



# **New Sedgwick Gunpowder Works, Sedgwick, Cumbria**

## **Archaeological Watching Brief**



**Oxford Archaeology North**

January 2008

**The Caravan Club**

Issue No:	2007/8-774
OA North Job No:	L9755
NGR:	SD 5098 8814

**Document Title:** NEW SEDGWICK GUNPOWDER WORKS, SEDGWICK,  
CUMBRIA

**Document Type:** Archaeological Watching Brief

**Client Name:** The Caravan Club

**Issue Number:** 2007/8-774  
**OA Job Number:** L9755

**National Grid Reference:** SD 5098 8814

Prepared by: Steve Clarke  
Position: Supervisor  
Date: September 2007

Checked by: Ian Miller  
Position: Project Manager  
Date: November 2007  
Signed.....

Approved by: Alan Lupton  
Position: Operations Manager  
Date: January 2008  
Signed.....

**Oxford Archaeology North**

Storey Institute  
Meeting House Lane  
Lancaster  
LA1 1TF  
t: (0044) 01524 848666  
f: (0044) 01524 848606

w: [www.oxfordarch.co.uk](http://www.oxfordarch.co.uk)  
e: [info@oxfordarch.co.uk](mailto:info@oxfordarch.co.uk)

**© Oxford Archaeological Unit Ltd (2008)**

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

Oxford Archaeological Unit Limited is a Registered Charity No: 285627

**Disclaimer:**

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

---

## CONTENTS

---

<b>SUMMARY .....</b>	<b>2</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>3</b>
<b>1. INTRODUCTION .....</b>	<b>4</b>
1.1 Circumstances of Project.....	4
<b>2. METHODOLOGY .....</b>	<b>5</b>
2.1 Project Brief.....	5
2.2 Watching Brief.....	5
2.3 Archive .....	5
<b>3. BACKGROUND .....</b>	<b>6</b>
3.1 Introduction .....	6
3.2 Location.....	6
3.3 Historical Background to New Sedgwick Gunpowder Works.....	6
3.4 Processes of Manufacture.....	7
<b>4. RESULTS OF THE WATCHING BRIEF .....</b>	<b>9</b>
4.1 Introduction .....	9
4.2 Trench 1.....	9
4.3 Trench 2.....	9
4.4 Trench 3.....	10
4.5 Area 4.....	10
<b>5. CONCLUSION.....</b>	<b>12</b>
<b>6. BIBLIOGRAPHY .....</b>	<b>13</b>
6.1 Primary and Cartographic Sources .....	13
6.2 Secondary Sources.....	13
<b>7. ILLUSTRATIONS .....</b>	<b>15</b>
Figures .....	15
Plates .....	15
<b>APPENDIX 1: SUMMARY CONTEXT INDEX.....</b>	<b>16</b>

---

## SUMMARY

---

In September 2006, OA North was commissioned by Harrison Pitt Architects, acting on behalf of The Caravan Club, to carry out an archaeological watching brief during development work at Low Park Wood caravan park at Sedgwick, near Kendal, Cumbria (centred at NGR SD 5098 8814). The caravan park occupies the site of the former New Sedgwick Gunpowder Works, which was designated as a Scheduled Monument (SM 27807) in 2000. The watching brief was required to facilitate the production of a written report to describe and record any archaeology encountered during the work, and to satisfy Scheduled Monument Consent for the development.

The New Sedgwick Gunpowder Works was one of seven powder manufactories that were active in the historic counties of Westmorland and the Furness area of Lancashire (now Cumbria) from the late eighteenth century. It was in production between 1857 and 1935, and produced gunpowder for the numerous mineral mines and stone quarries which existed in the area.

The proposed scheme of development allowed for the refurbishment of the toilet blocks, the refurbishment of the reception area, the opening of a new interpretation and information centre, repair work to the access roads, and repairs to several caravan pitches. Of these works, only the proposed repairs to the access roads and caravan pitches were considered to have archaeological implications, and it was these works that were targeted for archaeological monitoring.

The archaeological watching brief closely monitored the excavation of four small areas. Excavation of three of these areas exposed no archaeological structures or deposits, and yielded no artefacts, although the buried remains of a powder press house dating to the early twentieth century were revealed in the fourth area. These remains comprised the stone foundations of the building, and several internal features that pertained to the powder press process. These remains were retained *in-situ*, and were backfilled in a stratigraphic manner upon completion of the groundworks.

---

## ACKNOWLEDGEMENTS

---

Oxford Archaeology North (OA North) would like to thank Harrison Pitt Architects for commissioning and supporting the project on behalf of The Caravan Club. OA North is also grateful to Jamie Lund, the Nation Trust Archaeologist (North West Region), and Andrew Davison, the Regional Inspector of Ancient Monuments for English Heritage, for their support and advice.

The watching brief was carried out by Steve Clarke, who also compiled the report. The illustrations were produced by Marie Rowland, and the report was edited by Ian Miller, who was also responsible for project management.

