



ARCHAEOLOGICAL WATCHING
BRIEF REPORT

Northern Archaeological Associates Ltd

Marwood House
Harmire Enterprise Park
Barnard Castle
Co. Durham
DL12 8BN

t: 01833 690800

f: 01833 690801

e: gb@naa.gb.com

w: www.naa.gb.com

THE NORTH OF ENGLAND
LEAD MINING MUSEUM

KILLHOPE, COUNTY DURHAM

On behalf of

Durham County Council

and English Heritage

Project No.: 1070

Text: Cath Ross

Illustrations: Dawn Knowles

Edited by: Gary Brogan

NAA 12/78
August 2012

NAA Document Authorisation

| | | | | | |
|---------------------|-------------|--|---------------------------|-----------------------|--------------------|
| Project name | | The North of England Lead Mining Museum, Killhope, County Durham | | Project number | |
| Report title | | Archaeological Watching Brief Report, The North of England Lead Mining Museum, Killhope, County Durham | | 1070 | |
| Report No. | | 12/78 | | | |
| Revision | Date | Filename | NAA_1070_Rpt_12-78_WB.pdf | | |
| | | Description | Watching Brief Report | | |
| | | | Prepared by | Edited by | Approved by |
| | | Name | Cath Ross | Gary Brogan | Tania Simpson |

This document has been approved for release by: *TS*

THE NORTH OF ENGLAND LEAD MINING MUSEUM,

KILLHOPE, COUNTY DURHAM

ARCHAEOLOGICAL WATCHING BRIEF

| | | |
|-----|--|---|
| 1.0 | INTRODUCTION | 1 |
| 2.0 | LOCATION, TOPOGRAPHY AND GEOLOGY | 1 |
| 3.0 | ARCHAEOLOGICAL AND HISTORICAL BACKGROUND | 2 |
| 4.0 | AIMS AND OBJECTIVES | 3 |
| 5.0 | METHODOLOGY | 4 |
| 6.0 | RESULTS | 4 |
| 7.0 | DISCUSSION | 6 |
| | References | 7 |
| | Appendix A: Context register | 8 |

THE NORTH OF ENGLAND LEAD MINING MUSEUM,

KILLHOPE, COUNTY DURHAM

ARCHAEOLOGICAL WATCHING BRIEF

Summary

This report presents the results of archaeological monitoring undertaken during the installation of a new water mains connection to the visitor centre at the North of England Lead Mining Museum, Killhope, County Durham. The monitoring was undertaken during June and July 2012 by Northern Archaeological Associates Ltd for Durham County Council, on behalf of English Heritage.

The work consisted of the excavation of a trench from the existing mains, adjacent to Snodberry Bridge to the visitor centre. Where the mains connection traversed Killhope Beck it was carried by an auger-bored pipe which passed through the bedrock beneath the beck.

The excavation of the trench revealed the remains of two walls which hadn't previously been identified, one of which was aligned with the north-western wall of the mine shop and the other formed the continuation of the north-western edge of the washing floor. Two stone built culverts were also encountered running perpendicular to the excavated trench. One of the culverts was contemporary with the use of the mine and carried run-off water from within the mine and the other was built during the reconstruction of the site during the early 1980's to carry excess water from the water wheel to the washing floor. The excavation also provided the opportunity to examine the sequence of deposits across the site which comprised organic silts on the lower ground generally overlain by "deads" or mining refuse across the site.

1.0 INTRODUCTION

This report presents the results of an archaeological watching brief undertaken during groundworks associated with a new mains water connection to the visitor centre at the North of England Lead Mining Museum, Killhope, County Durham (centred on NY 82685 43008: Fig. 1). The archaeological watching brief was undertaken by Northern Archaeological Associates for Durham County Council, on behalf of English Heritage.

