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Mousehole Forge Scheduled Ancient Monument 1004804 Sheffield, South Yorkshire

Archaeological Assessment & Building Appraisal



Ref: 101750.01
January 2014



**Mousehole Forge
Sheffield
South Yorkshire**

Archaeological Assessment & Building Appraisal

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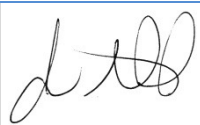
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Mousehole Forge Sheffield South Yorkshire

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Mousehole Forge Sheffield South Yorkshire

Archaeological Assessment & Building Appraisal

Summary

Wessex Archaeology was commissioned by East Peak Innovation Partnership to undertake a programme of archaeological works comprising an Archaeological Assessment and Building Appraisal at Mousehole Forge, Malin Bridge, Sheffield, South Yorkshire, centred on National Grid Reference (NGR) 432490 389082, hereafter 'the Site'.

The Site is a former water-powered iron forge which became best known for the production of anvils. It was first developed in the 17th century and continued in use until the early 20th century. The Site is designated as a Scheduled Ancient Monument (1004804) and the workshop range along the northeast boundary is Grade II listed. A programme of conservation and consolidation works is to be undertaken on the Site, funded by East Peak Innovation Partnership. Prior to these conservation works, the programme of archaeological works was carried out in order to inform the future conservation works and management of the Site, particularly focussing on the surviving large helve hammer, dam wall and ruined forge buildings.

In depth historical research has previously been undertaken by Julia Hatfield (the current owner), Richard Postman, and the South Yorkshire Industrial History Society (formerly the Sheffield Trades Historical Society). These previous studies have formed the basis of the historical background used within this report.

The archaeological works were carried out during October 2013 and identified and surveyed the remains of the forge buildings, surviving hammer and dam wall, and tied these with the standing buildings, creating a metrically accurate plan of the current Site. In addition the hammer, dam wall and immediate surrounding structures were 3D laser scanned in order to produce drawings for the basis of the technical drawings for a proposed temporary structure to protect the hammer from further weathering.

Mousehole Forge is one of the first and longest running anvil factories in the world. The Site's continuous use from at least 1632 to 1933 is exceptional, reaching its fullest extent by the 1890s. Following the Site's closure in 1933, the outbuildings and house remained in use, whilst the forge buildings fell into disuse and were demolished in the 1940s. The remnants of the former forge complex, along with parts of the surviving east hammer and a puddling furnace, reflect its scheduling and the Site is considered to be of **national significance**.

The Site, with the exception of the house and workshop range, is largely covered with grass with mature trees at the southeast edge of the former hearths range. The condition of the Site is considered to be **moderate** and **declining**.

The archaeological archive is currently held in the Wessex Archaeology Sheffield Office, under the project code 101750.01 and will be deposited along with a copy of this report with English Heritage and South Yorkshire SMR within six months of the issue of this report. Further copies of this report will be deposited with the Client.



Mousehole Forge Sheffield South Yorkshire

Archaeological Assessment & Building Appraisal

Acknowledgements

Wessex Archaeology would like to thank Tegwen Roberts of East Peak Innovation Partnership for commissioning the project and thanks also to Julia Hatfield, the current owner, for providing access and invaluable knowledge of the Site.

Lucy Dawson managed the project for Wessex Archaeology. The archaeological assessment and 35mm photography was also undertaken by Lucy Dawson. Laser scanning and survey was carried out by Chris Breeden. Medium format photography was by Adrian Wilson and archive research by Amy McCabe. Analysis and report compilation was by Lucy Dawson with illustrations prepared by Chris Breeden.



Mousehole Forge Sheffield South Yorkshire

Archaeological Assessment & Building Appraisal

1 INTRODUCTION

1.1 Project Background

1.1.1 Wessex Archaeology was commissioned by East Peak Innovation Partnership (EPIP) to undertake a programme of archaeological works comprising an Archaeological Assessment and Building Appraisal at Mousehole Forge, Malin Bridge, Sheffield, South Yorkshire, centred on National Grid Reference (NGR) 432490 389082 (**Figure 1**; hereafter 'the Site'). The work was carried out prior to a programme of conservation and consolidation on the Site.

1.1.2 The Site is a former water-powered iron forge which became best known for the production of anvils. It was first developed in the 17th century and continued in use until the early 20th century. The Site is designated as a Scheduled Ancient Monument (1004804) and the workshop range along the northeast boundary is also Grade II listed. Prior to proposed conservation works, the programme of archaeological works was carried out in order to inform the future conservation works and management of the Site, particularly focusing on the surviving large helve hammer, dam wall and ruined forge buildings.

1.1.3 Mousehole Forge is one of the first and longest running anvil factories in the world. The Site's continuous use from at least 1632 to 1933 is exceptional, reaching its fullest extent by the 1890s. Following the Site's closure in 1933, the outbuildings and house remained in use, whilst the forge buildings fell into disuse and were demolished in the 1940s. The remnants of the former forge complex, along with parts of the surviving east hammer and a puddling furnace, reflect its scheduling and the Site is considered to be of national significance.

1.1.4 In depth historical research has previously been undertaken by Julia Hatfield (the current owner), Richard Postman, and the South Yorkshire Industrial History Society (formerly the Sheffield Trades Historical Society). These previous studies have formed the basis of the historical background used within this report. EPIP produced a brief for the archaeological works (2013), whilst English Heritage (EH) produced metric survey specifications for the laser scanning (2013). Wessex Archaeology produced a project design for the archaeological works (2013) which adhered to requirements detailed within the EPIP brief and EH metric survey specification.

1.2 The Proposal

1.2.1 A programme of conservation and consolidation work at the Site is being funded by the EPIP as part of the East Peak Monument Management Scheme. This is also jointly funded by Leader and English Heritage. This work is to focus on the surviving drop hammer, dam wall and ruined forge buildings.



1.2.2 In advance of the conservation works, EPIP are funding the archaeological survey and assessment of the Site, set out within this report, in order to inform the conservation works and future management of the Site.

1.2.3 The archaeological works includes an archaeological assessment and buildings appraisal of the Site and incorporates a full measured survey and phased plan of the Site, in addition to 3D laser scan data of the surviving east hammer, and adjacent dam wall. All visible features were recorded and their archaeological significance and current vulnerabilities assessed.

1.3 The Site Location and Geology

1.3.1 The Site is located on the north-western bank of the River Rivelin, approximately 4.8 km northwest of the centre of Sheffield and approximately 0.32 km to the southeast of Malin Bridge, the point at which the River Rivelin joins the River Loxley. The Site is bounded by the River Rivelin and pedestrian pathway to the northeast and southeast, a pathway to the northwest and the former dam to the southwest. The private house (former Manager's House) is located at the northeast corner of the Site, whilst along the northeast side of the Site is the Grade II listed former workshop range (**Figure 1**). In addition, the Site contains the remains of two large drop/helve hammers, a large stone dam wall, remains of the former water management system along with the remains of other associated structures of the forge complex.

1.3.2 The underlying geology of the Site is mudstone and siltstone of the Pennine Lower Coal Measures Formation (British Geological Survey, 2014).

2 METHODOLOGY

2.1 Aims and Objectives

2.1.1 The main aim of the archaeological works was to produce a measured survey and phased plan of the Site, with basic commentary and photographic survey to record the Site in its current condition.

2.1.2 The objective was to provide a better understanding of the building remains on the Site in order to guide its future management. An assessment of the likely nature of the buried deposits on the Site was also made in order to inform decisions on further archaeological investigations.

2.1.3 The improved understanding of the fabric and development of the structures, the assessment of significance of its component parts and the identification of issues relating to condition, legibility and maintenance will help to inform the development and prioritisation of long-term management initiatives.

2.1.4 The methodologies employed for each of the survey activities are presented below.

2.2 Archival Research

2.2.1 A detailed review of all previous research and survey data was undertaken. This included relevant entries on all statutory lists and registers and relevant entries on the South Yorkshire Sites and Monuments Record. This research also included a visit with the



current owner, Julia Hatfield, who holds a large amount of historical information related to the Site.

2.2.2 The study's aim was to enhance the understanding of the development of the Site over time, the sequence of construction and use of the buildings, and impact of extensive conservation works during the later 20th century. The results have been used to put the archaeological features in context and establish their archaeological, architectural and historical significance.

2.2.3 The study was not, however, intended to be a formal desk-based assessment.

2.3 Appraisal

2.3.1 The buildings appraisal comprised a thorough programme of investigation of the layout and fabric of the structures, in order to ascertain the form, function and phasing of the forge complex. This identified all exposed features, fixtures and fittings relevant to the original and subsequent historical use of the Site.

2.3.2 Although the survey investigated the entire forge area, the detailed survey work focused on the central part of the forge (currently a residential garden). The former Manager's House and Grade II listed workshop range were also included on the Site plan, along with an external written description of the buildings and a basic photographic record of each external elevation.

2.4 Photography

2.4.1 A general and detailed photographic record was made of the entire forge complex. General and detailed photographs were taken with a Medium Format camera, using black and white 120 film. All photographs contain a graduated photographic scale wherever possible.

2.4.2 This photographic record has been supplemented by 35mm black and white and colour slide photography. Colour slide was used especially where colour was deemed as a significant feature.

2.4.3 The location and direction of each shot was recorded on to a corresponding Site plan. Wessex Archaeology pro forma registers were also used to detail direction and description of each shot. A Site plan showing the location of each photograph is included as **Figure 7** in the report.

2.4.4 The photography comprised:

- General view or views of the exterior of the buildings showing each external elevation from a vantage point as nearly parallel to the elevation as well as oblique general views;
- Any external detail (structural, decorative or functional), which is relevant to the building's design, development and use and which does not show adequately on general photographs;
- The building's relationships to their setting, to other buildings, or to a significant viewpoint.

2.5 Survey/Drawn Record

2.5.1 A floor plan of the complex, showing former buildings and all other features of archaeological/historical significance has been produced. The level of detail of the survey



data captured is commensurate with the production of the survey drawings at a scale of 1:50.

- 2.5.2 This survey was undertaken using a Leica TPS 1200 Total Station, employing a combination of infra-red (IR) and reflectorless (RL) observations. The 1200 system typically achieves precision in the order of $1\text{mm} \pm 1.5\text{ppm}$ in IR mode and $2\text{mm} \pm 2\text{ppm}$ in RL mode. This was supplemented where necessary with a Leica Disto and hand-measuring techniques. The data was captured and processed using a combination of AutoDesk's AutoCAD, LatimerCAD'S TheoLT and in-house software to produce plans and sections. Further elevational detail taken was added from measured sketches and rectified photography using PhoToPlan 2.1 software.
- 2.5.3 Observed earthworks are represented on an interpretive analytical plan as hachures. The on-Site survey record includes:
- *A description and record of all archaeological features observed;*
 - *A grid reference for all recorded features;*
 - *An interpretation of each feature/group of features, based on on-Site observations and archive material;*
 - *An assessment of the significance of each feature/group of features at local, regional and national levels.*
- 2.5.4 All drawings are at an appropriate scale to show the different elements of the industrial complex and their relationship with each other.
- 2.5.5 One transverse drawn section through the former forge building(s) has been produced and one elevation drawing, combining data taken using the total station described above and the 3D laser scan (set out below). These drawings show the drop hammers in relation to each other and the surviving dam wall.
- 2.5.6 Phased plans of the Site have also been produced. Any evidence of the former industrial processes, construction techniques and sequences has also been illustrated.

2.6 Survey Control

- 2.6.1 Two permanent survey markers were located on Site which were driven into a modern surface away from any structures of historic significance. These survey markers were located with the use of a Leica GNSS GS15 receiver which logged long term static observations over each survey marker. This provides a horizontal accuracy of $3\text{mm} \pm 0.5\text{ppm}$ and a vertical control of $3.5\text{mm} \pm 0.5\text{ppm}$. The position of these survey markers is provided on suitably scaled base mapping with xyz coordinates and additional location photography and traverse diagram. Both the HDS data and Total Station survey is tied in to this survey control and allows all data to be recorded and presented in an OSNG coordinate system.

2.7 Digital Scanning

- 2.7.1 3D digital scanning was used to record the surviving hammer beams, supporting structures and the dam wall producing drawings that will be the basis for technical drawings for a proposed temporary structure to protect the hammers from further weathering.



- 2.7.2 The HDS scanning employed a Leica Scanstation C10 which allows for a minimum scan spacing of <1mm and a modelled surface precision of 2mm std. deviation. The bulk of the scanning was done at a scan resolution of 3mm with areas of specific interest targeted at surface precision of 2mm. This scan resolution provides an overlapping point density sufficient to meet the project design in the final registered point cloud. Intensity and colour information was recorded with the Leica Scanstation C10's inbuilt 4 megapixel camera. This also allowed for the collection of panoramic digital shots from each scan position. No additional lighting was required but care was taken to scan the structures in suitable ambient lighting to avoid any colour distortion in the final colourised scan. Data collection was undertaken in accordance with English Heritage Metric Survey Specifications (English Heritage 2009), Chapter 7. All reasonable precautions were taken to avoid the creation of data voids. Vegetation was cleared from around the drop hammers prior to survey to allow maximum coverage in the scan with particular care taken to scan any voids from multiple angles to reduce data loss.
- 2.7.3 Point cloud is delivered in a geo-referenced ASCII and dxf format referenced against the OS National Grid. Registration and geo-referencing has been accomplished using Leica Cyclone V.8.
- 2.7.4 All metadata will be provided in the format stipulated by the English Heritage method statement for the metric survey of Mousehole Forge (English Heritage, 2013).

2.8 Assessment Criteria

- 2.8.1 Assessment of the significance of a site sets out to identify how particular parts of a place and different periods in its evolution contribute to, or detract from, identified heritage values associated with the site. This approach considers the present character of the site based on the chronological sequence of events that produced it, and allows management strategies to be developed that sustain and enhance the significance of heritage assets.
- 2.8.2 Significance is defined in NPPF Annex 2 as:
- 'the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.'*
- 2.8.3 Current national guidance for the assessment of the significance of heritage assets is based on criteria provided by English Heritage in the document Conservation Principles and Guidance for the Sustainable Management of the Historic Environment (2008). Within this document significance is weighed by consideration of the potential for the asset to demonstrate the following criteria:
- **Evidential value:** deriving from the potential of place to yield evidence about past human activity.
 - **Historical value:** deriving from the ways in which past people, events and aspects of life can be connected through a place to the present. It tends to be illustrative or associative.
 - **Aesthetic value:** deriving from the ways in which people draw sensory and intellectual stimulation from a place.
 - **Communal value:** deriving from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely



bound up with historical (particularly associative) and aesthetic values, but tend to have additional and specific aspects.

