

# Blackpool Mill Minwear Pembrokeshire

## Level 4 Historic Building Record



Richard Hayman

for

Bluestone Resorts

July 2021

## Crynodeb

Comisiynwyd Richard Hayman i ymgymryd â chofnodi adeilad hanesyddol Melin Pwll-du (Blackpool Mill) Sir Benfro, ym mis Mehefin 2021. Rhoddwyd caniatâd adeilad rhestredig ar gyfer gwneud gwaith i'r felin, ar yr amod fod cofnod adeilad hanesyddol, sy'n gyfystyr â Lefel 4 Historic England, yn cael ei wneud cyn i waith ddechrau ar y safle. Mae cofnod Lefel 4 yn darparu cofnod dadansoddol cyflawn sy'n addas ar gyfer adeiladau o bwysigrwydd arbennig, gan dynnu ar ystod lawn o ffynonellau i drafod arwyddocâd o ran hanes pensaernïol, cymdeithasol, rhanbarthol ac economaidd.

Adeiladwyd Melin Pwll-du yn 1813, gan George Brown o Lan-rhath, ar lannau Afon Cleddau Ddu yn Sir Benfro. Drwy gydol y bedwaredd ganrif ar bymtheg, darparodd ei holwyn ddŵr yr ynni symudol ar gyfer y felin, ond yn 1901, diwygiwyd y dechnoleg pan osodwyd tyrbin a meini melin newydd. Parhaodd y felin i gynhyrchu blawd ar gyfer bwydo pobl ac anifeiliaid yn ystod hanner cyntaf yr ugeinfed ganrif. Yn 1968, fe'i newidiwyd i fod yn atyniad i dwristiaid, ond roedd yn segur pan gynhaliwyd yr arolwg. Mae'r adeilad wedi cadw'r rhan fwyaf o'r offer a osodwyd ynddo yn 1901, gan gynnwys y tyrbin, ac olwyn ddŵr gynharach a oedd yn cynorthwyo i godi sachau i mewn ac allan o longau a fyddai'n angori ar yr afon.

Mae Melin Pwll-du yn felin ddiwydiannol o'r bedwaredd ganrif ar bymtheg sydd mewn cyflwr eithriadol o dda o ran cadwraeth, ac mae diddordeb arbennig iddi am fod ei pheiriannau a'i hoffer wedi goroesi, yn ogystal ag am fod ansawdd ei phensaerniaeth yn safonol iawn. Roedd yn un o blith tair melin ar raddfa ddiwydiannol a adeiladwyd yn Sir Benfro tua dechrau'r bedwaredd ganrif ar bymtheg, a dwy ohonynt, gan gynnwys Melin Pwll-du, o waith y peiriannydd lleol George Brown. Yn ogystal, lleolir y felin ger uchafbwynt llanw Afon Cleddau Ddu, sy'n peri fod y safle'n ganolbwynt pwysig yn ddiwydiannol a gwledig ar gyfer cludo nwyddau a oedd yn gysylltiedig â'r felin ac â'r economi wledig leol fel ei gilydd.

## Summary

Richard Hayman was commissioned to undertake historic building recording of Blackpool Mill, Pembrokeshire, in June 2021. Listed-building consent has been given for works to the mill, on condition that a historic building record, equivalent to Historic England's Level 4, is undertaken before on-site works commence. A Level 4 record provides a comprehensive analytical record appropriate for buildings of special importance, drawing on a full range of sources to discuss its significance in terms of architectural, social, regional and economic history.

Blackpool Mill was built in 1813 by George Brown of Amroth on the bank of the Eastern Cleddau in Pembrokeshire. Throughout the nineteenth century its waterwheel provided the motive power for the mill, but in 1901 the technology was overhauled when a new turbine and millstones were installed. The mill continued to produce flour and meal for animal feed in the first half of the twentieth century. In 1968 it was converted into a tourist attraction, but was disused at the time of the survey. The building retains most of the equipment installed in 1901, including the turbine, and an earlier waterwheel that helped hoists sacks to and from vessels moored on the river.

Blackpool Mill is an exceptionally-well preserved nineteenth century industrial mill, of special interest for the survival of its plant and machinery as well as for its architectural quality. It was one of three industrial-scale mills built in Pembrokeshire in the early-nineteenth century, of which two, including Blackpool Mill, were the work of local engineer George Brown. In addition, the mill is situated near the tidal limit of the Eastern Cleddau, which made the site an important rural-industrial hub for the transportation of goods associated with both the mill and the local rural economy.

Blackpool Mill  
Minwear  
Pembrokeshire

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## I Introduction

Blackpool Mill stands on the bank of the Eastern Cleddau in Pembrokeshire at SN 05999 14489. Listed-building consent has been given for works to the mill, which was disused at the time of the survey, on the condition that a historic-building record, equivalent to Historic England’s Level 4, is carried out before works commence. Blackpool Mill is listed grade II\* (Cadw ref 6090). This report, and the accompanying archive of photographs and measured drawings, fulfils that condition.

The mill is set within its own grounds on the south side and, in addition to the main mill, there are two outbuildings, known as The Store and Cottage & Forge (fig 1). A stone-lined watercourse (largely concealed by vegetation) is aligned just off centre to the building. On the north-west side of the mill is the remains of a stone-built quay. The mill backs on the river and is situated close to its upper tidal limit. On the east side of the site is a track leading to Blackpool Bridge, and is one of the approaches to Slebech Hall. Blackpool bridge is grade-II\* listed (Cadw ref 6089, 19408).

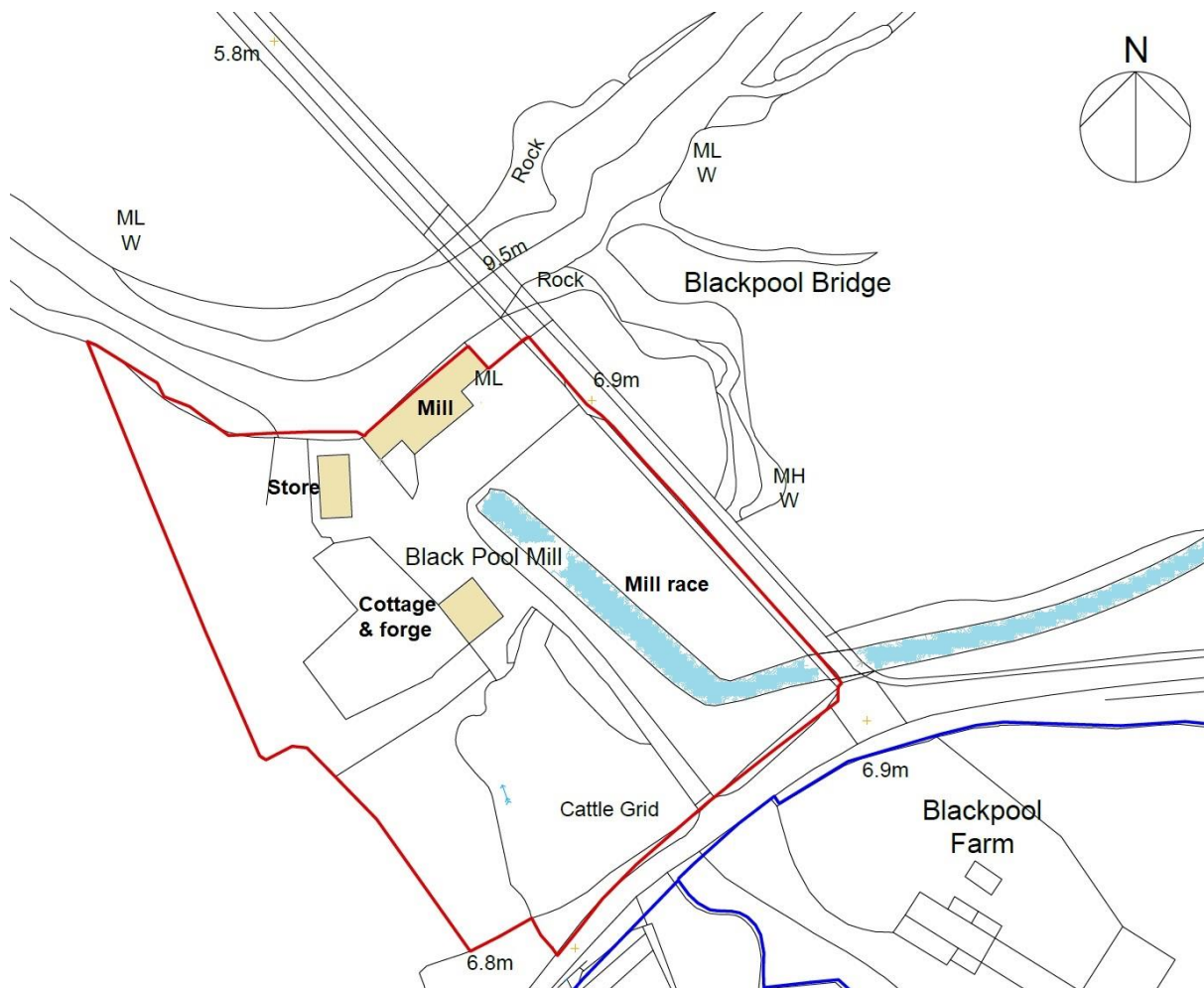


Figure 1 Location plan.

The building was visited on 21 June 2021. Access was possible to most of the building. The attic was photographed but not examined in detail as floorboards are missing. Access was



not possible to the basement of the south-west wing, or the basement of the north-east wing. Here the second waterwheel is housed, is discernible behind a glass screen, but it was not possible to photograph it because the storage of old exhibition material in the tight space behind obscures it and prevented access to it. Vegetation cover prevented photography of the rear of the Cottage & Forge, although it had previously been surveyed.

There have been some previous historical enquiries. There are records of the building in the National Monuments Record (nprn 40227) and the regional Historic Environment Record (prn DAT12560 and DAT4444). The adjoining wharf is also recorded in the National Monuments Record (nprn 420658). However, the information these records contain is drawn mainly from Cadw's listed building survey and other printed sources. The mill building, but not the machinery, was surveyed by G.W. Herbert under the auspices of the Welsh School of Architecture. The drawings are undated and belong probably to the 1960s or 1970s. They form part of the archive in the National Monuments Record entry for the site. RCAHM Wales also has photographic records extending back to the 1960s, but only of the building's exterior. The mill machinery has been recorded by John Brandrick, which is quoted in the references below and is part of the archive detailed in Section 9.

## **2 Aims and Objectives**

The purpose of the historic building record is to provide a written, drawn, and photographic record of the building that is to be repaired. As a Level 4 'analytical' record, it takes the form of a systematic account of the building's origins, development and use. The record includes an account of the evidence on which the analysis has been based, allowing the validity of the record to be re-examined in detail. It also includes the drawn and photographic records required to illustrate the building's appearance and structure and to support an historical analysis. The report then measures the significance of the building against established criteria for the significance of historic buildings.

## **3 Methodology and Standards**

The work has followed the Chartered Institute for Archaeologists (CIfA) Code of Conduct and adheres to their Standard and Guidance for Archaeological Investigation and Recording of Standing Buildings or Structures (CIfA 2016).

Historic England's guidelines, *Understanding Historic Buildings: A guide to good recording practice* (2016), have been used as a basis for defining levels of recording. The Historic Building Record for this project is at Level 4.

The measured survey was provided by Graham Frecknall Architects and was checked during the fieldwork for this project. Machinery drawings were provided by John Brandrick. The fieldwork included written descriptions, interpretation, and photographic record, and was undertaken by Richard Hayman.

## 4 Historical Background

References to corn and grist mills in the area in 1573 may have referred to a mill at Blackpool (Dashwood 1968). However, the site was later that of Blackpool Forge, an iron forge of probable post-medieval date where pig iron was converted to wrought iron. The forge is recorded as early as 1635 and appears in national surveys of the industry in three national surveys of the industry made in the first half of the eighteenth century, where its output was estimated at about 240 tons annually, a relatively high figure for the period (Lloyd 2004, 295; King 1996, 36). It was managed by John Wheeler, who was involved in the management of iron forges across the Forest of Dean and the English West Midlands (Fenton 1810, 299). Production ceased in 1806, by which time there were said to be difficulties in supplying enough charcoal for the hearths. Richard Fenton visited Blackpool in 1810, which he described as 'for many years noted as a great iron forge and fishery' rented from the Slebech Estate, but which appears to have been disused at the time (Fenton 1810, 298-99). Although he did not mention it, the place was also a wharf on the upper tidal reach of the Eastern Cleddau.



Figure 2. Slebech, Minwere and Newton Tithe map, 1846.

Nathaniel Phillips, whose wealth came from his Jamaican plantations, purchased the Slebech Estate in 1792. His son, also Nathaniel, had Blackpool Mill built in 1813, by the engineer George Brown of Amroth. He is also said to have built the adjoining arched bridge over the Cleddau (the date tablet of which says 1833 but is clearly later than the bridge itself). When the mill was insured in 1833 there is mention of only a single waterwheel, with grinding

stones and machinery, as well as adjoining storehouses and stables, with pigsties, and a separate house and offices (NLW, Slebech Estate Records, Insurance Policy 1833).

Repairs to the mill were undertaken after John Butler became the tenant in 1842. The waterwheel and pit wheel were replaced. Damage caused to the head race by Rebecca Rioters was made good (NLW, Slebech Estate Records, letters 1844). Otherwise, no documentary evidence has shown major changes to the original building until the early twentieth century. The building is shown on the 1846 Tithe survey, with a single outbuilding (fig 2). The map does not show the outer wings, which are shown on the latter 1888 and 1907 Ordnance Survey maps, but there is reason to suppose that the wings were part of the original design, as discussed below (figs 3, 4).



Figure 3. Ordnance Survey, 1888.

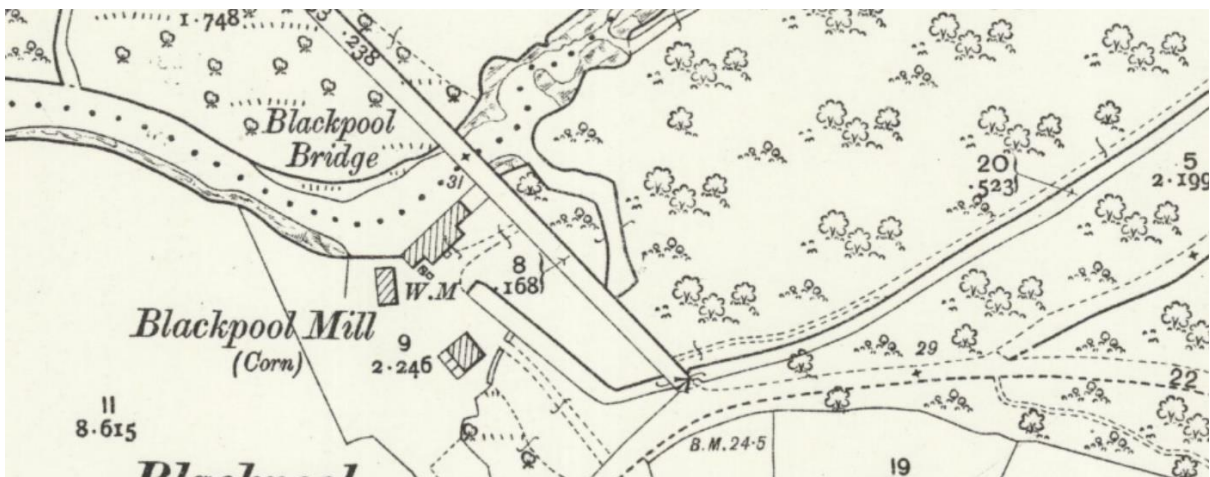


Figure 4. Ordnance Survey, 1907.

