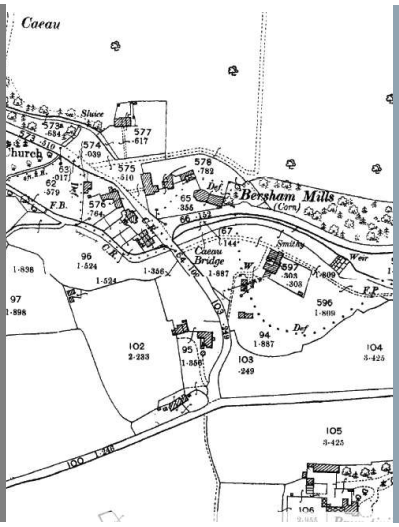


DESIGN & ACCESS STATEMENT

Proposed classroom structure adjacent to the car park area at

Bersham Ironworks

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1.0 INTRODUCTION

This Design & Access Statement has been prepared to accompany a full planning application submitted to Wrexham County Borough Council.

The application seeks planning permission for a new timber shelter structure to provide classroom space adjacent to the car parking area to Bersham Ironworks.

2.0 SETTING OF THE SITE & HISTORY

2.1 THE SETTING

The Bersham Ironworks are located to the north side of the Mill Terrace/ Plas Buckley Road, within the village of Bersham[1] and the community of Esclusham, 3km south-west of the centre of Wrexham; the remains of the former ironworks lie at an elevation of *c*.105m AOD. The site comprises a Scheduled Ancient Monument (SAM), and includes three statutorily listed buildings, Bersham Mill; the Octagonal Building (cannon foundry); and the adjoining Single-Storeyed Building (former fettling shop). Beyond the immediate ironworks boundary, Mill Farm House, on the opposite side of the road, lying outside of the scheduled area, comprises a farmhouse of early C18th-date (Grade II Listed), later extended to accommodate the accounts office of the ironworks. Nos. 1-6 Mill Terrace cottages, facing the ironworks from the south-west side of the road, are also statutorily listed buildings, Grade II.



Fig. 1 aerial photograph showing locations of surviving buildings, archaeological remains and other principal features in relation to the proposed location of the new classroom structure (identified by the red dot), source: Google Earth

[1] The village of Bersham was formed from two adjacent groups of cottages known as 'Dol Cuheleyn' (later simply 'The Ddol') and 'Pentre
Dybenni' (WBC 2009, 5); Palmer (1899, 4) records that, historically, the Bersham Ironworks were known locally as the 'Pont y Pentre Works' or simply the 'Pentre Works'

The site is located within the Bersham Conservation Area, originally designated on 29.08.1975, amended 25.03.2003 (see Fig. 2).