The overall significance of heritage assets and their settings is decided in line with criteria laid out in **Table 1** below:

Significance	Factors Determining Significance
International	World Heritage Sites Assets of recognised international importance Assets that contribute to international research objectives
National	Scheduled Ancient Monuments Grade I and Grade II* Listed Buildings Grade I and Grade II* Registered Parks and Gardens Undesignated assets of the quality and importance to be designated Assets that contribute to national research agendas
Regional	Grade II Listed Buildings Grade II Registered Parks and Gardens Assets that contribute to regional research objectives
Local	Locally listed buildings Assets compromised by poor preservation and/or poor contextual associations Assets with importance to local interest groups Assets that contribute to local research objectives
Negligible	Assets with little or no archaeological/historical interest
Unknown	The importance of the asset has not been ascertained from available evidence

Table 1: Summary of Factors for Determining Significance of Heritage Assets

2.9 Chronology

2.9.1 Where mentioned in the text, the main archaeological periods are broadly defined by the following date ranges:

Modern	1900 – Present	Romano-British	AD 43 – 410
19 th Century	1800 – 1899	Iron Age	700 BC – AD 43
Post-medieval	1500 – 1799	Bronze Age	2400 – 700 BC
Medieval	AD 1066 – 1499	Neolithic	4000 – 2400 BC
Saxon	AD 410 – 1066	Mesolithic	8500 – 4000 BC
Post-Roman	AD 410 – 650	Palaeolithic	650000 – 9500 BC



2.10 Best Practice

- 2.10.1 This assessment has been carried out in accordance with the Institute for Archaeologists' Standard and Guidance for desk based assessment (IfA 1994, revised October 2008), English Heritage *Conservation Principles, Policies and Guidance*, 2008 and English Heritage *Understanding Historic Buildings: A guide to good recording practice*, 2006.

3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

3.1 Introduction

- 3.1.1 The historical background and development of the Site has previously been extensively researched by Julia Hatfield (1991), Richard A. Postman (2003) and the South Yorkshire Industrial History Society, 2006 (formerly the Sheffield Trades Historical Society, 1989). Below is a summary and compilation of this along with a map regression of the Site.

3.2 Statutory and Local Heritage Designations

- 3.2.1 The Site is designated as a Scheduled Ancient Monument (1004804) and the workshop range along the northeast boundary is Grade II listed.

3.3 Summary

- 3.3.1 Mousehole Forge is located to the northwest of the city of Sheffield. Here, the landscape, adjacent to the Pennines, is dominated by deep valleys with the Rivers Loxley and Rivelin, joining at Malin Bridge before flowing into the River Don. The Don and its tributaries the – Loxley, Rivelin, Porter and Sheaf – were so intensively used for industrial power across Sheffield, that along over 30 miles of streams and their tributaries, there are over 115 former mill sites. These mills were utilised within a variety of industries, but the majority were employed within the metal trades industry (SYIS, 2006: vii).
- 3.3.2 Little is known of the use of water power in and around Sheffield during the medieval period, and it's not known whether water power was used to drive the metal trades or whether it was only used for flour production. The earliest reference to powered metal grinding is from 1496 in a lease of a wheel on the Sheaf which likely became the Moscar Wheel (SYIS, 2006: xv). However prior to 1581, the first year of which rentals survive, there are few references to powered metal trades in Sheffield. The 1581 rentals however, show that there were at least 14 cutler wheels within Sheffield, although there were likely more. Evidence from other sources has indicated that cutlers wheels were in existence in the early to mid- 16th century: the 'Leeche Carr' wheels, 1530s; Little Sheffield Moor Wheel by the 1540s; and the Porter Wheel (Shepherd Wheel) by the 1560s. After 1581, a large number of wheels within the Shrewsbury and Norfolk Estates can be traced through history. However, those located outside of the Sheffield manors are much harder to trace.
- 3.3.3 The greatest amount of development of water powered industries occurred during the 18th century. By 1790 all available sites on the rivers had been developed (SYIS, 2006: xvi), with the majority of the wheels being engaged in industrial rather than agricultural activities. In 1794 a survey was made of all the mills on the Don and its tributaries, indicating the density of mills along the streams as an average of four mills to the mile. Following on from this period, no new wheel sites were developed and investment at existing works was limited to conversions, modernisations and improvements on water storage (SYIS, 2006: xvi). In the 19th century steam power began to replace water power, but this was a slow process. The steam powered wheels developed within the centre of Sheffield, which meant that smaller wheels positioned out of town, especially along the



Rivelin were no longer sought after. However, by the mid-century, the land values in the centre of Sheffield had increased making the surviving out of town mill sites attractive again. At these sites the power provision had shifted to steam, with the water wheels retained as a reserve. In addition, during the 19th century, wheels were purchased along the Rivelin by the Sheffield Water Company which followed an Act authorising acquisition, in order to improve the drinking water supply for the city. Also, during the late 19th century, the Sheaf was affected by the construction of the Midland Railway's Sheffield to Chesterfield line which impinged on many of the dams and several sections of the river were straightened.

3.3.4 In 1864, the Dale Dyke Dam burst and devastated the wheels along the Loxley. However, following this, much of the water powered industry along the river was rebuilt and restored, unusual during a time when water power was being abandoned. The final end of water power was not abrupt. A gradual move to steam, gas and electricity occurred as their costs dropped and the condition of water wheels and their dams diminished. By the mid- 20th century the number of water wheels in use was into single digits.

3.3.5 The Rivelin had in total 20 mills along a three mile stretch from the Uppermost Wheel to the confluence with the Loxley at Malin Bridge. These mills along with the date of their construction or earliest known reference are listed below in geographical order (taken from SYIS, 2006: xxiv):

Uppermost Wheel	1751	Upper Cut Wheel	1749
Rivelin Corn Mill	1632*	Nether Cut Wheel	1719
Upper Coppice Wheel	1736	Little London Wheel	1752
Second Coppice Wheel	1736	Holme Head Wheel	1742*
Third Coppice Wheel	1758*	Roscoe Wheel	1725
Frank Wheel	1737	Spooner Wheel	1637*
Wolf Wheel	1722	Rivelin Bridge Wheel	1724
Swallow Wheel	1692*	Walkley Bank Tilt	1751
Plonk Wheel	1737	Mousehole Forge	1632*
Hind Wheel	1581*	Grogram Wheel	c.1620*

*= first known reference, to a mill already in existence

3.3.6 The only buildings to survive along this stretch of river are those at Mousehole Forge. Some remnants of structures remain along the river, but these are scarce. All the wheels along the river were fed by by-pass systems of which many weirs, goits and dams survive.

3.3.7 Of the early wheels, it is likely that Hind and Grogram date back to the 16th century, whilst Mousehole, Spooner and Rivelin Corn Mill date to the early 17th century.

3.4 Mousehole Forge

- 3.4.1 The earliest record found by Hatfield (1991) of what would later become Mousehole Forge, dates back to 1628. Edward Barber of Wadsely, leased various properties to Thomas Revell of Stannington. These included:

“...The halfe of the smelting house of him the said Edward Barber and of all the lande and ground of the said Edward Barber occupyed with the same...”

- 3.4.2 No locations are mentioned, but it has been deduced from later evidence that the site of the smelting house is that of the forge (Hatfield, 1991: 6). An indenture of 1631 between Edward and Francis Barber and Michael Burton of Holmesfield related to the leasing for 21 years of:

“All that close or parcel of land within its appurtenances known by the name of Turnholme or Leyes Stubbing conteyneing by estimation two acres situated, lying and neare unto Malyn Bridge....and late in the holding or possecon of Richard Revell or his assigns but now in the tenure or occupation of Michael Burton with all the two leadmylnes or smyting houses thereupon or therein builded and made with all the waterways of dams, goites, wyres, shuttle ways, passages and appurtenances whatsoever to the said leadmylnes or smyting houses”.

- 3.4.3 Richard Revell continued to have connections at the Turnholme smelting house as an undertenant of Michael Burton and was succeeded by Gregory Revell in 1633. In the following years, the smelting house became known locally as Mousehole (Hatfield, 1991: 8). By 1664, Edward Barber’s will indicates that Mousehole was a forge.
- 3.4.4 Barber’s trustees sold the forge to George Bamforth II in 1672, which passed on to his son, George Bamforth III, in 1709. The forge is included in the national list of iron works of 1717, producing 60 tons a year of wrought iron converted from blast furnace pig iron (SYIS, 2006: 108).
- 3.4.5 By 1734 the manor of Wadsley had passed to the Burton family and John Cockshutt, ironmaster at the Wortley forges, was tenant in 1741 and 1757. During this time there was also a cutlers’ forge occupied by Joseph Trickett, although its location within the Site is unknown. William Armitage became Cockshutt’s manager after 1762 and was recorded in the Nether Hallam rate book of 1791 as occupier and as a partner in a document on 1794 (SYIS, 2006: 108). He was also listed as the sole tenant in 1794 and again in 1832. The first cartographic source of Mousehole Forge dates to 1777 (**Figure 2**), which depicts the dam, sluices, two workshop buildings, tail goits, and a house. In the late 18th and early 19th centuries, improvements were made at the forge. Originally there had only been a single western opening for water from the dam, but by 1825 a second had been added and by 1828 four wheels were being powered. Two of these wheels were recorded as being breast-shot which powered the helve hammers. The other two, which were overshot wheels, drove grindstones and a furnace blower. A dispute with the Church Burgesses over water levels at Walkley Bank Tilt shows that after flood damage in 1839, Mousehole Weir was rebuilt and raised (and partially lowered again) in 1842-1844. In the mid-19th century additional air for the furnaces, was piped from Grogram Wheel which had also been bought by Armitage from the Burgoyne along with Mousehole in 1842 (SYIS, 2006: 109). **Figure 3** depicts plans of Mousehole from 1838, 1840s and 1842, around the time of this purchase, although the 1842 Fairbank plan depicts the Site in the most detail clearly showing building divisions and the pentrough to the east which supplies wheel pit 4.



- 3.4.6 After George Armitage's death in 1875, Mousehole was sold to William Cooper who with Brookes made anvils until 1927. Historic views of the forge dating to this period are depicted in **Plates 1-4**. It was also during this time that the Site reached its fullest extent, as depicted on the 1890 OS map (**Figure 3**). The buildings at this time extended further to the southeast into land which is outside of the Site boundary.
- 3.4.7 Brookes and Cooper were succeeded by Owen, Thomas & Co, who continued to make anvils at Mousehole until 1933. After 1933, any leases at Mousehole related to the outbuildings only. The Site is labelled as disused by the time of the 1935 OS map (**Figure 3**). By 1940, when H.G. Baker photographed the Site (**Plates 43, 57, 60, 63, 66 and 74**), the roof of the main forge had already gone, whilst the walls were demolished during World War II, which left only the former Manager's House and workshop and storage range standing. This can be seen on the 1953 OS map (**Figure 3**), which no longer depicts any forge buildings.
- 3.4.8 Until 1983 the Site was owned by Sheffield City Council, when Mr and Mrs Hatfield bought the Site and restored the former Manager's House and workshop and storage range, whilst preserving the remainder of the Site.

4 RESULTS OF THE SITE SURVEY

4.1 Introduction

- 4.1.1 The Site survey, which mainly focussed on the remains of the forge buildings, hammer and dam, resulted in a plan of the Site complex (**Figure 4**), and detailed elevation (**Figure 5**) and section (**Figure 6**) of the dam wall and surviving hammer, and a photographic record of the Site (**Plates 5-115**). Each photographic viewpoint can be found on **Figure 7**.

4.2 Results

- 4.2.1 The Site was first developed in the early 17th century and gradually developed over time before reaching its peak in the 1890s. The assessment of the Site and cartographic review has identified four main phases of development and construction (excluding the renovations undertaken by the Hatfields in the 1980s) :

- *Phase 1: by 1777*
- *Phase 2: 1777-1796*
- *Phase 3: 1796-1842*
- *Phase 4: 1842-1892.*

Buildings Appraisal

- 4.2.2 The former Manager's House and workshop range survive on the Site as standing buildings. The Manager's House is now a private residence and the workshop range (Grade II listed) serves as a store for the owner. An external photographic record of the buildings was made using medium format and 35mm black and white films, as well as 35mm colour slide to supplement the record. An external assessment of the structures was also made. However, no internal record of the standing buildings was made.



- 4.2.3 The former Manager's House is positioned at the northeast corner of the Site, adjacent to the footpath which runs to Stannington Road. Attached to the southeast side of the house are two remaining walls of a former single-storey office, which would have made the building 'L'-shaped in plan. This former office, constructed during phase 3, is now open to the southwest and no roof remains. The remainder of the house which likely contained a small furnace at the southwest end is two-storeys in height, largely constructed of regularly coursed sandstone with a stone covered pitched roof.
- 4.2.4 The principal façade is to the northeast with the stone-built northeast wall of the former office with two large window openings to the east, and the two-storey stone gable end of the house with a centrally positioned window at each floor, both with stone sills and lintels (**Plates 6, 5**). Historic views of the site (**Plates 1-3**) depict a doorway to the east of the ground floor window within the northeast elevation, as well as a central oculus/oeil-de-boeuf window in the gable above the first floor window.
- 4.2.5 The northwest elevation of the house clearly shows the multiphased development of the building, with various straight joints within the fabric and a change from regular dressed stone at the north end of the building to the use of irregular stonework at the southwest end. This rougher fabric delineates the furnace or industrial end of the building (**Plates 7, 8**). The main part of the house at the north end is two-storeys in height with the majority built by 1777 (phase 1), although further phases are likely to be identified with further recording and analysis of the building. The north end of the house is not cartographically depicted until phase 4. The north corner is chamfered with a simple stop (**Plate 9**) and the northwest elevation contains two first floor windows, and a doorway with adjacent window at ground floor (**Plate 10**). To the southwest of this the building is lower in height being only one and a half storeys, with ground floor window. The fabric of the building becomes coarser to the southwest and a vertical joint with quoin stones is visible, although the building extends further to the south east with large, projecting brick chimney stack, presumably once serving a furnace. The changes in fabric and phasing can clearly be seen within elevation in the historic photo of the Site (**Plate 4**).
- 4.2.6 Within the complex, the southeast elevation of the house is staggered, again indicating the multiphased construction of the building (**Plates 11-13**). The principal entrance for the house is now a ground floor doorway within the elevation. In addition there is a large brick external chimney stack with archway at the south end of the elevation. The southeast corner of the building is angled and contains an arched vehicular doorway (**Plate 14**). The southwest elevation of the building is dominated by a projecting brick chimney stack to adjacent lean-to single storey addition to the west with small window which housed a w.c. and first windows flanking either side of the stack (**Plates 8, 14, 15**). The former office at the north end, which is now open to the south west, is now used as a garden patio, although the original semi-circular steps which indicate the position of the former doorway into the building are retained in situ (**Plate 16**).
- 4.2.7 Positioned along the northeast boundary of the Site is the Grade II listed workshop and storage range. Again multiphased in construction, but largely dating to phases 3 and 4, being built in the mid-late 19th century. The range is single story with stone tile covered pitched roof, which is hipped to the northwest. The northwest corner of the range is angled with a double door opening which opens directly on to the adjacent foot path, rather than into the yard of the complex (**Plate 17**). This north-western end of the building was constructed first during phase 3, and then later extended to the southeast, incorporating a once roughly coursed stone boundary wall into the building, clearly seen along the northeast elevation (**Plate 18**). A blocked window is also present within the elevation (**Plate 19**). The south-eastern end of the range is angled (**Plate 20**), in order to allow

vehicular access through the former second entrance directly adjacent (now blocked) (**Plate 21**).