In 1901 Joseph Armfield & Co of Ringwood surveyed the existing machinery at Blackpool Mill and reported that it had a breast-shot waterwheel of 15 feet diameter and 11 feet 9 inches wide, which had clasp arms rather than radial arms (NLW, Slebech Estate, installation of turbine, 1901). The pit wheel was 9 feet in diameter. However, both the wheel and pit wheel were badly worn, and the waterwheel was considered to be inefficient by modern

standards. One of the problems was that, when there was a high tide, and the water level rose 2 or 3 feet, the wheel lost considerable power. When the waterwheel was removed, score marks were revealed in the wall of the wheelpit, although this is a common feature of waterwheel pits that have seen a long period of use (Pike 1968, 7). The hoist also needed replacing. According to the memoir of G.W. Pike, before 1901 there were six pairs of stones arranged in a circular form around a large central crown wheel. He also records that the smaller waterwheel under the east wing was mainly used for hoisting cargo from boats moored in the river (Pike 1968, 7-8). Although Pike's memoir says that it was removed in the renovations of 1901, a waterwheel remains *in situ*.

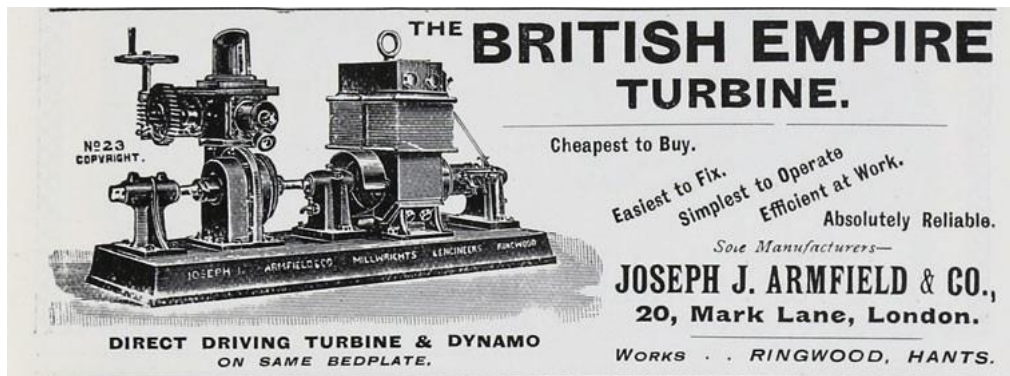


Figure 5. Advert for a British Empire Turbine, 1901.

Joseph J. Armfield & Co of Ringwood, Hampshire, was founded in 1875. The firm specialised in mill machinery and, from 1889, began manufacturing water turbines, which became the core of the business in the first third of the twentieth century. In 1901 plans were drawn up for a 25-inch double horizontal British Empire Turbine, a type that the company advertised as 'cheapest to buy, easiest to fix, simplest to operate, most efficient at work' (fig 5). The turbine developed 35 horse power but required new gearing on the ground floor to make it efficient to operate, which included both cast iron and wooden cogs. New hurst frames were installed for the four new millstones, which reduced any potential damage to the floors from vibrations. Other new equipment was a set of three grain bins and a new single-chain sack hoist.

Three of the mill stones were used for the coarser meal, used for animal feed. Two of the pairs were 'Derbyshire Peak', i.e., gritstone, and the third was a similar grit, but of artificial rather than quarried stone. These could be worked together so that, by means of conveyors, the output of all three sets of stones was mixed together. The fourth pair of stones are French Burrs and were used for grinding flour.

By 1907 the tenant, G.W. Pike, had installed a weighing machine (marked WM on the 1907 Ordnance Survey map), replaced one pair of stones, added a cake crusher, sawmill and corn rolls for rolling oats. In 1915 additional equipment was installed – a flour-dressing plant with automatic feeder, stone meal scalper, centrifugal dressing machine (or smutter) and grain separator, all by Joseph Armfield except for the smutter. The stones were used for grinding wheat and barley and shelling oats. Pike claimed, however, that demand for crushing barley

and oats had declined with the advent of oil engines and that grinding wheat had become the core of the business. Armfields may have also been responsible for the repairs to the sluice gates in the head race, work also undertaken in 1915. The mill continued working in the inter-war period, although Pike supplemented his income by loading timber at the wharf.

The mill continued to operate with the turbine until electrical power was installed in 1954, although in latter years the building was used more for storage than grinding.

In 1968 Lady Victoria Dashwood, owner of the Slebech Estate, began conversion of the mill into a tourist attraction, using the outer wings of the building as visitor facilities such as reception, shop and tea room. The machinery remained in place, although guards were put up around the turbine and line shafts.

#### **4.1 Quay**

There was a wharf at Blackpool by the end of the eighteenth century (Dashwood 1968), from where slate from Glogue Quarry was shipped until the arrival of the railway in 1853. The quarries at Glogue, east of Crymych and about 14 miles from Blackpool, had begun working in the late-seventeenth century (Gwyn 2015, 230). A new quay was constructed by the tenant in the early twentieth century and was used in the conveyance of goods central to a rural economy: grain, flour, foodstuffs, manure, stone and coal (Pike 1968, 14).

#### **4.2 Outbuildings**

The store building is shown on the 1846 Tithe map, while the Cottage & Forge is first shown on the 1888 Ordnance Survey, at which time it had pigsties, with pens, attached to the rear (figs 2, 3).

### **5 Description of Buildings and Machinery**

#### **5.1 Mill exterior**

The mill is a building of four storeys, with attic, and a basement housed within a deep plinth (fig 6). The main building which has walls of coursed stone that have been cement-rendered, under replacement slate roofs behind coped gables. The plinth is of hammer-dressed stone with freestone coping. The main range has five bays, with outer two-storey wings of two bays set back. The central entrance is round-headed and within a dressed limestone surround, with double doors under a radial-glazed overlight. Mid-twentieth century photographs show a gabled canopy over the entrance which this has been removed, but its shadow remains visible on the wall. Steps up to the door are in modern concrete. Original windows are 16-pane hornless sashes, of which four survive in the front of the main range, with some replacement twentieth-century horned sashes, while other windows are boarded over, and the sashes have been removed. In the north-east (right-hand) wing there is an inserted door, but otherwise it has windows similar to the main range. The angle between



the main range and the wing is not paved, leaving the watercourse to the secondary waterwheel exposed. Curved railings around the around protect from the fall in the ground. In the south-west (left-hand) wing are modern steps up to an inserted door, but otherwise the windows are also similar to the main range. In front of the south-west wing is a weighing machine by Pooley & Sons of Liverpool and Birmingham (fig 7). The attic of the main range is lit by small windows in the gable ends, both boarded over. In the gable end of the south-west wing is an arched opening to the basement and a single cast-iron mooring ring.



*Figure 6. South-east front of the Mill.*



*Figure 7. Weighing machine in front of south-west wing.*

At the rear, the main range and wing form a continuous front to the river (fig 8). The deep plinth of hammer-dressed stone with projecting coping, is more clearly visible than it is at the front of the building. It has a central wide tail race under a round arch of dressed limestone, with a smaller tailrace to the left, under the north-east wing, for the secondary waterwheel. The left-hand bay of the main range has a ground-floor doorway in a projecting stone surround with cambered head, which has a split boarded door. It was used for raising and lowering sacks from river vessels. In the right-hand bay there is a simple ground-floor boarded split door.



*Figure 8. Rear wall to river, with quay on the right-hand side.*

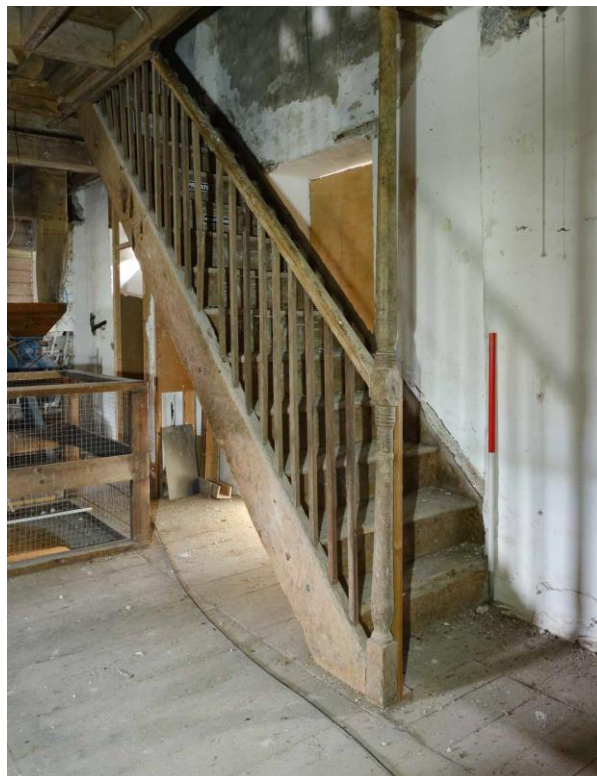
## **5.2 Mill Interior**

The main floors retain original pine floorboards, with significant areas of replacement. Walls are lime-plastered on the main floors. In the ground, first and second floors the cross beams are carried in two rows of cast iron columns. On the third floor they are carried on octagonal timber posts which have run-out stops (fig 9). The five-bay roof has trusses which have been restored and repaired by the addition of fish plates. They have tapering king posts with raking struts. Between the central two trusses are longitudinal beams that supported the sack hoist.



*Figure 9. Timber post on third floor.*

Stairs from ground to first floor, first floor to second and second to third are all set against the wall (fig 10). They have turned full-height newels, plain balusters (removed second-third floor) and moulded hand rail. The stair to the attic has lost its square balusters and retains only one moulded square newel. Other interior details are modern, including the doors to the outer wings and basement stairs.



*Figure 10. Stairs from first to second floors.*



The north-east wing has a modern stair, and an upper storey with plaster ceiling. In the south-west wing the roof has been replaced with modern trusses.

In the basement the masonry walls are exposed. The main range is subdivided into three units by dividing walls (fig 11). The mill race is aligned left-of-centre with the mill and so the wheelpit, of equal width to the watercourse, is also offset. It housed a breast-shot wheel. The wheelpit itself was inaccessible at the time of survey, but was partly dismantled when the turbine was installed, and a wall behind the turbine shaft was inserted across the wheelpit. Steps on the left-hand side of the wheelpit are probably modern, associated with the museum phase of the building. On the right-hand side (north-east) side of the mill race, in the basement of the building, is a blocked arch, through which water originally flowed from the mill race to the secondary wheelpit. The secondary wheelpit is in the basement of the north-east wing, which was inaccessible at the time of survey.

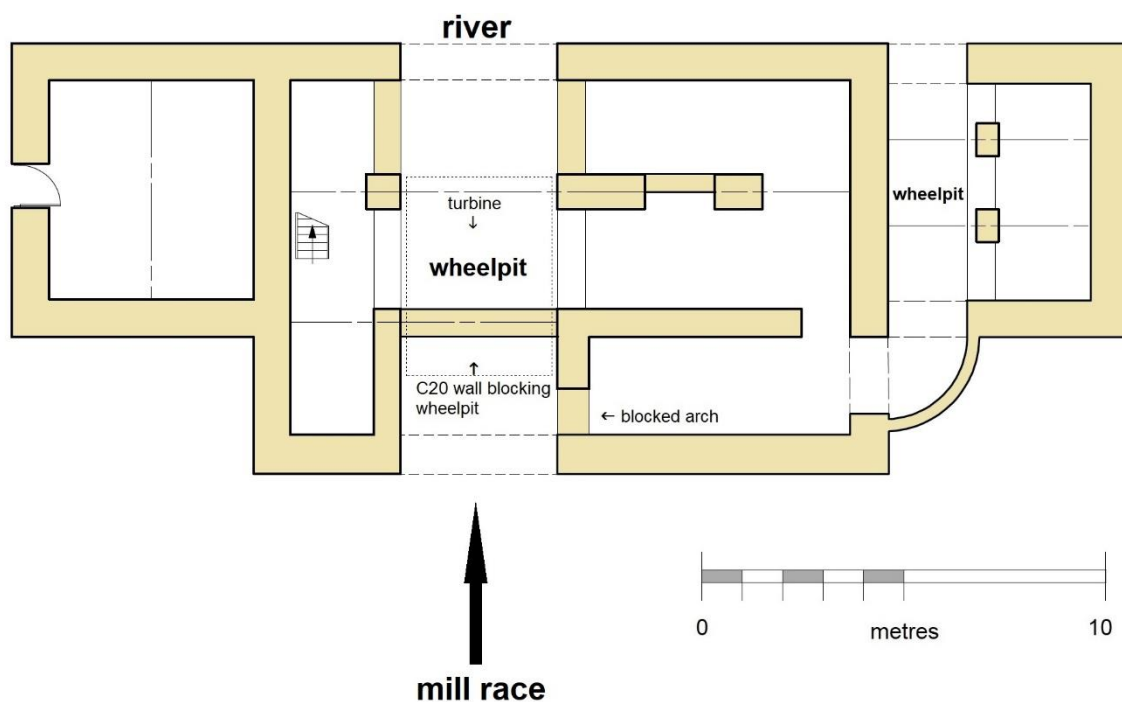


Figure 11. Basement plan.

The turbine shaft is placed centrally within the earlier wheelpit. Two further shafts offset are for the turbine controls operated at ground floor level. The turbine itself is set further below and was not visible because the tailrace of the main wheelpit is silted.

### 5.3 Mill Machinery

There are three sources of motive power in the building: turbine, waterwheel and electric motor (figs 12, 13). The turbine is not visible, as it is set below the level of silt inside the old tailrace. The turbine shaft passes up to the ground floor, where the turbine controls are situated, and where its power is distributed to a lay shaft by means of a bevel gear (fig 14). Two subsidiary vertical shafts are for the turbine controls.

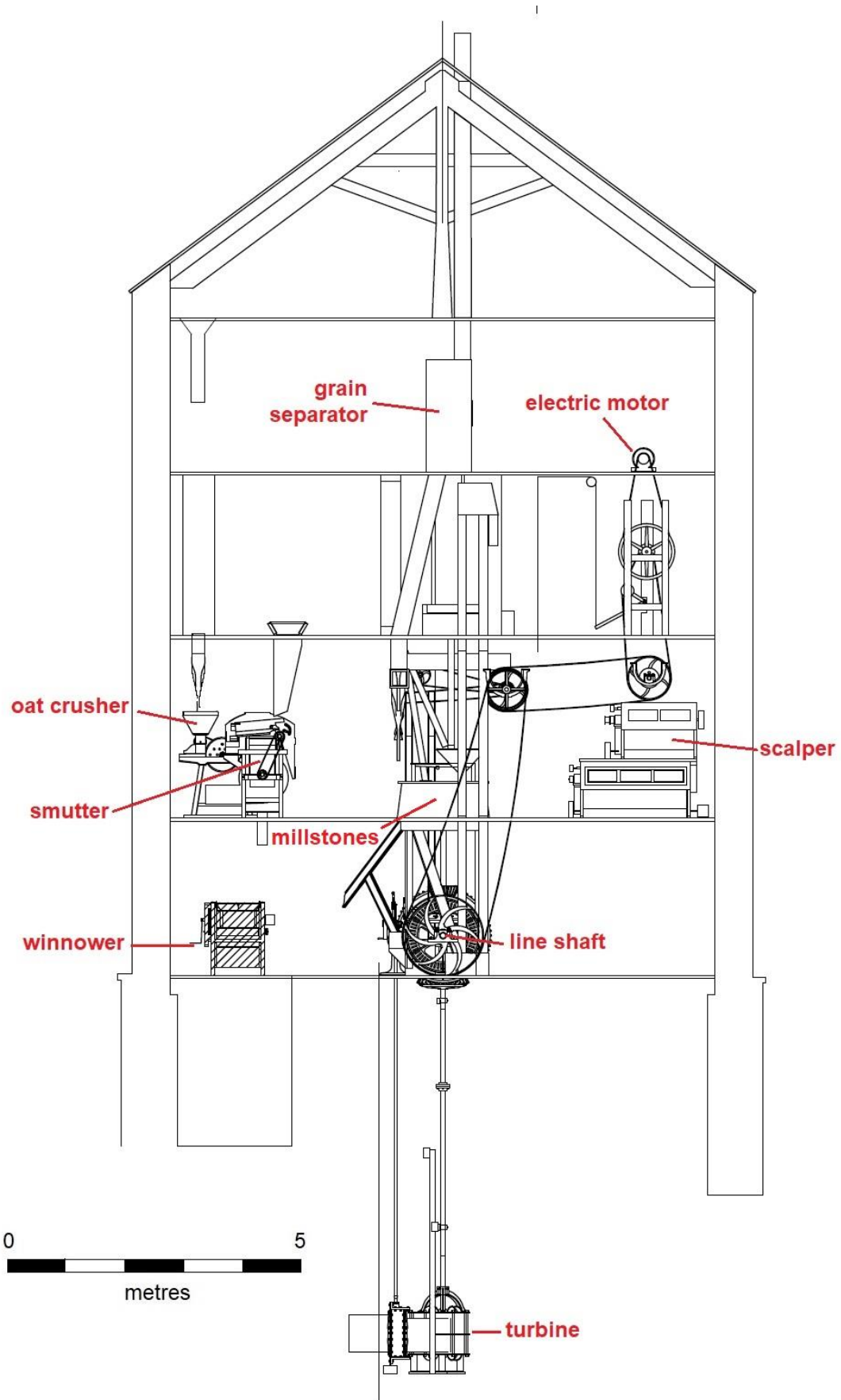


Figure 12. SW-NE section, showing turbine, motor and machinery.

