# Shildon engine house and mine workings

## Shildon by Blanchland, Northumberland

*Archaeological recording during conservation works in 2010*

Data Structure Report

for

North Pennines AONB Partnership

*January 2012*

NORTH PENNINES AONB PARTNERSHIP

Working together for the North Pennines

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**Data Structure Report**

*by Kenneth Macfadyen*

*Edited by Tom Addyman and Ross Cameron*

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In memory of our colleague

Jim Wright

Who died 28th July 2012

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**Data Structure Report**

### *1. Introduction*

#### *i. General*

Addyman Archaeology were contracted to undertake archaeological monitoring works and historic building recording as part of the conservation project at Shildon engine house and mine workings at Shildon, near Blanchland, Northumberland. Run by the North Pennines Area of Outstanding Beauty (AONB) Partnership (contacts Jon Charlton and Paul Frodsham), the works to the upstanding building remains principally involved clearing out the structures, masonry repairs and wall head consolidation. These were undertaken by Historic Property Restoration of Hexham (contact, Lee Wall) according to the specifications provided by Simpson and Brown Architects (contacts, John Sanders and Stuart Allan).

Archaeological works at Shildon were proposed on the basis of a project design developed in conjunction with North Pennines AONB Partnership and Simpson and Brown Architects (see *Appendix A.i.*)

#### *ii. The site*

The mine working site at Shildon comprises a large area to the west of Shildon village, a small hamlet of two rows of terraced houses with associated small enclosed backyards and fields. The area subject to the present archaeological investigation comprised some 10,000sqm, centred on the site of the engine house at NGR NY 95845 51076. The site lies ca. 500m to the N of Blanchland village (*figure 1*).

The site today is open grassland with an area of forestry to the south, encroaching upon the main engine building; some individual trees are scattered along the western edge of the site. A small burn forms the western boundary to the site running N / S; it is fed by a minor culverted stream, running westwards from Shildon village to the north of the engine house. This stream has been re-routed as part of the present works.

The topography of the site slopes down westwards, towards the burn. To the northwest the slope forms a few plateaus before the ground drops sharply to the river scarp. A similarly steep slope sits just northwest of the engine house on which the investigated area centres.

Remains of walls of collapsed or demolished structures, enclosures and boundary walls and more modern pathways have left their markers on the grassland; these were recorded in a topographical and walkover survey.

19th century map evidence shows a number of buildings on the site, most of these today lost or surviving only with their footprint. The best preserved of these structures is Shildon engine house itself with its associated boiler house and a small lean-to structure to the west. The other engine house on the site, Little Engine house to the north of the main engine house has been completely demolished, with no visible remains above ground. A proposed strip-and-map exercise in the area of the Little Engine house was intended to test the ground for any surviving fabric or foundation trenches;

however, the work proved to be outwith the scope of the present project and has been scheduled for a future phase of works.

Several mine shafts, now disused, are visible on the ground as depressions; some of them were still active in the late 19th century, others had already been out of used at that time and lay ruinous or covered since.

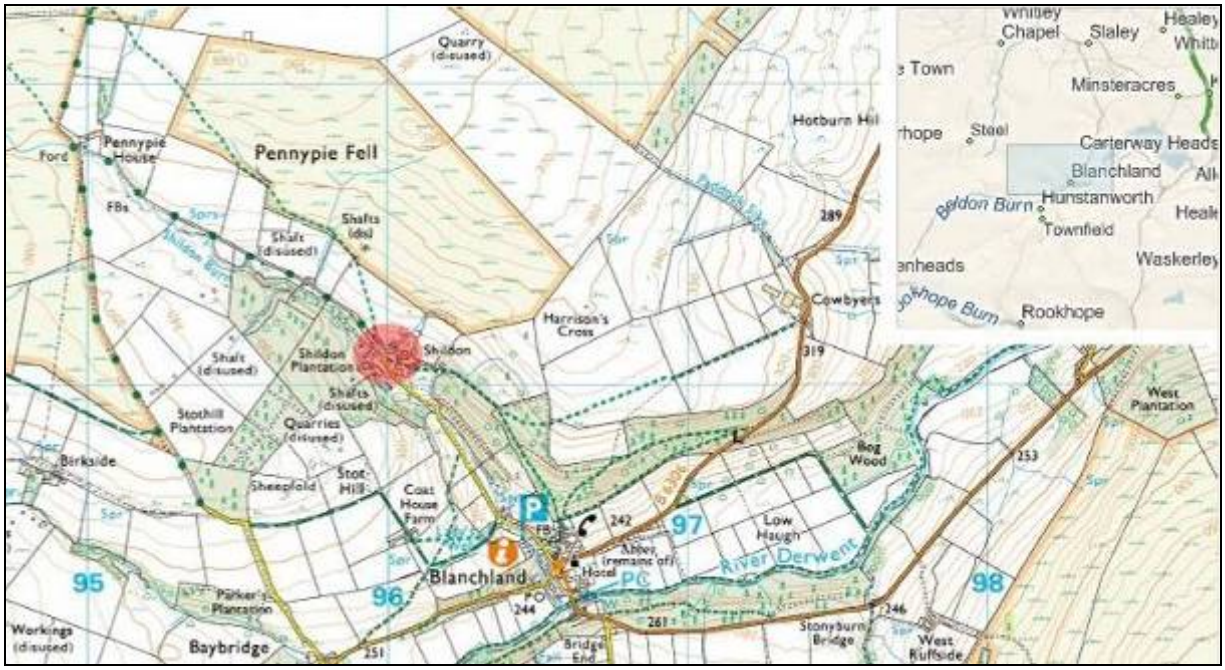



*Figure 1: Map of the area with the blue circle marking the approximate position of the site. Ordnance Survey @ Crown Copyright. All rights reserved. Reference Number 100006772*

## *iii. Methodology*

### *a. Survey of the engine house*

A rectified survey of the engine house and chimney had been undertaken by Colin Bryden in 2006; this resulted in a series of internal and external photographic elevations rectified and reproduced at a scale of 1:50 (*see figure 2* for example).

Rather than undertaking a standard hand-drawn measured survey, these photographic images served as an underlay for annotated survey drawings. Working from scaffolding on site archaeological detail was added onto the photographs with the intention to latterly digitise these elevations stone by stone in with the archaeological detail annotated onto the final drawing.

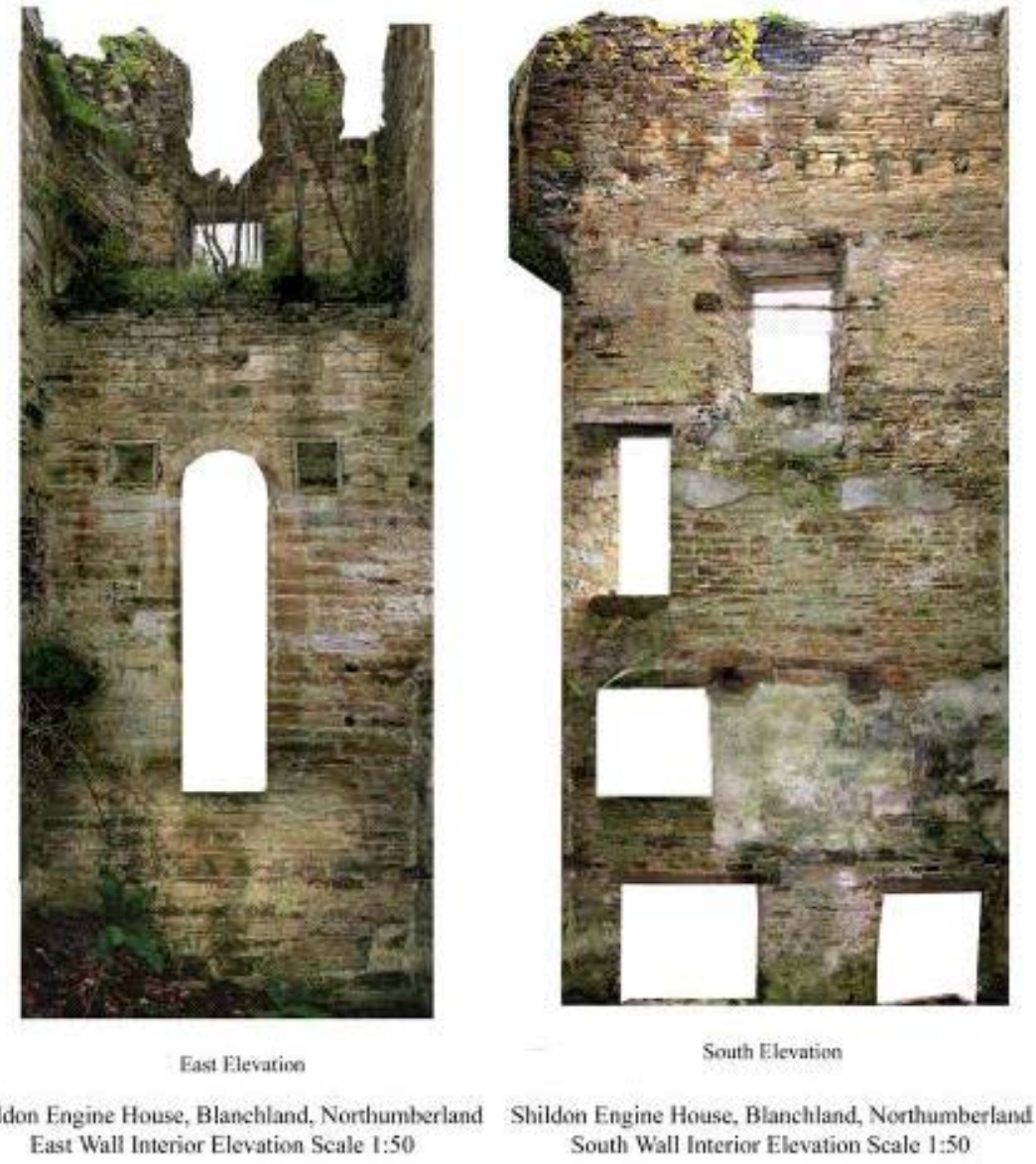



*Figure 2: Sample of interior rectified elevations*

However, the limitations of the photographic survey quickly became apparent containing distortions both in the outline and stonework detail on most of the elevations. This was most apparent on the upper parts of the elevations or in the areas of protruding masonry details i.e. at the window surrounds. Further distortion had appeared where individual photographs were merged together with stonework notably not matching across the joints. Existing vegetation and raking shadow had also obscured large areas in some of the elevation photographs.

The digitisation process in the office also showed that the elevations were not entirely consistent in their vertical heights, both within each elevation and when different elevations were compared. This made it difficult to relate floor levels as indicated by the joist holes surviving in the individual masonry walls of the building.

As far as possible the errors within the photographic record were corrected and a digital set of drawings was produced containing annotations regarding the visible archaeological detail. This forms the archival record of the site before consolidation.

A plan of the structural remains of the engine house was drawn on site on the 8th of March, 2010.

*b. Monitoring during works*

In order to allow for secure footings for the scaffolding some of the collapsed rubble around the structure of the engine house, especially within the footprint of the boilerhouse had to be removed. As part of this work the wall heads of the collapsed boiler house were also cleared of rubble and vegetation prior to consolidation (*see plate 1*). This clearance was monitored by a qualified archaeologist within a number of site visits between December 2009 and May 2010. The recording during this monitoring allowed reconstructing a phased plan of the structures following the partial clearance of the site.

The rubble infill within the structural remains was removed by the contractors and this material proved to be composed primarily of rubble collapse from the boiler house and engine house containing rubble stone and degraded lime mortar mixed with some soil. No dressed stones or other significant architectural material was recovered during the clearance, nor any other finds relating to the occupation or mechanical operation of the structure, that could contribute to its better understanding. Within the interior of the boiler house no floor surfaces were reached, however, a number of internal features were uncovered during the clearance including a blocked door (*see plate 2*) and a fireplace. These were previously obscured below rubble and vegetation. Evidence for phasing was also newly noted in the partially emptied boiler house structure. These phases are described in further detail below and as marked on the record drawings.

*Plate 1: Pre clearance of boiler house.*

Following the clearance the main structure, the engine house was scaffolded and any loose masonry was consolidated and repointed. The wall heads were the parts worst affected by collapse and decay; an infill panel of masonry on the east gable wall head was especially endangered of immediate collapse. Following the consolidation work, the wall heads were capped with clay and finally a layer of turf to protect and secure the exposed wall heads against further rainwater erosion of the lime mortar.

*Plate 2: Blocked door uncovered during clearance.*

In the 20th century a minor stream had been diverted from its historic course and now runs close to the engine house by its N side, along what appears to have been an historic path through the site. It follows the contours down to the main stream. The original course is readily apparent - a gully a little further N, this confirmed to be the case from 19th century plans of the settlement and mine workings. The minor stream was diverted where it runs below an access track – it now runs through a cast concrete pipe. The original channel may have been damaged by heavy vehicle activity above.

As part of this works it was proposed that the original minor stream course could be reinstated in order to divert flowing water away from the engine house, and to improve access generally. The culverted stream to the west of the site was re-culverted without any archaeological monitoring presence; however, on inspection of the backfilled trenches, nothing of archaeological significance or interest was noted (*plates 3 & 4*).

*Plate 3 and 4: View of stream entering culvert and general view of line of culvert.*

*c. Topographic survey*

No detailed recent plan exists of the Shildon site; indeed the most informative plan of the site is an estate plan that dates to the 19th century and forms part of the Lord Crewe archive. As part of the present archaeological works in relation to the site, a detailed plan of the site was prepared to contain two principal elements – a topographic survey, and a detailed mapping and archaeological recording of the buildings and ruined structures at the site. The combined mapping of ruined buildings and topography forms an essential basis for on-going planning related to the site, for developing access and drainage arrangements, etc, and for locating them (*see figures 3 & 10*).

The extent of the topographic survey (as discussed on site with Jon Charlton, 9 November 2009) took in the areas of the site that might be affected by proposed works, and extended between the stream bounding the W side of the site, and the existing public road to the E. It also included the area of the two shaft heads to the immediate S of the surviving engine house and to the SE of the engine house respectively and a band of terrain somewhat beyond. The survey area extended northwards to take in the former minor stream course and an area of historic enclosures immediately beyond.

The topographic survey was carried out over four days (11th, 12th, 16th & 19th March 2010). All observations were carried out using a Leica TC407R total station. Processing was undertaken, using Carlson Survey Software with drawings produced in ACAD compatible format. The contours at 20cm interval were produced using DGM3 digital terrain model software.

An approximate OS datum of 285m was assigned to survey station S1 at the side of the road. A local grid was used. The works were processed and completed by JW Wright BA, Finst.CES on 13 April 2010.

The detailed mapping and archaeological recording of the buildings and structures in the wider area was undertaken by Kenneth Macfadyen and Jenni Morrison, both of Addyman Archaeology, in a walkover survey conducted on the 18th of May 2010.

The topographic survey data was received in AutoCad format and was referenced to the British National Grid. The 19th century estate plan of Shildon was georeferenced to the topographic survey to allow for a historic interpretation of the survey features. This was performed in AutoCad and the program Surfer 9 was used to generate a 3D colour raster of the contour intervals. The features on the 19th century plan which were not identified in the survey were digitised and the walkover survey data undertaken by Addyman Archaeology was added.

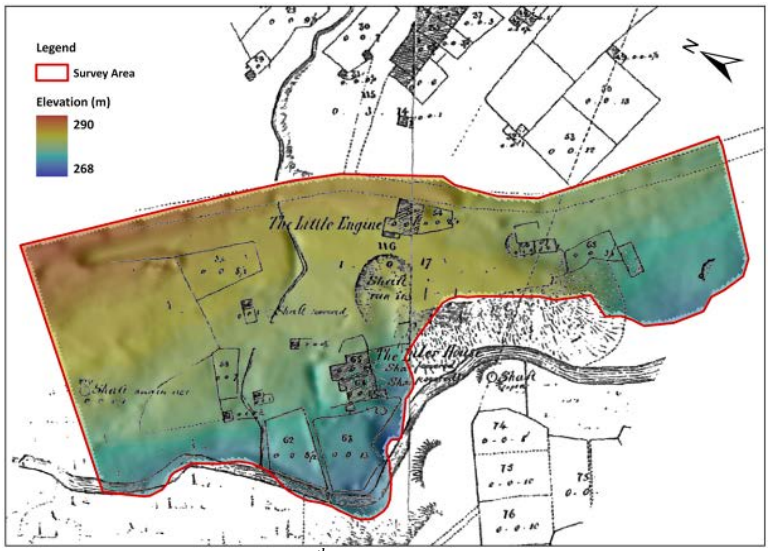



*Figure 3: Area of topographical survey with 19th century estate plan superimposed. For analytical plan see appended set of record drawings (figure 10).*

## *2. Historical lead mining at Shildon and Blanchland*

The North Pennines area is rich in deposits of lead ore, known as galena. In the area of Shildon, , mining may have begun in Roman times, but we have no clear evidence; records show mining was definitely taking place here in medieval times. The ore was also well known for its silver content, a valuable by-product in the production of lead, and several medieval kings retained the silver rights from these mines for coinage.