- 4.2.8 The southwest elevation (**Plate 22**), which opens on to the yard of the complex, contains three doorways, the southernmost being within a once larger opening, now partially blocked with brick, and five windows (**Plates 23-29**). No internal access was available.

Archaeological Appraisal

- 4.2.9 The whole of the remainder of the Site was archaeologically assessed and block phased, however the main focus of the works concentrated on the surviving helve hammer, dam wall, and immediately adjacent remains of the forge buildings. The Site contains extensive remains both below-ground and partially above ground of the former forge complex. Identified as being of most significance are the east helve hammer, dam wall, wheel pits and puddling furnace. The Site is currently a private garden and is covered with grass, shrubs and some mature trees (**Plates 30-35**).
- 4.2.10 The majority of the remains of the forge are retained within the centre of the Site and adjacent to the dam wall. The former phase 4 range once located at the southeast of the Site, which extended beyond the current boundary, is not visible being completely covered by grass apart from a possible chimney base at its north corner (**Plate 114**). Its location has been roughly added to the plan of the Site (**Figure 4**).
- 4.2.11 The central and oldest range of the forge is in the centre of the Site (**Figure 4**). Part of its northeast elevation had been retained up to window lintel height and contained a doorway with adjacent arched window (although partially covered by a tree) (**Plates 36, 37**). Attached to the northeast of the building was a former joiners shop with stone flagged floor surface in situ (**Plate 38**). Within the former internal space of the range were the remains of a steam hammer base at the north end, two brick hearths/chimney stacks, grinding bases in the centre and the east helve hammer and dam at the south end (**Plates 39-70**).
- 4.2.12 Wheel pit 1 to the west of the east hammer once held the wheel which drove the hammer, whilst a wheel within wheel pit 4, which had water supplied by a metal pentrough, drove grinding wheels. To the west of wheel pit 4 are the remains of the grinding bases (**Plates 48, 49**), whilst the wheel pit itself (**Plates 50-57**) is constructed of large ashlar stone, with small arched stone tail goit which continues underground until it joins the river again to the north. **Plate 57** depicts the wheel pit with overshot wheel and pentrough in 1940, looking northwest.
- 4.2.13 Much survives of the east helve hammer, with its outer posts and drome beam still standing, although vegetation and water is impacting on the structure. The hammer itself has not survived (removed prior to 1940), however the outer bearing housing has survived and the cam wheel is intact. The legs which would have supported the hurst have been removed, but their former positions are visible within the drome beam (**Plates 58-70**).
- 4.2.14 The former west hammer has collapsed in recent years. Remains are visible to the west of wheel pit 2 (**Plates 71, 72**). The wheel pits 1 and 2 once housed breast shot wheels which have completely gone. The pits themselves, constructed with ashlar stone are still intact and integral with the dam wall. Partial remains of sluice mechanisms are also visible (**Plate 73**). **Plate 74** depicts wheel pits 1 and 2 in 1940, looking southeast, with the raised metal pentrough running between the two wheels, which served the overshot wheel within wheel pit 3 to the north.



- 4.2.15 The dam wall behind the former hammers is constructed of large ashlar stone blocks around the wheel pits and directly behind the former hammers, likely due to providing extra strength and stability. The western end of the wall behind the former west hammer is constructed of smaller roughly coursed stone and may represent a rebuild (**Plate 71**). The coursing also changes to rougher stonework to the east of the east hammer, whilst the northeast wall return is constructed from brick (**Plates 75-77**). The lower section of a chamfered sill of a former window opening is also visible within the wall behind the east hammer. The top and pond side of the dam wall is currently covered with dense vegetation, which meant the full thickness along the wall could not be determined at this time (**Plate 78**).
- 4.2.16 Within the western phase 2 range of forge buildings, to the north of the west hammer are the remains of the outer walls (**Plates 79, 80**), wheel pit 3 with arched stone tail goit (**Plates 81-84**), and most significantly the remains of an early and considerably complete puddling furnace (**Plates 85-91**). This is constructed of brick, with red brick outer skins and internal yellow refractory brick. The flue/chimney of the furnace is to the west end. It is possibly the most intact, in situ puddling furnace in the country, and is early in date, possibly from the late 18th century.
- 4.2.17 To the west of this is a phase 3 range, with outer stone walls surviving to sill level in places (**Plates 92-101**). At the southeast corner are a set of brick stairs leading to the top of the dam wall. Adjacent to this is a brick and metal chimney base and stack (**Plate 101**) and at the northwest end remains of a further chimney stack, indicated by truncated cast iron supports (**Plate 97**). At the southwest corner of the Site remains of the outer walls of a phase 4 former storage building are visible (**Plate 98**). The nearby boundary wall, contains a blocked opening, possibly originally a window or coal/delivery chute, which overlooks the adjacent footpath to the north (**Plate 102**). Due to the difference in ground level on either side of the boundary wall, a window function is unlikely.
- 4.2.18 Located to the east of the central range of the forge complex are the remains of buildings dating to phases 3 and 4. These probably housed steam hammers and hearths (**Figure 4**). The outer walls of the structures are largely constructed of stone, and retained in situ stone jambs indicate the positions of former doorways (**Plates 104-113**), whilst internal walls, hearths and machine bases are constructed with red brick. At the southeast side of these structures, a raised earthwork with several mature trees interrupts the archaeology, with root systems likely disturbing and displacing the below-ground archaeology.

5 CONCLUSIONS

5.1 Summary

- 5.1.1 Although the Site was largely vacant from 1933 until 1983, with the majority of the forge buildings having been demolished during the 1940s, a large amount has been retained both above and below ground.
- 5.1.2 A great deal of documentary and historical research was previously undertaken by the current owner, Julia Hatfield (1991), as well as Postman (2003) and SYIHS (2006), which has formed the foundation of much interpretation. The phasing of the buildings and above ground structural remains has been based largely on cartographical evidence and Site observations where possible. A full comprehensive phasing of all walls of the Site would only be possible if full historic building recording and Site excavation was to go ahead; this would allow a record of the currently obscured relationships between the structural elements.



- 5.1.3 The forge complex remains have retained their general layout and once internal features are present, which are indicative of former functions as depicted on **Figure 4**, all of which correspond with those interpretations made by Hatfield in 1991. No features at the Site were observed which contradict previous interpretations. Many features have been lost and there appears to be less survival, certainly above ground, at the southeast side of the Site. This may be due to the former southeast range having been partially demolished between 1923 and 1933, prior to the final closure of the Site.
- 5.1.4 Retained features which are considered to be of most significance include:
- *Surviving east hammer;*
 - *Puddling furnace;*
 - *All wheel pits and associated water management structures;*
 - *Dam wall.*

The surviving puddling furnace is possibly one the most complete, in situ, furnaces of its kind, as well as possibly being early in date.

5.2 Statement of Condition

- 5.2.1 The Site is currently a private residence with the forge complex remains forming a private garden. Mature trees and shrubs are present throughout the garden area, some of which are growing directly from structures, especially the dam wall, as well as an extensive covering of vegetation along the top of the east hammer. The result is that the vegetation has prised open parts of surviving structures causing decay and erosion. The root systems of mature trees will also be potentially damaging and displacing below-ground archaeological remains. Some structural elements within the garden also appear to be modern planting divisions.
- 5.2.2 It is considered that all the remaining above ground elements of the former forge buildings and dam are at risk of further decay from frost and rain penetrating the structures where the core fabric is exposed and where mortar has been eroded. A considered strategy of conservation work, including repointing, would reduce the risk of further decay from this threat. The proposal of a canopy or roof over the east hammer in order to prevent further decay of the hammer is considered to be an essential element of the conservation works needed.
- 5.2.3 The former Manager's House and Grade II listed workshop range are not considered to be currently under any threat and are in good condition.
- 5.2.4 The identified threats to the remains of the forge buildings, hammer and dam wall have caused the monument to be in an overall **moderate** state and are active. However, the east hammer is deemed to be in a **poor** state. Therefore the Site is considered to be at a **high risk** of damage and the state of the Site is **declining**.

5.3 Statement of Significance

- 5.3.1 The Site is an early and only surviving example of a water powered industrial complex along the Rivelin. Very few examples are retained within the once cramped industrial rivers of Sheffield. The Site was certainly in existence by the early 17th century and may have earlier origins, and became world renowned for its production of anvils.



- 5.3.2 The significance of the Site derives from its historic value as a rare surviving water powered industrial forge complex dating to the 17th century; its group value as part of an element of a once connected group of water powered complexes and water management systems along the Rivelin as well as across Sheffield; and its evidential value with the preservation and retainment of evidence relating to its processes and operational life, especially in the form of significant structural elements with regard to its helve hammer and puddling furnace. This significance is reflected within the scheduling of the Site and is of **national significance**.
- 5.3.3 The recording of the historic buildings and remains on the Site has produced archives that are currently held in the Wessex Archaeology Sheffield Office and will be deposited, along with a copy of this report, with Sheffield Museums within six months of the issue of this report. Further copies of this report will be deposited with the Client and South Yorkshire HER.
- 5.3.4 An OASIS form will be completed at <http://ads.ahds.ac.uk/projects/oasis> for inclusion in the ADS database. This will include an electronic copy of this report in PDF format which will be accessible six months after deposition.



6 BIBLIOGRAPHY

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- Postman, R., 2003. Mousehole Forge.
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- Wessex Archaeology, 2013. Project Design for an Archaeological Assessment & Building Appraisal: Mousehole Forge, Sheffield, South Yorkshire. Ref T17689.

6.2 Consulted Maps

- 1777 Bartholomew's of Bamforth estate map
- 1838 Plan of Groggerham Wheels and Mousehole Forge
- 1840s Burgoyne estate plan
- 1842 Fairbank plan
- 1890 OS
- 1905 OS
- 1923 OS
- 1935 OS
- 1953 OS

6.3 Consulted Online Sources

- <http://www.picturesheffield.com/>
- <http://www.bgs.ac.uk/>



7 APPENDIX I – EPIP BRIEF

BRIEF FOR ARCHAEOLOGICAL ASSESSMENT AND BUILDING APPRAISAL AT MOUSEHOLE FORGE, SHEFFIELD

1 Summary

- 1.1 Mousehole Forge, Malin Bridge, Sheffield (grid reference SK32490 89082) is the site of a former water-powered iron-working forge in North Sheffield, best known for producing anvils, which were shipped around the world. It is thought to have been first developed in the 17th century and operated until the early 20th century. **Mousehole Forge is designated as a Scheduled Ancient Monument (SY1284).**
- 1.2 A number of buildings survive on the site, including the former manager's house, which has been restored by the current owner, and a workshop range (currently in use as a games hall). In addition there are a number of other visible features, including the remains of the central forge buildings (now ruined), two large drop hammers (one now collapsed), a substantial stone dam wall, the remains of the water management system and traces of spoil heaps and other structures associated with the operation of the forge.
- 1.3 A programme of conservation and consolidation work at the site is being funded by the East Peak Innovation Partnership (EPIP) as part of the East Peak Monument Management Scheme (jointly funded by Leader and English Heritage). This work will focus on the surviving drop hammers, dam wall and ruined forge buildings.
- 1.4 In advance of conservation works, EPIP have agreed to fund an archaeological survey and assessment of the site, to inform the works and future management of the site. A combined archaeological assessment and buildings appraisal is required as the site contains both standing and buried features of importance.
- 1.5 The site is in private ownership and access must be arranged in advance with the site owner (contact details to be supplied by EPIP).

2 Purpose of Assessment/Appraisal

- 2.1 The main purpose of the assessment/appraisal is to produce a measured survey and phased plan of the site, with basic commentary (including a discussion/record of the late 20th century restoration works – to be collated in consultation with the current owner) and basic photographic survey to record the site in its current condition.
- 2.2 An understanding of the building remains on the site is required in order to guide future management. An assessment of the likely nature of the buried deposits on this site is also required; the assessment will go on to consider the need for further investigation (evaluation) to fully inform on the nature of the buried archaeology present.

3 Archival Study

- 3.1 Before the survey work begins, background research should be undertaken to review any relevant documentary sources and previous archaeological work. The results of this exercise should be used to help inform the interpretation of the survey results, as well as to inform the whole project. **This stage must include at least one visit to the site and one visit to the South Yorkshire Sites and Monuments Record to review reports of previous work and related reports.**

- 3.2 A large amount of historical information about the site has been collected over a number of years by the site owner Julia Hatfield, and the results of this should be discussed with her before any fieldwork begins.
- 3.3 The aim of this stage of work should be to understand the development of the site over time, the sequence of construction and use of the buildings, and the impact of extensive conservation works during the later 20th century. The results will be used to put the remaining archaeological features in context and establish their archaeological, architectural and historical significance.
- 3.4 **Please note that a formal desk-based assessment is not required and the results of this stage of work should be incorporated within the final report.**

4 Nature of Appraisal

- 4.1 The building appraisal should enable a detailed understanding to be gained of the form, function and phasing of the forge complex. This work will identify all features, fixtures and fittings relevant to the original and subsequent historical uses of the site.
- 4.2 The survey will investigate the entire forge area shown on the accompanying site plan (figure 2) and will, in so far as current land-use and vegetation allows, investigate and record all historic features associated with the forge site, and its operation, within the immediate surrounding area.
- 4.3 The detailed survey work should focus on the central part of the forge (shown on figure 2) which is currently in use as a residential garden. The manager's house (currently in residential use) and former workshop range should be included on the site plan along with a basic description and photographs of each external elevation, however they do not require more detailed investigation.
- 4.4 It is anticipated that the majority of the survey work will be completed during September/October 2013, depending on on-site conditions. A draft report should be submitted for comments by the end of October 2013. The final report must be completed no later than the end of November 2013.

