



WATCHING BRIEF REPORT

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BARNEY CRAIG MINE
CARRSHIELD
NORTHUMBERLAND

prepared for

The Coal Authority

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Client	J N Bentley Ltd for the Coal Authority
Location	Carrshield, West Allendale, Northumberland
District	Hexham
Scheduled Monument	
Consent ref	S00141830
Grid Ref	NY 803 471
SM UID	UID 28541; HE List Entry Number 1015849
OASIS Ref	northern1-296501
Dates of Fieldwork	June-October 2016

BARNEY CRAIG MINE, CARRSHIELD, NORTHUMBERLAND
ARCHAEOLOGICAL WATCHING BRIEF REPORT

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BARNEY CRAIG MINE, CARRSHIELD, NORTHUMBERLAND

ARCHAEOLOGICAL WATCHING BRIEF REPORT

Summary

This document presents the results of the watching brief at Barney Craig Mine and Low Blue Row, Carrshield, Northumberland (NY 803 471; Figure 1), both part of the Scheduled Monument known as Carrshield Lead Mines and Ore Works (UID 28541; HE List Entry Number 1015849). The work was undertaken by Northern Archaeological Associates Ltd (NAA) for J N Bentley Ltd on behalf of the Coal Authority between June and September 2016. The watching brief was undertaken to record any archaeological features within the Scheduled Monument at Carrshield in advance of their potential loss as a result of drainage works being carried out across the site.

The watching brief demonstrated the presence of archaeological features beneath the existing Tailing Management Facility (TMF) that related to the historic lead mine. These features included a wall for a trackway leading into the mining complex and a number of wall foundations along the line of the drainage works. A later feature, thought to be an area of hard-standing deposited during the construction of the TMF, was also recorded. Evidence was also seen for possible bridge footings at the northern end of the drainage works.

The watching brief was also successful in identifying and avoiding earthworks related to mining features, and recognising the vulnerability of the standing remains of a miner's cottage at Low Blue Row. This resulted in survey and recording ahead of height reduction works, which have been discussed in a separate report (NAA 2016a).

1.0 INTRODUCTION

- 1.1 This document presents the results of a watching brief conducted at Barney Craig Mine, Carrshield, Northumberland (NY 803 471; Figure 1). The watching brief consisted of the monitoring of soil removal in advance of the installation of a new drain designed to redirect water into the River West Allen. The monitored area lay within the eastern side of the scheduled monument known as Carrshield Lead Mines and Ore Works (UID 28541; HE List Entry Number 1015849), and was undertaken in order to comply with Scheduled Monument Consent (S00141830) and an associated written scheme of investigation (WSI) (Golder Associates 2106).
- 1.2 The archaeological monitoring was undertaken by Northern Archaeological Associates on behalf of the Coal Authority between June and September 2016. Facilitating works involved the partial dismantling of a miner's cottage at Low Blue Row, the monitoring of which has been reported separately (NAA 2016a).

2.0 LOCATION, TOPOGRAPHY AND GEOLOGY

- 2.1 The hamlet of Carrshield lies towards the head of West Allendale, on the right bank of the River West Allen, a tributary of the River Tyne, approximately 20km to the south-west of Hexham (Figure 1). The archaeological monitoring was located within the northern end of Barney Craig lead mine (Figure 2), 600m to the south of Carrshield and west of the B6295.
- 2.2 The monitored work comprised the installation of an interceptor drain along the eastern and northern edges of the West Allen Tailings Management Facility (TMF), a substantial spoil heap derived from the 20th-century reprocessing of mine waste.
- 2.3 Since the 18th century, the site has been used for industrial purposes; firstly, as a lead mine, then later on to provide zinc ores and fluorspar. The site is now dominated by the spoil heaps from the various processes, although a number of buildings and foundations also survive.
- 2.4 The solid geology of the area comprises limestone, siltstone, mudstone and sandstone of the Alston Formation (British Geological Survey 2017). Drift deposits of Diamicton (glacial boulder clay) are recorded to the north, and there are spoil heaps and processing debris from mining operations across much of the site.

