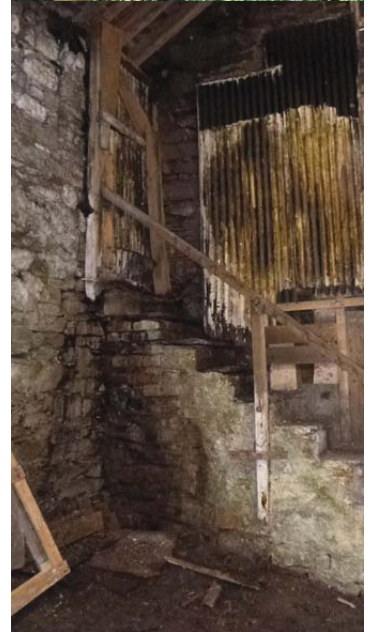
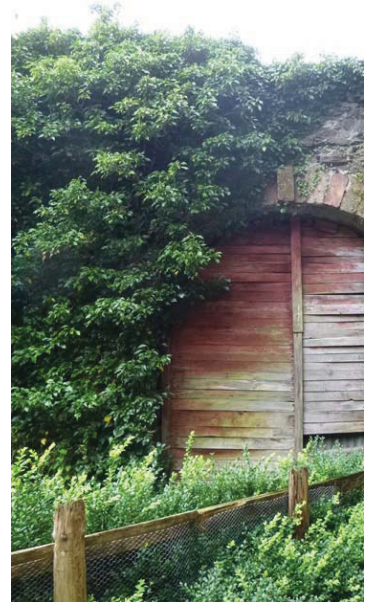


FURNACE COTTAGE BARN, NEWLAND, ULVERSTON, CUMBRIA

Archaeological Building Recording



Client:
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NGR: 330000 479700

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September 2017



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Summary

Prior to the submission of a planning application for the conversion of a barn at Furnace Cottage, Newland, near Ulverston, Cumbria, into a dwelling and following consultation with South Lakeland District Council, Greenlane Archaeology was commissioned to carry out an archaeological building recording of the site. The building is located immediately to the south of and adjoining the Scheduled Monument area corresponding to the former blast furnace and associated elements and so the project was intended to provide a record of the building prior to any development as well as assess its potential significance in relation to the Scheduled Monument and the possible effect any work might have on this. The work for the project, including a record of the building, was carried out in August 2017.

The furnace was built in 1746-7 by Richard Ford and his associates, who became known as the Newland Company, following the acquisition of an existing mill in Newland, which brought with it control over the leat necessary to provide water power to the furnace. The map evidence shows that a roofed structure was extant on the current footprint from at least c1804. The building was also recorded as part of a wider survey of the blast furnace complex carried out by English Heritage.

The building recording revealed that the building had essentially been constructed by the infilling of a space between the furnace, to the north, the cottage, to the south, and the casting house to the east. However, it is likely that the lower part of the west wall is the earliest element, although it may be contemporary with the furnace, and that this was constructed in part to retain the mill leat beyond by revetting the slope. The structure was probably subsequently raised in height, perhaps in 1854 when the doorway in the north-east corner was created, although it is considered that this is more likely because an earlier, wider, opening was partially blocked rather than because this new one was inserted, as has previously been suggested. After the furnace went out of use it is recorded that it was used as a joiner's workshop and then garage and it is likely that some of the most recent alterations to the doorways as well as changes to the internal access relate to this period.

The recording of the building has provided another useful piece of information about the development of the furnace and allowed some refinement of the earlier investigation. It is also apparent that further recording of the north internal elevation, which originally comprised part of the south external elevation of the furnace, should also be carried out once the modern cladding has been removed and that any covering to this wall added as part of the proposed development should be reversible so as to minimise the impact on the historic fabric.

Acknowledgements

Greenlane Archaeology would like to thank Miss S White and Mr I Brown for commissioning the project and for their help with access on site. Special thanks are also due to Mike Darwell at John Coward Architects for his help with information about the building.

The project was managed by Dan Elsworth, who also carried out the building recording, and wrote the report with Tom Mace, who produced the illustrations. The final report was edited by Jo Dawson.

1. Introduction

1.1 Circumstances of the Project

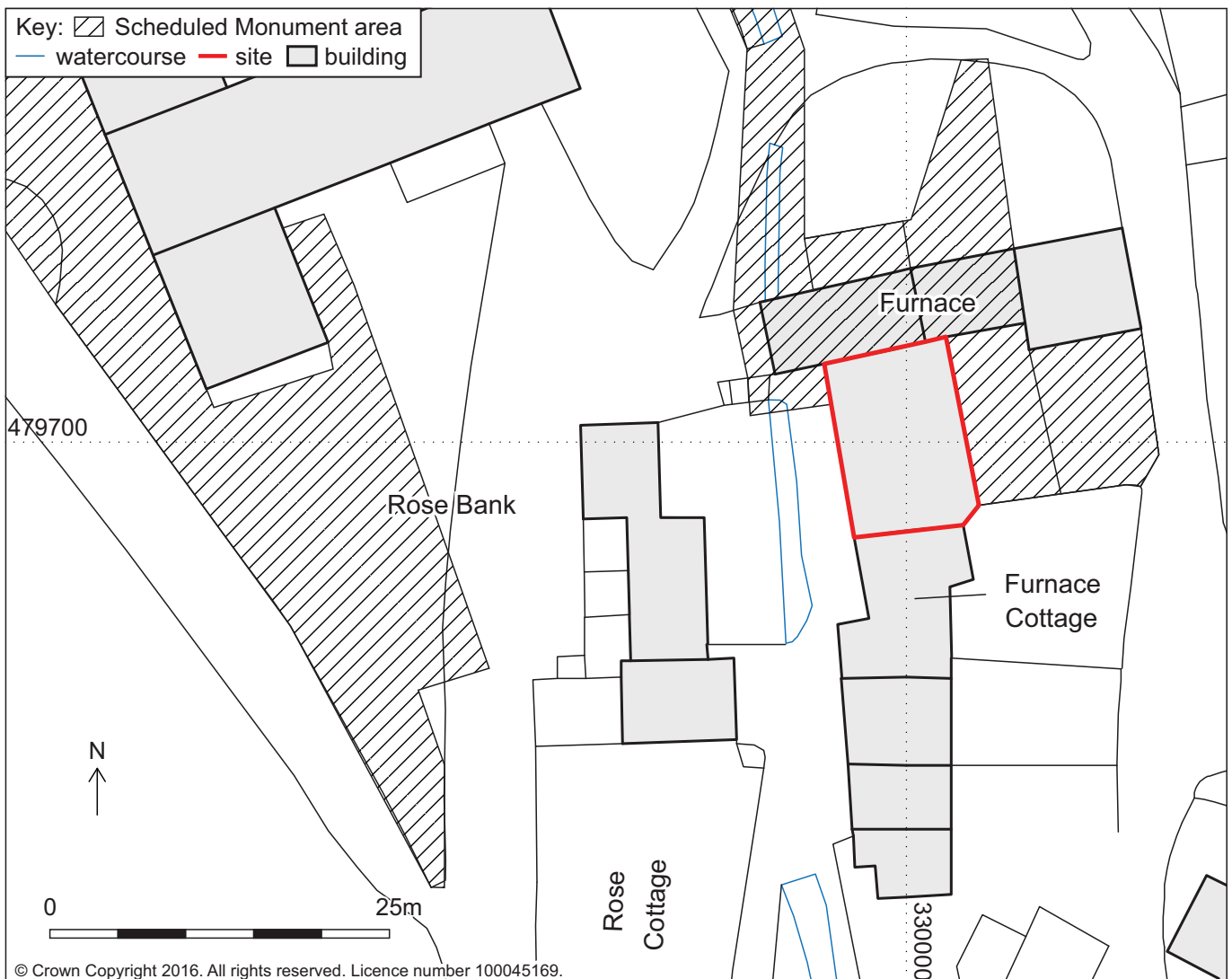
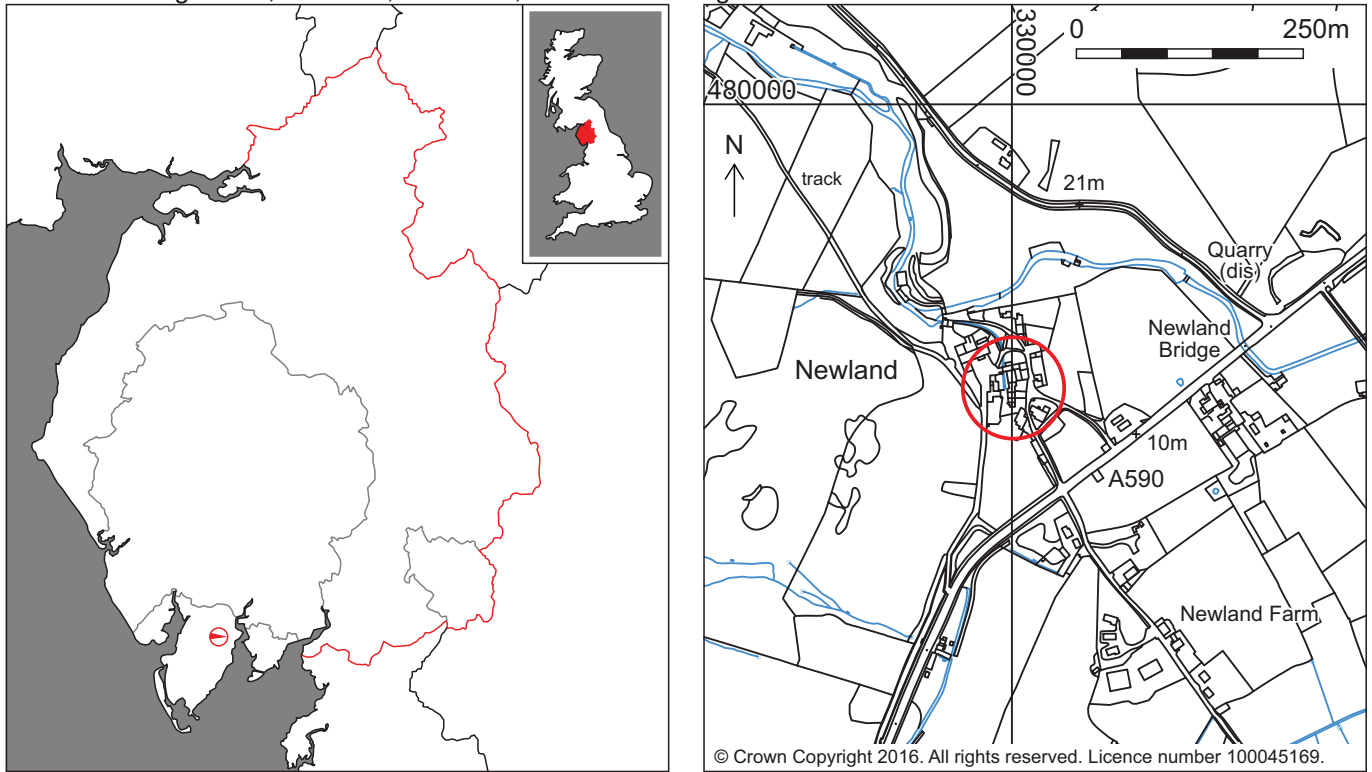
1.1.1 Prior to the submission of a planning application for the conversion of a barn at Furnace Cottage, Newland, near Ulverston, Cumbria (NGR 330000 479700) into a dwelling, and following consultation with South Lakeland District Council, it was recommended that an archaeological building recording be compiled for inclusion with the application. In response to this Greenlane Archaeology were commissioned by John Coward Architects on behalf of Miss S White and Mr I Brown (hereafter 'the client') to carry out the work, which was undertaken in August 2017.