- 1.1 The core of the North of England Lead Mining Museum is a Scheduled Monument (SM 1015853). Consent was granted for the excavation of a trench for the new mains water connection, with the condition that archaeological monitoring be maintained during the groundworks.
- 1.2 The work consisted of the excavation of a trench from the existing mains, adjacent to Snodberry Bridge, to the visitor centre, measuring an average of 0.5m in width by 0.75m in depth, to provide a minimum of 0.5m cover for the pipe (Plate 1). Where the mains connection traversed Killhope beck it was carried by an auger-bored pipe which passed through the bedrock beneath the beck. The scheme of works was undertaken over a six week period during June and July 2012 in accordance with a Written Scheme of Investigation (NAA, 2012) agreed with English Heritage.

2.0 LOCATION, TOPOGRAPHY AND GEOLOGY

- 2.1 The North of England Lead Mining Museum is situated adjacent to the A689, on the south-western bank of Killhope Burn. It lies some 4km upstream from Cowshill. The Killhope Burn runs across the site between the main mine complex and the A689. The water main route ran largely along the made site path within the scheduled area, although to the east of the scheduled area parts of it cut across open ground (Fig. 2).
- 2.2 The solid geology of the site comprises Carboniferous Limestone Series of the Yoredale Group (Institute of Geological Sciences 1979) likely to be overlain by river terrace gravels although it is un-surveyed (Institute of Geological Sciences 1977). The soils are mapped as Wilcocks 1 Association, which comprises drift of seasonally waterlogged fine loam (Soil Survey of England and Wales 1983; Jarvis *et al.* 1984).

3.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 3.1 This summary archaeological/historic background is largely drawn from the online scheduled monument list entry for the site (<http://list.english-heritage.org.uk/resultsingle.aspx?uid=1015853>) and Durham County Council (no date).
- 3.2 The site lies within a former medieval hunting forest owned by the Bishop of Durham.
- 3.3 The North of England Lead Mining Museum is a restored 19th century lead mine. Formerly the Park Level Mine, the works were established in 1853 by WB Lead Co.
- 3.4 By the mid-1870s, Park Level Mine was one of the richest mines in Britain. When in full production, it produced a thousand tons of lead ore a year and employed hundreds of men.
- 3.5 In 1883, Park Level Mine was taken over by Weardale Lead. The mine closed in 1910, although it was re-opened briefly in 1916.
- 3.6 The mine lay derelict until 1980, when Durham County Council took over the site and began a programme of restoration. The site was first opened to the public in 1984.
- 3.7 In 1968, the site was scheduled under the Ancient Monuments and Archaeological Areas Act 1979. The extent of the protected area is shown on Fig. 2. The original mine buildings at the site are listed buildings in their own right, including the Grade II* Jigger House and Crushing Mill Water Wheel.
- 3.8 Within the scheduled area, the water pipeline passes near to:
- Park Level Mill, which was built in 1878 to expedite the “washing” of lead ore (i.e. the separation of galena¹ from bouse²). The mill complex includes the Killhope Wheel (a large waterwheel), a jigger house,³ a

¹ “Clean” lead ore

² The raw mixture of lead ore, rock and other waste materials mined from the ground

³ Where galena was extracted by shaking gravel-sized lumps of bouse on a sieve in a tub of water

buddle house⁴ and the timber framework of a crushing plant;⁵

- The washing rake or washing floor, where the separation of galena from bouse was undertaken manually by washerboys (who were often as young as 9 or 10 years old);
- Bouse teams; constructed in 1862, these were rows of storage bays for the unwashed bouse;
- The entrance to the mineshaft; and:
- A mine shop, which was built in 1858 to provide basic lodgings for those miners unable to return home at the end of a shift.

3.9 All drystone boundary walls, fenceposts, a revetted retaining wall in the northern part of the site, road surfaces, a reconstructed stone and timber bridge, and the other modern reconstructions were excluded from the scheduling, but the ground beneath all of these features was included.

