

HARESHAW IRONWORKS BELLINGHAM NORTHUMBERLAND

ARCHAEOLOGICAL EVALUATION

May 2007



Prepared for: <i>NNPA</i>	By: <i>The Archaeological Practice Ltd.</i>
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HARESHAW IRONWORKS
BELLINGHAM
NORTHUMBERLAND

REPORT ON AN ARCHAEOLOGICAL EVALUATION

Prepared by:

The Archaeological Practice Ltd.



Frontispiece:
View of ashlar-built wall in the south-facing section of Trench 1.

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SUMMARY

This document reports on archaeological evaluation trenching conducted to inform a proposal for the construction of a children's play area on the site of Hareshaw Ironworks, Bellingham, North Northumberland. Previous documentary work has provided contextual information regarding the archaeological and historical development of the area, demonstrating the likelihood that the area contains the remains of a 19th century Ironworks and perhaps earlier remains. The trenching was devised to determine the precise impact of the proposed scheme on the cultural heritage.

In requesting archaeological evaluation of the site, the planning archaeologist for the Northumberland National Park Authority noted the possibility that structures or features of 19th century date existed upon the site and that their remains may survive below the modern ground surface.

The investigation of the site by archaeological trenching revealed structural remains at depths between 0.5 and 0.8m below the present ground surface.

The nature of remains found upon the site supports a recommendation for mitigation by avoidance.

1. INTRODUCTION

1.1 Purpose of Evaluation

The following is a report on a programme of archaeological evaluation trenching carried out on an area of land at Hareshaw Linn, on the north side of Bellingham village, Northumberland. The evaluation strategy was designed to further inform the planning process with regard to the proposed construction of a children's play area on the site. The trenching was designed to test for the existence and define the nature of any features of archaeological importance under the present ground surface.

1.2 Cultural Heritage Background

Hareshaw Ironworks (Northumberland HER ref. N7993) is a monument of recognised regional importance; as a scheduled monument it is protected by law.

The ironworks was founded in 1838 and included blast furnaces, 24 calcining kilns to roast the iron ore, a waggonway, 70 coke ovens, a dam, waste heaps, houses, offices, stables and stores. However, the works operated for only a brief period and, despite three changes in ownership in ten years, they had gone out of use by 1848. A row of cottages, Upper Hall, or Percy Row (Northumberland HER ref. N8032) were built to accommodate employees of the adjacent ironworks, but has also been demolished. The remains of the ironworks are visible today are earthworks and part of the dam, which stands to about half its original height, but more remains lie buried beneath the landscaped grassland which covers the site.

The following is a summary of several previous reports on Hareshaw Ironworks (cf. Linsley 1978a & 1978b; Roberts 2000).

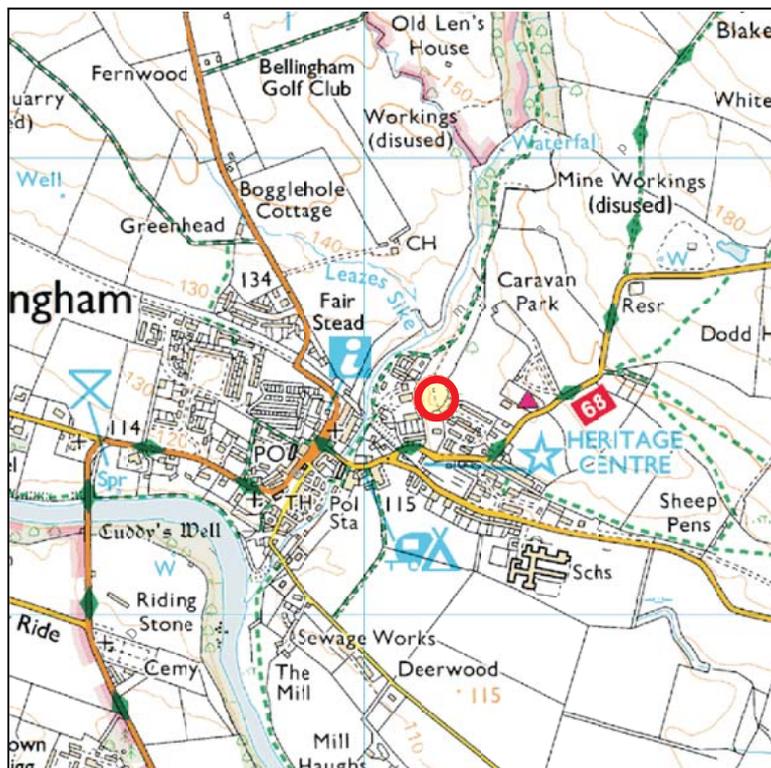
1.3 Historical Synthesis of Hareshaw Ironworks

Archaeological investigation has suggested that iron deposits in the North Tyne and Rede valleys were being mined and worked in pre-Roman and Roman times.¹ Other evidence has been found of iron working licensed by the Bishop of Durham in the twelfth and thirteenth centuries.² In more recent times, reliable reports mentioned a charcoal furnace being opened at Lee Hall near Wark-on-Tyne in the 1760s which produced small quantities of pig iron before the lack of available fuel drove the proprietor to open a new furnace in Lancashire.³ In the same period prospectors were looking for deposits of iron in the neighbouring Rede valley but their finds appeared to have been limited to a few Roman artefacts.⁴ In the 1830s the agent for the Redesdale estate reported to his employer the presence of prospectors in the upper Rede valley who were searching for lead and other minerals on his estate and that of the Duke of Northumberland at Catcleugh.⁵

The consequence of all this activity was the opening of the two iron foundries at Bellingham and Ridsdale in Northumberland in the late 1830s where raw materials were most abundant. Accounts prior to the present of the fortunes of these two foundries seem to have been based on a limited number of printed sources and to have adopted a similar format. The earliest of the modern accounts was set out in 1946-7 by T.M.Hoskison in a paper presented



Illus. 01: Location of Bellingham in Northumberland.



Illus. 02: Location of the evaluation site in Bellingham.