5 Photographic Recording

- 5.1 A general and detailed photographic record is to be made of the forge complex.
- 5.2 General photographs of the site and its setting are required. These can be taken with a 35mm camera. Detailed photographs of identified features of interest are also required and are to be taken with a Medium or Large Format camera. All photographs are to be black and white. All detailed photographs must contain a graduated photographic scale. Where appropriate, perspective control is to be used.
- 5.3 The basic photographic record is to be supplemented by 35mm colour slide photography, especially where colour is an aspect that needs to be recorded, e.g. decoration or industrial residues.
- 5.4 A photographic register detailing (as a minimum) location and direction of each shot must be completed.
- 5.5 The location and direction of each photograph must also be noted on floor plans of each building.

- 5.6 Digital photography is not acceptable for the record photography but digital photographs can be used to supplement the record photographs, e.g. as illustrations to be used in the report (see section 10). Digital cameras should have a minimum resolution of 4 megapixels.

6 Survey/Drawn Record

- 6.1 It is anticipated that the drawn record will equate to a floor plan of the complex, showing former buildings and all other features of archaeological/historical significance - to put those features fully in context. RCHME drawing conventions will be followed.
- 6.2 If earthworks are observed these should be represented on an interpretative analytical plan as hachures not contours.
- 6.3 The on-site survey record should also include:
- A description and record of all archaeological features observed
 - A grid reference for all recorded features (provided by navigation/mapping grade GPS)
 - An interpretation of each feature/group of features, based on on-site observations and archive material (see section 3 above)
 - An assessment of the significance of each feature/group of features (local/regional/national)
- 6.4 Drawings should be at an appropriate scale to show the different elements of the industrial complex and their relationship to each other (generally 1:500 with areas of complex detail produced at a larger scale).
- 6.5 At least two drawn sections through the former forge building(s) should be produced, to show the drop hammers in relation to each other and the surviving dam wall (see section 7 below).
- 6.6 Sketch illustrations that assist in interpreting the use of the rooms and spaces within the complex are also required. As a minimum this must include phase plans for the entire site, but it may also include isometric views and other illustrations where these are considered appropriate.
- 6.7 Evidence for former industrial processes, construction techniques and sequences should be noted and appropriately illustrated. Typical features of interest may include tool marks left over from the preparation of structural timbers, carpenters' marks, residue from metal working, in-situ furnace lining or fire bricks and water management features.

7 Digital Scanning

- 7.1 3D digital scanning should be used to record additional detail of the surviving hammer beams and supporting structures (including the section of the dam wall immediately adjacent to the hammers). A fine scan of one data point every 3mm should be used and automatic photography applied to the point cloud to generate accurate elevations and profiles of, and sections through, the hammers and supporting structures. These additional drawings will be used as the basis for technical drawings for a temporary structure that is currently proposed to protect the hammers from further weathering.

- 7.2 For further guidance on the requirements for the digital recording of the hammers please see *Metric Survey Specifications for Cultural Heritage, Laser Scanning of Mousehole Forge Hammers* (Andrews 2013) which is attached as a separate document.

8 Scientific Analysis

- 8.1 Contingency costs should also be included for dendrochronological dating of the hammer beams, although this will only be carried out if the budget allows, and in consultation with English Heritage. **Please note that any dendrochronology sampling will require Scheduled Monument Consent.**

9 Health and Safety

- 9.1 Contractors are expected to abide by the *1974 Health and Safety Act* and its subsequent amendments as stated in the *Construction and Design Management Regulations 1994*. Appropriate provision of first aid, telephone and safety clothing as described in the *SCAUM* manual on archaeological health and safety must be followed. The project must have a nominated safety officer.
- 9.2 Health and safety will take priority over archaeological matters. All those undertaking fieldwork must comply with all Health and Safety Legislation; this includes the preparation of a Risk Assessment.
- 9.3 The archaeologist or archaeological organisation undertaking fieldwork should ensure that they, or any proposed sub-contractors, are appropriately qualified to undertake such projects.
- 9.4 The archaeologist or archaeological organisation undertaking the survey should ensure that they are adequately insured, to cover all eventualities, including risks to third parties. EPIP may request a copy of the contractor's insurance certificate before the work begins.

10 Report Preparation

- 10.1 Record photographs are to be printed at a minimum of 5" x 4".
- 10.2 A fully indexed field archive is to be compiled consisting of all primary written documents, plans, sections, photographic negatives and a complete set of labelled photographic prints. Labelling should be in indelible ink on the back of the print and should include: film and frame number; date recorded and photographers name; name and address of feature/building; national grid reference. Photographic prints should be mounted in appropriate archival stable sleeves.
- 10.3 Digital images should be provided in three file formats (as a RAW data file, a DNG file and a JPEG file). Metadata should be embedded in the DNG file, including the following; the commonly used name for the site being photographed, the relevant centred OS grid coordinates for the site to at least six figures, the date of photograph, the subject of the photograph, the direction of the shot and the name of the organisation taking the photograph.
- 10.4 A written report is to be produced. A non-technical summary outlining the results is to be included at the start of the report. The report will go on to detail who undertook the assessment/appraisal, when the work was done, where the site/building is located, what research was undertaken and why the work was required.

- 10.5 A discussion of the construction sequence, use of the building(s) and industrial processes is to be included. The report will include a synthesis of the information gathered during the archival study.
- 10.6 The report illustrations should include, as a minimum: a location map at not less than 1:2500 and location plans of all recorded features at a scale that enables easy identification and that depict the full extent of the site investigated. The plans should clearly and accurately indicate any areas that were difficult to survey or were impenetrable and require further work. Maps and plans must include geographical details so that locations are easily identifiable. 3D digital versions of all plans must be supplied in AutoCAD 2007 (or earlier) format (*.dwg or *.dxf).
- 10.7 The report illustrations should also include copies of all historic map extracts consulted (where possible) with the buildings/site clearly visible and outlined; copies of any borehole logs consulted; copies of photographs and slides, used to illustrate key points made; the photographic record plans; reproductions of any record and sketch drawings made.
- 10.8 A complete set of all photographs (excluding duplications) and selected slides are to be included with the digital report, referenced as necessary.
- 10.9 A copy of this brief should be bound into the back of the report.

11 Submission of Report

- 11.1 Within 1 month (or such other period as to be mutually agreed) of completion of the survey work a draft report for both stages of the work should be produced and submitted to the South Yorkshire Archaeology Service (SYAS), English Heritage and EPIP for comments.
- 11.2 Within 3 months (or such other period as may be mutually agreed) of completion of the fieldwork a full report should be provided (taking into account any comments or amendments required by SYAS, English Heritage and EPIP).
- 11.3 5 copies of the final report are required: EPIP and the site owner will both require 1 full copy in a bound A4 printed format and a full digital copy of the report in both word and PDF format. English Heritage will require 2 copies of the final report in bound format and digital copy. 1 additional A4 bound copy of the report and a digital copy in PDF format must be submitted to SYAS on completion of the project.
- 11.4 A database of records must be submitted with the final report to the South Yorkshire SMR (held by SYAS). The Database format should be compatible with MIDAS xml, which forms the industry standard. The data structure of the records should be created according to the latest version of MIDAS, which is MIDAS Heritage available at <http://www.english-heritage.org.uk/publications/midas-heritage/> . This should also include metadata so that they have the background information e.g. scale of data capture.
- 11.5 Acceptable formats for digital survey information are:
 - MAPINFO Interchange format (*.MIF)
 - CAD (*.DXF)

The copyright holder must agree a license with SYAS to allow them to give out the data to enquirers once it is in the SMR.

- 11.6 Upon completion of the work, the archaeological contractor should make their work accessible to the wider research community by submitting digital data and copies of reports online to OASIS (the Online Access to Index of Archaeological Investigations (OASIS) Project using the online form available at <http://ads.ahds.ac.uk/project/oasis/>. The overall aim of the OASIS project is to provide an online index to the mass of archaeological grey literature that has been produced as a result of the advent of large scale developer funded fieldwork.

12 Site Archive

- 12.1 Within 6 months of completion of the fieldwork a full site archive comprising the original paper records and plans, photographs, negatives etc, should be deposited with Sheffield Museums, who should be contacted at the start of the project.

13 Copyright

The author of the material should give permission for the material presented within any reports, and other documents produced as part of this project, to be used by the client (EPIP and English Heritage, in perpetuity, although the author of the material retains the right to be identified as the author of all project documentation and reports as specified in the *Copyright, Designs and Patents Act 1988* (chapter IV, section 79). The permission will also allow the South Yorkshire Archaeology Service to reproduce material, including for non-commercial use by third parties, with the copyright owner suitably acknowledged.

14 General considerations

- 14.1 The project will be monitored as necessary and practicable by the SYAS, in its role as “curator” of the county’s archaeology, and by Tegwen Roberts from EPIP. The contractor will ensure that arrangements are made for monitoring visits and meetings before, during and after the archaeological site work, as appropriate.
- 14.2 Monitoring meetings will typically involve an initial site visit, a further visit(s) to review findings during or near completion of fieldwork, and a final discussion when the report reaches an advanced draft. Time must be allowed for all staff involved in the fieldwork/report to discuss progress with the monitors.
- 14.3 The archaeological contractor will report any significant or unexpected discoveries immediately to the project monitors.

15 Authorised alterations to Specification by consultant

- 15.1 It should be noted that this specification is based upon records available at the South Yorkshire SMR and on a brief examination of the site by EPIP and English Heritage.
- 15.2 If, on first visiting the site or at any time during the course of the recording exercise, it appears in the archaeologist's professional judgement that:
- a part or the whole of the site is not amenable to recording as detailed above, and/or
 - an alternative approach may be more appropriate or likely to produce more informative results,

it is expected that the archaeologist will contact EPIP as a matter of urgency.

- 15.3** If the consultant has not yet been appointed, any variations that EPIP considers to be justifiable on archaeological grounds will be incorporated into a revised specification, which will then be re-issued to the tendering consultants. If an appointment has already been made and site work is ongoing, EPIP will resolve the matter in liaison with SYAS and English Heritage.

16 Submitting a Proposal

- 16.1 A detailed project design for the work outlined above should be formulated by potential contractors and submitted to the East Peak Industrial Heritage Programme for consideration (in consultation with SYAS and English Heritage). The proposal should include:
- A description of the proposed fieldwork methods to be used.
 - A projected timetable for work on the site.
 - Details of the arrangements made for deposition of the site archive
 - A breakdown of costs for the proposed work (including, as a minimum, the desk based assessment and survey work, reporting and archiving costs)
- 16.2 To assist with cost estimates, consultants are asked to indicate day rates for additional work of documentary research, field investigation, surveying and reporting, in case further work is required.
- 16.3 The work shall be carried out by appropriately qualified and experienced staff; details of staff numbers and their relative experience should be included, plus their responsibilities in carrying out the work. Staff CVs should be included as supporting documents with the application (unless already supplied to EPIP and/or English Heritage in previous project specifications).
- 16.4 At least three tenders will be sought. All responses will be assessed in terms of cost, quality of project design and timescale
- 16.5 The final decision on the consultant employed will rest with the East Peak Innovation Partnership.
- 16.6 The successful contractor will be required to enter into a contract with the East Peak Innovation Partnership for the delivery of the work in accordance with this brief and the tender documents submitted.
- 16.7 Once a project design has been agreed, any changes to the project design must be discussed and agreed with the East Peak Industrial Heritage Programme before implementation.**
- 16.8** Applicants should submit a written copy of their tender, along with the requested project plan and supporting documents no later than 5pm **23rd August 2013**.
- 16.9 The work must be completed and the final report submitted no later than **November 30th 2013**.

17 Contact Details

Please submit a copy of your tender along with any supporting documents to:

Tegwen Roberts
East Peak Innovation Partnership
Town Hall House
Shrewsbury Road
Penistone
S36 7DY

Or by e-mail to tegwen@epip.org.uk

Please mark the envelope 'tender submission' and include the name of your organisation on the back of the envelope, alternatively please include 'tender submission' in the title of your e-mail. If you have any queries about this document please contact Tegwen on 01226 767365 or by e-mail at tegwen@epip.org.uk

List of References

(Many of these documents are published by English Heritage, Swindon, and can be downloaded from the English Heritage website)

English Heritage 2002, With Alidade and Tape: graphical and plane table survey of archaeological earthworks).

English Heritage 2003, Where on Earth Are We? The Global Positioning System (GPS) in archaeological field survey.

English Heritage 2006, Management of Research Projects in the Historic Environment: the MoRPHE Project Managers' Guide.

English Heritage 2007, Understanding the Archaeology of Landscapes: a guide to good recording practice.

English Heritage 2008a, SHAPE: A Strategic Framework of Historic Environment Activities and Programmes in English Heritage.

Forum for Information Standards in Heritage (FISH) 2007, MIDAS Heritage – a data standard for the historic environment <http://www.english-heritage.org.uk/publications/midas-heritage/>

*HMSO 1974 Health and Safety at Work Act
http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1974/cukpga_19740037_en_1*

*HMSO 1988 Copyright, Designs and Patents Act
http://www.opsi.gov.uk/acts/acts1988/ukpga_19880048_en_1.htm*

*HMSO 1994 Construction (Design and Management) Regulations
http://www.opsi.gov.uk/si/si1994/uksi_19943140_en_1.htm*

Institute of Field Archaeologists, 1994, revised September 1999

IFA Standard and Guidance for the archaeological investigation and recording of standing buildings or structures.