4.0 AIMS AND OBJECTIVES

4.1 The purpose of the archaeological monitoring was to record any archaeological features and deposits which were uncovered during the course of the groundworks. The main objectives were:

- to provide a detailed record of any archaeological remains in advance of their loss through the proposed works;
- to recover and assess any associated structural, artefactual and environmental evidence and
- to undertake a programme of post-excavation analysis, and prepare an illustrated report on the results of the archaeological investigations to be deposited with the County Durham Historic Environment Record (HER) and the National Monuments Record (NMR)

⁴ Where separation of fine bouse was effected by washing away the lighter waste in a current of water

⁵ Where large of lumps of bouse were mechanically crushed in order to break them down into smaller pieces

5.0 METHODOLOGY

- 5.1 The removal of overburden and subsoils was undertaken using a back-acting excavator with a toothless ditching bucket under constant archaeological supervision.
- 5.2 Where archaeological structures and deposits were encountered they were recorded, photographed and drawn in section at a scale of 1:10.
- 5.3 A written description of features was recorded using the NAA context recording system.

6.0 RESULTS

- 6.1 Excavation of the water mains trench revealed that in the area between the beck and the buddle house yellow/grey boulder clay (04) was overlain by up to 1m of organic silt (03). The organic silt was confined to the lower ground and may have resulted from periodic flooding of the beck.
- 6.2 In the area immediately adjacent to the beck the organic silt was overlain by a depth of between 0.5m and 1.1m of sub-angular limestone fragments or "deads" (02). The same material was also encountered on the higher ground where the course of the water main followed the made site path. This widespread deposit represented the waste limestone resulting from both the non-profitable excavation of the level or shafts and the processing of the mined material for the extraction of galena. It is possible that it had been intentionally deposited in the areas adjacent to the beck and along the course of current path in order to consolidate the ground and facilitate access to the buildings.
- 6.3 A deposit of rubble (05) comprising timber planks, roughly worked sandstone blocks and iron objects was identified to the immediate south-east of the bridge carrying the light railway to the crusher, adjacent to the jigger house. The layer covered a distance of approximately 4m within the trench and had a maximum depth of 0.8m. Two large sandstone slabs, each measuring 0.95m by 0.8m by 0.05m, were encountered within the rubble deposit (Plate 2). They had been riveted together by an iron bar which protruded from the face of each slab indicating that they formed a support for either machinery or possibly a railway. The nature and location of the rubble spread suggested that it represented the collapse of the original light railway to the crusher, which had been reconstructed during the renovation of the site during the early 1980's.

- 6.4 An extensive layer of shale fragments (12), with occasional inclusions of limestone, was encountered in the area directly in front of the mine shop. It covered a distance of approximately 10m within the trench and had a maximum depth of 0.5m to the base of the trench. The deposit represented further waste material from the mining process which had presumably been laid down to provide hard-standing in front of the building.
- 6.5 A rudimentary wall foundation (11) had been cut into the shale deposit described above (Plate 3). It was composed of three rough courses of undressed sandstone with no bonding material, stood to a height of 0.4m and measured 0.48m in width. The wall footing was aligned with the north-western wall of the mine shop, but was too insubstantial to form a structural element of the building. It may have enclosed a yard in front of the building but no opposing wall was identified within the excavated trench. The wall remained *in situ* as the protective duct for the water main was inserted beneath without causing any damage.
- 6.6 The remains of a further wall foundation (15) were encountered to the south-east of the mine shop in the north-east facing section of the excavated trench (Plate 4). It stood to a height of 0.68m with a width of 1.38m and was composed of four rough courses of undressed sandstone blocks, which varied in size from 0.1m by 0.1m by 0.05m to 0.5m by 0.2m by 0.3m. There was no formal bonding material but dark brown sandy clay (17) was present in some areas between the stones and appeared to have leached in. The wall footing followed the alignment of the reconstructed retaining wall along the north-western edge of the washing floor and may have been the precursor to this wall extending further to the south-west. The north-western face of the wall foundation had been cut into boulder clay (04), whereas the opposing face was abutted by loose deads (02). This would indicate that perhaps the washing floor originally extended further to the south-west and that the area had been significantly landscaped prior to the construction of the made path for visitors during the early 1980's.
- 6.7 The course of the water main crossed two stone-built culverts within the area of the made path. One culvert (09) was located in front of the mine entrance and carried run-off water from within the mine down to the washing floor (Plate 5). It was contemporary with the use of the mine and comprised a linear stone built chamber, oriented from south-west to north-east, which encased a wooden launder carrying the water. The stone element of the culvert measured 1.2m in width by 1m in depth and was composed of six rough courses of undressed sandstone blocks measuring 0.2m by 0.1m by 0.15m on average. There was no bonding material between the blocks but the top surface of the culvert had been covered with 0.3m of concrete to protect it from damage where the path passed over it.