3.0 SUMMARY ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 3.1 The following section is taken from a Historic Environment Assessment (NAA 2016b) associated with the scheme.
- 3.2 Although there are records of lead mining within the area prior to the 16th century, it was probably during the late 17th century that exploitation of the mineral resources in the valley of the West Allen commenced (Coombes 1958, 246-8). A date stone indicated that Shield Ridge Level, to the south of Carrshield, was driven in 1684 by 'W. B.', presumably William Blackett, whom had purchased the manor of Hexham.
- 3.3 In 1760, the driving of Barney Crag (or Barney Craig) Horse Level commenced, running approximately south-eastwards beneath the eastern side of West Allen Dale. At the time, there were no formal roads along the dale, so transport was by pack pony or 'galloway' (*ibid.*). The mine was considered to be worked out by 1880, but was reopened for the extraction of zinc, finally halting in 1941 (Ash Consulting *et al.* 1998, App. 3 p.124).
- 3.4 The Historic England Heritage List (Historic England 2017) describes the remains at Carrshield as follows:

Barney Crag continued in use throughout the 19th century. The access to this mine was through an adit, or horizontal tunnel into the valley side 10m south west of a large lodging shop. The two-storeyed lodging shop, which is the largest in the north Pennines, retains original internal features including several arched furnace openings and a blacksmiths' forge. Inside and surrounding the lodging shop there are a series of culverts, some of which are thought to have been used to drain the mines; others are thought to be related to the water management system associated with ore processing at the northern end of the monument...

As well as the underground adit, lead ore could be exposed by directing torrents of water across the line of the vein; the action of the water often resulted in a water-cut ravine or a hush. Two water cut features 12m to 14m wide, thought to be hushes, are situated on the left bank of the river immediately opposite the lodging house. It is uncertain exactly which phase of mining they relate to though they are thought to be of 19th-century date. Situated at the northern end of the monument, on the western side of the river where it overlies an earlier lynchet, is an extensive spoil heap associated with the mining activity at the site.

There is also evidence at the Carrshield complex for the processing of ore prior to smelting. Once the lead ore had been recovered from the mines it was stored in tall stone containers known as bouse teams; there are the remains of a series of bouse teams 26m long in the central area of the monument. These have been modified in later years but their 19th-century form is still visible. To the north of the bouse teams, is the washing floor where many of the ore processing operations intended to wash and sort the ore from unwanted impurities were carried out. This area is now covered by later dressing waste but it is thought that much of the original washing floor survives beneath this waste. Underlying earthwork features are visible at the northern end of these waste heaps. The Ordnance Survey first and second edition plans (1859 and 1895) show the positions of the small structures and tanks used during these processes. The third edition plan of 1919 indicates more buildings and additional tanks in this area. The washing floor was supplied with water from a complex of culverts visible in the vicinity of the lodging shop. Two large reservoirs, measuring 50m by 12m and 65m by 20m, situated on the right bank of the river above the washing floor are thought to have operated as settling tanks. Once the ore had been sorted further processes were used to break it into smaller pieces; one method was the use of a mechanized crusher and documentary sources refer to the existence of a crushing mill at Barney Crag during the 1860s and 1870s, although its exact position is unknown.

The River West Allen runs through the centre of the complex. It is revetted with stone walls; it is thought that the revetment originally carried arches of 19th century date along the whole of its length to support a raised floor providing an extension to the area provided for the washing floor. A number of these arches survive. The stone wall revetment on the eastern side of the river is Listed Grade II. The early 19th-century bridge which carries the track across the river to Greenpit and a portal and chamber of a drainage tunnel 20m to the east of the bridge are also Listed Grade II. The complex also includes the remains of a railway line and several tracks giving access to the waste heaps, and a series of ways on the east side of the river above the washing floors. The trackways are thought to relate to the working of these areas as well as giving general access to the complex.

- 3.5 The 20th-century saw the reworking of the mine and spoil heaps for fluorspar and zinc, the resultant waste being handled by the Tailings Management Facility (TMF).

This produced an extensive mound of spoil overlying much of the former working area and dressing floor. Whether the mine structures had been dismantled prior to tipping, or were simply buried by spoil, is unknown. Therefore, there was some potential for elements of these structures to survive below ground.

4.0 AIMS AND OBJECTIVES

4.1 The main aims of the watching brief were:

- to provide a detailed record of any archaeological remains in advance of their loss as a result of the drainage works; and
- to ensure that there were no other impacts upon the scheduled monument.