The mines were expanded and developed commercially from 1708, when the London Lead Co. leased the area from the land owners, the Lord Crewe Trustees. Demand for lead as a building material began to increase after the Civil War, with the increase in building at the end of the 17th century. The demand increased into the 18th and 19th centuries, particularly with the growth of towns and cities and the need for buildings.

By the 18th century, the extraction, preparation by washing and smelting of lead ore for sale had become highly developed. The introduction of water and steam-powered machinery further increased productivity.

The earliest method of mining lead with bell pits was used in the Blanchland area from ancient times until the 18th century. A shaft was dug, and then worked outwards into the veins of ore. These workings were small scale, as the shaft might have been only 10 metres deep, and the workings became unsafe beyond a few metres out from the shaft. There were also no systems for ventilation or water removal. Each pit would be quickly exhausted, requiring another shaft and pit further along the vein. This method of extraction was very labour intensive, and was only able to exploit veins close to the surface.

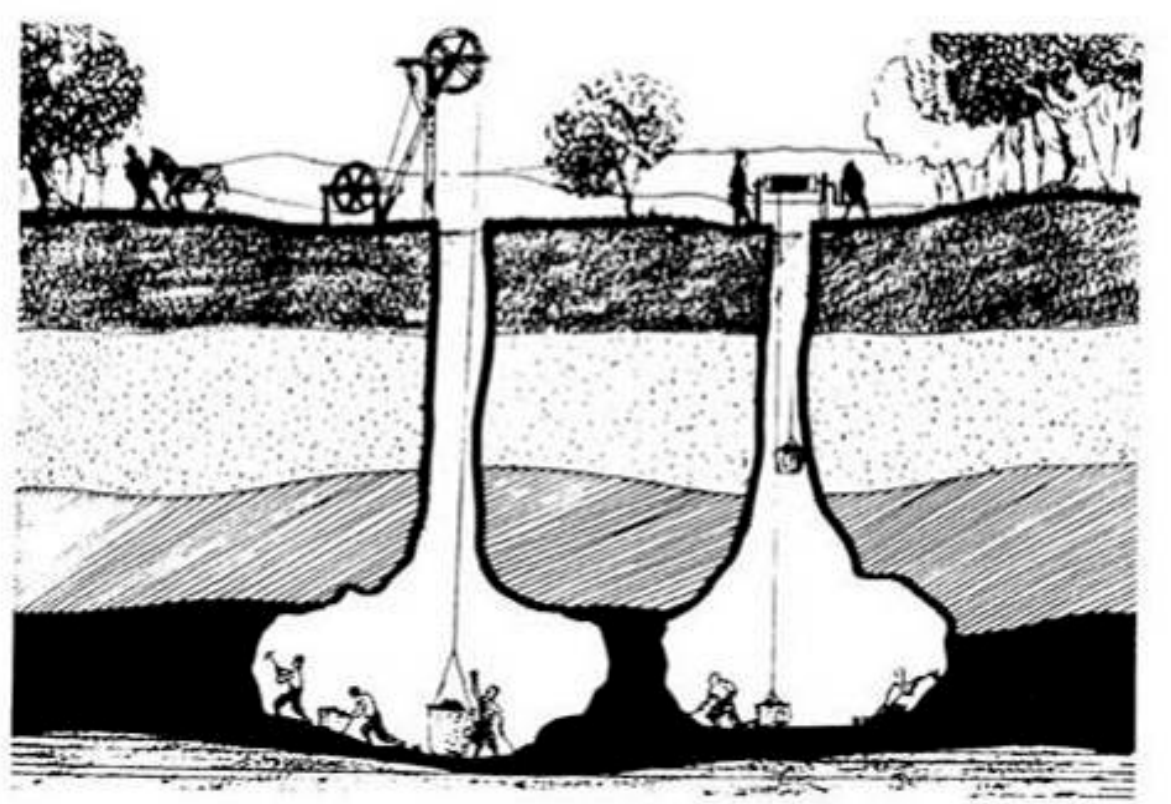


*Figure 4: Bell pit mining section.*

An opencast extraction technique called hushing was used where the landform permitted; there are a few examples of this in the Blanchland locality. Water was collected in reservoirs on the top of the

moor, and suddenly and repeatedly released down cut channels or along valley sides, washing away topsoil to uncover veins of ore. This method however, only revealed veins close to the surface, and as it destroyed the landscape of the hush, it was seldom used in the Shildon workings.

The sinking of deeper shafts than those of bell pits only developed when larger companies began exploiting the ore in an organised way, with investment made in the workings from the outset. Tunnels cut off these shafts and made safe with timber and masonry support, and drained where possible by levels cut in from hill and valley sides lower down. These levels also provided access. By the late 18th century, improved productivity was generating more income for the Lord Crewe Trustees who owned the Blanchland mines and enabled them to comprehensively rebuild much of Blanchland village, and establish a school.

The introduction of steam powered pumps from the early 18th century by Thomas Newcomen enabled the sinking of deeper shafts and rectified problems with drainage. The market was dominated from the mid 1770s by the business partnership of Matthew Boulton and James Watt, who produced increasingly efficient engines, following Watt's 1769 patent of the steam condenser. This dramatically reduced coal consumption by up to 75% compared to the earlier Newcomen engines. Combined with highly developed sales and marketing arguments, emerging in the period in many newly organised and industrialised businesses, Boulton & Watt engines were widely purchased by mining companies.

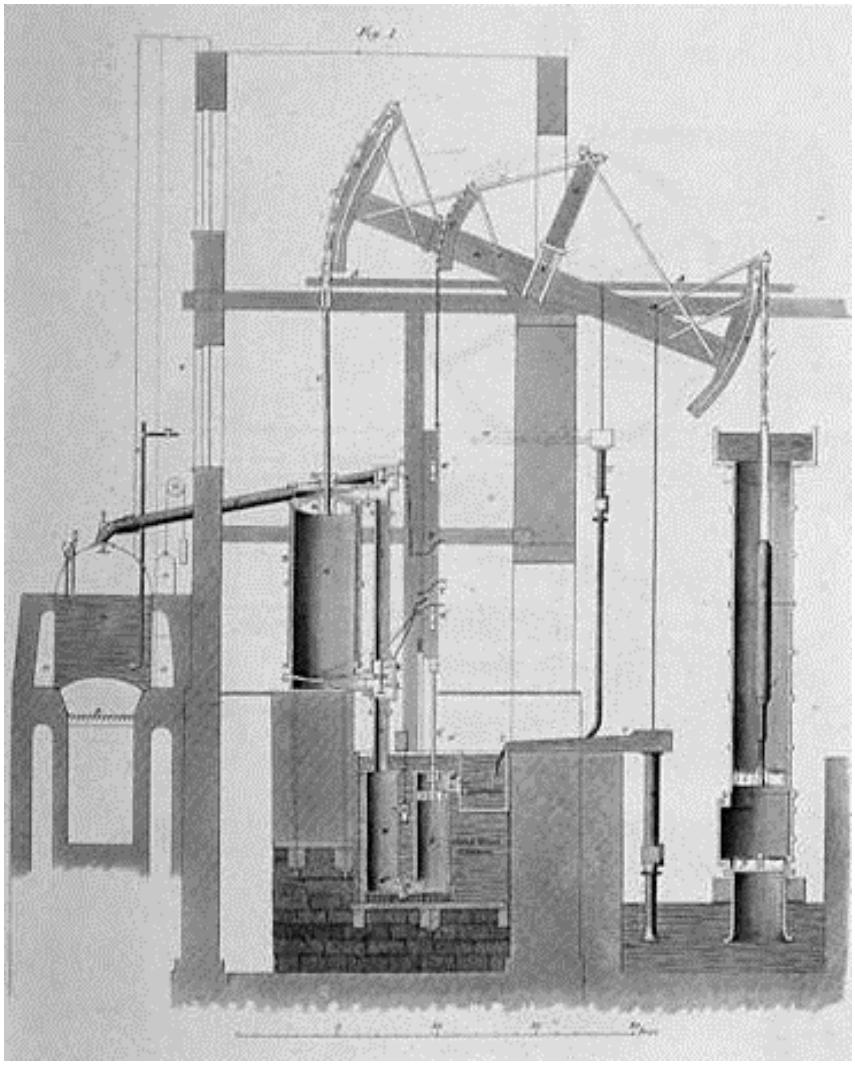


*Figure 5. Boulton & Watt single-acting pumping engine, 1788 (Science Museum)*

*Steam, generated by the boiler on the left, is supplied to the vertical cylinder, pulling the piston, and the left hand end of the beam down. This draws up the right hand end of the beam and the pump connector rod, which pulls water up the pump cylinder, deep in the mine shaft. The condenser is in the centre, below the cylinder.*

In 1806, Easterby Hall & Co. took over the Lord Crewe Trustees lease at Blanchland, and installed several coal-fired steam engines supplied by Boulton & Watt to solve the drainage problem and provide power for machinery used in the preparation of ore for smelting. The engines in the Shildon engine houses were probably single-acting condensing engines, and were transported to Shildon by sea, canals, and finally a team of horses.

In 1808, the original engine in the Shildon engine house was replaced with a more powerful Boulton & Watt model.

However, the continual expenditure of supplying coal to a relatively remote area, before the advent of the railways, compared to the income from the mines, was very high. The lease was taken in 1810 by the Derwent Mining Co. who realised that steam power was economically unsustainable, and they phased out the steam engines replacing them with water power. Though this required an initial investment, the associated running costs were virtually zero. They began the construction of a network of dams, sluices, races and water-wheels which grew to dominate the moorland landscape to the south of Shildon and Blanchland by the mid 19th century.

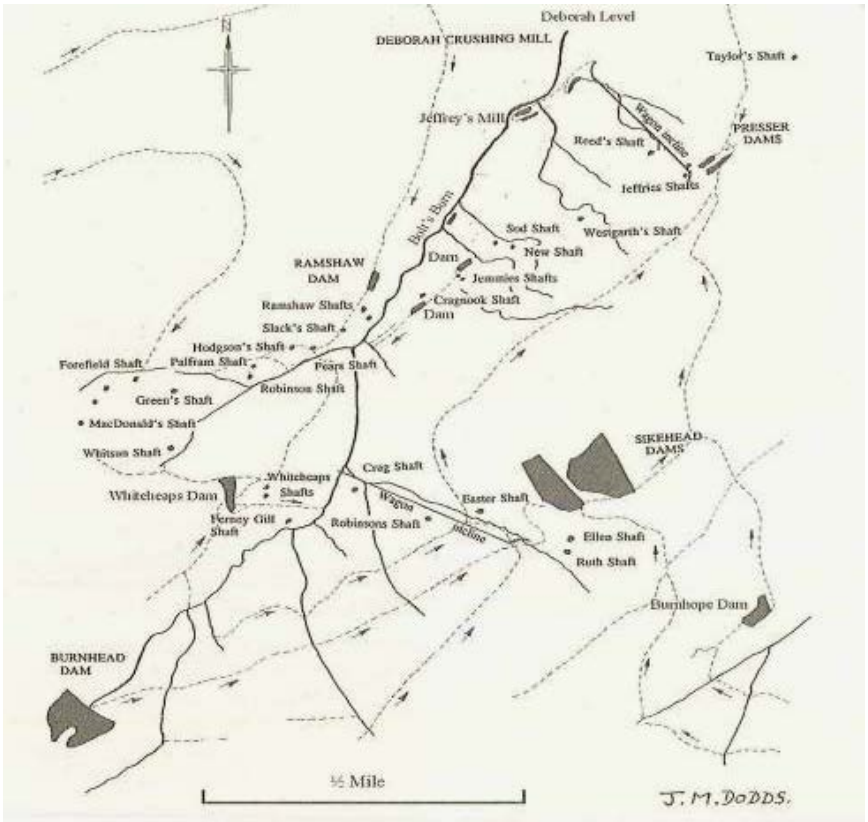



*Figure 6: Diagram of the waterworks of the Derwent Mining Co. in the mid 19th century. Blanchland lies 1km aprox. to the north of this diagram (after J. M. Dodds)*

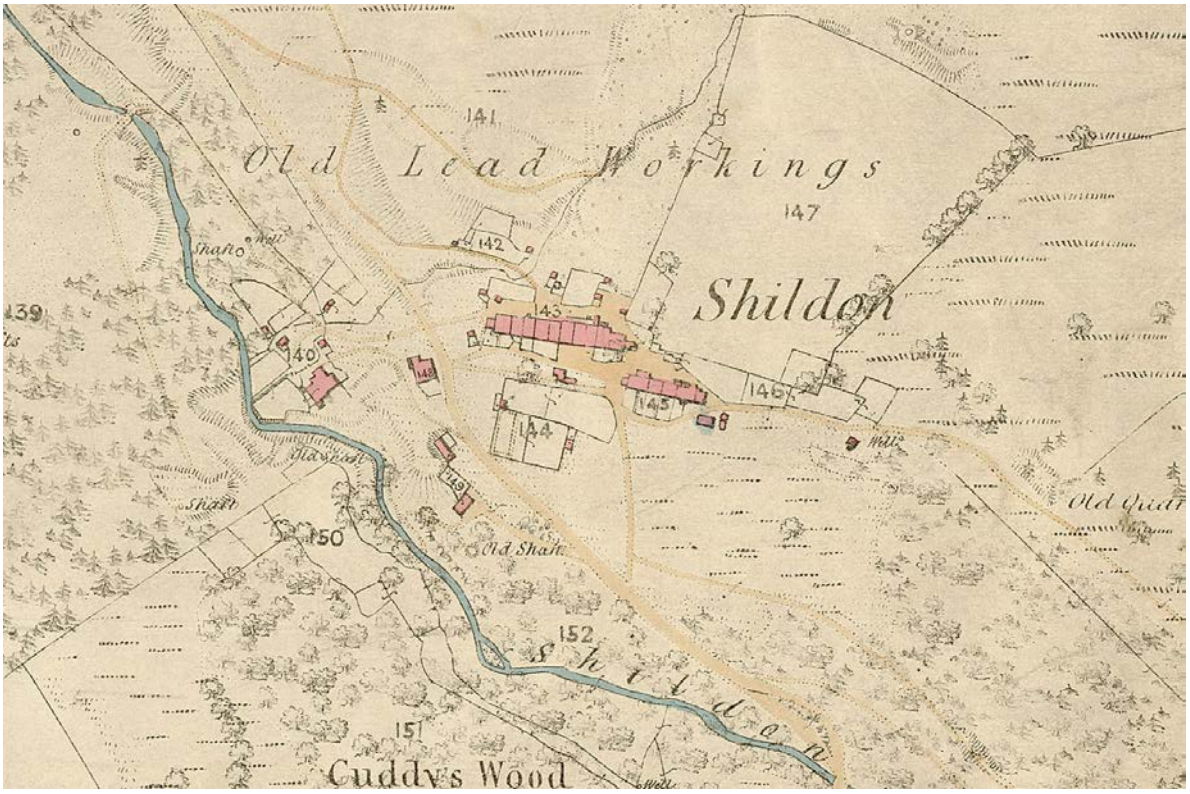



*Figure 7: First Edition Ordnance Survey, surveyed 1861 (County Series: Durham)*

Due to this investment, the mines were made very productive and profitable by the mid 19th century, peaking in the 1860s. There was a population spike, with experienced miners, especially from Cornwall, moving to Shildon and Blanchland. With the increase in the number of miners, there was an associated increase in tradesmen and suppliers. The 1861 Census records the population spike with Shildon swelled to 158, and Blanchland to 265. It was in this period that the disused engine house was converted into flats and grandly named "Shildon Castle". However, this success was short-lived as competition from lead mines in mainland Europe put British mining under increasing pressure to be more competitive. Fewer people were employed and the population of Shildon dropped by three quarters between 1861 and 1881 to around 40 inhabitants. The Derwent Mining Co. finally went into liquidation in 1883.