1.1.2 Furnace Cottage and the barn are part of the wider Newland blast furnace complex but they are just outside of the Scheduled Monument area for the same (No. 34986), although the north end of the barn is adjoining to it and Furnace Cottage is a Grade II Listed Building (see *Appendix 1*). The furnace was built in 1746-7 by Richard Ford and his associates, who became known as the Newland Company (Goodall 2001). The enterprise expanded throughout the late 18th and early 19th century with the addition of associated structures elsewhere in the Newland valley (*ibid*). By the second half of the 19th century it had become amalgamated with several other associated enterprises controlled by Harrison Ainslie and Company (*ibid*). The furnace went out of use in 1891 and quickly fell into disrepair, although many of the associated outbuildings found other uses.

1.2 Location, Geology, and Topography

1.2.1 The village of Newland is approximately 1.5km north-east of the centre of Ulverston, and situated at the end of the valley formed by Newland Beck (Figure 1).

1.2.2 The site lies at approximately 30m above sea level (Ordnance Survey 2011). The main road into the area, the A590, is approximately 120m to the south-east. 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).



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Figure 1: Site location

2. Methodology

2.1 Desk Based Assessment

2.1.1 The study area for the project was restricted to the footprint of the barn, which comprised approximately 125m². Information relating to the immediate vicinity was also taken into consideration, but the only other historic sites of interest nearby were those relating to or forming part of the Newland furnace complex. The desk-based assessment was carried out in accordance with the relevant guidelines of the Chartered Institute for Archaeologists (CIfA 2014a). 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, although much of this information had already been acquired during previous phases of work carried out in Newland:

- **Cumbria Archive Centre, Barrow-in-Furness (CAC(B))**: the majority of original and secondary sources relating to the site are deposited in the Cumbria Archive Centre in Barrow-in-Furness. Of principal importance are early maps of the site. These were examined in order to establish the development of the site, date of any structures present within it, and details of land use. In addition, any details of the site's owners and occupiers were acquired where available;
- **Cumbria Archive Centre, Kendal (CAC(K))**: this was visited in order to examine early maps and plans of the site, and local and regional histories;
- **Historic England**: information compiled by Historic England, in particular a detailed study of the whole of the Newland furnace complex (Goodall 2001), was consulted;
- **Lancashire Record Office (LRO)**: the enclosure map of 1823, which is held in the Lancashire Record Office in Preston, was also examined;
- **Greenlane Archaeology library**: additional secondary sources and unpublished reports were examined to provide information for the site background.

2.2 Building Recording

2.2.1 The building recording was carried out to Historic England Level-2 type standards (Historic England 2016), which provides a relatively detailed record of the building, but discusses its development in terms of its historical context to only a limited extent. The recording comprised the following elements, and was carried out according to the standards and guidance of the CIfA (2014b):

- **Written record**: descriptive records of all parts of the building 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 building, its 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 in the project archive;
- **Drawings**: 'as existing' drawings were provided by John Coward Architects. These were plotted at a scale of 1:50 and 1:100 and hand annotated with additional detail on site. The drawings produced ultimately comprised:
 - i. external elevations at 1:100;
 - ii. floor plans at 1:100;
 - iii. a cross-section at 1:50.

2.3 Archive

2.3.1 A comprehensive archive of the project has been produced in accordance with the project design and current CIfA 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 Archive Centre in Barrow-in-Furness following the completion of the project. A copy of this report will be provided for the client and a

copy will be retained by Greenlane Archaeology. In addition, at a suitable time a digital copy will be provided for the Cumbria County Council HER, and a record of the project will be made on the OASIS scheme.

3. Desk-Based Assessment

3.1 Map and Image Regression

3.1.1 **Introduction:** although there are early, typically county-wide, maps that include the area, they are generally very small scale and so the first useful maps of the area do not appear until the early 19th century. As a result, it is primarily maps from that date onwards that are discussed below.

3.1.2 **Estate plan of c1804:** this early and relatively detailed plan (CAC(B) BD/BUC/49/Bundle 1/16 c1804) shows that the iron furnace complex had taken on much of its current form by this date and the area in which the barn is located is clearly filled with a structure by this time. The plan is undated but has a watermark of 1804 so cannot be earlier than this date.

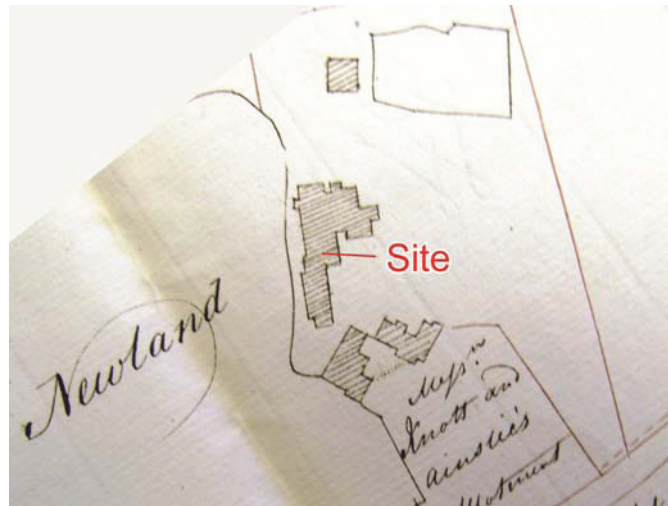


Plate 1: Extract from the estate plan of c1804 showing the location of the barn

3.1.3 **Ulverston Commons Enclosure map of 1812:** this plan (Plate 2; Ulverston Local Board 1891), which was primarily intended to show the extent of the Ulverston commons enclosure, shows some elements of Newland. The terrace to the south of the furnace is not shown but as it is the map is incomplete and seems to only show those structures that fall wholly or partially on the Ulverston side of the parish boundary and in a very simplified way.