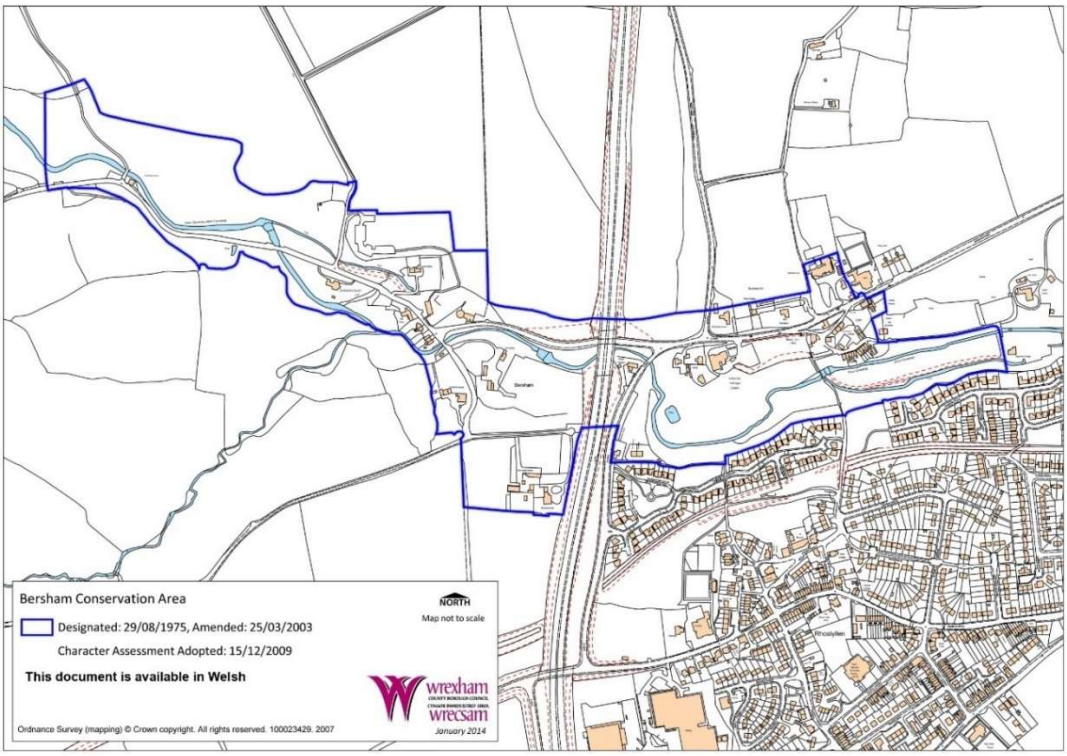


Fig. 2 Bersham Conservation Area

2.1 THE HISTORY

Ironworking was first undertaken at Bersham in the mid-17th century (*c*.1640)[2], while a blast furnace is recorded at Esclusham in 1670. Bersham occupied a favourable location for iron-production, combining readily available minerals and fuel, access to markets and suitable topography (WBC 2009). The first furnace at the Bersham Ironworks site, understood to have been owned by John Roberts of Hafod y Bwch, Rhostyllen was operational from *c*.1717, worked by one Charles Lloyd of Dolobran, Montgomeryshire, a friend of Abraham Darby of Coalbrookdale who was to pioneer the use of coking coal. Indeed, Bersham was to become the first Welsh furnace to adopt this fundamental development in iron production in 1721, though charcoal was still in use as a fuel as late as 1754 (Grenter 1992). Lloyd was declared bankrupt in the late-1720s, however, and from *c*.1730 the works were taken on by Mr. John Hawkins, a son-in-law of Abraham Darby. Following Hawkins' death in 1739, the works were in the occupation of his widow, Ann Hawkins, operating under the management of one Nathaniel Higgons (Palmer 1899). Although the Coalbrookdale connection through Hawkins saw some investment, overall the initial stages of the Bersham Works were not overly successful (Grenter 2008).

[2] https://www.gracesguide.co.uk/Bersham_Ironworks

From *c*.1753, the iron works[3] were leased by Isaac Wilkinson who set about making improvements to the works (including diverting the course of the river Clywedog and the creation of a number of weirs to control flow), acquiring mineral rights in the area and improving transport networks (*ibid*., 17)[4]. An upturn in trade was fuelled in part by the outbreak of the Seven Years War, for which Bersham was engaged in production of various armaments[5]. Ultimately, however, having failed to make a commercial success of the venture, Isaac Wilkinson moved to Bristol in 1761, and from *c*.1762/3 the Bersham Works were operated by his two sons John and William, trading as the New Bersham Company[6]. In 1774, John Wilkinson patented a machine for the precision-boring of cannon, a method adopted by the Board of Ordnance, and a product for which Bersham was to become renowned. The technique was also subsequently adapted for the boring out of steam-engine cylinders for Boulton and Watt of Birmingham, for which Wilkinson received an exclusive contract. There followed a major expansion of the Bersham Ironworks, which became a highly successful venture playing a leading role in the development of iron-making in Britain; by 1796 Wilkinson was producing (at his various sites) around one eighth of all Britain's cast-iron.

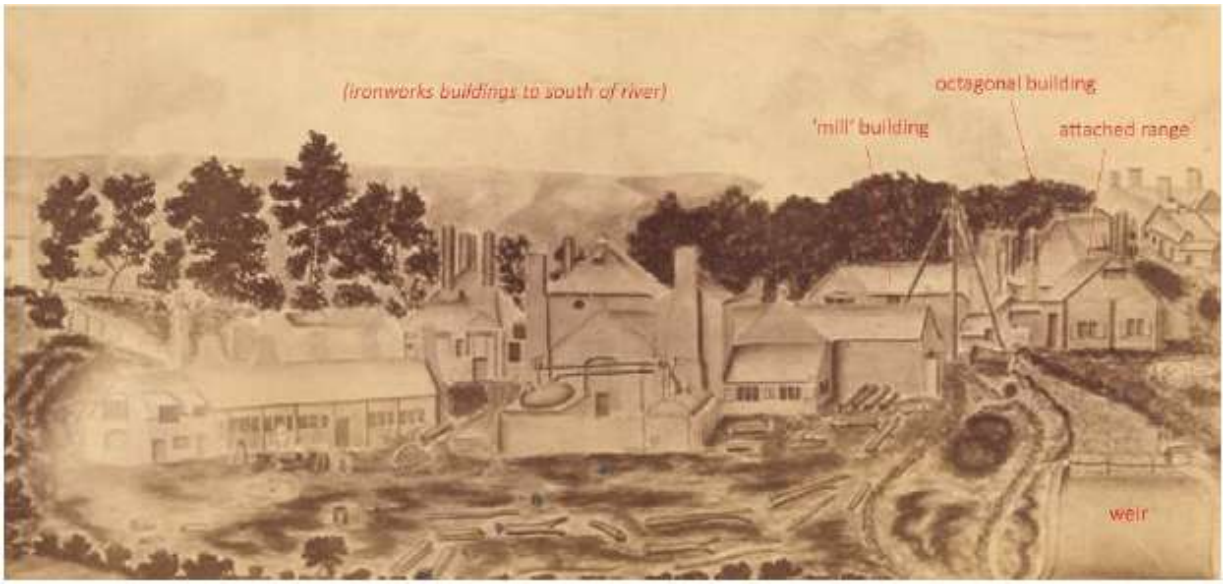


Fig. 3 Sketch of the Bersham west works, looking north-west, by John Westaway Rowe, *c*.1780; source: https://www.wrexhamheritage.wales/bersham-ironworks/)

[3] The iron works at Bersham were split over two sites, the east works towards Rhostyllen, and the west works (currently under consideration) at Bersham; the latter site formerly extended to the south side of the Clywedog river, as depicted in the sketch of 1780.

[4] In 1758, for example, an agreement was made between Richard Myddleton and Isaac and John Wilkinson for the construction of a rail line to carry coal and ironstone 'to and for the use of Bersham furnace' (Grenter 1993, 202).

[5] As well as cannon, first produced at Bersham by Isaac Wilkinson (Grenter 1993, 196), a ledger from around this time, cited by Palmer (1899, 12), records that the Bersham Works was also engaged in the production, amongst products for commercial industrial use, of military wares including shells, grenades and guns.

