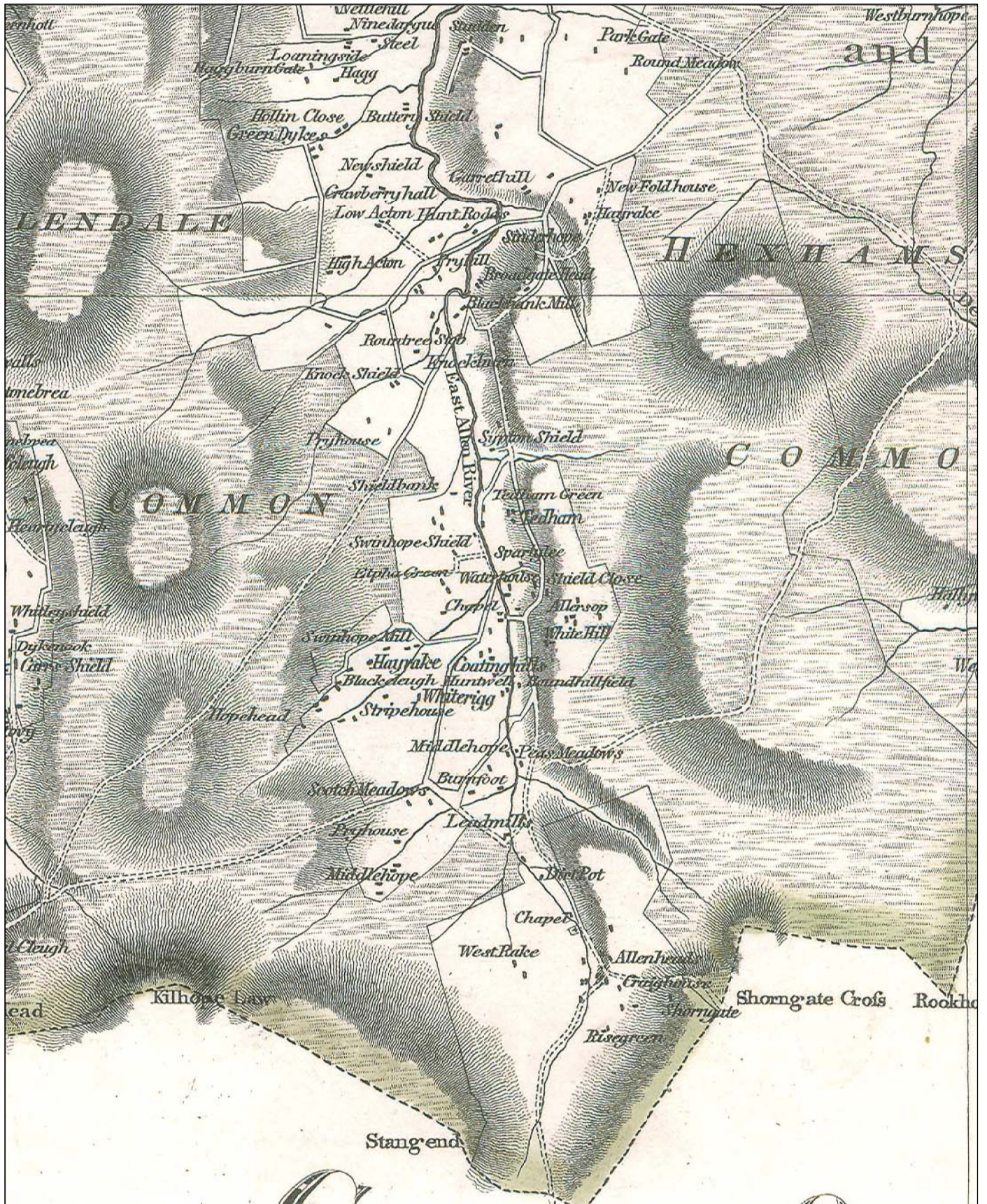
 <p>North Pennines Archaeology Ltd 2008</p>	<p>PROJECT: Thorngreen Limekiln, Allenheads</p> <p>SCALE: Not to Scale</p> <p>REPORT No: CP 711/08</p> <p>CLIENT: Allenheads Trust Limited</p> <p>DRAWN BY: FW</p> <p>DATE: September 2008</p>	<p>LOCATION:</p> 	
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Figure 4: Extract from Armstrong's Map of Northumberland 1769




