JB HERITAGE CONSULTANCY

Penton Mill

Historic Building Record

Date of Report: 20 February 2011

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Introduction

Photo 1. Penton Mill. South Elevation.

Penton Mill is located to the northern fringe of the B6318 close to the bridge over Liddel Water and close to the English/Scottish border. Presently there is a ruin on the site showing a plan form of three rooms with parts of their external walls surviving up to roof level. Other external walls survive only at low level and some sections are missing. There is no evidence of roof covering material or roof timbers to be found on the site. There is evidence of a mill race to the north and east of the Mill.

JB Heritage Consultancy was commissioned to carry out a Level 3 Historic Building Record of Penton Mill, Penton, Cumbria on 18 January 2011 prior to development work being carried out. The inspection of the mill was carried out by Mr John Bargh MSc IHBC on 3 February 2011 and the report was written also by John Bargh.

It is understood that the Mill is to be developed by the partial demolition of the existing mill walls and the erection of a log cabin on top of the remaining mill walls. The Historic Building Record is a condition of a planning permission – planning reference No 1/08/0359.

The grid reference for the mill is NY 4335 7729.

The report format is laid out in accordance with English Heritage: Understanding Historic Buildings A Guide to Good Recording Practice 2006[1] and will conform to Level 3 standard as set out in this Guide. The report will be written in accordance with the Brief for an Archaeological Building Recording Project issued by the Cumbria County Council Historic Environment Service, Environment Unit, dated 13 January 2011.

The County Historic Environment Service requirements for the survey are as follows:-

- The precise location of the building with an address and National Grid Reference.
- A date when the project was undertaken and by whom.
- A description of the building's plan, form, function, age development sequence and construction materials. Where known, the building's architects, builders, patrons and owners.
- A description of the building's landscape and historical context, for example its relationship with nearby buildings in architectural and functional terms, its relationship to field systems, settlement patterns and other man made features.
- A scaled plan of the building together with the mill race showing the location of each photographed feature of architectural, historical or archaeological interest.
- A sketch drawing of any elevations that contain features of architectural, historical or archaeological significance that may aid the understanding of the building.
- A photographic record including: photographs of the building in its landscape context; detailed photographs of the principal elevations of the building (both internal and external); detailed photographs of any features of architectural, historical or archaeological significance; photographs of the mill race. Photographs should include a scale.

The report should include as a minimum requirement of the County Historic Environment Service:-

- A site location plan, related to the National Grid, produced at an appropriate scale to show the relationship of the mill and mill race to nearby buildings or significant features.
- A front cover, which includes the planning application number and the National Grid Reference of the site.
- A concise non-technical summary of the results.
- A scaled plan of the mill building and mill race showing the location of each photographed feature of architectural, historical or archaeological interest.
- Photographs of the mill building should be accompanied by an appropriate description and each photograph should include a scale.

- A description of the methodology employed and work undertaken.
- A discussion of the results obtained including the structural phasing, the functions and the significance of the building placed in a brief historical and architectural context.
- Sketch drawings of any elevations that contain features of architectural, historical or archaeological significance.
- The dates on which the project was undertaken.

Documentary research was undertaken at the Cumbria County Library, books and the Internet. Due to the current closure of the Cumbria County Archives Service at Carlisle it has not been possible to carry out any archival research from this source.

General Description

Photo 2. Penton Mill. South-east Elevation.

Site Location and Description

Penton Mill is located along the B6318, in an area of low elevation, along the meandering watercourse close to Liddel Water. There are no other buildings in the vicinity of the Mill. It is now a ruin having only some parts of the external walls surviving up to roof level, the remaining walls being small vestiges at low level, or missing altogether. However, a rectangular plan form showing three rooms is still discernible, these rooms being built in succession making a three roomed elongated plan form. The most northern room has substantial parts of its external walls and gable intact; the remaining two rooms heading south have less external wall surviving. The immediate area around the buildings is very overgrown with grass, moss, ferns and trees. In the past sections of external wall have collapsed resulting in piles of stones within the rooms, now covered with vegetation. There is no evidence on the site of roof covering material. Some decaying timbers are strewn around the building but their condition is such that their original use is uncertain. There is evidence of a mill race to the north east of the Mill but this is full of organic debris and soil.

The external walls are constructed of stone random rubble with some parts built with dressed ashlar stone all bedded in lime mortar. The stone is buff coloured sandstone and there are

some areas of red sandstone. Walls are generally about 500mm thick, the inside built of random rubble, the core of which is rubble filled.

There are various window and door openings in the walls, most of which are built up with stone.

The vestiges of internal walls that survive are also about 500mm thick and built of stone random rubble.

There is no floor material surviving but some areas of wall internally still have a rough plaster finish.

Photo 3. Penton Mill. Inside of east facing wall showing boarded up window.

Topography

The Mill is built at the bottom of a site that slopes sharply towards the river. The vegetation on this site is long grass and trees. The surrounding area is mainly farmland. There is an access track giving partial access to the Mill from the B6318.

Photo 4. Penton Mill. Showing topography.

Orientation

The elongated plan form is orientated with the long walls facing approximately east and west and the short walls facing north and south. The elongated plan is in fact rotated slightly to the east of the north-south axis, however for ease of description, this report will orientate the Mill along its north south axis. The room with the walls surviving to roof level is facing north.