[6] John Wilkinson (1728-1808) was an English industrialist who pioneered the manufacture and use of cast-iron, applying it in many novel instances where other materials had previously been used, the source of his sobriquet of 'Iron Mad' Wilkinson or 'Iron Mad Jack'. Prior to his involvement at Bersham, Wilkinson had already, in 1757, established his own iron foundry at Willey, near Broseley in Shropshire. Known as the 'father' of the South Staffordshire iron industry, his largest and most successful enterprise was to be the Bradley Ironworks at Bilston near Wolverhampton, established in 1766 (https://www.gracesguide.co.uk/Bradley_Works). In particular, it was his development of precision boring technology, and his development of the cupola furnace for remelting pig-iron for casting, that secured his reputation as a key figure of the Industrial Revolution (Clarke 2008, 3).

A sketch of *c*.1780 by site engineer John Westaway Rowe (inset above) gives an impression of the extent of the western ironworks at its height. The Clywedog river is shown to the right-hand side of the image, with a weir in the foreground; beyond this the roof of the octagonal building (cannon foundry; flanked by four chimneys) and attached range can be seen, together with the 'mill' building (partly obscured behind a set of lifting shearlegs). It is of particular note that the largest part of the ironworks complex was located to the south side of the river, shown to the centre and left-hand side of the image within an area annotated as 'Furnace Field' on a map of 1763 (see Fig. 13), including a former smith's shop which survives in much modified form, converted to residential use[7].

Funded by the success of the Bersham works, John Wilkinson purchased, independently of his brother, the 500a Brymbo Hall Estate *c*.4km north of Bersham in 1792 for the sum of £14,000, with a view to establishing another ironworks there[8], exploiting the local minerals and coal deposits (with developments in steam engine technology, the lack of an available water source no longer presented a problem to development).

The Wilkinson brothers subsequently fell into dispute, in large part due to John's investments at Brymbo, which William saw as effectively in competition with, and detrimental to the profitability of, their jointly owned concern at Bersham (Grenter 2008)[9]. The works were advertised for sale by auction in 1795 (see below right) but ultimately, through a process of litigation, John was to buy out his brother's interest in the Bersham site (Trinder 2013). The Bersham works subsequently went into a steady decline, however, in favour of Wilkinson's new works at Brymbo, and there were several occasions in the late-1790s when the Bersham works were at a complete standstill.



IRON WORKS.

TO be ſold by Auction, at the Houſe of John Jones, the Eagles, in Wrexham, Denbighſhire, on Tueſday the 1ſt of December next, at Five o'Clock in the Afternoon, ſubject to the Conditions then to be produced, That old eſtabliſhed Iron Work called BERSHAM FURNACE, comprizing the Machinery and Utenſils thereto belonging, together with the Reverſion of the ſundry Leaſes of the Lands and Buildings; the Whole being well calculated for carrying on the Foundry Buſineſs on an extenſive Scale.

At the ſame Time will be ſold the Stock of Metal, conſiſting of Caſt and Wrought Iron, and Lead, together with various Caſtings, &c. which will be diſpoſed of in Lots agreeable to the Purchaſers.

The Whole to be ſeen at any Time previouſly to the Sale; and further Particulars may be had by applying to William Fawcett, Merchant, Liverpool.

Figs. 4 and 5 (left) Portrait of John 'Iron Mad' Wilkinson by Lemuel Francis Abbot (1760-1803). IGMT; (right) Advertisement for sale by auction, *London Gazette*, 10.11.1795

[7] CPAT HER PRN 104483.
[8] See https://coflein.gov.uk/en/site/34054/.
[9] See also Dawson, 2004.

Both Wilkinson brothers died in 1808, still in dispute, with the ironworks carrying on for a few years under John's nephew, Thomas Jones Wilkinson[10], until they were finally closed and put up for sale by auction in 1812, to cover Thomas's legal fees associated with his uncle's probate (Grenter 2008). An advertisement for latter sale by auction appeared in the *Chester Courant* on 7th January of that year, wherein the works were described as comprising 'foundries, furnaces, boring mills, rolling mills, forges, machinery for casting and drawing patent lead pipes, cannon foundry and machinery for boring and turning cannon, smith's shops, carpenter's shops, patternmaker's shops, dwelling houses for agents and workmen and all necessary conveniences as lately used for carrying on the iron foundry and engine-making business on the most extensive scale, and now in excellent repair, formerly erected by and long in the possession the late Mr Wilkinson, and since in the occupation of Mr. Thomas Jones' (see fn.10). The works are further described as comprising 'two powerful falls of water, upwards of 70 acres of excellent land in high state of cultivation, exclusive of nearly 20 acres forming the sites of the different works, good farm buildings, cottages, and the extensive erections containing the engines and machinery'.

Following on from the sale, the iron works site was subsequently used as a farm (Bersham Mill Farm), recorded in the occupation of various individuals throughout the course of the 19th century (see Table 1 below), a majority of its constituent buildings having been removed or modified to agricultural purposes. The extant 'mill' building was partly rebuilt in 1828, adapted for use as a corn mill for the Plas Power estate, a function it continued to perform until 1947, while the Octagonal Building was repurposed, by 1829 at the latest, as a stack house for the farm with the attached single-story structure serving as a stable and cowhouse[11].

