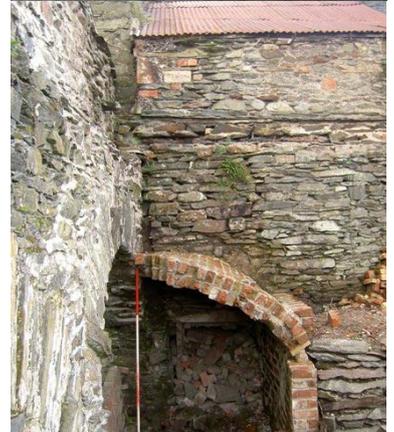


NEWLAND FURNACE GARAGE, NEWLAND, ULVERSTON, CUMBRIA

Archaeological Building Recording
and Watching Brief



Client: Trustees of the Newland
Estate
Planning ref.: SL/2008/0451
NGR: SD 29970 79730

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Non-Technical Summary

Following a planning application for the renovation of a garage attached to the former iron furnace at Newland, Ulverston, Cumbria, a programme of archaeological investigation was requested by the Cumbria County Council Historic Environment Service and English Heritage. This was to comprise a desk-based assessment and recording of the standing buildings in conjunction with a watching brief during the removal of the concrete floor and excavation of a new foundation trench. The building recording was carried out by Greenlane Archaeology during October 2008 and the watching brief was carried out in March 2009.

The building was probably built sometime in the mid-19th century and is approximately square in plan; it butts the furnace on the east side, using its east elevation as its west wall. The building is single-storey and gabled with a slate roof, part of which has been replaced with corrugated iron. The walls are generally of stone rubble, with brick and other inclusions. The roof was raised sometime before 1897 but it is not certain why this was done. The floor was raised some 1.2m during the mid-20th century when the building was converted to a garage.

The watching brief revealed that the present floor within the building, which was constructed of a make-up layer of slate rubble overlaid with concrete, was laid to a height level with the ground on the north side of the building. The original floor, which was constructed of brick, was at a considerably lower level, although this was evident within the flue that passed through the south elevation of the building.

The flue from the furnace passed through its east elevation and into the 'garage', before apparently turning to the south and exiting through its south elevation. The building appears to have been built around this flue at a later date. Groundworks within the vicinity of the flues, however, did not reveal how the different parts of the flue were physically associated.

Although the building is connected to the furnace there is no evidence to determine its function. It is most likely that the building was used as some type of workshop connected with the furnace, perhaps by a joiner, in part, because this is what it was subsequently used for.

Acknowledgements

Greenlane Archaeology would like to thank the Trustees of the Newland Estate, in particular Michael Stevenson for commissioning the project and Steve Meyer of Craig and Green Architects, and Phil Dale of Leck Construction for their assistance. Additional thanks are due to Jeremy Parsons, Historic Environment Officer at Cumbria County Council, and Andrew Davison, at English Heritage, for their comments and additional information. Thanks are also due to Kate Lawson at South Lakeland District Council for providing further information.

The desk-based assessment, building recording and watching brief were carried out by Steve Clarke, who also wrote the report and produced the illustrations, with additional modifications made by Tom Mace. The project was managed by Daniel Elsworth, and the report was edited by Daniel Elsworth and Tom Mace.

1. Introduction

1.1 Circumstances of the Project

1.1.1 A planning application (SL/2008/0451) was made by the Trustees of the Newland Estate to carry out repairs and rebuilding work to a former garage attached to what was once the iron furnace at Newland, Ulverston, Cumbria (NGR SD 29970 79730). The furnace is a Scheduled Monument and as the garage is attached to and originally formed part of this historically significant structure a building recording was recommended by South Lakeland District Council (SLDC), following a recommendation by the Cumbria County Council Historic Environment Service (CHES). In addition, a watching brief on any ground work carried out inside the garage was requested by English Heritage (EH). These requirements were expressed in the planning conditions as:

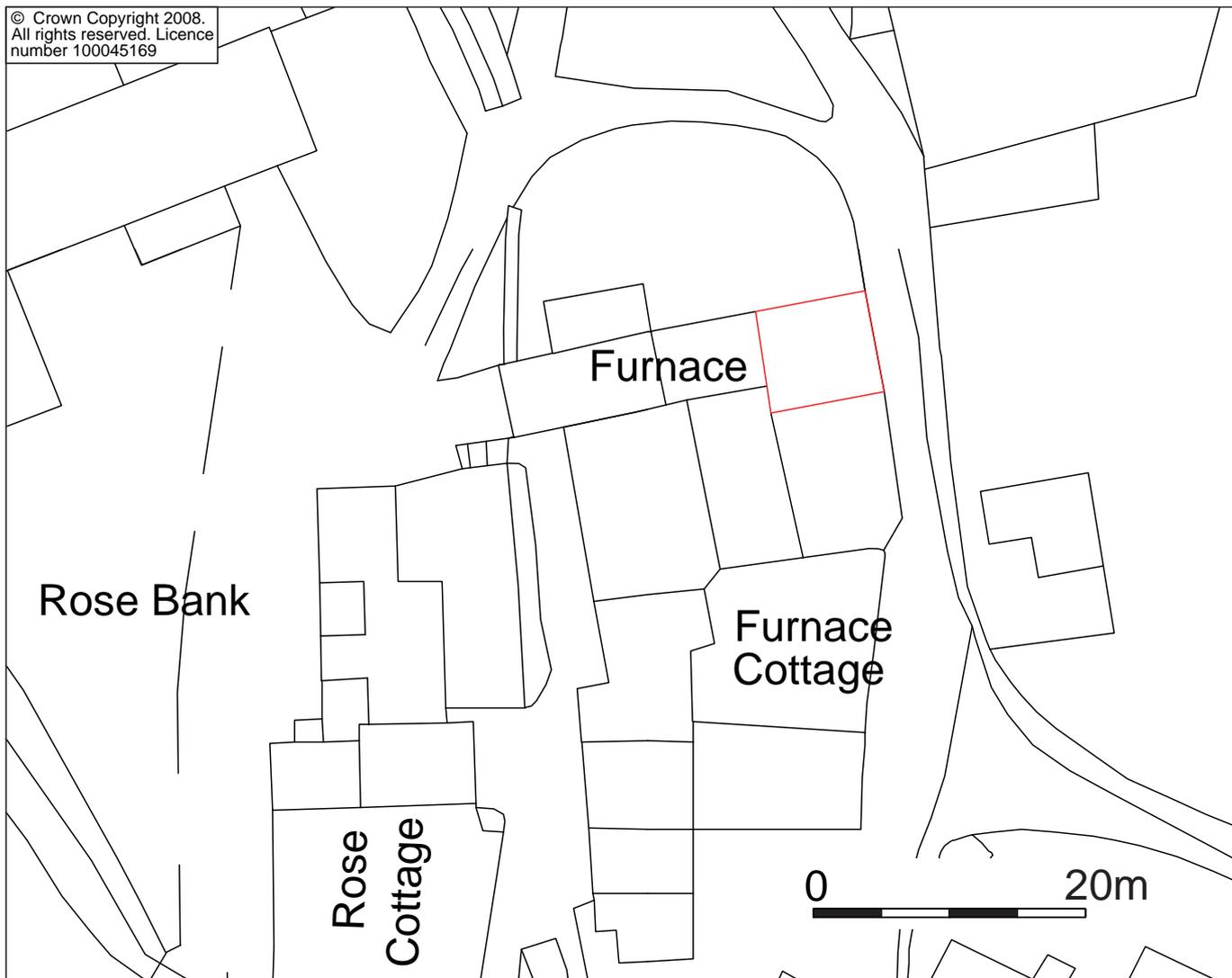
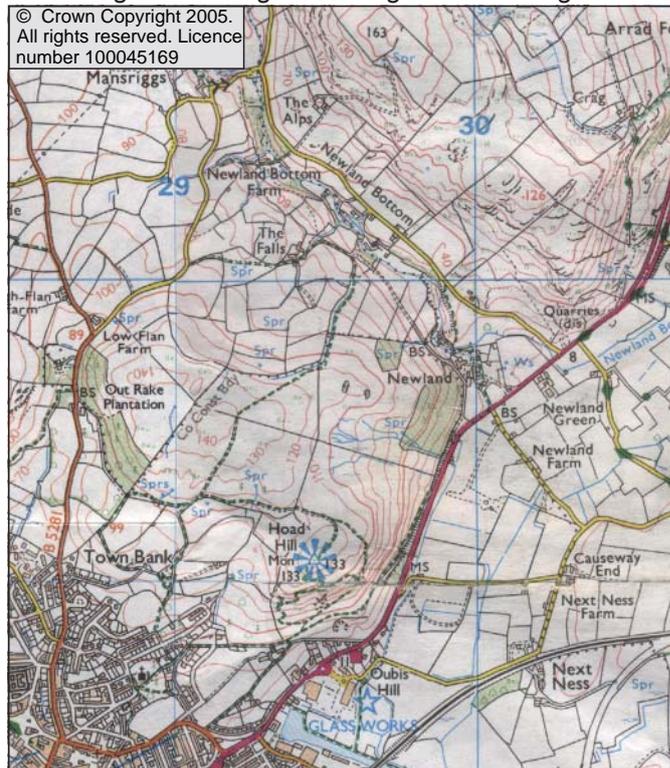
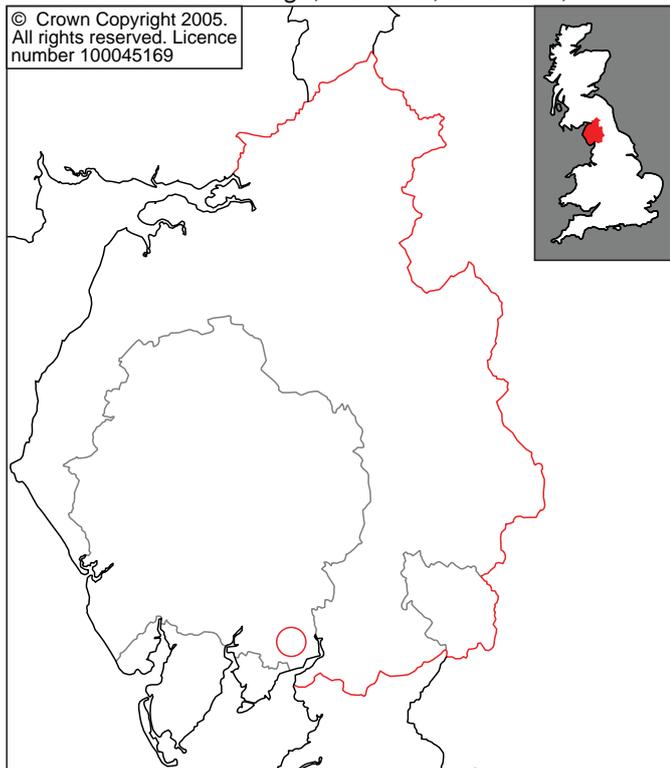
Condition (4) Prior to the carrying out of any alteration works the existing building occupying the site shall be recorded in accordance with a Level 3 survey as described by English Heritage's document *Understanding Historic Buildings: A Guide to Good Recording Practice*, 2006 and, following its completion, 3 copies of that survey report shall be submitted to the Local Planning Authority. Additionally, any excavation work required as part of the approved alterations shall be the subject of a watching brief whereby the developer shall afford access at all reasonable times to any archaeologist nominated by the Local Planning Authority and shall allow him/her to observe the excavations and record finds and items of interest.

Reason (4): To ensure that a permanent record is made of the building of architectural and historic interest prior to its alteration as part of the proposed development.

1.1.2 Verbal briefs for the work were subsequently provided by CHES and EH outlining the requirements. In response to these Greenlane Archaeology produced two project designs (Greenlane Archaeology 2008; 2009a), and following their acceptance the building recording began on 2nd October 2008 with the watching brief concluding on 15th March 2009.

1.2 Location, Geology, and Topography

1.2.1 The village of Newland is located 1.5km to the north-east of Ulverston (Figure 1). The eastern boundary of Newland Parish is marked by the rivers Leven and Crake, and the western is formed by Newland Beck. Newland Beck drains the higher land of the Furnace Fells immediately to the north-west of the site into the Leven estuary to the south. The furnace is located on flattish ground at the southern end of this valley where the fells meet the coastal moorlands, and is situated at approximately 12m above sea level (Ordnance Survey 2002). Newland is within the West Cumbria coastal plain, a landscape generally made up of pastoral land in an '*undulating or rolling topography*' (Countryside Commission 1998, 27). The solid geology is typically made up of Bannisdale slate and Carboniferous limestone (Moseley 1978, plate 1), and this is overlain by a drift geology made up of glacially-derived tills comprising boulder clay, sands and gravels (Countryside Commission 1998, 27).



Client: Trustees of the Newland Estate

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Figure 1: Site location

2. Methodology

2.1 Introduction

2.1.1 This project comprised three separate elements intended to record the standing building and establish the extent, nature and, where possible, date of any buried deposits of archaeological interest present on the site. The first element of this was the completion of a desk-based assessment in order to establish the extent of the known archaeological resource in the area and produce an outline history of the site environs. The second part was the recording of the standing buildings remaining on site prior to their conversion. The third part was the watching brief conducted while the concrete floor was removed from the interior of the building and during the excavation of a foundation trench for the construction of a new wall.

2.1.2 All aspects of the desk-based assessment, building recording, and watching brief were carried out according to the standards and guidance of the Institute of Archaeologists (IfA, formerly the Institute of Field Archaeologists; IFA 2001a; 2001b; 2001c).