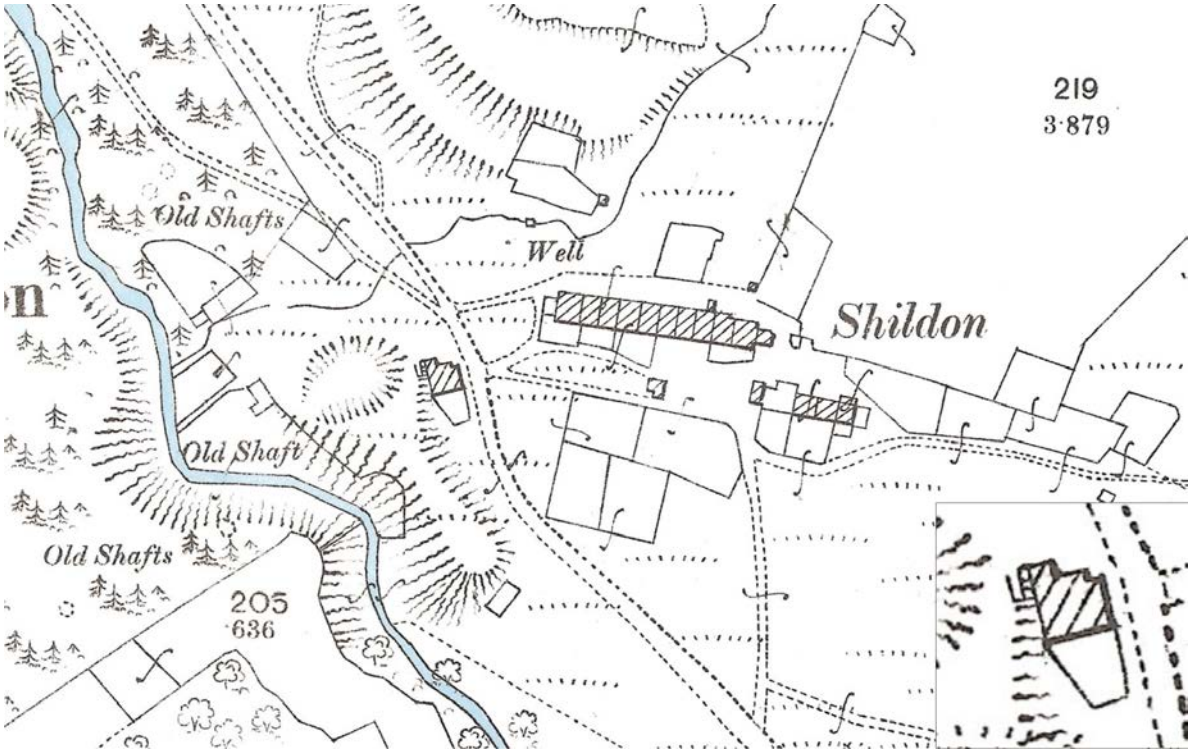



*Figure 8; First Revision Ordnance Survey, surveyed 1898 (County Series: Durham)*
*This edition records a landscape heavily populated with abandoned mine workings, shafts, rail, and waterways.*

## *3. Archaeological recording*

### *i. The engine house*

#### *a. General description (figure 9)*

The engine house at Shildon sits within a cluster of associated buildings some upstanding, others completely lost (*figure 3*). Immediately to the east sits the mine shaft that the engine house served (*see figure10*). To the north of this is a boiler house (also referred to as the 'link building') with its chimney that abuts the structure. A smaller extension structure of apparently later date sits against the west elevation of the engine house, at its junction with the boiler house.

The engine house itself is generally in good condition and stands to full wall head height for most of its structure. The boiler house is far more ruinous and is largely collapsed to ground level with the main exception of the chimney and parts of the west gable wall.

Some further remains of a collapsed structure can just be made out at the south west corner of the structure.

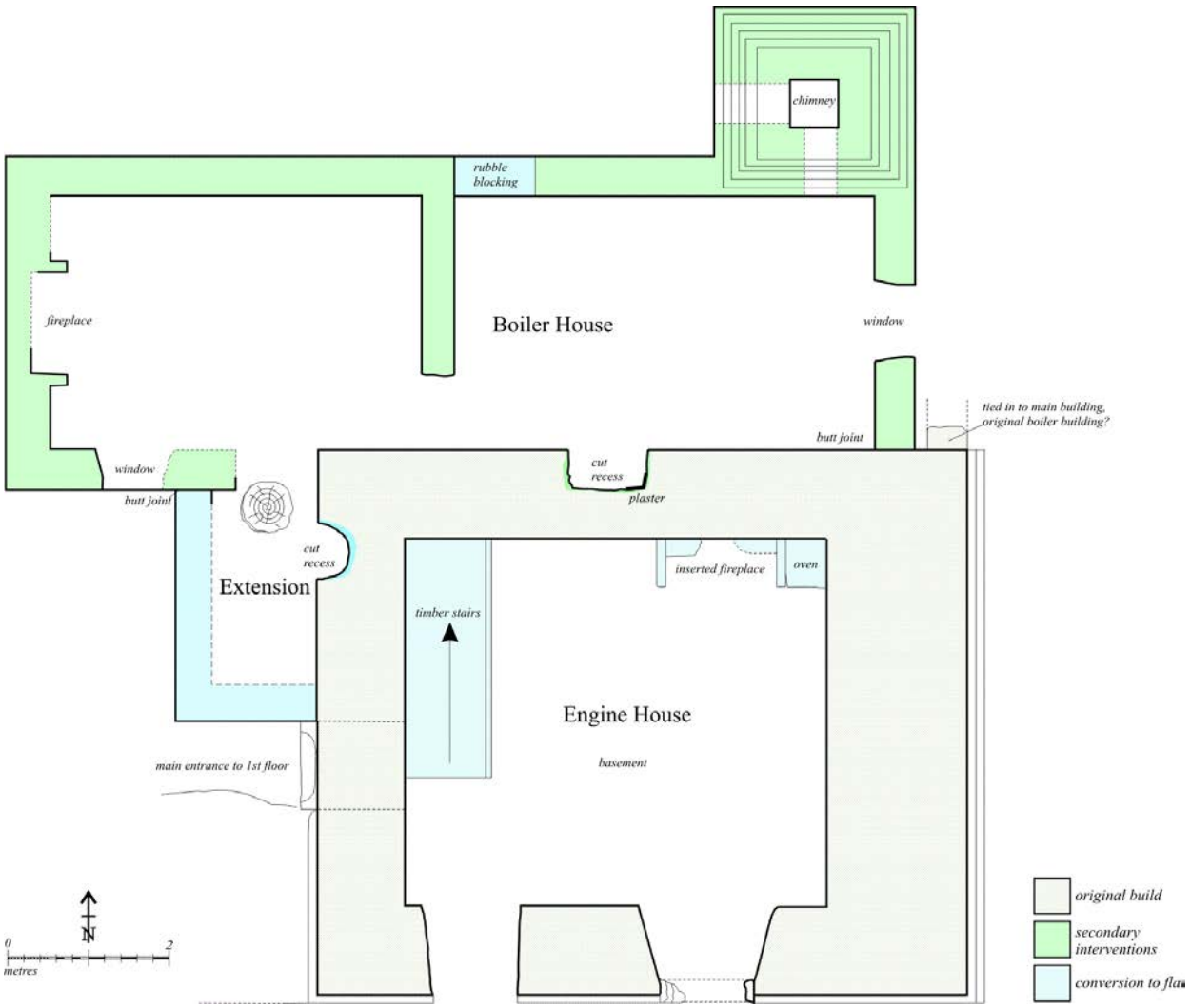



*Figure 9: Phased plan of the engine house complex.*

*b. Engine house (figure 9 )*

The main engine tower formed a rectangle in plan, 8.25m long by 6.85m wide, aligned east-west. The north, west and south walls were 1.10 m wide; the east wall, the so-called "Bob wall" was 1.95m wide at the base, then stepping backwards in two chamfered stages to 1.75m in its upper parts thus forming two recesses. It is referred to as "Bob wall" because it supported the main beam (bob) at its central point.

The masonry of the north, west and south elevations was generally well constructed, consisting of small squared rubble stone with larger sandstone quoining. The east elevation as well as being more massively constructed was also much better built with large, sometimes very large squared sandstone blocks forming a good coursed ashlar face to the exterior and a good face on the interior. This elevation was apparently constructed to these massive dimensions as it had to support the weight of the beam of the engine.

The structure has seen two main periods of uses. The first, was as its primary use as an engine house to pump water out from the mine in the early 19th century. It was constructed in 1806. The second phase of use saw the conversion of the building into accommodation for lead workers in the later 19th century. When the mine works closed, by the turn of the 20th century, the building lay derelict.
Both of these phases of use may represent a number of sub-phases with the engine being upgraded and replaced at a number of occasions, as described above.

The original masonry of the primary phase of the structure, its use as the engine house proper, is largely intact. The good condition of the building is most likely due to the massive and solid construction needed to support the beam, "Bob" and associated fittings. Evidence for such mechanical fittings or other machinery can be seen within the make-up of the exterior masonry, recognisable largely as sockets for timbers either built into the masonry or cut in.

*Evidence for the primary phase: exterior*

*South elevation (figure 12)*

The south elevation rises in three stages stepping in at each, similar to the east elevation. These stages contain a number of openings.

Five evenly spaced horizontal lines of sockets within the wall face might relate to structures constructed against the building or perhaps scaffolding during the original construction.

In the lower part of the wall at ground level, there is a door to the west and a former splayed window to the east.

Within the masonry in the second stage a large opening with square ingos 1.15 m wide by 2m high might relate to a door to an exterior structure or perhaps gave access to some external machinery or fitting alternatively it could just be a window opening.

In the centre of this elevation, below the uppermost step in, is an apparent opening, 0,4m high and 0.8m wide, now blocked. It sits beneath a larger window opening (1.14 m wide by 1.70m high) in the recess above and though the lower opening was latterly blocked, it might have originally formed part of this opening arrangement together with the larger opening above. This arrangement is likely to pair up with a similar opening arrangement on the north elevation, presumably to carry a large beam or spring girder through the building.

*West elevation (figure 13)*

On the west elevation a large round-headed opening partly survived, possibly representing the "Cylinder Opening". This opening was 2.10 m wide and seems to have originally been arched over, presumably with ashlar voussoirs to match those elsewhere in the build. These voussoirs have latterly been robbed. A further square window opening existed within the west elevation at the top of the wall corresponding with the height to the beam. This may represent the "Bob loft" window.

*East elevation (figure 14)*

On the east elevation, within which the beam would have sat within the upper opening, five even rows of four small square sockets were identified These could represent the sockets for some form of timber framework relating to the beam construction or perhaps even to scaffolding during the construction of the massive east gable wall and the installation of the beam itself. A further two pairs of sockets almost certainly relate to structures supporting the beam machinery, the upper two sitting between the beam opening and the arch-headed plug door opening , with the lower two larger sockets flanking the plug door opening (narrow door beneath the beam) at the first step in. A large socket at the lower end of the north wall may also be related to this framework.

*North elevation (figure 15)*

The main feature of the north elevation was a small square opening, 0.70m high and 0.90m wide, crossing the line of the upper step back, and placed slightly offset to the east. It likely matched the opening on the south elevation, placed in a similar position A couple of projecting quoins at the northeast corner might indicate an intention to have continued a structure to the north. However, as the surrounding quoining of this corner including the chamfered step backs are well formed across the projected line of this extension, it is not clear whether this extension was ever built. Evidence on the ground was not conclusive regarding the existence (or absence) of wall footings or robber trenches for such a structure now lost.

### *Evidence for the primary phase: interior*

The interior was likely to have been largely taken up with the machinery of the engine, with an apparent five galleries or floors contained within to allow access to the various parts of the machinery.

*South elevation (figure 16)*

At ground floor exists a door to the west and a window to the east as can be seen on the exterior. Above these openings to the east sits a square-sided opening, again as seen on the exterior. From the inside this appears to have been a window with a splay continuing below the sill height. Its timber lintel is possibly a reused piece, evident by some jointing visible on the exposed west end.

A central splayed window sits above this opening just described, the lower part of which is likely to be a later alteration of a major socket "*B*" that can be seen on the exterior and matches the position of another socket on the north elevation. Above this window exists a row of blocked joist sockets; these are likely to represent a floor or gallery around the machinery of the beam providing access for control, maintenance and repair to the engine.

A further floor or gallery is likely to have sat above the central window. This floor would have been supported at the level of the two major east/west beams and it seems likely that the large square sockets that pass through the north and south walls at his level are for a large girder, "the main girder" or another major structural element which would have intersected with the east/west beams.

Below the central window a further floor structure may have existed sitting upon two joists running north/south and contained within matching sockets within the north elevation

*East elevation (figure 17)*

The east elevation is dominated by the arch-headed plug door opening 1.05m wide by 4.15m high. Flanking the top of the opening are two large major beam sockets these sockets are framed internally with timber, approximately 0.50m square on the internal face. These sit 1.75m apart, and are paired with 2 sockets in the opposite west elevation. These timbers relate to the substantial machinery that formerly existed within the engine house. At the wall head the wide opening for the beam survives. The elevation must have originally had a pitched gable to match the west gable but no evidence of the original survives.

*West elevation (figure 18)*

The main early feature on this elevation was the remains of the wide arch-headed "cylinder opening" as seen on the exterior, largely latterly robbed and rebuilt. The full extent of its lower part is hidden behind later plaster, but it appears to continue below the current visible height of about 3m. Above this are two large major beam sockets these sockets are framed internally with timber, approximately 0.50m square on the internal face. These sockets match those on the east elevation. Above these sockets, as seen on the exterior, sat an upper "Bob loft" floor window, to light the beam machinery

A number of joist sockets are cut into this wall face, a row of which high up the wall were cut into the masonry and have been latterly blocked. These sit in-between the level of the upper two floors as described for the south elevation.

*North elevation (figure 19)*

Within the north elevation numerous later features can be seen in the masonry though it is probable that most are part of the secondary phase described below. A row of blocked joist sockets at a high level might relate to the top floor level as it matches the level of a floor on the south elevation. A further three sockets at mid level to the west are also blocked and thus possibly early, part of phase 1. These three sockets and the ones on the west elevation, however, sit at different levels than the probable floor levels as seen on the north and south elevations. It is thus possible that these represent a stairwell running up against the west elevation. Traces of stair treads can in fact be seen within the wall plaster adhering to the lower part of the west elevation in this area. While the plaster itself is likely to relate to the later domestic occupation of phase two, the position of a stair access to the upper levels could be original and was later reused to access the upper floors of the miner's accommodation.

Close to the centre of the wall sits another large socket, only the west jamb of which and the lintel socket (B1) survives internally latterly infilled. This can be seen clearly on the exterior and matches the position of a similarly large socket as seen on the south elevation.

Two further large sockets are likely to relate to main joists for a lower floor level.

### *Evidence for the secondary accommodation phase: exterior*

The exterior showed little visible evidence for the conversion of the building into miners' accommodation.

*East elevation*

The main visible impact due to the conversion into accommodation was the infill of the opening for the beam with poor quality rubble work to form a window (or two windows?) within the pitched gable. This infill rubble work was collapsing because of its poor construction.

*South elevation*

The exterior remained largely unchanged with the exception of an inserted window at the upper first recess and some masonry infill of a large beam socket.

*West elevation*

The main change within this elevation comprised of the robbing out of the voussoirs of the cylinder opening, and subsequent blocking up of this opening to form a smaller door within. This blocking also seems integral or tied to the small extension, which sat to the north of the door and ran up to the boiler house. A cut recess in the wall face is also likely to be part of this phase. A horizontal alignment of 3 cut sockets in the wall face above the door may relate to a roof or floor structure, relating to this extension.

*North elevation*

On the north elevation the large square socket was infilled and a new chimney stack was constructed, this was to service the series of inserted fireplace on the interior, for the heating of the miners' accommodation.

*Evidence for the secondary accommodation phase: interior*

The interior contain much more evidence for the fitting out of the building for the use as accommodation including the insertion of fireplaces, stairwells and flooring. The interior space appears to have been split into five floors levels of approximately similar heights, corresponding with the early floor structures as part of the engine house use.

*East elevation*

On the east elevation the most visible intervention was the infill of the beam opening and the construction of a window within the infill. A fireplace was constructed in the northeast corner upon the deep recess in which the beam used to rest. An associated floor level must have existed at the base of the fireplace, with the joists running east/west, supported by the masonry ledge to the east and socketed into the west wall. This floor sat 1.50m lower than the earlier upper floor level.

A further three floors were noted below this floor, the upper one of which was 0.70m lower than an early floor. As above the joists were aligned east/west. The next floor down was simply an apparent reuse of the early flooring but was probably now extended across the plug door opening assuming the original did not already cross this opening . The lowest timber floor level seems likely to be another reused floor from the early phase corresponding with an existing stairwell to the west as discussed above. The eastern half of the original floor has possibly been removed in order to create room for the insertion of a kitchen range in the northeast corner. Otherwise, the ceiling would have possibly been far too low, that is unless the actual ground surface at the ground floor level would have been considerably lower than it is currently, which is possible considering the rubble infill of the building and that the actual floor level has not been exposed yet . The kitchen range was inserted against the north and east elevations with a double flue for the cooking range (*plate 5*) built against the masonry of the north elevation.

*Plate 5: Inserted kitchen range in NE corner*

*South elevation*

The general floor level mirrored the new arrangements on the east elevation. The lowering of the upper floor caused it to cross the upper window so that a new lower timber lintel had to be inserted corresponding with the new floor height. The upper part of this opening was presumably infilled with rubble at this time, but has now collapsed due the decay of the wooden lintels.

Some *in situ* wall plaster survives on the upper part of the second floor level as well as across most of the first floor level. Imprints of a vertical timber of what appears to have been shelving, possibly within a cupboard, can still be seen within the make-up of this plaster.

*West elevation*

The main change as on the exterior of this elevation was the robbing out of the voussoirs of the cylinder opening, blocking up this opening to form a door within at the second floor level. A series of joist sockets within this elevation might relate to a stairwell above this door. Below the door at ground and first floor level the wall plaster survives *in situ* preserving the outline of a timber stair against the elevation, probably reused from the earlier phase, and a cupboard at first floor level.