Date	Property	Name	Source
1812	Bersham Ironworks	Thomas Jones (Wilkinson)	*Chester Courant*, 07.01.1812
1829	Bersham Mill Bersham Mill	--- Duckitt, corn miller Robert Jones, corn miller	Pigot's Directory, 1829
1835	Bersham	Joseph Griffiths, miller	Pigot's Directory, 1835
1841	**NB**. 1841 Census records for Bersham missing (see https://www.clwydfhs.org.uk/en/miscellanea/missing-census-records)		
1844	Bersham	Joseph Griffiths, miller	Pigot's Directory, 1844
1851	Bersham Mill	Joseph Griffiths, miller and farmer (25a)	1851 census
1861	Bersham Mill House Farm	Joseph Griffiths, miller and farmer	1861 census
1871	Mill House (Bersham)	John Daniel, miller	1871 census
1881	Mill Terrace	John Daniel, farmer and miller	1881 census
1891	Mill House	John Daniell, miller and farmer	1891 census
1895	Bersham Mill	Allen Thomas, miller	Slater's Directory, 1895
1901	Bersham Mill	Allen Thomas, farmer	1901 census
1911	Mill Farm, Bersham	Allen Thomas, farmer	1911 census
1921	Mill Farm, Bersham	Allen Thomas, farmer	1921 census

Fig. 6 occupation (partial) throughout 19th / early 20th century

The 1911 census (inset below) records Allen Thomas, farmer (aged 44), at Mill Farm, Bersham, together with his wife Elizabeth (47), three children, Arthur Allen Morgan (15), Owen Sydney (12) and Elizabeth Primrose (11), and a general domestic servant, Sarah Elizabeth Humphreys (21).

[10] Son of his sister, Sarah. Jones adopted the surname of his uncle as a condition of inheritance stipulated in John Wilkinson's will (Palmer 1899, 37).
[11] Annotated on plan of 'Bersham Iron works Estate', dated 1829 (see fig. 16).

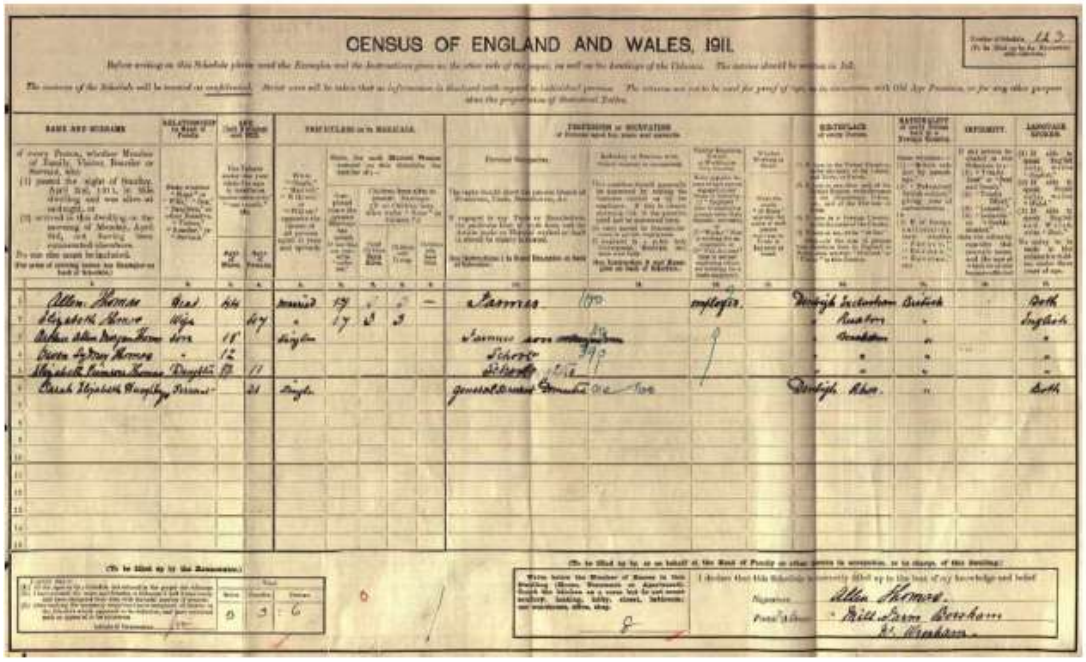

CENSUS OF ENGLAND AND WALES, 1911

Fig. 7 1911 census return recording Allen Thomas at Mill Farm, Bersham; source: https://www.ancestry.co.uk

The ironworks site and surviving buildings were acquired by Clwyd County Council in 1988, restored and opened as a heritage centre in 1992[12].

The Bersham Ironworks site, as represented by the Scheduled area, extends to a total of *c*.10,000m2 (1ha), located to the north side of the river Clywedog and Mill Terrace road; the boundary wall defining the south side of the site is a relatively recent modification, formerly returning to abut the south-west angle of the mill building (see historical OS maps and AP inset above). The scheduled ironworks represents only a small part of a formerly much more extensive site, previously extending to the southern side of the river, as depicted in the sketch of *c*.1780 reproduced at fig. 3 above. To the north, the site is terraced into a natural embankment, historically exploited for the loading of materials into the furnace buildings. Of Wilkinson's original works, only two principal buildings survive, *viz*. a former foundry building (subsequently converted and adapted to a cornmill and known as 'Bersham Mill'), and a former (octagonal) cannon casting house with attached single storey range, originally a 'fettling shop' (see figs. 8 and 9).

Archaeological excavations in 1987-1990 revealed the remains of a number of related structures including coking facilities, limekiln, blast furnace, air furnaces and foundry remains, together with a waggon way (see Grenter, 1992), the vestiges of some of which are open to display as part of the visitor attraction (currently closed).

[12] 'Iron and fire to be a tourist magnet', *Wrexham Mail*, 03.07.1992. Wrexham Council planning department do not hold any records pertaining to this phase of refurbishment (email exchange with Ms. Susan Davies, Business Support Officer, Economy and Planning, WBC; 25.02.2025).