- 6.8 The other culvert (07) was located to the south-east of culvert 09 and was on broadly the same alignment (Plate 6). This culvert had been built during reconstructive works in the early 1980's, presumably to replace an existing drain that was too ruinous to function, and formed part of a circular water system that fed the water wheel on the jigger house from reservoirs further up the hillside. It was of similar dimensions to the previous culvert but comprised only the sandstone chamber, without a wooden launder. It was capped by an iron road-plate where it passed beneath the made path.
- 6.9 Due to the depth of both culverts (07 and 09) it was impossible to pass the duct for the water main beneath the stone superstructures. Instead, in each case a couple of sandstone blocks were removed from each face of the culvert and the duct was passed through, causing minimal disturbance to the integrity of the structure (Plates 7 and 8).
- 6.10 All of the features described above were sealed by an average of 0.1m of gravel (06) forming the modern access path from the visitors' centre across the scheduled area to the buddle house. The ground level in the area to the immediate south-west of the visitors' centre had been raised in modern times as the gravel path in this area was underlain by up to 0.5m depth of chipped limestone (19).

7.0 DISCUSSION

- 7.1 The excavation of the trench for the water main revealed the general pattern of deposits across the scheduled area of the site. This included a relatively deep layer of organic silt (03) on the lower ground across the south-eastern half of the site, resulting from periodic flooding of the beck. On the majority of the higher ground in the area of the made path and also in the area immediately adjacent to the beck a depth of up to 1.1m of mining refuse or "deads" was encountered. Across the majority of the site this was composed of sub-angular fragments of limestone (02), apart from the area in front of the mine shop where the deads were composed of shale fragments (12).
- 7.2 A layer of rubble (05) was identified to the immediate south-east of the reconstructed railway bridge to the crusher which appeared to represent the collapsed remains of the original structure. A number of iron artefacts were recovered from this deposit, but were not retained.
- 7.3 Three features were encountered along the course of the water main which potentially dated to the lifetime of the mine. These included a rudimentary wall foundation (11) which may have enclosed a yard in front of the mine shop, a further wall footing (15) which appeared to be the original retaining wall along the north-western edge of the washing floor and a stone-built culvert (09)

encasing a wooden launder which conveyed water out of the mine entrance to the washing floor.

- 7.4 A further culvert (07) was identified which was carried run-off water from the water wheel on the jigger house. This culvert dated to the reconstruction of the site in the early 1980's.
- 7.5 No further work is considered necessary for the site archive, which should be deposited at Bowes Museum.