2.2 Desk-Based Assessment

2.2.1 A desk-based assessment was carried out in accordance with IfA guidelines (IFA 2001b). This principally comprised an examination of early maps of the site and published secondary sources. A number of sources of information were used during the desk-based assessment, a considerable amount of which had been recently acquired for a similar project undertaken at the former Newland mill (Greenlane Archaeology 2009b):

- **Cumbria County Record Office, Barrow (CRO(B))**: this was visited in order to examine early maps and plans of the site, original documents relating to businesses and properties on the site, and local and regional histories and directories;
- **Lancashire County Record Office, Preston (LRO)**: as Newland was formerly in the county of Lancashire many original documents are still held in the Lancashire Record Office. Several original documents relating to the site were examined, as were other early maps and published sources;
- **Greenlane Archaeology Library**: additional secondary sources, used to provide information for the site background, were examined;
- **Private collections and individuals**: original documents and other sources held in private collections relating to the site were also examined, and local historians and industrial archaeologists familiar with the site were consulted in order to identify any other information about the site.

2.3 Building Recording

2.3.1 The building recording was carried out to English Heritage Level-3 type standards (English Heritage 2006). These are largely descriptive investigations but with a more detailed interpretation of the phasing and use of the buildings, utilising information from the documentary sources as much as possible. The recording comprised several parts:

- **Written record**: descriptive records of all parts of the buildings were made using Greenlane Archaeology *pro forma* record sheets;
- **Photographs**: photographs in both 35mm colour print and colour digital format were taken of the main features of the buildings, their general surroundings, and any features of architectural or archaeological interest. A selection of the colour digital photographs is included in this report, and the remaining photographs are presented on the accompanying CD;

- **Drawings:** drawings were produced by hand-annotating 'as existing' illustrations of the buildings drawn by the previous owner's architect. These comprised:
 - i. 'as existing' ground, first, and second floor plans of the building at 1:50;
 - ii. 'as existing' elevations of all accessible external aspects at 1:50;
 - iii. an 'as existing' cross-section through the building, incorporating elements present in the west internal elevation, at 1:50.

2.4 Archive

2.4.1 A comprehensive archive of the project has been produced in accordance with the project design, and current IfA and English Heritage guidelines (Brown 2007; English Heritage 1991). The paper and digital archive and a copy of this report will be deposited in the Cumbria Record Office in Barrow-in-Furness on completion of the project. Three copies of this report will be deposited with the Cumbria Historic Environment Record (HER), one with the client, and one will be retained by Greenlane Archaeology. In addition, a digital copy will be made available through the OASIS scheme and a digital copy will be provided to English Heritage.

2.4.2 No artefacts of significance were encountered during the watching brief and so none have been retained.

3. Desk-Based Assessment Results

3.1 Background history

3.1.1 The background to the site is intended to place the results of the project in its local context. More specific information regarding the development and use of the site, where known, is also presented, which allows a more detailed understanding of the results of the project.

3.1.2 **Early History:** while there is evidence for prehistoric activity from the area around Ulverston in the form of casual finds such as stone axes and axe hammers dating from the Neolithic and Bronze Age (CCC and EH 2002, map D), the extent of any associated settlement is, as yet, uncertain. More recently a large enclosure has been identified on Hoad Hill, immediately to the west of Newland, which is considered to be of Late Bronze Age or Iron Age origin (Elsworth 2005).

3.1.3 Although there have been occasional finds of Roman coins, no evidence has yet been confirmed of settlement from that period in the immediate area. Some of these stray finds, such as a coin (Shotter 1989, 42), have been found in relatively close proximity to the site, however, and fragments of possible Romano-British pottery have recently been found during evaluations in Ulverston (OA North 2004; Greenlane Archaeology 2006). Recent work reappraising the evidence for Roman activity in the general area has suggested that a road may have passed close to or through Ulverston and that this could have had an associated settlement (Elsworth 2007).

3.1.4 **Medieval:** the hamlet of Newland is recorded as early as c1196 in the Coucher Books of Furness Abbey (Atkinson 1887, 385); the place-name might be taken to indicate land that had been relatively recently taken into cultivation. A mill is recorded at Newland from as early as 1331 (Farrer and Brownbill 1914, 359n) and by at least 1347 it is part of property held by William de Coucy and Robert de Coucy of Gynes (Farrer 1915, 154). Later, in 1535, it is recorded as having paid rent to Furness Abbey (Farrer and Brownbill 1914, 359n; the tenant at the time was a John Corker: Brownbill 1919, 614), and was subsequently taken into the ownership of the crown before being sold in 1662 (Davies-Shiel 1978, 111).

3.1.5 **Newland Furnace:** the most significant historical development in Newland is the establishment of a blast furnace in the first half of the 18th century. In 1746 Newland Mill was acquired from John Benson of Mansrigg Hall by Agnes Bordley acting on behalf of Richard Ford, her brother, and his business partners (Michael Knott, James Backhouse, and William Ford), in order to control the valuable water system that existed in the valley (Fell 1908, 217; OA North 2003, 12). Using Agnes Bordley to acquire the estate allowed them to establish a new enterprise without breaking an agreement made in 1735 with Thomas Rigg in regard to the Nibthwaite Furnace, in which Ford was a partner, by which neither party could establish a furnace within 10 miles (Fell 1908, 212). By 1784 the increased involvement of Henry Ainslie, through his marriage to Richard Ford's daughter Agnes, led to the company becoming known as Knott, Ainslie and Co, and after George Knott's death in 1812, Harrison, Ainslie and Co (OA North 2003, 13).

3.1.6 The furnace was enlarged in the later 18th century with the addition of a forge in 1783 and a rolling mill in 1799; the latter subsequently became a blacking mill in the 19th century (Fell 1908, 218), while there is some evidence that the former was contained within the old corn mill (Greenlane Archaeology 2009b). By 1818 Harrison, Ainslie and Co. seem to have been trading as the Newland Company (Goodall 2001, 4), and they continued to operate the furnace at Newland intermittently until 1891 (*op cit*, 7). According to Mannex's Directory of 1882 '*...from its commencement until 1874...considerable alterations and improvements were made, and coke and coal substituted for charcoal*' (Mannex and Co 1882, 249). These improvements are likely to have included the installation of a hot blast system whereby hot waste gases could be re-used in the smelting process (Goodall 2001, 7). The brick chimney and raised throat evident in the only early photograph of the site (Plate 1) is likely to relate to this, as is the presence of the brick flue in the 'garage' (*ibid*).

3.1.7 These alterations were not enough to save the struggling enterprise, however. By 1890 the price of pig iron had fallen and holding a stockpile of over 1,000 tons by January 1891 contributed to the furnace's eventual closure (Marshall *et al* 1996, 213). The Newland Company cancelled the lease of the

property in 1903, which was taken up by James Athersmith, a joiner and wheelwright, who sub-let part of the site to Thomas Thompson (Goodall 2001, 8). As well as the corn mill the property included Newland House and garden, five cottages with gardens, the joiner's shop and the iron furnace, which was by that time in ruins (CRO(B) BD/BUC/43/8/22 1904).