3.0 THE EXISTING BUILDINGS

3.1 THE MILL BUILDING

The mill building, located to the west side of the site, is rectangular in plan, aligned approximately north-south, measuring c.19.8m (65ft.) long x 8.7m (28ft.) wide; it is of two full storeys beneath a pitched and gabled, slateclad roof. The lower storey if of stone rubble construction with ashlar quoins, the upper storey of red brick laid to English garden wall bond, rising to a ¼-brick oversail and dentillated eaves band. The west elevation is of five window bays, windows comprising decorative cast-iron frames beneath rusticated lintels, with a wide, segmental headed doorway towards the south end. The east elevation is plainer, with a wide, segmental headed doorway to the south (adapted to a window), and a single first-floor window to the north (a second 1F window to the south has been blocked in brick). A clear, vertical straight-joint in the upper brickwork denotes a phase break approximately half way along the elevation, while the scar of the pitched-roof of a former abutting structure, indicated on OS maps as late as 1963 and extant in an aerial photograph of 1987, is clearly traceable towards the southern end of the range, with apex beneath eaves level. The south gable end is likewise of brick over stone, with a round-arched double-door to the west and four-light window beneath a segmental arch to the west[13]; at first floor level, a central loading door has been inserted into a former, wider window opening while the apex is pierced by superimposed timber casements of three and two lights respectively.





Fig. 8 and 9 (left) west elevation looking north east, (right) east elevation looking north west

The extant range is of two principal phases of construction, the earliest parts to the south relating to its original function as a foundry building for the ironworks, and the latter to its reconstruction as a cornmill in *c*.1828. The mill phase work incorporates most of the main west elevation, including the double-doors and windows, together with the north gable end and the northern half of the east elevation (Grenter 1992).

[13] Neither of these features clearly evident on AP of 1987, at which time the exterior ground level was here significantly higher (Grenter 1992, 184); the features are thus assumed to have been reintroduced during building restoration works undertaken by Clwyd County Council.

The interior of the building (not accessed) is understood to retain an enclosed wheel chamber to the north end, housing a 6.4m (21ft.) diameter wheel, fed by an iron pipe and cast penstock with, in the next bay to the south, surviving gearing driving four pairs of mill-stones on the floor above (WBC 2009, 15). The water wheel was fed by a long head race opening off the Clywedog river 275m (900ft.) to the WNW, while the tail race ran southwards against the western exterior wall of the range, feeding into an earlier culvert returning to the river (Grenter 1992).

Internal excavations in 1987-1900 revealed a number of casting pits below the flagstone mill floor, indicative of the production of relatively small objects (Grenter 1992). Further, a series of features were exposed below the foundry floor level including walls, a possible casting pit and at least two phases of brick flooring, all demonstrably pre-dating the 'foundry phase' of the extant range and corresponding to building alignments depicted in the plans of 1763/1772 (see figs. 8 and 9 above).

3.2 THE OCTAGONAL BUILDING & ATTACHED SINGLE-STOREY RANGE

The Octagonal Building and attached single-storey range is located *c*.50m (160ft.) east of the mill building. The octagonal building was erected in *c*.1775[14], originally serving as a cannon foundry, reasonably related to increased production following the outbreak of the American War of Independence (1775-1783).

The cannon foundry comprises an eight-sided building, *c*.12.5m (41ft) in span, of a single, high storey, beneath a pyramidal, slate-clad roof (the unusual plan form was designed to accommodate a pivotal crane). The complex timber roof structure[15] is supported at each corner by pentagonal brick piers, with the sides of the structure variously open or infilled with contemporary brickwork, the latter laid predominantly to header bond and simply butted up against the angle piers. The casting house would have been furnished with two banks of double air furnaces, with four associated chimneys being depicted on the sketch of *c*.1780 (inset at Fig. 3 above).

Attached to the south-east side of the octagonal building, a single-storey extension, with canted angles to the north-west where it adjoins the former structure. It is brickbuilt, beneath a pitched, slate-clad roof, gabled to the south-east, its ridge line standing slightly above the eaves level of the octagonal building. Areas of early brickwork survive, matching the fabric of the octagonal building, though the north elevation in particular has been extensively rebuilt, with a series of five rectangular window openings furnished with concrete cills and lintels. Similar openings have been inserted in the south elevation, otherwise largely in early brick, which is abutted by two small, lean-to extensions, one dating to the late-19th century and one to the late-20th century. The range has been historically extended to the east, the roof of the latter being supported on cast-iron Wilkinson pipes (Grenter 1992). The range is assumed to be contemporary with the octagonal building, being depicted on the sketch of *c*.1780, and is traditionally known as the 'fettling shop'[16], though it is not known whether this reflects its original function. It is recorded in 1829 as being used as a cowhouse and stable.

[14] The building is not shown on plans of 1763 and 1772, though it is depicted on the sketch of *c*.1780 (inset at fig. 4 above).

[15] At the time of site visits related to the current project, the timber roof structure was supported by an internal scaffold.

[16] Fettling' being the process of trimming and smoothing castings.

4.0 SIGNIFICANCE OF THE SITE

The specific constraints for Bersham Ironworks are summarised below.

There are five protective designations for Bersham Ironworks found on CADW's website. In their legal status these buildings are recorded as:

Bersham Ironworks:

- Bersham Ironworks - Schedule Ancient Monument (ref: DE 189)
- Bersham Mill including cast- iron feed-pipe – Grade II (LB ID 16538)
- Octagonal Building at Bersham Ironworks Site – Grade II* (LB ID 16539)
- Single Storeyed Building to SE of Octagonal Building at Bersham Ironworks Site – Grade II* (LB ID 16539)
- Bersham Conservation Area

It should be noted that there may be significant historic assets below ground in other areas of the site curtilage. The Scheduled Ancient Monument (SAM) is only partially investigated and not considered to have an exact representation.

The official listing information recorded on CADW's website in 2025 is set out in the Appendix.