References

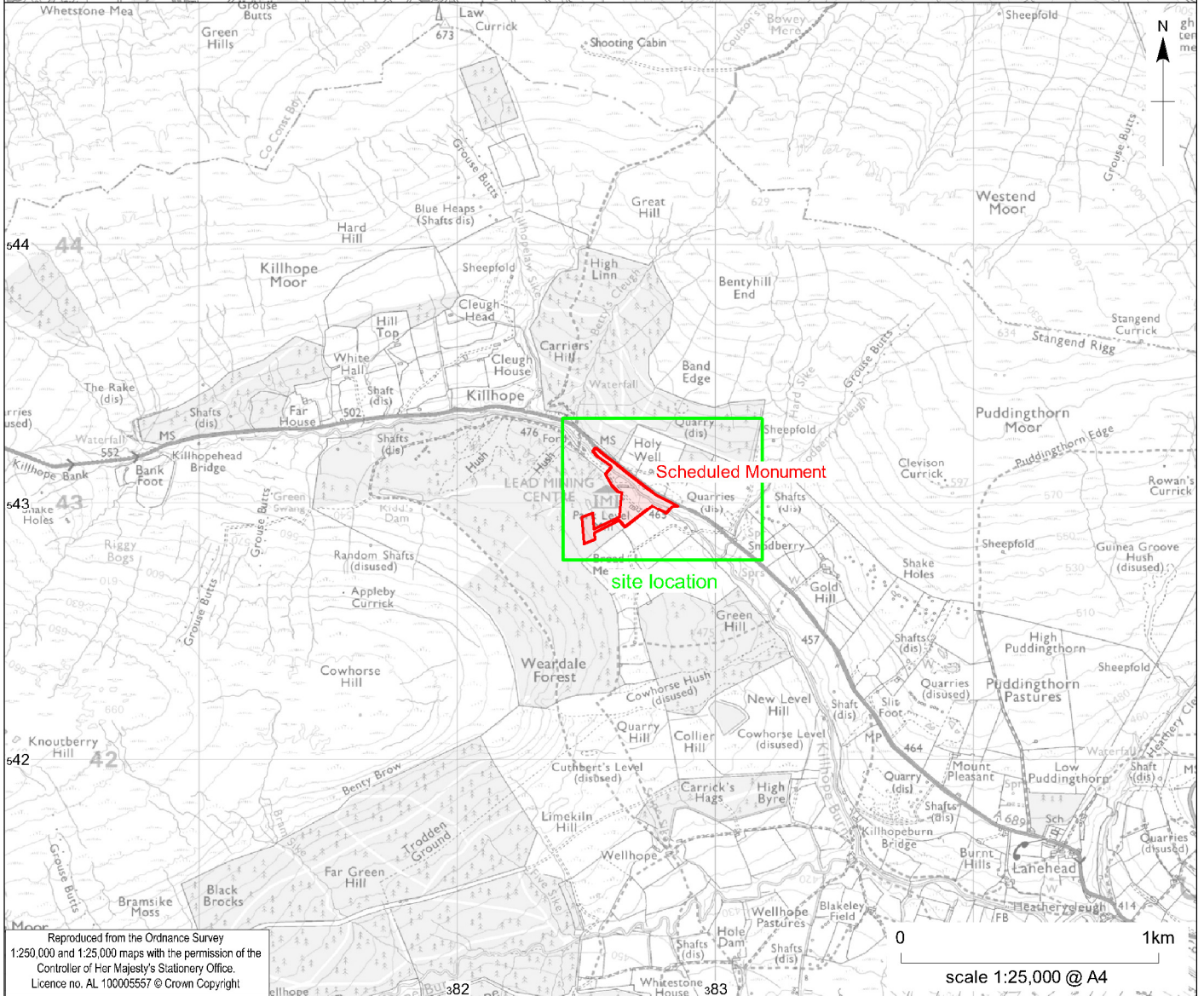
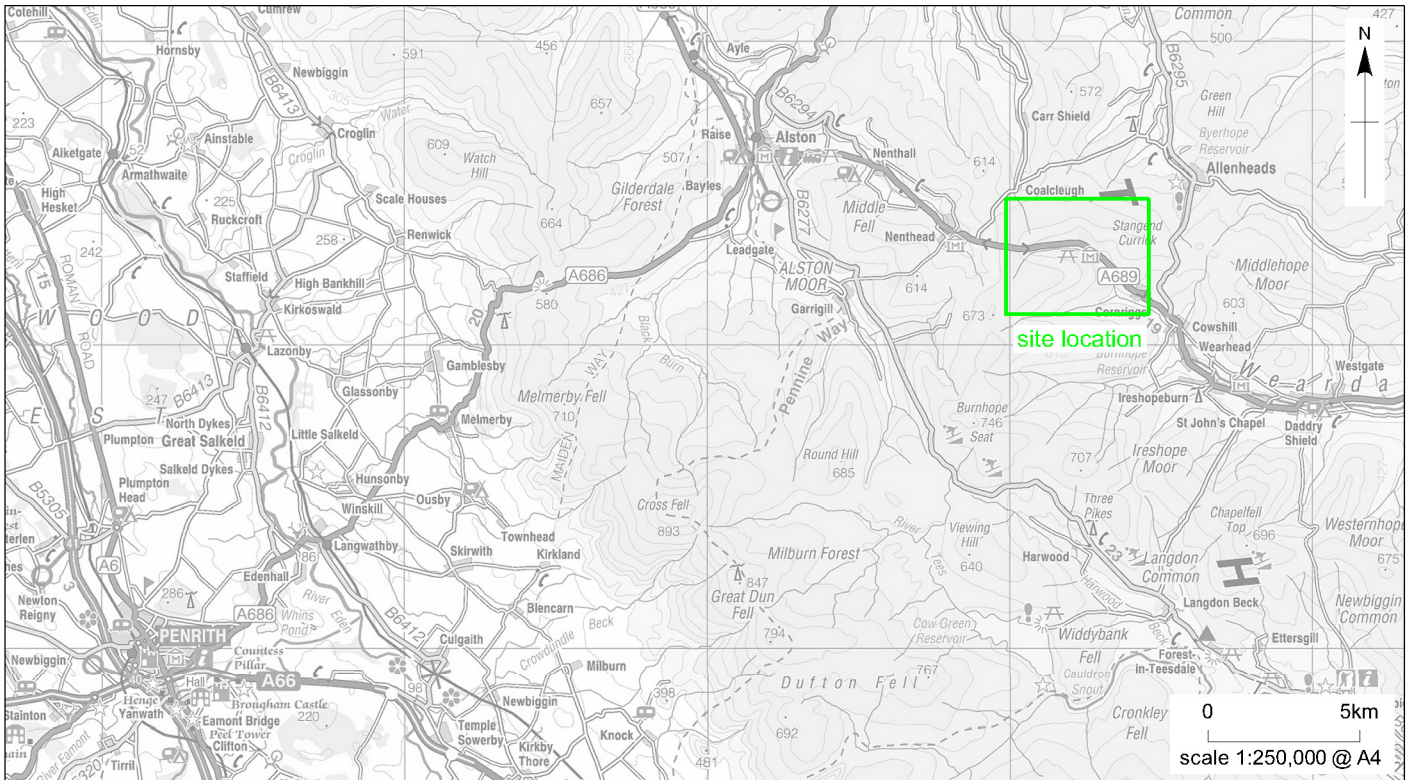
Durham County Council (no date) *The Victorians at Killhope: A Creative History Resource Pack for Teachers* Retrieved from:

[HTTP://WWW.KILLHOPE.ORG.UK/SITECOLLECTIONDOCUMENTS/CREATIVE+HISTORY+RESOURCE+PACK+FOR+TEACHERS.PDF](http://www.killhope.org.uk/sitecollectiondocuments/creative+history+resource+pack+for+teachers.pdf)

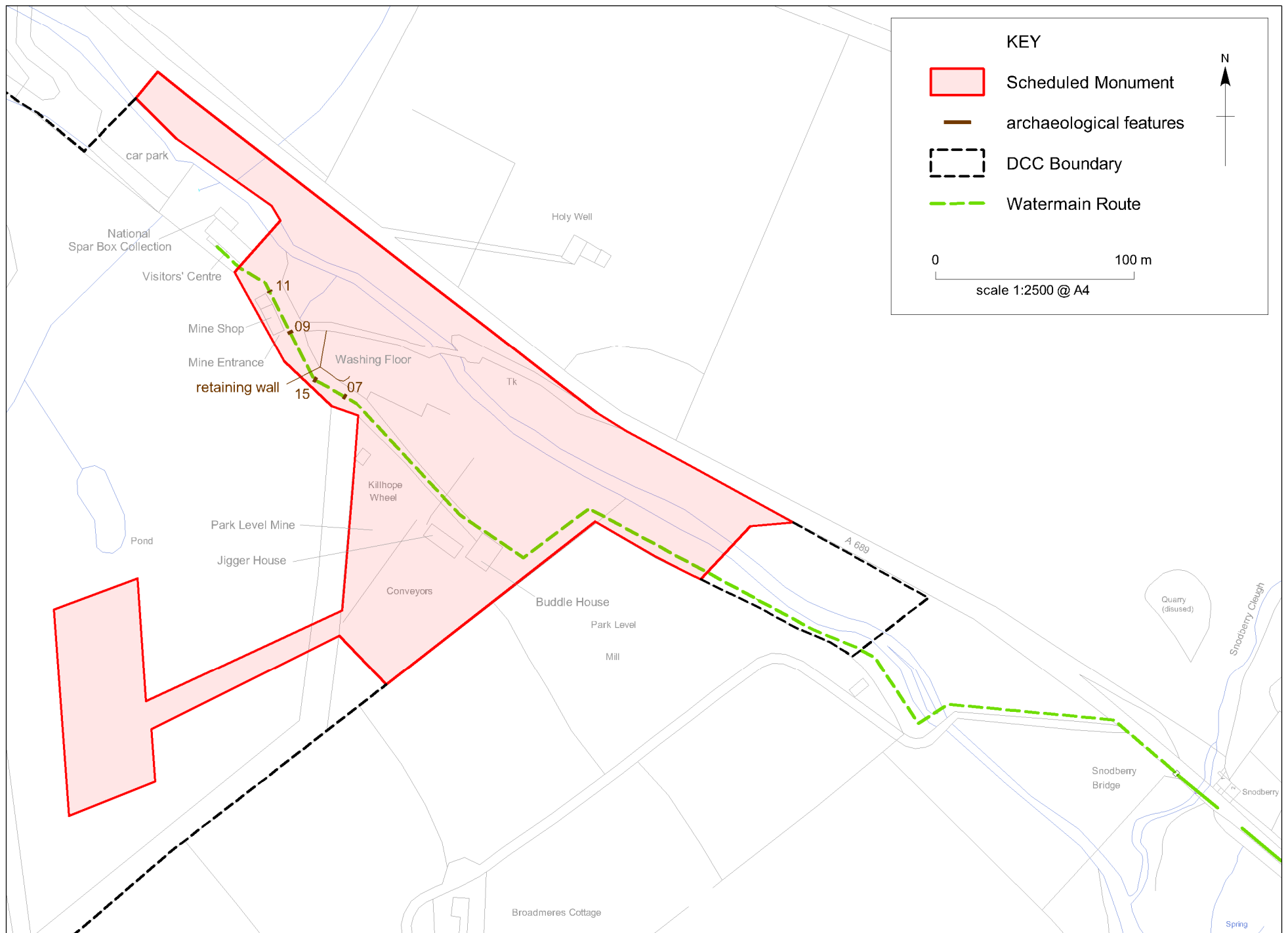
NAA (2012), *The North of England Lead Mining Museum, Killhope, County Durham, Archaeological Monitoring : Written Scheme of Investigation*. Unpublished Northern Archaeological Associates Report 12/47.

APPENDIX A
CONTEXT REGISTER

| Context | Description |
|----------------|---|
| 01 | Turf and topsoil |
| 02 | Sub-angular stones in silty sand matrix ("deads") |
| 03 | Alluvial/organic silts |
| 04 | Yellow/grey boulder clay |
| 05 | Rubble layer |
| 06 | Gravel road |
| 07 | Stone-built culvert |
| 08 | Cut for culvert (07) |
| 09 | Stone-built culvert |
| 10 | Cut for culvert (09) |
| 11 | Wall footing |
| 12 | Shale deposit (mining refuse) |
| 13 | Concrete covering culvert (09) |
| 14 | Cut for wall footing (11) |
| 15 | Wall footing |
| 16 | Cut for wall footing (15) |
| 17 | Brown sandy clay matrix within (15) |
| 18 | Mid grey/brown colluvial silt |
| 19 | Car park surface (Type 1) |



Reproduced from the Ordnance Survey 1:250,000 and 1:25,000 maps with the permission of the Controller of Her Majesty's Stationery Office. Licence no. AL 100005557 © Crown Copyright