Plate 1: Newland Furnace c1897 shortly after its closure with the garage in the foreground (Anon 1897)

3.1.8 In 1918 the dam burst during a heavy storm and much of Newland was flooded (Helme 2002, 68). This damage and the cost of repair and maintenance of the mill and other buildings forced the landowner, the Duke of Buccleuch to put all the land and property at Newland up for sale in 1921 (*ibid*; CRO(B) BD/BUC/42/Bundle 6/50 1918-1919). It was finally bought by Thomas Thompson in the same year after a bidding war with James Athersmith, his former landlord (CRO(B) BD/BUC/17/42 1921-25). The 'garage' building appears to have carried on in use as a joiner's workshop after the closure of the furnace (as is evident in Plate 1), and appears to have remained in reasonably good condition long after the furnace stack had become ruinous (see Plate 2 and Plate 3). Parts of the site were also used as a garage after the Second World War (Helme 1994, 13).



Plate 2: (left) North elevation, c1971 (Marshall and Davies-Shiel 1971, 80)



Plate 3: (right) East elevation, c1969 (Marshall and Davies-Shiel 1969, 18)

3.1.9 The property at Newland stayed with the Thompson family and their decedents until the present day (Helme 2002, 70). It ultimately passed into the possession of Harry and Geoffrey Stephenson before recently passing into the ownership of a trust. It is recorded that the floor of the building was filled in to its present height to be used as a garage and store sometime after 1971 (*ibid*).

3.2 Map Regression

3.2.1 **Plan of c1804:** this undated plan is on paper water marked 1804 (Plate 4; CRO(B) BD/BUC/49/Bundle 1/16 c1804) and is apparently the earliest detailed depiction of the furnace and its associated structures. It shows the furnace, cottages, corn mill, and associated buildings. It is not apparent whether the garage is present at this time as the plan is not quite detailed enough to show it, but there does appear to be a building on its location.

3.2.2 **Ordnance Survey 1851:** this plan (Plate 5) clearly labels the 'Iron Works', and specifically the 'Smelting Furnace', but is not quite detailed enough to show whether the garage exists. Again, however, there appears to be a structure on the site.

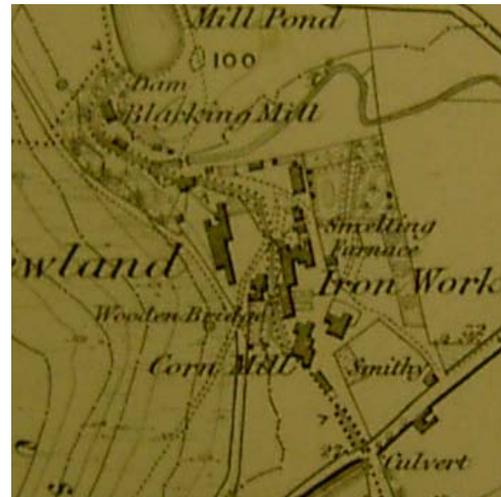


Plate 4 (left) Extract from c1804 plan

Plate 5: (right) Extract from 1851 Ordnance Survey

3.2.3 **Mid-19th-century plan:** this detailed undated plan (Plate 6; CRO(B) BD/BUC/40/Bundle 2/58 n.d.) is very similar to the earlier Ordnance Survey map and labels the office and charcoal shed. The furnace buildings appear unchanged, and, although it is not clear, the garage would seem to be present.

3.2.4 **Ordnance Survey 1890:** this slightly more detailed map (Plate 7) shows a slightly different outline to the layout in 1851. The garage building is shown quite clearly on this map, although the internal divisions do not seem to tally with the actual plan of the site. There is also clearly a structure immediately to the south side of the garage.

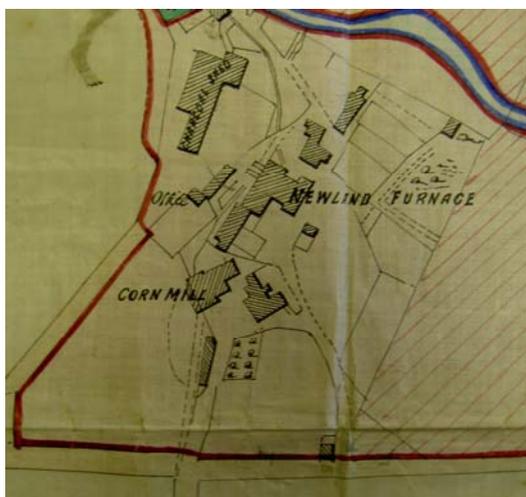


Plate 6: (left): Extract from mid-19th-century plan

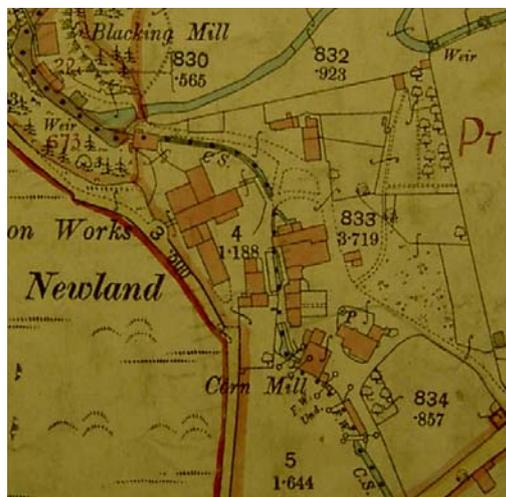


Plate 7: (right): Extract from 1890 Ordnance Survey

3.2.5 **Indenture Plan 1904:** this plan (Plate 8) has probably been hand drawn from the earlier 1890 Ordnance Survey map and shows the buildings to be unchanged from that date (CRO(B) BD/BUC/43/Bundle8/22 1904).

3.2.6 **Ordnance Survey 1913:** this map (Plate 9) gives a very clear picture of the arrangement of the furnace buildings, especially as the internal divisions appear more accurate than the map of 1890. The general layout of the buildings seems largely unchanged, however, although it is noticeable that the furnace, to the west of the garage, is not filled in, probably due to it being a ruin.