---

## 1. INTRODUCTION

---

### 1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 In September 2006, OA North was commissioned by Harrison Pitt Architects, acting on behalf of The Caravan Club, to carry out an archaeological watching brief during development work at Low Park Wood caravan park at Sedgwick, near Kendal, Cumbria (centred at NGR SD 5098 8814). The caravan park occupies an area owned by the National Trust, and is currently managed by the Caravan Club. The site was occupied formerly by the New Sedgwick Gunpowder Works, which was designated as a Scheduled Monument (SM 27807) in 2000.
- 1.1.2 The New Sedgwick Gunpowder Works was one of seven powder manufactories that were active in the historic counties of Westmorland and the Furness area of Lancashire (now Cumbria) from the late eighteenth century. This thriving industry was of considerable importance to the local and regional economy, and produced gunpowder for the numerous mineral mines and stone quarries which existed in the area (Somervell 1930, 71). New Sedgwick was one of the region's later gunpowder works, and was in production between 1857 and 1935.
- 1.1.3 Recent investigations of the site by English Heritage established that the site preserves many important archaeological and historic features pertaining to the former gunpowder works. The principal surviving features are the main leat and all three of its original turbine pits, two adjacent ranges of incorporating mills separated by a blast wall, a cooperage, gatehouse, clocking-in house, and several blast banks. In addition, numerous buildings are preserved as concrete floors or ruinous wall footings, including the green charge house, the press pump house, accumulator housing, saltpetre house, reel house, glaze house, two packing houses, and a cartridge press house (Dunn *et al* 2003).
- 1.1.4 Given the extent and importance of the known archaeological resource within the area of the proposed development work, the National Trust Archaeologist, in consultation with English Heritage, recommended that a watching brief was required to monitor development works within the boundaries of the Scheduled Monument. This work was required to facilitate the production of a written report to describe and record any archaeology encountered during the work, and to satisfy Scheduled Monument Consent for the development.

---

## 2. METHODOLOGY

---

### 2.1 PROJECT BRIEF

2.1.1 The programme of archaeological works was carried out in accordance with a Project Brief devised by the National Trust Archaeologist (North West Region). This specified that an archaeological watching brief should be maintained during earth-moving works across the site associated with the proposed development. The aims and objectives of the work were specified as follows:

- to undertake an archaeological watching brief on work to remove several existing surfaced caravan pitches. This will involve observing the removal by machine of crushed stone layers down to the interface with the natural ground or archaeology below. At this point the excavations shall stop to allow appropriate time for recording, after which the area will be backfilled with topsoil;
- to undertake a watching brief on the removal of various visitor service points from within the Scheduled Area. This may involve the removal or partial removal of underground tanks and pipework;
- to undertake a watching brief on work to remove, upgrade or install any buried cables or pipes.

### 2.2 WATCHING BRIEF

2.2.1 The programme of field observation accurately recorded the location, extent, and character of any surviving archaeological features and/or deposits exposed during the course of the groundworks. The work comprised the systematic examination of any subsoil horizons exposed during the course of the groundworks, and the accurate recording of all archaeological features and horizons, and any artefacts, identified during observation.

2.2.2 Recording was by means of OA North's standard context recording system, with watching brief records and supporting registers and indices. A full photographic record in colour transparency and monochrome formats was made. Section drawings and plans were made of relevant archaeological features at appropriate scales. These were located using taped measurements from existing boundaries and landmarks.

### 2.3 ARCHIVE

2.3.1 A full professional archive has been compiled in accordance with the Project Brief, and in accordance with current IFA and English Heritage guidelines (English Heritage 1991).

---

## 3. BACKGROUND

---

### 3.1 INTRODUCTION

- 3.1.1 The following section provides an outline of the natural setting of the study area, and a summarised chronological account of the development of the New Sedgwick Gunpowder Works. The information is taken largely from a comprehensive survey of the site carried out by English Heritage (Dunn *et al* 2003).

### 3.2 LOCATION

- 3.2.1 The former New Sedgwick Gunpowder Works occupies a site on the west bank of the river Kent, some 4.5km south-south-west of Kendal, and 1km north-west of Sedgwick, Cumbria (centred at NGR SD 5098 8814). The site covers an area of 10.9ha (26.9 acres), and lies on the periphery of the Sizergh Castle Estate, Cumbria. The principal manufacturing area of the gunpowder works lies on a terrace of alluvial deposits at a height of 25m above OD.
- 3.2.2 Below Kendal, the river Kent flows through an undulating landscape of low hills and ridges of Carboniferous Limestone (Institute of Geological Sciences 1980). Lower Kentdale has the typical 'U' shape of a glacial valley. The river is either flanked by intermittent narrow terraces or confined within narrower gorges.

### 3.3 HISTORICAL BACKGROUND TO NEW SEDGWICK GUNPOWDER WORKS

- 3.3.1 Approval to build the New Sedgwick Gunpowder Works was obtained by Walter Charles Strickland in 1857 (CRO(K) WQ/O/15), and construction must have commenced immediately as the weir, main leat, and the principal processing buildings are all shown on the Ordnance Survey map surveyed in that year. The original layout of the manufacturing area included the saltpetre refinery, the preparing house, the green charge house, the early range of incorporating mills together with their integral waterwheel house, the first powder press house, the corning house, the first glaze house, and the first stove house, which may all be discerned on the Ordnance Survey map. However, in 1864, Strickland's business failed due to a lack of available capital, and the site was taken over by a syndicate from Manchester who traded as the New Sedgwick Gunpowder Company Ltd. In 1886, the manufactory became a family concern, when the manager of the works, Henry Swinglehurst, brought out the other partners; the company was known thereafter as the Sedgwick Gunpowder Company.
- 3.3.2 The manufacture of gunpowder at New Sedgwick ceased in 1935, and several of the buildings were demolished to prevent any residual gunpowder in their fabric being ignited accidentally. During World War II the site was requisitioned by the army and used as a munitions store, and in 1977 it was remodelled extensively when converted to a caravan park.