©NAA 2012

*North of England Lead Mining Museum, Killhope:
site overview*

Plate 1



©NAA 2012

*North of England Lead Mining Museum, Killhope:
structural supports*

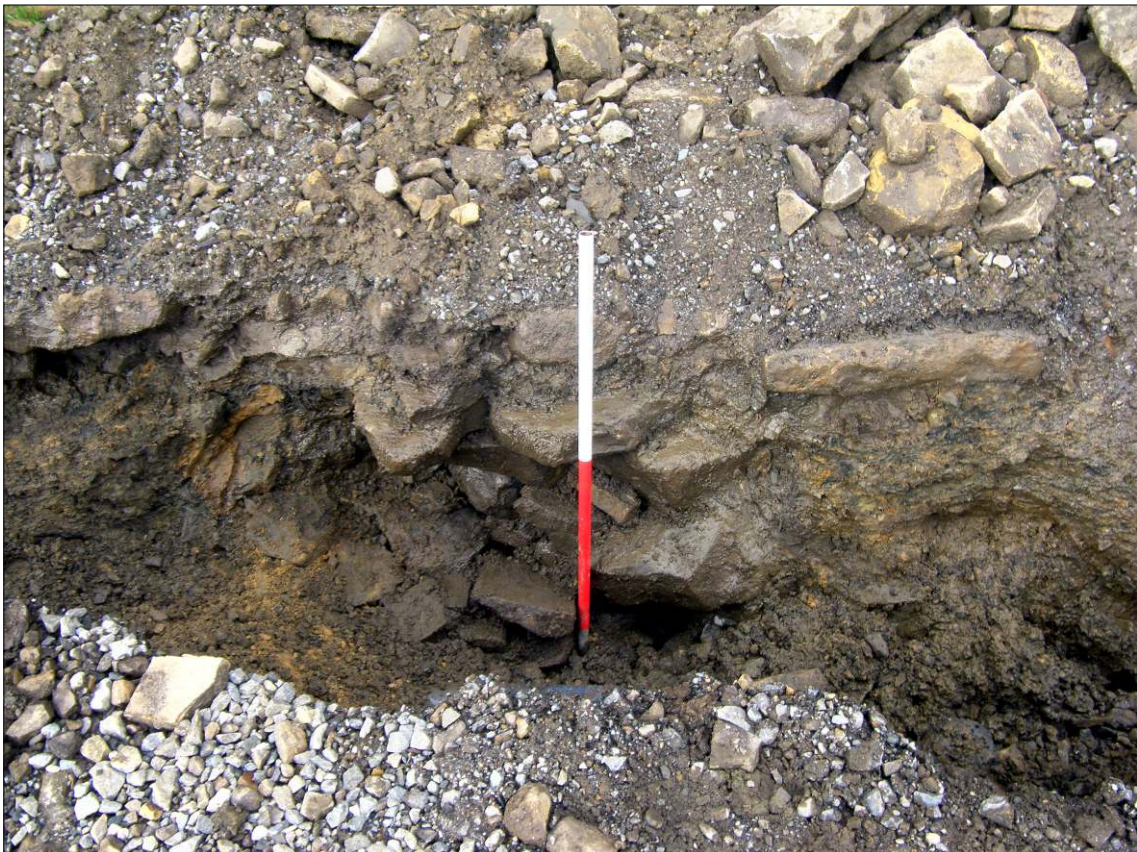
Plate 2



©NAA 2012

*North of England Lead Mining Museum, Killhope:
wall foundation 11, south-east facing elevation*

Plate 3



©NAA 2012

*North of England Lead Mining Museum, Killhope:
wall foundation 15, looking south-west*

Plate 4



©NAA 2012

*North of England Lead Mining Museum,
Killhope: rear of culvert 09, south-west
facing elevation*

Plate 5



©NAA 2012

*North of England Lead Mining Museum,
Killhope: rear of culvert 07, north-west
facing elevation*

Plate 6



©NAA 2012

North of England Lead Mining Museum,
Killhope: culvert 7 with pipe duct

Plate 7



©NAA 2012

North of England Lead Mining Museum,
Killhope: culvert 9 with pipe duct

Plate 8