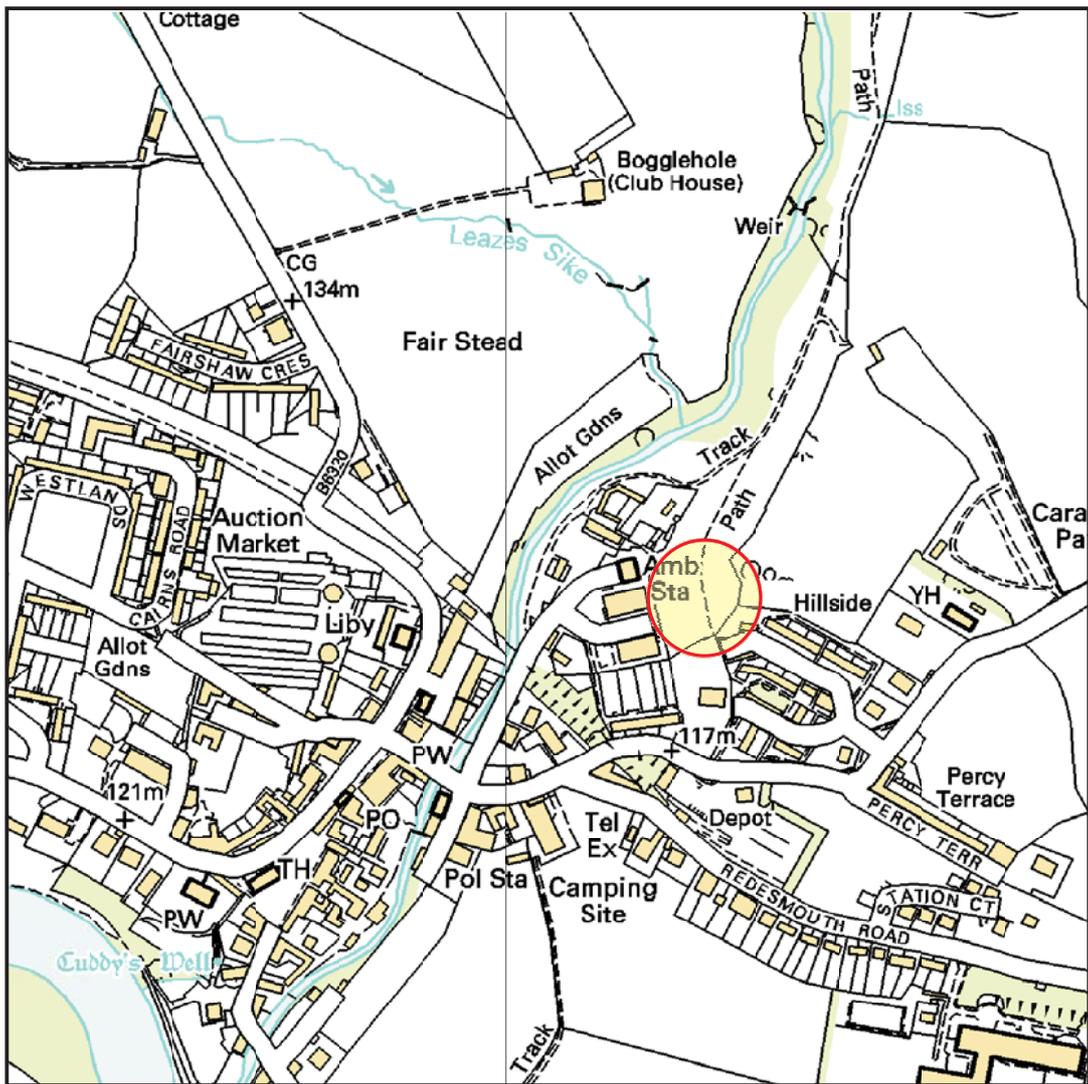
to the Newcomen Society.⁶ Hoskison's analysis set the pattern for subsequent accounts and appears to have been used with minor variations by all later writers.⁷

Since Hoskison's paper, pertinent manuscript material from the Duke of Northumberland's records has become available at Alnwick Castle.⁸ The principal sources are the documents known as Business Minutes, which are the records of the weekly interchange of information and decisions between the Duke and his Chief Commissioner or principal agent.⁹ These were begun on the accession of the Fourth Duke in 1847 and contain a considerable amount of information about the iron works from before 1847 until all iron working ceased in the 1870s. In addition to these papers, the House of Lords' Record Office holds the manuscript reports of the Common's Select Committee which enquired into the proposed Border Counties Railway in 1854.¹⁰ Because it was anticipated that the railway would lead to the re-opening of iron works in Bellingham and Ridsdale, the testimonies of several witnesses contain information about iron making in upland Northumberland. Although consulted by railway historians, little use has been made of this material elsewhere.¹¹ Finally there are several documents and maps in the Bell and Armstrong collections of papers in the Northumberland County Record Collection, which, together with the Census Returns, augment and amplify the evidence obtained from the previous sources. It should be stated that some writers since Hoskison have dipped into portions of the manuscript materials mentioned above. However, these sources have not been explored to the full in order to establish a credible narrative of events and analysis of the results.

The Hareshaw works were opened in 1839 by a partnership concern, Batson, Campion and Company.¹² Edward Campion was later to testify to the Select Committee mentioned above and much of this account is drawn from evidence in his testimony.¹³ The company constructed a single blast furnace on the site in Foundry Yard in the village, the blast for which was driven by a 60 horsepower engine powered by water. The company created two dams on the Hareshaw burn for the purpose. The lower dam abstracted water through a flume to drive the engine, while a larger dam was constructed upstream to provide a reservoir for continuous supplies of water.¹⁴ In addition, the company had to build a number of dwellings for workers as there was inadequate housing in the village. By 1841, the census¹⁵ reveals the identities and occupations of nearly 150 foundry employees living in the village. At its height, Campion stated the company employed about 500 men and boys.

The purpose of the company was to mine coal, iron ore and limestone, from the neighbourhood, convert the coal to coke and then use a cold blast furnace to manufacture pig iron. Iron ore was found in the valley of the Hareshaw Burn, while there were extensive deposits of limestone in the valley of the Haining Rigg Burn. Coal on Hareshaw Common had been mined for some time. All the raw materials were transported to the works on iron tubways made for the purpose. The resultant pig iron was then sent by cart to Hexham where the company had a foundry and timber yard. In the yard, specific castings were made for customers, for example Woolwich Dockyard and the Carlisle and Maryport Railway, while any remaining iron was sold on the open market. Campion believed that he made about 100 tons of iron each week of which approximately 50 tons was used in the yard at Hexham and the remainder sold.¹⁶

Batson and Campion ceased to have any part of the company in 1845. Batson was killed in an accident near Redesmouth on 21 March 1845 and Campion lost money through investing in a railway project that never materialised. As a result of these two misfortunes, the company was unable to pay mortgages to the Union Bank. The works became the property of the Bank which constructed two more blast furnaces with an accompanying steam engine to power the blast and attempted to increase production. It was Campion's view that they also increased the work force to over 1000 and had to construct more buildings and houses.



Illus. 03: Location of the evaluation site in Hareshaw Linn, Bellingham.

The enterprise failed to pay. In November 1847, the bank offered the works for sale.¹⁷ The bank would have been happy to obtain £50,000 for the enterprise but the most they were offered was £30,000. In February 1848, Mr Wood, on behalf of the bank, renegotiated the terms of the Duke's royalty in order to try and make the works more competitive. This had little effect and by May 1848 the works were only producing 80 tons of pig iron a week (anticipated production was about 300 tons) and no more ore was being mined.¹⁸ The works closed in 1849. The bank made various arrangements with the Duke over the ground rents and continued to occupy the property until 1852, subletting the land and buildings when possible.¹⁹ Despite the arrival of a railway in the village in 1855, no further iron founding operations were attempted. In October 1862, the remaining plant was sold and in 1863 removed from the site.²⁰ The Duke declined a suggestion to purchase parts associated with the water and steam engines as they would have to be renewed in the event of the works reopening and, in any case, he did not have any other enterprises of this nature in his ownership.²¹

In his evidence to the Select Committee, the Duke's Mineral Agent, T.J.Taylor, gave as his reasons for the failure of the Hareshaw Iron Works the inadequacy of the transport arrangements, in particular the absence of a railway, and depression in the iron trade. Superficially there is much to recommend this judgement. The cost of transporting iron from Hareshaw or Ridsdale via Hexham was about 12 shillings per ton.²² On top of the cost of production, it was believed this was too great to be borne. On the other hand, the only depression in the iron trade recognised by Riden in his analysis of production, was in 1842-43.²³ In other years Riden believed trade prospered and low prices were a consequence of technological efficiency and a competitive market.