### 3.4 PROCESSES OF MANUFACTURE

- 3.4.1 In essence, the manufacture of gunpowder necessitated the even mixing of the three main component elements, which comprised sulphur, charcoal, and saltpetre; these constituents do not react together chemically, but are simply blended together. In order that the sulphur and charcoal could burst into an instantaneous combustion, all the grains had to be of the same size, and free from dust or other foreign particles adhering to the grain surface (Marshall and Davies-Shiel 1977, 75-6).
- 3.4.2 The first stage of manufacture was the preparation of the three component elements. Saltpetre was usually imported in its raw form and required refining, which was achieved by gentle boiling and re-crystallisation. Sulphur was also normally imported in its raw state, and often contained impurities that were removed through distillation. Charcoal could be produced on site in sealed retorts, although it has been suggested that all charcoal at New Sedgwick was sourced from outside the works following a fire at the charcoal house in 1884 (Tyler 2002, 204).
- 3.4.3 The charcoal and sulphur were ground separately to a fine powder in the mixing house, and all component elements were then sieved and mixed in a rotating circular drum containing arms fixed to a central spindle. The mixed ingredients, known as the green charge, were then transferred to the green charge house to await incorporation. This process mixed and compacted the gunpowder into a denser mass, known as mill cake, and was carried out in the incorporating mills. In total, there were nine incorporating mills at New Sedgwick, which were erected in two ranges set at an angle to each other and separated by a blast wall (Dunn *et al* 2003).
- 3.4.4 The mill cake was then transferred to the powder press house, where it was broken down by hand and combined with dust recycled from the corning house. The powder was then spread thinly on to a series of stacked brass plates, which were pressed for about 35 minutes. Once this had been completed, the powder needed to be granulated into rounded and evenly sized grains, a process which was carried out in the corning house. There, the press cake was broken into pieces, and then passed through a series of rollers that granulated it. The powder grains then landed on the sieves of the separator, which separated dust and over-size grains from the powder; the dust was returned to the powder press house, and the over-size grains went back through the rollers.
- 3.4.5 At New Sedgwick, the powder press house was initially situated adjacent to the corning house, although the former was relocated following an explosion in 1871. The new powder press house was built some 70m south of the old powder press house, on the site of an old expense magazine, which had been used to store part-manufactured gunpowder between processes (*Westmorland Gazette* 1875). The new powder press house is shown on the Ordnance Survey map of 1898 as a rectangular building measuring about 10m by 4.75m, with a short porch on its west side over the tramway (Fig 3). However, during a thunderstorm in 1906, the building 'was demolished entirely, but the press itself - a very strong and comparatively new one - was only slightly damaged'

(*Westmorland Gazette* 1906). The official report on the incident noted that the building was constructed of wood with corrugated iron roofing (Explosives Inspectorate 1906, 4). The powder press house was rebuilt following this explosion, and its depiction on the Ordnance Survey map of 1914 is identical to that of its predecessor on the 1898 map.

- 3.4.6 The corning house also had to be rebuilt several times after disastrous explosions, but it was always located on the same site. The original corning house is shown on the Ordnance Survey map of 1857, which shows a rectangular building, measuring some 11m by 5m, situated on the eastern side of the main leat and separated from the first powder press house by a blast wall. The rebuilt corning house depicted on the Ordnance Survey map of 1898 comprised a 'T'-shaped building, with the stem part extending over the tramway (Fig 3). The building was destroyed by an explosion in 1903, although it is shown on the Ordnance Survey map of 1914 to have been rebuilt on the same footprint.



Extract from the Ordnance Survey map of 1914

- 3.4.7 From the press house, the powder was then transferred to the glaze house, where it was placed in wooden drums with graphite and rotated, which smoothed the powder grains and made them less hygroscopic. The glazed powder destined to be sold loose went straight to the stove house to remove any residual moisture, whereas cartridge powder was despatched to the dust house. At the heading house, the loose powder was packed into barrels, each lined with a waxed calico or rubber bag, which were then stencilled before being taken to the store magazine to await despatch.

---

## 4. RESULTS OF THE WATCHING BRIEF

---

### 4.1 INTRODUCTION

- 4.1.1 The proposed scheme of development allowed for the refurbishment of the toilet blocks, the refurbishment of the reception area, the opening of a new interpretation and information centre, repair work to the access roads, and repairs to several caravan pitches. Of these works, only the proposed repairs to the access roads and caravan pitches were considered to have archaeological implications, and it was these works that were targeted for archaeological monitoring.
- 4.1.2 An archaeological watching brief was maintained during the excavation three service trenches, and the mechanical removal of a gravel surface along the main road running north/south between the main buildings of the gunpowder works and the river Kent.

### 4.2 TRENCH 1

- 4.2.1 This trench was excavated across the access road, and was situated a short distance to the east of the site of the Incorporating Mills (Fig 3). The trench measured 5.2m long by 0.5m wide, and was excavated to a maximum depth of 0.4m.
- 4.2.2 The natural geology (**103**) was exposed along the base of the trench. This was overlain by levelling deposits (**101** and **102**), seemingly of modern origin. No features or deposits of archaeological interest were exposed in the trench, and no artefacts were recovered.

### 4.3 TRENCH 2

- 4.3.1 This trench was excavated for a distance of 28m, was 0.4m wide, and was excavated to a maximum depth of 0.9m. The trench was aligned broadly east/west, and was placed across the access track a short distance to the north of Trench 1 (Fig 2).
- 4.3.2 The natural geology was exposed at a depth of 0.2m below the modern ground surface, and was excavated for a depth of 0.7m. This was overlain by a friable, sandy-clay topsoil. No features or deposits of archaeological interest were exposed in the trench, and no artefacts were recovered.