Historical Development

Corn milling is one of the oldest and most necessary service crafts involving removing the outer hard shell from grain so that flour can be extracted.[2] Water power was first used to turn millstones over 2000 years ago and by the middle of the 11th century milling was well established in England.[3]

The corn mill is probably the oldest type of industrial building in the country and most surviving mills appear to date from the late 18th or the 19th century.[4] They took advantage of steep hillsides and consistent supplies of water making the water powered mill more reliable than windmills.[5]

The type of watercourse pattern would be for a mill to be positioned at the end of a short constructed head race.[6] This would lead from a weir sited on a bend in a river where water was naturally channelled into the race.[7] At the entrance to the head race from the river there should be a high walled narrow entrance to control the water going in.[8]

Simple water powered corn mill buildings usually have three levels. The lowest level contained the horizontal drive from the waterwheel and the gearing that converted it into a vertical drive to the next level where the sets of millstones were located.[9] The topmost level, often partly in the roof space, was used for storage probably for the grain to be ground.[10] The waterwheel might be external or internal but required a narrow, easily controlled head race, a bypass and a tailrace.[11] The wheels were made from ash and oak but after 1769 metal parts were introduced.[12]

Different types of waterwheel were employed. The overshot waterwheel operated when water was dropped from a head race above the wheel.[13] Examples are at the Corn Mill, Waberthwaite and Beckside Mill, Kirkby in Furness.[14]

The undershot waterwheel operates from the force of water acting at the bottom of the wheel. It is common in northern Cumbria and worked well with a weir across a larger river.[15] An example is at Helsington Laithes, South Kendal [16] and Newby Bridge.[17]

The breastshot is a type of waterwheel that operates when the water enters the wheel around the level of the wheelshaft. This type is also common in Cumbria and an example is at Lupton, Kirkby Lonsdale (working until 1964).[18]

By the 1730's external drying kilns would have been incorporated into the mill buildings.[19] This is important where high rainfall has caused a late damp harvest.[20] During the 19th century this became usual practice, the drying or malting kiln being positioned at one end of the mill and, as it was fired by charcoal, only requiring a louvre in the roof and not a chimney.[21] The kiln would usually be square or rectangular and be two storeys; the lower storey containing the furnace; the upper storey having a floor on which to spread the grain for drying.[22] This floor would be constructed from stone, slate, cast or wrought iron to provide a fire resistant structure.[23] The floor surface may have had metal plates or perforated clay tiles.[24]

Near the mill there was sometimes a miller's house with a stable and cart shed and a small range of buildings as the miller was probably also a part-time farmer.[25]

A mill was, as a rule, a simple rectangular building of the size and proportions of a barn, easily recognisable by its position on a slope, its two and a half or three storeys of small domestic sized windows, and its lack of chimneys.[26]

There are two common corn mill-building patterns seen in Cumbria.[27] The first, being the manorial or large corn mill, was found on the richer farming lowlands and comprised fine structures of red sandstone, brick or white limestone with embellishments such as stone finials.[28] These mills were usually three storeys with a hipped or gable roof and a square drying kiln at one end with a graceful archway entrance at the front.[29]

The second is the smaller bank mill. These are the older mills, capable of being operated by one man and usually situated on the early township trackways lying well back from the tarmacadam road.[30,31] Few mills were built in northern Cumbria before 1725 and most would seem to have been built by 1730.[32] The bank mill is placed on the side of a major valley at a point where a lateral beck comes down.[33] It is at a place where a contoured head race will supply the mill with ample water for the waterwheel.[34] It is on the old valley road, linking the hamlets on that side of the valley and built into the hillside so that carts full of grain can be driven up around the back of the mill to the level of the drying kiln, unloaded and put onto the kiln floor.[35] Examples of bank mills are at Widewath and Boot in Eskdale.[36]

In the 1880's small country watermills could not compete with the coastal steam mills so they turned to making feedstuffs for animals.[37]

The family who is likely to be associated with the Mill is the Graham family of Netherby. The Kirkandrews upon Esk Parish extends twenty miles from the Solway Firth to Northumberland; is about three miles in breadth; is separated from Scotland by the River Liddel and bounded by the parishes of Arthuret and Bewcastle.[38] This area forms the Barony of Liddel and belongs to Sir J. R. G. Graham of Netherby.[39] From this description Penton Mill seems to be located within this area.

A predecessor to Sir James Graham, Dr Robert Graham, transformed the Netherby estate into a 'rich, fertile and beautiful demesne'.[40] He had built free schools, corn mills; a harbour at Sarkfoot; developed Longtown and provided decent housing throughout the estate.[41]

The directory describes the houses as being scattered around the parish at irregular distances and there being 'townships'.[42] In the Nichol Forest township there is a Hathwaite Mill where a William Scott was the corn miller.[43] Penton Mill is located on the edge of Nichol Forest as shown on the Donald's Map[44] and is close to a place called Haythwaite, which could have been called Hathwaite. (conjectural). Nichol Forest is also in the ownership of Sir James Graham.[45]

Hutchinson's book mentions a mill near Netherby being of a very superior construction where great quantities of flour are made and shipped to the west coast of England for Lancaster.[46]

Sections of the lower walls at Penton Mill do have some fine ashlar. However, on the

Donald's Map there is another mill shown which is nearer to Netherby and could be the mill to which this reference is made.

Penton Mill on Liddel Water is recorded as being a mill with piggeries and was referred to as a Soke Mill.[47] This means it is owned by the Lord of the Manor, who required the tenant miller to breed pigs but for which he would receive a reduction of rent.[48]

Historical Building Description

Due to the absence of a full building enclosure there is some uncertainty as to how this building looked and functioned, however based on site observations and written text on mill operations it is possible to build up a reasonable picture of the form and operation of Penton Mill.

Confirmation is given on the First Edition Ordnance Survey Map 1868 [49] that Penton Mill was a corn mill. There is an old postcard dated 1905 [50] showing Penton Mill as rather a grand building and somewhat different from the remains now visible. It is uncertain how accurate this representation is as the postcard shows a hipped roof to the north but the present building has a gable. There is some fine masonry at low level and there appears to have been some rebuilding so a quality building could have once existed. It is recorded that mills are often the subject of alteration or part demolition and then are rebuilt.[51]

Photo 5. Penton Mill Signs of the mill race and the bypass just before the wire fence on the right of the picture.