However, a number of important factors which contributed to the failure of the company were ignored by Taylor. The first of these is financial. The company was originally set up in 1839 by two men who borrowed through mortgages a substantial amount of their capital. The amount of capital needed to start an iron foundry was considerable. Coupled to this in the case of Hareshaw were the costs of seventy coke ovens, the dams and water engine, the houses, the opening of the iron mines and the extension to the coal mines at Hareshaw Head. A reasonable estimate would make the whole cost around £40,000-50,000. At no point in his evidence to the Select Committee, including the summary of costs, did Campion allow for interest or repayment of capital. This is particularly important in his estimates of costs for producing a ton of pig iron. In passing, Campion offered the composite figure of £2.10s to produce one ton of pig iron in 1845.²⁴ He then stated that at this figure the Works paid. This statement was never fully explained for there was no allowance for capital repayments, none for interest and none for transport. In addition, Campion's figures are much lower per ton of ironstone than those given by Bell,²⁵ and very much lower than the figure of £3.10s per ton of pig iron exclusive of interest on capital and other expenses arrived at by the Duke's agents in 1847.²⁶ After Campion left the works, the situation deteriorated further. In an effort to recoup its investment, the Union Bank authorised the construction of two more blast furnaces powered by a steam engine. This involved further massive capital expenditure so that by November 1847, the Duke's agents calculated that the bank had invested in total about £120,000 in the enterprise. Campion's price might have been competitive, but only for a short period. Bearing in mind these new investments and set against Scottish and other prices, which were below £3 per ton for 6 of the 10 years of the 1840s, the works simply could not pay.²⁷

A second factor contributing to its failure was the technology employed at the Hareshaw Works. The blast furnace system constructed by Campion in 1839 was anachronistic. Water powered blast furnaces may have reduced the cost of capital investment in steam power and running expenses of coal and labour, but they were low power and produced only

a moderate blast. Such engines could not be harnessed to the hot blast system and had been abandoned completely in other iron works in places such as the Weald and Shropshire by the beginning of the nineteenth century.²⁸ Despite the fact that the hot blast system had been in use on Tyneside for several years, no attempt was made by Campion or his successors to introduce it at Hareshaw. Coke ovens which were labour intensive were retained even after the Duke's agents encouraged the use of more advanced technology in 1847.²⁹ Perhaps most important of all was the way in which pig iron was produced and allowed to cool completely before transport to Hexham. Here it had to be re-heated for casting or sold on to other companies who had to convert it into malleable iron. Such practices were wasteful of fuel and labour and had long been abandoned by the more modern, integrated foundries, for example, at Low Moor, near Bradford³⁰. It is a measure of the inefficiency of the Hareshaw Works that on a completely empty site, an anachronistic furnace should be constructed and integrated with no other process.

Finally, the question of labour has to be considered. The company had been forced to construct several rows of cottages for its workers due to the scarcity of housing in Bellingham.³¹ A work force had then to be recruited, trained and retained if it were to be of lasting value to the company. Not only was this a difficult task but Hunt's information about the level of miners' pay in Northumberland during the period suggests that their rate of pay would have been among the highest rates in England.³² Such disadvantages could only be offset by efficiency of operation. Given the nature of the works this seems hardly likely and it becomes reasonable to ascribe part of the works' failure to problems associated with labour recruitment.

In addition, the financial difficulties experienced at Hareshaw also merit greater attention. The adoption of a water powered blast furnace was linked to a small local foundry producing a limited range of industrial and domestic products in a Northumberland market town. The financial collapse of the enterprise arose, by his own admission, from Campion's injudicious investment in local railway development as well as the death of his partner. When the bank from which Campion had borrowed money took over and attempted to expand the Hareshaw works, it did so without any clear market for the iron it was producing beyond that already supplied by Campion's own modest establishment in Hexham. The absence of a major outlet meant that there were no returns to service the increased investment and it was only a matter of time before the enterprise failed. Once the collapse had taken place, the anachronistic technology and other problems at Hareshaw served as a disincentive for the reopening of the plant under new management. For example, although Armstrong took over the lease of the Hareshaw mines in the 1860s when he was opening up his works at Ridsdale, expensive potential problems such as the inadequacy of the upper dam on the Hareshaw Burn, caused him to withdraw soon afterwards.³³

2. EVALUATION PROGRAMME

2.1 Aims

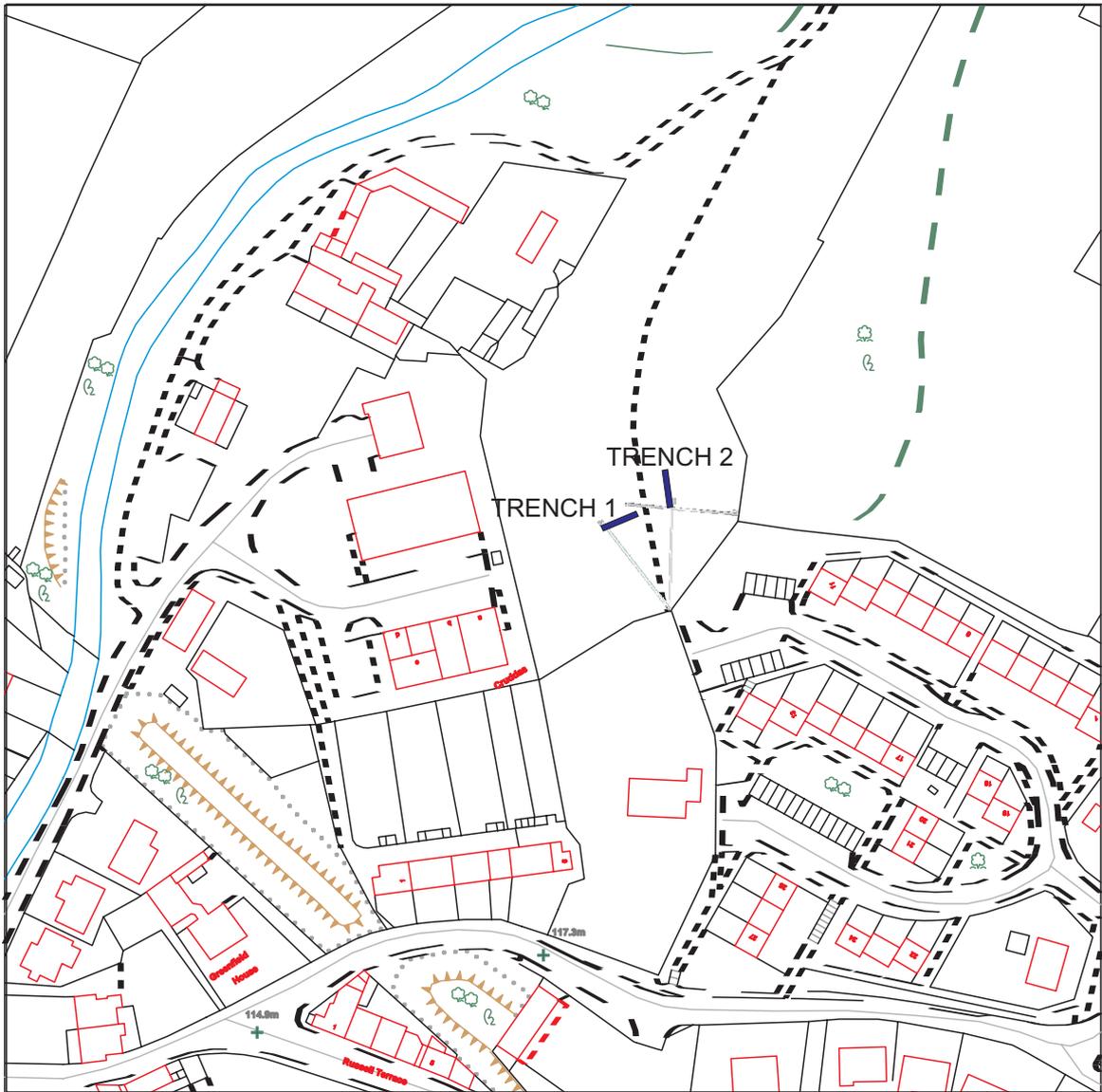
The aims of the programme of evaluation trenching were to investigate the possibility that significant archaeological remains were present on the site of the former Hareshaw Ironworks, to determine the character of any such remains and determine, as far as possible, their function and state of preservation.