<http://www.archaeologists.net/modules/icontent/inPages/docs/codes/build2.pdf>

RCHME 1999. Recording Archaeological Field Monuments a descriptive specification. RCHME. Swindon

SCAUM 2006 *Health and Safety in Field Archaeology Manual*
<http://www.famearchaeology.co.uk/>

Appendix One: Site Photographs



General shot from dam wall, showing ruined forge building(s) with manager's house behind



General shot from dam wall, showing ruined forge building(s) with workshop range in background



Shot of surviving drop hammer (with dam wall behind)



Shot of collapsed drop hammer (with dam wall behind)

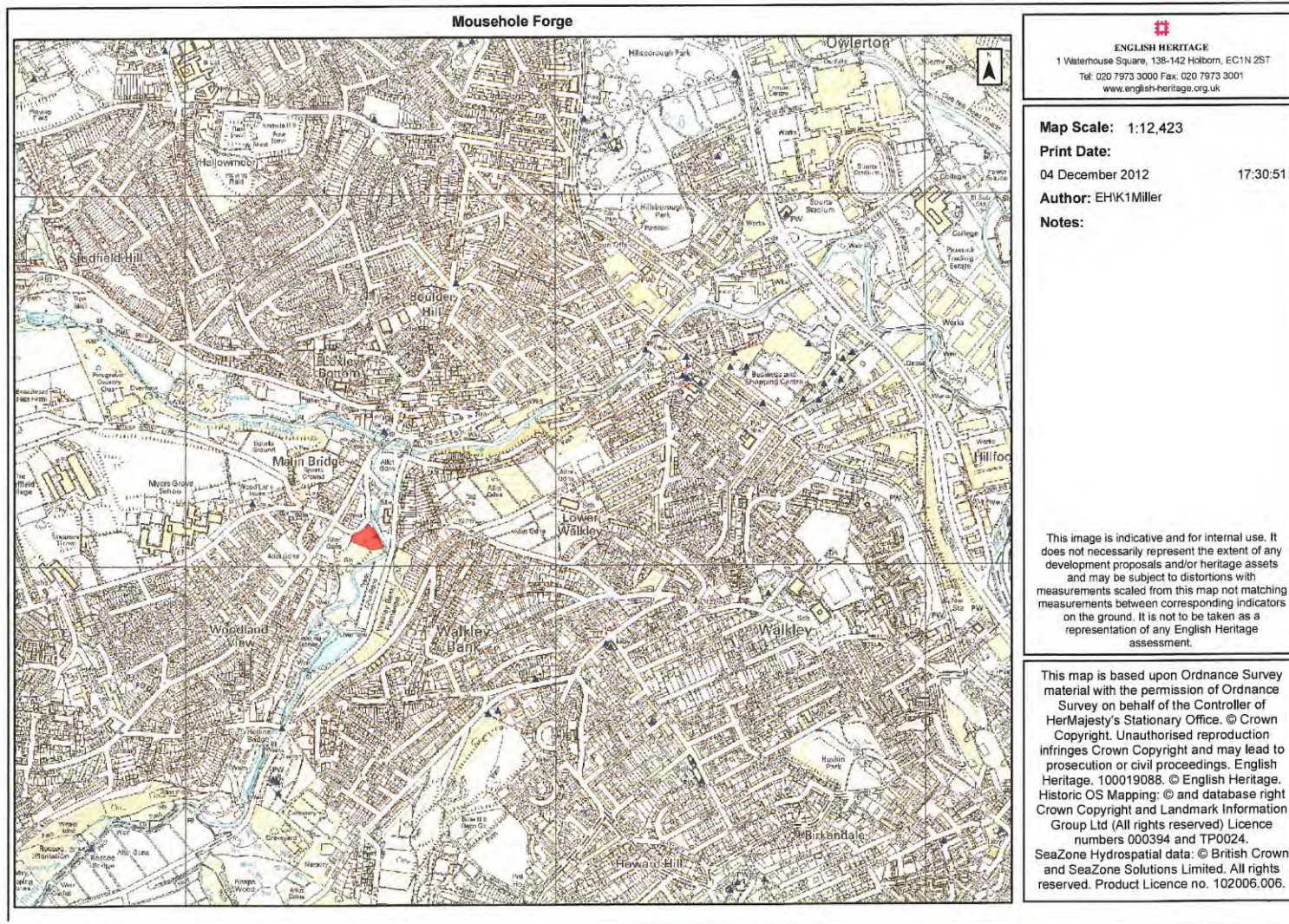


Figure 1: Site location (approximate)

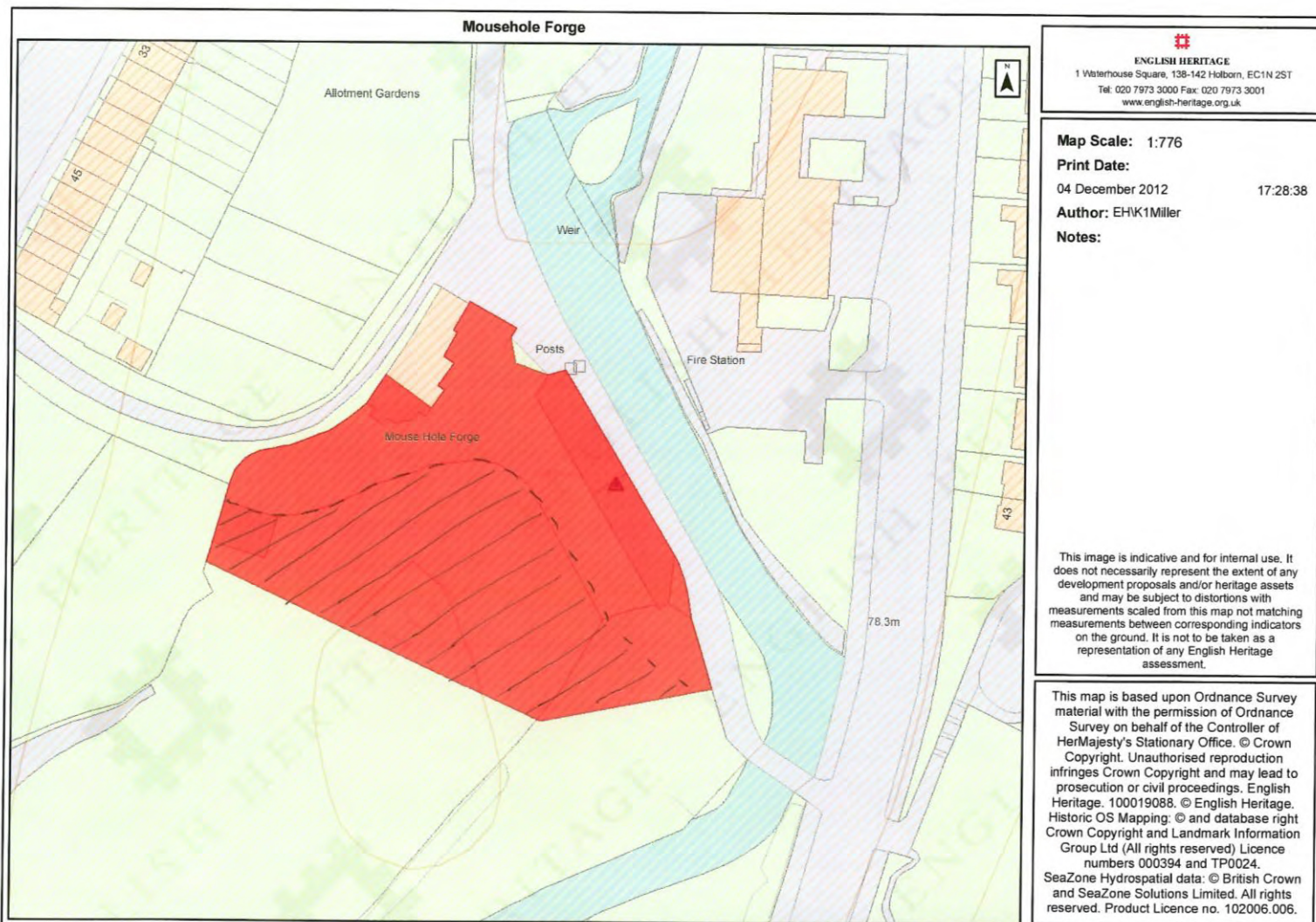
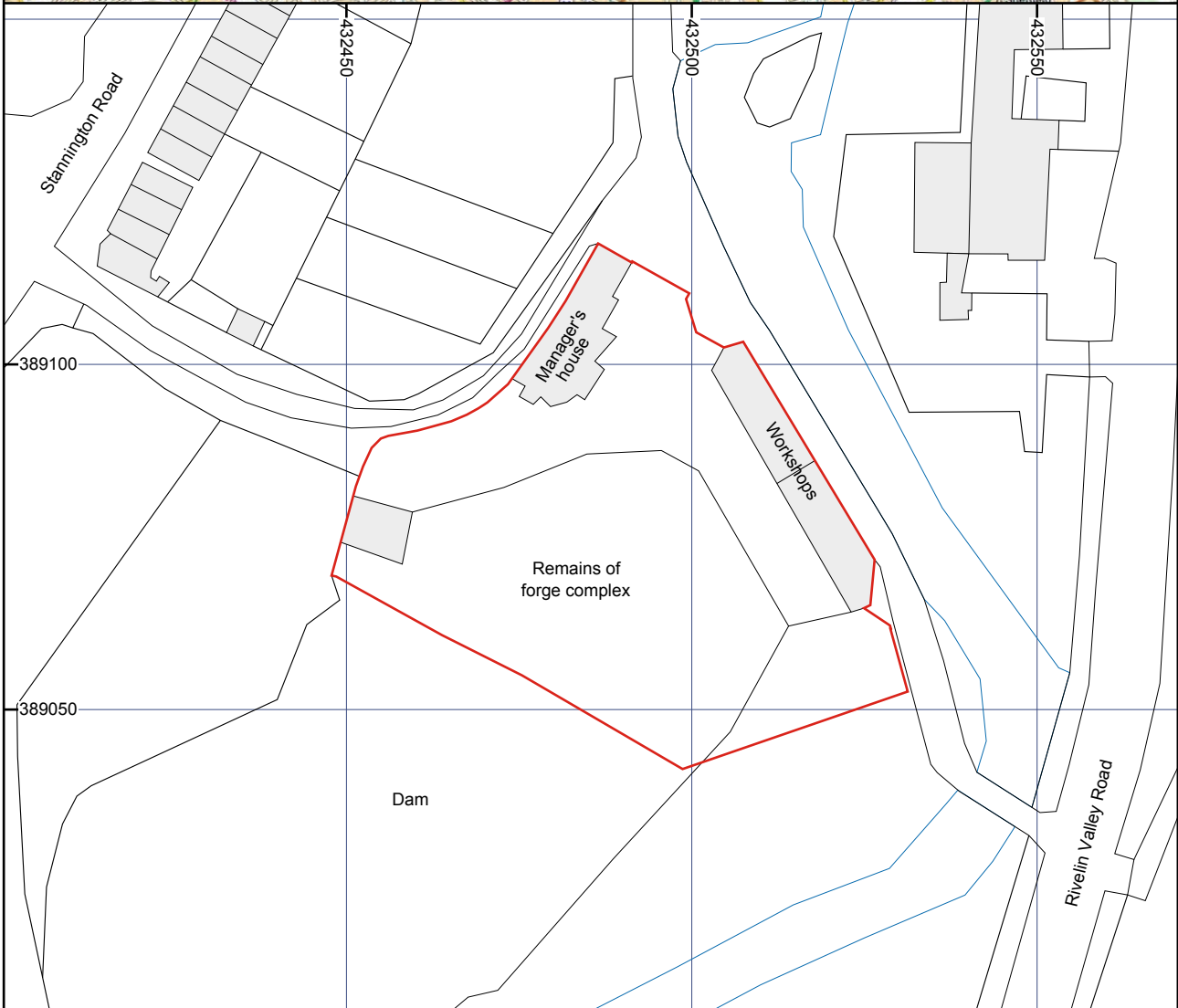


Figure 2: Detail of site showing survey area with central forge area hatched. Please note this is only approximate and the survey should investigate all of the scheduled area (shown in red)



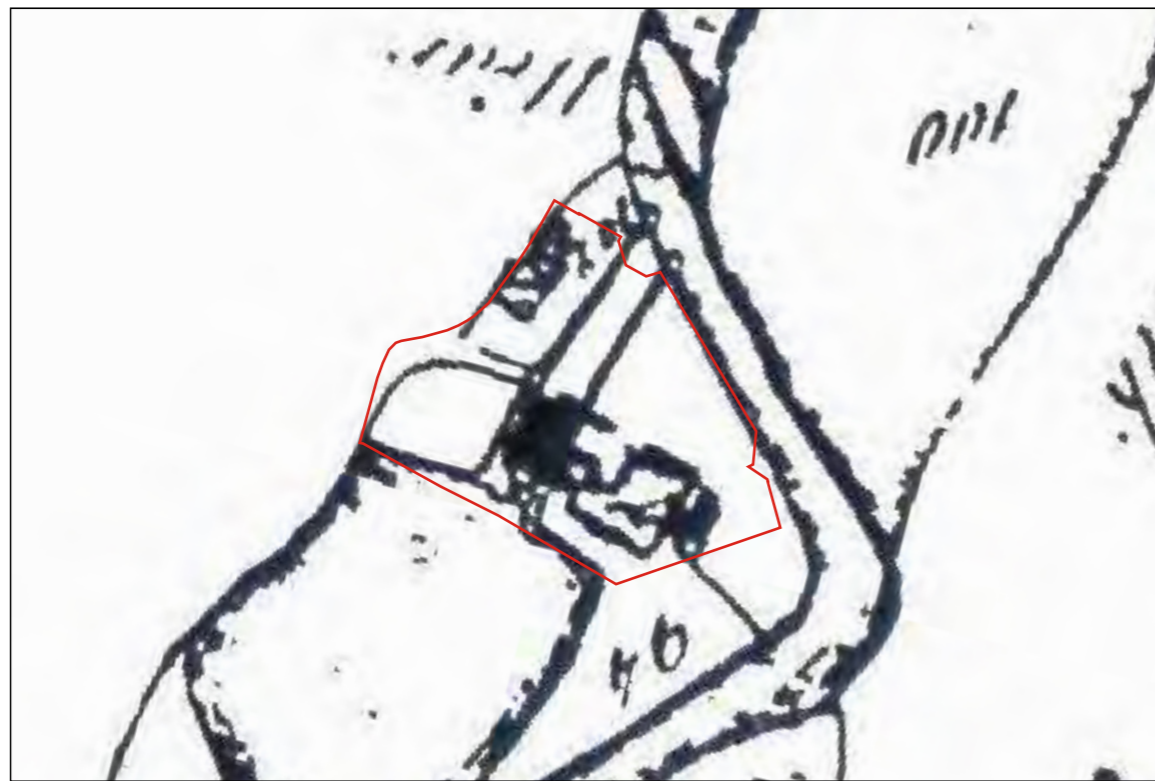
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Site location