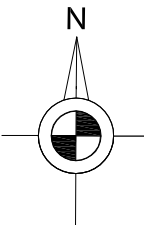
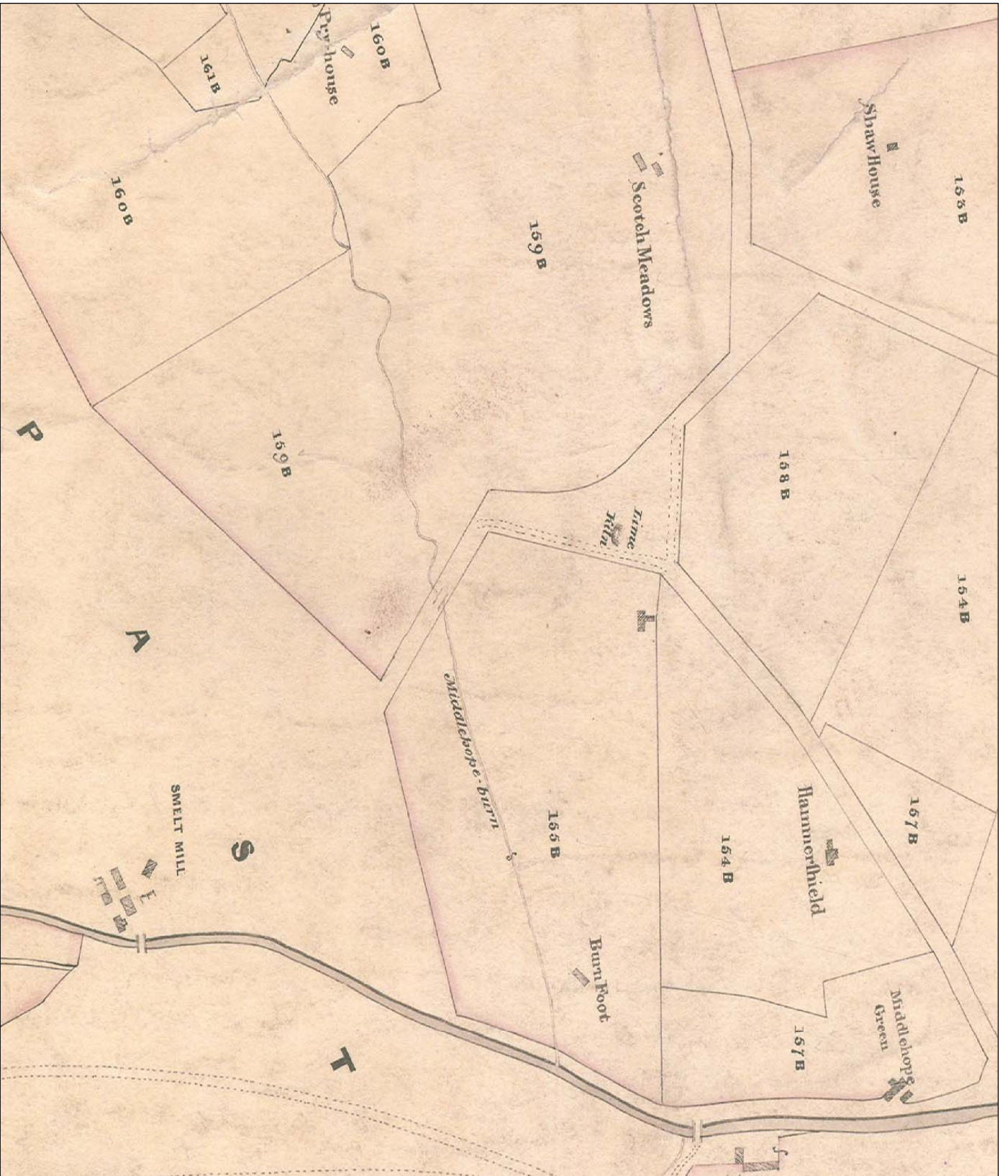
 <p>North Pennines Archaeology Ltd 2008</p>	<p>PROJECT: Thorngreen Limekiln, Allensheads</p> <p>SCALE: Not to Scale</p> <p>REPORT No: CP 711/08</p> <p>CLIENT: Allensheads Trust Limited</p> <p>DRAWN BY: FW</p> <p>DATE: September 2008</p>	<p>LOCATION:</p> 	
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Figure 5: Extract from Fryer's Map of Northumberland 1820