*North elevation*

The insertion of a number of fireplaces and associated flues built into the masonry represent the most notable changes within this internal elevation. At ground level the kitchen range was built into and against the northeast corner; above this was a now collapsed projecting flue stack, stone-built, and containing at least two flues. These were carried into the main masonry at the junction between the first and second floor level in order to be carried up towards the wall head. At second, third and fourth floor levels, further fireplaces were inserted and connected with these flues; some feather stones can be made out on the wall face separating some of these flues. The flooring levels to the west of the wall as shown by the joist sockets seem at different heights to elsewhere. Some of these rows of five sockets might represent half-landings within a stairwell.

*c. Chimney and link building (figure 9)*

*General*

The boiler house, also known as the link building, is heavily degraded with the large bulk of the structure collapsed down to the current ground level. The exception is the largely intact chimney, some masonry walls abutting the chimney and the southwest gable corner which still stands one story high, though partially ruinous. The works for this part of the complex involved clearing collapsed rubble in order to expose the wall heads of the complete building for subsequent consolidation and to enable it to be laid out for interpretation.

The boiler house as surviving is clearly a secondary construction to the masonry of the engine house. Whether this represents an original boiler house constructed as part of the original construction phase, but secondary to the engine house or whether it represents a complete rebuilding for a later boiler as part of an upgrading phase remained unclear form the field record.

The masonry of the boiler house abuts the engine house at the southeast side. The line of its east gable masonry is set back from the wall line of the engine house. It is also set back to the west of some original projecting tusking on the corner of the engine house; perhaps the line of the original engine house had been constructed too close to the mineshaft, and the layout of the boiler house had to be adjusted accordingly.

The structure was split into two chambers with a chimney attached to the northeast corner. The exterior walls were of lime-bonded, coursed squared rubblework 0.50 m wide with the western gable maybe slightly wider at 0.55m; the interior partition wall separating the chambers was 0.40 m wide.

*The eastern chamber (plates 6,7 & 8)*

The eastern chamber was 5.20m x 3.15m, aligned east / west. Surviving on the east elevation were the remains of a 0.90m wide window with a splayed ingo which overlooked the mine shaft (*plates* 6 and 7). Its lintel has failed, causing the rubble wall above to collapse with it. The masonry of this elevation continues a full story below the infilled interior on the exterior. Where exposed, some interior plaster was noted *in situ* to the north.

The southern wall of the boiler house was in fact the masonry of the engine house, roughly cut into which was a deep recess. Again, some plaster survived on the interior of this showing it to be a plastered recess, presumably a cupboard. This could relate to the later fitting out as accommodation, but could equally relate to the use as a boiler house. Two rows of joist sockets in the southern wall may indicate two timber floors above the current level or perhaps one floor and sockets for tie beams as part of a roof structure.

The west wall was uncovered for depth of 0.50-0.60m during the works; this was tied into the exterior masonry and of the same stonework. A door opening may have existed at the south end against the engine house leading into the western chamber of the boiler house.

The north wall had a doorway in its west end, latterly blocked up with rubble work. The chimney structure to the east was accessed via a narrow, arch-headed opening as seen in *plate* 8. Some plaster existed *in situ* above this opening.

*Plates 6, 7 and 8: Interior and exterior of east gable and access to chimney*

### *The western chamber*

Within the western chamber only the western gable was partly upstanding. This appeared to have a centrally-set fireplace in its gable wall. The only other features noted were a door to the east, leading into the eastern chamber, and a window in the south elevation with a door to the east, leading out to the south. A socket for the lintel over this door can be seen in the corner of the wall that is part of the engine house masonry. This door might have been a feature original to the engine house fabric and use, and was latterly enclosed by the later small building at the junction of the boiler house and the engine house; alternatively this could have been slapped through at this later stage to provide access to the extension.

### *Chimney*

The upstanding chimney is a square lime-bonded squared rubble stone structure (*plate* 1). The structure reduces from 2.50m x 2.40 m square at its base to 1.40m x 1.40m square at the top in 7 steps; the interior flue size was 0.60m square at the top (*plate* 11).

The chimney was in good condition apart from loose parts noted at the wall top.

The chimney had two access points at the base, both tall and narrow openings, leading into the centre. One opening leads in from within the boiler house and is arch-headed (*plates* 8 and 9), presumably to vent the boilers. The other opening from the west side leads in from the exterior into the boiler house (*plate* 10); this is lintelled over, perhaps a revision opening to allow cleaning of the flue.

A further blocked-up tall and narrow opening can be seen high up on the north elevation continuing across the 3rd and 4th steps, this of unknown purpose.

*Plate 9 and 10: Arched interior opening and lintelled exterior*

*Plate 11: Top of chimney from scaffolding*

### *ii. Structures recorded by topographic survey*

The following sites, structures and features were recorded by topographic survey on the 11th, 12th, 16th and 19th March 2010 by Jim Wright, assisted by Paul Frodsham, and an archaeological walkover survey on the 18th of May 2010 by Kenneth Macfadyen and Jenni Morrison of Addyman Archaeology.

| Site No. | Description | Comment or photograph |
|---|---|---|
| SEH-001 | Mine shaft in NW | *Marked as in use on 19th C estate plan* |
| SEH-002 | Linear feature / ?field boundary running WNW / ESE to S of SEH-001 | |
| SEH-003 | Field boundary in NE, running NNW / SSE, partially collapsed at S end, towards rectangular enclosure SEH-004 | *Survey location does not coincide with position marked on 19th C estate plan* |
| SEH-004 | Rectangular enclosure in NE, to S of boundary wall SEH-003 | *Survey location does not coincide with position marked on 19th C estate plan* |
| SEH-005 | Small building with square plan, rectangular enclosure to SW at same width of building | *No visible remains above ground* |
| SEH-006 | Mine shaft to S of SEH-005 | *Marked as covered on 19th C estate plan* |
| SEH-007 | 19th century line of culvert for minor stream to N of main engine house and directly S of mine shaft SEH-006 running approx. E / W down slope to meet the burn to W of site; compare SEH-013 | *Survey location does not fully coincide with position marked on 19th C estate plan* |
| SEH-008 | Wall running NE / SW forming N side of rectangular enclosure SEH-009 | *Alignment does not fully coincide with position marked on 19th C estate plan* |
| SEH-009 | Rectangular enclosure to NNW of main engine house, rubble wall | *Alignment does not fully coincide with position marked on 19th C estate plan* |
| SEH-010 | Small building with square plan, to SW of rectangular enclosure SEH-009 | *Only NE and SE walls survive* |
| SEH-011 | Rubble wall remains to SW of building SEH-010, continuing from SE corner of SEH-010 SE-wards to meet the culvert | |
| SEH-012 | Small rectangular building to NNW of main engine house, SE of SEH-010 with small rectangular enclosure wrapped around its SW elevation and S corner | *No visible remains above ground* |
| SEH-013 | S end of 19th century line of culvert for minor stream to N of main engine house where it meets the burn to W of site; compare SEH-006 | |
| SEH-014 | Wall to SSE of culvert SEH-013, following its course to the burn; wall forms NW side of large rectangular enclosure incorporating SEH-015 and SEH-016 | |
| SEH-015 | Remains of walling containing blocked openings, probably of disused building, later incorporated within large rectangular enclosure consisting of SEH-013 and SEH-016 |  |

| Site No. | Description | Comment or photograph |
|---|---|---|
| SEH-016 | Wall forming SE side of rectangular enclosure consisting of SEH-013 and SEH-015 (W side of enclosure is built directly against E scarp of burn | |
| SEH-017 | Wall to SE of SEH-016 on similar alignment; together they appear to form a small road or track leading from the engine house down to the burn; NW side of large angular enclosure SEH-018, SEH-019, SEH-022, SEH-025 | |
| SEH-018 | Wall line continuing from wall SEH-017 forming NW corner at burn; dilapidated | *No visible remains above ground* |
| SEH-019 | Wall at S corner of angular enclosure SEH-017, SEH-018, SEH-022, SEH-025; tumble | |
| SEH-020 | Vertical upright slabs, aligned NW / SE, set in the centre of the large angular enclosure SEH-017, SEH-018, SEH-019, SEH-022, SEH-025 | *Not marked on 19th C estate plan* |
| SEH-021 | Pair of two wall stubs revetted into the slope, aligned N / S, on the N scrap of the burn, immediately W of the subcircular feature (as part of SEH-025) |  |
| SEH-022 | Wall at N corner of angular enclosure SEH-017, SEH-018, SEH-019, SEH-025; dilapidating to NE | |
| SEH-023 | Masonry stump protruding from built-up ground to W of engine house; possibly related to SEH-024 | |
| SEH-024 | L-shaped remains of walling to NW of engine house consisting of a relatively thin stretch running E / W, against a thicker wall running roughly N / S and possibly continuing N of the re-entrant angle of the E / W cross wall | |
| SEH-025 | Complex of thin wall footings, aligned NW / SE and connected to a square building in its N part and subcircular structure to S (photograph; compare SEH-021); NE part of complex forms NE wall of large angular enclosure SEH-017, SEH-018, SEH-019, SEH-022 | *No visible remains above ground* |

| Site No. | Description | Comment or photograph |
|---|---|---|
| SEH-026 | Mine shaft to SSE of engine house |  |
| SEH-027 | Main engine house building also comprising boiler house, chimney and small lean-to structure | |
| SEH-028 | Small rectangular building against S corner of main engine house | |
| SEH-029 | Small rectangular building, perpendicular to a relatively steep part of the sloping ground, to N of engine house; a small stretch of wall continues S-wards from the building's E wall | *No visible remains above ground* |
| SEH-030 | Mine shaft to E of engine house | *Marked as ruinous on 19th C estate plan* |
| SEH-031 | "Little Engine" house to E of main engine house, small complex of structures with a main rectangular block and extensions to N and E; small long rectangular building against W wall; angular enclosure against S wall | *No visible remains above ground* |
| SEH-032 | Large complex of buildings and enclosure walls to SE of main engine house | *No visible remains above ground* |
| SEH-033 | Small stretch of walling forming N-most line of enclosure walls of field system to S of main engine house | |
| SEH-034 | Mine shaft at S edge of site | |
| SEH-035 | Semi-oval enclosure wall against NE side of boiler house, part of main engine house complex | *No visible remains above ground* |

key

*buildings and features from 19th map*

SEH-007 *structures recorded by topographic survey*

SHILDON

Engine House

shaft

wall

fence

post and wire fence

gate

cul

tumble

approx position of stream

Shildon Burn

*approximate location of wall stubs*

to Blanchland

OS GRID NORTH

0 5 10 15 20 25

Figure 10 : Structures recorded by topographic survey

## *Appendix A : Phased elevations*

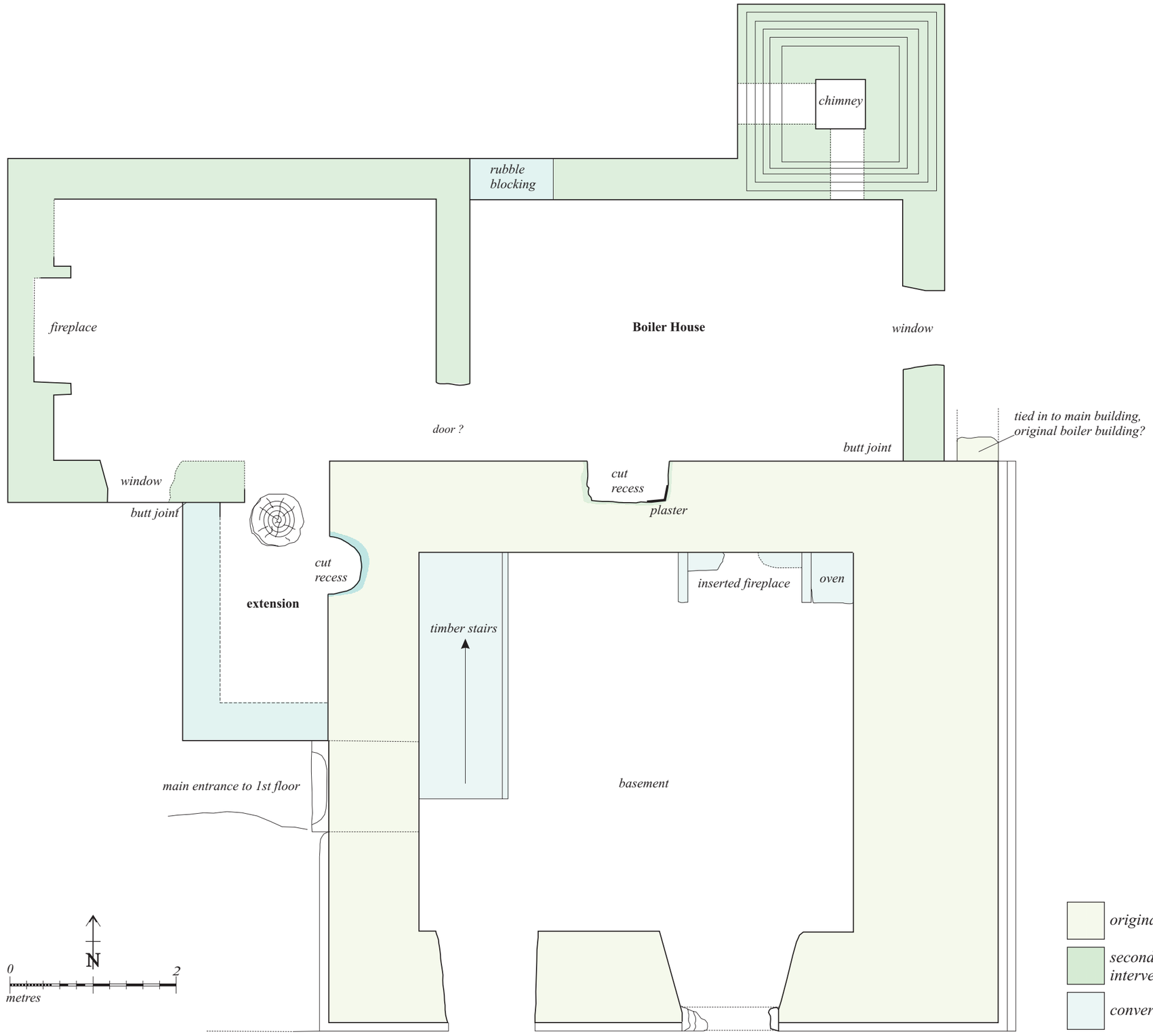
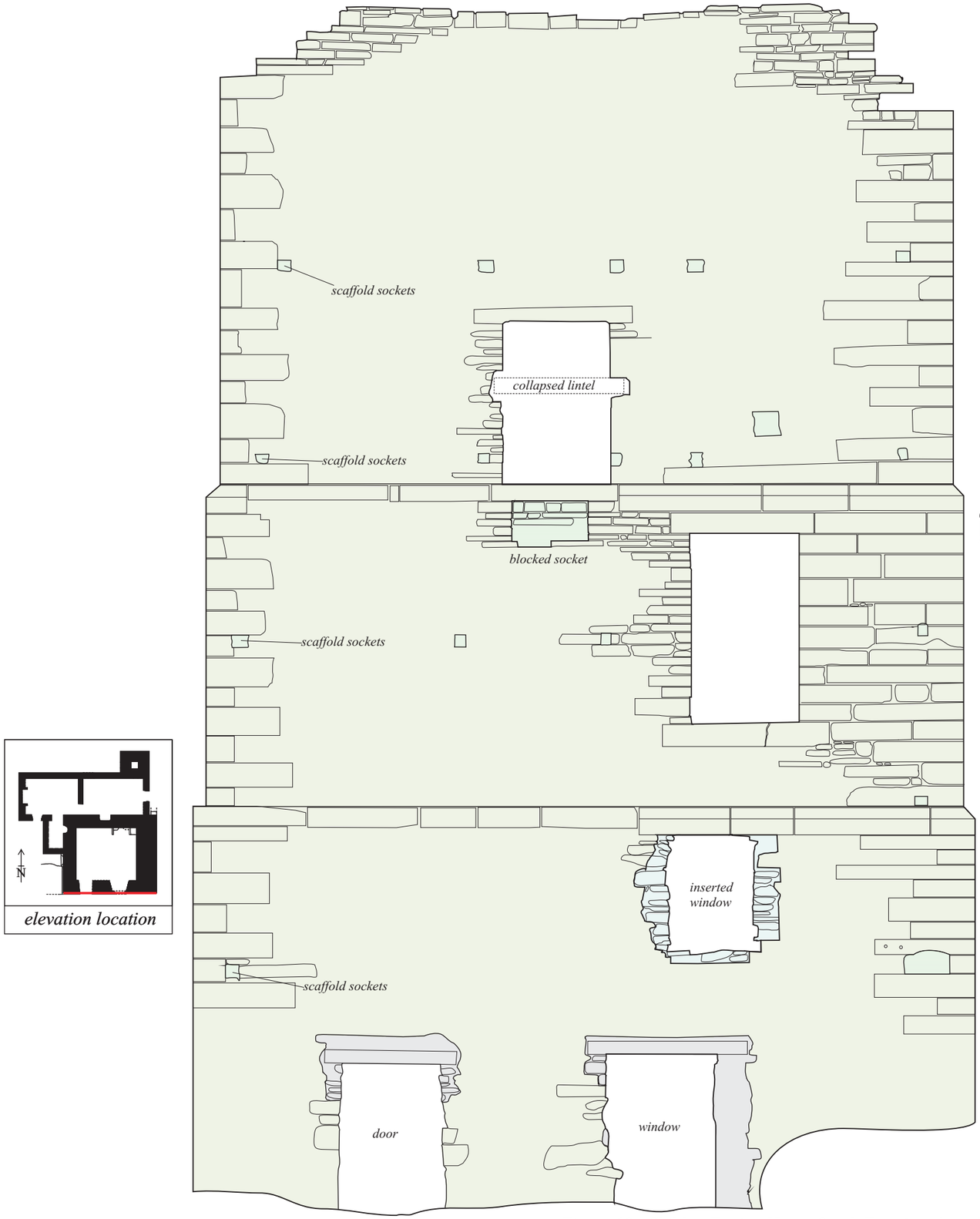