4.2 The specific objectives were:

- to identify the presence of any structural remains relating to the 19th-century leadmines and, if present, seek a construction methodology that would allow the remains to be preserved in situ;
- to identify and record any archaeological remains that did not necessitate preservation in situ;
- to recover any pre-modern artefacts;
- to undertake a programme of investigation that meets with national and regional standards (Historic England 2015; ClfA 2014a; 2014b; 2014c; Petts and Gerrard 2006; WYAAS 2011); and
- to prepare an illustrated report on the results of the archaeological investigations to be deposited with the Northumberland Historic Environment Record and the Historic England Archive.

5.0 METHODOLOGY

5.1 A 1m wide trench was excavated in 6m sections to a depth of up to 1.2m using a tracked excavator fitted with a toothless ditching bucket. The machine removed mixed mining waste (consisting mainly of gravel, rubble, sand and wet clay) and laminated tailings down to either the level required for the drainage works or to the top of any archaeological deposits or structures encountered, whichever occurred first. Time was

then allocated for the archaeologist to clean and record any archaeology encountered. Due to the loose nature of the tailings material, access into the trench was limited, so that at times, only a photographic record was possible.

- 5.2 Archaeological structures were cleaned by hand and all identified features were planned and photographed. Once this was completed, the structures were then removed by machine using a toothed bucket if required. This was done under the supervision of the attending archaeologist with a view to identifying any further underlying archaeological deposits or structures.
- 5.3 Written descriptions of all archaeological features and deposits were recorded on pro forma sheets using the NAA context recording system.
- 5.4 A photographic record of the site was taken using both digital format and 35mm monochrome prints.
- 5.5 No deposits warranting environmental samples were encountered.

6.0 RESULTS

- 6.1 Monitoring of the drainage works on site took place in two phases, separated by building recording at Low Blue Row, which has been reported separately (NAA 2016a). The larger north/south portion of the trench was monitored first, extending between the southern limit of the drainage works and the remains of miners' cottages at Low Blue Row (Figures 2 and 3). The second phase of monitoring took place after the building recording and consolidation works had taken place, along an east to west section of pipeline between Low Blue Row and the discharge point into the River West Allen.
- 6.2 Natural boulder clay was recorded only at the northern end of the trench, where it had been cut away or eroded during the deposition of the mine tailings.
- 6.3 During excavation of the north to south aligned portion of the drain, four archaeological features were recorded. These included three sections of buried wall foundations and part of a temporary hard-standing. The east to west section of the drain did not reveal any new features of archaeological interest, but allowed details of the riverside retaining wall to be seen.

Wall foundation 008

- 6.4 Approximately 30m to the south of Low Blue Row, a section of buried wall foundation was encountered 0.5m below ground surface (Figure 2; Plate 1). The foundation (**008**) consisted of a band of irregular, undressed sandstone blocks sitting on top of a reddish-yellow thick clay with traces of mortar on top of the masonry. Above the wall foundations were laminated tailings, indicating that the wall pre-dated the construction of the TMF. The tailings in this area contained occasional large stones, presumably derived from the wall foundation. One of these stones was a roughly-dressed rectangular block measuring 400mm by 300mm by 300mm. Historic Ordnance Survey (OS) mapping shows a small building in this location (Figure 3).



Plate 1. Wall foundation 008, with laminated tailings slumping into trench

Trackway wall 001

- 6.5 Some 50m to the south of wall **008**, the footing of a drystone wall (**001**), associated with a trackway leading into the mining complex, was recorded (Plate 2). The line of this wall could be seen continuing to the north-east, leading up to the main road and former mine offices. The excavated wall footing stood up to three courses high and was constructed of roughly faced, thin blocks, double faced (at 0.5m wide) with a rubble core. It was overlain by mining waste (**002**) associated with the TMF. On the southern side of the wall was a large amount of stone rubble suggesting the wall had

fallen down when it was covered by mine tailings. The wall was depicted on 19th-century OS mapping.



Plate 2. Wall footing 001 with upstanding remains visible in background

- 6.6 A deposit of heavy blue grey clay was observed on both sides of, and cut by, wall **001**. This deposit was overlain by mixed silty gravel mine waste. There was no evidence for buried topsoil between these deposits.

Hard-standing 002

- 6.7 A rudimentary paved area or hard-standing (**002**) was recorded towards the southern end of the drainage works, adjacent to the modern trackway running between two former reservoirs. This feature consisted of angular sandstone flags (Plate 3) bedded on a shallow sandy layer over laminated mining waste. This area of the site was extremely boggy, and it was likely that the hard-standing was put down across the wet clay during the deposition of the mine tailings and was not associated with the original mining complex. Further mine waste had accumulated over the hard-standing.