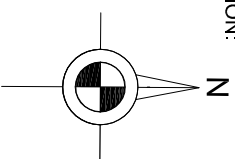
North Pennines Archaeology Ltd
2008
Thorngreen Limekiln, Allenheads

Scale Not to Scale

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LOCATION: N



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Figure 6: Extract from Allendale Tithe Map 1849



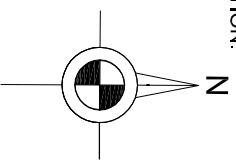
North Pennines Archaeology Ltd
2008
Thorngreen Limekiln, Alleneheads

Scale Not to Scale

DRAWN BY: FW

DATE: September 2008

LOCATION:



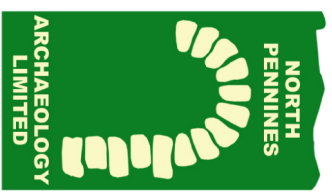
REPORT NO:

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Figure 7: Extract from a Map of Allendale Parish 1861



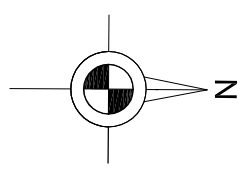
North Pennines Archaeology Ltd
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Thorngreen Limekiln, Allenheds

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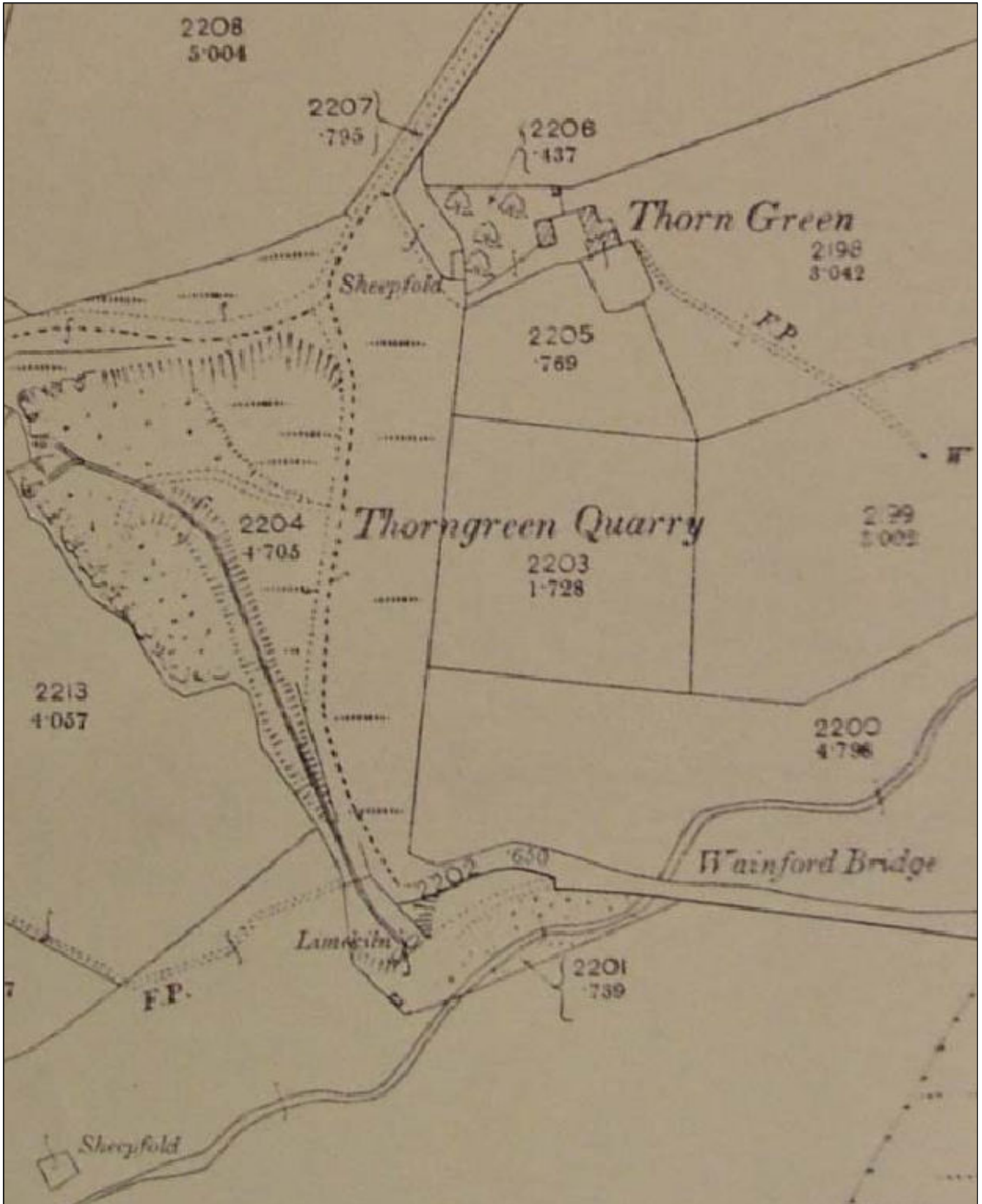
 Location of Thorngreen Limekiln