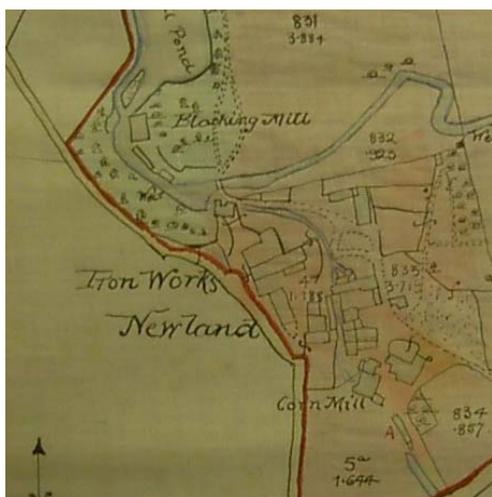


Plate 8: (left) Extract from 1904 indenture plan

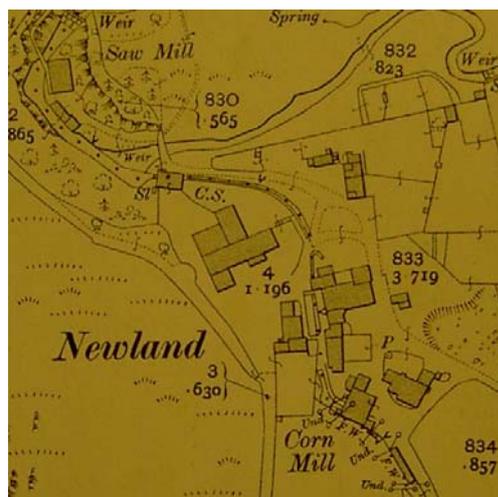


Plate 9: (right) Extract from 1913 Ordnance Survey

4. Previous Investigation

4.1 Introduction

4.1.1 The furnace and associated buildings were left to the elements once the furnace had closed down. Valuable materials and machinery were removed soon after closure (Helme 1994, 12). In the 1980s members of the Cumberland and Westmorland Antiquarian and Archaeological Society (CWAAS) investigated the site and conducted a survey of the hamlet and furnace, and in 1989 renovations were commenced by members of CWAAS, the Cumbria Amenity Trust Mining History Society (CATMHS), and the Cumbria Industrial History Society (CIHS) (*op cit*, 13).

4.1.2 All of the renovation work was carried out by volunteers and the principal repairs were largely completed by 1999. In 1993 the CWAAS succeeded in getting the furnace and ancillary buildings Listed Grade II* by English Heritage (Helme 2002, 70).

4.1.3 In 1997 an architectural survey was carried out by English Heritage, which was inclusive of all the industrial and related domestic buildings within Newland (Goodall, 2001). A large part of the furnace complex was subsequently designated a Scheduled Monument in 2002 (OA North 2003, 30).

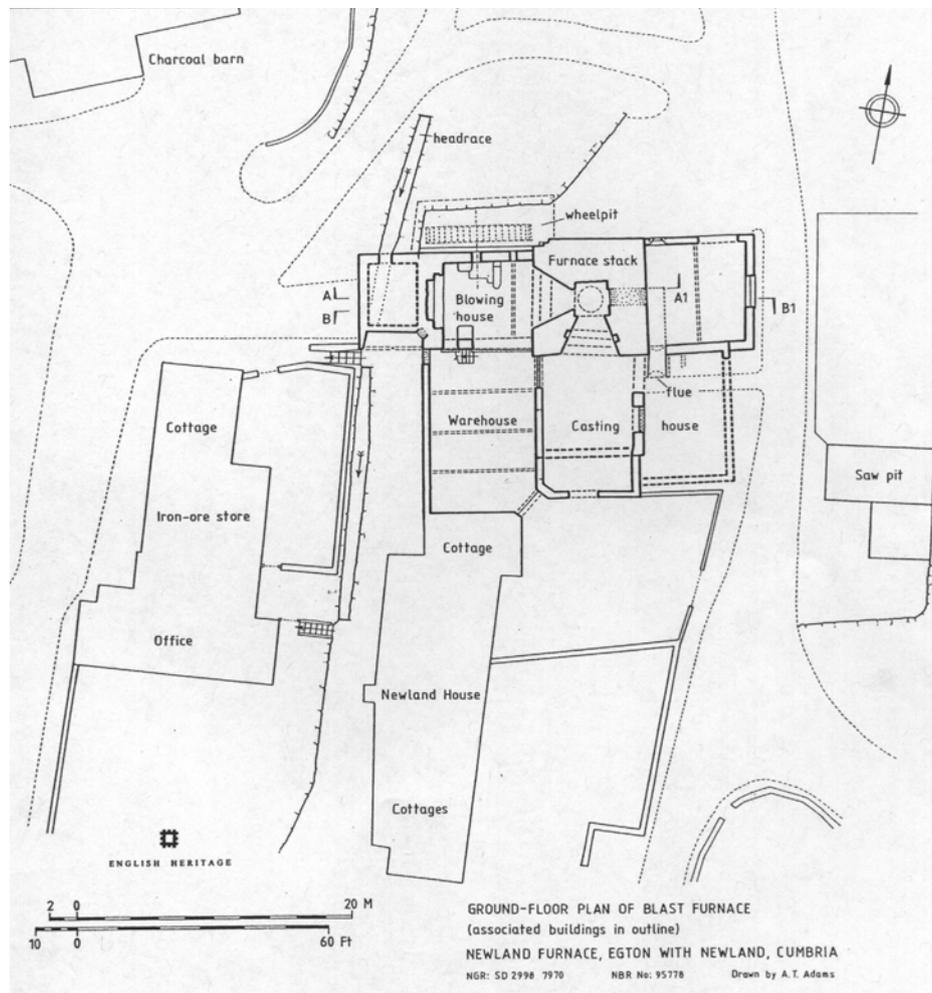


Plate 10: Plan of the furnace and associated structures including the garage, to the east of the furnace stack (after Goodall 2001, figure 4)

5. Building Recording

5.1 Arrangement and Fabric

5.1.1 The building is approximately square in plan and butts the furnace on the east side, using its east elevation as its west wall, and is built onto what was clearly an existing wall to the south. The building is single storey and gabled to the east with a slate roof, the west half of which has been replaced with corrugated iron on the south side (Figure 2). The walls are generally of stone rubble and mortar with other inclusions. The roof has a single king post truss situated centrally and supporting two purlins per pitch and the rafters. All of the roof timber is neatly machine cut and squared.

5.2 External Elevations

5.2.1 **North External elevation:** this elevation is of a mortared rubble construction mainly of limestone and firebrick with some slate (Plate 11). The east end has large rectangular quoins of limestone while the west butts the furnace. There is a wide doorway towards the east end with another wide albeit slightly smaller opening above, which extends to the roof. There is a timber lintel separating the doorway from the opening above, along which is a drip hood of timber planks with a skin of iron sheeting. The east jamb has quoins of firebricks and the west jamb is poorly finished and irregular. The opening above has a timber lintel and jambs. Both openings have been blocked with corrugated plastic sheeting. At the west end is a doorway which has been narrowed with brick jambs, a timber frame, and a heavy timber lintel, and it too has been blocked with corrugated plastic sheeting. There is a rafter end exposed midway along the elevation.



Plate 11: (left) North external elevation



Plate 12: (right) East external elevation

5.2.2 **East External elevation:** this elevation is the gable end of the building and is constructed of mortared stone rubble which consists of a mix of re-used sandstone, limestone, house bricks, fire bricks and slate (Plate 12). The wall appears to have been rendered with a coarse gravelly mortar. Both ends of the elevation are set with large rectangular limestone quoins. Situated centrally is a wide doorway, which has been converted into a window, the space below having been blocked with firebricks, sandstone and slate. The window itself is timber-framed with four tall vertical lights, above which is a timber lintel which extends to the north end of the elevation. Affixed to the lintel is a timber hood which probably covered a rail for a missing sliding door. Immediately above this is a drip hood of roofing slate. At the south end of the elevation at a height of approximately 2.5m are two small rectangular apertures, possibly acting as vents or for access.