Plate 3. Hard-standing 002 bedded on clean sand and overlain by mining waste

Wall foundation 004

- 6.8 At the southern limit of the drainage works the possible footing of a north to south aligned wall (**004**) was identified (Plate 4) on an alignment parallel to a retaining wall for the reservoir to the east. The full width of the wall was not exposed within the trench but there were displaced stone blocks with gravel deposit **006** to the west. It was unclear as to the purpose of this wall, but it was likely to be contemporary with the reservoirs



Plate 4. Wall 004 in east side of trench

- 6.9 At the northern end of the scheme, the drain turned to the west, running down the flank of the tailings heap to the river, where there was to be a new, stone-lined discharge channel. The channel was cut through the remains of the riverside retaining wall.

Retaining wall 100

- 6.10 The location for the discharge channel had been selected where the retaining wall (**100**) was in its most ruinous condition. The wall had a rubble core (Plate 5) and was faced with roughly-dressed, sub-rectangular blocks (Plate 6).
- 6.11 Material from the inside of the retaining wall consisted of general mining waste and laminated tailings down to a depth of 1.2m.



Plate 5. Rubble core of retaining wall 100 showing tailings heap (left)

Bridge footing

- 6.12 A change in the style of walling immediately to the south of the discharge point, with a distinctive, narrow 'string course' (Plate 6), possibly represented the location of a foot-bridge recorded on the Second Edition OS map of 1899 (Figure 3). No other elements of a bridge were encountered during machine monitoring, but it is possible that these were wooden and have not survived.



Plate 6. Outer face of river wall showing 'string course' (centre), possibly representing the location of a foot-bridge

Outfall test pit

- 6.13 In order to help determine the most suitable location for the pipe outfall, a test pit was machine-excavated some 5m from the river wall, to the north of the eventual location. The pit measured 3m east-to-west by 1.2m, and was up to 1m deep. Natural horizons were not reached, the pit being entirely within 'made ground' deposits of redeposited topsoil and large boulders up to 0.8m across (Plate 7). Within this deposit were four sections of roughly-finished, 200mm diameter timber posts (Plate 8) with regularly spaced, 50mm diameter sockets, some with remains of wooden dowels still in-situ. Although most of the original ends had been broken off, two of the posts had been mortised at one end to fit together in the form of a hinge. Four such posts would have formed the main elements of a ladder stile, with the circular sockets indicating the location of the rungs. The stile was unlikely to relate to mining activity, although may have been associated with the garden plots of nearby miners' cottages; its disposal in the made ground presumably dated to the earlier 20th-century deposition of mine tailings in this area.



Plate 7: Redeposited boulders within made ground exposed by test pit



Plate 8. Fragments of wooden 'ladder stile' exposed within test pit, showing sockets for rungs and mortis joint (right)

7.0 DISCUSSION

- 7.1 The watching brief identified a number of structural remains relating to mining activity beneath the TMF. Three wall footings (**001**, **004** and **008**) within the area of investigation had been dismantled to their foundations, although the scattered stones in the overlying deposits suggest that they may have been standing a few courses higher when the deposition of mine tailings commenced. Wall **008**, close to the northern end of the site, corresponded with a small structure recorded on historic OS mapping. Its location in proximity to the (now ruined) miners' cottages of Low Blue Row mirrored the position of a former pigsty adjacent to the surviving cottages at High Blue Row. Wall **001**, a short distance to the south, was part of the revetment of a track or incline leading up from the lead dressing floor to the main road. The line of wall **001** continued to the north-east as a standing structure. North-to-south oriented wall **004**, towards the southern end of the pipe installation, was on, or close to, the alignment of the main tramway running from the mine levels to the dressing floor, and may have served as a revetment for the embankment of the reservoirs.
- 7.2 At the foot of a modern trackway between the two reservoirs, leading down from the upper level, was hard-standing **002**, a small area of paving bedded in a layer of sand. Mine tailings were recorded both above and below this paving, indicating that it was a temporary feature constructed part-way through the reworking of the spoil heaps. Comparison of historic mapping shows that the corner of a substantial processing building occupied this area until at least 1958. The hard-standing must post-date this structure.
- 7.3 The watching brief was also successful in identifying and avoiding earthworks related to mining features and recognising the vulnerability of the standing remains of a miner's cottage at Low Blue Row. This resulted in survey and recording ahead of height reduction works, which has been discussed in a separate report (NAA 2016a).