2.2 Methods

Two trenches were placed in positions which it was considered provided a reasonable sample of the site area. A mechanical excavator, closely supervised by an archaeologist, was used to excavate the surface topsoil until archaeological features were encountered. All anomalies or features of potential interest were examined closely by hand to appraise their importance and, if necessary, for recording purposes. The surface of the sub-soil was also cleaned by hand to reveal any potential features cut into it. All trench sections were also hand-cleaned for recording purposes.

2.3 Trench Location and Extent

The locations and extent of the evaluation trenches are shown on *Illustration 04*.



Illus. 04: Trench location plan.

The following Buildings have been erected by the Hareshaw Iron Company on the Droughill Gate Grounds.

Seven Cottages in one range, each Cottage containing one good room and Loft with a pantry & a Kitchen attached & good Garden plots in front. The Buildings of stone covered with blue slate and apparently well finished. 3 of them are at this time unoccupied, and seven of them occupied by Nathan Childers, Thomas Druden, William Armstrong, John Brown, Jane White, Thomas Redley & Francis Walsh: from what we could learn these tenants pay 1/6 per week for these Cottages. The Garden behind these Cottages is occupied by Thomas Redley who rents it of John Garforth. His Cattle appear to graze upon the Common.

Upon Upper Hall Grounds there are Six Ranges of Cottages, each Cottage containing generally a good room and Loft with a pantry in a top all behind; an Ashpit has also been intended but the whole are not finished.

The Eastern Range contains 16 Houses numbered 1 to 16 all of them unoccupied. This range is called "Northumberland Row".

The three next ranges contain respectively 12 Houses, 12 Houses & 10 Houses in all 34. They are numbered 1 to 34, and are called "Upper Hall Houses" all of them are at this time unoccupied.

The next Range contains 20 Houses, numbered from 1 to 20, and is called "Cory Row". 11 of these Houses are unoccupied, and 9 are occupied, viz. by Joseph Hildy, Edward Dodd Ann Turnbull, Margaret Armstrong, George Johnson, Thomas Peckerty, James Johnson, James Smith & James Clarke respectively who pay we understand 1/6 per week each. There are a few small Gardens in front of this range, but the ground surrounding the other ranges, is let to John Garforth and all cultivated.

The next Range of Buildings is called "Belton Brae" and contains ten Houses four of which are at present unoccupied and 6 of them occupied, viz. by Ralph Storer, John Anderson, Barbara Skelly, Thomas Ferguson & Mrs Boyd respectively the latter occupying two Cottages. Some of these parties have small Gardens in front; and wherever we could ascertain the rent, 1/6 per week for each Cottage appears to be paid.

These Buildings are all of stone covered with blue slate with some trifling exceptions appear in a fair state of repair.

The other Buildings on Upper Hall Grounds, consist of 40 Cokes ovens in several ranges, many of them are now in a deteriorated state and in case the manufactory is again let they will have to be rebuilt. 24 Large Kilns for roasting Iron Stone: several of them in a very indifferent state. Some Kilns - a range of Coal Stacks, with a Railway on gears communicating with the same.

3 Blast Furnaces, with the requisite shades, Machinery &c. complete. A large Boiler stand, with funnels, and four Boilers. Engine Shed & a large Building with wheel wrought by water power. Another Engine Shed, formed of wood used for drawing the scows or refuse to the top of the Bank, where it has lately been deposited. A Smith's work shop - A Blacksmith's shop with three fires. A large stone House and stabling - A waggon shed. Extensive Dam and Wagon ways communicating with the several Buildings &c. Two Dwelling Houses, four rooms on the ground floor with a pantry &c. being now occupied by Thomas Curragh. The upper rooms form a suite of Offices &c.

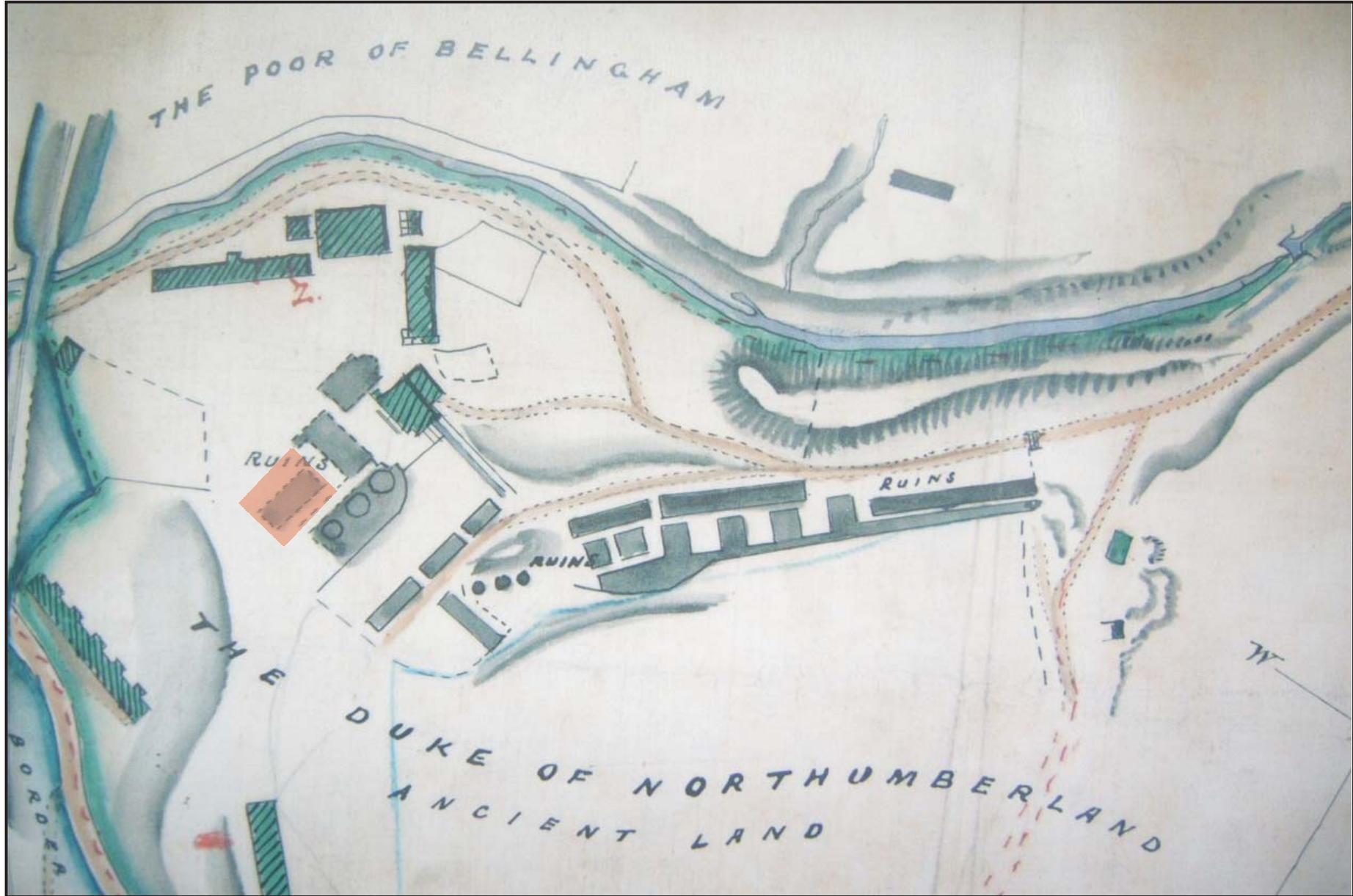
The following Buildings, at the Iron works have been let by the Iron Company to Mr Wilkinson of Dundane for the purpose of telemanufactory &c.