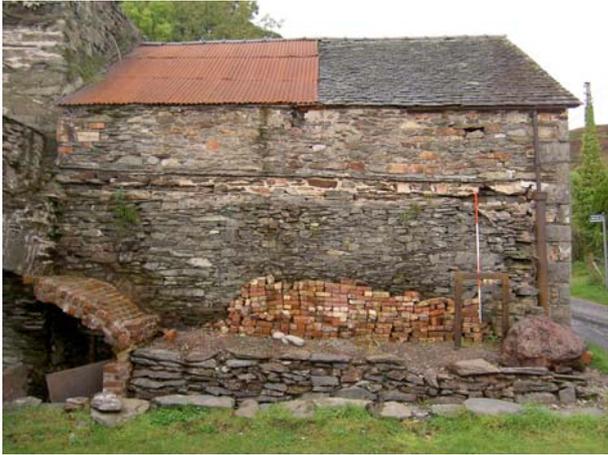


Plate 13: (left) South external elevation



Plate 14: (right) Grindstones set in south external elevation

5.2.3 **South External elevation:** the lower two-thirds of this elevation (Plate 13) are constructed of coursed slate with the upper third being constructed of mortared stone rubble at a later date. This rubble is similar to that on the north and west elevations. Two timber lintels are exposed at each end of the elevation within this rubble running along the top of the slate section; the one at the west end being 2.5m long, and the other being 3.5m long. Approximately 0.3m above the slate section is a course of roof slate, possibly a drip course, running the length of the elevation. The west end of the elevation butts the furnace wall and the east end is keyed to the north elevation with large limestone quoins. Set amongst the quoins are two small grindstones, 0.3m in diameter, made of a yellow gritstone (Plate 14). At the west end of the elevation, below ground floor level, a half-arched flue of red bricks extends to a height of 1m at right-angles to the wall. This half-arched flue contains a rectangular aperture with a timber lintel (Plate 15), which is blocked with loose rubble. At the east end of the elevation are the remnants of a slate wall, keyed in just behind the quoins, which is 0.7m in length and approximately 2m in height. There is a small rectangular aperture in the top east corner of the elevation and an exposed rafter end situated midway along the roof line. A cast-iron gutter runs the length of the roof line to a cast-iron drainpipe at the east end.



Plate 15: Flue at west end of south external elevation

5.3 Internal Detail

5.3.1 **Introduction:** the garage is a single room building mainly constructed of stone rubble, fire bricks, and mortar. The floor is concrete and slopes slightly to the west to allow drainage through the flue in the south-west corner. The roof structure comprises a single truss with three purlins supporting a mixture of slate and corrugated iron sheets (Figure 3).

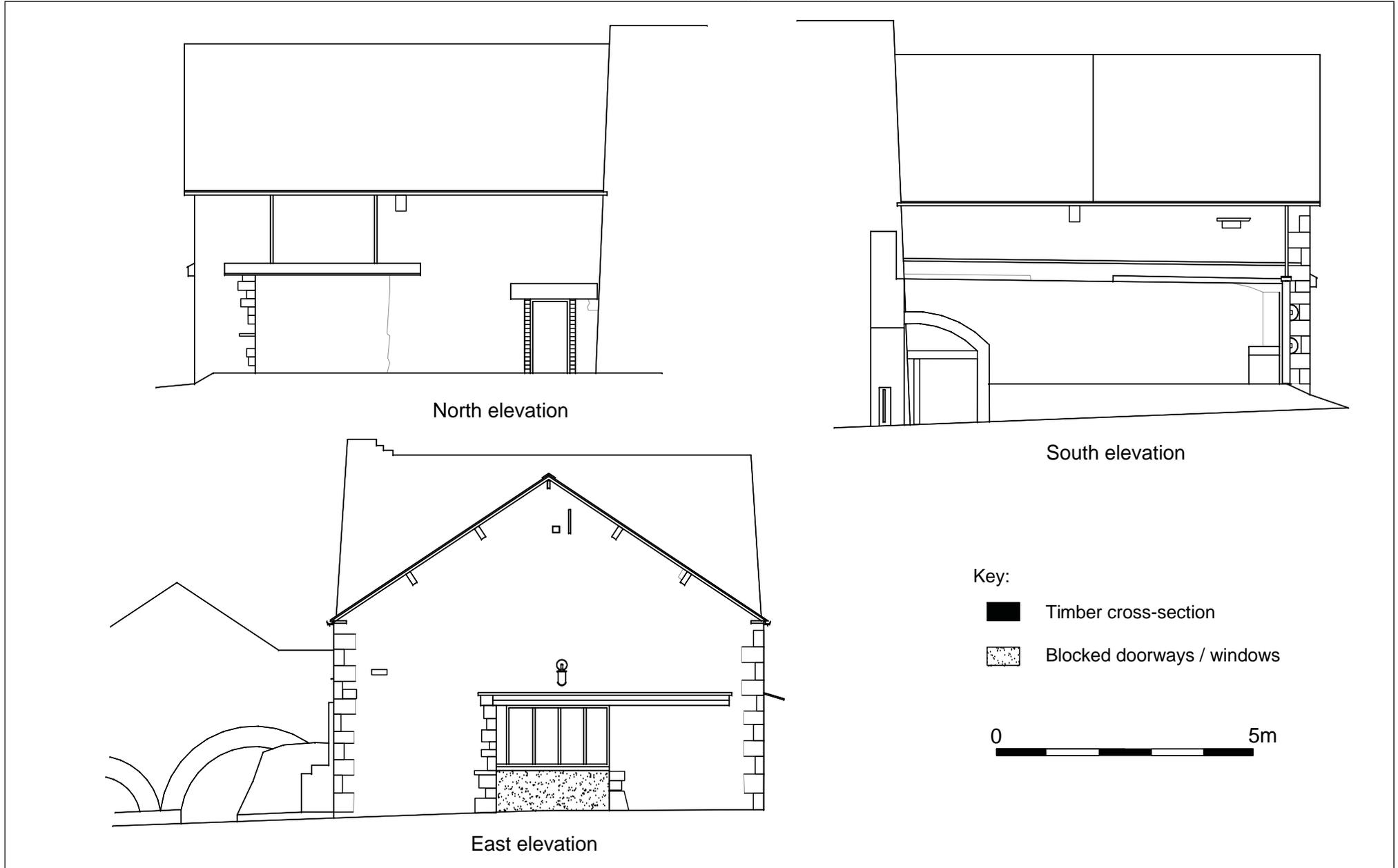


Figure 2: External elevations

5.3.2 **North elevation:** this elevation (Plate 16) is constructed of stone rubble and mortar with firebrick inclusions. It butts against the north end of the west elevation of the furnace. At the east end is a large doorway; the east jamb is constructed from large firebricks. It has a relatively modern siding door comprising a metal-frame with transparent corrugated plastic. At the west end of the elevation is a window with a shallow brick arch, blocked with transparent corrugated plastic. Directly above the doorway is a large window extending from the top of the doorway to the roofline. The window frame is made from scaffolding boards and the light is transparent corrugated plastic. It is possible to see evidence of an earlier, lower roof in the stonework, running just above the height of the doorway.