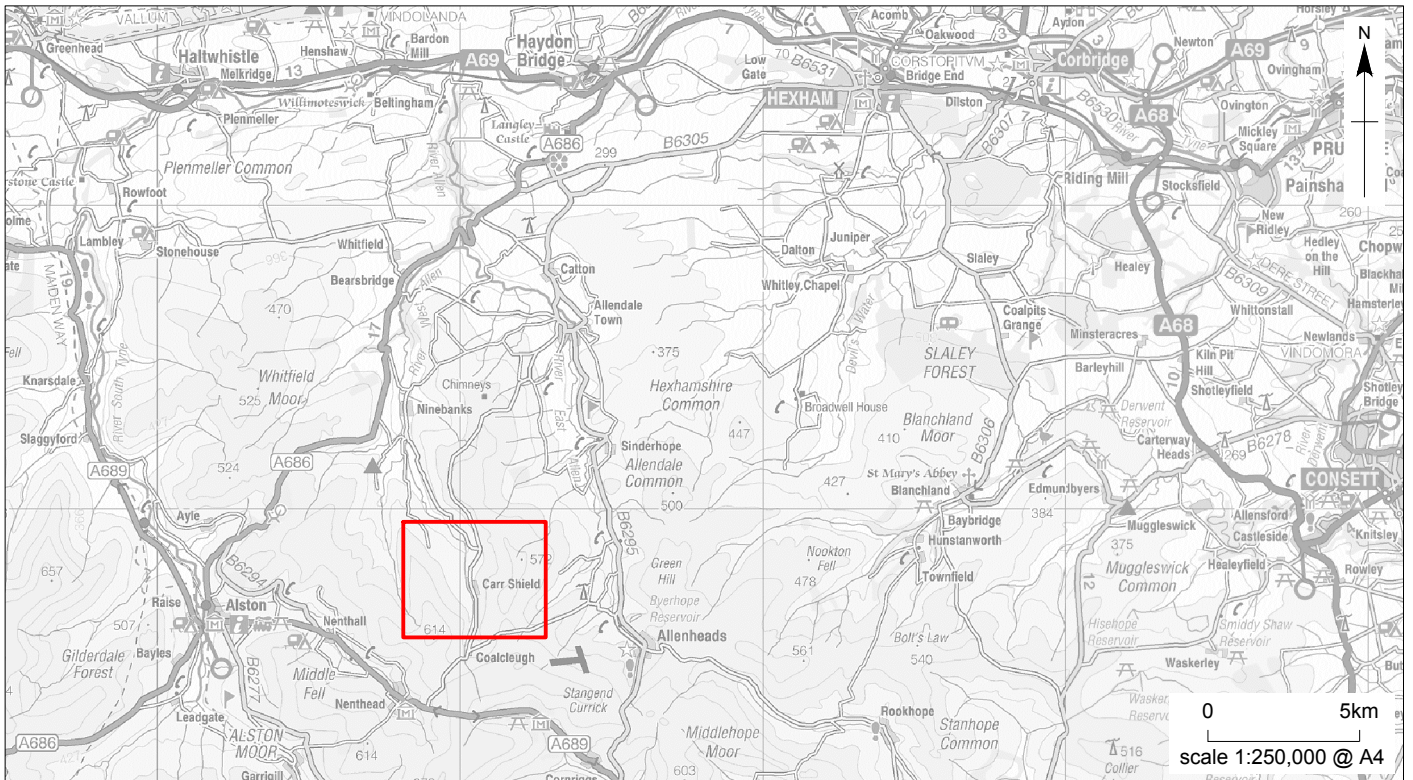
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