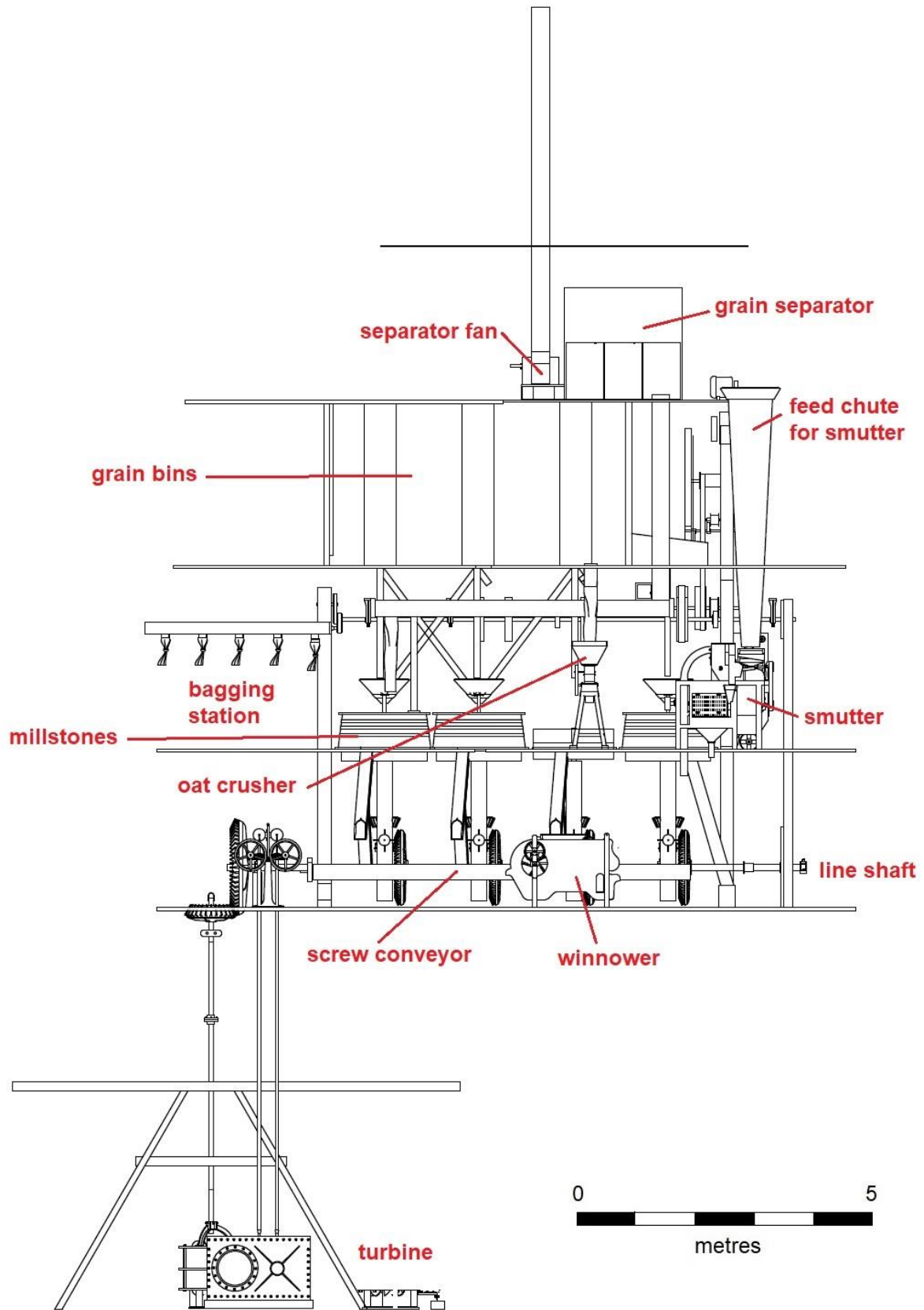
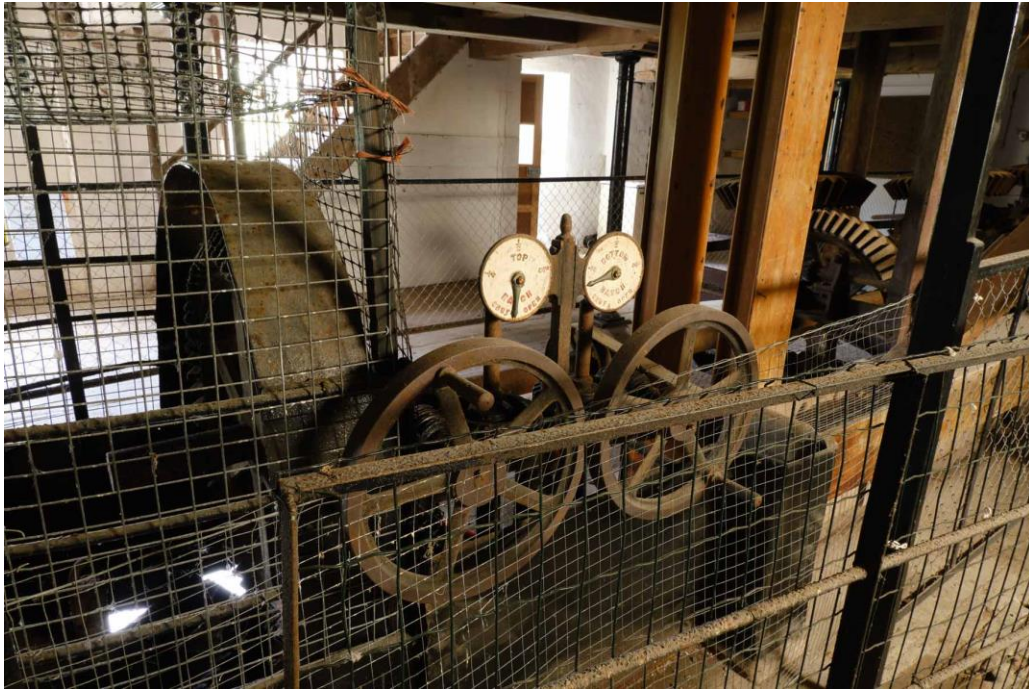


Figure 13. SW-NE section, showing turbine and machinery.



*Figure 14. Turbine controls on the ground floor.*

The secondary waterwheel has what appears to be wooden buckets, and a cast-iron axle. Given the level of water in the mill race, it is likely to be a breastshot wheel. Power was distributed to the floor above by means of line shafting and belt drive, which is set against the basement wall on the outer side of the wheelpit, and is boxed and guarded with mesh for the safety of visitors (fig 15). The belt drive is connected to the main ground-floor lay shaft at the north-east end. There is no surviving transmission associated with hoisting sacks from moored barges, as was once the case.



*Figure 15. Drive from the secondary wheelpit in the basement.*



At the north-east end of the ground floor is also a belt drive by which means power was transmitted from an electric motor. The motor, by Brooks Motors Ltd of Huddersfield, is on the third floor and the shafts and pulley wheels that deliver power to the line shaft on the first floor are re-used from the sack hoist installed in 1901 (fig 16).



Figure 16. Brooks electric motor on third floor.

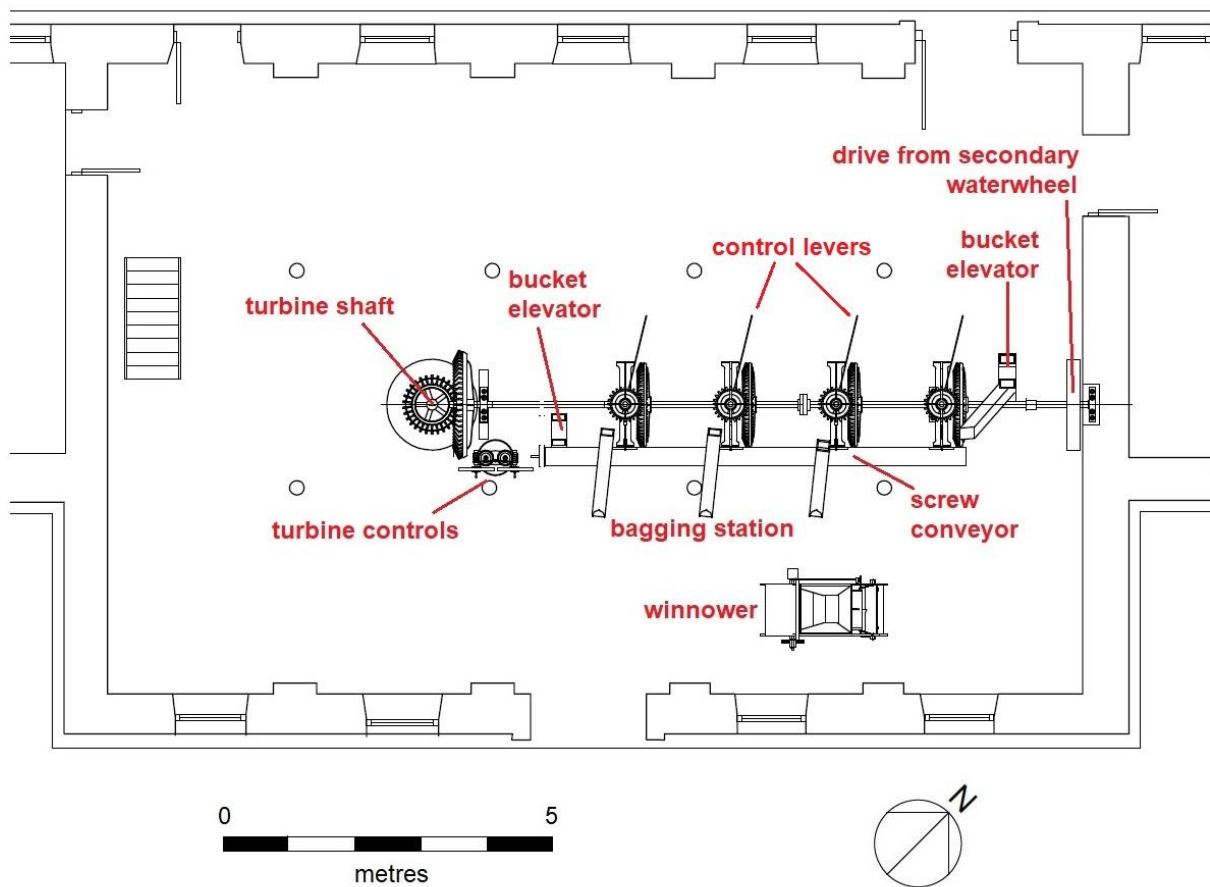


Figure 17. Ground-floor machinery.



Figure 18. Hurst frame on the ground floor, supporting millstones.

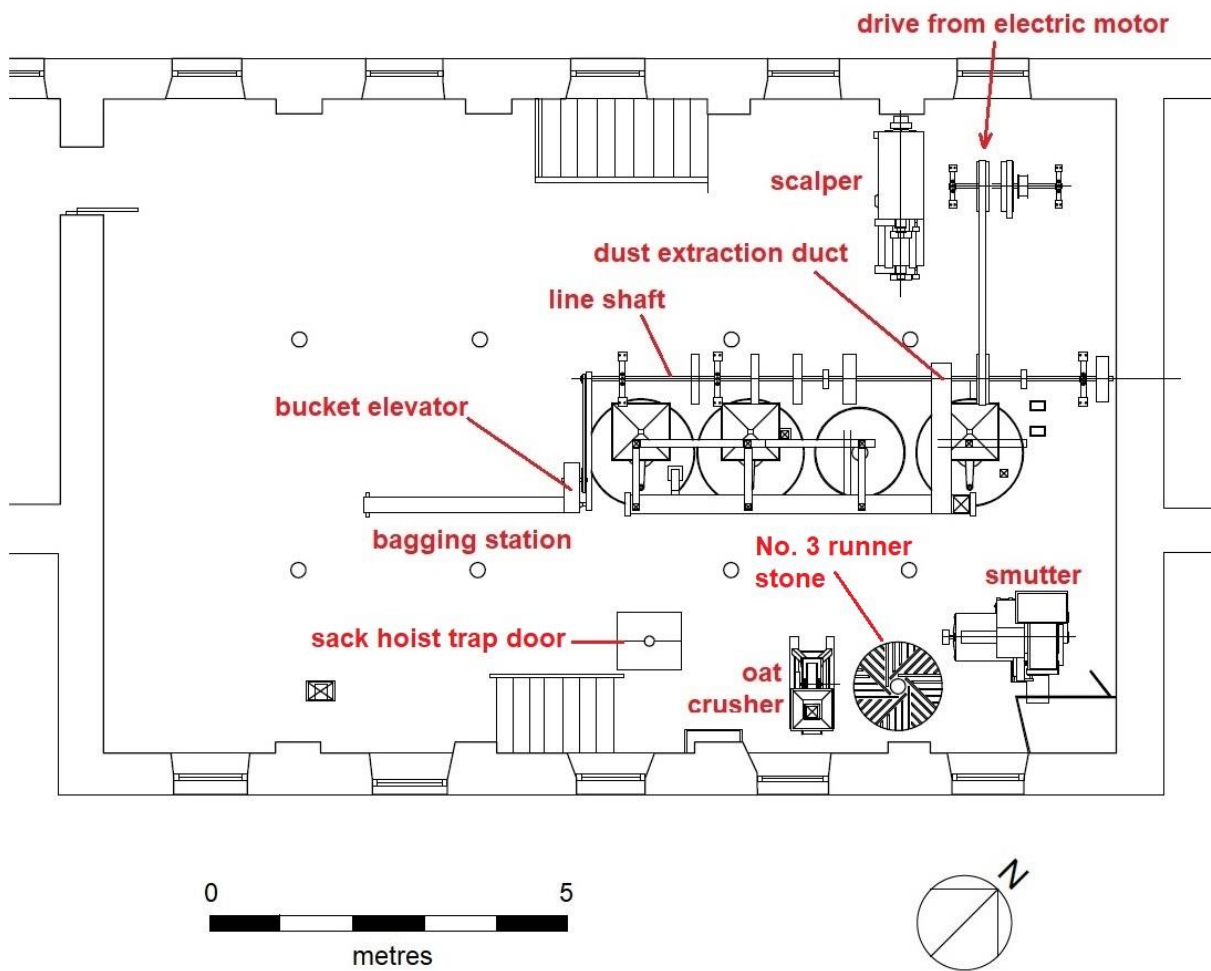


Figure 19. Machinery on the first floor.