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Figure 8. Second Edition Ordnance Survey Map 1899 (6" scale)




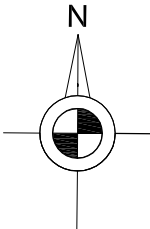
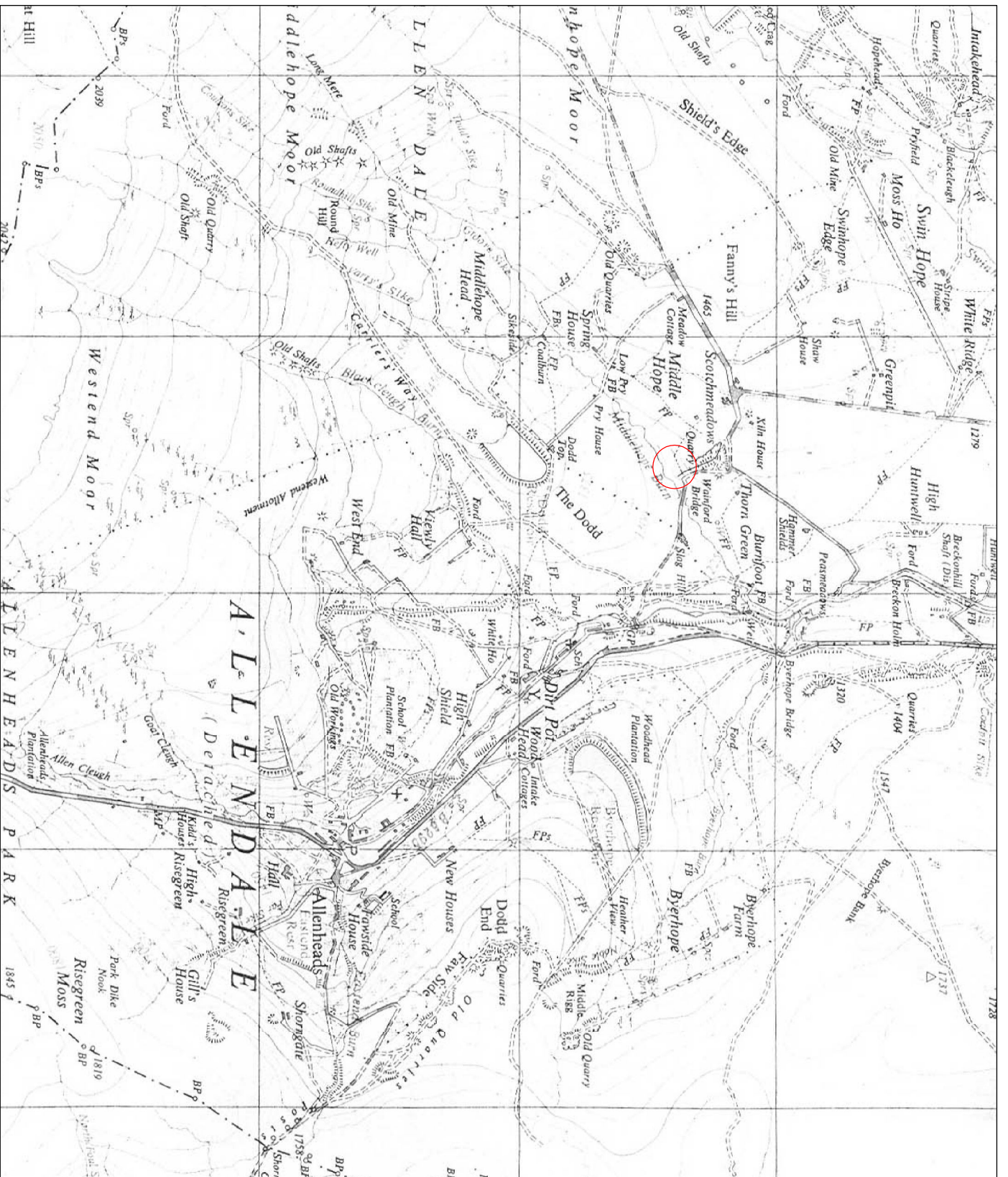
 <p>North Pennines Archaeology Ltd 2008</p>	<p>PROJECT: Thorngreen Limekiln, Allenheads</p> <p>SCALE: Not to Scale</p> <p>REPORT No: CP 711/08</p> <p>CLIENT: Allenheads Trust Limited</p> <p>DRAWN BY: FW</p> <p>DATE: September 2008</p>	<p>LOCATION:</p> 	<p>Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100014732</p>
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Figure 9: Second Edition Ordnance Survey Map 1899 (25" scale)