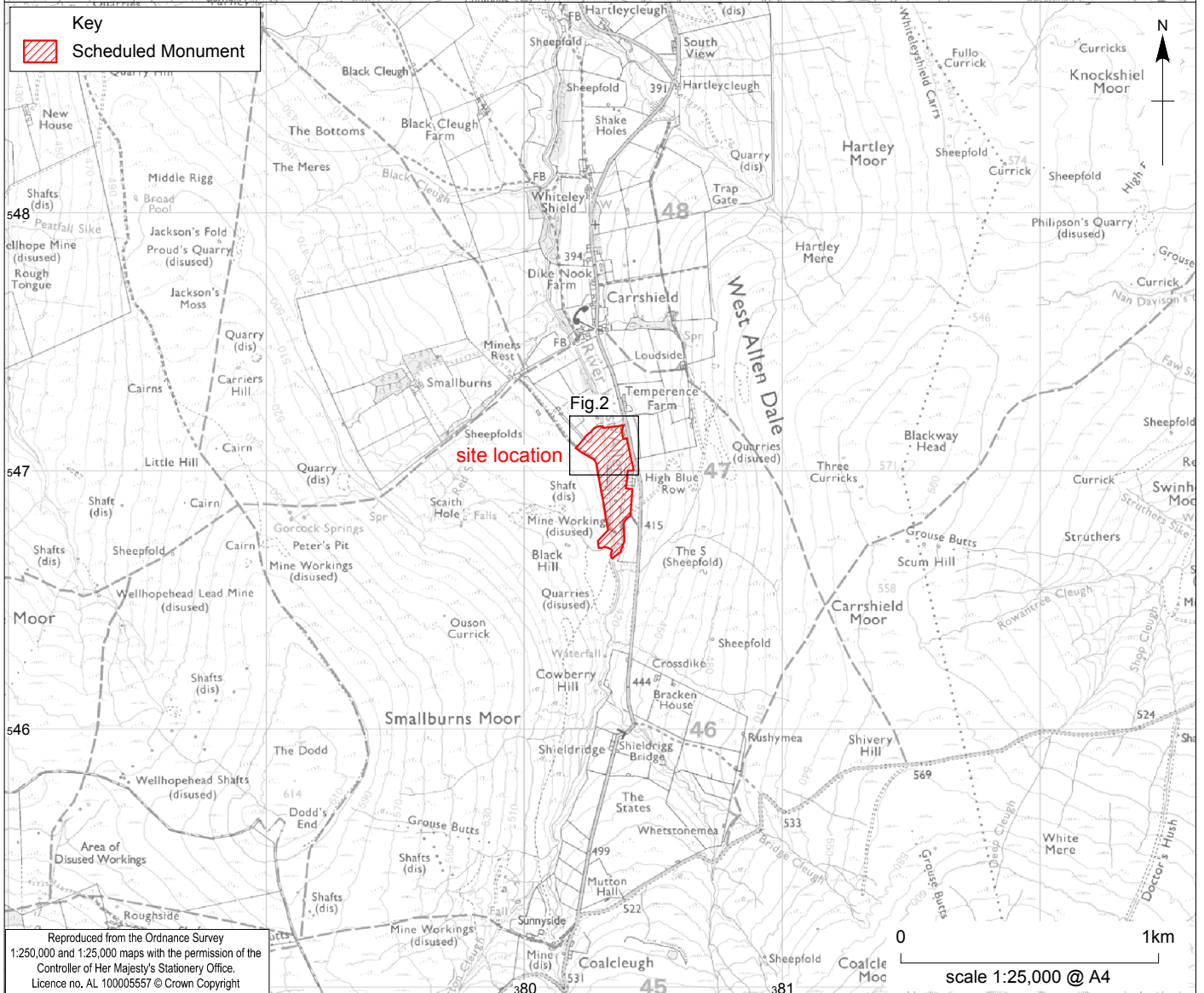
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APPENDIX A
CONTEXT CATALOGUE