Plate 16: (left) North internal elevation



Plate 17: (right) East internal elevation

5.3.3 **East elevation:** the east elevation (Plate 17) is also constructed of stone rubble and mortar although with a higher amount of firebrick inclusions. A large window with a timber sill has been inserted where there was previously a doorway with a shallow brick arch; firebricks have been used to block the doorway below the window. The original roof line consists mainly of firebricks and can be seen just above the window.

5.3.4 **South elevation:** this elevation (Plate 18) is of the same construction as the north elevation and butts against the south end of the east elevation of the furnace. At the west end, towards the base of the elevation, is a brick lined half-arched opening which is flush against the west elevation. This opening extends down below the level of the floor. A slight change in the stonework reveals the original roofline of the elevation.

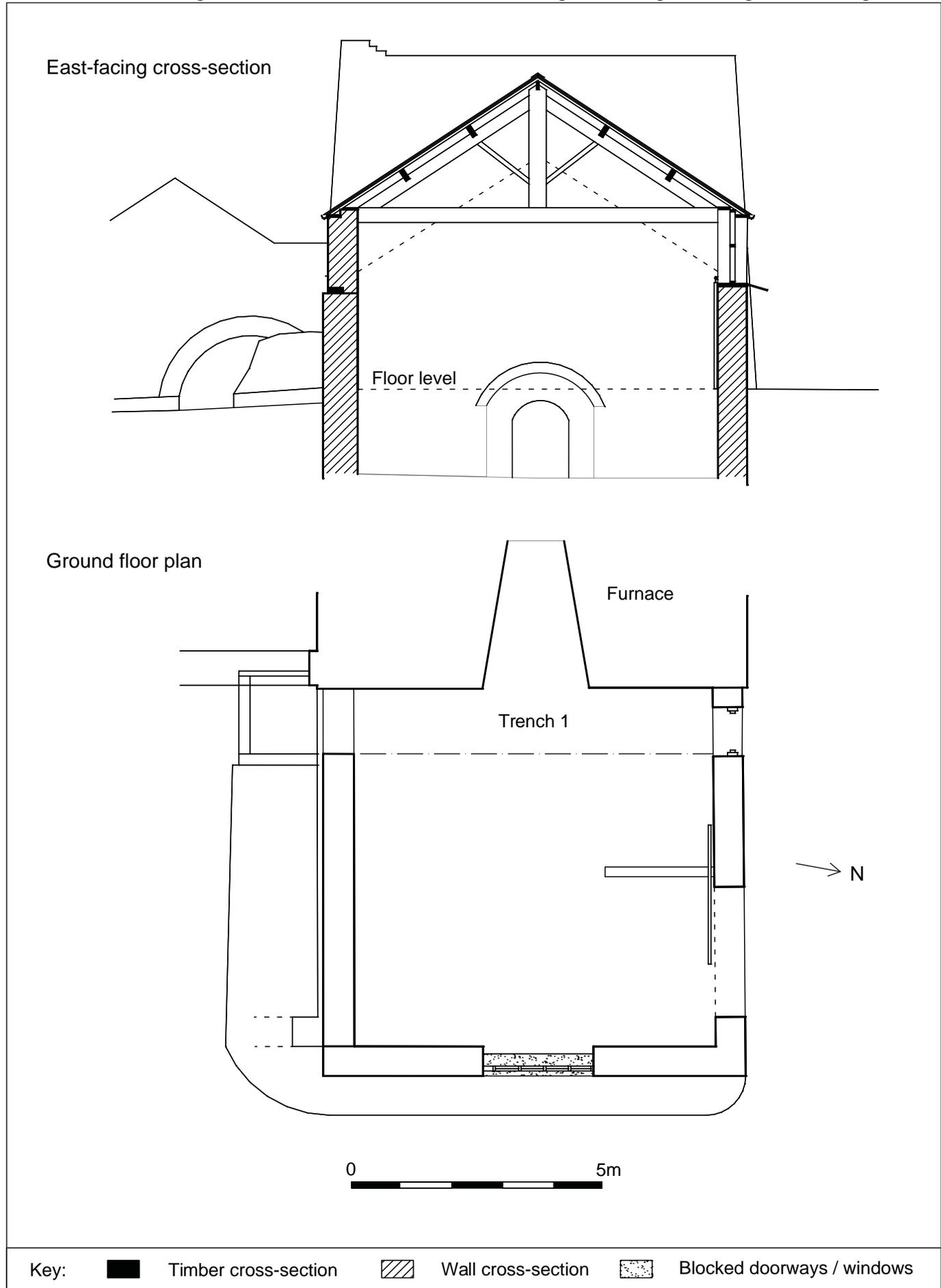
5.3.5 **West elevation:** the west elevation of the garage (Plate 19) comprises the east elevation of the furnace. This wall is constructed of medium sized roughly cut limestone. Centrally positioned at the base of the wall is a brick lined flue, which exits from the furnace. This flue also extends below the level of the floor and only a small amount of the top is visible.



Plate 18: (left) South internal elevation



Plate 19: (right) West internal elevation showing east wall of furnace



6. Watching Brief

6.1 Removal of floor

6.1.1 **Introduction:** the work carried out within the building was to enable the construction of an internal wall to protect the east elevation of the furnace, and also to lay a new floor. The built up ground below the existing concrete floor consisted of mainly stone and slate rubble with industrial metal waste consistent with that of an automobile garage.



Plate 20: (left) South end of Trench 1



Plate 21: (right) North end of Trench 1

6.1.2 **Trench 1:** this trench (Plate 20, Plate 21) was excavated to the depth of the original floor, which was 1.8m below the existing floor level (Figure 4). The original floor sloped slightly upwards from the centre of the room towards the south elevation and was composed of red brick apart from an area in front and inside of the flue, which was concrete. The entrance of the flue (Plate 22) had a brick arch and its lining was also of red brick with a yellow string course at the base of the arch. The entrance at the west end of the flue was smaller than the east end by 0.43m in width and 0.55m in height. The floor of the flue was level.