On the ground floor, cast-iron bevelled cogs were manoeuvred into position by cast-iron levers, distributing power to the individual millstones above, which are supported by cast-iron hurst frames (figs 17, 18). This arrangement allowed a combination of millstones to be used rather than powering all of them. At first-floor level are the four pairs of stones, three encased in wood with iron straps (fig 19). These were numbered 1-4 from the south-west end, nearest the turbine. Three were for grinding the meal, the other for grinding flour. The runner stone for number 3 has been removed and lies close by.

Grain was delivered from the grain bins on the second floor by means of chutes (fig 13, 20). The meal could be recirculated and could be bagged either on the first floor – by means of the screw conveyor and bucket elevators to the feed chutes toward the south-west end of the room (fig 19) – or (for stones 1-3) at ground floor level (fig 17).

Hatches on the south side of each floor mark the position of the sack hoist (fig 17, 19, 20). In the attic there are two beams to which the pulleys were attached, but the mechanism has been dismantled and re-used for the electric motor, as described above.

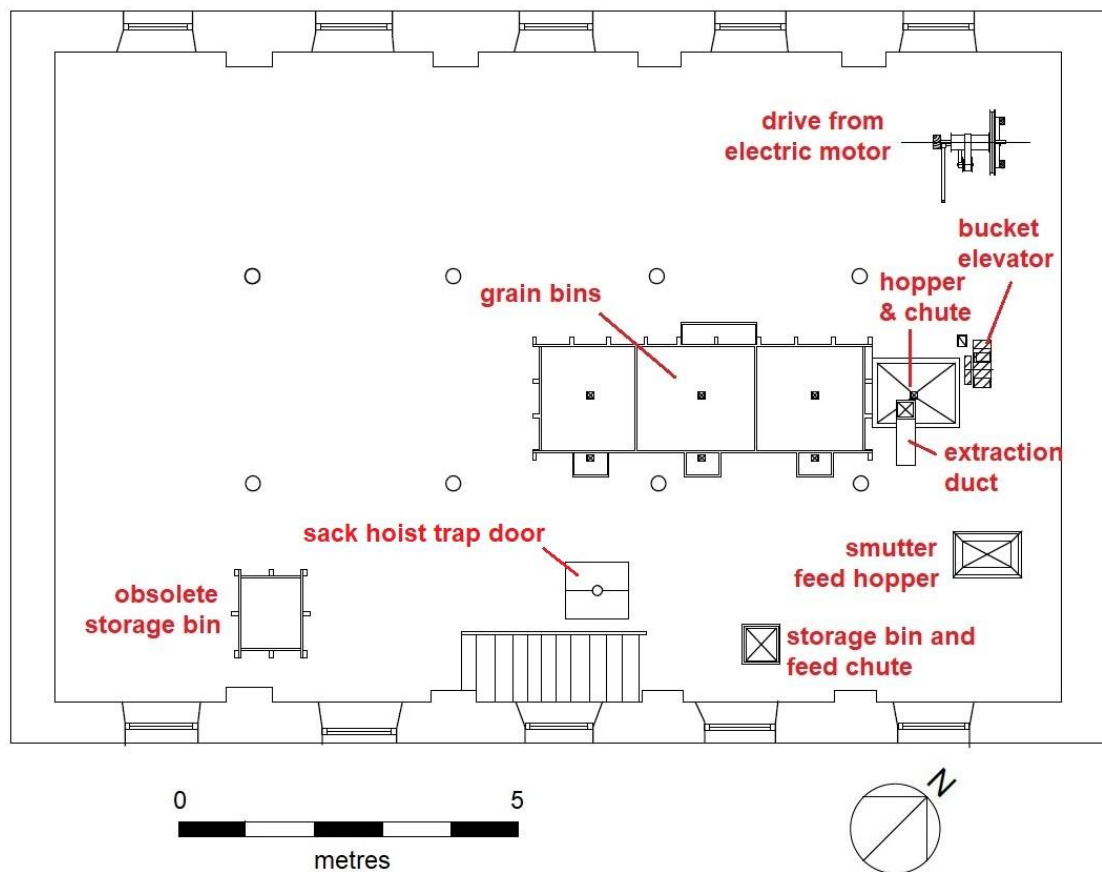


Figure 20. Machinery on the second floor.

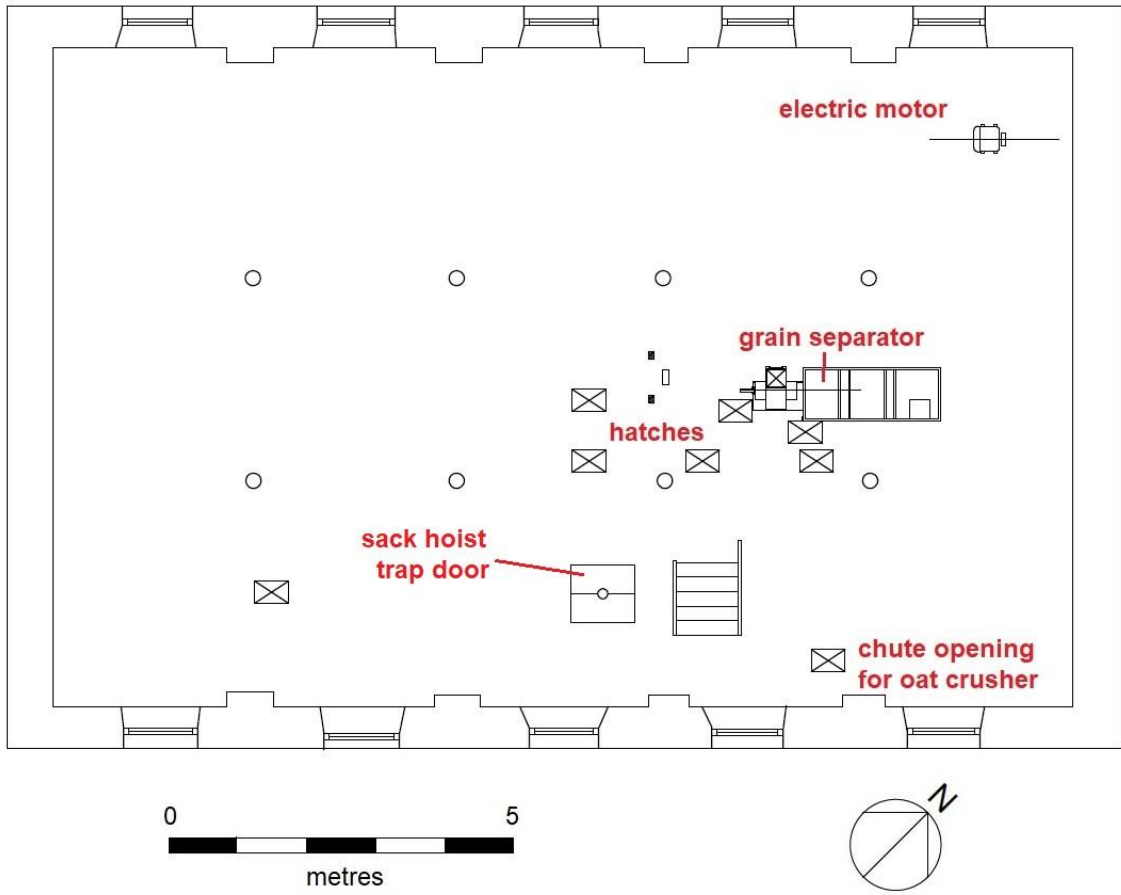


Figure 21. Machinery on the third floor.



Figure 22. Grain separator, with fan on the left side, third floor.



The grain cleaner, or separator, is on the third floor, which removed dust and foreign matter from the grain (figs 13, 21, 22). It was part of the installations made by Armfields – whose name is stamped on the side – in 1915. Its fan was powered by belt drive from the line shaft above the millstones. The cover for the chamber has been partly removed. The grain separator had a vertical wooden dust extractor, which is no longer in place, although sections of it are on the attic floor. On the first floor is the freestanding Armfield scalper for cleaning grains (figs 12, 19, 23). It is not in its original position and appears to have been turned 90 degrees to its present position as a measure to control the movement of visitors within the building.



*Figure 23. Armfield scalper on first floor.*

Also, on the first floor is the smutter by S. Howes, also probably of 1915 (figs 12, 13, 19, 24). The smutter was used to remove spores of smut, a fungus which attacks wheat. Typical of smutters in British mills, it was built in the USA. Their introduction coincided with the large-scale imports of grain across the Atlantic and was important when milling grain by gradual reduction, which was practised at Blackpool Mill from the early twentieth century. The oat crusher on the first floor is a type that could be used on farms, and therefore contributed to the decline in purpose-built mills for animal feed (fig 12, 13, 19, 25). On the ground floor is a hand-operated winnowing machine, although this is not in situ and its original position or provenance is unknown (figs 12, 13, 17, 26).



*Figure 24. Howes smutter on first floor.*



*Figure 25. Oat crusher on the first floor.*





*Figure 26. Winnowing machine on the ground floor.*

#### **5.4 Outbuildings**



*Figure 27. Store, looking north from the yard.*

The Store is a single-storey building of random rubble stone under a roof of corrugated metal sheets (figs 27, 28). Original openings are under cambered stone heads, whereas the second-phase ones are under brick heads. The heads of the modern openings are not articulated in any way. Facing the mill, the east side has one blocked window under a stone head, and one to its right under a brick head, both with thin slate sills. Further left are two modern doorways and windows, which are part of the conversion of the building to toilets. The north gable end facing the river has a pronounced batter and is buttressed at the north-east angle. The west wall has three windows under stone heads, of which the southernmost is blocked, and an inserted door under a concrete lintel. Only in the south gable end is there evidence of an early doorway, offset to the left side under a stone cambered head and with boarded door. To its right is a modern window that lit the toilets but has been blocked.

Inside the building the toilets are simply a blockwork structure at the south end of the building. There are re-used cross beams, on stop-chamfered, that suggest a former loft, and two tie-beam trusses.



*Figure 28. Cottage & Forge.*

The former Cottage & Forge is a lofted building of random rubble stone with bigger quoins, under a corrugated metal roof of shallow pitch (fig 29). In the east wall, facing the drive to the mill, is a central doorway flanked by windows, all under cambered heads. A small square window is in the loft above. In the north gable end the doorway and loft window under cambered heads are offset to the right, with a small lintelled opening right of the doorway. In the rear (west) wall a former opening for a cart shed is under a timber lintel but has been part blocked, with inserted boarded door and shutter.



Inside the building there is an original spine wall. There are three tie-beam trusses. There is no evidence of a hearth for a forge nor a domestic fireplace.

## **6 Interpretation**

### **6.1 The Mill**

The building appears to be of a single phase of construction. Although the Tithe plan does not show the outer wings, evidence of the building, principally the high plinth with its arched tailrace openings, suggests a single phase of building.

Although the original waterwheel was replaced by the turbine in 1901 the wheelpit itself remains substantially intact, with water fed at a level to indicate a breast-shot wheel, as claimed by Pike. The secondary wheelpit probably ceased working before the end of the mill's working life, given that the head race was blocked. However, given its connection to the main lay shaft on the ground floor it was certainly in use in the twentieth century.

The use of the outer wings is not entirely certain. No fireplaces are discernible in the building, which is evidence that the wings were not for residential use. Both wings have doorways but in both cases they are twentieth-century insertions. Neither doorway is shown in the Welsh School of Architecture survey drawings of the 1960s or 1970s. Photographs accompanying Pike's memoir show sash windows in the position of these doors. The doorway in the north-east wing is earlier and is shown in a photograph on the cover of Dashwood's guide book of c1968. The doorway in the south-west wing is therefore later still. The two floors of the south-west wing are accessible only from the respective floors of the main mill. Although there are references in Pike's to drying kilns on the west side of the mill it does not appear that they could have been housed in the south-west wing. The upper floor rests of regular joists and floorboards and there was no outlet for heat on the roof. Given the presence of the weighing machine outside the building, the ground floor was probably for office use, at least in the early twentieth century. The basement has no internal connections with the rest of the building, faces the quayside, and was therefore probably more associated with that side of the business than the mill.

The north-east wing has a modern stair, probably associated, like the entrance in the wing, with the conversion to a museum in 1968.

### **6.2 Outbuildings**

Both outbuildings seem to have been associated as much with the wharf as with the mill. The building known as Former Cottage and Forge may have been, at least in part, a stable and cart house, given the wide opening in the rear and the arrangement of door and windows on the east side. The early Ordnance Survey maps indicate that there was access to these buildings from the west side, something that the present growth of vegetation has

obscured. The 1888 and 1907 Ordnance Survey indicate pigsties on the west side of the Cottage and Forge and G.W. Herbert's survey drawing describes the Store as a piggery.

## 7 Statement of Significance

The significance of heritage assets is measured against agreed heritage values, as set out in Conservation Principles published by Cadw (2011):

- **Evidential value:** This derives from those elements of an historic asset that can provide evidence about past human activity, including its physical remains or historic fabric.
- **Historical value:** An historic asset might illustrate a particular aspect of past life or it might be associated with a notable family, person, event or movement.
- **Aesthetic value:** This derives from the way in which people draw sensory and intellectual stimulation from an historic asset. This might include the form of an historic asset, its external appearance and how it lies within its setting.
- **Communal value:** This derives from the meanings that an historic asset has for the people who relate to it, or for whom it figures in their collective experience or memory. It is closely linked to historical and aesthetic values but tends to have additional or specific aspects.

Blackpool Mill has communal value as a landmark building on the banks of the Eastern Cleddau, and as a place of work and leisure over many years. Its chief values, however, are evidential, historic and aesthetic.

Most sites where water power has been exploited have a long history, powering a succession of different industries from the medieval period to the twentieth century. Blackpool Mill is typical in that respect, having been the site of a forge where waterwheels drove bellows and hammers, and possibly a corn mill before that.

Blackpool Mill is an exceptionally well-preserved late-Georgian industrial building, designed more like a factory than a mill with its symmetrical facades to the front and (nearly symmetrical) to the river. It was one of three industrial-scale mills built in Pembrokeshire in the early-nineteenth century. A tidal mill was built in Pembroke, close to the castle, also by George Brown of Amroth. This was also a four-storey building with symmetrical facades, but was destroyed in 1955. Carew Tidal Mill (Grade II\*, Cadw ref 6038) was built in the early-nineteenth century. Although slightly smaller than Blackpool, it is of a similar design, of three storeys and five bays. Each of these industrial mills had two waterwheels, Blackpool and Carew of similar breastshot or undershot type.

The design of Blackpool Mill, and the straight line of its head race in front of the building, was also influenced by its position relative to Slebech House. Although not the main entrance to the house, there was an approach from the east through woods that meant crossing the Eastern Cleddau at Blackpool Bridge, beside the mill, from where there are fine views of the river and the mill. The bridge may be contemporary with the mill, and is said to

be by George Brown. Certainly, the stone arch of the bridge complements the stone round-headed tail races of the mill.

There is evidence for the working of the mill from the early-nineteenth to the mid-twentieth century. Although the machinery of the nineteenth century was removed, the original layout is clear – there was a garner floor, bin floor, stone floor and meal floor, with plenty of space for the storage of grain. The position and operation of the original waterwheel remains clear, despite later alteration.

Blackpool Mill retains a near-complete set of machinery from 1901, possibly the most complete surviving installation in Britain by Joseph Armfield, which provides evidence for the progression of milling technology in the nineteenth and twentieth centuries. There are few other corn mills that were turbine-powered – for example, Cilcewydd Mill near Welshpool (grade II, Cadw ref I9557) retains two late-nineteenth century turbines, but no millstones. At Blackpool Mill the turbine and associated line shafts survives in complete form.