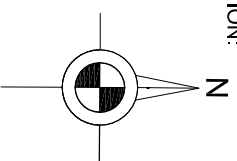
North Pennines Archaeology Ltd
2008
Thorngreen Limekiln, Allenheads

Scale Not to Scale

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LOCATION: N



KEY:



Location of
Thorngreen Limekiln

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Figure 10: Ordnance Survey Map 1958



Thorngreen
Limelkin
2008

Scale

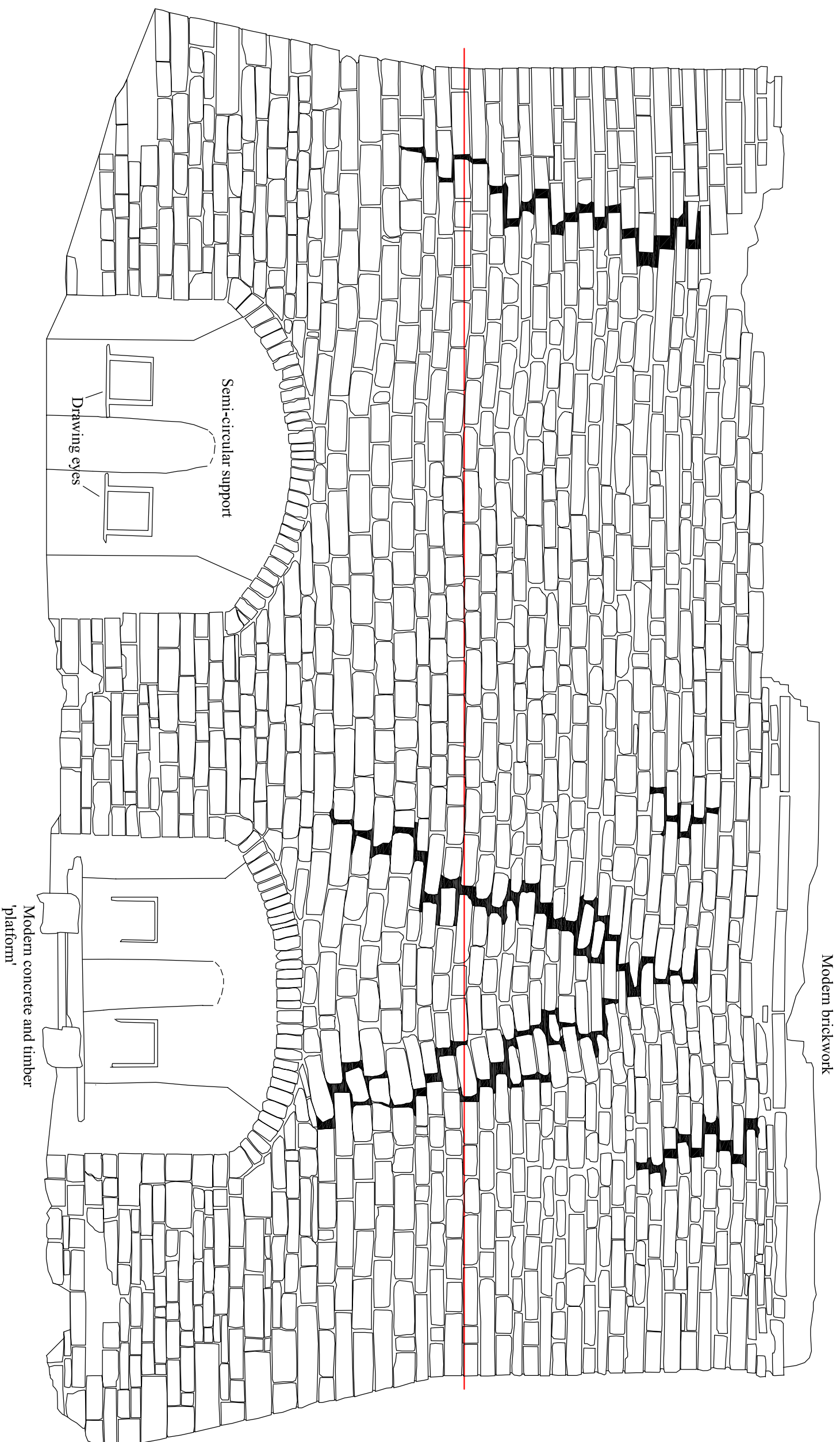