5.0 SUMMARY OF SIGNIFICANCE

5.1 SIGNIFICANCE OF THE LANDSCAPE & THE BUILDINGS

Though the physical remains themselves are somewhat limited in extent, when considered in relation to the former area of the ironworks as a whole (as depicted in the 18th-century plans), and while the surviving ranges have been the subject of historical modification to alternative use, the site and its component features are nonetheless clearly of significant historical and archaeological interest at both a local and national level. The surviving buildings, being Grade II (mill) and Grade II* (Octagon building and fettling shop) listed, and forming part of a Scheduled Ancient Monument, are accepted as being of national importance. Together, they provide a strong link to the area's industrial past, the significance being heightened through the association with John Wilkinson, a prominent figure in Britain's Industrial Revolution. The exposure through excavation of archaeological remains related to further, related industrial structures has enhanced the interpretative potential of the extant buildings, and provides an historical/functional context in which to consider the surviving ranges.

Building / Feature	Designated Status	Coflein PRN.	CPAT HER PRN
Bersham Ironworks	SAM (DE **189**); Bersham CA	**34501**	**101243**
Bersham Mill	LB Grade II ID: **16538**	**24853**	**101247**
Octagonal Building (casting house)	LB Grade II* ID: **16539**	**40427**	**101246**
Attached 'Fettling Shop'	LB Grade II* ID: **16539**	**40427**	**26235**
Boring Mill		**24854**	
Bersham Furnace		**34052**	**101244**
Furnace remains		**34053**	**101245**
East weir		**33629**	
Accounts House		**26752**	

Fig. 10 Summary of buildings/features with designation/ HER references

Current proposals for the iron works site, *viz*. the introduction of a covered 'events space', eco toilets and access track, are sited to the north of the ironworks site and, as such, do not impact directly upon the statutorily listed buildings or on the exposed archaeological remains, nor upon the wider scheduled area or the designated Conservation Area. The principal concerns are thus related to the possible impact of any new development upon the setting of the designated heritage assets[17] and upon the Bersham Conservation Area.[18] The exposure of a length of timber tramway during excavations in 1987, representing part of a more widespread materials transportation network, raises the possibility of hidden archaeological remains beyond the immediate boundary of the ironworks site, especially when evaluated in conjunction with the works plan depicted in the plan of 1763 (specifically waggon way 'N' and structure 'K'; see fig. 11) and should be carefully considered in the decision making process on the siting of any new structures, and related services.

[17] Both the listed buildings of the ironworks, and the farmhouse and Mill Terrace Cottages to the south-west side of the road, directly opposite the ironworks site.

[18] The setting of a historic asset includes the surroundings in which it is understood, experienced and appreciated, embracing present and past relationships to the surrounding landscape (CADW 2017, 2).



Fig. 11 Plan of 1763, source: NLW: Chirk Castle Estate Papers Ms4007, reproduced by permission of Llyfrgell Genedlaethol Cymru / National Library of Wales

6.0 PROPOSAL

The project relates to the installation of a new purpose-built classroom structure on land outside of the SAM boundary.

It is proposed to erect a single-storey, timber frame and timber clad structure located to the west of the car park area. The proposal also includes a new pathway and hardstanding between the car parking area and the classroom structure and links to the existing access to the Bersham Ironworks site to the south. In addition, a new proprietary freestanding timber clad composting WC unit is proposed to compliment the new facility.

The proposal seeks to enhance the education facilities at Bersham Ironworks site.

6.1 ACCESS

The new classroom facility will be accessed from the existing car park area via a track located to the west of Bersham Ironworks site. A new track/ pathway will provide level access from the car park area to the classroom structure and provide a new access to the existing pathway which leads to Bersham Ironworks, to the south of the site.

An area of hardstanding will be provided in front of the classroom area and allow for level access to the new standalone composting WC unit positioned to the north of the classroom building.

Level access will be provided into the classroom and WC. The proposed WC facility will be DDA compliant.

6.2 LAYOUT

The classroom building and WC facility will be positioned to the west of the car parking site (and to the north of Bersham Ironworks site).

The new structure will provide a single open plan space, which will be used as a classroom facility for school visits.

6.3 SCALE & APPEARANCE

The new classroom building is single-storey under a pitched roof. The roof has rooflights to both slopes to maximise natural lighting.

The building will be clad in horizontal timber cladding with timber shutters to the windows and entrance doors for security.

The proposed materials are intended to weather into the landscape and to sensitively respond to its surroundings.

6.4 LANDSCAPING

There are no proposals to alter the existing landscaping.