The building of three industrial-scale mills in Pembrokeshire in the early nineteenth century is evidence of the importance of arable farming in the county in that period, and during the Napoleonic Wars in particular. Each of them was well-placed with access to the ports of western Britain via Milford Haven, which may have been a specific ambition of Nathaniel Phillips when he invested in the building of the mill. After the middle of the nineteenth century the agricultural economy was changing, with a shift from arable to pastoral, and increased reliance on imported grain. The milling of wheat and barley may have declined in this period, but oats could be milled for human and animal consumption.

By the twentieth century many farmers had their own plate and roller mills, powered by internal-combustion engines, to mill grain for fodder. Consequently, there was less need to take grain to the mill. Blackpool Mill did not have direct access to railway transport for importation of grain and its fortunes were linked with the prosperity of the river trade and of coastal traffic. The slow decline in the mill's fortunes, despite the investment made in 1901, is testified in the memoir G.W. Pike, which stresses the importance of the wharf in supplementing the miller's income in the twentieth century.

The site of Blackpool Mill close to the navigable limit of the Eastern Cleddau is evidence of the importance of river transport in the pre-railway and motor transport period. The mill was part of a small but important rural-industrial complex on the river.

## **8 References**

### **8.1 Documentary and cartographic sources**

Slebech, Minwere and Newton Tithe survey, 1846.

Ordnance Survey, county series maps, 1888, 1907.

RCAHM Wales files (nprn 40227)

National Library of Wales, Slebech Estate Records:

- Slebech 58, A plan of premises at Blackpool situate in the parish of Newton, Pembrokeshire by J. Goode, 1822
- Slebech 55, Installation of turbine & millstones for Blackpool Mill Narberth [graphic] / Joseph J. Armfield & Company, 1901.
- Accounts and Correspondence concerning Blackpool Mill (1913)
- Correspondence from Joseph Armfield and Co. concerning New Plant for Blackpool Mill (1915): Slebech Estate Records.
- Letters from John Butler and Ben R. Thomas concerning Repairs to Blackpool Mill and the Dispute with Marychurch (1844):
- Insurance Policy in Respect of Blackpool Corn Mill (1833)

## 8.2 Online sources

Armfield Engineering, history of the company at <https://armfield.co.uk/about-armfield-engineering/the-history-of-armfield-engineering/>

John Brandrick, drawings of Blackpool Mill,  
[http://www.milldrawings.com/html/black\\_pool\\_mill.html](http://www.milldrawings.com/html/black_pool_mill.html)

## 8.3 Printed sources

Archaeological Archives Forum (2011) *Archaeological Archives. A guide to best practice in creation, compilation, transfer and curation.*

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<http://www.archaeologists.net/codes/cifa>

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Lloyd, T., Orbach, J. and Scourfield, R., 2004, *The Buildings of Wales: Pembrokeshire*. London Yale University Press.

Pike, W.G., 1968, *As far as the tide flows*. Unpublished ms.

Watts, Martin, 2002, *Carew Tidal Mill*. Pembroke Coast National Park Authority.

Welsh Archaeological Trusts, 2018, *Guidance for Submission of Data to the Welsh Historic Environment Records*.

## **9 Archive**

The archive deposited with the regional Historic Environment Record and the National Monuments Record consists of:

108 digital photographs (tif)

Report (pdf)

Written Scheme of Investigation (pdf)

Catalogue of photographs (Excel)

1 Measured building survey drawings

9 Measured machinery drawings

Field notes (to be retained by contractor)

# 10 Plans showing direction of photographs

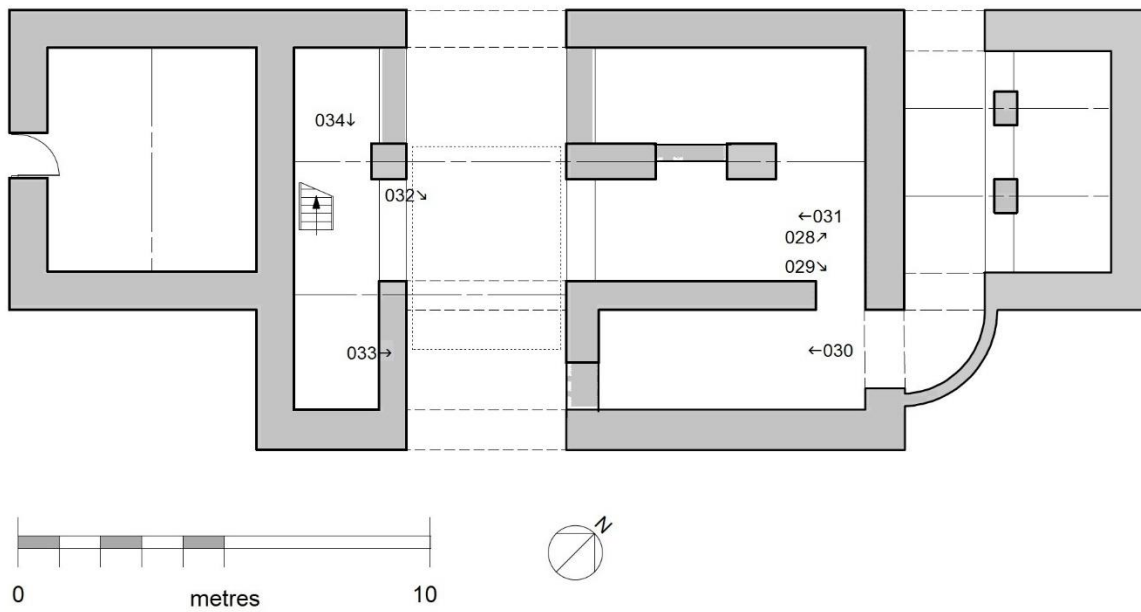


Figure 29. Basement photographs.

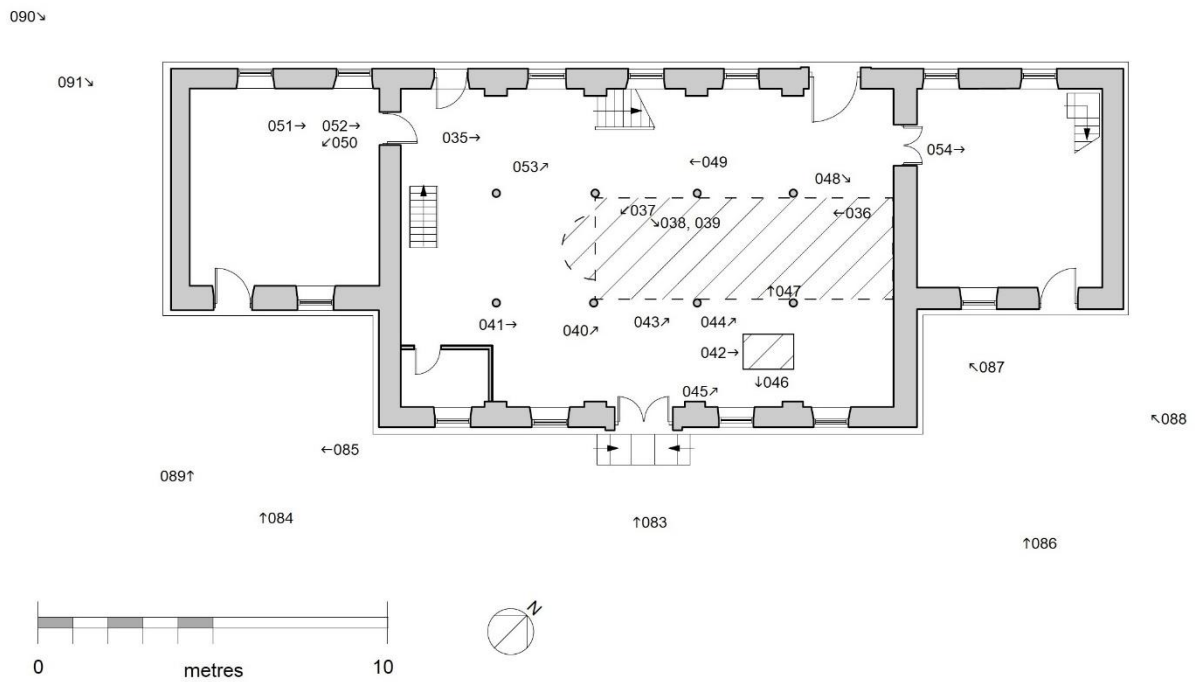


Figure 30. Ground floor photographs.

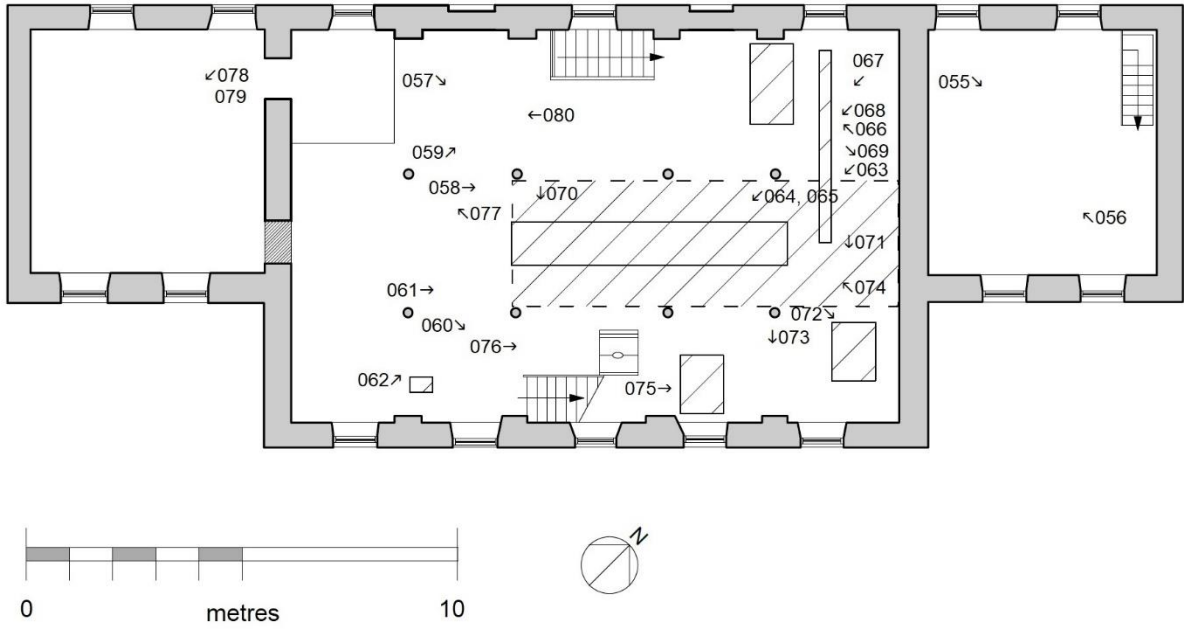


Figure 31. First-floor photographs.

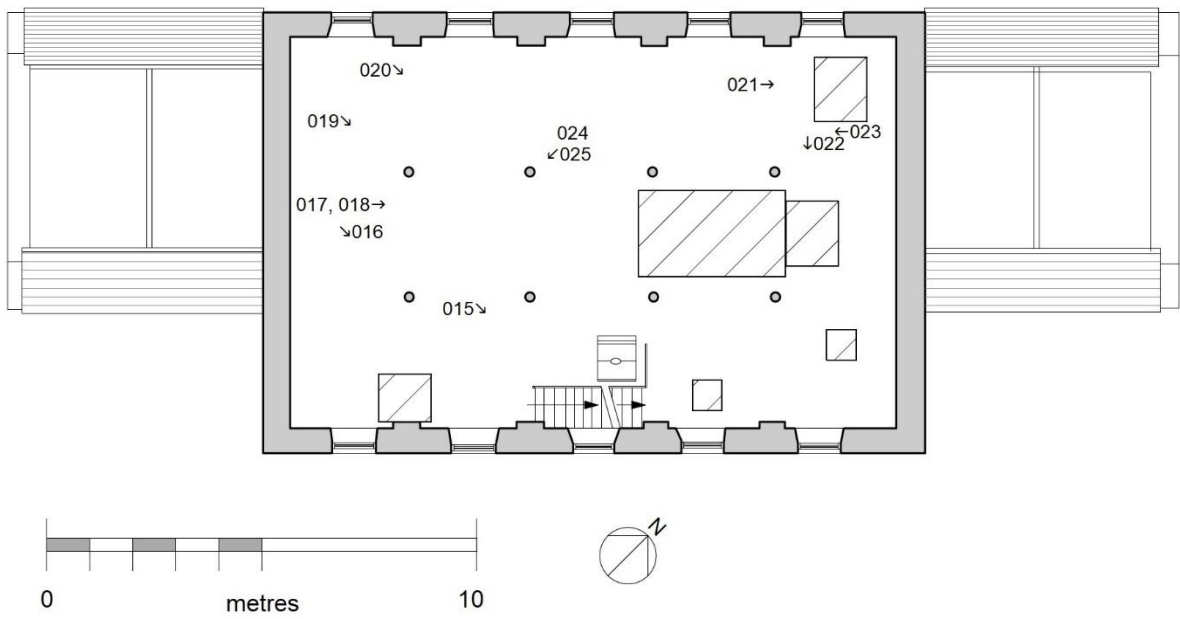


Figure 32. Second-floor photographs.

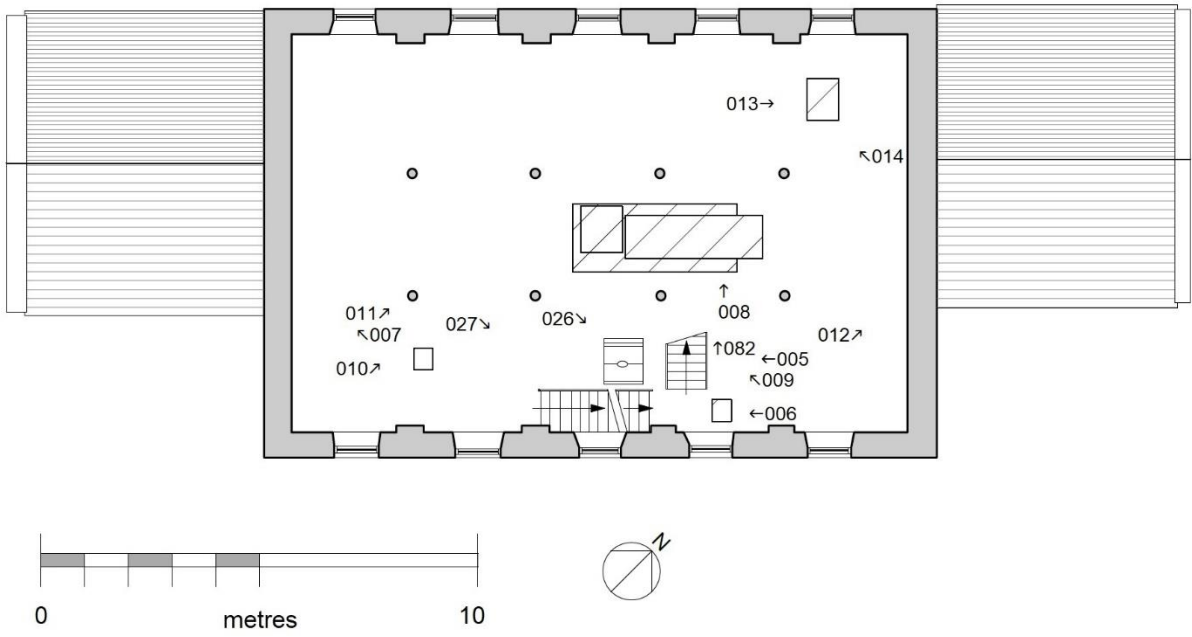


Figure 33. Third-floor photographs.