1:50

DRAWN BY: FW

DATE: Sept 2008

KEY

— 390m
AOD



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Trust Limited

Figure 11: South-East Elevation



Thorngreen
Limeklin
2008

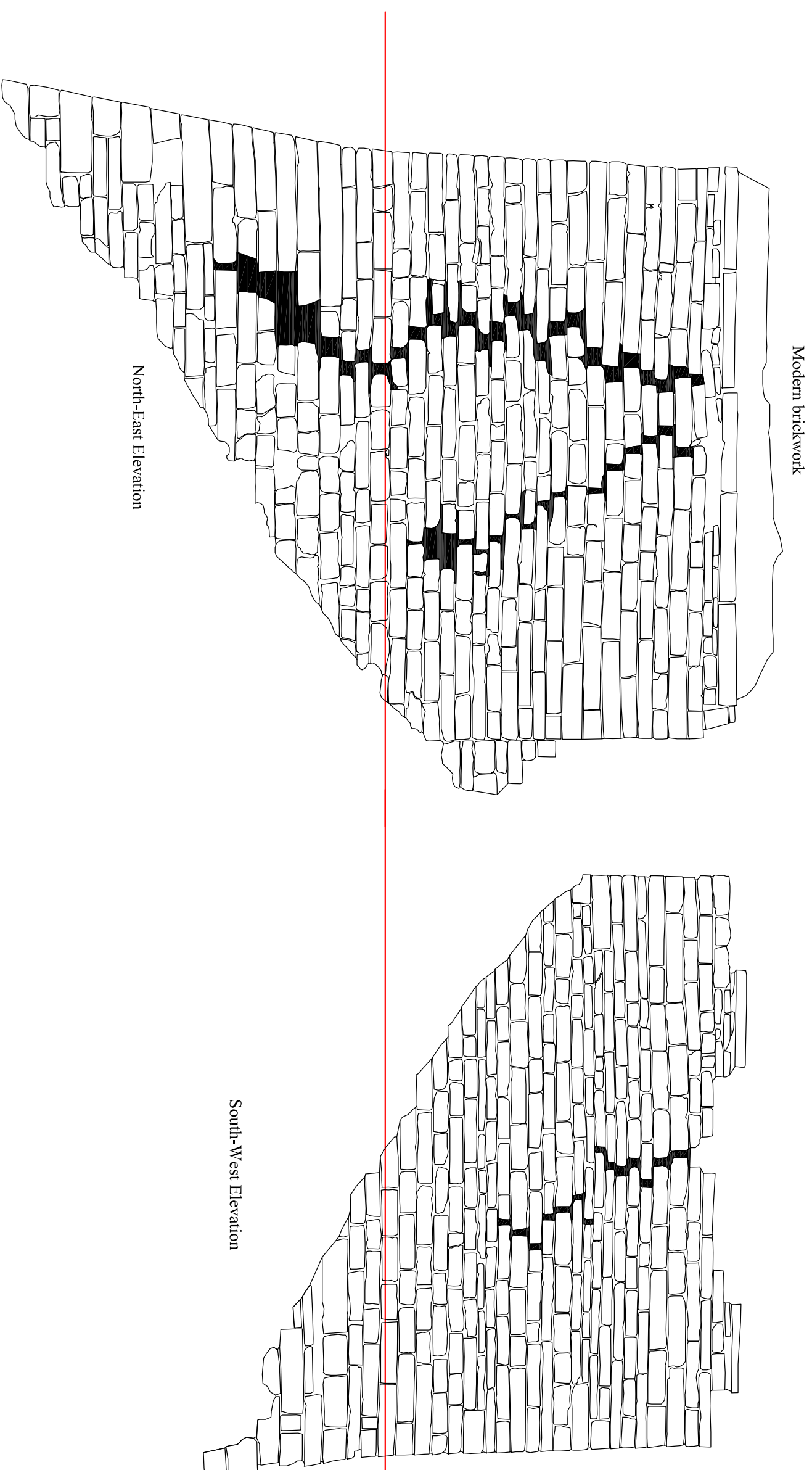
Scale

1:50

DRAWN BY: FW

DATE: Sept 2008

390m
AOD



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Figure 12: North-East and South-West Elevations