7.0 APPENDIX

7.1 BERSHAM IRONWORKS LISTING

7.2 BERSHAM MILL INCLUDING CAST-IRON FEED PIPE LISTING

7.3 OCTAGONAL BUILDING AT BERSHAM IRONWORKS SITE LISTING

7.4 SINGLE STOREYED BUILDING TO SE OF OCTANGONAL BUILDING AT BERSHAM IRONWORKS SITE LISTING

7.1 BERSHAM IRONWORKS

Summary Description of a Scheduled Monument

Reference Number

DE189

Name

Bersham Ironworks

Date of Designation

Status

Designated

Location

Unitary Authority

Wrexham

Community

Esclusham

Easting

330715

Northing

349266

Broad Class

Industrial

Site Type

Ironworks

Period

Post Medieval/Modern

Description

Summary Description and Reason for Designation

The following provides a general description of the Scheduled Ancient Monument. The monument comprises the remains of Bersham Ironworks. The area covered by the original designation did not relate accurately to the remains on the ground, relating simply to what was then thought of as the remains of a blast furnace (the limekiln). The scheduled area has been revised in order to rectify the original designation. Bersham Ironworks were founded by Charles Lloyd c. 1718 and, in 1721, soon became the first Welsh works to improve production by using coke rather than charcoal as fuel. Bersham came to specialise in the manufacture of cast iron goods. However, it was in the 18th century - when the Ironworks were owned and extended by first Isaac and then John Wilkinson - that Bersham acquired an international reputation. It was at Bersham from 1775 that John Wilkinson used his revolutionary process to accurately bore cannon and cylinders (for James Watt's steam engines) from solid cast metal. The ironworks ceased to operate in 1812 and the site was later used as a farm. It is now owned and managed by Wrexham County Borough as part of the Bersham Heritage Centre. The site comprises several buildings (including the exceptional octagonal cannon foundry and associated probable fettling shop), an open excavated area (containing casting floors and the remains of air furnaces for reheating iron prior to casting) and a steep bank (containing the partial remains of a blast furnace; coal hoppers; coking ovens; and a leat bringing water to power the bellows). A consolidated limekiln (the subject of the original designation) is situated further to the E; and the area above the works contains archaeological deposits pertaining to horse-drawn wagon ways and leat systems. The monument is of national importance for its potential to enhance and illustrate our knowledge and understanding of the development of the iron industry. The importance of the monument is further enhanced by the survival of detailed historical documentation and its partial excavation and display; and by the excellent associated museum facilities. The area to be scheduled comprises the remains described and an area around them within which related evidence may be expected to survive. It is irregular and measures up to 185m from ESE to WNW by up to 105m transversely, as shown in red on the accompanying map extract. The renovated mill building (currently housing an excellent interpretative display) is specifically excluded from the scheduling.

Summary Description

Reference Number

16538

Building Number

Grade

II

Status

Designated

Date of Designation

08/12/1995

Date of Amendment

08/12/1995

Name of Property

Bersham Mill including cast-iron feed pipe

Address

Location

Unitary Authority

Wrexham

Community

Esclusham

Town

Locality

Bersham

Easting

330669

Northing

349243

Street Side

Location

At the centre of Bersham village, at the western end of the ironworks site

Description

Broad Class

Recreational

Period

History

The mill is a substantial component of the ironworks site at Bersham: a blast furnace was recorded in Esclusham by c1670, though it may not have been on the present site. The first recorded furnace on this site was operated from c1717 by Charles Lloyd of Dolobran, and in 1721, became the first Welsh furnace to use coke rather than charcoal as its fuel. The ironworks was leased by Isaac Wilkinson from c1753. From c1763, it was operated as the New Bersham Company by his sons John and William. In 1774, John patented a machine for the precision-boring of cannon, and in 1775, for boring out steam-engine cylinders for Boulton and Watt: there followed a major expansion of the works which became a highly successful venture playing a leading role in the development of iron-making in Britain. However, following an argument between John Wilkinson and his brother William, the works were partially destroyed in c1795, but continued to operate until their sale in 1812. The site was later used as part of a farm. The mill building was originally built as a foundry adjacent to the site of the blast furnace, on a site previously occupied by other buildings. It probably dates from c1780-1800, after the blast-furnace had ceased to function, and at a time when the works was beginning to be run-down. In 1828, it was partly demolished and rebuilt as a cornmill for the Plas Power Estate: the water-wheel itself may be re-used from elsewhere on the ironworks site. The building continued to be used as a mill until 1947. It has now been restored as an industrial museum. The remains of the foundry are incorporated in the S end of the building, while the N end appears to have been newly built or rebuilt in 1828. Various mid C19 additions to the E side were removed in recent restoration work.

Exterior

Both principal phases have similar construction: rough rubble with angle quoins to lower storey, with brick above ashlar string course; dentilled eaves cornice; slate roof. 2 storeyed, 5-window range to W elevation (largely a single building phase of 1828 but incorporating parts of the earlier foundry building towards the S), which has double doors towards the left, with steeply arched cambered brick heads. The windows all have decorative cast-iron traceried glazing bars and rusticated stone lintels. The S gable end is largely a survivor from the earlier foundry building, and has doorway to left with double ring cambered head, and inserted window alongside, wider than the earlier single ring cambered head above it. Upper window is also an enlargement and the head and jambs of the earlier opening remain visible. The E wall exhibits both phases of construction, with a straight-joint roughly half-way along its length indicating the junction of the 2 phases. Blocked doorway towards the left, with 4-light window alongside beneath cambered relieving arch. Squared blocked window above.

Interior

The building comprises a wheel chamber to the N, the rest a single 2-storeyed space of 7 bays with king-post roof trusses. The cast-iron and wood wheel with a 6.41m diameter is fed by a cast-iron pipe and penstock tank; the gearing survives in the lower storey immediately S of the wheel chamber, and there are 4 stone beds above.

Reason for designation

One of the few extant buildings associated with John Wilkinson's highly important ironworks at Bersham, and of added interest for its later re-use as a cornmill.

Summary Description

Reference Number

1586

Building Number

Grade

II*

Status

Designated

Date of Designation

07/06/1963

Date of Amendment

08/12/1995

Name of Property

Octagonal Building at Bersham Ironworks Site

Address

Location

Unitary Authority

Wrexham

Community

Esclusham

Town

Locality

Bersham

Easting

330719

Northing

349234

Street Side

Location

In the centre of Bersham Village, towards the E end of the Ironworks site.