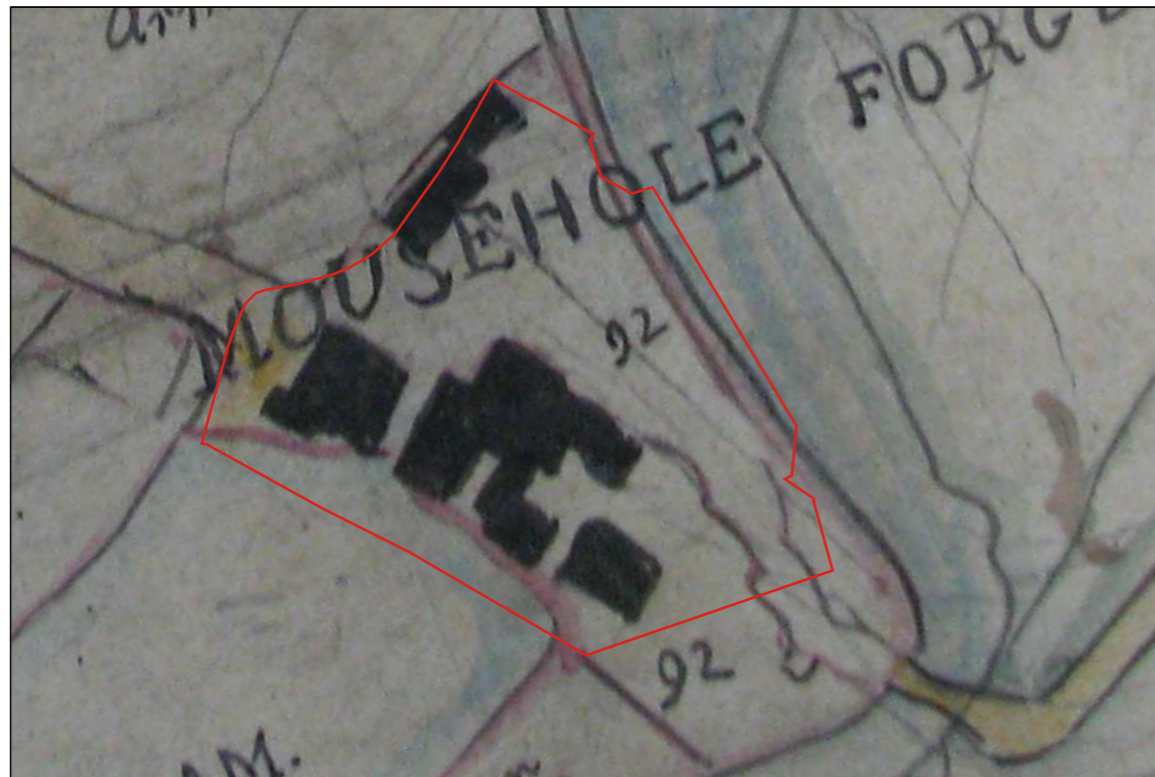
Figure 1



1777 Bartholomew's of Bamforth estate map, 1:1500 (Hatfield, 1991)



1838 Plan of Groggerham Wheels & Mousehole Forge, 1:1000 (South Yorkshire Industrial History Society, 2006: 112)



1840s Burgoyne estate plan, 1:1000 (Sheffield Archives, MD6964)

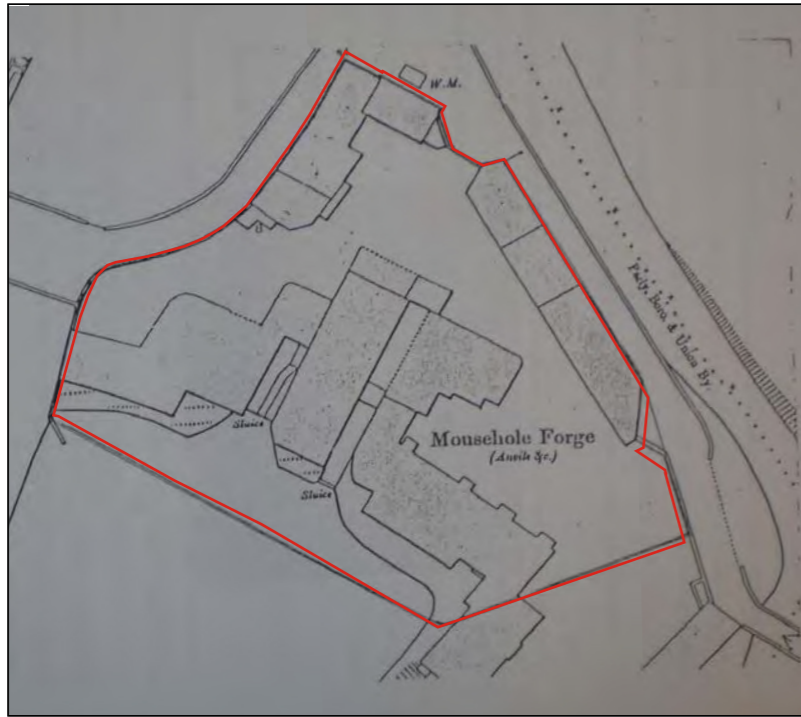


1842 Fairbank plan, 1:1000 (South Yorkshire Industrial History Society, 2006: 109)

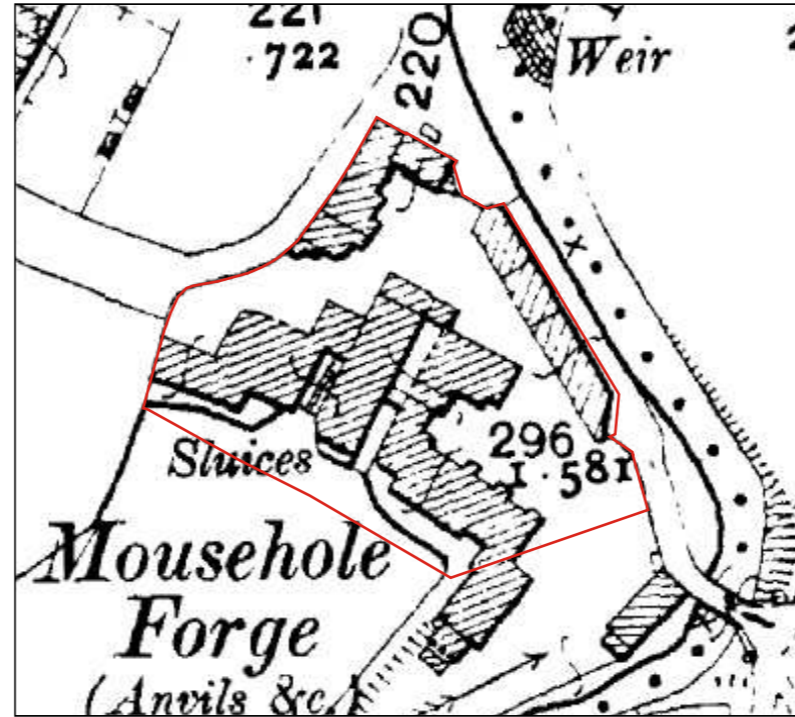


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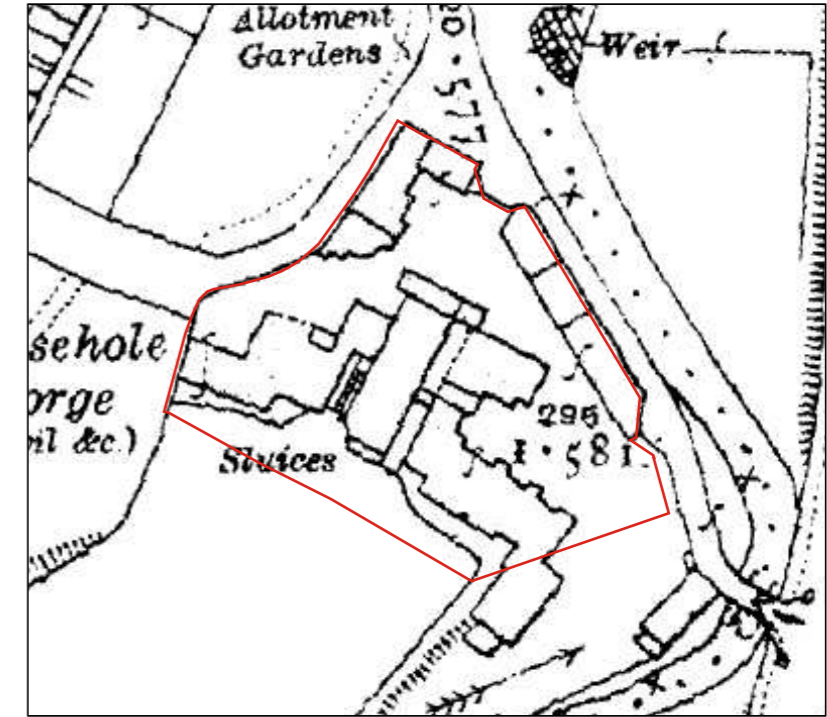
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1890 Ordnance Survey map, 1:1000



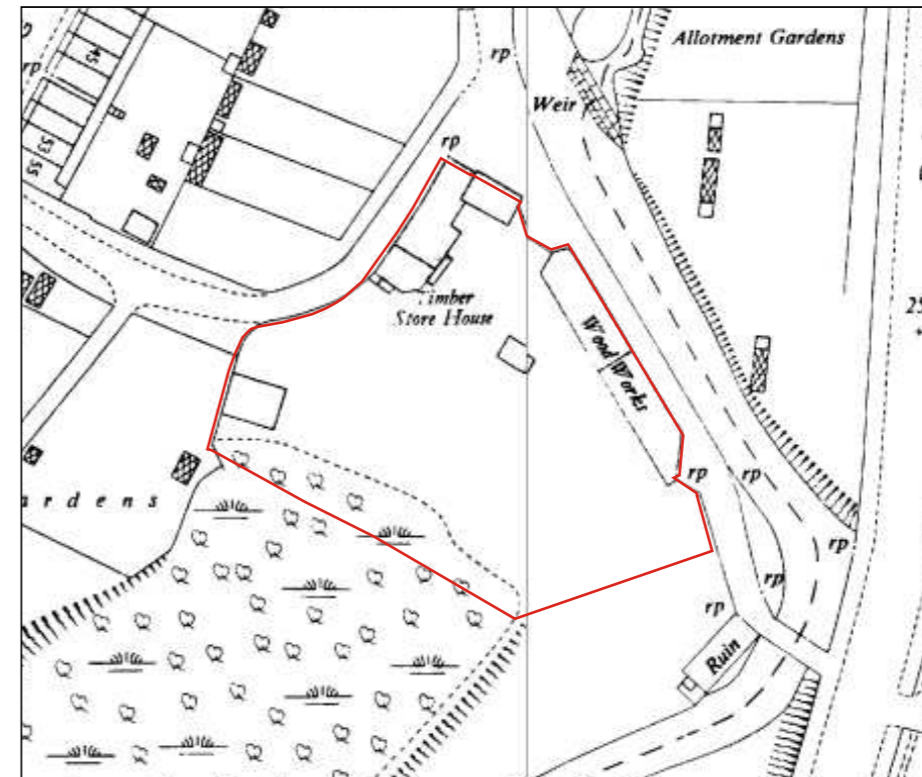
1905 Ordnance Survey map, 1:1250



1923 Ordnance Survey map, 1:1250



1935 Ordnance Survey map, 1:1250



1953 Ordnance Survey map, 1:1250



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- Dam wall
- Vegetation cover
- Water
- Current site boundary
- Phase 1
- Phase 2
- Phase 3
- Phase 4

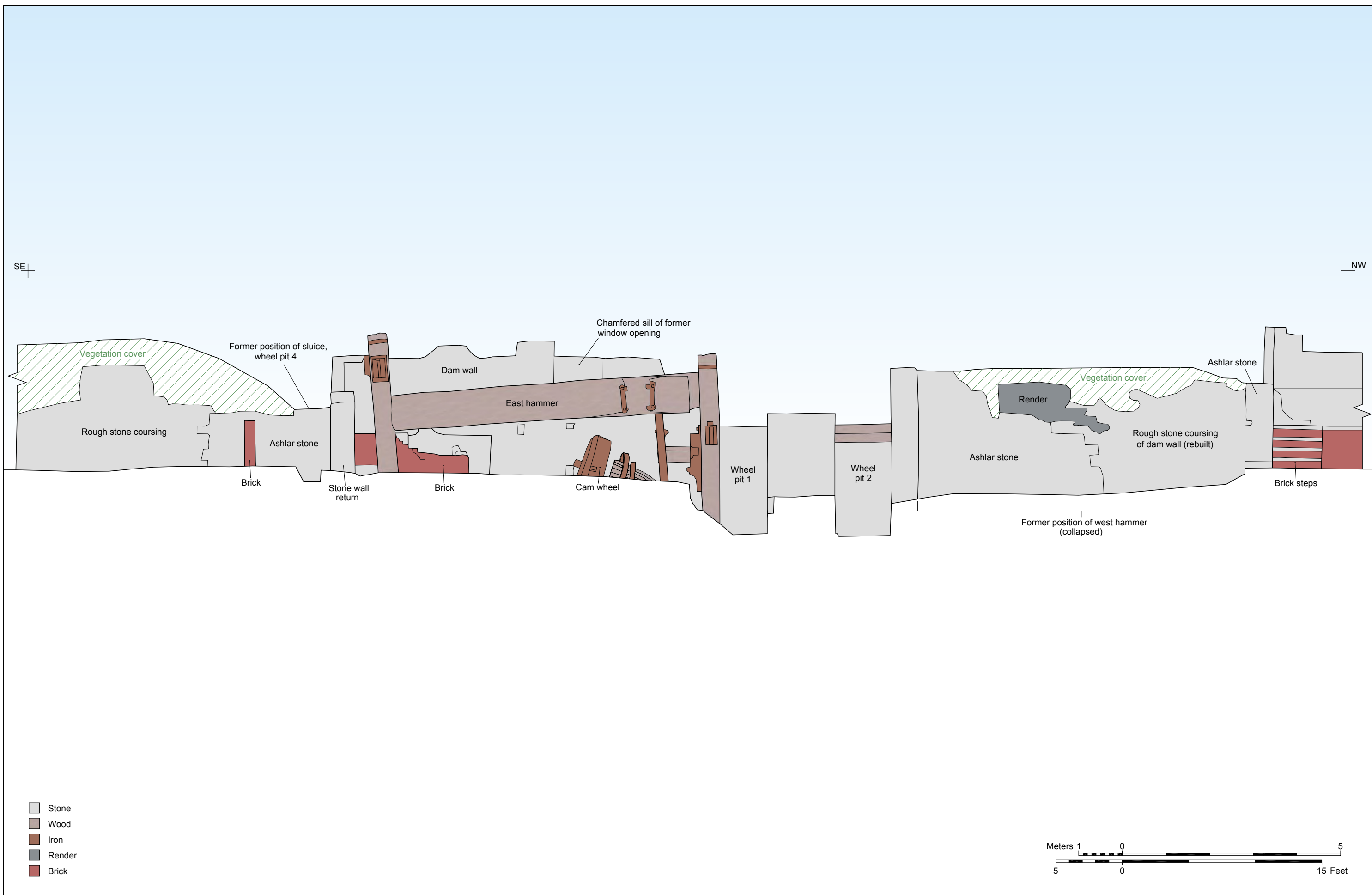


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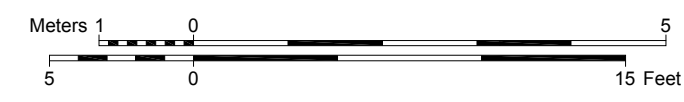
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Site plan with phasing