Today the Liddel river has a good continual flow of water running from east to west past the Mill, which would have supplied the mill race. A depression in the landscape appears to indicate that the mill race left the river and entered the site on the east providing water for the head race. It then continued as a tail race past the north mill gable and back down to the river. Just off the north-east corner of the gable a further depression would indicate the position of a bypass. The 1868 and 1901 Ordnance Survey Maps [52,53] confirm the mill race left the river to the east of the Mill at the edge of the weir. Site observation at this point shows

a loose formation of stones in the river forming a bank and allowing the water to be channelled off to the race. The OS Maps also show the bypass and tail race. Close to the bypass location it was possible to see the stone walls that formed the side of the race; at this point the race measuring 1400mm wide. The race is now full of earth therefore the depth of the race or the existence of a wheel pit below the waterwheel, could not be ascertained.

The mill race is at the northern end therefore this is where the waterwheel was located. It is likely that the waterwheel was positioned externally on the gable wall with its drive shaft passing through the wall to drive the millstones. It is uncertain what type of waterwheel was used at the Mill. Looking at the site it seems unlikely that an overshot wheel was fitted as the mill race would have to approach the Mill at a higher level and discharge water over the top of the wheel. An undershot water wheel worked best from a head race that fell at a rate of one inch in 200 yards.[54] From site observations, the head race could probably have achieved this gradient.

There is no evidence for a roofed structure built out from the gable to protect the waterwheel from inclement weather, as is sometimes found at a mill.[55] However on the first edition OS Map [56] a structure is clearly shown over the mill race.

The room to the north would be where the grain was ground. The horizontal shaft from the waterwheel, having passed through the external wall, would be connected at ground floor level to gears converting it to a vertical shaft to drive the millstones.

There is no evidence of any beams that would have been built into the walls to support a first floor for the milling machinery. From 1700 larger mills rested their milling machinery on heavy timber frames standing free on the ground floor and not resting on the walls [57] so this could have been the method used at Penton Mill.

Of the three rooms remaining, it is likely that the centre room housed the kiln. Externally to the south-east of the Mill there is what appears to be a formation of earth behind a stone retaining wall. This may have been an elevated access to an external door possibly once located in the eastern external wall. Carts would be brought down the track from the road, pass along the elevated access and discharge their load onto the kiln floor.

The remaining southerly room may have housed the cart.

One further structure is located on the north west corner of the Mill. Only vestiges of external walls remain but if it was a room then it would probably have been used for storage.

Photo 6. Penton Mill. Stone retaining wall in centre of picture concealed by vegetation.

Photo 7. Penton Mill. Structure to north-west corner of Mill.

Detailed Report

Due to the scantiness of the building fabric the detailed report will describe features on the individual elevations and parts of the building that are worthy of note.

North Elevation

This elevation has several features of interest that assist with the interpretation of the Mill. The stonework to most of this elevation is random rubble with squared quoin stones to the two corners. The gable peak is roughly formed. To the lower walls there is some fine ashlar walling. On the north east quoin the tooling to one quoin stone is different from that of the remainder. These features suggest that there has been some rebuilding of this wall.

Photo 8. Penton Mill. Tooling to quoin stone.

There are two windows in this gable set at about 2000mm above ground level. They both have stone cills and stone lintels. The north eastern one is 1300mm high by 820mm wide. It has been built up with stone but in two vertical sections, one 300mm wide and the other 520mm wide, suggesting that partial building up had been deliberate and for a purpose. Internally there are the remains of a timber lintel. The north western window is 1320mm high by 850mm wide, is now partially built up but some of this stonework has collapsed. A section of wall internally above the window has also collapsed. Also noted on this north western window, the window reveals are squint.

Photo 9. Penton Mill. View of north-western window from inside.

Photo 10. Penton Mill. Features in north gable wall.

At low level towards the north-east corner of the gable wall is a vertical aperture 170mm wide by 800mm high by about 70mm deep. This is positioned 1600mm from the north east corner of the wall. Immediately to the right of it and just visible on the photograph is a depression at

ground level 500mm wide by 400mm high and 70mm deep, cut into the ashlar stonework. It is possible that these features were used for regulating the water flow to the waterwheel.

Slightly off centre of the gable and at ground level is a square opening passing through the full thickness of the wall. It is 680mm wide by 300mm high and has a substantial stone lintel over the opening. The opening is positioned 3300mm from the north west corner of the gable. It was probably formed as the axle hole for the waterwheel shaft to pass through. Its position slightly off-centre of the gable wall might suggest that the millstones were positioned towards the eastern end of the room.

Photo 11. Penton Mill. Axle Hole in gable. Note the quality of the low level stonework.

Close to the north west corner is a square hole formed in the stonework. It is 220mm high by 200mm wide and 100mm deep. It is positioned at 1100mm above ground level and 700mm from the corner of the wall. It is not known what its purpose was.
Internally on this wall and at low level are areas of lime plaster applied to the wall surface.

Photo 12. Penton Mill. Square hole in wall.

South Elevation

The only surviving section of the south elevation showing any detail is the south facing wall of the north room and can be seen in Photos 1, 2 and 6. This still retains some of its gable structure and contains a window that has been built up with stone. The window is positioned at approximately 2600mm above ground level and is 1000mm high by 1100mm wide. It has a stone cill but no lintel. Internally on this wall is an area of lime plaster at low level.