#### 4.4 TRENCH 3

- 4.4.1 This trench was excavated broadly north/south across the access road to the rear of the Powder Press Pump House and the Corning House (Fig 3). The trench measured 15.2m long and 0.5m wide, and excavated to a maximum depth of 0.8m.
- 4.4.2 The natural geology (**305**) was exposed at a depth of 0.4m below the modern ground surface. This deposit was overlain in the eastern part of the trench by the topsoil, **302**, which had a maximum depth of 0.4m. Where the trench cut across the access road, the section revealed a make-up layer of ash, soil and large sub-rounded stones and deposits of limestone chippings. This was overlain by a tarmac surface. No features or deposits of archaeological interest were exposed in the trench, and no artefacts were recovered.

#### 4.5 AREA 4

- 4.5.1 Area 4 represented the largest single part of the site that was subject to archaeological investigation. It was situated between the road and the leat, 25m north of the road junction, and incorporated an area measuring approximately 40m long, with a maximum width of 30m (Fig 2). Area 4 was located immediately to the east of the position of the new powder press house, which was built in c1875 and rebuilt in c1906 (3.4.5 above). Upon completion of the recording of the archaeological remains, the area was backfilled in a stratigraphic manner, retaining all buried remains *in-situ*.
- 4.5.2 The modern ground surface was composed of gravel (**400**), overlying a bedding layer (**401**) of limestone chippings and medium- to large-sized limestone boulders. The area was excavated to a maximum depth of 0.5m. A layer of limestone rubble (**410**) was revealed across the north side of the excavated area. This layer had a maximum depth of approximately 0.5m.
- 4.5.3 Removal of rubble layer **410** revealed the foundations of a stone building (Plate 1), situated 5.6m south of the leat and 27m east of the footbridge that crosses the leat. The building was aligned east/west, parallel with the leat, and was 5.95m long; the full width of the building was not established.
- 4.5.4 The exposed elements of the building comprised the eastern wall (**402**), part of the northern wall (**403**), and several internal features (Fig 4). The eastern wall was exposed for a distance of 5.95m, and measured 0.5m wide. The wall incorporated an aperture, some 1.2m wide, which almost certainly represented the position of a doorway (Plate 1). The internal and external elevations comprised worked stone blocks, with a limestone rubble core and mortar bonding. The wall survived to an average height of 0.15m, although the southern part incorporated an offset foundation course, which extended 0.12m from the overlying masonry; the northern part of wall **402** is also likely to have incorporated an offset foundation course, although this was not exposed. The northern wall (**403**) was exposed for a distance of 1.8m, and whilst of similar construction to the east wall, it was slightly narrower, measuring 0.4m wide (Plate 2).

- 4.5.5 Internally, the building retained an *in-situ* floor (**404**) across its southern part. This floor was composed of concrete, and covered an area measuring some 3.2m by 2.9m. No internal surfacing survived to the north, where the compacted, sandy-clay natural geology (**409**) was exposed (Fig 4).
- 4.5.6 A small, sub-circular pit or posthole (**407**), cut into the natural geology, was revealed in the north-western corner of the exposed area. The feature measured 0.51 by 0.4m, and was 0.38m deep. It contained three large sub-rounded stones, possibly representing post-packing material, set in a sandy-clay matrix (**408**) that contained frequent inclusions of charcoal and burnt clay.
- 4.5.7 Within the southern part of the building, set on concrete floor **404**, were the remains of a concrete plinth, **405**, which survived to a height of 0.26m. This was seemingly associated with a large concrete block, **406**, which lay immediately to the south of plinth **405**. Concrete block **406** measured 0.9m by 0.5m, and survived to a height of 0.52m.
- 4.5.8 Structural components **405** and **406** seemingly bounded a large circular feature, which had been cut into the natural geology (Plate 3). This feature had a diameter of 0.92m, and a maximum depth of 0.22m. The western edge of this feature was lined with medium-sized, sub-angular stones (Fig 4), although it is uncertain whether these had been laid deliberately, or derived from the demolition of the building.
- 4.5.9 Concrete floor **404** and the natural geology were overlain by a thin layer of charcoal and burnt material (**411**), which is likely to have derived from the demolition of the building in the mid-twentieth century.

---

## 5. CONCLUSION

---

- 5.1 The watching brief closely monitored all earth-moving works of archaeologically-sensitive deposits within the Scheduled Area of New Sedgwick Gunpowder Works, which comprised the excavation of four trenches. The excavation of three of the trenches exposed no archaeological remains, and yielded no artefacts, although significant buried structures were encountered immediately below the modern ground surface in one part of the site (Area 4). A detailed record was made of the upper surface of the exposed remains, which were backfilled in a stratigraphic manner upon completion of the archaeological fieldwork. The groundworks associated with the development have therefore not had a negative impact on the buried archaeological remains across the site.
- 5.2 The position of the buried structures encountered in Area 4 correspond to the location of a building shown on the Ordnance Survey map of 1898, and almost certainly represent the vestiges of the powder press house. This component of the works was erected in this position in *c*1875, following the destruction of the original powder press house, which had been sited adjacent to the corning house to the north. The new powder press house was built on the site of an expense magazine, which itself may not have dated to the initial construction phase of the works as it does not appear on the first edition of the Ordnance Survey 25" map (surveyed in 1857), or on the 1859/1860 sketch maps of the site. A building screened by trees is visible at this location on an historic photograph, dated 1873-5 (Dunn *et al* 2003), which shows a single-storey rectangular building on top of a raised stone base. It is considered likely, however, that this building was the expense magazine rather than the powder press house, as the latter was still under construction in 1875 (*ibid*).
- 5.3 The new powder press house, erected in *c*1875, was reportedly constructed of wood with corrugated iron roofing (3.4.5 *above*), a description which does not lend itself closely with the exposed remains, other than the possible posthole (407) against the western edge of the excavated area. This building was replaced in the early twentieth century, and it seems likely that the exposed remains pertain to this rebuilt structure. The internal flooring (404) and structural remains (405 and 406) almost certainly represent elements of the powder pressing process, although their precise function cannot be established.