Plate 22: (left) Flue in north elevation



Plate 23: (right) Rubble backfill of floor

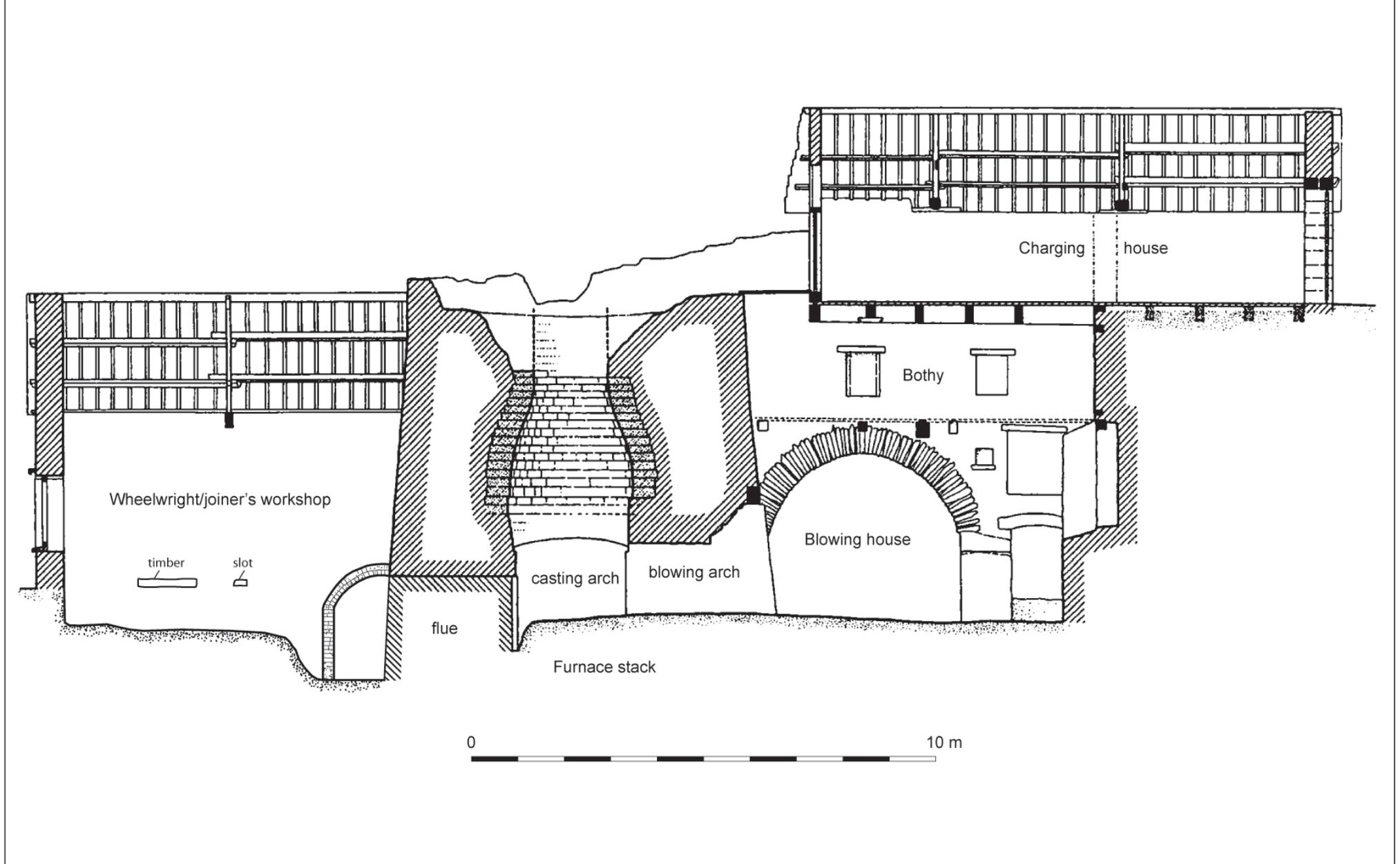


Figure 4: Long section through the furnace and 'garage' (labelled 'Wheelwright/joiner's workshop'), showing features identified during the watching brief (after Goodall 2001, figure 5)

6.1.3 **Removal of the floor:** the concrete surface of the floor was removed and the rubble below excavated to a depth of 0.4m (Plate 23). Removal of the concrete revealed a timber 2.2m in length inserted lengthways into the north elevation (Plate 24). This timber, which was, approximately 0.2m in thickness, was attached to other timbers embedded in the rubble. A length of timber and a small slot at the same height were also revealed just below floor level in the south elevation.



Plate 24: Timber extending from north elevation

7. Discussion and Conclusion

7.1 Discussion

7.1.1 **Introduction:** the comprehensive historical information and the results of the building recording allow a relatively detailed discussion of the building to be compiled. The construction date of the building is not known but it might have been built in 1874 when alterations were made to the furnace (Mannex and Co 1882, 249). The building might therefore relate to the introduction of the use of hot blast technology (Goodall 2001, 7). Indeed, the flue, which evidently at one point passed through the building, was probably installed to accommodate this (Bowden 2000, 56). The map evidence from 1890 appears to confirm this; maps prior to 1890 show that there was another building on the site dating back to at least 1851 which seems likely to have been rebuilt. It is evident, however, that the present building, and possibly whatever may have preceded it, was built at a slightly later date than the structure to the south, which it butts against.

7.1.2 At some point before 1897 (Plate 1) the roof was raised by some 1.5m. The former roof line is visible on the interior elevations and the timber wall plates are still *in situ* on the exterior. There are also remnants of cement where the roof was sealed against the east elevation of the furnace. When the furnace was closed down the history of the building becomes uncertain, though it is thought to have been used by Thomas Thompson as a joiner's shop (Goodall 2001, 8). After 1971 the lower floor of the building was backfilled with rubble and a concrete floor was laid down to make use of the building as a garage (Helme 2002, 70; it has also been suggested that this was done in 1968 (Stan Bould pers comm.)). Presumably at this time the doorway in the east elevation was partially blocked and a window inserted. The doorway on the north elevation shows evidence of being widened as the east jamb has been finished with firebricks while the opposite side looks unfinished. Also, a large window was opened above the doorway to allow more light into the building. At some time in the past the slate on the west half of the roof has been replaced with corrugated iron.

7.1.3 Removal of the make-up layer of rubble below the concrete floor confirms that the original floor level was considerably lower, although this was evident within the flue that passed through the south elevation of the building. There is no evidence to show that there were any intermediate floors within the building; the timber protruding from the west elevation may have been a platform or some form of support. There was no scarring visible on the east elevation of the furnace to show how the flue was constructed between it and the flue aperture on the south elevation. Unfortunately the make-up layer of the floor was not pulled back far enough from the furnace wall to reveal any possible remnants of flue structure. The lack of keying between the brickwork of the flue and the south elevation suggests that the building was built at a later date to the flue.

7.2 Conclusion

7.2.1 The masonry in the south elevation indicates that either the flue and building were built simultaneously or the building was built at a later date. There is no conclusive evidence to say exactly what the original function of the building was, but its location, covering the hot blast flue, suggests that it might have been connected to this operation. However, it was subsequently used as a joiner's workshop and store, and it is conceivable that this had also been its original function. The warmth from the flue would have made it very suitable for storing timber.

7.2.2 The subsequent enlargement of the building by raising the roof height is of uncertain date, but evidently occurred before the mid 1890s as it is shown in the photograph published in 1897 (Plate 1). It is conceivable that this alteration was made after the building became occupied by a joiner and wheelwright after the furnace closed down.

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