East Elevation

The east wall of the northern room is of random stone rubble, the quoin stones on the southern corner being of irregular form. The eaves are roughly formed at the top of the wall. The wall contains one window with a stone cill and stone lintel and has squared stone dressings to the reveals. It is 1670mm high and 920mm wide but is also partly built up with stone. Below this window are two small holes formed in the stonework approximately 20mm diameter each. The dressings have different detailing from the window on the north gable and the stone surface is tooled. The reveals are squint but also recessed, presumably for the window frame. The lintel is also recessed on its back edge and there are the remains of a timber lintel above the opening.

Photo 13. Penton Mill. External view of window east elevation.

Photo 14. Penton Mill. View of east facing window from inside.

At the southern corner of the wall is an angular depression cut into the wall that is almost certain to be a skewback for an arch over an opening. This is set at about 1650mm above ground level and is about 250mm girth. Approximately 300mm above the skewback is an

opening formed in the corner with an old wrought iron gutter bracket alongside it. It is likely that a stone arch sprang from this skewback to the stone retaining wall opposite and supported a narrow wall above, which probably carried either a roof or a platform, hence, the need for a gutter bracket.

Photo 15. Penton Mill. Southern corner of east wall to northern room. Arch skewback.

Photo 16. Penton Mill. East wall of centre room.

Little survives of the east wall to the centre room. Two openings built up with stone, each with a stone lintel can be seen with the remains of a stone cill at the top. The lower opening could have been to serve the kiln. The upper opening could have been access to the kiln floor.
The east wall of the southern room is concealed behind the bank of earth retained by the stone wall forming the possible access for carts.

West Elevation

The west facing wall of the north room has lost much of its upper masonry. In this wall is a former doorway, positioned approximately in the centre of the wall, 1530mm wide by 1040mm high. The opening has a slightly curved door head formed by a decaying piece of timber lintel with a crude stone arch above it. There is also a further decayed timber lintel on the inside of this opening. Towards the north corner of the wall at about 1500mm above ground level is a wrought iron gutter bracket fitted into the wall.

Photo 17. Penton Mill. Former doorway on west elevation.

Below this north corner is the remains of a square low level masonry structure, which may have been a store room.
At the southern corner of the wall there appears to have been a door opening as there is the remains of a vertical reveal formed in dressed stone with a small aperture cut in one of the reveal stones, possibly for a door bolt. Selected horizontal mortar joints up the reveal are open suggesting that these may have contained timber plugs for a large timber door frame possibly giving access for bringing in milling machinery.
The west elevation of the centre room and southern room have very little external wall left.

Interpretation and Significance

A substantial part of the structure of this Mill is in a ruinous state but sufficient survives to be able to make some interpretation of the type of mill and how it may have operated. Site observations seem to confirm that it was not a large corn mill but rather a smaller bank mill possibly linking small hamlets in the area. However evidence in the form of postcard suggests that it had been a somewhat larger mill. There was no miller's house found on the site but this may have been demolished or situated off site and now redeveloped. On the First Edition Ordnance Survey map 1868 [58] a property called Mill House is shown to the west of Penton Mill. This is opposite the end of the track leading down to the Mill, so it is possible that this house, or its predecessor, may have been connected with the operation of the Mill. (conjectural). Penton Mill was positioned to take the best advantage of a meander in the river that would feed the mill race with a good flow of water. The Mill was built at the bottom of a slope seemingly so the carts could deliver the grain more easily to an elevated kiln floor. This cart access together with the two built up openings on the east elevation of the middle room reinforce the possibility of this room being a kiln with two storeys, the lower housing the kiln and the upper, the kiln floor on which to dry the grain.

There is no evidence of an upper floor construction internally to the north room so the milling machinery was likely to have been mounted independent of these walls on the ground floor.

No traces of the waterwheel survive but the relationship of the axle hole to the head race suggests probably an undershot wheel was fitted.

The stone for construction was probably quarried in the area as there was a quarry nearby producing good freestone.[59] The wall construction is variable in that random rubble and ashlar can be seen in the same wall. Also different tooling has been employed on the surface of the stones and the window detailing varies also between different windows. In line with known practice, it is likely that some demolition and rebuilding has taken place over the years. All the openings are fully or partially built up with stone suggesting possibly a change in use of the building with a further building up probably to make the derelict building secure.