Figure 4



- Stone
- Wood
- Iron
- Render
- Brick

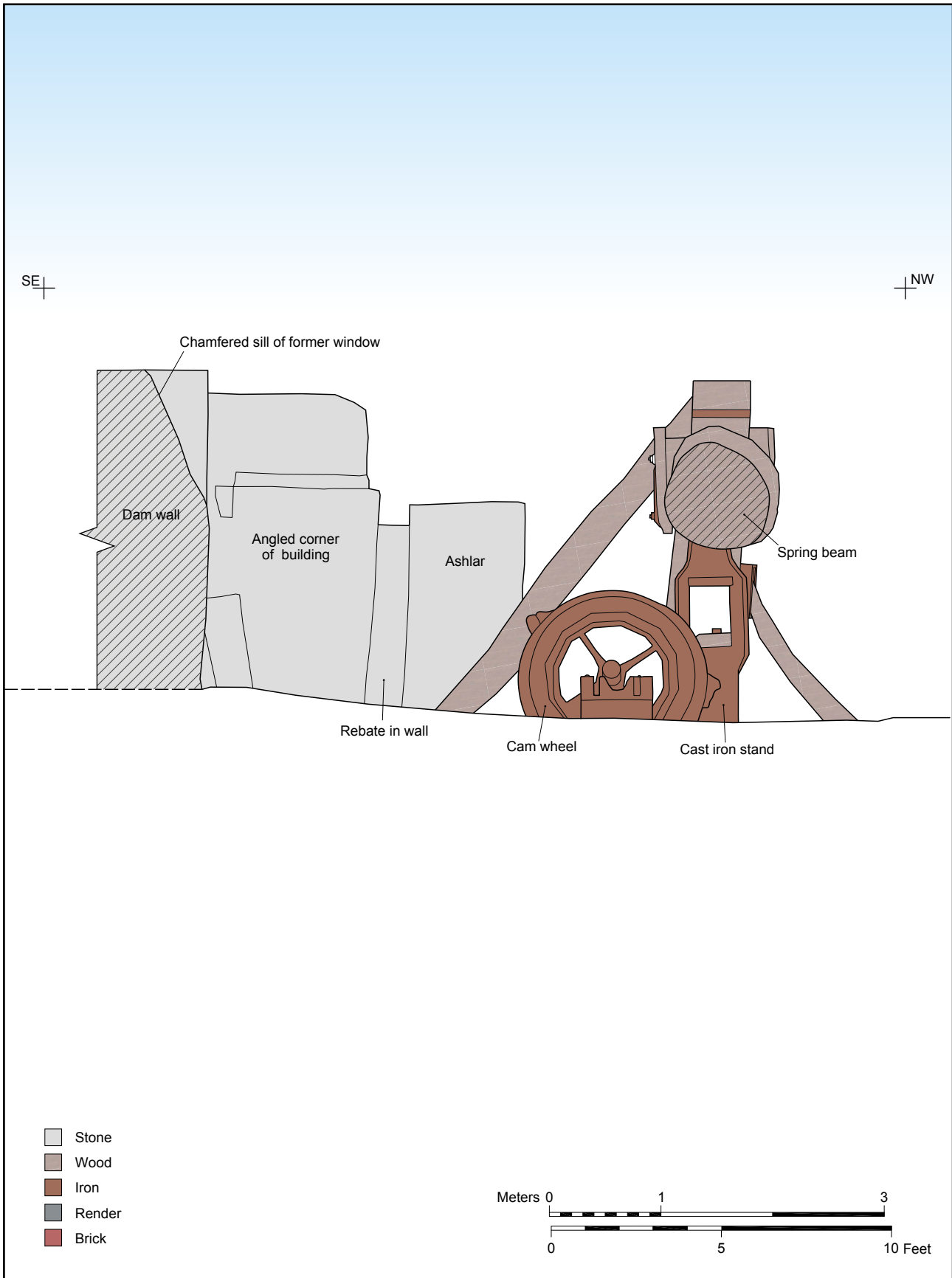



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Elevation 1 showing hammers and dam wall

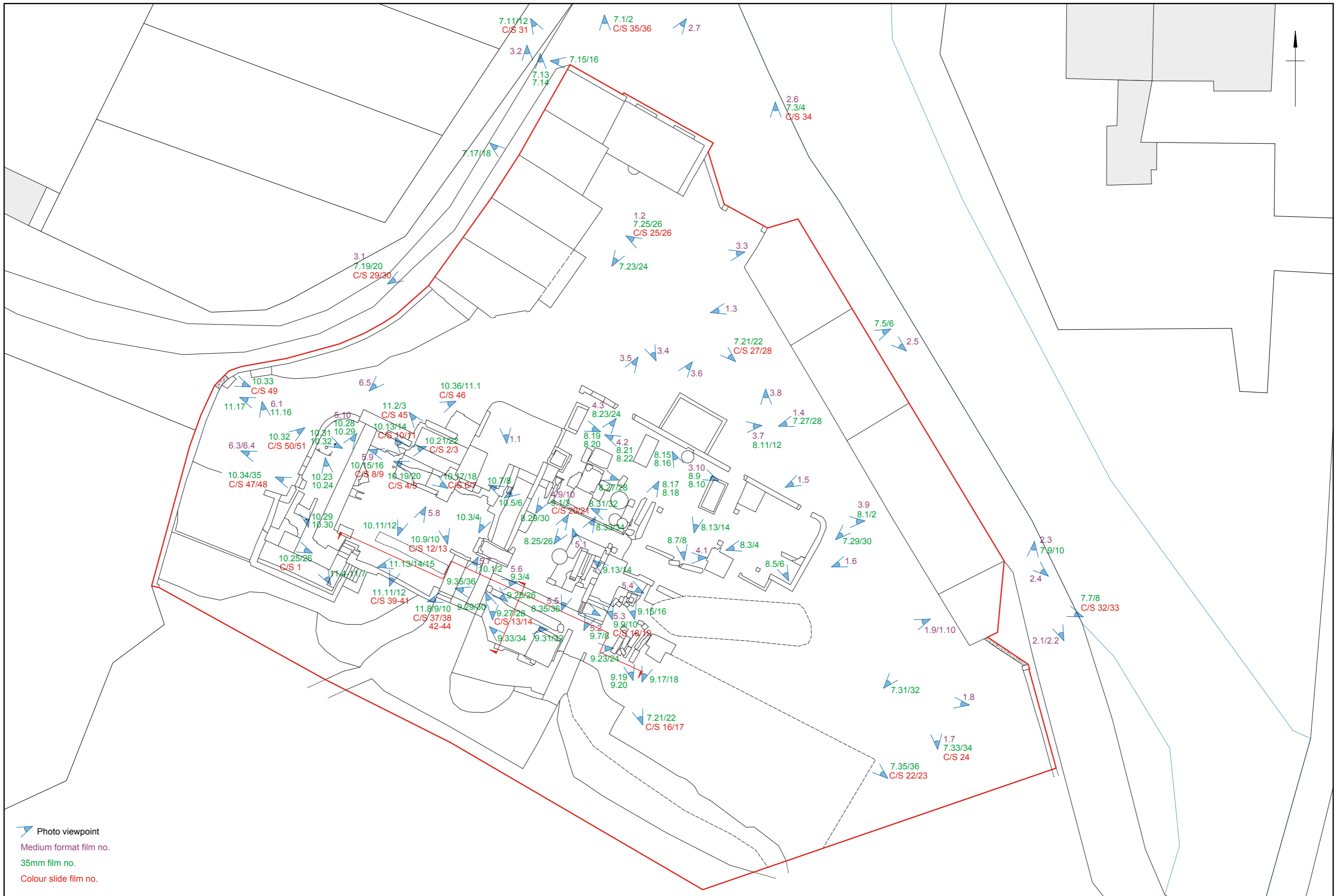
Figure 5




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Section 1 through east hammer

Figure 6



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Site plan showing photographic viewpoints

Figure 7



Plate 1: Historic view of Mousehole Forge from an advertising poster, dating to c.1870s-1880s (Picture Sheffield Ref. s10385)



Plate 2: Historic view of Mousehole Forge, dating to c.1870s-1880s (Picture Sheffield Ref. w02075)



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Plate 3: Historic view of Mousehole Forge dating to c.1900s (Picture Sheffield Ref. s10386)

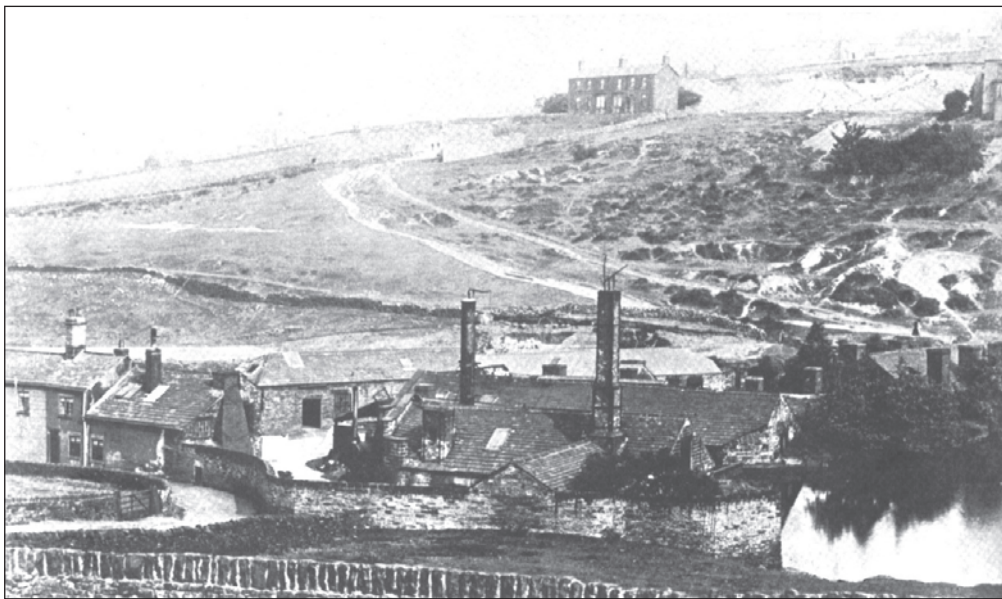


Plate 4: Historic view of Mousehole Forge, from Stannington Road looking towards Walkley Bank, dating to c.1900s (Picture Sheffield Ref. s10384)



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Plate 5: General view of the northeast elevations and entranceway of Mousehole Forge from the 'Easy Going Trail' footpath (Film CS 35)



Plate 6: General view of the northeast elevation of the former Manager's House and office, Mousehole Forge from the 'Easy Going Trail' footpath (Film 2.7)



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Plate 7: General view of the northwest elevation of the former Manager's House and attached furnace, Mousehole Forge (Film 3.2)



Plate 8: General view of the northwest elevation of the former Manager's House and attached furnace, Mousehole Forge (Film 3.1)



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Plate 9: Detail of the chamfered and stopped north corner of the northeast and northwest elevation of the former Manager's House (Film 7.15)



Plate 10: Detail of doorway within the northwest elevation of the former Manager's House (Film 7.18)



Plate 11: General view of the southeast elevation of the former Manager's House and attached furnace (Film 3.3)



Plate 12: General view of the southeast elevation of the former Manager's House and remains of the former office (Film 3.4)



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Plate 13: General view of the southeast elevation of the former Manager's House and attached furnace (Film 7.22)



Plate 14: General view of the south and southeast elevations of the former Manager's House and attached furnace (Film 1.1)

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Plate 15: General view of the southwest gable elevation of the former Manager's House and attached furnace (Film 6.5)



Plate 16: General view of the remains of the former office, looking north (Film 7.23)

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Plate 17: General view of the angled north corner of the Grade II listed former anvil store and workshop range (Film 2.6)



Plate 18: General view of the northeast elevation of the former anvil store and workshop range (Film 2.4)



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Plate 19: Detail of blocked window within the northeast elevation of the former anvil store and workshop range (Film 7.6)



Plate 20: General view of the northeast elevation of the former anvil store and workshop range, showing the angled southeast corner (Film 2.2)



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Plate 21: View of blocked entranceway within the eastern boundary (Film 2.3)



Plate 22: General view of the southwest elevation of the former anvil store and workshop range (Film CS. 25)



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Plate 23: View of the north end of the southwest elevation of the former anvil store and workshop range (Film 1.3)



Plate 24: View of the southwest elevation of the former anvil store and workshop range (Film 1.4)



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Plate 25: View of the southwest elevation of the former anvil store and workshop range (Film 7.28)



Plate 26: View of the southwest elevation of the former anvil store and workshop range (Film 1.5)



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Plate 27: General view of the southwest elevation of the former anvil store and workshop range, looking north (Film 1.7)



Plate 28: View of the south end of the southwest elevation of the former anvil store and workshop range (Film 7.29)



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Plate 29: View of the south end of the southwest elevation of the former anvil store and workshop range (Film 1.6)



Plate 30: General view of the Site, showing remains of the forge complex amongst mature trees, looking northwest (Film CS. 23)



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Plate 31: General view of the Site, showing remains of the forge complex and dam wall amongst mature trees, looking west (Film 1.10)



Plate 32: General view of the Site, showing remains of the forge complex amongst mature trees, looking east (Film 6.4)



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Plate 33: General view of the Site, showing remains of the forge complex amongst mature trees, looking east (Film CS. 48)



Plate 34: General view of the Site, showing remains of the forge complex amongst mature trees, looking northeast from dam wall (Film CS. 41)



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Plate 35: General view of the Site, showing remains of the forge complex amongst mature trees, looking north (Film 9.22)



Plate 36: General view of the northeast elevation of the central phase 1 former forge building (Film 3.5)



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Plate 37: General view of the northeast elevation of the central phase 1 former forge building, showing truncated hearth and chimney stack (Film 3.6)



Plate 38: General view of the central phase 1 former forge building, showing truncated hearth and chimney stack and attached former joiners shop (Film 3.7)



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Plate 39: General (internal) view of the central phase 1 former forge building, showing steam hammer base, surviving east helve hammer and dam wall (Film 4.3)



Plate 40: View of the former steam hammer base, looking southwest (Film 8.23)



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Plate 41: View of the former steam hammer base, looking northeast (Film 8.26)



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Plate 42: Detail of the remains of the western hearth within the central phase 1 former forge building (Film 8.20)