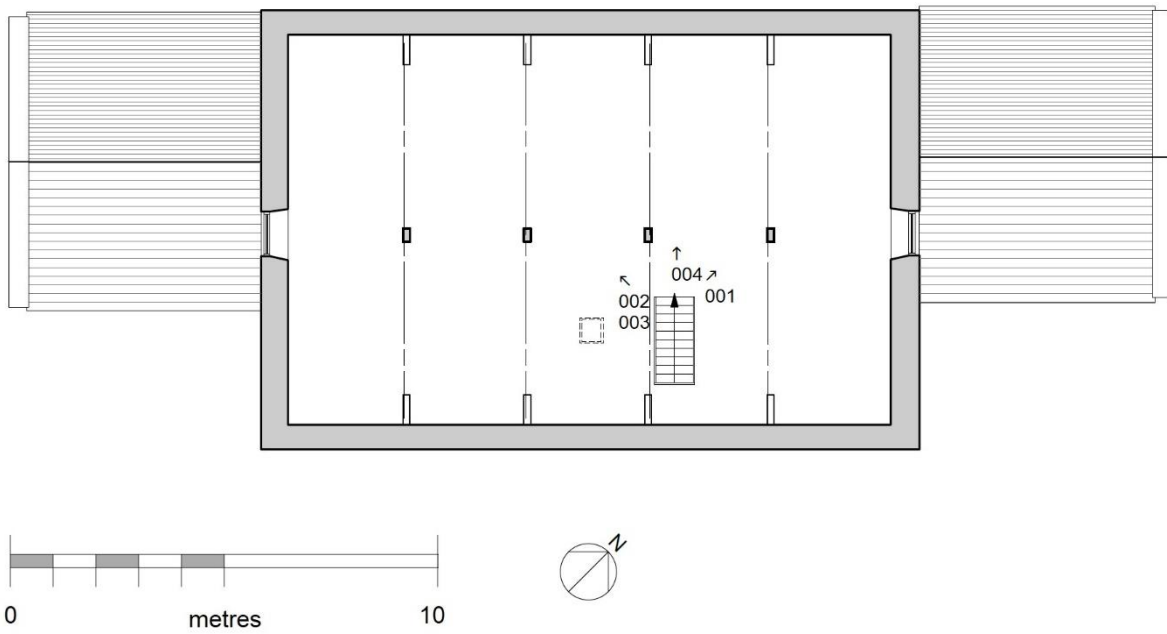


Figure 34. Attic floor photographs.

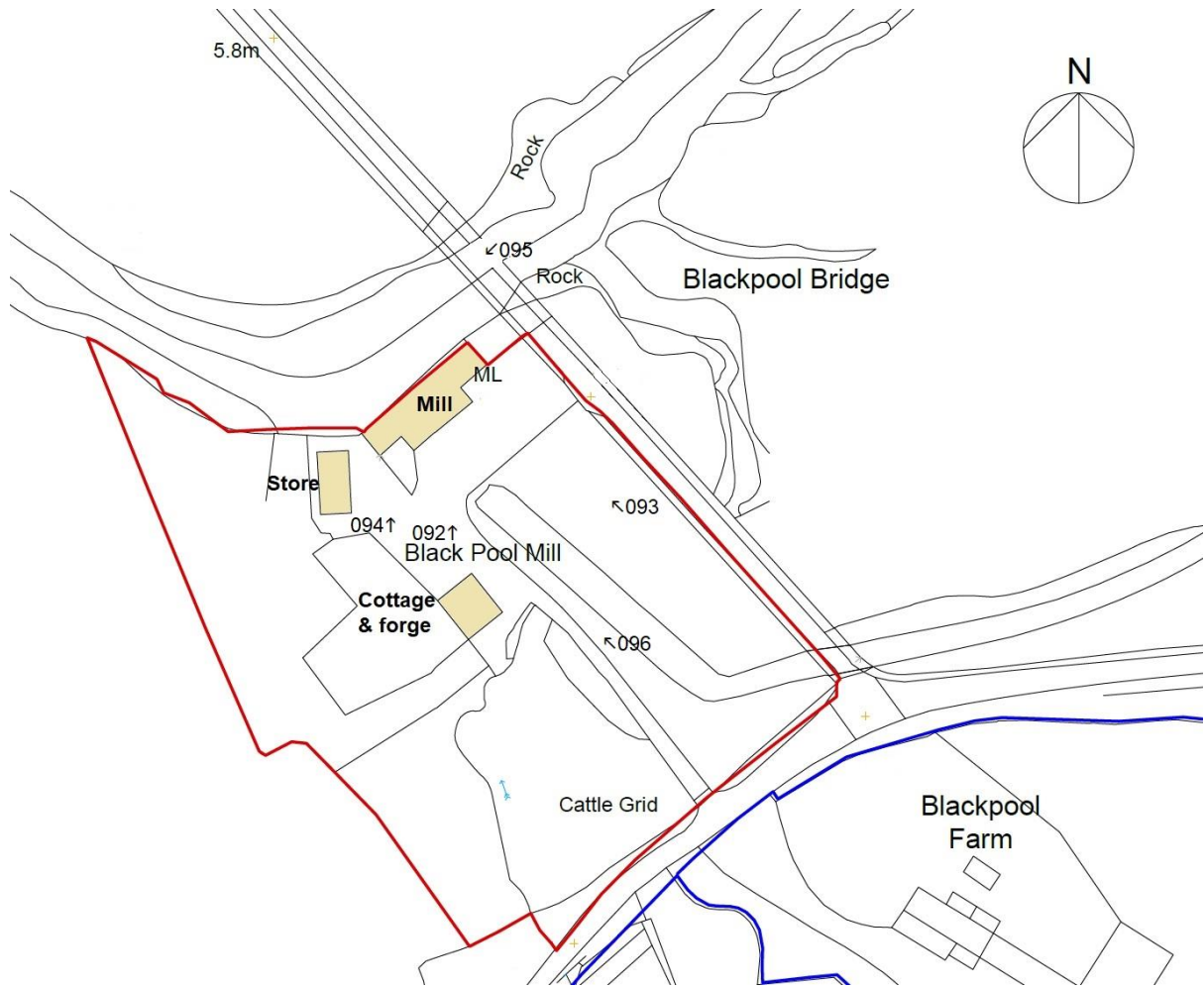


Figure 35. Exterior photographs.

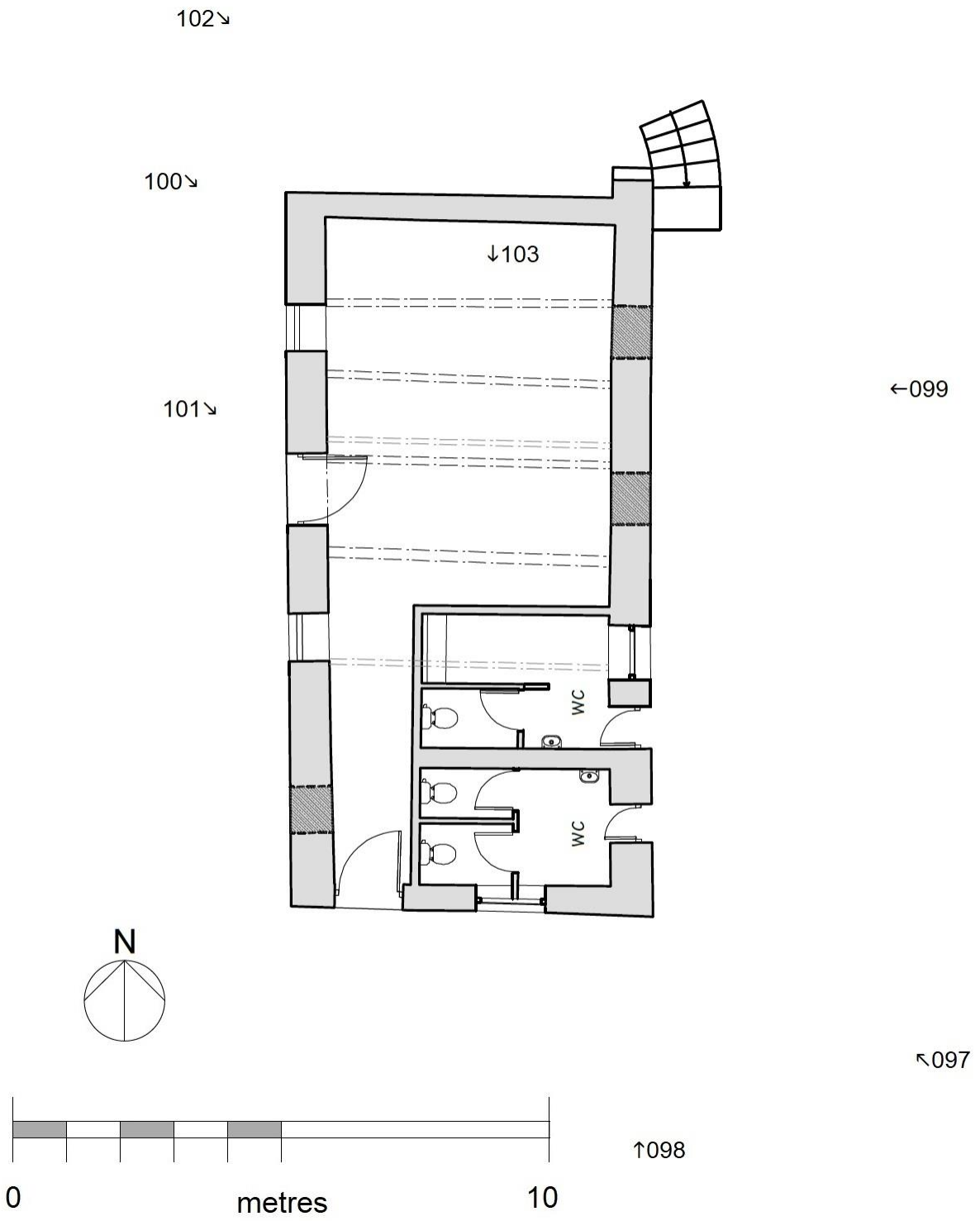
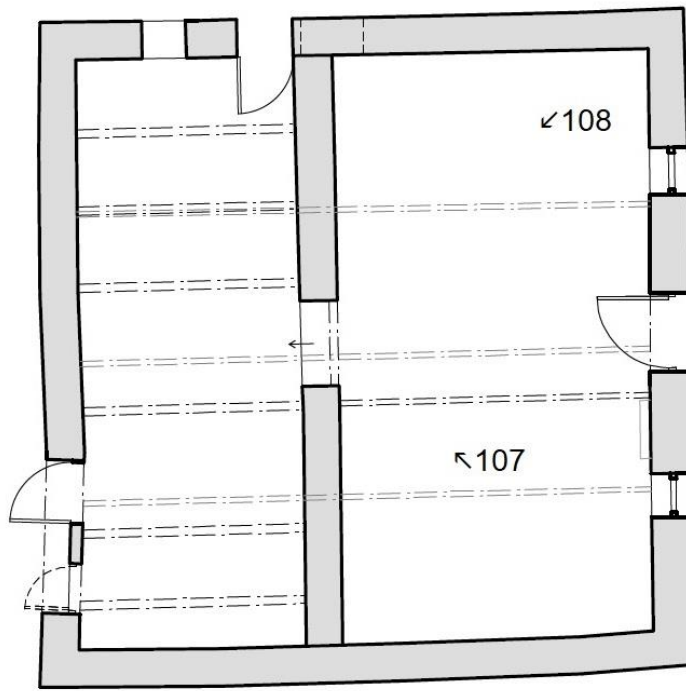


Figure 36. Store photographs.

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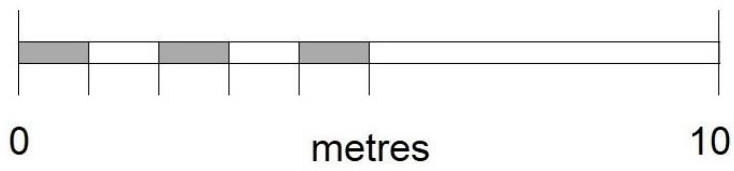


Figure 37. Cottage & Forge photographs.

## Appendix I: Digital Photographs



BlackpoolMill2021.001.tif



BlackpoolMill2021.002.tif



BlackpoolMill2021.003.tif



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BlackpoolMill2021.108.tif



<b>File name</b>	<b>date</b>	<b>description</b>	<b>Photographer</b>
BlackpoolMill2021.001	21.06.2021	attic roof truss, looking N	Richard Hayman
BlackpoolMill2021.002	21.06.2021	attic looking SW	Richard Hayman
BlackpoolMill2021.003	21.06.2021	attic looking SW	Richard Hayman
BlackpoolMill2021.004	21.06.2021	attic showing floor joists and principal rafters, looking NE	Richard Hayman
BlackpoolMill2021.005	21.06.2021	3rd floor showing attic stair, looking SW	Richard Hayman
BlackpoolMill2021.006	21.06.2021	3rd floor, chute to oat crusher, looking SW	Richard Hayman
BlackpoolMill2021.007	21.06.2021	3rd floor, old sashes stacked against SW wall	Richard Hayman
BlackpoolMill2021.008	21.06.2021	3rd floor 'Armfield' name stamped on Separator	Richard Hayman
BlackpoolMill2021.009	21.06.2021	3rd floor, looking W	Richard Hayman
BlackpoolMill2021.010	21.06.2021	3rd floor, looking NE, with grain separator & fan	Richard Hayman
BlackpoolMill2021.011	21.06.2021	3rd floor, detail of timber post, looking NE	Richard Hayman
BlackpoolMill2021.012	21.06.2021	3rd floor, old sashes stacked against NE wall	Richard Hayman
BlackpoolMill2021.013	21.06.2021	3rd floor, electric motor, looking NE	Richard Hayman
BlackpoolMill2021.014	21.06.2021	3rd floor, electric motor, looking NW	Richard Hayman
BlackpoolMill2021.015	21.06.2021	2nd floor, stair to 3rd floor, looking SE	Richard Hayman
BlackpoolMill2021.016	21.06.2021	2nd floor, disused grain bin & stair to 3rd floor, looking SE	Richard Hayman
BlackpoolMill2021.017	21.06.2021	2nd floor, looking NE, with grain bins	Richard Hayman
BlackpoolMill2021.018	21.06.2021	2nd floor, looking NE, with grain bins	Richard Hayman
BlackpoolMill2021.019	21.06.2021	2nd floor, looking E, with grain bins	Richard Hayman
BlackpoolMill2021.020	21.06.2021	2nd floor, looking SE, with grain bins & stairs	Richard Hayman
BlackpoolMill2021.021	21.06.2021	2nd floor, belt drive & wheels from electric motor, looking NE	Richard Hayman
BlackpoolMill2021.022	21.06.2021	2nd floor, hopper & chute, with extract duct, looking SW	Richard Hayman
BlackpoolMill2021.023	21.06.2021	2nd floor, looking SE, with cast iron posts	Richard Hayman
BlackpoolMill2021.024	21.06.2021	2nd floor, cast iron post, capital detail	Richard Hayman
BlackpoolMill2021.025	21.06.2021	2nd floor, cast iron post, base detail	Richard Hayman
BlackpoolMill2021.026	21.06.2021	3rd floor, floor hatch by stairs, looking SE	Richard Hayman
BlackpoolMill2021.027	21.06.2021	3rd floor, guard at top of 2nd-floor stair, looking SE	Richard Hayman