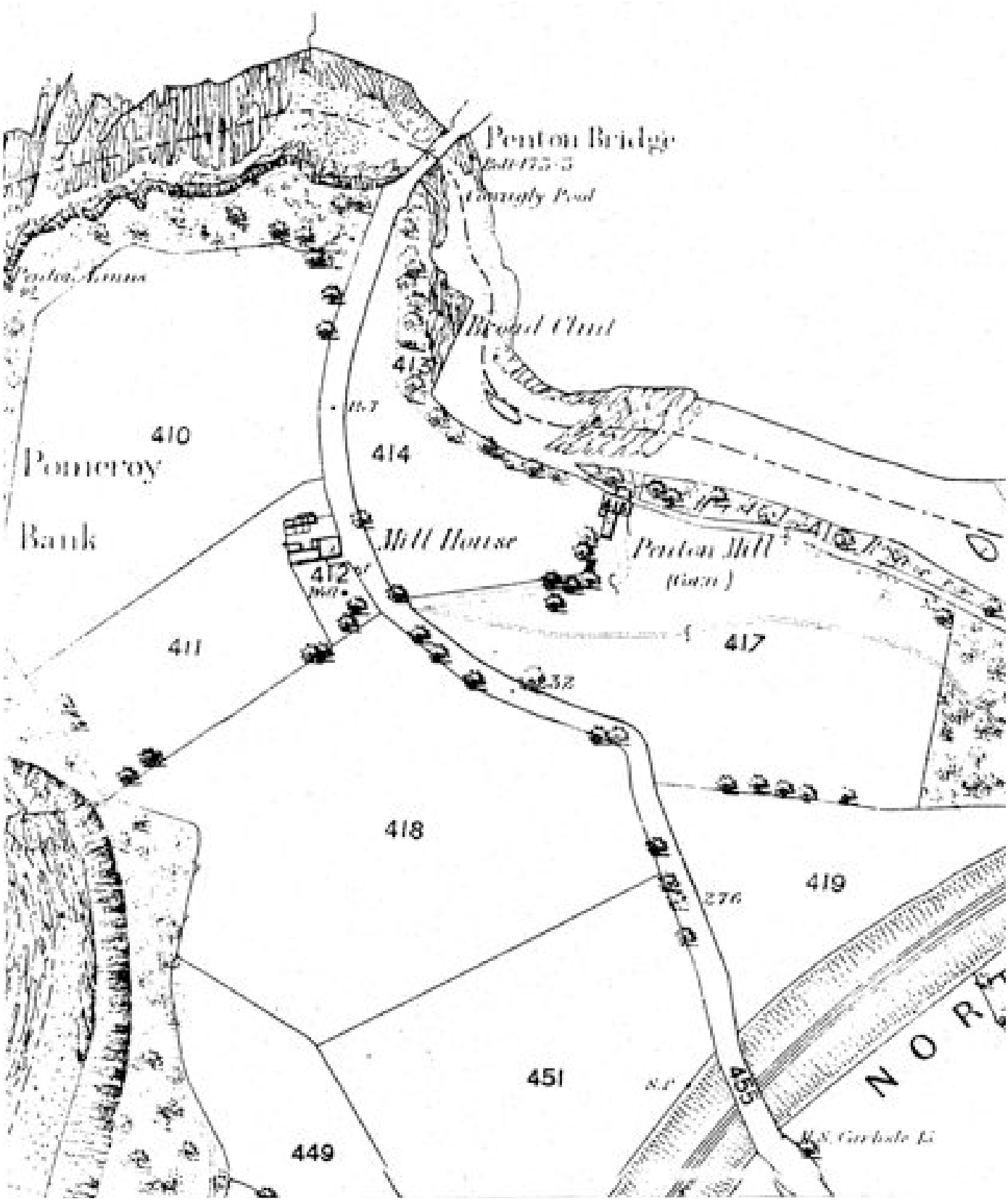
The quality of workmanship of the low level stone ashlar on the north elevation is very good. It is possible that this section of the wall has not been rebuilt. Quoin detailing and the stonework to some of the windows are worthy of note.

Penton Mill was probably built about 1730 but now has little left to show how it looked when it was a thriving working building. The roof and parts of the upper walls are missing and those that remain are very dilapidated but some nice features of workmanship to the stonework still survive, particularly at low level on the north elevation gable. It is likely that further collapse will occur to this building. Of significance is the evidence of operation provided by the surviving low level stonework detailing; the contribution the Mill made to the local vernacular architecture when it was in use and its contribution to the lives of local people of the day by helping to provide food.