*Figure 11 : Shildon Engine House phased plan*



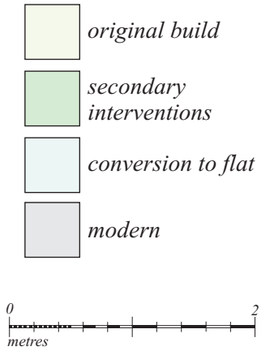




*Figure 12 : Shildon Engine House South Exterior phased*

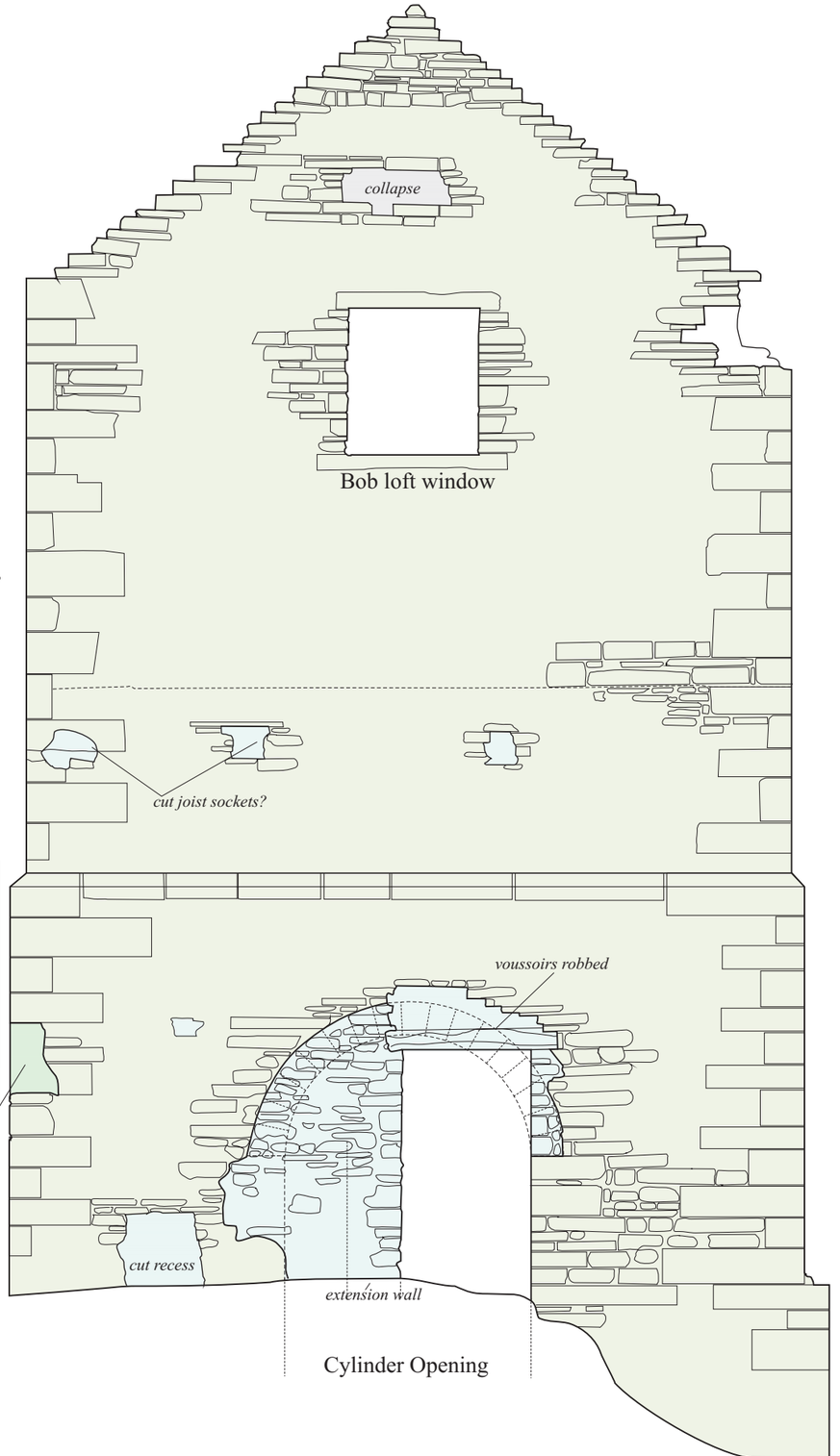
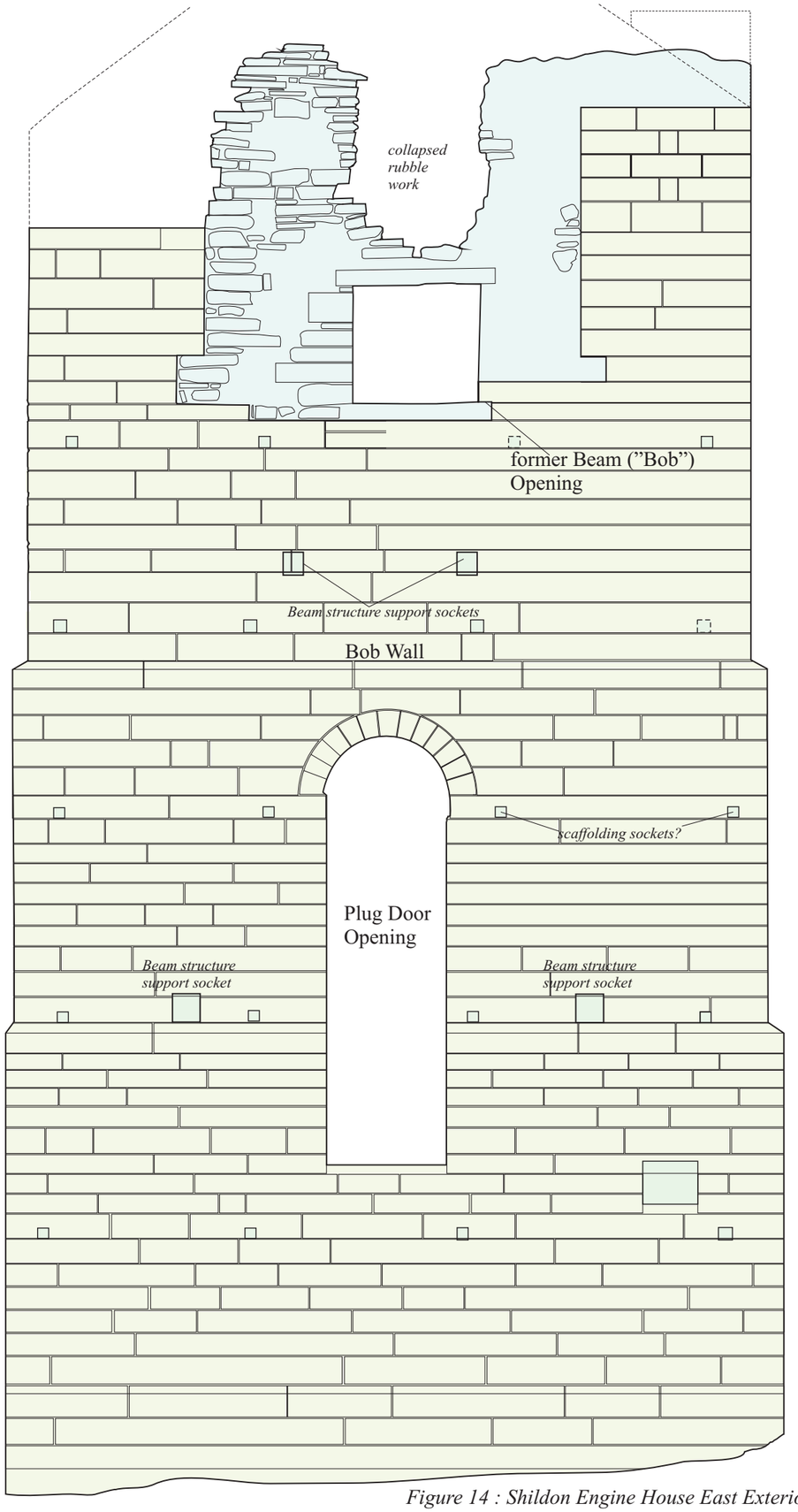