BlackpoolMill2021.028	21.06.2021	basement, drive from secondary wheel, looking NE	Richard Hayman
BlackpoolMill2021.029	21.06.2021	basement, arch to secondary wheelpit, looking SE	Richard Hayman
BlackpoolMill2021.030	21.06.2021	basement, blocked arch from head race to secondary wheelpit, looking SE	Richard Hayman
BlackpoolMill2021.031	21.06.2021	basement, looking SE	Richard Hayman
BlackpoolMill2021.032	21.06.2021	basement, turbine shaft, looking E	Richard Hayman
BlackpoolMill2021.033	21.06.2021	wheelpit interior, looking NE	Richard Hayman
BlackpoolMill2021.034	21.06.2021	basement, looking SE to steps by wheelpit	Richard Hayman
BlackpoolMill2021.035	21.06.2021	ground floor, looking NE	Richard Hayman
BlackpoolMill2021.036	21.06.2021	ground floor, lay shaft, looking SW	Richard Hayman
BlackpoolMill2021.037	21.06.2021	ground floor, end of lay shaft over turbine, looking SW	Richard Hayman
BlackpoolMill2021.038	21.06.2021	bevelled gears driving millstones	Richard Hayman
BlackpoolMill2021.039	21.06.2021	ground floor, hurst frame supporting millstones	Richard Hayman
BlackpoolMill2021.040	21.06.2021	ground floor, turbine controls, looking N	Richard Hayman
BlackpoolMill2021.041	21.06.2021	ground floor, guarded lay shaft looking NE	Richard Hayman
BlackpoolMill2021.042	21.06.2021	ground floor, winnowing machine, detail	Richard Hayman
BlackpoolMill2021.043	21.06.2021	ground floor, No 1 chute to meal sacks, looking NE	Richard Hayman
BlackpoolMill2021.044	21.06.2021	ground floor, No 2 & 3 chute to meal sacks, looking NE	Richard Hayman
BlackpoolMill2021.045	21.06.2021	ground floor, winnowing machine, looking NE	Richard Hayman
BlackpoolMill2021.046	21.06.2021	ground floor, chute for filling sacks, looking S	Richard Hayman
BlackpoolMill2021.047	21.06.2021	ground floor, hurst frame, control wheel for adjusting millstone height	Richard Hayman
BlackpoolMill2021.048	21.06.2021	ground floor, belt drives from 2nd wheel and electric motor, with bucket elevator	Richard Hayman
BlackpoolMill2021.049	21.06.2021	ground floor, footprint of former fixtures, looking SW	Richard Hayman
BlackpoolMill2021.050	21.06.2021	SW wing, ground floor, looking SW	Richard Hayman
BlackpoolMill2021.051	21.06.2021	SW wing, ground floor, looking NE to main mill	Richard Hayman
BlackpoolMill2021.052	21.06.2021	SW wing, ground floor doorway, looking NE to main mill	Richard Hayman
BlackpoolMill2021.053	21.06.2021	ground floor, stair to 2nd floor, looking NE	Richard Hayman
BlackpoolMill2021.054	21.06.2021	NE wing, ground floor looking NE	Richard Hayman

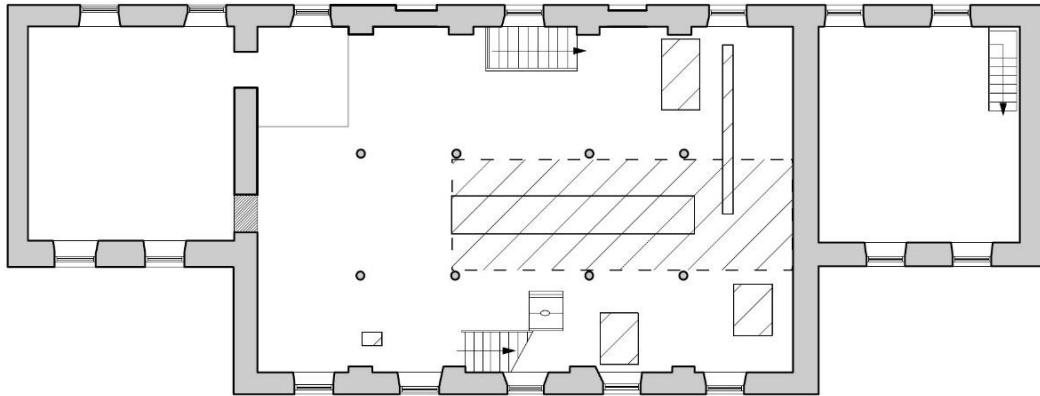
BlackpoolMill2021.055	21.06.2021	NE wing, 1st floor looking SE	Richard Hayman
BlackpoolMill2021.056	21.06.2021	NE wing, 1st floor looking NW	Richard Hayman
BlackpoolMill2021.057	21.06.2021	1st floor, looking SE, millstones, with feed chutes on right	Richard Hayman
BlackpoolMill2021.058	21.06.2021	1sr floor, millstones looking E	Richard Hayman
BlackpoolMill2021.059	21.06.2021	top of stairs from ground to 1st, looking NE	Richard Hayman
BlackpoolMill2021.060	21.06.2021	stair 1st-2nd, looking SE	Richard Hayman
BlackpoolMill2021.061	21.06.2021	1st floor, millstones & bagging chutes, looking NE	Richard Hayman
BlackpoolMill2021.062	21.06.2021	1st floor looking NE	Richard Hayman
BlackpoolMill2021.063	21.06.2021	1st floor, millstone No 4, line shaft above with belt from electric motor, looking S	Richard Hayman
BlackpoolMill2021.064	21.06.2021	1st floor, millstones looking SW	Richard Hayman
BlackpoolMill2021.065	21.06.2021	1st floor, millstones looking SW	Richard Hayman
BlackpoolMill2021.066	21.06.2021	1st floor, Armfield scalper, looking W	Richard Hayman
BlackpoolMill2021.067	21.06.2021	1st floor, line shaft & belt drive from electric motor, looking SW	Richard Hayman
BlackpoolMill2021.068	21.06.2021	1st floor, line shafting above millstones, looking SW	Richard Hayman
BlackpoolMill2021.069	21.06.2021	1st floor, NE end of line shaft, with belt drive from electric motor, looking E	Richard Hayman
BlackpoolMill2021.070	21.06.2021	1st floor, chute and hopper to millstone No 1, looking S	Richard Hayman
BlackpoolMill2021.071	21.06.2021	1st floor, smutter, looking S	Richard Hayman
BlackpoolMill2021.072	21.06.2021	1st floor, stamped lettering on smutter	Richard Hayman
BlackpoolMill2021.073	21.06.2021	1st floor, detached millstone (No 3) & old sashes against SE wall	Richard Hayman
BlackpoolMill2021.074	21.06.2021	1st floor, millstones looking W	Richard Hayman
BlackpoolMill2021.075	21.06.2021	1st floor, oat crusher, looking NE	Richard Hayman
BlackpoolMill2021.076	21.06.2021	1st floor, machinery and trap door guards, looking NE	Richard Hayman
BlackpoolMill2021.077	21.06.2021	1st floor, doorway to SW wing, looking W	Richard Hayman
BlackpoolMill2021.078	21.06.2021	SW wing, 1st floor, looking SW	Richard Hayman
BlackpoolMill2021.079	21.06.2021	SW wing, roof truss looking SW	Richard Hayman

BlackpoolMill2021.080	21.06.2021	1st floor, holes in floor (formerly for sack hoist?)	Richard Hayman
BlackpoolMill2021.081	21.06.2021	NW wall with Slebech bridge & E Cleddau, looking NE	Richard Hayman
BlackpoolMill2021.082	21.06.2021	3rd floor, Separator, & fan to L, looking N	Richard Hayman
BlackpoolMill2021.083	21.06.2021	concrete steps to SE wall main entrance	Richard Hayman
BlackpoolMill2021.084	21.06.2021	weighing machine looking NW	Richard Hayman
BlackpoolMill2021.085	21.06.2021	weighing machine name plate	Richard Hayman
BlackpoolMill2021.086	21.06.2021	NE wing, looking NW	Richard Hayman
BlackpoolMill2021.087	21.06.2021	railings to void in angle of main range & NE wing	Richard Hayman
BlackpoolMill2021.088	21.06.2021	NE wing, looking W	Richard Hayman
BlackpoolMill2021.089	21.06.2021	doorway in SW wing, looking N	Richard Hayman
BlackpoolMill2021.090	21.06.2021	SW gable end of SW wing, looking SE	Richard Hayman
BlackpoolMill2021.091	21.06.2021	mooring ring & blocked basement doorway, SW wing looking S	Richard Hayman
BlackpoolMill2021.092	21.06.2021	Mill front looking N	Richard Hayman
BlackpoolMill2021.093	21.06.2021	Mill front looking NW	Richard Hayman
BlackpoolMill2021.094	21.06.2021	Mill & SW wing looking NE	Richard Hayman
BlackpoolMill2021.095	21.06.2021	Mill & Eastern Cleddau looking S	Richard Hayman
BlackpoolMill2021.096	21.06.2021	Leat and mill front, looking N	Richard Hayman
BlackpoolMill2021.097	21.06.2021	Store, looking NW	Richard Hayman
BlackpoolMill2021.098	21.06.2021	Store, S gable end looking N	Richard Hayman
BlackpoolMill2021.099	21.06.2021	Store, blocked windows in E wall	Richard Hayman
BlackpoolMill2021.100	21.06.2021	Store, E wall looking S	Richard Hayman
BlackpoolMill2021.101	21.06.2021	Store, inserted doorway W wall, looking S	Richard Hayman
BlackpoolMill2021.102	21.06.2021	Store, S gable end looking SE	Richard Hayman
BlackpoolMill2021.103	21.06.2021	Store interior looking S	Richard Hayman
BlackpoolMill2021.104	21.06.2021	former cottage & forge, looking S	Richard Hayman
BlackpoolMill2021.105	21.06.2021	former cottage & forge, N gable end	Richard Hayman
BlackpoolMill2021.106	21.06.2021	former cottage & forge, E front	Richard Hayman
BlackpoolMill2021.107	21.06.2021	former cottage & forge, interior showing spine wall, looking NW	Richard Hayman

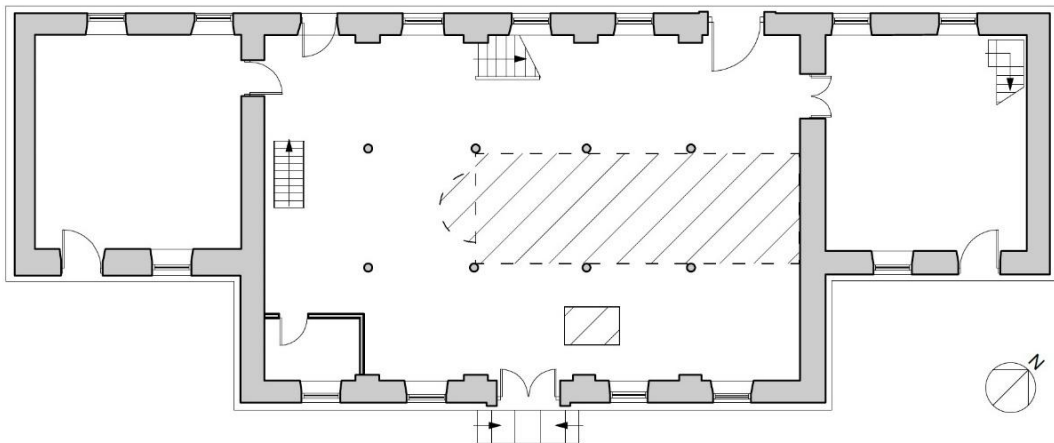
BlackpoolMill2021.108	21.06.2021	former cottage & forge, roof trusses looking SW	Richard Hayman
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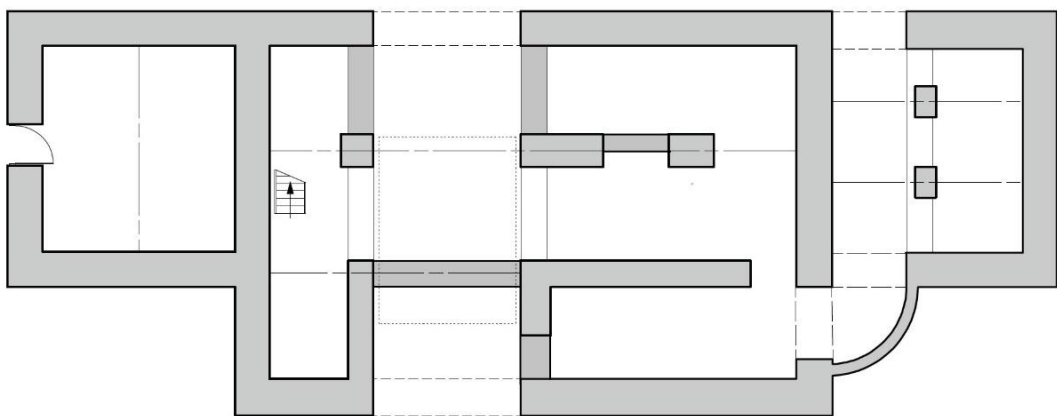
## Appendix 2: Measured survey drawings



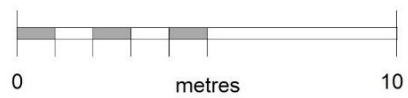
**First floor**



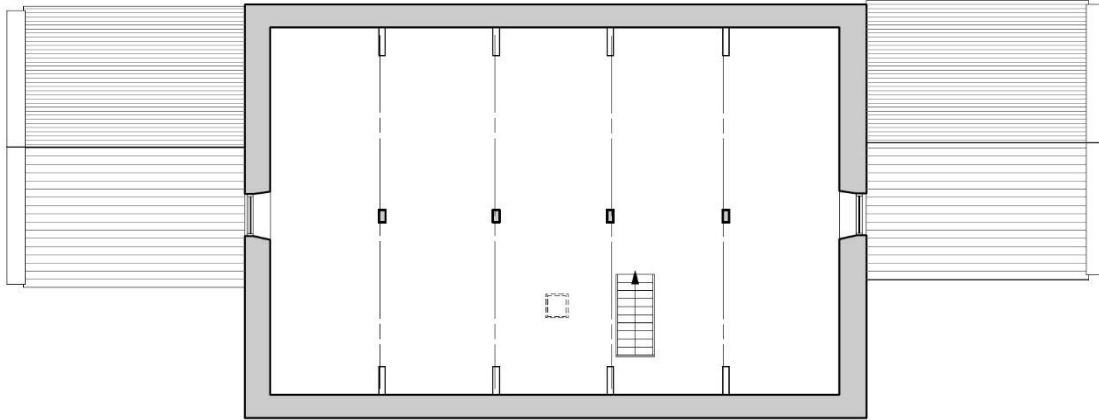
**Ground floor**



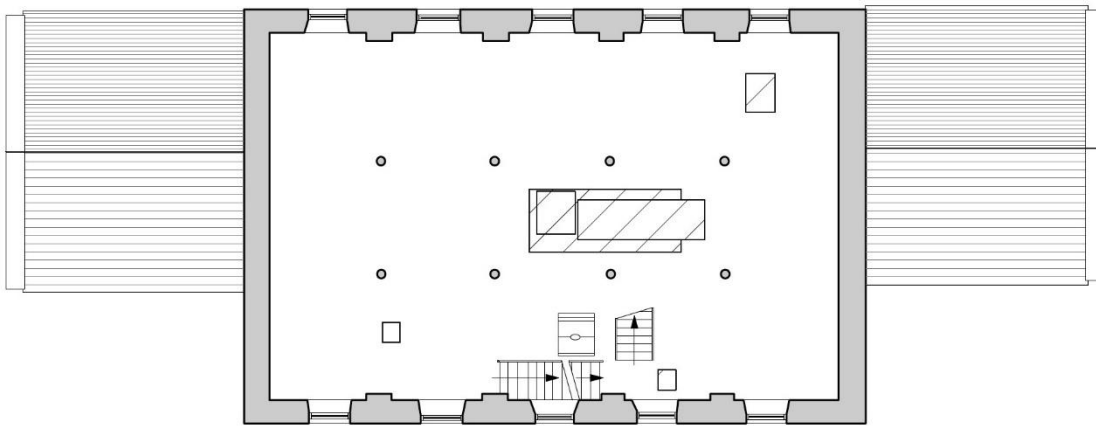
**Basement**



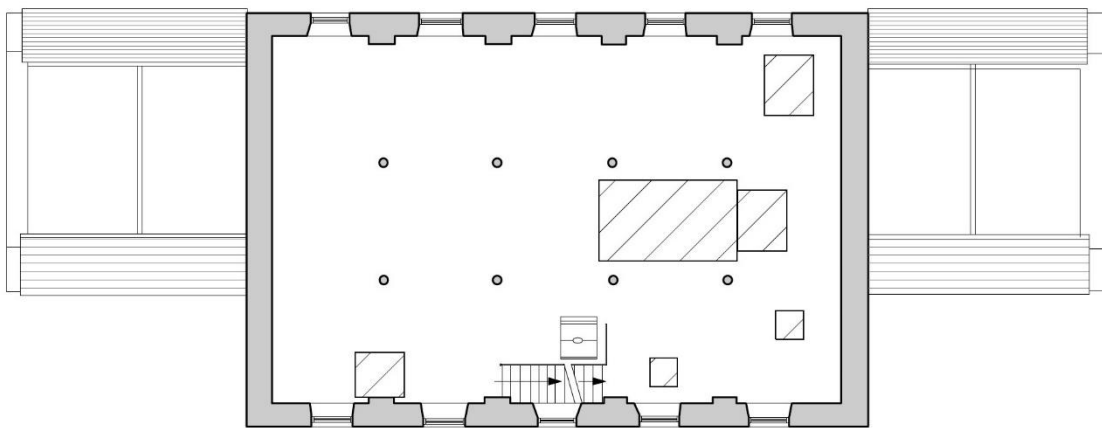
*Figure 38. Basement, ground and first-floor plans.*



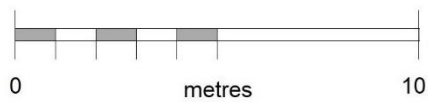
**Attic**



**Third floor**



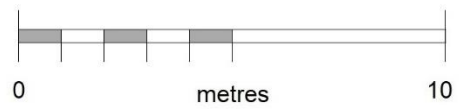
**Second floor**



*Figure 39. Second, third and attic floor plans.*



Figure 40. Front elevation.