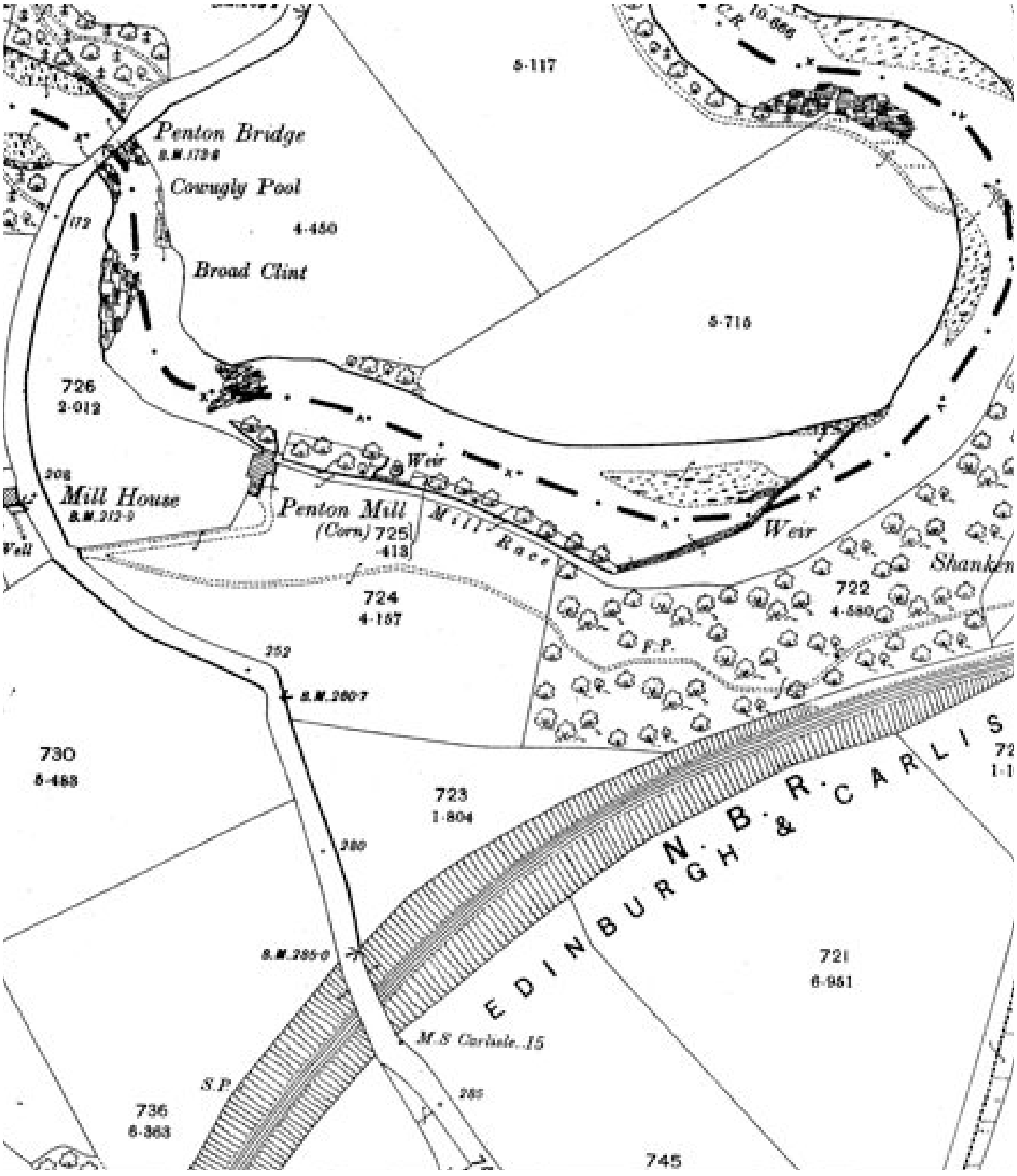
Historic Maps

Cumbria County Council Library Hodskinson's and Donald's Map

Cumbria County Council Library First Edition OS Map 1/2500. 1868