A large Drying flat, with funnels &c. for draining Dily. Two Kilns: - a mill for grinding Clay, worked by the water wheel. A Cottage of one room and Loft. George Hopper Tile maker, occupier. A Dwelling House containing four rooms and other conveniences, occupied by Mr Wilkinson whom in this neighbourhood. and. A fine stall stable: - and John Garforth who occupies the land, has a stable with seven stalls.

The above Buildings appear in a tenable state.

Illus. 06:

Description of buildings recently built on the site of the recently abandoned Hareshaw Ironworks c. 1860.



Illus. 07:
Extract from a Plan of Hareshaw Ironworks c.1866-8 (from the Armstrong Colln.), Showing position of building apparently revealed in Trench 1.



Illus. 08: Extract from the 1st edition Ordnance Survey Plan (surveyed c.1855), showing building revealed during the evaluation excavations.



Illus. 09: Extract from the 2nd edition Ordnance Survey Plan (surveyed c.1855), showing building revealed during the evaluation excavations.

3. RESULTS

3.1 *Trench 1* - 10m by 1.5m (NNW-SSE)¹

Below the shallow, sandy loam topsoil [101] at the east end of the trench was a brick floor [102] which appeared to have been bordered on the west side by a low wall or sill, the remains of which, a brick and stone construction [103], survived in the north-facing section. The single course of a well-made wall [104] of large, well-dressed sandstone ashlar blocks, some with keystones evident, appeared in (actually, behind) the south-facing section and was also probably related to the brick floor. Below [101] west of the brick floor was sandstone rubble [105] the depth of which could not be determined. At the far west end of the trench, however were the remains of a rough sandstone wall [106] of at least two kinds of construction, the inner part of the wall of much rougher construction than the outer (western) face. The finds recovered from this trench were of nineteenth and 20th century origin, and included a conical ink-well, suggesting the existence of offices in the vicinity.

Interpretation

The east end of the trench clearly contained the remains of significant structures, including a very well-built ashlar wall and a brick floor. It is significant that a building appears at this location on the 1st and 2nd edition of the Ordnance Survey plan, and on earlier plans contemporary with or slightly post-dating the operational period of the ironworks. The western part of the trench contains destruction deposits associated with the levelling and landscaping of the ironworks; the wall at the far west end may be a revetment of more than one phase.

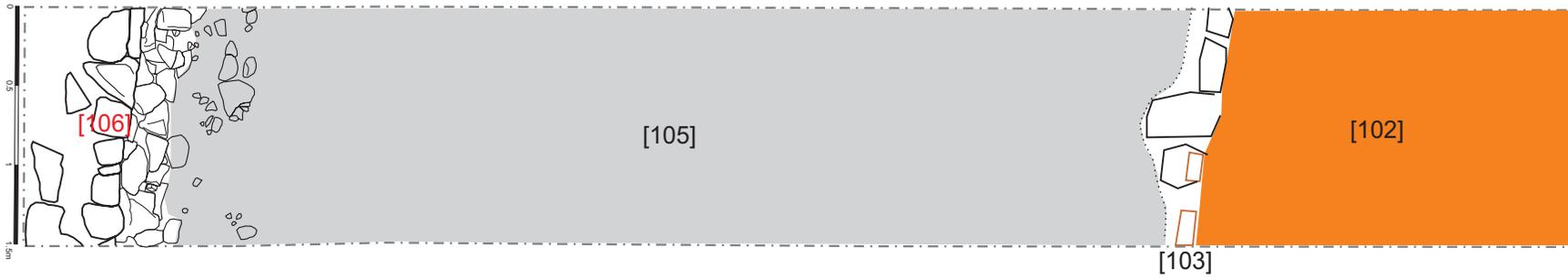
3.2 *Trench 2*: - 10m by 1.5m (ENE-WSW)²

Below the dark, sandy loam topsoil [201] was a deposit of rubble mixed with loam and mortar [202] which was much deeper at the north end of the trench, than the south. Below this, at the south end of the trench was a shallow deposit of grey silt, and beneath this was a deposit of rubble [203] which extended throughout the trench. At the south end of the trench the rubble deposit [203] sat upon a brick-, concrete- and stone-built feature [204] which appeared to be comprised of a stone-built platform, consolidated and in places covered by mortar and concrete, with brick walls built at bothsides to form a shallow pit. However, brick- (and tile) work appears to continue either side of the platform, suggesting that the feature excavated could be a sunken feature built into a larger floor. Earthenware tiles along the east side of the feature perhaps suggest this a possible floor, but could have been reused. At the north end of the trench were the remains of a brick floor [206] which sat upon (and at the very north end of the trench was partly covered by) a deposit of black clinker [206], itself sitting upon red ash [207] and compact, orange clay [208], the latter possibly the natural boulder clay, though perhaps redeposited. The finds recovered from this trench also were of nineteenth and 20th century origin.

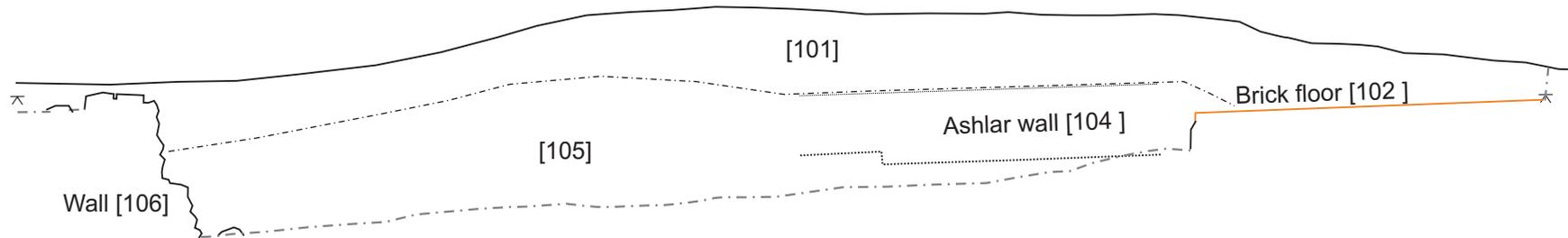
Interpretation

¹ For purposes of simplifying the trench description, the orientation of this trench will be regarded as N-S rather than NNW-SSE.

² For purposes of simplifying the trench description, the orientation of this trench will be regarded as E-W rather than ENE-WSW.



Illus. 10: Plan of evaluation trench 1.



Illus. 11: South-facing section of evaluation trench 1.

Trench 2 contains the enigmatic remains of a brick- and stone-built feature which appears to comprise a platform and but does not include any signs of burning except in deposits which appear to underly the remains of a brick floor at the north end of the trench. It is difficult to associate the structure with any known iron-making processes, but it is possible that it was part of offices or ancillary buildings, - the presence of lime allows suggests slaking or mortar preparation as one of a range of possibilities, for example. No sign of structures appears on contemporary maps in this area, or on Ordnance Survey plans slightly post-dating abandonment, but it is known from contemporary reports (see *Illus. 06*) that the ironworks site was used for light-industrial activities following the cessation of ironworking, and it is perhaps to this phase of activity that the features discovered during the evaluation belong. The heavily burnt deposits underlying the feature [204] are indicative of the heavy industrial activities carried out on the site, but it is not clear precisely what activities were carried out in the area of the evaluation trench.



Illus. 12:
View of Trench 1 from the east, showing brick floor.