*Figure 13 : Shildon Engine House West Exterior phased*

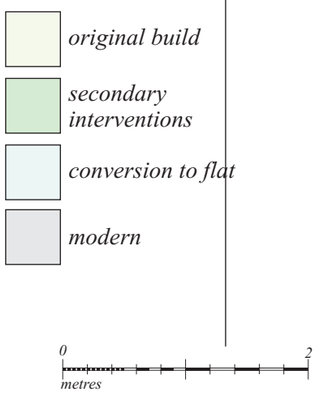


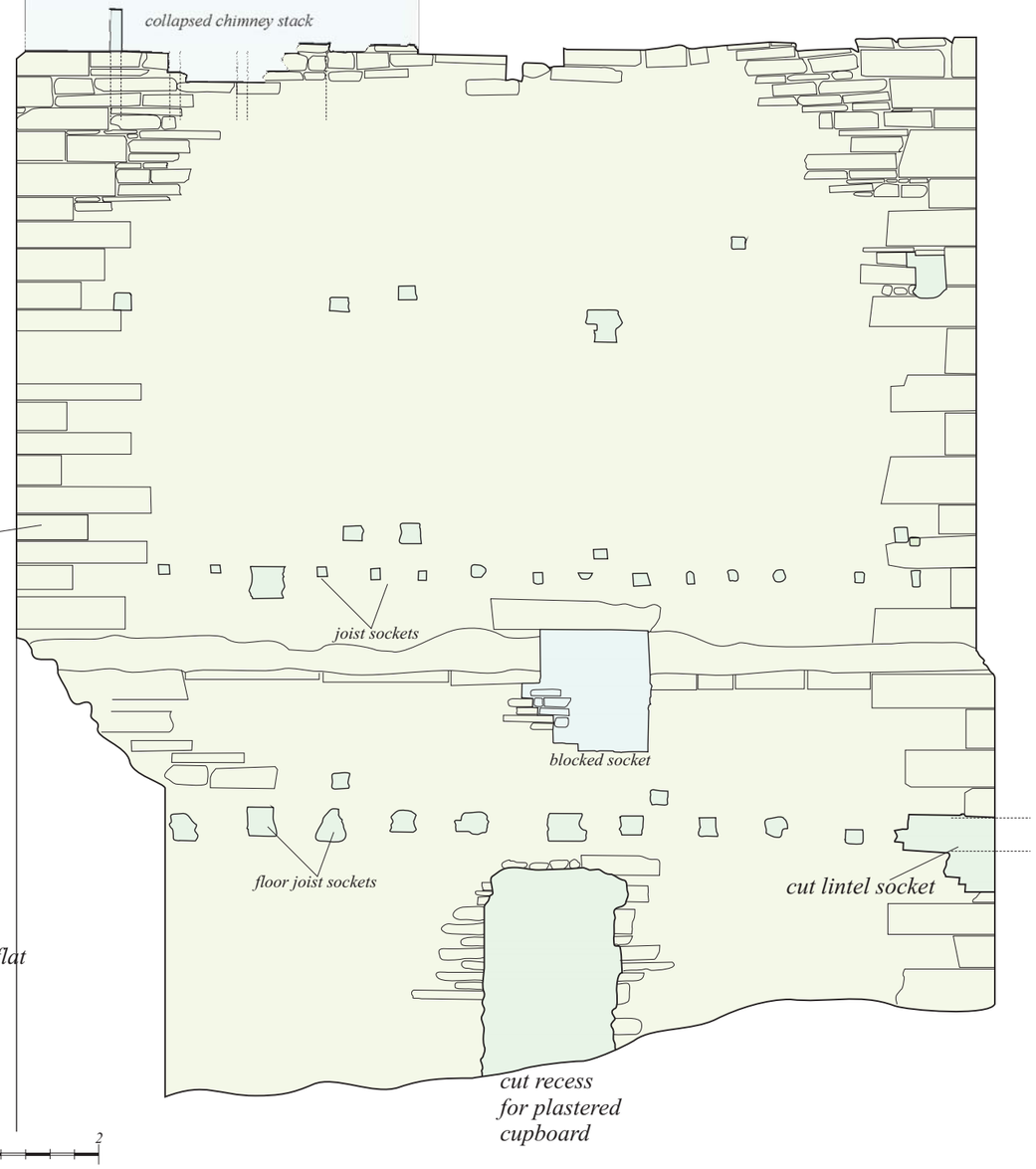


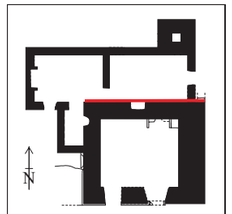


elevation location

Figure 14 : Shildon Engine House East Exterior phased




elevation location

Figure 15 : Shildon Engine House North Exterior phased

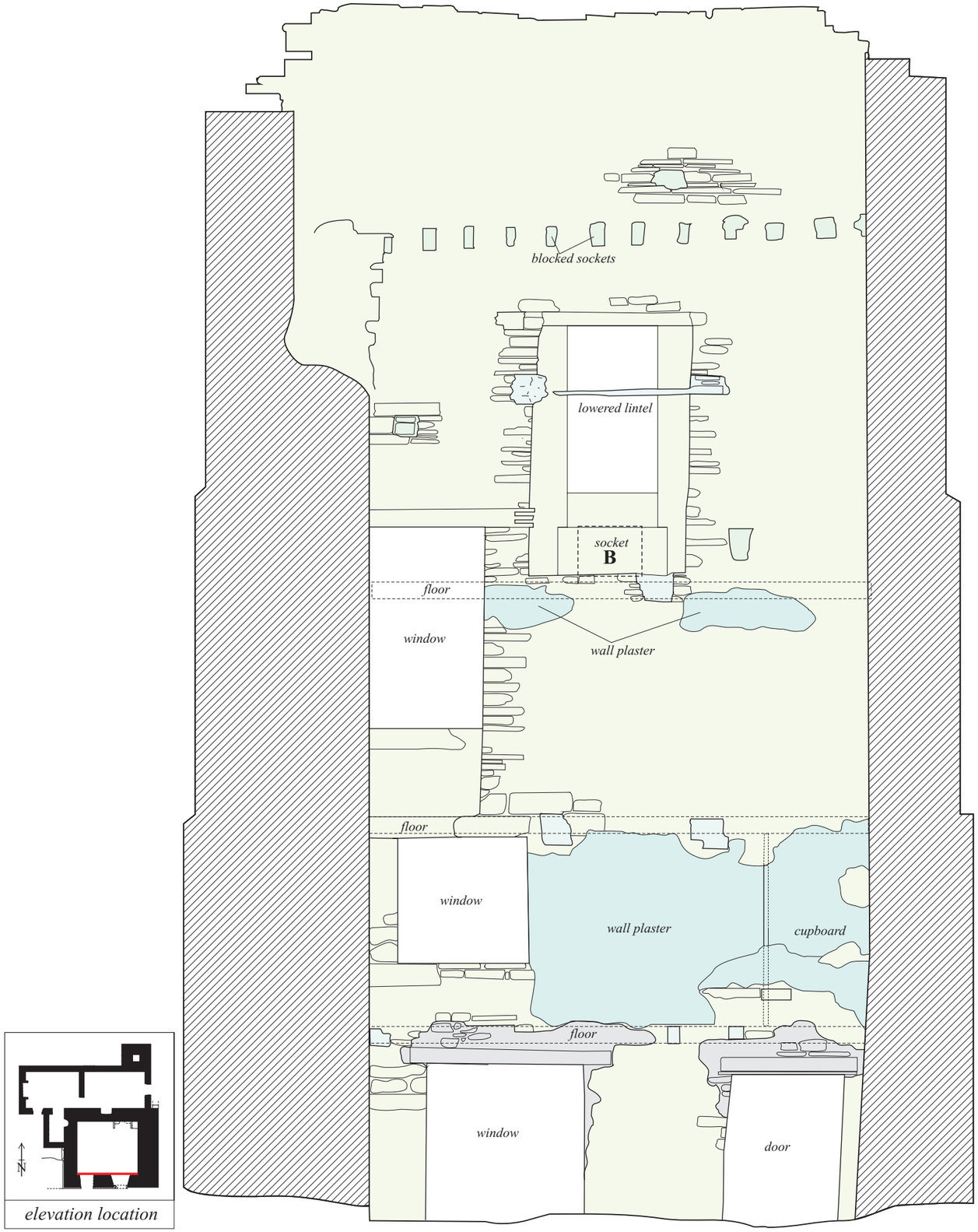



Figure 16 : Shildon Engine House South Interior phased

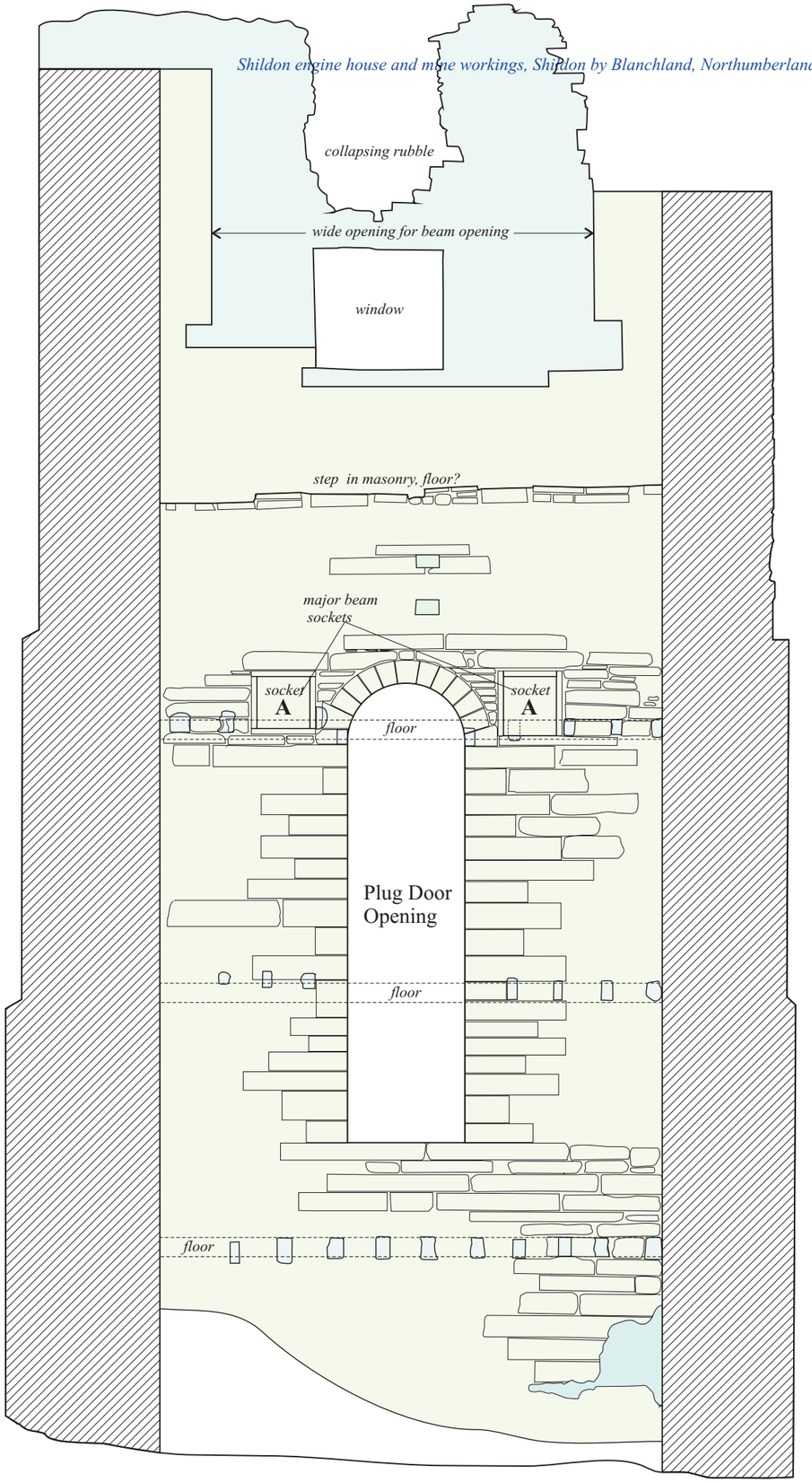



Figure 17 : Shildon Engine House East Interior phased

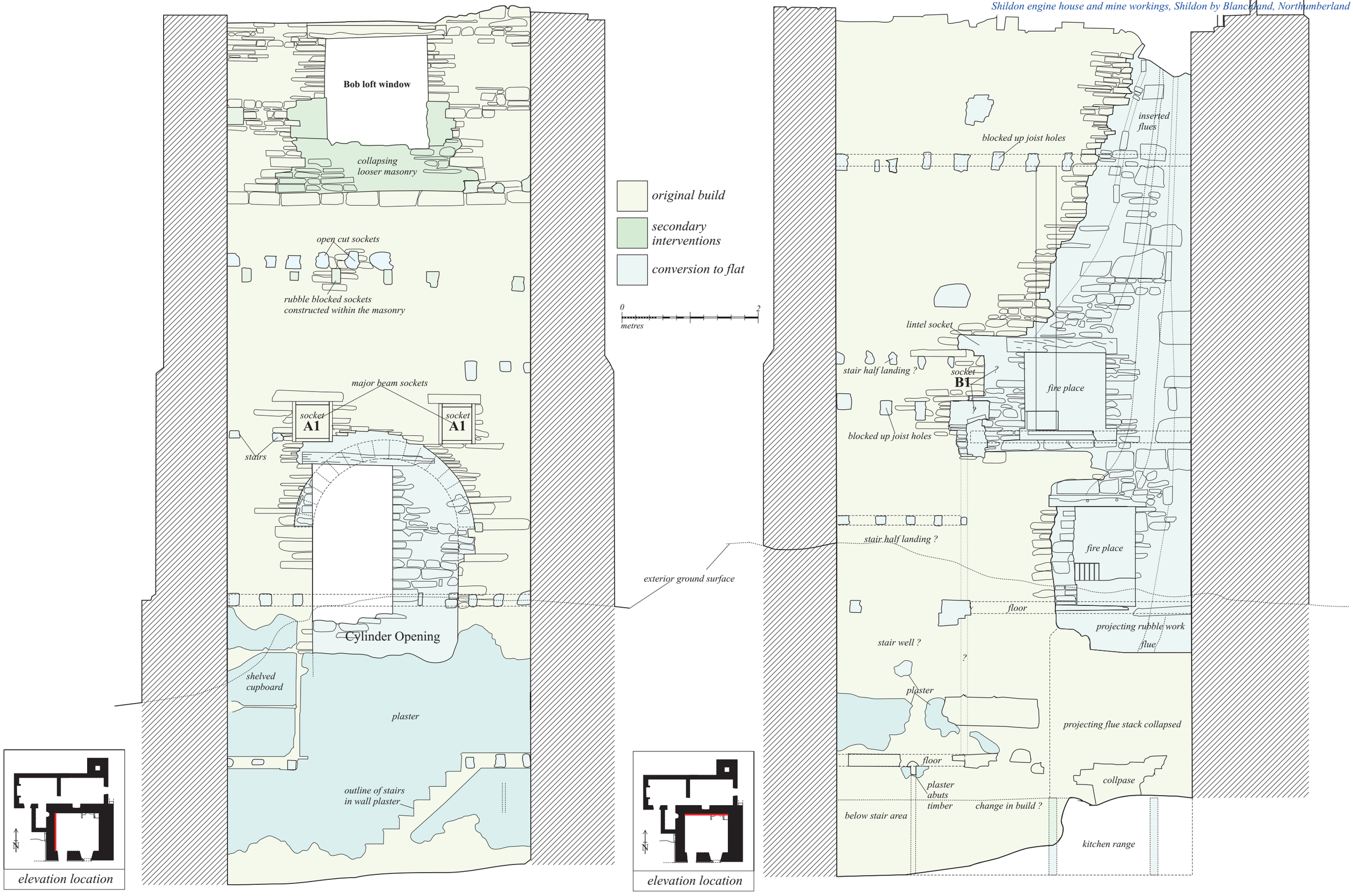



*Figure 18 : Shildon Engine House West Interior phased*

*Figure 19 : Shildon Engine HouseNorth Interior phased*

## *Appendix B Project documentation*

### *i. Project design*

# *Living North Pennines*

## *Shildon engine house and site – proposed scope of archaeological works [DRAFT 2]*

Addyman Archaeology, 15 December 2009

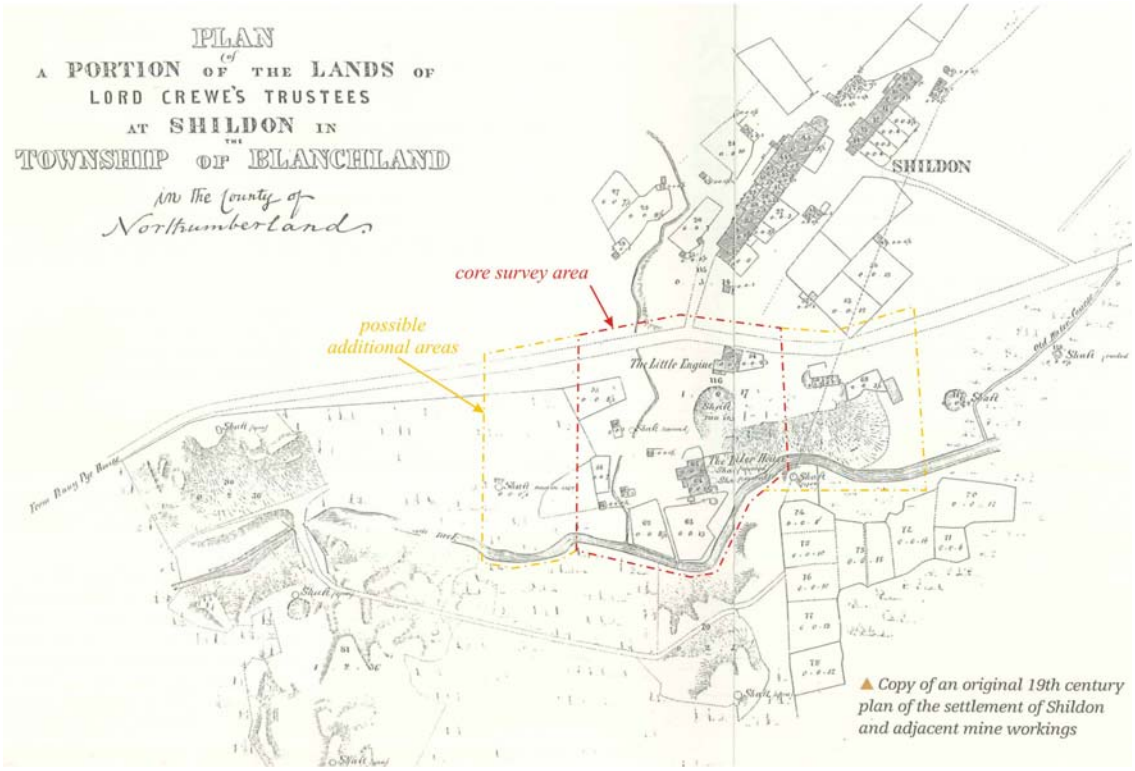
### *1. Introduction*

The development of this scope of archaeological works in response to the proposed consolidation, repair and provision of public access to the engine house and its immediate landscape at Shildon was developed by Addyman Archaeology in close association with Jon Charlton and Paul Frodsham of North Pennines AONB Partnership, English Heritage (Rob Young), Simpson and Brown Architects, and Historic Property Restoration Ltd. (contact Lee Wall).

### *2. Proposed works*

### *i. General topographic survey and site plan*

There exists no detailed recent plan of the Shildon site; indeed the most informative plan of the site dates to the 19th century and forms part of the Lord Crewe archive. It is proposed that a detailed plan of the settlement be prepared that will consist of two principal elements – a topographic survey, and a detailed mapping of the buildings and ruined structures at the site. The combined mapping of ruin buildings and topography will form an essential basis for on-going planning at the site, for developing access and drainage arrangements, etc, and for locating.




▲ Copy of an original 19th century plan of the settlement of Shildon and adjacent mine workings

*Proposed extent of topographic survey*

*a. Topographic survey*

The extent of the desired topographic survey was discussed on site with Jon Charlton (9 November 2009) – this would take in the areas of the site that might be affected by proposed works, and would extend between the stream bounding the W side of the site, and the existing public road to the E, and would take in the two shaft heads to the immediate S of the surviving engine house and to the SE of the engine house respectively (as safe access permits), , with a band of terrain somewhat beyond. The survey area would extend northwards to take in the former minor stream course and area of historic enclosures immediately beyond.

*b. Survey of landscape structures*

Using the topographic survey as a base the individual buildings, structures, enclosures, etc. at the site will be mapped in closer and analytical detail (where access permits) and layerd over the topographic base plan.

*c. Detailed building plan*

A more detailed plan will be undertaken of the engine house structure at its maximum extent of clearance (see *iii*, below) – this will also be added to the general survey.

### *ii. Archaeological monitoring/investigation in relation to drainage*

In the 20th century a minor stream had been diverted from its historic course and now runs close to the engine house by its N side, along what appears to have been an historic path through the site, and down to the main stream. The original course is readily apparent - a gully a little further N, this confirmed to be the case from 19th century plans of the settlement and mine workings. The minor stream was diverted where it runs below an access track – it now runs through a cast concrete pipe. The original channel may have been damaged by heavy vehicle activity above.

It is proposed that the original minor stream course be reinstated in order to divert flowing water away from the engine house, and to improve access generally. In order to achieve this there will need to be some investigation to establish the position and condition of the original channel. This could be undertaken by the site contractors but under archaeological supervision. In situ remains of the early channel will recorded if encountered and assessed as to whether they can be reinstated or whether new piping, etc may be required.

### *iii. Archaeological monitoring in relation to clearance at the site*

Removal of the considerable quantity of felled timber at the site would not require archaeological involvement.

Where rubble is to be removed – within or in the immediate vicinity of the ruined buildings – this process should be monitored for any other than minor interventions. Dressed stones and other significant architectural materials would be recovered, as would other finds relating to the occupation or mechanical operation of the structure, that could contribute to its better understanding. Such finds would be recorded – including their find-spot – catalogued and set aside at a designated facility pending post-excavation assessment.

The extent of clearance is yet to be fully confirmed, but will include removal of some rubble and levelling works to permit scaffolding erection within and around the main engine house, and around the free-standing chimneystack on its E side. The ruined remains of the associated buildings to the

E and NE of the engine house will also require some clearance at the exterior footings – to permit masonry consolidation to the wall foot. There will also be clearance to expose largely buried lower walling along the E side of the ruined structure – this partly to permit provision to level access through an existing entrance into the southern chamber within (this chamber lying between the engine house and chimney-stack). The extent of clearance within this chamber is yet to be confirmed – whether simply levelling of deposits within to permit access or more extensive excavation of interior deposits (to early floor level?).

The northern chamber within the ruined range is more extensively rubble-filled. It is not currently proposed to excavate this area other than where access in relation to wall consolidation is necessary – particularly the upstanding fragment of its N wall.

Such clearance works will be monitored as required and recorded photographically. Where more extensive excavation is to be considered this will be undertaken under archaeological direction, particularly where *in situ* structural features or occupation deposits are likely to be encountered.

### *iv. Archaeological monitoring / investigation in relation to possible access arrangements*

Route of access and details of installation still to be confirmed – this may or may not have archaeological implications - tbc.

### *v. Building recording*

The interior of engine house in particular retains considerable evidence for its former interior arrangements, structure and finishes. It is proposed that, with scaffolding access, this information be recorded in detail. This will use the existing rectified photographic imagery as a basis; this would then be marked up in detail on site with any further analytical information (phasing information, construction details and the like) that becomes accessible. Recording will generally be at a scale of 1:20, with details as appropriate. This will not involve a context-by-context record, but the drawings will be marked up with detailed analytical notes.

### *vi. Reporting, dissemination and publication*

A formal Data Structure Report of the archaeological site works is a necessary requirement for work of this nature – required both by English Heritage and the County Archaeology service. This draws together a general description of the works undertaken, the field observations made and incorporates the records of the work – site plans, survey work, metrical data, etc.

A formally published academic notice or account of the works and principal findings will probably prove essential. Consideration might also be given to distilling the results of the works, combined with the results of the proposed community archaeology project, into a guide to the site and settlement at Shildon that can be made available in local shops.

Reporting of the site works can also be achieved through the Living North Pennines web-site and through the on-site interpretation, both of which can be up-dated as the works progress.

### *vii. Community archaeology project*

The possibility of a community archaeology project has been mooted at Shildon. This might most beneficially be centred upon the investigation of the site of the little engine house, which lies up-slope (to the E of) the surviving engine house ruin. The structure, which is well documented on early plans and in photographic views, was demolished in the early 1950s (information kindly supplied by Donald and Shirley Lee, of Shildon). It is possible that when demolished the walls of the structure may have been partly pushed in upon themselves – there is likely potential that lower walling will still be up-standing.