---

## 6. BIBLIOGRAPHY

---

### 6.1 PRIMARY AND CARTOGRAPHIC SOURCES

Cumbria Record Office (CRO: Kendal) WQ/O/15 Kendal Order Book 1839-76

Explosives Inspectorate, 1906 *Circumstances attending an Explosion in the Press House and Incorporating Mills which occurred at the Factory of the Sedgwick Gunpowder Company, Limited, at Sedgwick, near Kendal, in the County of Westmorland, on the 23<sup>rd</sup> June, 1906*, Report **179**, London

*Westmorland Gazette and Kendal Advertiser*, 25 June 1864

*Westmorland Gazette*, 7 August 1875

*Westmorland Gazette*, 30 June 1906

Ordnance Survey 1862, *County Series 6"*, *Westmorland Sheet XLII*, surveyed 1858

Ordnance Survey 1863, *County Series 6"*, *Westmorland Sheet XXXVIII*, surveyed 1858

Ordnance Survey 1880, *County Series 25"*, *Westmorland sheet XXXVIII.16*, surveyed 1858

Ordnance Survey 1895, *County Series 25"*, *Westmorland sheet XLII.4*, surveyed 1857

Ordnance Survey 1898a, *County Series 25"*, *Westmorland sheet XLII.4*, 2<sup>nd</sup> edn, revised 1896

Ordnance Survey 1898b, *County Series 25"*, *Westmorland sheet XLII.4*, 2<sup>nd</sup>, revised 1897

Ordnance Survey, 1914a, *County Series 25"*, *Westmorland sheet XLII.4. Edition of 1914*, revised 1912

Ordnance Survey, 1914b, *County Series 25"*, *Westmorland sheet XXXVIII.16, Edition of 1914*, revised 1911

### 6.2 SECONDARY SOURCES

Dunn, C, Lax, A, Hunt, A, Jecock, M, Goodall, I, Berry, T, and Taylor, S, 2003 *New Sedgwick Gunpowder Works, Cumbria: An Archaeological and Architectural Survey*, English Heritage Report A1/19/2003, unpubl rep

English Heritage, 1991 *Management of Archaeological Projects*, 2<sup>nd</sup> edn, London

Marshall, JD, and Davies-Shiel, M, 1977 *Industrial Archaeology of the Lake Counties*, 2<sup>nd</sup> edn, Beckermest

Somervell, J, 1930 *Water-power Mills of South Westmorland on the Kent, Bela and Gilpin and their Tributaries*, Kendal

Tyler, I, 2002, *The Gunpowder Mills of Cumbria*, Keswick

---

## 7. ILLUSTRATIONS

---

### **FIGURES**

- Figure 1: Site location
- Figure 2: Plan showing Trenches 1, 2, and 3, and Area 4
- Figure 3: Plan showing Trenches 1, 2, and 3, and Area 4, superimposed onto the Ordnance Survey map of 1898
- Figure 4: Detail of Area 4

### **PLATES**

- Plate 1: The exposed remains of the new powder press house, looking west
- Plate 2: The exposed remains of the new powder press house, looking south
- Plate 3: Circular feature exposed within the new powder press house, looking north

## APPENDIX 1: SUMMARY CONTEXT INDEX

Context	Depth	Deposit	Description
<b>101</b>	0.1m	Road	Tarmac
<b>102</b>	0.1m	Layer	Greyish-black mix of clinker and gravel
<b>103</b>	0.2m	layer	Make up layer of greyish brown very sandy-clay, 10% medium sub-rounded stones and 10% small sub-angular stones
<b>201</b>	0.25m	topsoil	Greyish brown friable sandy-clay soil, occasional small sub-rounded stone
<b>202</b>	0.45m	Subsoil	Yellowish brown firm sandy clay with occasional large sub-rounded stone.
<b>301</b>	0.5m	Road	Tarmac
<b>302</b>	0.4m	Topsoil	Mid brown friable sandy-clay, 10% small sub-rounded stone.
<b>303</b>	0.4m	Make-up	Pinkish brown limestone chippings
<b>304</b>	0.43m	Make up layer	Blackish-brown sandy-clay soil and ash, 30% inclusions of large sub-rounded stones
<b>305</b>		Natural	Light orangey-brown fine very sandy-clay, 30% inclusions of medium to large sub-rounded stones
<b>400</b>	0.2m	Surface	Light grey chippings , 0.01 - 0.05m in size.
<b>401</b>	0.5m	Make up layer	Loose sandy-clay, 50% mixed chippings and medium to large sub-rounded stones.
<b>402</b>		Wall	Limestone and mortar wall, forming eastern side of building
<b>403</b>		Wall	Limestone and mortar wall, forming northern side of building
<b>404</b>		Surface	Concrete floor surface
<b>405</b>		Plinth	Concrete plinth and crucible
<b>406</b>	0.52m	Block	Concrete block
<b>407</b>	0.38m	Pit	Sub-circular pit, or posthole, with near vertical sides and a flat base
<b>408</b>	0.38m	Fill	Fill of feature <b>407</b> . Mix of blackish-brown sandy-clay and charcoal (50%) and patches of burnt clay
<b>409</b>		Layer	Orangey-yellow compact very sandy-clay, <0.5% small sub-rounded stones
<b>410</b>	0.05	Deposit	Black silty-clay mixed with 60% charcoal, inclusions of small burnt wood and copper nails
<b>411</b>	0.04	Deposit	Small to large sub-angular limestone building material