Illus. 13: *View of brick floor at the east end of Trench 1.*



Illus. 14: *View from the south of the brick floor at the east end of Trench 1.*



Illus. 15: *View of feature [103] in the south-facing section of Trench 1.*



Illus. 16: View of Trench 1 from the west, showing ashlar-built wall (left) and brick floor [102] (rear)



Illus. 17: Detailed view of ashlar blocks [104] with keystone.



Illus. 18:
View from east of wall at the west end of Trench 1.

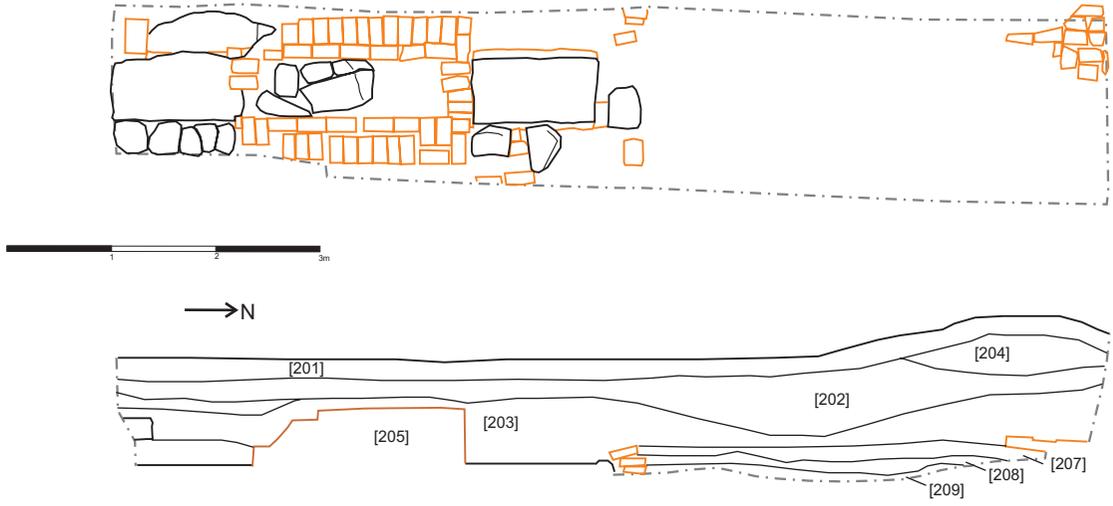


Illus. 19:
Vertical view of wall [106] at the west end of Trench 1.



Illus. 20: Plan of Trench 2

Illus. 21: Plan of evaluation trench 2.



Illus. 22: East-facing section of evaluation trench 2.



Illus. 23: View of Trench 2 from the north, showing platform feature [204].



Illus. 24: View of east-facing section (north part) and brick floor remains in the north-west corner of Trench 1.



Illus. 25: View from the north of brick floor remains [206] in the north-west corner of Trench 1.



Illus. 26: View of burnt deposits [207 & 208] in the south-facing section of Trench 2.

4. CONCLUSIONS

The evaluation excavations revealed structural remains between 0.2 and 0.8m below the present ground surface.

In Trench 1 the remains of significant structures were uncovered, including a very well-built ashlar wall and a brick floor, probably associated with a building which appears at this location on historic maps and, at the west end of the trench, a wall interpreted as a possible revetment of more than one phase.

In Trench 2 were the enigmatic remains of a brick- and stone-built feature and a brick floor which may belong to a phase of activity following the abandonment of ironworking, although signs of the latter are apparent in deposits of burnt material apparently underlying the built remains, the function of which could not be determined.

The appearance of the site, with its extensive man-made earthworks, backed-up by the trial excavations reported here suggests that it is likely that remains of the iron-works are extensive and reasonably well-preserved throughout the site.

The shallow depth of the remains means that any development works would have an impact upon them unless restricted strictly to turf removal, or if the ground level was built up prior to development.

5. RECOMMENDATIONS

The nature of remains found upon the site and the status of the site as a Scheduled Monument supports a recommendation for mitigation by avoidance.

The excavations revealed various deposits of industrial character, some clearly residues of industrial practices, and the potential issue of contamination should be explored prior to any development.

Given the existence of archaeological remains and potential contaminants, any development should be carried out upon a surface of imported, sterile material.

6. REFERENCES

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7. APPENDIX 1: CONTEXT DESCRIPTIONS

7.1 TRENCH 1

[101] Dark, sandy loam topsoil

[102] Brick floor comprised of bricks laid flat and dry on a prepared surface.

[103] Partial remains of a brick- and stone-built wall or kerb.

[104] Wall of large, well-dressed sandstone ashlar blocks, some with keystones evident.

[105] Loose sandstone rubble.

[106] Rough sandstone wall of at least two kinds of construction, the inner part of the wall of much rougher construction than the outer (western) face. No mortared joints visible.

7.2 TRENCH 2

[201] dark, sandy loam topsoil.

[202] rubble mixed with loam and mortar.

[203] Friable grey silt.

[204] Rubble comprised mainly of sandstone fragments with some mortar and sparse brick.

[205] Brick-, concrete- and stone-built construction which appeared to extend to the east and west sides of the trench. Earthenware tiles along the east side of the feature suggest a possible floor, but could have been reused.

[206] the remains of a brick floor.

[207] Thin deposit of black clinker.

[208] Thin deposit of burnt, red ash.

[209] Compact, orange clay.

8. BRIEF FOR ARCHAEOLOGICAL EVALUATION

1.0 Summary

- 1.0 An application for scheduled monument consent has been submitted in order to carry out a programme of playground development work on an area of Hareshaw Iron Works, Bellingham Northumberland NY842 836 SAM NO. 594.
- 1.1 This document provides a brief for a scheme of archaeological field evaluation. It is essential that a limited programme of archaeological field evaluation is carried out in order to formulate an appropriate response to proposals that may adversely affect archaeological remains on the site. Archaeological evaluation has been requested by the Secretary of State before she determines the scheduled monument consent application.
- 1.2 The time, in terms of working days in the field, allotted to this evaluation is 4 days.
- 1.3 The aim is to determine the presence or absence, nature and extent, date, integrity, level of preservation and relative quality of the archaeological resource within a given area, in order to make an assessment of their worth in a regional, national or international context.
- 1.4 The results of this evaluation will provide further information about the archaeological resource of the monument, and lead to the formulation of an appropriate response or mitigation strategy to repair or development proposals. Where deposits are established as significant, a further programme of research and archaeological investigations may be necessary.
- 1.5 The project proposal involves works to enhance public enjoyment. Ultimately the aim is to level an area of ground c. 30m x 30m at the location shown on Fig. 1 (attached). The National Park Authority would like to do this to provide a safe, grassed, play area (for football etc.) for children from the nearby Hillside Estate. At the moment no such space exists and local children have to play in a roadside /garage area. The aim is to level the existing landscape which is currently waste ground and re-seed to provide the kick about area.
- 1.6 The tenderer is to provide a costed project design in line with the Management of Archaeological Projects (MAP2), English Heritage, 1991. Work will be carried out in accordance with standard guidelines such as the IFA Standard and Guidance for Archaeological Filed Evaluations.
- 1.7 It is essential that all archaeological fieldwork, investigations and study of the historic environment are carried out in a secure research context. The North-East Regional Research Framework for the Historic Environment (2006) sets out the key research priorities for the region. All studies and investigations must demonstrate their relevance in relation to both national and regional priorities for archaeology and the historic environment.

2.0 Site Description

- 2.1 The land is currently owned by the National Park Authority and as presently constituted the site is an area of undulating land which may have been the location of a series of coke ovens. There are no access problems in relation to the area of proposed development.