3.1.4 **Egton with Newland Commons Enclosure 1823:** this plan (LRO AE/4/5 1823; Plate 3) is generally remarkably similar to that of c1804 (CAC(B) BD/BUC/49/Bundle 1/16 c1804) and it seems likely that one is based on the other (as the estate plan of c1804 is undated it is perhaps likely that it is copied from the enclosure map, especially as it seems more likely that the enclosure map would be based on an original survey, but this would mean that the paper used for the estate plan was almost 20 years old).

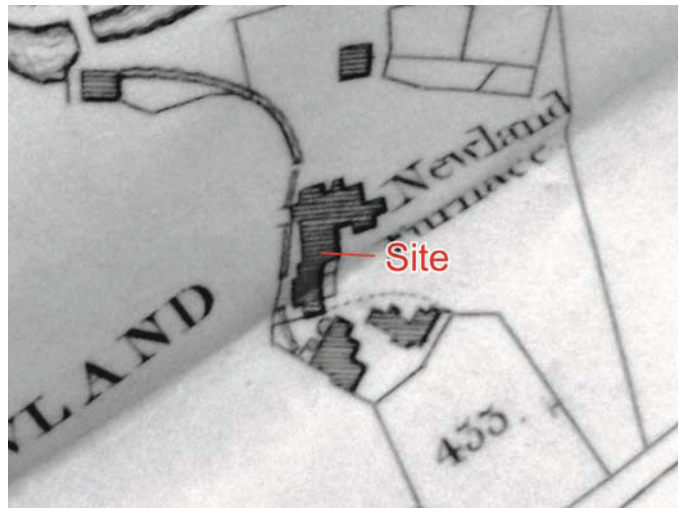
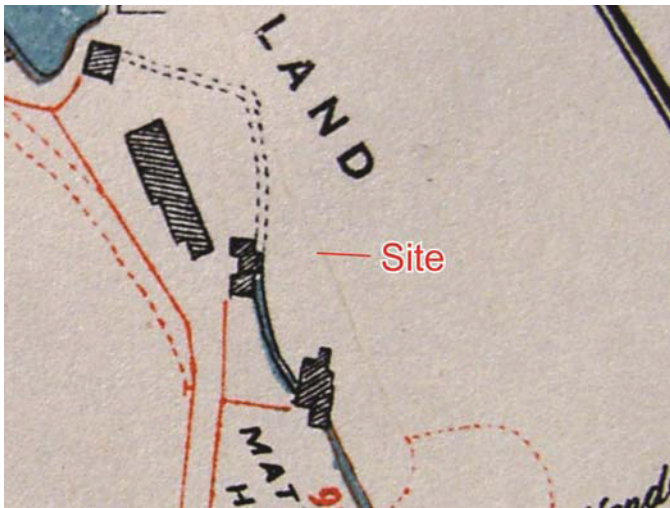


Plate 2: Extract from the Ulverston commons enclosure map of 1812 showing the location of the barn

Plate 3: Extract from the Egton with Newland enclosure map of 1823, showing the location of the barn

3.1.5 **Undated estate plan (probably mid-19th century)**: this is a detailed plan of the site (Plate 4; CAC(B) BD/BUC/Box 40/Bundle 2/58 nd) and, although undated, is considered likely to be mid-19th century (see Goodall 2001, figure 2). It is particularly useful because it names various elements of the site. A division is shown between the furnace to the north and houses to the south, which corresponds to the division between the barn and cottage.

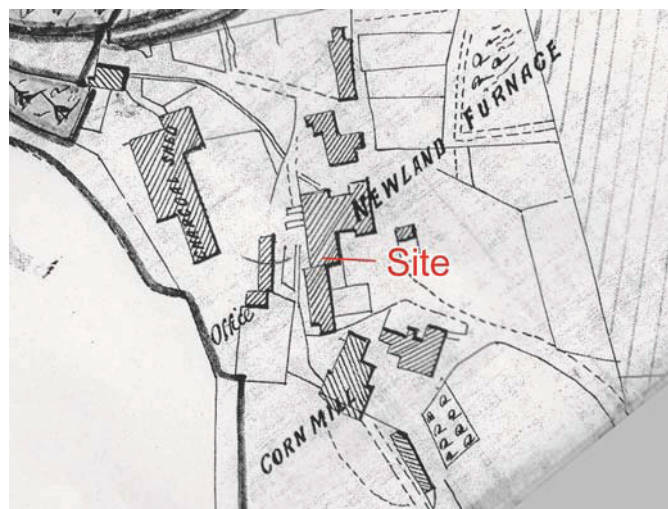


Plate 4: Extract from an undated estate map, probably mid-19th century, showing various elements associated with the furnace, showing the location of the barn

3.1.6 **Ordnance Survey 1851**: this plan is broadly similar to the probably mid-19th century estate plan but no internal divisions are shown (Plate 5; cf. Plate 4).

3.1.7 **Ordnance Survey 1890**: this more detailed map shows the internal divisions within the furnace and terrace to the south (Plate 6).



Plate 5 (left): Extract from 1851 Ordnance Survey, showing the location of the barn



Plate 6 (right): Extract from 1890 Ordnance Survey, showing the location of the barn

3.1.8 **Plan 1904**: this plan (CAC(B) BDHJ/184/7/1 1904; Plate 7) has probably been hand drawn from the 1890 Ordnance Survey map (cf. Plate 6).

3.1.9 **Ordnance Survey 1913**: the layout of the buildings is apparently unchanged (Plate 8).



Plate 7 (left): Extract from 1904 indenture plan, showing the location of the barn



Plate 8 (right): Extract from 1913 Ordnance Survey, showing the location of the barn

3.1.10 **Survey report, 2001**: drawings of the buildings at the furnace complex were produced as part of an English Heritage survey of the site, which was visited in 1997 (Goodall 2001, figure 4; Plate 9). The barn, south of the blowing house and north of the cottage, is labelled 'Warehouse'.