Plate 1: The exposed remains of the new powder press house, looking west (2m scale)



Plate 2: The exposed remains of the new powder press house, looking south  
(2m scale)



Plate 3: Circular feature exposed within the new powder press house, looking north  
(2m scale)

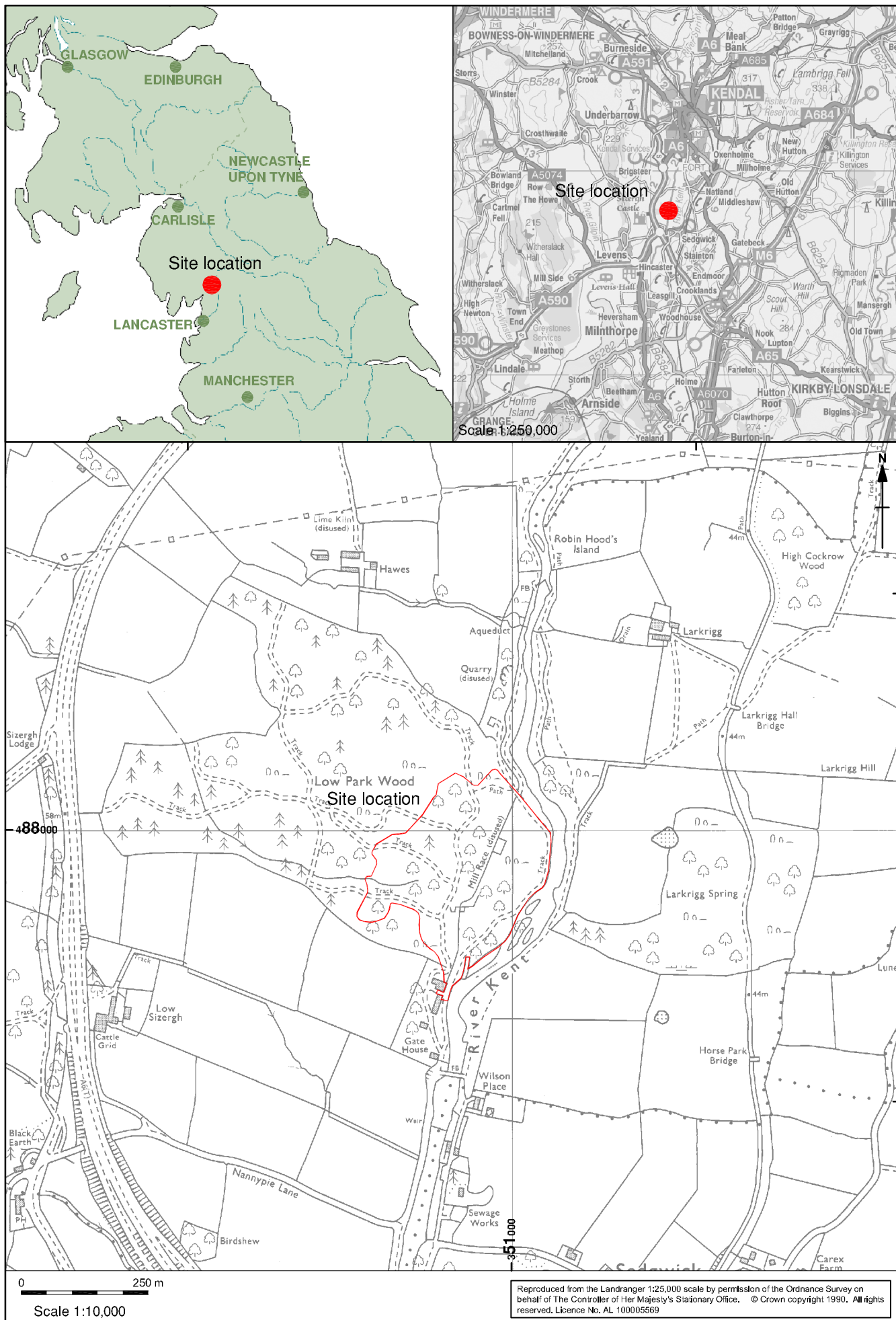


Figure 1: Site Location

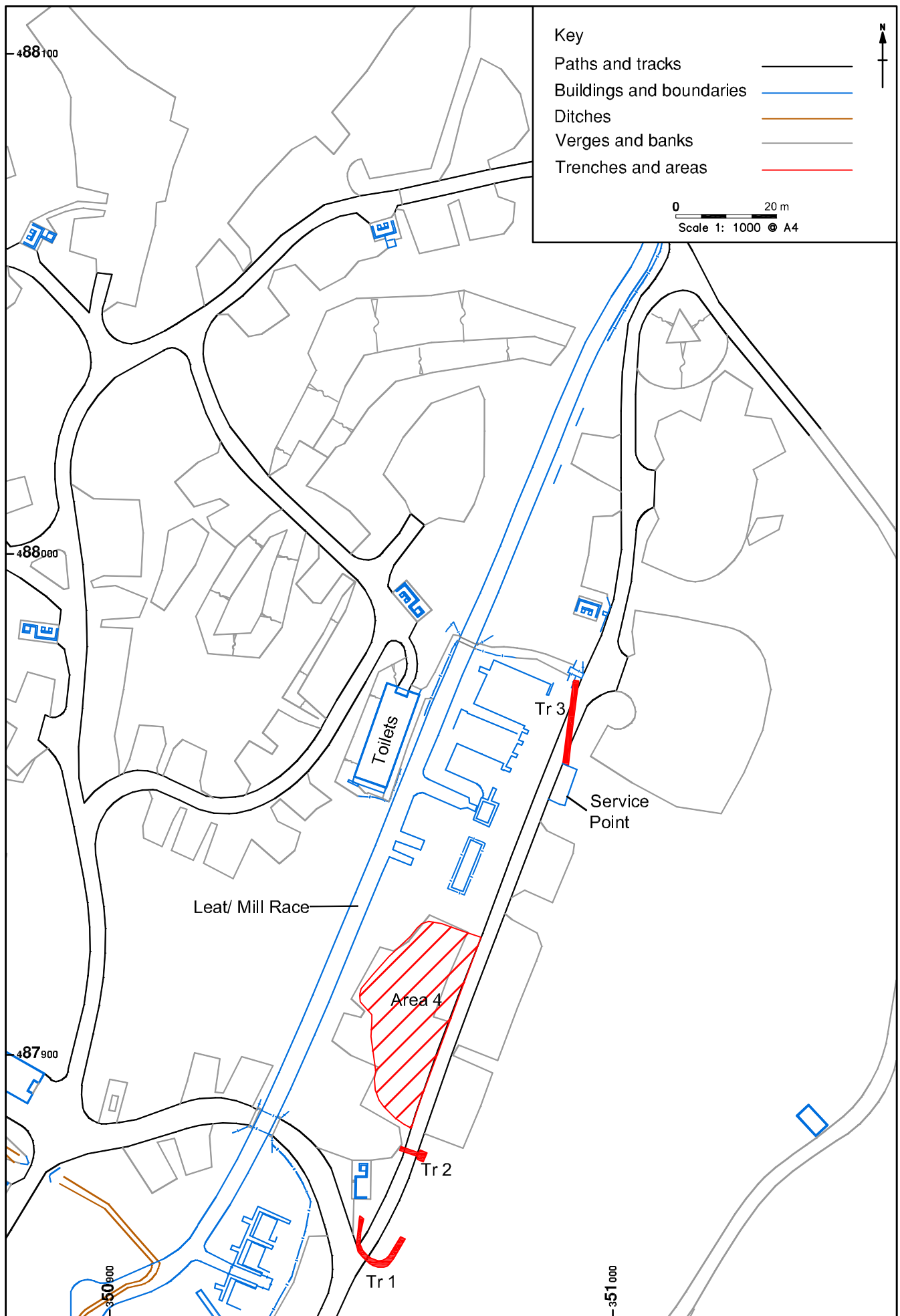


Figure 2: Plan showing Trenches 1, 2, and 3, and Area 4