3.0 Archaeological and Historical Background

- 3.1 In 1839, Messrs Batson, Campion and Co. established an ironworks by the Hareshaw Burn, Bellingham. A furnace was built on the site of Foundry Yard; a two dam system was constructed on the Hareshaw Burn to supply water for a waterwheel-powered cold blast; coke ovens were built, and ironstone, coal and limestone were extracted from the local vicinity. However, the company made a loss of £1 on every ton of iron produced and was taken over in 1845 by the principal mortgagee, the Union Banking Company of Newcastle upon Tyne (Sewell, 1992, 11; NRO P669, 75).
- 3.2 The Company expanded production with the construction of two new furnaces with steam-powered blast in order to improve profitability but production declined whilst labour costs increased significantly. At its peak, the venture employed some 1,000 men and boys (Roberts, 2000, 290). It was mothballed in 1849 and never reopened. A railway link was established in 1855 but there was no attempt to restart the works. When the rail link was established with Hexham and the Newcastle and Carlisle line, one of the first passenger services brought bidders from Newcastle to an auction of the plant (Sewell, 1992, 28), and the site was cleared in the following year.
- 3.3 The main reasons for the failure of the Bellingham ironworks have been explored by Roberts (2000, 283-298). Despite the obvious advantages of having coal, ironstone and limestone in close proximity, an advantage not available in the North East Coalfield, the venture was a victim of the incompetence of its founders. As Roberts notes, the original company employed technology that was already behind the times. The design of coke ovens was primitive by contemporary standards, and they relied on the availability of cheap water power as a cost saving over the greater investment required for a more efficient steam-powered blast. This was to a degree corrected by the Union Banking Company when it installed two new furnaces with steam-power blast. However, by this time the Bank was itself in financial difficulties and, by increasing both their capital investment and running costs when output was actually falling, merely increased the losses.
- 3.4 Secondly, the company exported pig iron by cart to its foundry in Hexham rather than manufacture at Bellingham, thus incurring extra transport cost and the cost of reheating in Hexham.
- 3.5 Thirdly, the company was forced to built worker's housing as there was no ready pool of workers in the local area, and the quality of employee it managed to recruit was low as the company could not compete with the wages available in the North East Coalfield.
- 3.6 Lastly, the original company did not factor in high running costs and interest payments on the mortgages it chose to use when setting up the ironworks instead of raising capital from share issues. Thus the inability of the company to curb losses and to compete with its more efficient rivals meant that it was almost bound to fail. The arrival of the railway link made no difference to its fortunes.
- 3.7 Subsequent demolition and redevelopment has removed much of the site, including four terraces of workers' housing, though a few of the buildings survive as dwellings (Roberts and West, 1998, 13). For a decade the ironworks was a major employer, and it has left a significant mark on the character of the town. The lower dam on the Hareshaw Burn survives remarkably well despite having been damaged by flooding in 1968 (Roberts and West, 1998, 62). A well-known local landmark, it provides a dramatic reminder of this once

extensive industrial landscape. It has recently been conserved by the National Park Authority

4.0 Objectives

4.1 There is the potential for archaeological deposits in the area affected by the proposals. In particular remains of coke ovens and related structures

The objectives of this programme of evaluation are as follows:

- to identify any archaeological features or deposits in the given area/s, including environmental aspects;
- to determine the nature, depth, stratigraphic complexity, level of preservation and date of any archaeological features or deposits in the given area/s;
- provide an assessment of the potential and significance of any identified archaeological features or deposits exposed, including environmental aspects;
- to provide an assessment of the impact of the proposed development on the archaeological features or deposits exposed in the given area/s;
- to assess the likely scope and duration of any further evaluation that may be necessary to mitigate the effects of the proposed repair or development scheme.
- Provide a mitigation strategy for the proposed repair or development.

5.0 Method

- 5.1 The exact location of the area to be examined will be determined by the National Park Archaeologist and the successful contractor. It is envisaged that a 20% sample of the area of the proposed development will be examined. The excavation will require the removal of topsoil and overburden using an appropriate mechanical excavator with a toothless ditching bucket. The trench shall be excavated by hand on removal of the overburden to a reasonable depth that will enable the identification and full understanding of the stratigraphic relationships of all significant features identified in order to achieve the objectives of the evaluation.
- 5.2 The contractor will ensure that all spoil is deposited in the designated areas and kept tidy at all times.
- 5.3 The contractor will make arrangements for the reinstatement of topsoil and subsoil or the removal of spoil from the site immediately after excavation and recording has been completed. This to be done in consultation with National Park Authority Ranger staff.
- 5.4 The contractor must demonstrate that all staff, including subcontractors, are suitably qualified and experienced and understand the work required of them.
- 5.5 The contractor must ensure that plant and machinery is operated by suitably qualified staff and in a manner that adheres to Health and Safety legislation.

- 5.6 A record of all features excavated will be produced using appropriate archaeological context recording. All features will require a full written, drawn and photographic record.
- 5.7 All measurements will be expressed in metres. Plans and sections will be produced at appropriate scales using reliable and repeatable control measurements by establishing a metric based co-ordinate system.
- 5.8 All photographic recording of features should use the most appropriate method to fulfil the objectives of the project (35mm colour slide, black and white print, digital photograph) and agreed in advance of the fieldwork.
- 5.9 An appropriate artefact collection and discard policy should be defined and agreed in advance of any fieldwork
- 5.10 Loose architectural fragments should be treated as small finds and recorded individually (with reference to the appropriate repository standards and guidelines). The find location should be recorded three dimensionally.
- 5.11 All drawings to be provided as ink on film or where facilities are available as digital drawings in a .dwg or .dxf format.
- 5.12 An appropriate sampling strategy must be prepared in consultation with the English Heritage Regional Archaeological Science Advisor.
- 5.13 The archaeological contractor will ensure that all conservation specialists and consultants are identified as part of the contractor's team from the outset.
- 5.14 The archaeological contractor will ensure that a sum for any sampling and assessment work is identified in the tender return.
- 5.15 On completion of the fieldwork all samples will be processed and artefacts cleaned, conserved, identified, labelled and packaged in accordance with the requirements of the appropriate repository guidelines and standards.
- 5.16 An appropriate programme of analysis and publication of the results should be completed if no further archaeological investigations are to be carried out.
- 5.17 If articulated human burials are discovered, the remains should be left in situ unless their removal can be justified. Any disarticulated material and charnel may be removed

6.0 Archive and Report

- 6.1 The site archive will be prepared to the standards specified in the Management of Archaeological Project (MAP2), English Heritage, 1991, Appendix 3. Archive preparation and deposition should be undertaken with reference to the appropriate repository guidelines and standards, and where necessary the Museums and Galleries Commission (MGC), United Kingdom Institute for Conservation (UKIC) standards and guidelines. The contractor must demonstrate that arrangements have been made with an appropriate organisation for the deposition of the project archive in advance of any work on site.

6.2 The contractor will provide for a written, illustrated report within 3 months (or shorter period by mutual agreement) on completion of the fieldwork in accordance with MAP2. 5 copies the report should be sent to the National Park Archaeologist, one copy should be sent to the English Heritage, regional Inspector of Ancient Monuments/Historic Buildings Inspector and the County Sites and Monument Record. The National Monuments Record should be asked if they wish to receive copies of the archive and report. The report should contain as a minimum:

- Non-technical summary
- Introductory statement
- Aims and objectives
- Methodology
- Results
- Assessment and recommendations
- Index and location of archive
- References and bibliography
- Copy of project design

6.3 Where appropriate arrangements should be made to publish the results of the investigations through a local or national journal.