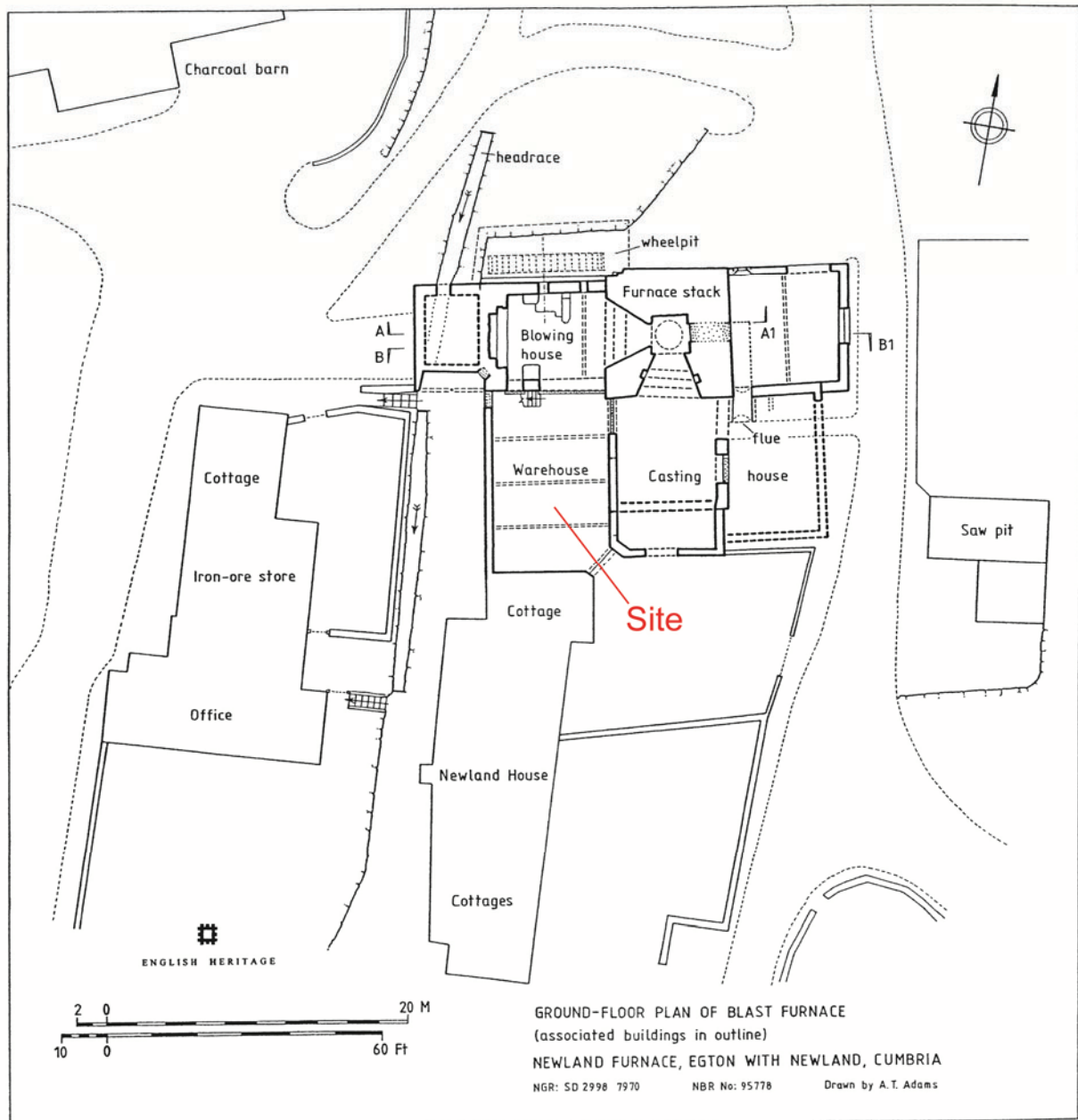


Plate 9: Ground floor plan of the blast furnace (Goodall 2001, figure 4), showing the location of the barn (labelled 'warehouse')

3.1.11 **Summary:** the barn clearly formed part of the south side of the furnace complex, probably at least as early 1823 as it appears to be shown on the Egton with Newland Commons Enclosure map of that date. It is possible that it formed part of an earlier structure, since a blast furnace is recorded at Newland from the first half of the 18th century (see Section 3.4.5 below), but this is uncertain from the mapping evidence. The division between the cottage and the barn is first shown on an undated estate plan of probably mid-19th century date and the division between it and the blowing house is shown on maps dating from 1890 onwards. It is described as a warehouse on the plan of the blast furnace produced by English Heritage in 2001 (Goodall 2001, figure 4).

3.2 Site History

3.2.1 The background history to the site helps our understanding of the development and use of the site, where known, making use of the map evidence presented above (see Section 3.3) where relevant.

The background to the site is intended to place the results of the project in its local context, so a brief discussion of the earlier history of its wider environs is necessary.

3.2.2 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 likely to be of Late Bronze Age or Iron Age origin (Elsworth 2005; Elsworth 2014).

3.2.3 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 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).

3.2.4 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 it was subsequently taken into the ownership of the crown before being sold in 1662 (Davies-Shiel 1978, 111).

3.2.5 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).

3.2.6 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 forge was contained within the old corn mill to the south of the furnace (Greenlane Archaeology 2009a). 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 reused in the smelting process (Goodall 2001, 7). The brick chimney and raised throat evident in the only early photograph of the site (Plate 10) is likely to relate to this, as is the presence of the brick flue in the 'garage' (*ibid*).

3.2.7 These alterations were not enough to save the struggling enterprise. 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 sublet part of the site to Thomas Thompson (Goodall 2001, 8). The property included the corn mill, Newland House and garden, five cottages with gardens, the joiner's shop, and the iron furnace, which was by that time in ruins (CAC(B) BD/BUC/43/8/22 1904).



Plate 10: Newland Furnace c1897 shortly after its closure (Anon 1897)

3.2.8 In 1918 the dam that controlled the water to the furnace buildings 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*; CAC(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 (CAC(B) BD/BUC/17/42 1921-25). Elements of the furnace complex appear to have carried on in use as a joiner's workshop after the closure of the furnace (as is evident in Plate 10) and remained in reasonably good condition long after the furnace stack had become ruinous. Parts of the site were also used as a commercial garage after the Second World War (Helme 1994, 13).

3.2.9 **Occupiers:** generally speaking the most reliable source of information for ascertaining the occupiers from 1841 to 1911 is the census returns. Unfortunately, census entries for Newland are rarely specific as to the name of the property. The first mention of 'Furnace Cottage' by name is in the 1911 census at which point it is occupied by Richard Allan Athersmith, a farmer, and his wife, Irene. The Athersmith family are listed as resident at 'Newland Mill/House' on the 1901 census, distinct from Newland House and various other entries for Newland, which may or may not be the name by which the cottage was known at that point. Details from the census are presented in *Appendix 2*.

3.2.10 **The Building:** with the exception of the map evidence (see *Section 3.3*) there is little available early information specifically about the history of the building. However, it was recorded as part of the previous English Heritage survey of the furnace, in which it is described as a warehouse or store (Goodall 2001; see Plate 9). The description from that survey is worth reproducing in full as it provides some useful information about how the building was interpreted at that time:

'It is a tall single-storey building with stone rubble walls and a slate roof gabled to the north and south. Its east wall utilises the west wall of the existing casting house, and its south wall the north wall of an earlier cottage. The canted south-east corner may be original, but the garage door is likely to have been widened, causing some alterations at the junction of the store and the casting house extension. The roof has three king-post trusses carrying three sets of trenched purlins per side. The king posts are through-bolted to the tie beams and have struts up to the principals. A doorway was inserted between this building and the casting house in 1854' (op cit, 12-13).

3.3 Previous Archaeological Work

3.4.1 A number of recent small pieces of work have been carried out in Newland, all of which add to the understanding of the blast furnace and its associated buildings:

- A Conservation Plan was carried out in 2003 for the iron furnace, which looked at the known historical development of the site and considered issues about its future development, conservation, and public display and interpretation (OA North 2003);
- A desk-based assessment and building recording prior to the conversion of the former corn mill at Newland was carried out by Greenlane Archaeology in May 2008 and a watching brief was carried out during associated groundworks between May 2008 and January 2009 (Greenlane Archaeology 2009a). The mill comprised the main building, with a corn drying kiln to the north, and the remains of a small outshut to the south-east. There was also originally another outshut to the west, perhaps a peat store. It is uncertain whether the existing mill building was built following the acquisition of the site by the Newland Company in 1746 or whether they remodelled an existing mill. Certainly the building was substantially remodelled, most likely in the late 18th or early 19th century. The watching brief identified some areas of interest in the land around the mill, including evidence for the location of iron ore dumps on the west side of the site. It also enabled a section cut through the head race and the structure of the wheel pit to be recorded. A number of finds were made, including fragments of millstones, presumably incorporated as building material into the mill, a sandstone disc, perhaps part of one of the mill stones, and most significantly an iron tilt hammer head. The tilt hammer head recovered from the site and the documentary sources suggested that the mill did indeed incorporate the forge in some way.
- Greenlane Archaeology carried out a desk-based assessment and building recording of a garage attached to the former iron furnace at Newland in October 2008 and monitored the removal of its concrete floor and excavation of a new foundation trench in March 2009 (Greenlane Archaeology 2009b). The building was probably built sometime in the mid-19th century and is approximately square in plan. The watching brief revealed that the floor within the building comprised a make-up layer of slate rubble overlaid with concrete to the level of the ground on the north side of the building. The original floor was constructed from brick, and remains relating to a large flue connected to the furnace were also revealed. The building was perhaps most likely used as some type of workshop connected with the furnace, although there was no evidence to determine its function.
- Two phases of monitoring work were undertaken by Greenlane Archaeology as part of Scheduled Monument consent relating to the conversion of the former charcoal barn at Newland and later the erection of a steel framed solid fuel store on an adjoining piece of land. The first period of watching brief carried out in March 2013 entailed the monitoring the removal of part of a bank set against the south end of the charcoal barn (Greenlane Archaeology 2015). This revealed that, although it had been subsequently utilised as a location to dump and bury rubbish, the bank, which was in an area known to have originally had an extension to the charcoal barn on it, originated in part as a dump of haematite (iron ore), presumably intended for use in the nearby furnace. Finds recovered during the watching brief were of primarily 19th century date, which fits with the documentary evidence, which shows that by the end of the 19th century, when the furnace was in its final years, it had amassed a considerable stockpile of ore. The further watching brief, which took place in October 2016, monitored the excavation of six pits located immediately to the south of the former charcoal barn, each of which was typically 1.3m by 1.3m in plan and between 0.5m and 1.1m in depth. In each pit a similar sequence of deposits was encountered: a surface layer of loose slate gravel, a layer of haematite-rich clay varying from 0.1m to 0.3m thick, and the natural clay geology. Only in the north-east corner was there any significant variation to this, where there was no haematite present but a thin layer of compacted gravel, perhaps bedding for a surface, and another thin deposit of dark grey clay instead. No finds were recovered, but based on the results of the previous watching brief it is likely that the

layer of haematite related to a store of iron ore of probable 19th century date (Greenlane Archaeology 2016b).