Plate 43: Historic view of the remains of the western hearth within the central phase 1 former forge building (Baker, 1940. Picture Sheffield Ref. y01186)



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Plate 44: Detail of the remains of the eastern hearth within the central phase 1 former forge building (Film 8.22)



Plate 45: View of remains of structures along the western side of the central phase 1 former forge building (Film 8.28)

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Plate 46: View of remains of structures and machine bases along the western side of the central phase 1 former forge building (Film 8.30)



Plate 47: View of remains of structures along the eastern side of the central phase 1 former forge building, showing grinding wheels (Film 8.31)



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Plate 48: View of remains of structures and machine bases associated with grinding, adjacent to wheel pit, along the south-eastern side of the central phase 1 former forge building (Film 8.33)



Plate 49: View of remains of structures and machine bases associated with grinding, adjacent to wheel pit 4, along the south-eastern side of the central phase 1 former forge building (Film 8.35)



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Plate 50: View of remains of wheel pit 4 adjacent to former grinding shop and machine bases along the south-eastern side of the central phase 1 former forge building (Film 5.1)



Plate 51: View of remains of wheel pit 4 adjacent to former grinding shop, south-eastern side of the central phase 1 former forge building (Film 9.14)



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Plate 52: View of remains of wheel pit 4 adjacent to former grinding shop, south-eastern side of the central phase 1 former forge building, and tail goit (Film 9.8)



Plate 53: View of remains of wheel pit 4 adjacent to former grinding shop, south-eastern side of the central phase 1 former forge building, and tail goit (Film 5.3)



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Plate 54: View of remains of wheel pit 4 adjacent to former grinding shop, south-eastern side of the central phase 1 former forge building (Film 5.4)



Plate 55: Detail of the south end of wheel pit 4 adjacent to former grinding shop, south-eastern side of the central phase 1 former forge building (Film 9.12)



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Plate 56: View of remains of wheel pit 4 adjacent to former grinding shop, south-eastern side of the central phase 1 former forge building (Film 9.16)

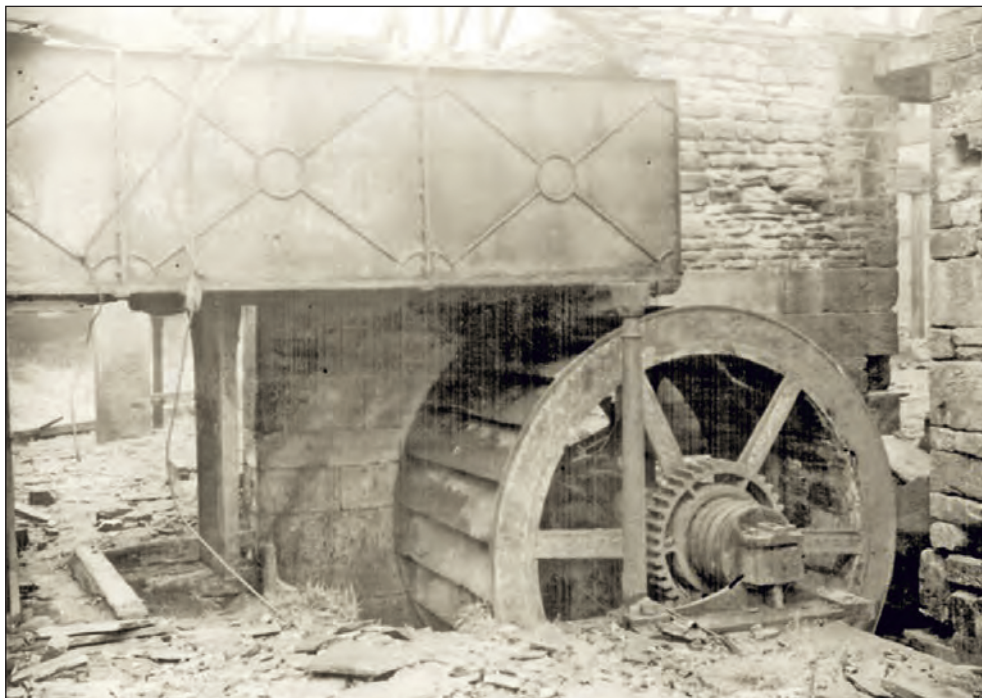


Plate 57: Historic view of wheel pit 4 adjacent to former grinding shop, south-eastern side of the central phase 1 former forge building (Baker, 1940. Picture Sheffield Ref. y01188)



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Plate 58: General view of the remaining east helve hammer, south end of the central phase 1 former forge building (Film 4.5)



Plate 59: General view of the remaining east helve hammer, south end of the central phase 1 former forge building (Film CS. 21)



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Plate 60: Historic view of the east helve hammer, south end of the central phase 1 former forge building (Baker, 1940. Picture Sheffield Ref. y01191)



Plate 61: General view of the remaining east helve hammer and dam wall, south end of the central phase 1 former forge building (Film 9.24)



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Plate 62: Detail of the west end mechanisms of the east helve hammer, south end of the central phase 1 former forge building (Film 9.6)

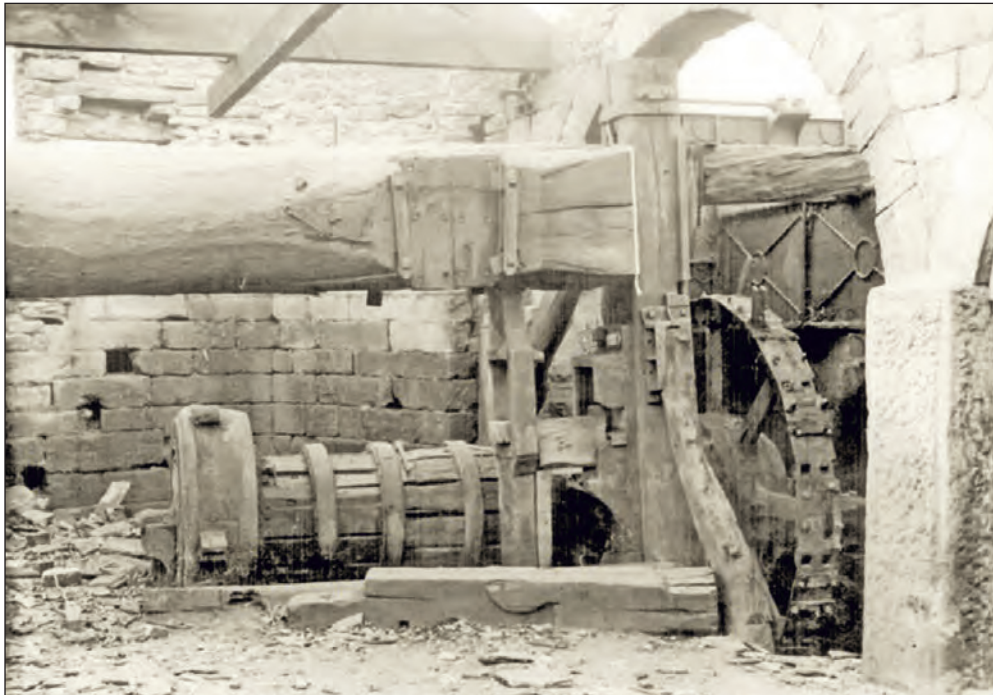


Plate 63: Historic view of the west end mechanisms of the east helve hammer, south end of the central phase 1 former forge building (Baker, 1940. Picture Sheffield Ref. y01190)



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Plate 64: Detail of the west end of the east helve hammer, south end of the central phase 1 former forge building (Film 9.3)



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Plate 65: Detail of the cam wheel at the west end of the east helve hammer, south end of the central phase 1 former forge building (Film 5.6)

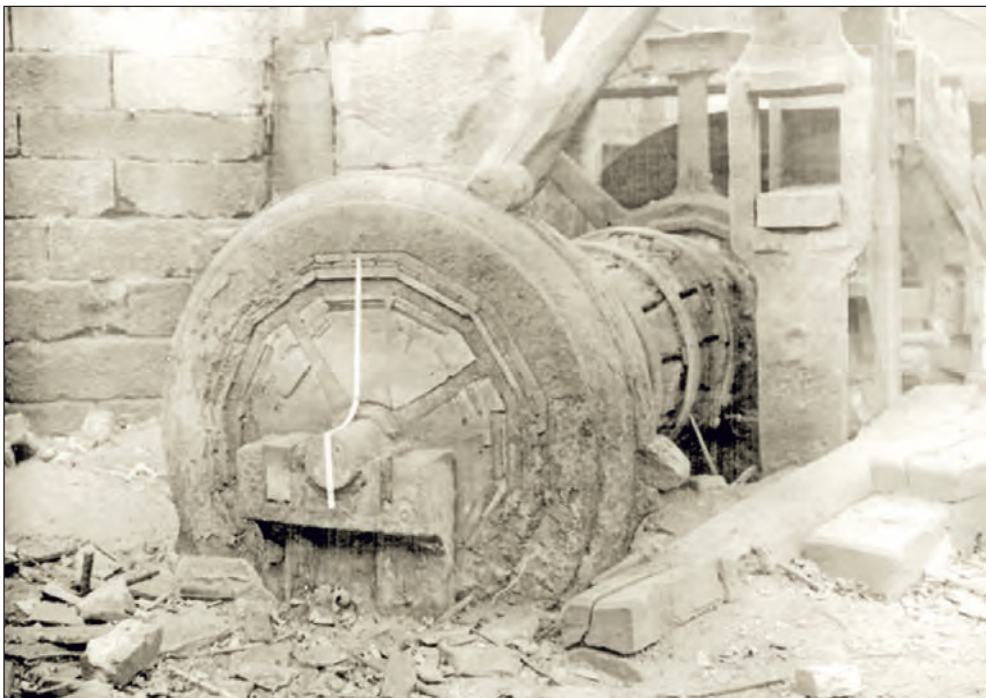


Plate 66: Historic view of the cam wheel at the west end of the east helve hammer, south end of the central phase 1 former forge building (Baker, 1940. Picture Sheffield Ref. y01189)



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Plate 67: Detail of the cam wheel at the west end of the east helve hammer, south end of the central phase 1 former forge building (Film 9.26)



Plate 68: Detail of the cam wheel at the west end of the east helve hammer, south end of the central phase 1 former forge building (Film 9.27)



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Plate 69: Detail of the cam wheel at the west end of the east helve hammer, south end of the central phase 1 former forge building, from the adjacent wheel pit (Film 9.36)



Plate 70: General view of the east helve hammer, south end of the central phase 1 former forge building from the dam wall (Film 11.9)



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Plate 71: General view of the collapsed west helve hammer and dam wall at the south end of the phase 2 range (Film 5.8)



Plate 72: General view of the collapsed west helve hammer from the dam wall at the south end of the phase 2 range (Film 11.12)



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Plate 73: General view of wheel pits 1 and 2, sluices and dam wall (Film 5.7)



Plate 74: Historic view of wheel pits 1 and 2 and the east helve hammer beyond (Baker, 1940. Picture Sheffield Ref. y01187)



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Plate 75: General view of the dam wall behind the east hammer (Film 9.30)



Plate 76: General view of the dam wall and structures behind the east helve hammer (Film 9.34)



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Plate 77: General view of the dam wall behind the east hammer, showing chamfered sill of former window and angled west corner (Film 9.31)



Plate 78: General view of the dam wall behind the east helve hammer, from the dam wall (Film CS. 42)



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Plate 79: General view of the western phase 2 range (Film 11.1)



Plate 80: General view of the western phase 2 range from dam wall, showing remains of a puddling furnace (Film 11.11)



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Plate 81: General view of the western phase 2 range from the dam wall (Film 11.15)



Plate 82: General view of wheel pit and structural remains at the north end of the western phase 2 range (Film 10.4)



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Plate 83: View of the wheel pit and tail race at the north end of the western phase 2 range (Film 10.6)



Plate 84: Detail of wheel mechanism remains at the north end of the western phase 2 range (Film 10.8)



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Plate 85: General view of a puddling furnace at north side of the western phase 2 range (Film CS. 13)



Plate 86: View of the south elevation of the puddling furnace at the north side of the western phase 2 range (Film 10.12)



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Plate 87: General view of a puddling furnace at north side of the western phase 2 range (Film CS. 11)



Plate 88: Detail of the northwest elevation/flue of the puddling furnace at the north side of the western phase 2 range (Film CS. 8)



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Plate 89: General view of the puddling furnace at north side of the western phase 2 range (Film CS. 7)



Plate 90: General view of the puddling furnace at north side of the western phase 2 range (Film CS. 5)



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Plate 91: General view of the puddling furnace flue at north side of the western phase 2 range (Film CS. 3)



Plate 92: General view of the western phase 3 range (Film 5.10)



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Plate 93: General view of the western phase 3 and 4 ranges (Film 6.1)



Plate 94: General view of the western phase 3 and 4 ranges (Film 6.3)



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Plate 95: General view of the western phase 3 range, showing dam wall and staircase (Film 10.23)



Plate 96: General view of the western phase 3 and 4 ranges, looking north (Film 10.29)



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Plate 97: Detail of a former chimney base at the west side of the western phase 3 range (Film 10.31)



Plate 98: General view of the western phase 4 range, looking southwest (Film 10.32)



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Plate 99: General view of the western phase 3 and 4 ranges, from the dam wall (Film 11.5)



Plate 100: General view of the western phase 3 and 4 ranges along the dam wall (Film 11.7)



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Plate 101: Detail of the chimney remains at the southwest corner of the western phase 3 range (Film CS. 1)



Plate 102: Detail of blocked opening within the western boundary stone wall (Film 10.33)

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Plate 103: General view of the northern side of the western phase 2 range (Film 11.2)



Plate 104: General view of the northern elevation of the eastern phase 3 and 4 ranges (Film 3.8)



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Plate 105: General view of the eastern phase 3 and 4 ranges, looking southwest (Film 3.9)



Plate 106: General 'internal' view of the eastern phase 4 range (Film 3.9)



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Plate 107: General 'internal' view of the eastern phase 4 range (Film 8.6)



Plate 108: General 'internal' view of the eastern phase 3 range (Film 8.8)



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Plate 109: General 'internal' view of the eastern phase 3 range, showing rear of chimney and grinding wheel (Film 3.10)



Plate 110: Detail of brick base within eastern phase 3 range (Film 8.13)



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Plate 111: General 'internal' view of the eastern phase 3 range (Film 8.15)



Plate 112: Detail of brick structures within the eastern phase 3 range (Film 8.18)



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Plate 113: General view across the eastern phase 3 range towards the dam wall and east hammer (Film 4.1)



Plate 114: Detail of brick chimney base within the south-eastern phase 4 range (Film 9.18)



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Plate 115: General view of stone elements of former forge buildings (Film 9.19)



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