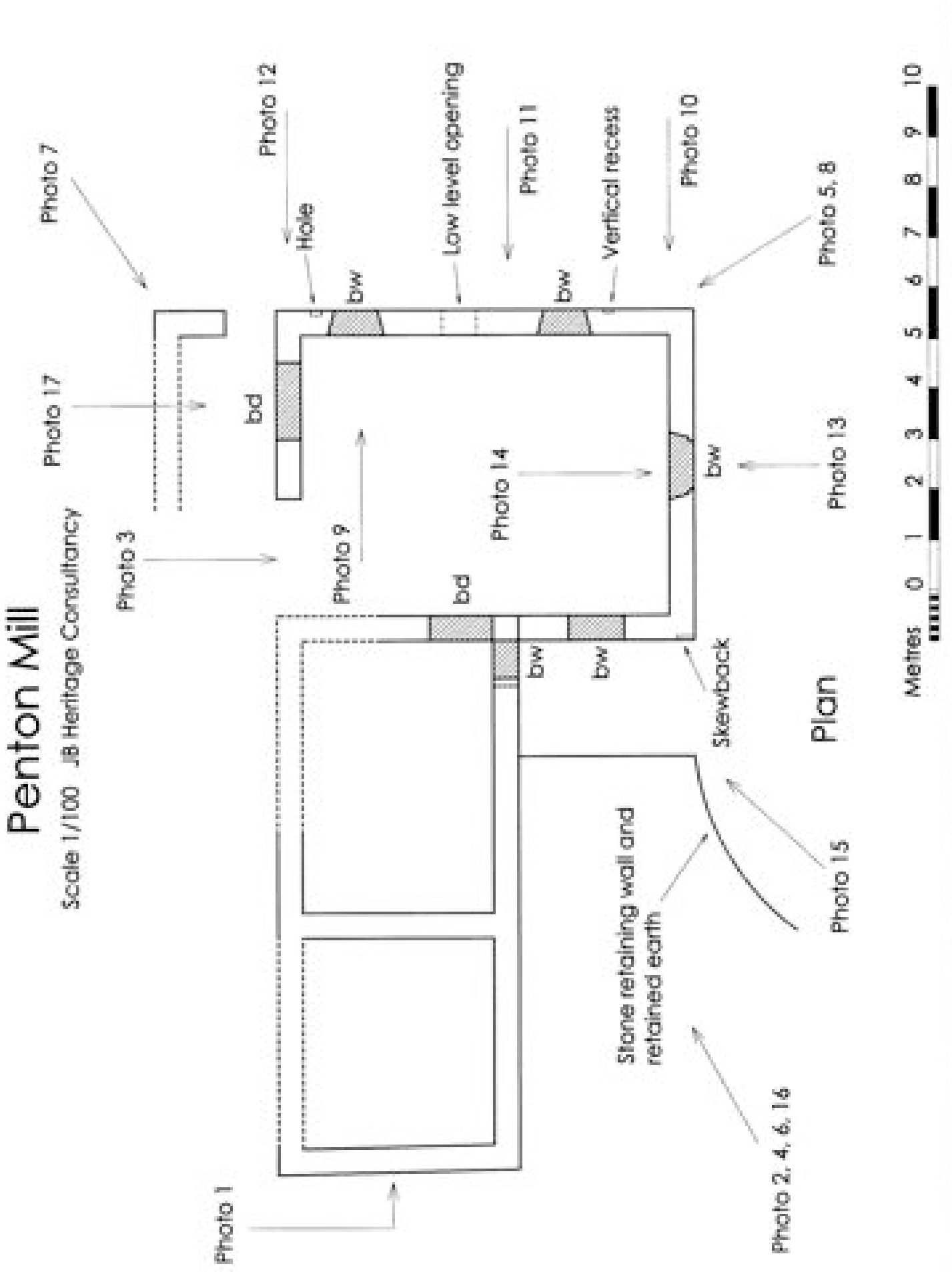


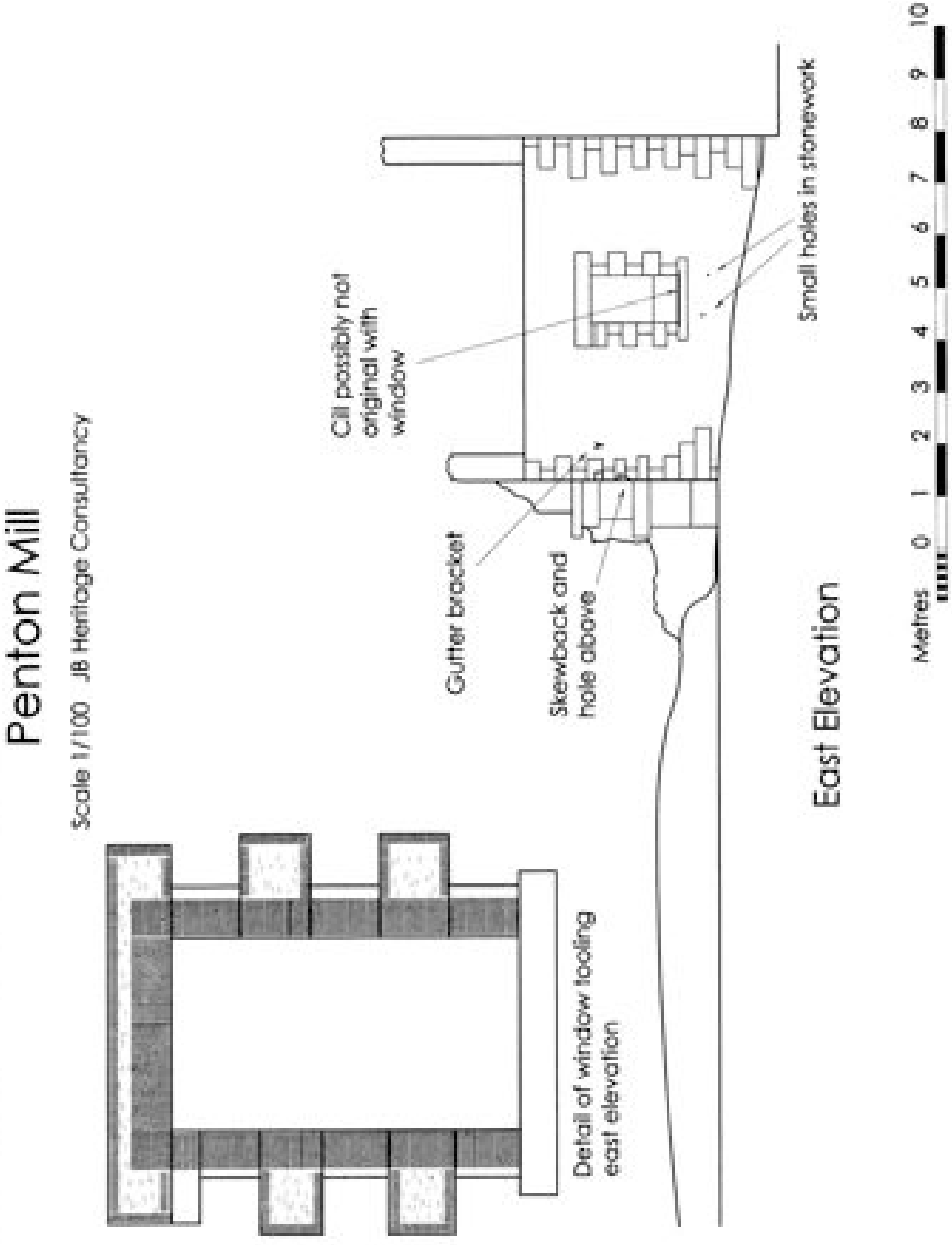
Cumbria County Council Library Second Edition OS Map 1/2500. 1901