Context	Interpretation	Description	Finds
001	Wall footing	NE-SW aligned wall associated with trackway	
002	Hard-standing	Flagstones placed on top of mining waste. Recent	
003	Sandy bedding layer	Sand beneath 002	
004	Wall footing	N-S wall probably retaining mine waste	
005	Clay	Natural blue clay, cut by wall 001.	
006	Gravel deposit	Associated with wall 004	
007	Mine waste	Mixed mining waste.	
008	Wall footing	Angular stone fragments with traces of mortar	
100	Retaining wall	Remains of retaining wall adjacent to River West Allen	Post-medieval pottery



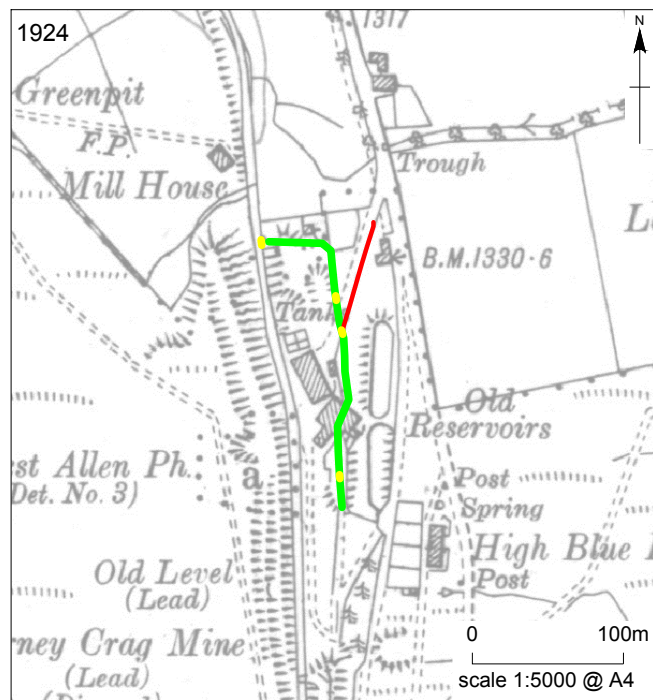
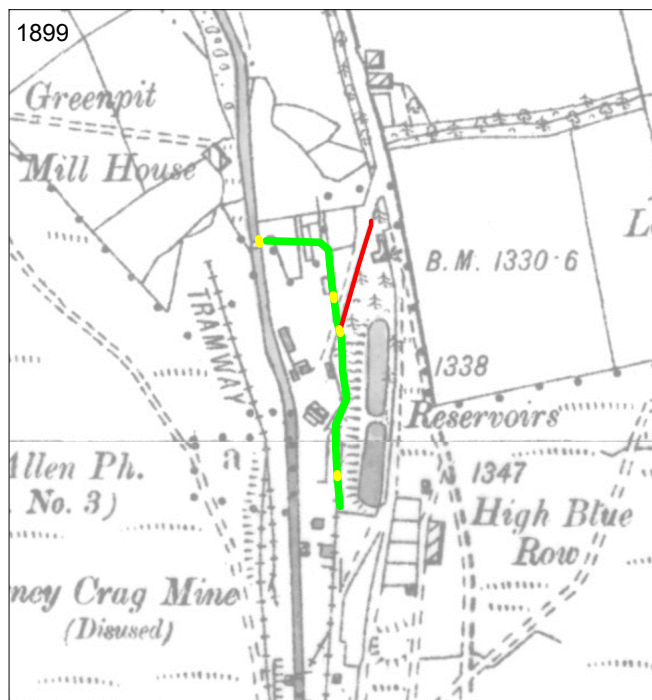
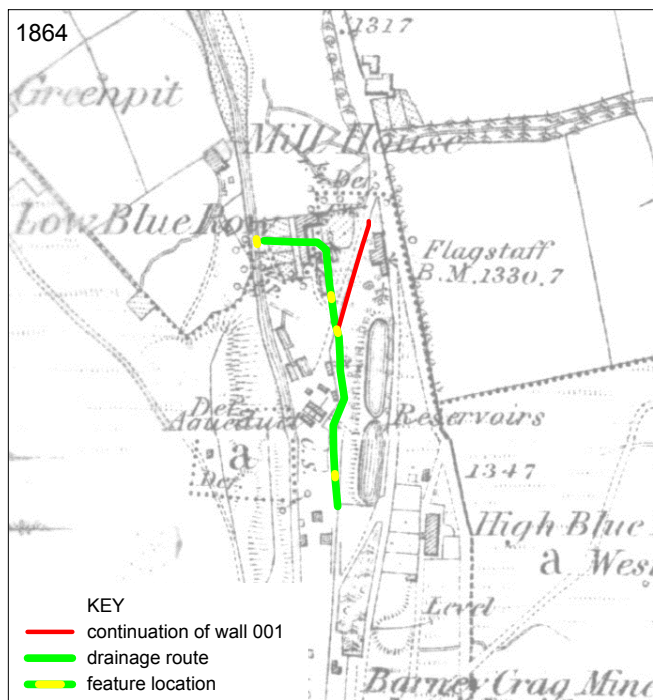
Key
 Scheduled Monument



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West Allen, Carrshield: site location

Figure 1



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West Allen, Carrshield: 1864, 1899 and 1924 Ordnance Survey maps showing wall locations and High Blue Row

Figure 3