- A heritage assessment of the site the former Blacking Mill at Newland was carried out by Greenlane Archaeology in November 2016 (Greenlane Archaeology 2016a). The heritage assessment collated information relating to the former blacking mill buildings, which probably originated as a rolling mill associated with the furnace in 1799, and did not become a blacking mill until at least the mid-19th century. The history of the blacking mill is not well understood but the details of some of the occupiers are recorded as are details of a number of catastrophic fires that affected the site in the 1840s and later. It remained in use into the late 19th century before becoming a saw mill. As it was considered likely that the proposed development would have some impact on the surviving fabric of the building, both standing and below ground, it was recommended that further archaeological recording should be carried out as part of the work.
- An evaluation comprising the excavation of several test pits within the blowing house and furnace stack has recently been carried out. This demonstrated that throughout much of the blowing house a considerable amount of material had been dumped, largely domestic rubbish but also considerable quantities of slag, probably to infill the floor and form a level surface during its subsequent use as a joiner's workshop and garage (Greenlane Archaeology forthcoming). Below this a substantial machine base built of dressed stone blocks was revealed, which most likely relates to a late phase of re-organisation within the furnace.

4. Building Recording

4.1 Arrangement and Fabric

4.1.1 The building is essentially a single storey, but very tall and open to the roof internally. It is primarily of stone construction, a mixture of local grey slate and volcanic material derived from the boulder clay as well as a small amount of sandstone but there is also lots of brick, including red hand-made brick and fire brick, especially large refractory bricks reused from lining the adjoining blast furnace. The roof is finished with grey slate topped with ceramic ridge tiles. Concrete has been used internally for the floors and some lintels but iron has also been used for the latter while much of the internal timber is sawn Baltic pine, although rougher hand finished timber is also present. The building comprises a single approximately rectangular structure running essentially north/south between Furnace Cottage to the south and the remains of the blast furnace to the north.

4.2 External Detail

4.2.1 **East elevation:** at the north end is a large doorway with a semi-circular arched opening built of re-used furnace-lining bricks (Plate 11; Figure 2), in the centre of which is a keystone, also a brick, into which has been carved 'HAR & CO 1854' (Plate 12). The area within the doorway itself is filled with timber and corrugated sheet metal. Immediately to the south of this doorway a large block of red sandstone is incorporated into the base of the wall, and other blocks have been used in the south jamb, the north jamb being formed by the wall of the adjoining blast furnace. The central part of the elevation is mostly obscured with ivy (Plate 13), and the line of the elevation actually returns to the east and so forms part of the adjoining roofless structure. Beyond this return the elevation turns slightly to the west where the upper part meets the cottage. This angled section is supported by concrete lintel and within the section joining the cottage there is a wide doorway with a folding four-part plank and batten door, with a single light in each section, below two I-beam iron lintels (probably re-used rails) (Plate 14). Where the wall extends above the roof of the adjoining cottage it is finished with three dressed quoins and there are lots of bricks incorporated below the eaves.



Plate 11 (left): Arched doorway at the north end of the east external elevation, viewed from the east

Plate 12 (right): Dated keystone in the arch at the north end of the east external elevation, viewed from the east



Plate 13 (left): The ivy-covered central part of the east external elevation, viewed from the south-east

Plate 14 (right): The south end of the east external elevation showing the doorway, viewed from the south-east

4.2.2 **South elevation:** this only comprises a small section of gable above the roof line of the adjoining cottage (Plate 14). There is some patchy render remaining in places and the ends of two purlins project through the wall. The roof runs up to a square chimney built of red machine-made bricks, which serves the cottage, with a single ceramic pot. A lot of bricks, including furnace lining blocks, are incorporated into this elevation.

4.2.3 **West elevation:** only a very small part of this is visible as the building is set into the slope and what there is comprises numerous re-used fire bricks (Plate 15; Figure 2). It adjoins the blast furnace at the north end and its wall has a large recessed section supported by a heavy timber beam further supported by a large cast iron column, perhaps a re-used pipe, with a slight collar at the top below a plank packing piece (Plate 16). The recessed area leads to a doorway leading into the upper floor of the furnace. At the south end the elevation meets the cottage, which it presumably butts against (Plate 17).



Plate 15 (left): The north end of the west external elevation, viewed from the south-west

Plate 16 (right): The recessed area in the adjoining blast furnace, viewed from the south-west



Plate 17: The south end of the west external elevation, viewed from the north-west

4.2.4 **Casting house:** while this does not strictly speaking form part of the barn as it now appears, it is evident that the barn is formed out of part of it, and so a brief examination was made. This structure is now a roofless ruin forming part of the curtilage of Furnace Cottage and running up to the south side of the furnace. Externally the south side is largely obscured by vegetation, but there is a large doorway on the west side with a very decayed timber lintel with a brick relieving arch above, the jambs of which incorporate a lot of furnace lining bricks, red sandstone, and dressed limestone blocks (Plate 18). The east elevation has dressed quoins on the south side, and a row of through stones in the wall immediately north of this, below which is a concrete skim for an attached outshut or lean to. The south end of the wall butts the north section, which projects slightly and incorporates two large openings with arched heads of voussoir edge-set slate, the smaller of which is blocked with furnace lining blocks (Plate 19). The top of this section is thinner than the lower part and finished with a gable. Internally the south elevation is largely obscured by ivy but the large opening on the west side has a concrete lintel (Plate 20). The east elevation is also largely covered by ivy but there is an evident butt joint on the south side and the smaller arch is only blocked externally leaving an alcove in the thick wall (Plate 21).



Plate 18 (left): The south external elevation of the ruined casting house to the east of the barn, viewed from the south



Plate 19 (right): The east external elevation of the ruined casting house to the east of the barn, viewed from the east



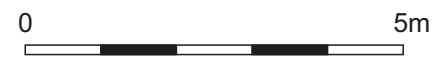
Plate 20 (left): The south internal elevation of the ruined casting house, viewed from the north



Plate 21 (right): The east internal elevation of the ruined casting house, viewed from the west

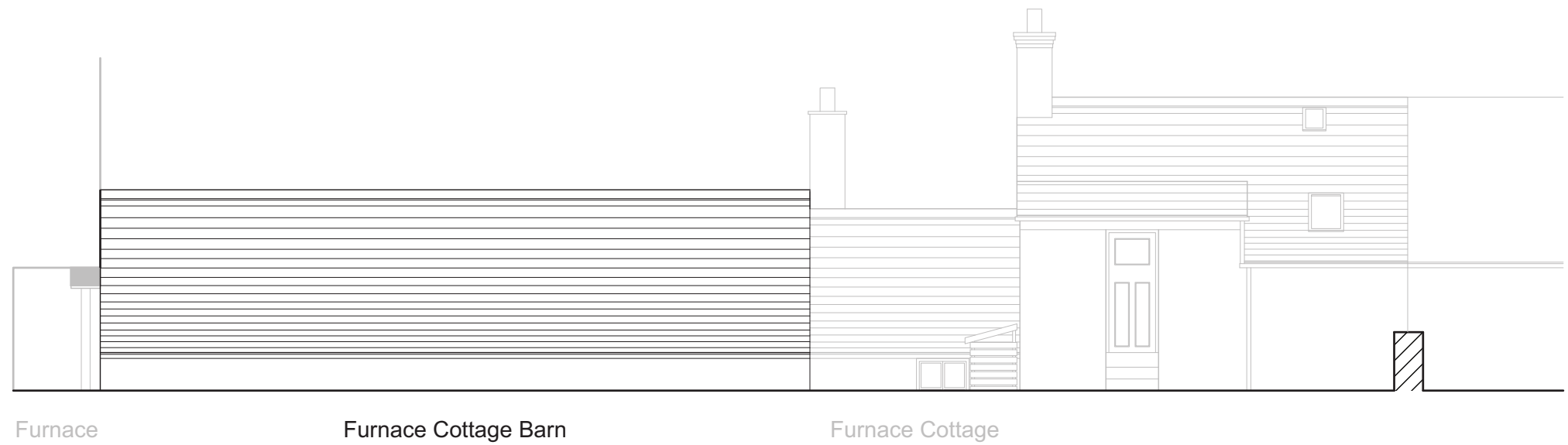


EAST EXTERNAL ELEVATION



Key:

- cross-sectional timber
- ▨ cross-sectional wall
- building not recorded



WEST EXTERNAL ELEVATION

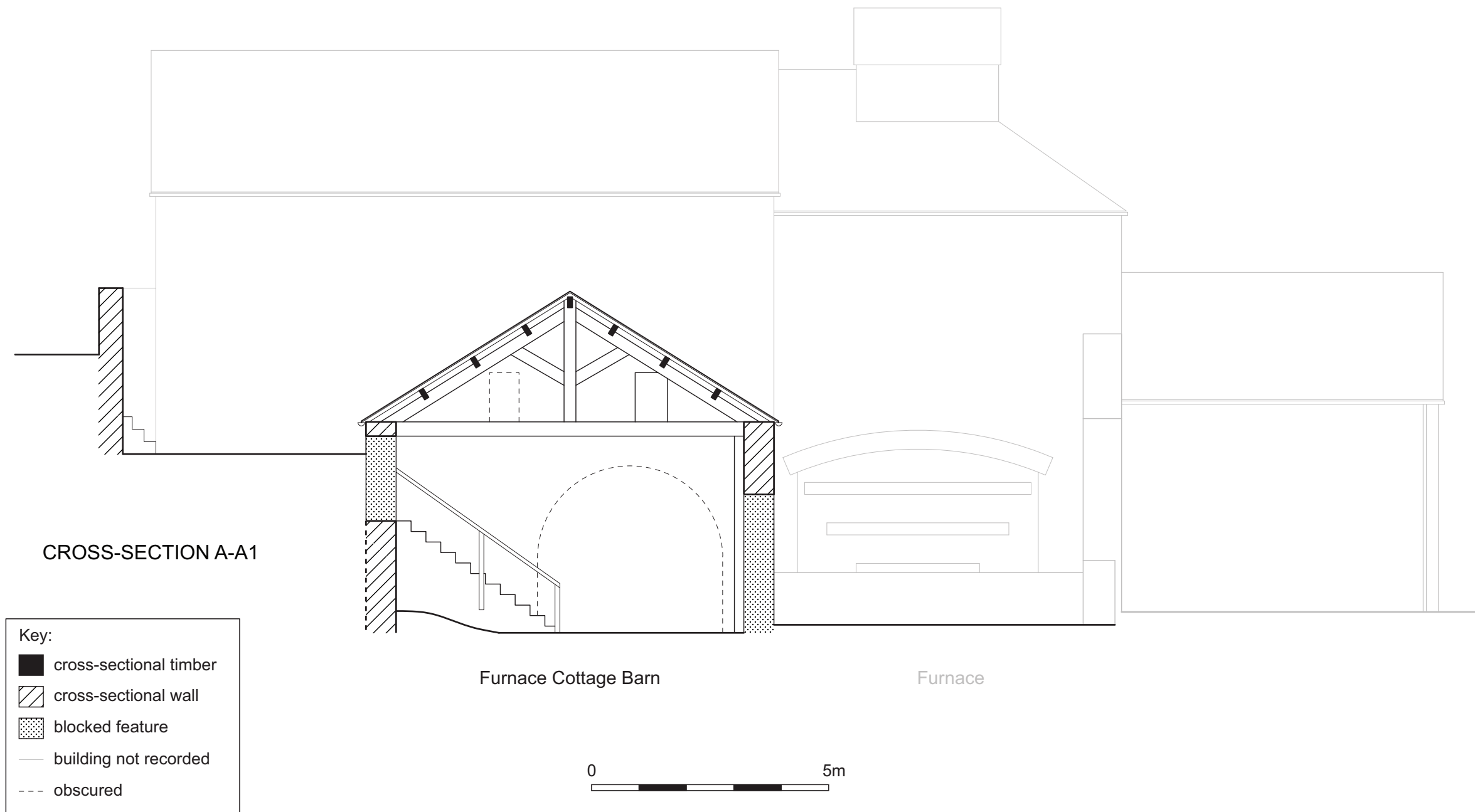
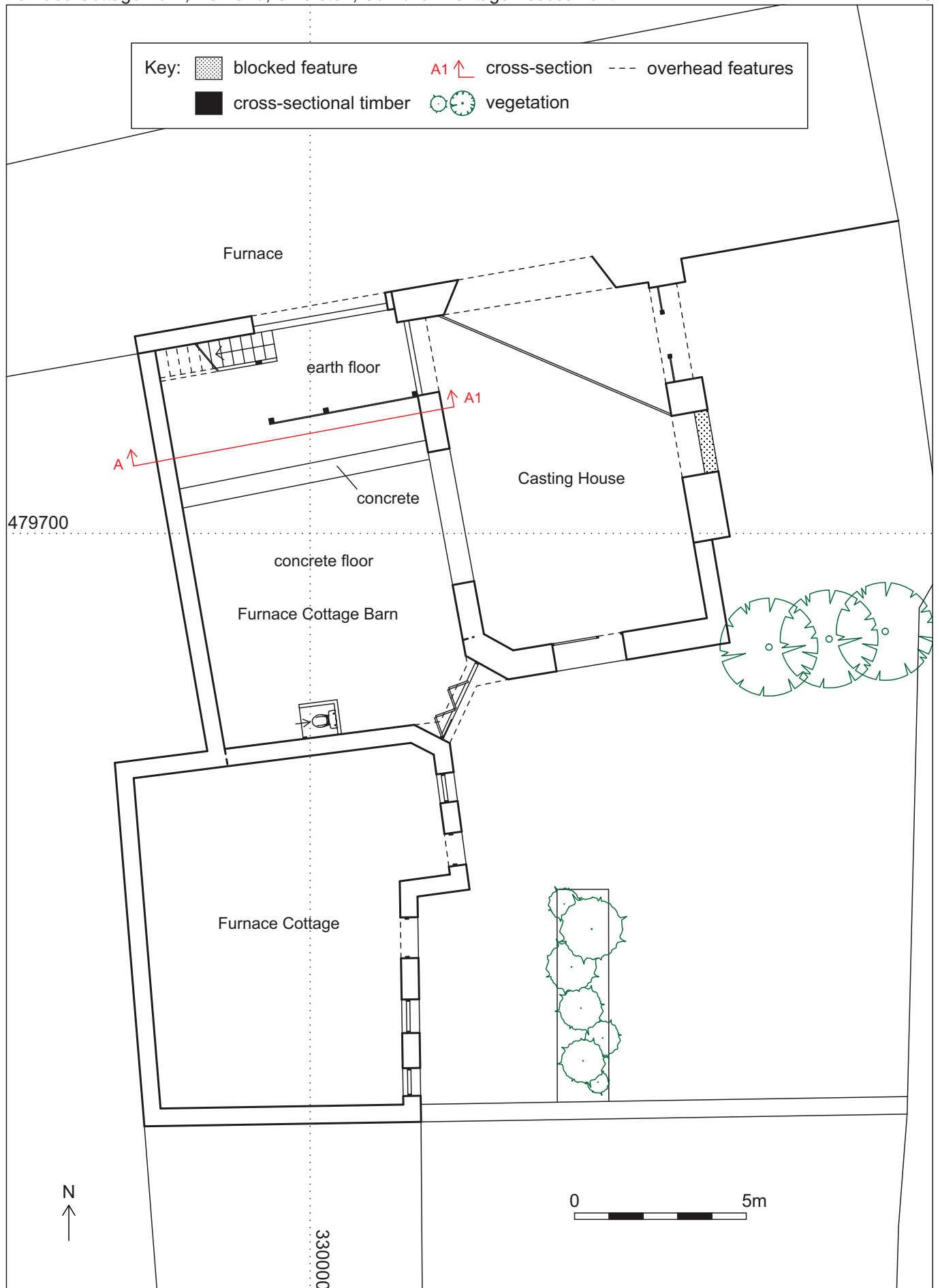