6.4 NNPA, through Northumberland County Council supports the Online Access to Index of Archaeological Investigations (OASIS) project. 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. The archaeological contractor must therefore complete the online OASIS form at <http://ads.ahds.ac.uk/project/oasis/>. Contractors are advised to contact the Northumberland HER prior to completing the form. Once a report has become a public document by submission to or incorporation into the HER Northumberland National Park Authority may place the information on a web-site. Please ensure that you and your client agree to this procedure in writing as part of the process of submitting the report to the case officer at NNPA

7.0 Timetable and Monitoring

7.1 Ideally the fieldwork should start on.....23rd April 2007.....
to ensure completion by..... 27th April 2007.....

7.2 The project will be monitored by the Northumberland National Park Archaeologist.

7.3 The contractor will report any unexpected discoveries immediately to the project monitor.

8.0 Health and Safety

8.1 The archaeological contractor should comply with the Health and Safety at Work Act and subsequent additions and amendments. All fieldwork must be carried out under an agreed Health and Safety Policy. A method statement and risk assessment should be completed and forwarded to Northumberland National Park Authority prior to the commencement of work and the project should have a nominated Safety Officer.

9.0 Guidance for Tenderers

- 9.1 Each contractor wishing to bid for this contract should provide a project design drawn up on the basis of this brief. This should be based on the format suggested in English Heritage's 'The Management of Archaeological Projects' (1991). It should include:
- A detailed methods statement indicating the proposed methodologies to be adopted
 - The relevant experience of the organisation, key personnel and any sub-contractors
 - Details of human resources to be applied to the project
 - A detailed breakdown of costs
 - Proposed timescale for completion of the work and submission of the report and archive
 - Evidence of compliance with the Health and Safety at Work Act 1974

PROJECT COSTINGS SHOULD BE PROVIDED IN A SEPARATE SEALED ENVELOPE TO BE INCLUDED WITH THE SUBMITTED TENDER AND PROJECT DESIGN

- 9.2 Tenders will be assessed immediately after the closing date and the contract awarded to the contractor who, in the opinion of the NNPA, offers the best deal based on price, creativity of ideas, method statement, experience of similar projects and the expertise of the personnel involved. The contract will be awarded on a fixed price basis, with any subsequent agreed departures from the brief subject to negotiation.
- 9.3 The contract for the project will be let by the Northumberland National Park Authority. No work should take place until the successful contractor's project design has been accepted in writing by the NNPA and a contract for the work awarded.
- 9.4 The successful contractor is to arrange a preliminary meeting with the National Park Archaeologist on site before the commencement of work in order to finalise the areas to be examined.
- 9.5 The chosen contractor will be required to indemnify the Park Authority and private landowners against any loss, damage or claims which may be made as a result of the work and to accept liability for any personal injury, loss or damage sustained whether occasioned by negligence or otherwise.
- 9.6 Before the commencement of work on the project proper, the successful contractor will be required to complete a full risk assessment, covering all aspects of the proposed work (including work to be sub-contracted), to the satisfaction of the Project Director.

10.0 Timetable

Completed tenders must be submitted no later than 12noon on Friday 30th March 2007.

It is envisaged that the contract for the project will be let on **Monday 2nd April 2007.**

The overall budget available for the project is c£1,500.

¹ N.Higham, *The Northern Counties to AD 1000*, (1986) 140, and D.B.Charlton, *Fifty Centuries*, 144.

² R.Charlton, "Ridsdale Iron Works" in *Redewetter* No.4 (West Woodburn 1980) 5.

³ Edward Campion in evidence to the Select Committee on the Border Counties Railway, now in the keeping of the House of Lords Record Office and listed as SC/BCR, SC/BCR 4 June 1854.

⁴ J.Hodgson, "Observations on the Roman station of Housesteads" in Archaeologia Aeliana 1st Series I (1822) 271.

⁵ Redesdale Society, Letter Book of Edward Lawson, Land Agent to Lord Redesdale, Lawson to Lord Redesdale, 2 August 1838.

⁶ T.M.Hoskison, "Northumberland Blast Furnace Plants in the Nineteenth Century", Transactions of the Newcomen Society XXV (1945-47) 73-81.

⁷ See, for example, R.F.Tylecote, "Recent research on nineteenth century Northumbrian blast furnace sites" Industrial Archaeology VIII (1971) 341-359; S.M.Linsley, "Hareshaw and Ridsdale Ironworks" Northumbriana 12 and 13 (1978) 15-17 and 11-14; D.B.Charlton, Upper North Tynedale, (Newcastle-upon-Tyne 1987); Northumberland Record Office, Sites and Monuments Record, Report NY 88 SW 22, 22/02/1996 and N.McCord and R.Thompson, The Northern Counties from AD 1000 (1998) 215.

⁸ This material, together with additional information culled from other sources, has been used in I D Roberts, "Iron Making in Redesdale and North Tynedale in the Nineteenth Century: the Problems of Rural Exploitation and Diversification", Northern History, XXXVI: 2, September 2000, 283-298, on which this report is based.

⁹ For the reforms of the Fourth Duke, see D.Spring, The English Landed Estate: Its Administration (Baltimore 1963) 8-13.

¹⁰ The proceedings of Select Committees of both Houses on private bills were never printed but the manuscript notes of the meeting of both on the Border counties Railway are in the House of Lords' Record Office.

¹¹ See, for example, G.W.M.Sewell, The North British Railway in Northumberland, (Braunton 1992).

¹² Hexham Courant, 2 February 1870 states that Campion came to Hexham in 1834 and was employed as clerk at the Gas Works. He bought into a small iron foundry and became sole proprietor of this firm, a second iron works and the Tyne Saw Mills by 1838. Campion and his associates opened the Hareshaw works to make iron for use in the Hexham businesses.

¹³ SC/BCR 4 June 1854.

¹⁴ The author is grateful to Jim and Dorothy Bell and the Heritage Centre of Bellingham, as well as Tommy and Muriel Breckons of Foundry Farm, for help in exploring the sites associated with the dams and the tubways. The upper dam was dismantled in 1869 while the history of the lower dam is set out in D.Archer, Land of the Singing Waters, (Stocksfield 1992) 194 and 205-6.

¹⁵ Census of 1841, Bellingham Parish.

¹⁶ The Hexham Courant article cited above suggests that only 24 tons was used in the Hexham works each day. Campion had given up his interest in the works by 1849 and there may have been some difficulty in reconstructing the exact figures.

¹⁷ Alnwick Castle Manuscripts, Business Minutes, (hereinafter ACM/BM) Vol I, 22 November 1847.

¹⁸ ACM/BM Vol. I, 6 March 1848 and Vol.II, 29 May 1848.

¹⁹ ACM/BM Vol. IX, 12 January 1852.

²⁰ ACM/BM Vol. XXXI, 7 October 1862.

²¹ ACM/BM Vol. XXXI, 13 January 1863.

²² SC/BCR Evidence of T.J.Taylor, 2 June 1854.

²³ Riden, "Output", 458-9.

²⁴ SC/BCR 4 June 1854.

²⁵ Bell, "Manufacture of Iron", 121.

²⁶ ACM/BM Vol.I, 8 November 1847.

²⁷ See figures given in B.R.Mitchell and P.Deane, Abstract 492-493.

²⁸ Harris, British Iron, 55 and Trinder, Shropshire, 233.

²⁹ ACM/BM Vol.I, 8 November 1847.

³⁰ C.Dodsworth, "The Low Moor Ironworks, Bradford" Industrial Archaeology VIII (1971) 122-164.

³¹ This point was made by Campion, but a survey of the works in 1852 (Northumberland Record Office, hereinafter NRO, ZHE 9/11) shows that 80 cottages had been constructed on the Snughill Gate and Upper Hall grounds.

³² E.H.Hunt, Regional Wage Variations in Britain 1850-1914, (Oxford 1973) 44-47.

³³ ACM/BM Vol. III of Sixth Duke 16 October 1869.