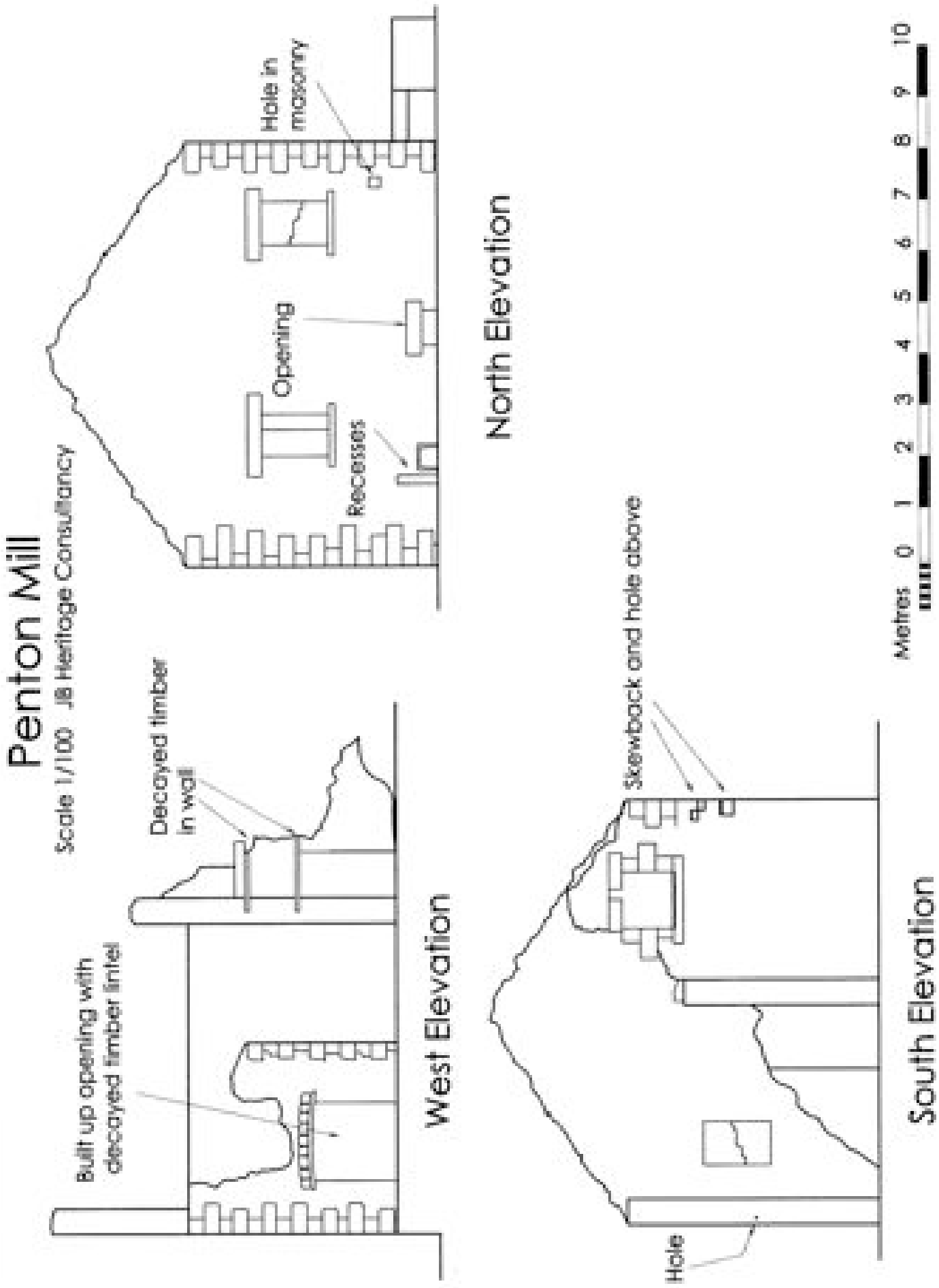


Postcard of Penton Mill

Existing Plans and Elevations


Penton Mill
Scale 1/100 JB Heritage Consultancy
Plan
Photo 1
Photo 2, 4, 6, 16
Photo 3
Photo 5, 8
Photo 7
Photo 9
Photo 10
Photo 11
Photo 12
Photo 13
Photo 14
Photo 15
Photo 17
Hole
Low level opening
Vertical recess
Skewback
Stone retaining wall and retained earth
bd
bw
Metres 0 1 2 3 4 5 6 7 8 9 10


Penton Mill
Scale 1/100 JB Heritage Consultancy
Cill possibly not original with window
Small holes in stonework
Gutter bracket
Skewback and hole above
East Elevation
Detail of window tooling east elevation
Metres 0 1 2 3 4 5 6 7 8 9 10


Penton Mill
Scale 1/100 JB Heritage Consultancy
North Elevation
Hole in masonry
Opening
Recesses
West Elevation
Decayed timber in wall
Built up opening with decayed timber lintel
South Elevation
Skewback and hole above
Hole
Metres 0 1 2 3 4 5 6 7 8 9 10

References

[1] English Heritage. 2006. *Understanding Historic Buildings. A Guide to Good Recording Practice*. Swindon: English Heritage.

[2] Watts. Martin., 2008. Corn Milling. Oxford: Shire. Pages 4 and 5.

[3] Watts. Martin., 2008. Corn Milling. Oxford: Shire. Pages 11 and 13.

[4] Brunskill. R. W., 2002. *Traditional Buildings of Cumbria The County of the Lakes*. London: Cassell. Page 117.

[5] Brunskill. R. W., 2002. *Traditional Buildings of Cumbria The County of the Lakes*. London: Cassell. Page 117.

[6] Davies-Shiel. M., 1978. Watermills of Cumbria. Dalesman Books. Page 19.

[7] Davies-Shiel. M., 1978. Watermills of Cumbria. Dalesman Books. Page 19.

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[9] Brunskill. R. W., 2002. *Traditional Buildings of Cumbria The County of the Lakes*. London: Cassell. Page 119.

[10] Brunskill. R. W., 2002. *Traditional Buildings of Cumbria The County of the Lakes*. London: Cassell. Page 119.

[11] Brunskill. R. W., 2002. *Traditional Buildings of Cumbria The County of the Lakes*. London: Cassell. Page 119.

[12] Davies-Shiel. M., 1978. Watermills of Cumbria. Dalesman Books. Page 25.

[13] Davies-Shiel. M., 1978. Watermills of Cumbria. Dalesman Books. Page 27 and 28.

[14] www.cumbria-industries.org.uk/corn.htm. Online. Accessed: 14/02/2011.

[15] Davies-Shiel. M., 1978. Watermills of Cumbria. Dalesman Books. Page 29.

[16] Davies-Shiel. M., 1978. Watermills of Cumbria. Dalesman Books. Page 29.

[17] www.cumbria-industries.org.uk/corn.htm. Online. Accessed: 14/02/2011.

[18] www.cumbria-industries.org.uk/corn.htm. Online. Accessed: 14/02/2011.

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[20] Watts. Martin., 2008. Corn Milling. Oxford: Shire. Pages 26 and 27.

[21] Brunskill. R. W., 2002. *Traditional Buildings of Cumbria The County of the Lakes*. London: Cassell. Page 119.

[22] Watts. Martin., 2008. Corn Milling. Oxford: Shire. Pages 27.

[23] Watts. Martin., 2008. Corn Milling. Oxford: Shire. Pages 28.

[24] Watts. Martin., 2008. Corn Milling. Oxford: Shire. Pages 28.

[25] Brunskill. R. W., 2002. *Traditional Buildings of Cumbria The County of the Lakes*. London: Cassell. Page 119.

[26] Brunskill. R. W., 2002. *Traditional Buildings of Cumbria The County of the Lakes*. London: Cassell. Page 119.

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