A wider community project might include historical research, oral history, clearance / evaluation / wider excavation of the site, an element of masonry consolidation (if remains are to remain exposed), and interpretation (that may constitute part of the reserved interpretation budget for the site).

This project will be subject to further development and discussion with local groups. The proposed project would necessarily need to take place following the completion of the general site contractors' main works. The existing archaeological budget might permit professional guidance over the organisation of the project and ensuring that remains revealed are recorded and reported to professional standards.

*a. Suggested first stage - evaluation*

It is suggested that a first stage might constitute a combined evaluation and wall-head defining exercise to confirm the exact location and extent of the remains and, by means of a small number of individual sondages, the floor levels within the structure. In this way a considered appraisal of the remains as they currently exist can be achieved, and an informed decision taken on how best to proceed further.

*b. Further works*

The first stage project may lead on to a more substantial stage of works – perhaps revealing the structure more comprehensively and arranging for consolidation and permanent display. This will necessarily be determined through further discussion with interested parties and through the Living North Pennines Project, and falls out-with this proposed scope of works.

### *viii. Interpretation*

A provision has been made within the wider budget for the project for interpretation at Shildon. This will be developed as a separate item and does **not** form part of this scope of works though will benefit from the out-put of the archaeological recording and research.

## *3. Staffing*

The formulation of the approach to archaeological works at Shildon and the initial stages of site supervision have been undertaken by Tom Addyman. Hereafter archaeological site involvement will be undertaken primarily by Kenneth Macfadyen of Addyman Archaeology. Topographic survey will be by Jim Wright with an assistant.

## *Appendix C Drawings register*

***1804 - Shildon Engine House - Drawing Register***

| *DWG No.* | *Area* | *Scale* | *Type of drawing* | *Date* | *Drawn by* | *Description* |
|---|---|---|---|---|---|---|
| *001* | - | *01:50* | *Plan* | *08/03/2010* | *KMF* | *General plan of Engine House complex* |
| *002* | - | - | *Plan* | *11 - 19/03/10* | *JW* | *Topographic survey* |

**Appendix D: 1804 Shildon Engine House - Digital Shots**
**11/03/2009**

| Frame | Direction Facing | Film Type | Date | Description | Taken by | Notes |
|---|---|---|---|---|---|---|
| 001 | S | Digital | 11/03/2009 | General view - Chimney and N facing elevation | TOA | |
| 002 | S | Digital | 11/03/2009 | General view - N facing elevation | TOA | |
| 003 | SSE | Digital | 11/03/2009 | General view | TOA | |
| 004 | SE | Digital | 11/03/2009 | General view | TOA | |
| 005 | E | Digital | 11/03/2009 | General view - W facing elevation | TOA | |
| 006 | E | Digital | 11/03/2009 | General view - W facing elevation | TOA | |
| 007 | E | Digital | 11/03/2009 | Main entrance to 2nd level on W facing elevation of engine house - detail | TOA | |
| 008 | NNE | Digital | 11/03/2009 | Collapsed structure | TOA | |
| 009 | NE | Digital | 11/03/2009 | General view | TOA | |
| 010 | NE | Digital | 11/03/2009 | General view of Engine House | TOA | |
| 011 | NE | Digital | 11/03/2009 | General view of Engine House | TOA | |
| 012 | N | Digital | 11/03/2009 | S facing elevation | TOA | |
| 013 | N | Digital | 11/03/2009 | S facing elevation | TOA | |
| 014 | NW | Digital | 11/03/2009 | General view showing watercourse | TOA | |
| 015 | NW | Digital | 11/03/2009 | General view showing water course | TOA | |
| 016 | NW | Digital | 11/03/2009 | General view | TOA | |
| 017 | SSW | Digital | 11/03/2009 | E facing elevation | TOA | |
| 018 | S | Digital | 11/03/2009 | Mine workings/shaft | TOA | |
| 019 | SW | Digital | 11/03/2009 | General view | TOA | |
| 020 | SSW | Digital | 11/03/2009 | General view | TOA | |
| 021 | WSW | Digital | 11/03/2009 | General view | TOA | |
| 022 | WSW | Digital | 11/03/2009 | General view showing chimney | TOA | |
| 023 | NW | Digital | 11/03/2009 | Detail of doorway | TOA | |
| 024 | | Digital | 11/03/2009 | Detail of rubble | TOA | |
| 025 | ENE | Digital | 11/03/2009 | Interior W facing elevation of engine house | TOA | |
| 026 | N | Digital | 11/03/2009 | Detail of inserted fireplace on S facing interior elevation of engine house | TOA | |
| 027 | W | Digital | 11/03/2009 | Detail of E facing elevation showing timber stairs | TOA | |
| 028 | W | Digital | 11/03/2009 | Detail of E facing elevation showing timber stairs | TOA | |
| 029 | W | Digital | 11/03/2009 | E facing interior elevation of engine house - detail of 2nd level main entrance | TOA | |
| 030 | W | Digital | 11/03/2009 | E facing interior elevation of engine house - detail of roof | TOA | |
| 031 | NW | Digital | 11/03/2009 | E facing interior elevation of engine house - detail of 2nd level main entrance | TOA | |
| 032 | NW | Digital | 11/03/2009 | Details of interior | TOA | |

| | | | | | |
|---|---|---|---|---|---|
| 033 | S | Digital | 11/03/2009 | Details of interior | TOA |
| 034 | S | Digital | 11/03/2009 | Details of interior | TOA |
| 035 | SW | Digital | 11/03/2009 | Details of interior | TOA |
| 036 | SW | Digital | 11/03/2009 | Details of interior | TOA |
| 037 | E | Digital | 11/03/2009 | Shot through entrance to 2nd level | TOA |
| 038 | NE | Digital | 11/03/2009 | Corner face of ruinous boiler house | TOA |
| 039 | E | Digital | 11/03/2009 | View of boiler house looking to chimney | TOA |
| 040 | ESE | Digital | 11/03/2009 | Base of chimney | TOA |
| 041 | ESE | Digital | 11/03/2009 | Base of chimney | TOA |
| 042 | E | Digital | 11/03/2009 | Base of chimney | TOA |
| 043 | E | Digital | 11/03/2009 | W facing interior elevation of boiler house showing window and joint between boiler house and engine house | TOA |
| 044 | NE | Digital | 11/03/2009 | S facing elevation of boiler house beside chimney | TOA |
| 045 | S | Digital | 11/03/2009 | S facing elevation of boiler house showing flue to chimney | TOA |
| 046 | SW | Digital | 11/03/2009 | Cut recess within N facing elevation of engine house | TOA |
| 047 | SE | Digital | 11/03/2009 | General view | TOA |

**07/12/2009**

| Frame | Direction Facing | Film Type | Date | Description | Taken by | Notes |
|---|---|---|---|---|---|---|
| 048 | SE | Digital | 07/12/2009 | W upstanding remains of the boiler room under consolidation - bad light | TOA | |
| 049 | SE | Digital | 07/12/2009 | W upstanding remains of the boiler room under consolidation | TOA | |
| 050 | E | Digital | 07/12/2009 | W facing exterior elevation of boiler house showing recess | TOA | |
| 051 | E | Digital | 07/12/2009 | W facing exterior elevation of boiler house | TOA | |
| 052 | N | Digital | 07/12/2009 | Entrance to engine house | TOA | |
| 053 | N | Digital | 07/12/2009 | Inserted fireplace | TOA | |
| 054 | N | Digital | 07/12/2009 | Inserted fireplace | TOA | |
| 055 | NE | Digital | 07/12/2009 | Inserted fireplace | TOA | |
| 056 | NE | Digital | 07/12/2009 | Inserted fireplace | TOA | |
| 057 | E | Digital | 07/12/2009 | Inserted fireplace | TOA | |
| 058 | E | Digital | 07/12/2009 | Inserted fireplace | TOA | |
| 059 | NE | Digital | 07/12/2009 | Inserted fireplace | TOA | |
| 060 | NE | Digital | 07/12/2009 | W facing externail elevation of boiler house | TOA | |
| 061 | - | Digital | 07/12/2009 | Detail of walling | TOA | |
| 062 | - | Digital | 07/12/2009 | Detail of walling | TOA | |
| 063 | - | Digital | 07/12/2009 | Detail of walling | TOA | |

| | | | | | |
|---|---|---|---|---|---|
| 064 | - | Digital | 07/12/2009 | Detail of walling | TOA |
| 065 | - | Digital | 07/12/2009 | Detail of walling | TOA |

**09/12/2009**

| Frame | Direction Facing | Film Type | Date | Description | Taken by | Notes |
|---|---|---|---|---|---|---|
| 066 | S | Digital | 09/12/2009 | N facing elevation of NW end of boiler room post-clearance of vegeatation | TOA | |
| 067 | S | Digital | 09/12/2009 | N facing elevation of NW end of boiler room post-clearance of vegeatation | TOA | |
| 068 | S | Digital | 09/12/2009 | N facing elevation of NW end of boiler room post-clearance of vegeatation - Detail | TOA | |
| 069 | S | Digital | 09/12/2009 | N facing elevation of NW end of boiler room post-clearance of vegeatation - Detail | TOA | |
| 070 | W | Digital | 09/12/2009 | N facing elevation of NW end of boiler room post-clearance of vegeatation - Detail | TOA | |
| 071 | E | Digital | 09/12/2009 | W facing elevation of NW end of boiler room post-clearance of vegetation | TOA | |
| 072 | ESE | Digital | 09/12/2009 | W facing elevation of NW end of boiler room post-clearance of vegetation | TOA | |
| 073 | ESE | Digital | 09/12/2009 | W facing elevation of NW end of boiler room post-clearance of vegetation | TOA | |
| 074 | E | Digital | 09/12/2009 | W facing elevation of W end of boiler room post-clearance of vegetation | TOA | |
| 075 | E | Digital | 09/12/2009 | W facing elevation of W end of boiler room showing recess post-clearance of vegetation | TOA | |
| 076 | E | Digital | 09/12/2009 | W facing elevation of W end of boiler room showing recess post-clearance of vegetation | TOA | |
| 077 | E | Digital | 09/12/2009 | W facing elevation of W end of boiler room showing recess post-clearance of vegetation - Upper part | TOA | |
| 078 | NE | Digital | 09/12/2009 | W facing elevation of W end of boiler room showing recess post-clearance of vegetation - Upper part | TOA | |
| 079 | N | Digital | 09/12/2009 | S facing elevation of SW end of boiler house post-clearance of vegetation | TOA | |
| 080 | N | Digital | 09/12/2009 | S facing elevation of SW end of boiler house post-clearance of vegetation - Detail | TOA | |
| 081 | E | Digital | 09/12/2009 | W facing elevation of outbuilding W of engine house post-clearance of vegetation | TOA | |
| 082 | E | Digital | 09/12/2009 | W facing elevation of outbuilding W of engine house post-clearance of vegetation | TOA | |
| 083 | NE | Digital | 09/12/2009 | SW corner of outbuilding W of engine house post-clearance of vegetation | TOA | |
| 084 | ENE | Digital | 09/12/2009 | SW corner of outbuilding W of engine house 2nd level entrance post-clearance of vegetation | TOA | |
| 085 | ENE | Digital | 09/12/2009 | SW corner of outbuilding W of engine house 2nd level entrance post-clearance of vegetation | TOA | |
| 086 | E | Digital | 09/12/2009 | 2nd level entrance post-clearance of vegetation | TOA | |
| 087 | N | Digital | 09/12/2009 | S facing elevation of outbuilding to W of engine house | TOA | |
| 088 | N | Digital | 09/12/2009 | S facing elevation of outbuilding to W of engine house | TOA | |
| 089 | S | Digital | 09/12/2009 | View S across outbuilding | TOA | |
| 090 | S | Digital | 09/12/2009 | View S across outbuilding | TOA | |
| 091 | W | Digital | 09/12/2009 | E facing elevation of boiler house | TOA | |

| | | | | | |
|---|---|---|---|---|---|
| 092 | W | Digital | 09/12/2009 | E facing elevation of boiler house | TOA |
| 093 | W | Digital | 09/12/2009 | E facing elevation of boiler house | TOA |
| 094 | W | Digital | 09/12/2009 | E facing elevation of boiler house - base | TOA |
| 095 | S | Digital | 09/12/2009 | N facing elevation of boiler house with engine house behind | TOA |
| 096 | S | Digital | 09/12/2009 | N facing elevation of boiler house with engine house behind | TOA |
| 097 | SSE | Digital | 09/12/2009 | View over boiler house to recess within N facing external elevation of engine house | TOA |
| 098 | SSE | Digital | 09/12/2009 | View over boiler house to recess within N facing external elevation of engine house | TOA |
| 099 | S | Digital | 09/12/2009 | View S along cross-wall in boiler house | TOA |
| 0100 | S | Digital | 09/12/2009 | View S along cross-wall | TOA |
| 0101 | E | Digital | 09/12/2009 | View through boiler house to W facing internal elevation and window opening | TOA |
| 0102 | E | Digital | 09/12/2009 | View through boiler house | TOA |
| 0103 | E | Digital | 09/12/2009 | View through boiler house to W facing internal elevation and window opening | TOA |
| 0104 | W | Digital | 09/12/2009 | Debris within boiler house | TOA |
| 0105 | SE | Digital | 09/12/2009 | Join between boiler house and engine house | TOA |
| 0106 | NE | Digital | 09/12/2009 | Opening to chimney | TOA |
| 0107 | NW | Digital | 09/12/2009 | Rubble within boiler house | TOA |
| 0108 | WSW | Digital | 09/12/2009 | View across N facing elevation of engine house showing recess | TOA |
| 0109 | S | Digital | 09/12/2009 | Cut reces in N facing elevation of engine house | TOA |
| 0110 | N | Digital | 09/12/2009 | Opening in chimney | TOA |
| 0111 | N | Digital | 09/12/2009 | Opening in chimney | TOA |
| 0112 | N | Digital | 09/12/2009 | Joint between boiler room and outbuilding | TOA |
| 0113 | E | Digital | 09/12/2009 | Threshold of 2nd floor entrance | TOA |
| 0114 | E | Digital | 09/12/2009 | 2nd floor entrance | TOA |
| 0115 | E | Digital | 09/12/2009 | 2nd floor entrance with W facing elevation of outbuilding | TOA |
| 0116 | E | Digital | 09/12/2009 | 2nd floor entrance with W facing elevation of outbuilding | TOA |
| 0117 | E | Digital | 09/12/2009 | 2nd floor entrance with W facing elevation of outbuilding | TOA |
| 0118 | N | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0119 | N | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0120 | N | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0121 | N | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0122 | N | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0123 | N | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0124 | N | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0125 | NE | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0126 | NE | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0127 | NE | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |

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|---|---|---|---|---|---|
| 0128 | NE | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0129 | E | Digital | 09/12/2009 | W facing elevation of inserted fireplace | TOA |
| 0130 | E | Digital | 09/12/2009 | W facing elevation of inserted fireplace | TOA |
| 0131 | E | Digital | 09/12/2009 | W facing elevation of inserted fireplace | TOA |
| 0132 | E | Digital | 09/12/2009 | W facing elevation of inserted fireplace | TOA |
| 0133 | E | Digital | 09/12/2009 | W facing elevation of inserted fireplace | TOA |
| 0134 | NE | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0135 | NE | Digital | 09/12/2009 | Inserted fireplace post-removal of vegetation | TOA |
| 0136 | N | Digital | 09/12/2009 | S facing interior elevation of engine house | TOA |
| 0137 | E | Digital | 09/12/2009 | W facing interior elevation of engine house | TOA |
| 0138 | NW | Digital | 09/12/2009 | Location of timber stairs within engine house | TOA |
| 0139 | NW | Digital | 09/12/2009 | Location of timber stairs within engine house | TOA |
| 0140 | NW | Digital | 09/12/2009 | Location of timber stairs within engine house | TOA |
| 0141 | W | Digital | 09/12/2009 | Location of timber stairs within engine house | TOA |
| 0142 | W | Digital | 09/12/2009 | Location of timber stairs within engine house | TOA |
| 0143 | W | Digital | 09/12/2009 | Base of timber stairs in engine house | TOA |
| 0144 | W | Digital | 09/12/2009 | Base of timber stairs in engine house - E facing elevation | TOA |
| 0145 | W | Digital | 09/12/2009 | Location of stairs within engine house | TOA |
| 0146 | W | Digital | 09/12/2009 | Features within E facing interior elevation of engine house | TOA |
| 0147 | W | Digital | 09/12/2009 | Features within E facing interior elevation of engine house | TOA |
| 0148 | SW | Digital | 09/12/2009 | Features within E facing interior elevation of engine house | TOA |
| 0149 | SW | Digital | 09/12/2009 | Features within E facing interior elevation of engine house | TOA |
| 0150 | SW | Digital | 09/12/2009 | Features within E and N facing interior elevationS of engine house | TOA |
| 0151 | S | Digital | 09/12/2009 | Window within interior of engine house | TOA |
| 0152 | S | Digital | 09/12/2009 | Openings within S wall of engine house | TOA |
| 0153 | SE | Digital | 09/12/2009 | Openings within S wall of engine house | TOA |