Figure 3: Cross-section A-A1



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Figure 4: Lower floor plan

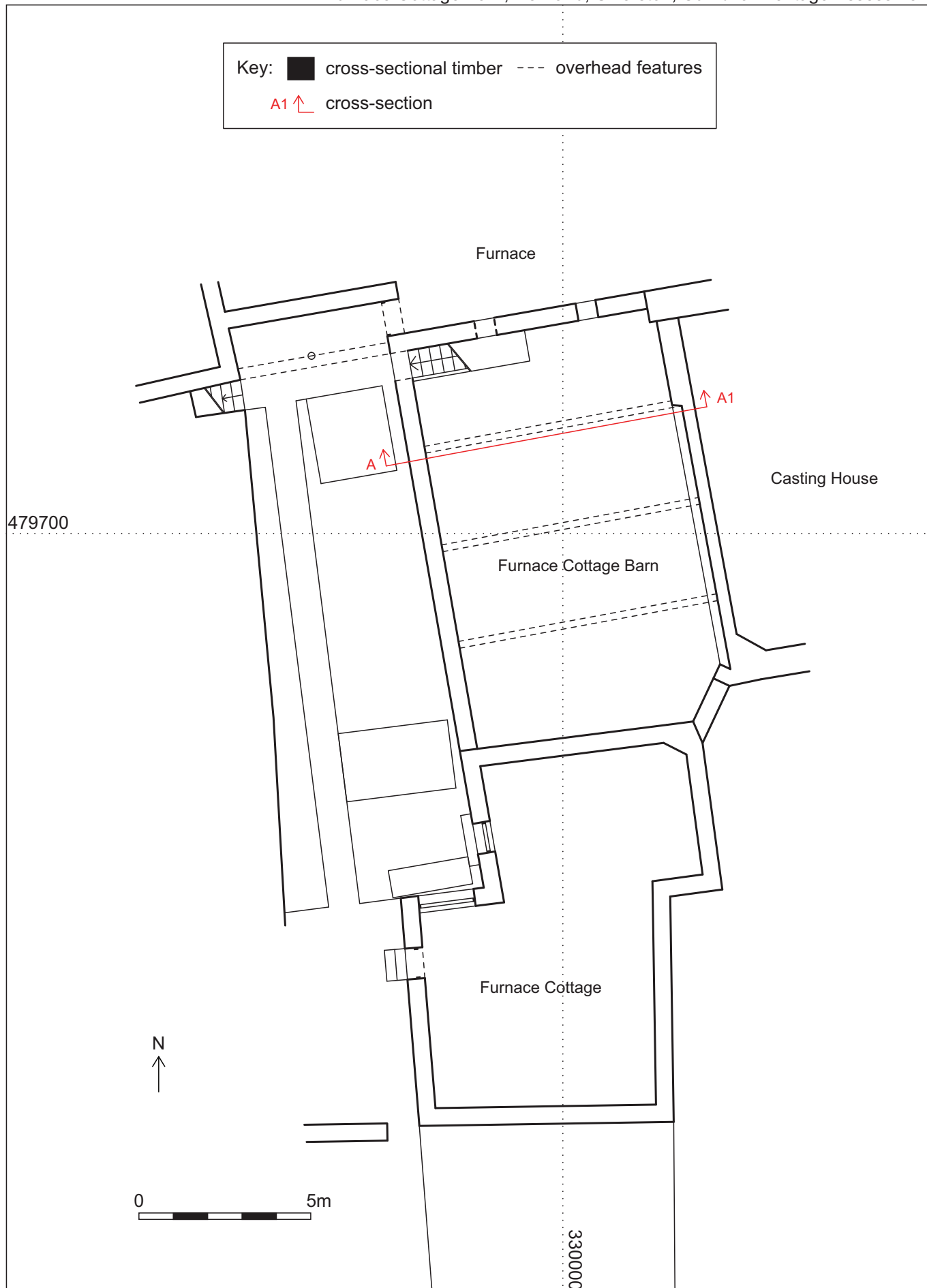


Figure 5: Upper floor plan

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4.3 Internal Detail

4.3.1 The floor is mostly finished with very rough and irregular concrete but the north end is separated from the rest by a more distinct and slightly raised band of concrete, perhaps originally a foundation for an internal wall or a structure of some form (Plate 22). Beyond this the north end has an earth floor, which is noticeably raised in the north-west corner. A rough partition constructed from corrugated roofing sheets supported by upright posts runs east/west part way across the room from the north end of the east elevation (Plate 23). The room is open to the roof, which is supported by three trusses, each of king post form, the king post fixed to the tie beam by an iron bolt, and with a pair of raised angled braces (Plate 24; Figure 3). There are Baltic timber marks on at least two of the tie beams; the central (Plate 26) and southern ones. There are three purlins per pitch and a ridge plank. The walls are generally finished with the remnants of whitewash, with the exception of the north elevation.



Plate 22 (left): The concrete strip dividing the earth floor at the north end from the concrete floor to the south, viewed from the west



Plate 23 (right): The partition wall on the north-east side of the room, viewed from the south



Plate 24 (left): The central truss, viewed from the south



Plate 25 (right): Baltic mark on the underside of the tie beam of the central truss, viewed from the north

4.3.2 The north internal elevation has a flight of steps against it on the west side leading to what is presumably a doorway in the west elevation, although this is not visible externally (see *Section 4.2.3* above). The stairs are constructed from stone and brick – both fire brick and red brick, as well as at least one furnace-lining brick, and seem to butt the west elevation. They are topped with slate flags and there is a rough timber hand rail attached along the south side (Plate 26). Above the stairs there is an area of attached boarding and corrugated sheeting, presumably covering a doorway, with a smaller brick-lined aperture to the east of this (Plate 26). The elevation is dominated on the lower east side by a large opening with an arched top of voussoir slates, which is filled and partially covered by timber boards and corrugated sheeting (Plate 27). Above this are two small square alcoves or apertures, with a smaller possible one between and at the top of the elevation, which forms a gable, are presumably two small rectangular apertures covered by plastic sheeting held with timber battens. Running the full height of the north-east corner is a projecting 'buttress' that is actually the corner of the adjoining blast furnace stack.

4.3.3 The east internal elevation is dominated on the north side by a large doorway with a round-headed arch constructed from re-used fire bricks and blocked with a random selection of pieces of timber including at least one complete door (Plate 28). The partition running part-way across the room springs from the south side of the doorway, and butts against the timber blocking. Beyond this there is a very evident butt joint in the wall with quoins, with a further butt joint to the south, although this slightly less visible and has less prominent quoins (Plate 29), all of which is indicative of the end of a building running east being incorporated into this wall. Above these joints the wall is stepped and thinner at the top. It also turns slightly to the west at the south end where it meets the doorway, which has possibly been enlarged or even inserted as its north jamb is evidently rebuilt. Above this there is an odd alcove in the wall, perhaps resulting from the butting of wall sections, and there is an apparent butt joint with the cottage to the south.



Plate 26 (left): Steps on the west side of the north internal elevation, viewed from the south-east

Plate 27 (right): The large opening on the east side of the north internal elevation, viewed from the south-west



Plate 28 (left): Large doorway at the north end of the east internal elevation, viewed from the west

Plate 29 (right): Butt joints visible in the east internal elevation, viewed from the west

4.3.4 The south internal elevation comprises the opposing gable end and there are numerous projecting through-stones suggesting that it was once external (Plate 30). It has a slight angle at ground floor level, which forms the south jamb of the doorway and is supported by a timber lintel. Several further timbers are built into the main part of the south elevation, which has also evidently been raised on at least the west side as the ends of two purlins, presumably corresponding to the roof of the adjoining cottage, project through the wall (Plate 31). The base of the brick chimney serving the cottage is also visible at the top. There are lots of attached pipes and cables and in the centre at ground level a small room has been formed by timber partitions, constructed from a range of planks of different forms and incorporating a six-light fixed casement window on the north side and a door to the west, has been constructed to house a toilet (Plate 32).



Plate 30 (left): General view of the south internal elevation, viewed from the north

Plate 31 (right): Upper part of the south internal elevation, viewed from the north



Plate 32: The partition walls forming a toilet against the south internal elevation, viewed from the north-west

4.3.5 The west internal elevation is largely plain. The lower part is constructed from stone finished with a thick coat of whitewash, and this has evidently been raised by approximately 1m, the extension mostly comprising furnace lining bricks (Plate 33 and Plate 34). The upper part clearly butts the south elevation, although its relationship to the north is obscured by attached planks while the lower part appears earlier or contemporary with the south elevation, and is clearly earlier than the staircase.



Plate 33 (left): The south end of the west internal elevation, viewed from the north-east



Plate 34 (right): The north end of the west internal elevation, viewed from the south-east

5. Discussion

5.1 Introduction

5.1.1 Although the building had already been recorded as part of a wider survey of the blast furnace complex this new recording has provided additional detail and enables a more detailed consideration of this part of the wider site to be presented. In addition a consideration of the significance of the building in terms of its relationship to the adjoining blast furnace, which is a Scheduled Monument, but also the manner in which it fits the wider site development.