Thorngreen
Limelkin
2008

Scale

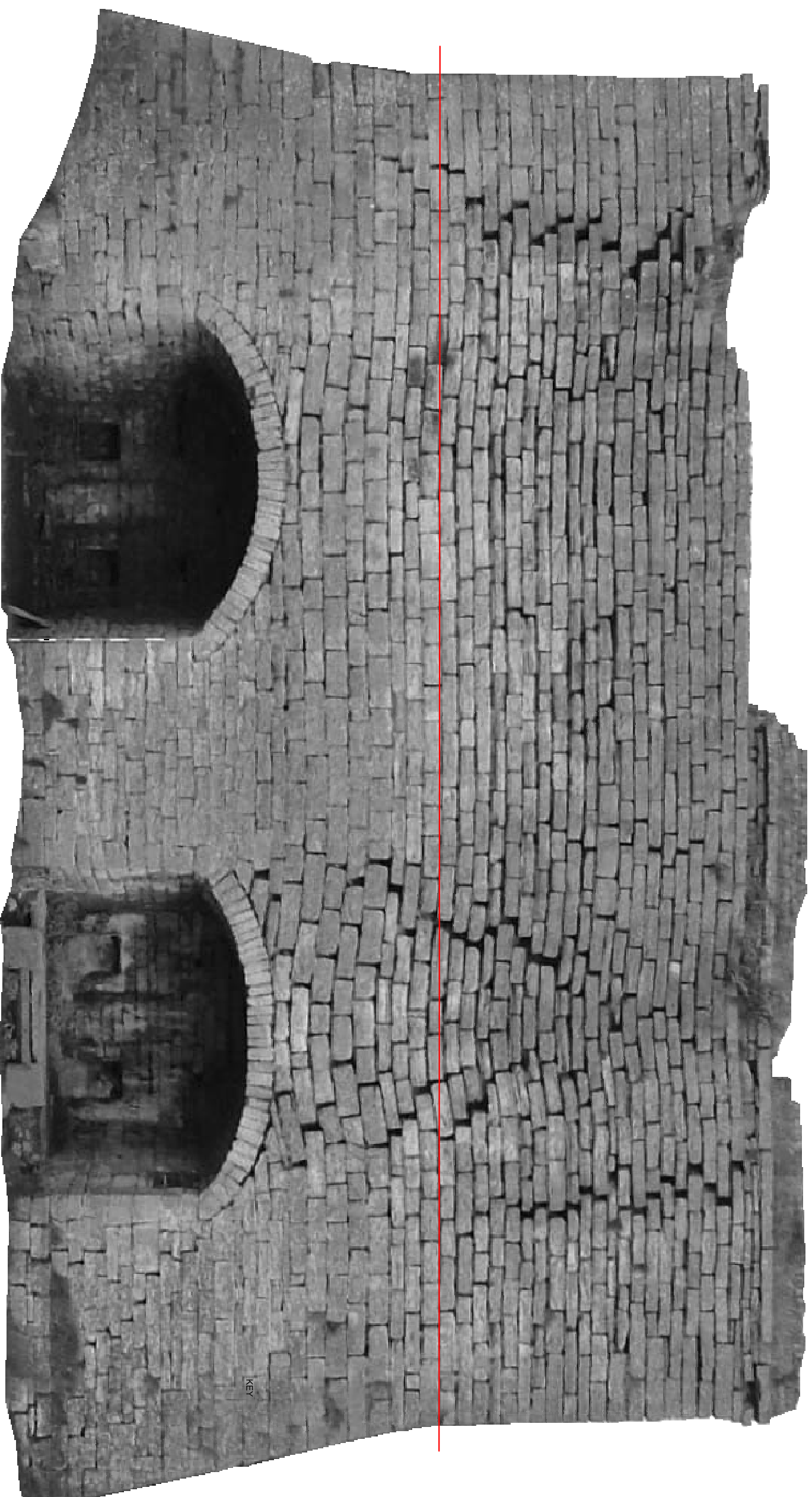
1:50

DRAWN BY: FW

DATE: Sept 2008

Key:

390m AOD



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Figure 13: South-East Elevation Rectified Photograph



Thorngreen
Limelkin
2008

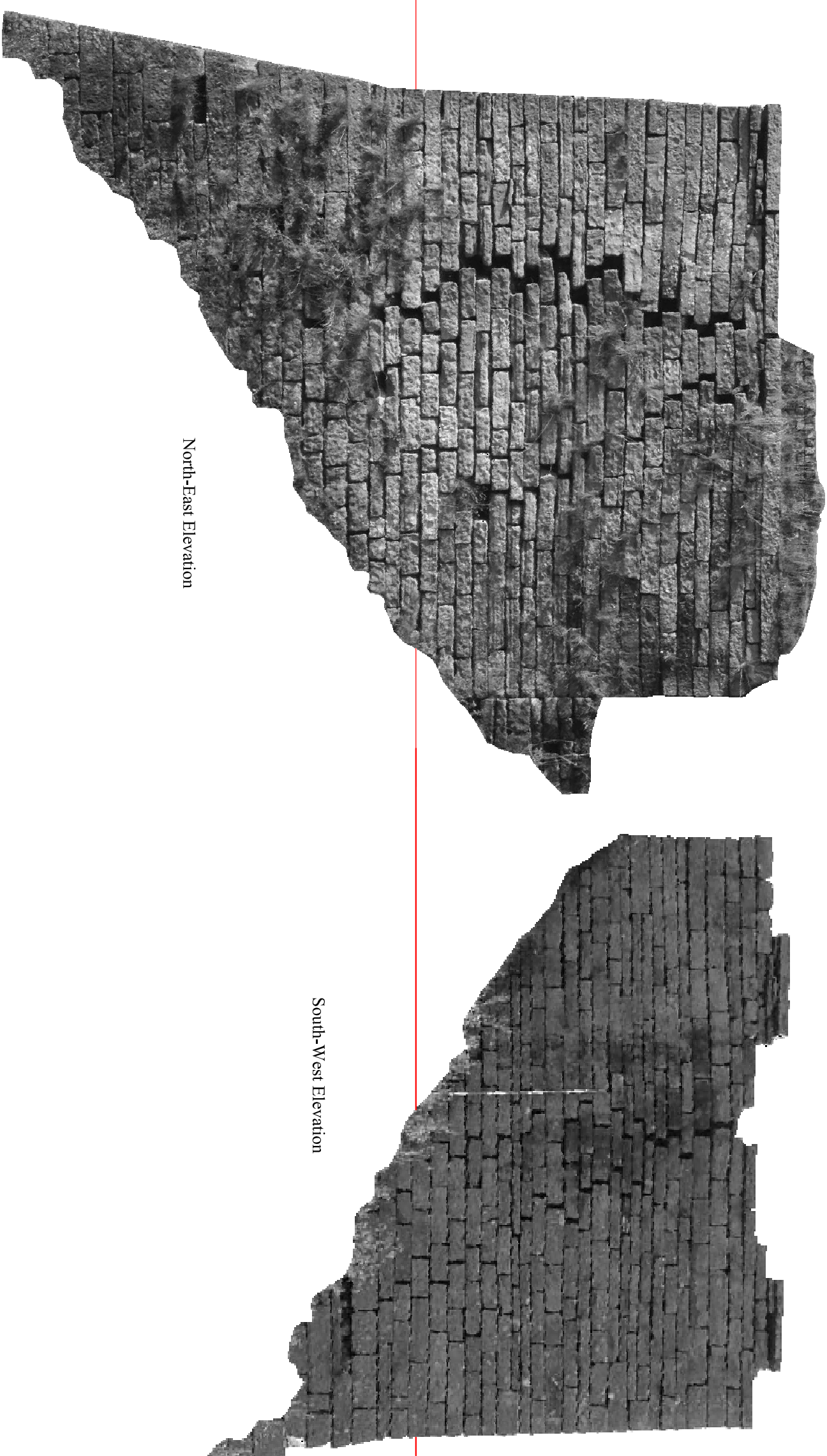
Scale

1:50

DRAWN BY: FW

DATE: Sept 2008

390m AOD



North-East Elevation

South-West Elevation

REPORT No:

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Figure 14: North-East and South-West Elevations Rectified Photographs