**16/12/2009**

| Frame | Direction Facing | Film Type | Date | Description | Taken by | Notes |
|---|---|---|---|---|---|---|
| 0154 | N | Digital | 16/12/2009 | N facing elevation of boiler house wall showing rubble blocking | KMF | |
| 0155 | E | Digital | 16/12/2009 | View of N wall of boiler house post-clearance of vegetation | KMF | |
| 0156 | E | Digital | 16/12/2009 | View of boiler house post-clearance of vegetation | KMF | |
| 0157 | SE | Digital | 16/12/2009 | Opening in chimney | KMF | |
| 0158 | S | Digital | 16/12/2009 | N facing elevation of wall adjacent to chimney | KMF | |
| 0159 | S | Digital | 16/12/2009 | N facing elevation of wall adjacent to chimney | KMF | |

| | | | | | |
|---|---|---|---|---|---|
| 0160 | N | Digital | 16/12/2009 | N facing elevation of boiler house wall showing rubble blocking | KMF |
| 0161 | WSW | Digital | 16/12/2009 | N facing elevation of boiler house wall showing rubble blocking | KMF |
| 0162 | WSW | Digital | 16/12/2009 | N facing elevation of boiler house wall showing rubble blocking | KMF |
| 0163 | SW | Digital | 16/12/2009 | View across to upstanding SW corner boiler house | KMF |
| 0164 | - | Digital | 16/12/2009 | Stone removed from structure during clearance | KMF |
| 0165 | E | Digital | 16/12/2009 | Working shot - W facing elevation of boiler house showing recess | KMF |
| 0166 | NE | Digital | 16/12/2009 | Butt joint between SW corner of boiler house and outbuilding post-clearance of vegetation | KMF |
| 0167 | E | Digital | 16/12/2009 | Butt joint between SW corner of boiler house and outbuilding post-clearance of vegetation | KMF |
| 0168 | N | Digital | 16/12/2009 | S facing elevation of boiler house | KMF |
| 0169 | S | Digital | 16/12/2009 | Backfilled culverted burn | KMF |
| 0170 | E | Digital | 16/12/2009 | Interior of boiler house post-clearance of vegetation | KMF |
| 0171 | W | Digital | 16/12/2009 | Mid-excavation shot - Rubble within interior of boiler house | KMF |
| 0172 | NE | Digital | 16/12/2009 | Interior of boiler house post-clearance of vegetation showing cross-wall | KMF |
| 0173 | NW | Digital | 16/12/2009 | Mid-excavation shot - Rubble within interior of boiler house | KMF |
| 0174 | S | Digital | 16/12/2009 | Cross-wall of boiler house meeting engine house | KMF |
| 0175 | S | Digital | 16/12/2009 | Mid-excavation shot - Rubble within interior of boiler house | KMF |
| 0176 | V | Digital | 16/12/2009 | Backfilled culverted burn | KMF |
| 0177 | SW | Digital | 16/12/2009 | Backfilled culverted burn | KMF |

**05/02/2010**

| Frame | Direction Facing | Film Type | Date | Description | Taken by | Notes |
|---|---|---|---|---|---|---|
| 0178 | E | Digital | 05/02/2010 | Bob opening in internal W facing elevation at top of engine house - through scaffolding | KMF | |
| 0179 | E | Digital | 05/02/2010 | Bob opening in internal W facing elevation at top of engine house - through scaffolding - detail of corner | KMF | |
| 0180 | SE | Digital | 05/02/2010 | Detail of fragile wall-heads | KMF | |
| 0181 | SE | Digital | 05/02/2010 | Detail of fragile wall-heads | KMF | |
| 0182 | W | Digital | 05/02/2010 | E facing elevation of interior wall head of engine house | KMF | |
| 0183 | E | Digital | 05/02/2010 | Detail of fragile wall-heads | KMF | |
| 0184 | V/E | Digital | 05/02/2010 | Mine shaft | KMF | |
| 0185 | S | Digital | 05/02/2010 | Detail of window in S wall - through scaffolding | KMF | |
| 0186 | SE | Digital | 05/02/2010 | Detail of window in S wall - through scaffolding | KMF | |
| 0187 | - | Digital | 05/02/2010 | Detail of interior of engine house - through scaffolding | KMF | |
| 0188 | - | Digital | 05/02/2010 | Detail of interior of engine house - through scaffolding | KMF | |
| 0189 | - | Digital | 05/02/2010 | Detail of interior of engine house - through scaffolding | KMF | |
| 0190 | - | Digital | 05/02/2010 | Detail of interior of engine house - through scaffolding | KMF | |

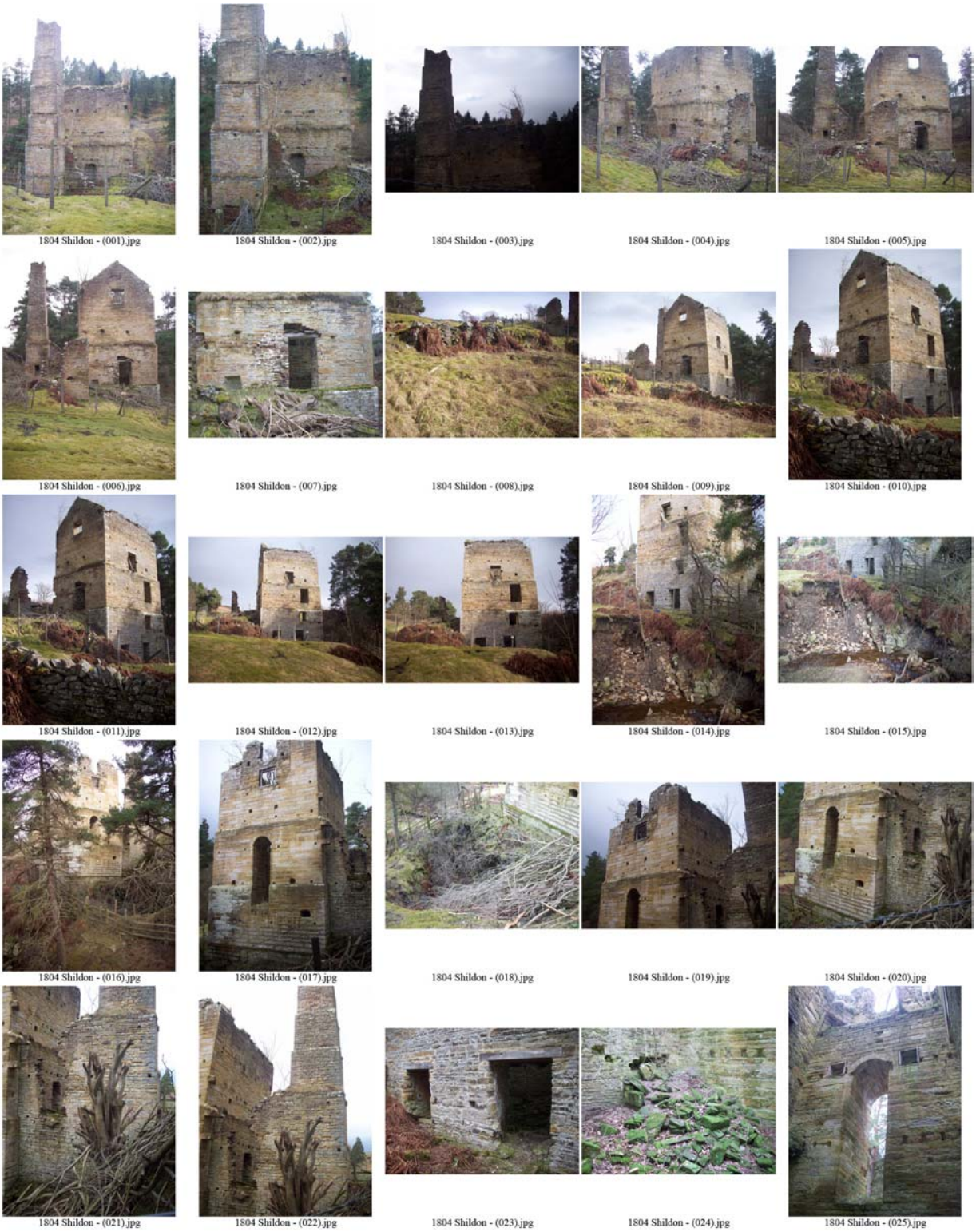
| | | | | | |
|---|---|---|---|---|---|
| 0191 | - | Digital | 05/02/2010 | Detail of interior of engine house - through scaffolding | KMF |
| 0192 | - | Digital | 05/02/2010 | Detail of interior of engine house - through scaffolding | KMF |
| 0193 | - | Digital | 05/02/2010 | Detail of interior of engine house - through scaffolding | KMF |
| 0194 | - | Digital | 05/02/2010 | Detail of interior of engine house - through scaffolding | KMF |
| 0195 | S | Digital | 05/02/2010 | General view | KMF |

**08/03/2010**

| Frame | Direction Facing | Film Type | Date | Description | Taken by | Notes |
|---|---|---|---|---|---|---|
| 0196 | SSW | Digital | 08/03/2010 | View across top courses of engine house - through scaffolding | KMF | |
| 0197 | SW | Digital | 08/03/2010 | View across top courses of engine house - through scaffolding | KMF | |
| 0198 | SW | Digital | 08/03/2010 | Top courses of NE corner of engine house | KMF | |
| 0199 | SSW | Digital | 08/03/2010 | Top courses of NE corner of engine house | KMF | |
| 0200 | NNW | Digital | 08/03/2010 | Fragile top courses and bob opening in E elevation of engine house | KMF | |
| 0201 | NNW | Digital | 08/03/2010 | Fragile top courses and bob opening in E elevation of engine house | KMF | |
| 0202 | WNW | Digital | 08/03/2010 | Wall tops of S elevation of engine house | KMF | |
| 0203 | N | Digital | 08/03/2010 | View along E elevation of engine house | KMF | |
| 0204 | N | Digital | 08/03/2010 | View along E elevation of engine house | KMF | |
| 0205 | NW | Digital | 08/03/2010 | Detail of junction between original masonry and later conversion | KMF | |
| 0206 | SE | Digital | 08/03/2010 | Detail of junction between original masonry and later conversion | KMF | |
| 0207 | SW | Digital | 08/03/2010 | View across wall heads to W gable of engine house | KMF | |
| 0208 | S | Digital | 08/03/2010 | Top of chimeny stack - detail | KMF | |
| 0209 | W | Digital | 08/03/2010 | Top of chimeny stack - detail | KMF | |
| 0210 | NW | Digital | 08/03/2010 | Top of chimeny stack - detail | KMF | |
| 0211 | V | Digital | 08/03/2010 | View down chimeny stack - detail | KMF | |
| 0212 | V/S | Digital | 08/03/2010 | View across E end of engine house | KMF | |
| 0213 | V/S | Digital | 08/03/2010 | View across centre of engine house | KMF | |
| 0214 | V/SSW | Digital | 08/03/2010 | View across W end of engine house | KMF | |
| 0215 | V/S | Digital | 08/03/2010 | View across E end of engine house | KMF | |
| 0216 | V/SW | Digital | 08/03/2010 | View of N wall head of engine house | KMF | |
| 0217 | V/SSW | Digital | 08/03/2010 | View of S wall head of engine house | KMF | |
| 0218 | NNW | Digital | 08/03/2010 | Detail of chimney stack | KMF | |
| 0219 | - | Digital | 08/03/2010 | Wall head - detail | KMF | |
| 0220 | - | Digital | 08/03/2010 | Detail of external elevation | KMF | |
| 0221 | - | Digital | 08/03/2010 | Detail of external elevation | KMF | |
| 0222 | - | Digital | 08/03/2010 | Detail of external elevation | KMF | |

| | | | | | |
|---|---|---|---|---|---|
| 0223 | - | Digital | 08/03/2010 | Detail of external elevation | KMF |
| 0224 | - | Digital | 08/03/2010 | Detail of external elevation | KMF |
| 0225 | - | Digital | 08/03/2010 | Detail of external elevation | KMF |
| 0226 | - | Digital | 08/03/2010 | Detail of external elevation | KMF |
| 0227 | - | Digital | 08/03/2010 | Detail of external elevation | KMF |
| 0228 | - | Digital | 08/03/2010 | Detail of external elevation | KMF |
| 0229 | - | Digital | 08/03/2010 | Detail of external elevation | KMF |
| 0230 | SSW | Digital | 08/03/2010 | Junction between engine house and boiler house | KMF |
| 0231 | SW | Digital | 08/03/2010 | Junction between engine house and boiler house - detail | KMF |
| 0232 | SSW | Digital | 08/03/2010 | E facing external elevation of engine house - detail | KMF |
| 0233 | WNW | Digital | 08/03/2010 | Top arch of the 'plug hole opening on the bob wall' - E facing elevation of engine house | KMF |
| 0234 | WNW | Digital | 08/03/2010 | S facing elevation of engine house - detail | KMF |
| 0235 | NW | Digital | 08/03/2010 | E facing elevation of the engine house - detail | KMF |
| 0236 | NNE | Digital | 08/03/2010 | W facing elevation of the engine house - detail | KMF |
| 0237 | NNE | Digital | 08/03/2010 | S facing elevation of engine house - detail | KMF |
| 0238 | ESE | Digital | 08/03/2010 | N facing elevation of engine house - detail | KMF |
| 0239 | SSE | Digital | 08/03/2010 | W facing elevation of engine house - detail | KMF |
| 0240 | E | Digital | 08/03/2010 | View through E wall of boiler house window | KMF |
| 0241 | SE | Digital | 08/03/2010 | S facing interior elevation of boiler house - NE corner | KMF |
| 0242 | ENE | Digital | 08/03/2010 | View through E wall of boiler house window - through scaffolding | KMF |
| 0243 | N | Digital | 08/03/2010 | Inserted fireplace within S facing interior elevation of engine house - detail - through scaffolding | KMF |
| 0244 | W | Digital | 08/03/2010 | Imprint of timber stairs within E facing elevation of engine house - detail - through scaffolding | KMF |
| 0245 | S | Digital | 08/03/2010 | View through opening in S wall at base of engine tower | KMF |
| 0246 | S | Digital | 08/03/2010 | View through opening in S wall at base of engine tower | KMF |
| 0247 | NW | Digital | 08/03/2010 | Imprint of timber stairs within E facing elevation of engine house - detail - through scaffolding | KMF |
| 0248 | V | Digital | 08/03/2010 | View up chimeny flue in fireplace | KMF |
| 0249 | V | Digital | 08/03/2010 | View up chimeny flue in fireplace | KMF |
| 0250 | N | Digital | 08/03/2010 | Detail of disruption (flue) in wall above fireplace | KMF |
| 0251 | N | Digital | 08/03/2010 | Detail of disruption (flue) in wall above fireplace | KMF |
| 0252 | N | Digital | 08/03/2010 | Detail of disruption (flue) in wall above fireplace | KMF |
| 0253 | N | Digital | 08/03/2010 | Detail of fireplace in 1st floor of engine house | KMF |

## *Appendix E Photographic contact sheet*

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1804 Shildon - (028).jpg


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1804 Shildon - (030).jpg


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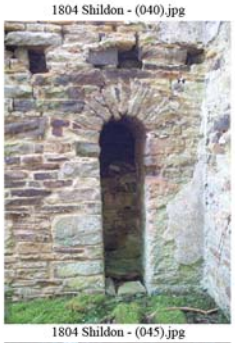
1804 Shildon - (042).jpg


1804 Shildon - (043).jpg


1804 Shildon - (044).jpg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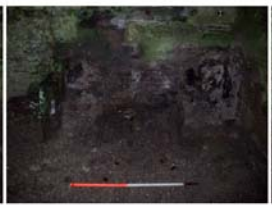
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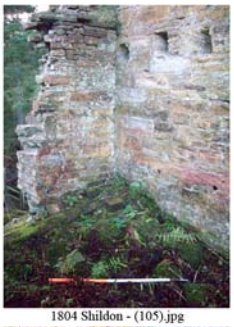
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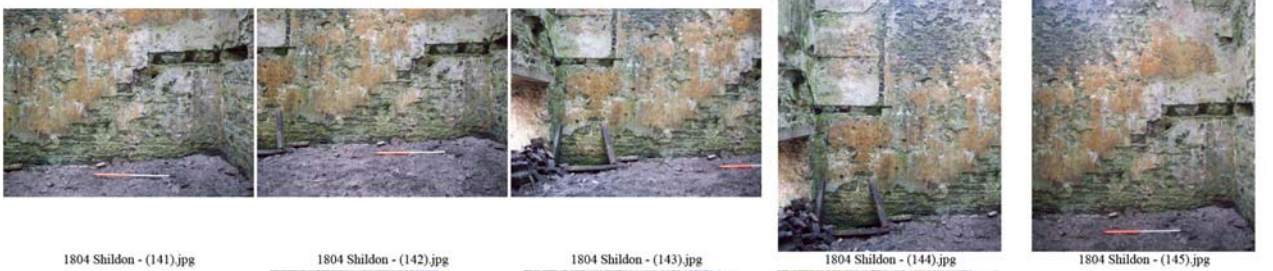

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