*Figure 41. Rear elevation.*

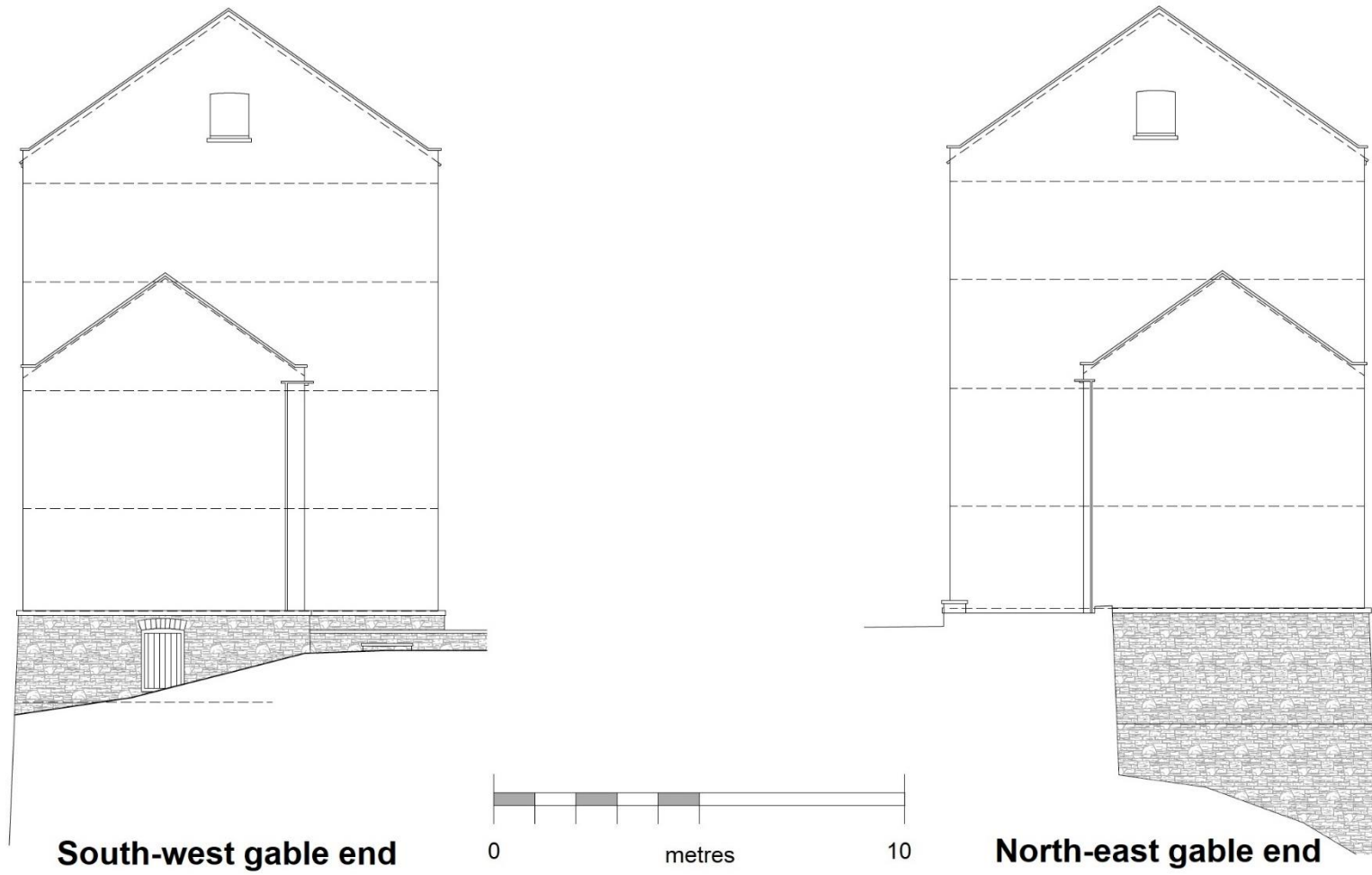
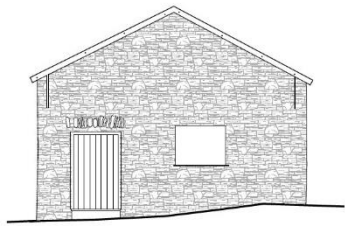
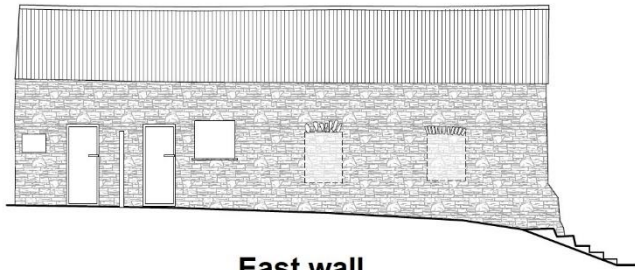


Figure 42. Gable-end elevations.

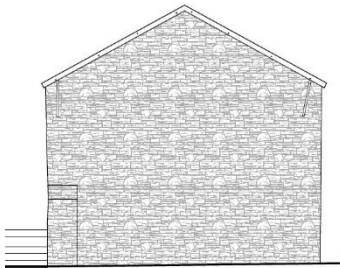




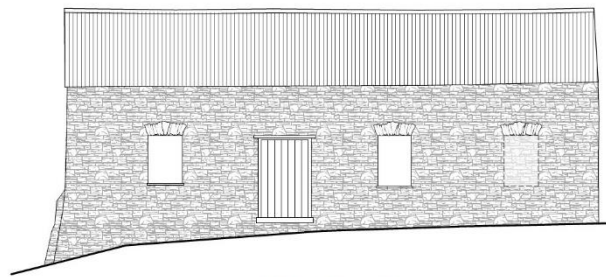
**South gable end**



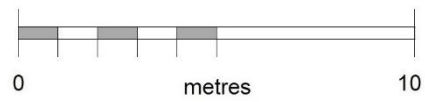
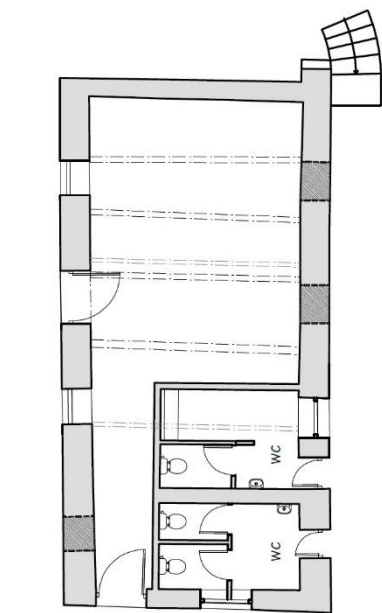
**East wall**



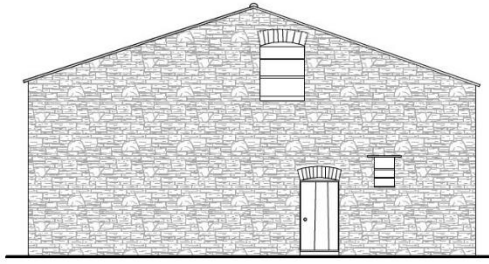
**North gable end**



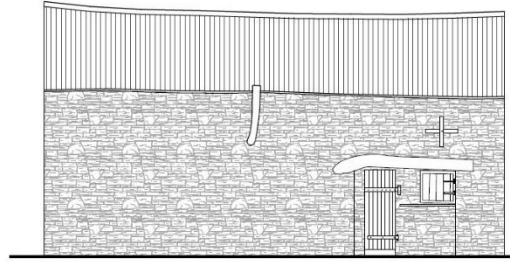
**West wall**



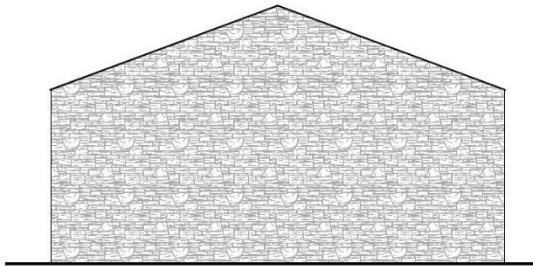
*Figure 43. Store building plan and elevations.*



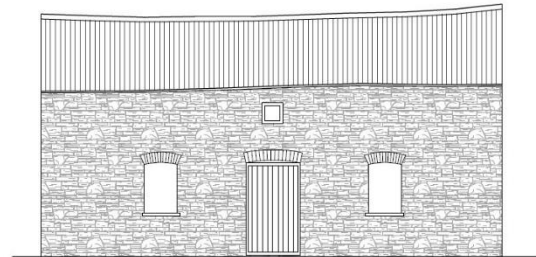
**North gable end**



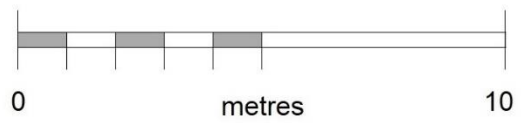
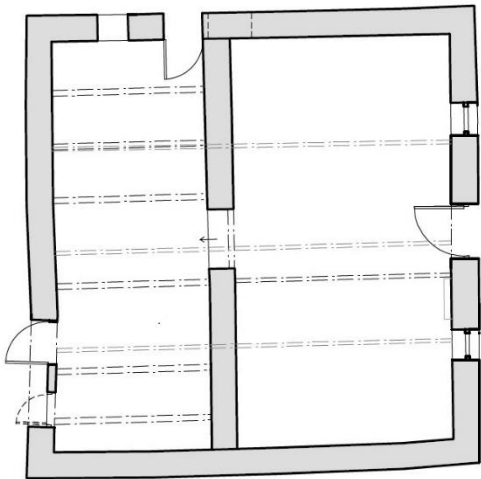
**West wall**



**South gable end**



**East wall**



*Figure 44. Cottage & Forge plan and elevations.*

## Appendix 3: Listed Building Citation

### Full Report for Listed Buildings



#### Summary Description of a Listed Buildings

Reference Number	Building Number	Grade	Status	Date of Designation	Date of Amendment
6090		II*	Designated	21/06/1971	11/11/1997

Name of Property	Address
Blackpool Mill	

#### Location

Unitary Authority	Community	Town	Locality	Easting	Northing
Pembrokeshire	Martletwy		Blackpool	205999	214489

Street Side	Location
	On the left bank of the Eastern Cleddau 1 km SW of Canaston Bridge.

#### Description

Broad Class	Period
Industrial	

#### History

Built in 1813 by Nathaniel Phillips, owner of the Slebech Estate, on the site of the former Blackpool ironworks. Water for the wheel was brought from a distance of 0.5 km. The last section of the leat was contrived to approach the S face of the mill nearly on its central axis, for architectural effect. The mill itself is also designed for symmetry, with a central main entrance

and with its main block flanked by equal low wings at each end. The original water-wheel was beneath the main block of the mill: a wheel of 4.5 m diameter and 3.5 m in width, on a wrought-iron shaft.

In 1842 John Butler became tenant of Blackpool Farm and Mill. He had problems with the water wheel; marks from the original wheel scraping against the stonework are visible in the basement. He also had trouble from Rebecca rioters, who destroyed the floodgates in 1843.

At the turn of the century it was decided to renew the milling machinery and to remove the water-wheel in favour of a turbine. The new machinery was installed by Armfield of Ringwood, and continued in use until after the second World War. In 1958 the mill was converted to electricity.

In 1968 a programme of restoration of the mill was commenced by Lady Victoria Dashwood to convert the mill to a tourist attraction. The left wing was converted to be the public entrance and shop, the right wing to be the tea-room. The mill machinery including the turbine was guarded, displayed and interpreted. One window of the left wing was converted to be a doorway and the main front door canopy was removed.

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## **Exterior**

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The main elevation facing SE is of four storeys plus an attic, with a range of five windows. The attic is lit only by windows in the gable ends plus a recent central roof-light at the front in the place of an earlier small dormer. At each end of the building is a two-storey wing, two windows, set back from the front elevation but in a continuous elevation at the rear. Rendered on all faces; slate roofs with coped gables. All the windows are of sash type with 16 panes, with recessed exposed frames. Some of the sashes have been replaced, many are of the type without horns and probably original. Slate sills. Central original double-doors, framed and boarded with a large fanlight within a dressed limestone surround. Three steps up to the door, which are unlikely to be original. There are the marks of a former canopy above.

As the rear elevation is all in one plane the fenestration of the main block and the wings is continuously spaced as a range of nine windows. In the ground storey the third and seventh openings are doors, probably altered from windows as the head height is the same.

The mill stands on a thin plinth over a basement podium. The basement is about 0.5 m high at the front but about 5 m high overlooking the river at the rear. The basement below plinth level overlooking the river is in regularly coursed hammer-dressed stonework with a large central archway for the tail water from the wheel and a smaller blocked archway to the left.

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## **Interior**

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The main roof is of four king-post trusses with two purlins each side, in pine. The struts to the principals are kept high to preserve headroom. Sack-hoist pulley centrally in the roof apex. The roofs of the two side extensions are of two bays on queen-post trusses.

The attic floor is carried on four timber cross-girders supported by timber posts in the storey beneath. Plain pine single floorboarding in variable widths without cross-tongues. The first, second and third floors are all similar but each is carried on

110 mm diameter cast-iron columns in the storey beneath. The ground floor is also carried on timber girders, with two longitudinal ones supported on stone piers and six trimmed cross-girders at positions where machinery loads are carried.

The staircases have turned storey-posts in oak. Shaped pine handrails on square balusters; closed strings.

The machinery consists of a vertical-axis turbine by Armfields of Vale of Avon Ironworks, Ringwood, in the basement, driving a lay-shaft at ground floor to the four stones. The four sets of stones are at first floor level. The cast-iron hurst frames at ground floor level have handwheels for the adjustment of runner pressure.

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**Reason for designation**

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Listed as an exceptionally fine industrial building in the functional tradition, imposingly situated. It survives virtually intact and includes a full working set of machinery.

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