5.2 Phasing

5.2.1 **Introduction:** a total of five phases of construction and development were revealed within the building, some of which can be dated quite precisely due to the dated keystone and the wider understanding of the blast furnace complex as a whole. However, this more detailed consideration of the barn does lead to some disagreement with the conclusions about its development presented in the earlier report by English Heritage (Goodall 2001).

5.2.2 **Phase 1 – c1746-1747:** the earliest element of the site is arguably the lower stone-built section of the west wall. This seems to predate the cottage to the south but its relationship to the north wall, which is the south wall of the blowing house that formed part of the blast furnace, and so was presumably therefore built in 1746-1747 (Goodall 2001, 3). The original form and position of the west wall of the barn would suggest that it was constructed as a revetment into the slope, possibly to support and provide access to the mill race to the west, which pre-dated the blast furnace it was also the reason it came to be built in its current location (*op cit*, 2-3). However, it perhaps most likely that this wall corresponds with work carried out as part of the construction of the blast furnace in 1746-7, either to provide better access during construction or to ensure that the mill leat was properly contained. The majority of the east wall probably also belongs to this phase, having been constructed to form the west wall of the original casting house, however the quined butt joint near the centre suggests that the wall did not originally extend all the way to the blast furnace, and that there was either a wider opening at this point or that the casting house was narrower than previously thought and not attached to the blast furnace. The size of the surviving sections of the original gabled roof might suggest that the latter theory is more likely but this does not fit with the map evidence, which shows no gap in this location.

5.2.3 **Phase 2 – late 18th century:** the south wall is primarily formed by the north gable of the cottage attached to the north side of Newland House. As this appears to post-date the west wall it clearly belongs to a later phase, but it is likely to be 18th century (or even early 19th century – see *Appendix 1*) and represent part of the wider development of the blast furnace and associated buildings (Goodall 2001, 17).

5.2.4 **Phase 3 – late 18th century to early 19th century:** it is reasonably clear from the map evidence, allowing for the difficulties of interpretation at the available scales, that a structure fitting approximately the current footprint existed. This had probably been constructed by roofing over the space between the existing walls, but with the addition of a small section of angled wall in the south-east corner between the corner of the casting house and the cottage. There is now no evidence for the form of the roof as this was presumably removed during the following phase, but it was presumably lower than the present one.

5.2.5 **Phase 4 – 1854:** the dated keystone over the doorway at the north end of the east elevation is most probably indicative of the period at which a number of alterations were made; the doorway probably being made by the infilling of a wider opening at that end belonging to an earlier phase, perhaps essentially mirroring that on the opposite side of the casting house. This phase most probably also includes the raising of the roof to its current location and with its current structure, as evidenced by the additions to the east, south, and west elevations. The presence of Baltic timbers, something typically found in late 18th to early 19th century buildings (Greene 1995; 1996), does not preclude this as examples have been recorded locally in at least one industrial building built much later in the 19th century (Greenlane Archaeology 2007).

5.2.6 Phase 5 – early 20th century: subsequent alterations to the building have seemingly been relatively minimal, but they are all likely to relate to the period after the blast furnace went out of production, in 1891, and the site was put to a number of other uses. The most notable change is the evident enlarging of the doorway at the south end of the east elevation, probably to accommodate the folding garage door that is now present. This was achieved by remodelling the north jamb. Other changes probably include the addition of the present concrete floor and the partitions forming the toilet and partially dividing the room from the north-east corner, but also blocking several of the earlier openings, especially those connecting to the furnace. After the furnace ceased production the machinery was removed and the furnace was partially demolished in order to remove the iron lintels for scrap and from 1903 the site was being used as a joiner's shop then a motor garage (Goodall 2001, 8; Helme 1994, 13). Exactly how the different parts of the building were used during this period is not clear, but there was evidently some internal partitioning at this time that related to this (Greenlane Archaeology forthcoming) and this is perhaps indicated by the concrete slab running across the room separating the earth floor at the north end from the rest.

5.3 Significance

5.3.1 While the barn itself is of relatively limited significance and is not statutorily protected as a Listed Building or as part of the Scheduled Monument area for the blast furnace, it is immediately adjoining the latter on two sides, the north and east, and part of the west. It is also apparent that, as the barn was formed by essentially filling a gap between several existing walls, access to its interior provides an opportunity to examine what would have been the external walls of the blowing house and the casting house. It is particularly important therefore that these elements of the historic fabric of the Scheduled blast furnace remain undamaged by the proposed conversion of the barn.

5.4 Conclusion and Recommendations

5.4.1 The building recording has allowed a more detailed examination of a building that, while not particularly significant in its own right, is of interest due to the associations it has with the adjoining structures. This has enabled a further consideration of the manner in which this part of the blast furnace complex at Newland has developed, which, alongside other recent pieces of work nearby (Greenlane Archaeology 2009a; 2009b; 2015; 2016a; 2016b; forthcoming) is helping to refine the understanding of the site.

5.4.2 It is essential that, as a minimum, the north and east internal elevations of the barn be covered in a manner than is reversible so that they can be examined in the future. Given that this would undoubtedly require the removal of the boards and sheeting cladding parts of the north elevation, which were obscuring much of the detail, the opportunity should be taken when this is done to carry out further recording, in the form of detailed photography and the production of detailed drawings as this could not be done during this phase of building recording.

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Appendix 1: Listed Building Details

After: Historic England 2017

List Entry Number: 1096784

Location: TERRACE OF HOUSES COMPRISING 1 NEWLAND HOUSE NEWLAND HOUSE AND FURNACE COTTAGE

County: Cumbria

District: South Lakeland

Parish: Egton with Newland

NGR: SD 30001 79682

Date listed: 14th April 1993

Grade: II

Details:

Terrace of three houses. Late C18 or early C19, with late C19 and C20 alterations and additions. Rendered stone with artificial slate roof coverings, brick intermediate and gable stacks and plain eaves. East elevation. Stepped range of three and two storey dwellings. South dwelling (1 Newland House), with two doorways, one inserted C20, one C19 with 6-panel door, the upper two panels glazed. Tripartite glazing-bar sash window between central sash of 6 over 6 panes, flanking sashes 2 over 2 panes. Wide 2-light 2-pane casement to south end, and stacked 2-light 2-pane side-hung casements to first and second floors, all with stone cills and flat heads. Centre house (Newland House) with renewed canted timber bay window with glazing bar sashes 8 over 8 panes to centre, 4 over 4 panes to side lights. Doorway to north, slightly advanced with 6-panel door, the upper two lights glazed, beneath a shallow rectangular overlight. Stacked 2-light, 2-pane casements to first and second floors, all with painted cills. North dwelling (Furnace Cottage) with two 3-storey bays and a lower 2-storey range which extends into the end of the attached outbuilding to the north-west of the iron furnace (q.v.). Ground floor with segmental arches to altered door and window opening to ground floor of 3-storey part, two first-floor 2-light 2-pane casements with segmental arched heads, and flat headed casements to second floor. Lower range to north breaks forward, with 6-panel door having four glazed panels, and stacked 2-light 2-pane casements to north. Angled wall with C20 garage door attached to front wall of former casting house area of furnace complex. Listed for group value.

Appendix 2: Census Details

1901 Census (RG 13/Piece 4002/Folio 81/Page 15)				
Name	Age	Occupation	Address	Place of Birth
James Athersmith	53	Farmer and general carter	Newland Mill House	Ulverston, Lancashire
Martha Athersmith	51			Colton, Lancashire
Lizzie Athersmith	25	Dressmaker		Ulverston, Lancashire
Agnes Athersmith	27			Ulverston, Lancashire
Thomas Athersmith	22	Farmer's son		Ulverston, Lancashire
John Athersmith	20	Farmer's son		Ulverston, Lancashire
William Athersmith	20	Engine fitter's apprentice		Ulverston, Lancashire
Albert Athersmith	17	Pupil teacher		Egton-cum-Newland, Lancashire
Allan Athersmith	14	Farmer's son		Egton-cum-Newland, Lancashire

1911 Census (Piece 25622)				
Name	Age	Occupation	Address	Place of Birth
Richard Allan Athersmith	24	Farmer's son working on farm	Furnace Cottage, Ulverston nr Ulverston	Egton-cum-Newland, Lancashire
Irene Athersmith	23	–		Ulverston, Lancashire