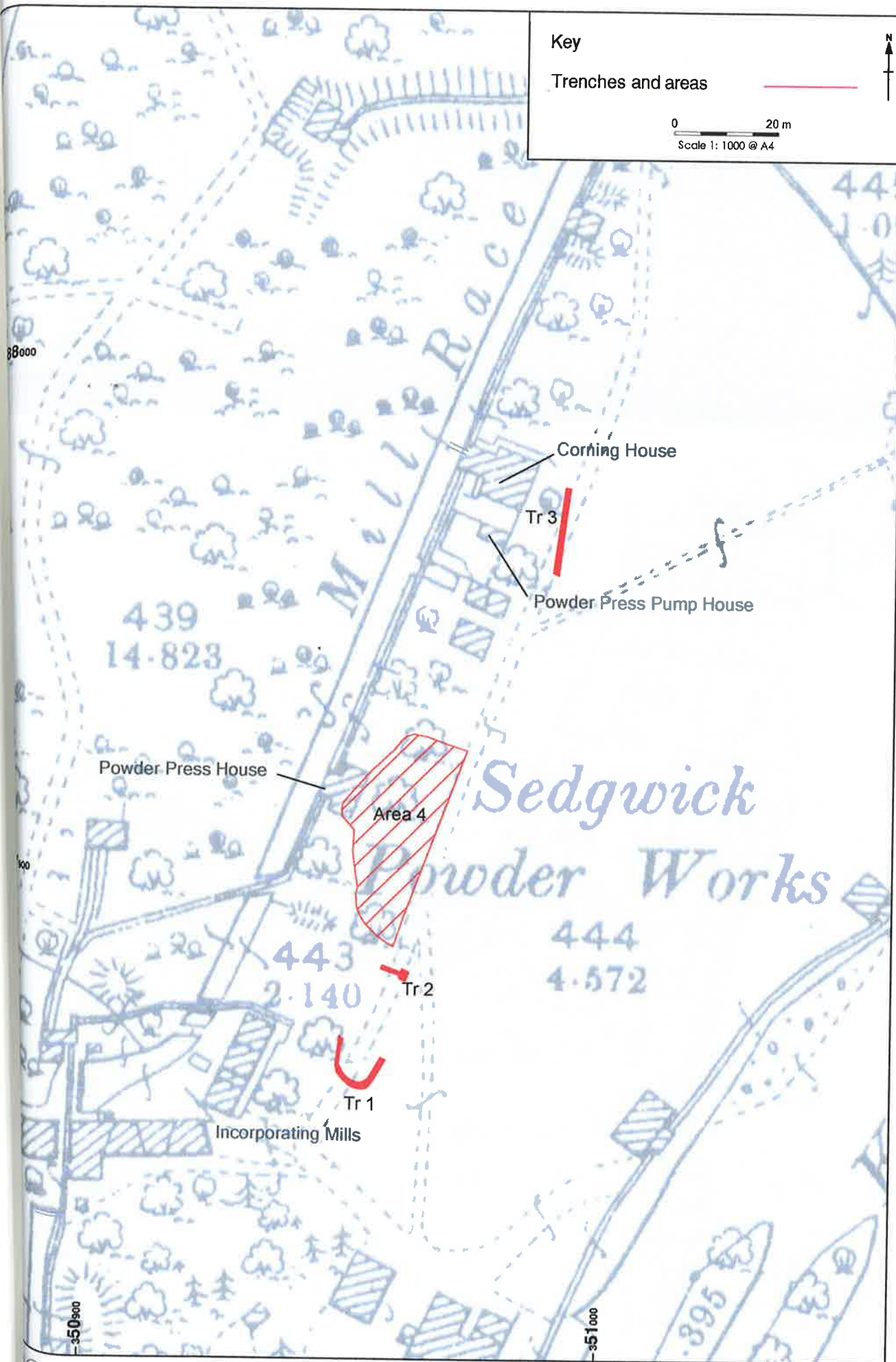


Figure 3: Plan showing Trenches 1, 2, and 3, and Area 4 superimposed onto the Ordnance Survey map of 1898

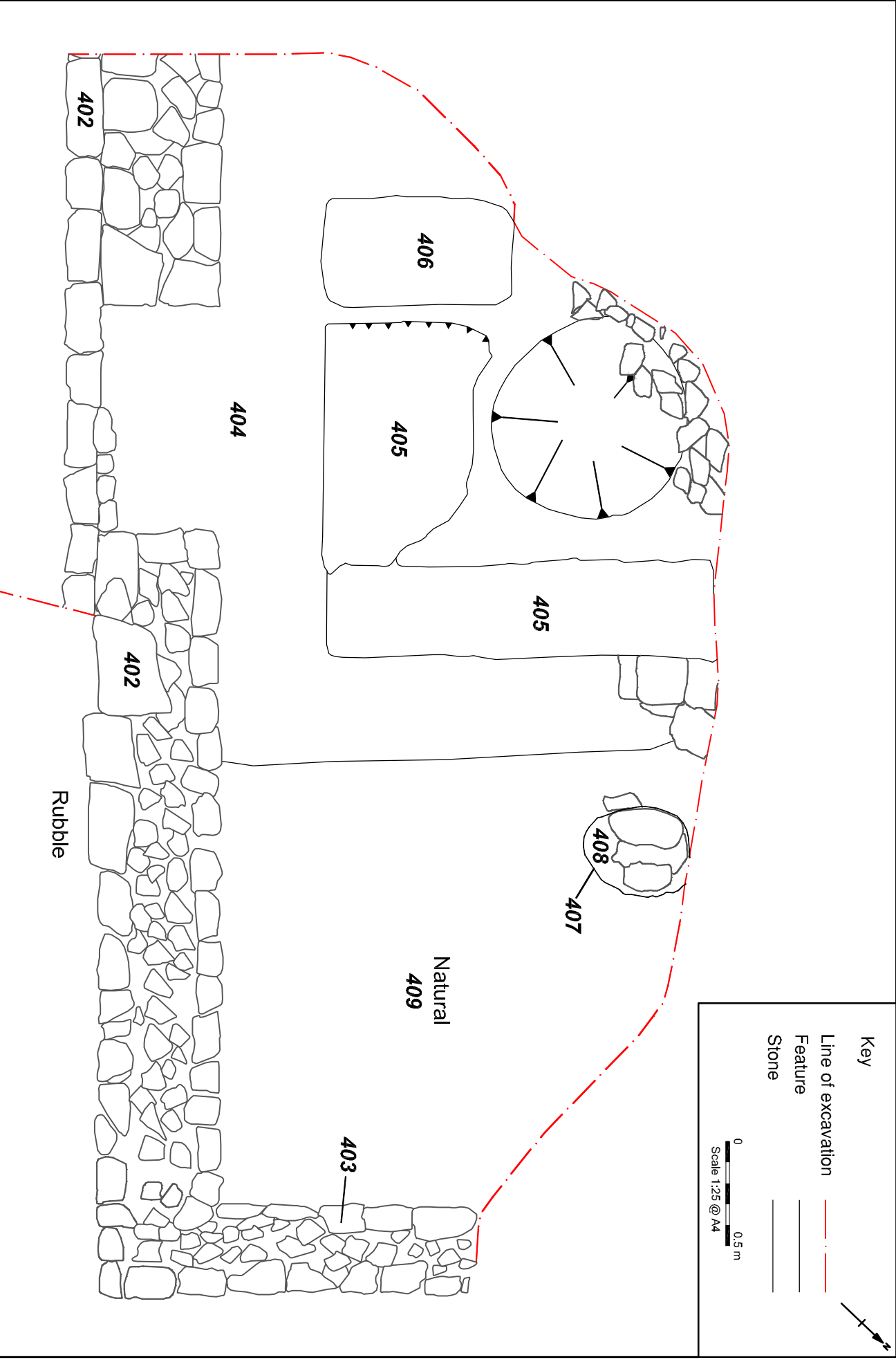


Figure 4: Detail of Area 4