Description

Broad Class

Industrial

Period

History

History: The buildings form a significant component of the ironworks site: A blast furnace was recorded in Esclusham by c1670, though not necessarily on the present site. The first furnace recorded on this site was operated from c1717 by Charles Lloyd of Dolobran, and in 1721, became the first Welsh furnace to use coke rather than charcoal as its fuel. The ironworks was leased by Isaac Wilkinson from c1753. From c1763, it was operated as the New Bersham Company by his sons John and William. In 1774, John patented a machine for the precision-boring of cannon, and in 1775, for boring out steam-engine cylinders for Boulton and Watt: there followed a major expansion of the works which became a highly successful venture playing a leading role in the development of iron manufacture in Britain. However, following an argument between John Wilkinson and his brother William, the works were partially destroyed c1795, but continued to operate until their sale in 1812. The site was later used as part of a farm. The octagonal building was built c1775, almost certainly as a cannon foundry connected with the increased demand for cannon following the outbreak of the American War of Independence in 1775. A drawing of c1780 shows the building with 4 chimneys and an open-top roof, suggesting its use as a foundry, and a description of the site in 1775 refers to a cannon foundry with 4 furnaces casting simultaneously: the octagonal or near-circular form of the building would have permitted this. By 1829, it was in use as a stack house on the farm. The single storeyed building adjoining it, now known as the 'fettling shop', is probably contemporary with the octagonal building, although its precise original purpose is unknown. This building was extended at some time to the E.

Exterior

Roughly 8-sided or near-circular brick and rubble structure, with pyramidal roof (the slates removed at time of inspection, July 1995). The roof is supported by pentagonal brick piers at each angle. Between the piers, the NW, E, and S walls appear to be contemporary brickwork. The S wall has relieving arch with later rubble infil below; the upper part of the elevation is open. There is a similar blocked arched opening in the E wall, which provided access to the adjacent 'fettling shop'. The NW wall is bowed out in its central section. The W side is open, while the SW elevation, which is brick above a rubble base, was probably infilled at a later date, and has a small ventilation slit. The N elevation has brick infil on a rubble plinth, with stone sill to open upper section. Blind brick infilled NE elevation. Single storeyed attached range has been extensively rebuilt (probably in the late C19-early C20), but incorporates earlier work between and below the windows in its N elevation. 5-light windows have concrete sills and lintels. In the E bay (probably a later extension), the roof is supported on cast-iron Wilkinson pipes. A-frame timber truss exposed in E gable. Lean-to extensions to S.

Interior

Although the building is now a single space internally, excavation in 1987 revealed traces of internal walls parallel to the external walls. These were probably removed to enable the building's reuse. Braced king-post roof, the king-post at the intersection of massive cross tie-beams. In the centre of the underside of the post, a cast-iron bracket has a central hole, probably associated with C19 agricultural machinery.

Reason for designation

Listed at grade II* as one of the few extant buildings associated with Wilkinson's Bersham Ironworks, and for its exceptional interest as a purpose-designed cannon foundry of highly unusual form.

7.4 SINGLE STOREYED BUILDING TO SE OF OCTANGONAL BUILDING AT BERSHAM IRONWORKS SITE

Summary Description

Reference Number

16539

Building Number

Grade

II*

Status

Designated

Date of Designation

07/06/1963

Date of Amendment

08/12/1995

Name of Property

Single Storeyed Building to SE of Octagonal Building at Bersham Ironworks Site.

Address

Location

Unitary Authority

Wrexham

Community

Esclusham

Town

Locality

Bersham

Easting

330733

Northing

349229

Street Side

Location

In the centre of Bersham Village, towards the E end of the Ironworks site.

Description

Broad Class

Industrial

Period

History

The buildings form a significant component of the ironworks site: A blast furnace was recorded in Esclusham by c1670, though not necessarily on the present site. The first furnace recorded on this site was operated from c1717 by Charles Lloyd of Dolobran, and in 1721, became the first Welsh furnace to use coke rather than charcoal as its fuel. The ironworks was leased by Isaac Wilkinson from c1753. From c1763, it was operated as the New Bersham Company by his sons John and William. In 1774, John patented a machine for the precision-boring of cannon, and in 1775, for boring out steam-engine cylinders for Boulton and Watt: there followed a major expansion of the works which became a highly successful venture playing a leading role in the development of iron manufacture in Britain. However, following an argument between John Wilkinson and his brother William, the works were partially destroyed c1795, but continued to operate until their sale in 1812. The site was later used as part of a farm. The octagonal building was built c1775, almost certainly as a cannon foundry connected with the increased demand for cannon following the outbreak of the American War of Independence in 1775. A drawing of c1780 shows the building with 4 chimneys and an open-top roof, suggesting its use as a foundry, and a description of the site in 1775 refers to a cannon foundry with 4 furnaces casting simultaneously: the octagonal or near-circular form of the building would have permitted this. By 1829, it was in use as a stack house on the farm. The single storeyed building adjoining it, now known as the 'fettling shop', is probably contemporary with the octagonal building, although its precise original purpose is unknown. This building was extended at some time to the E.

Exterior

Roughly 8-sided or near-circular brick and rubble structure, with pyramidal roof (the slates removed at time of inspection, July 1995). The roof is supported by pentagonal brick piers at each angle. Between the piers, the NW, E, and S walls appear to be contemporary brickwork. The S wall has relieving arch with later rubble infil below; the upper part of the elevation is open. There is a similar blocked arched opening in the E wall, which provided access to the adjacent 'fettling shop'. The NW wall is bowed out in its central section. The W side is open, while the SW elevation, which is brick above a rubble base, was probably infilled at a later date, and has a small ventilation slit. The N elevation has brick infil on a rubble plinth, with stone sill to open upper section. Blind brick infilled NE elevation. Single storeyed attached range has been extensively rebuilt (probably in the late C19-early C20), but incorporates earlier work between and below the windows in its N elevation. 5-light windows have concrete sills and lintels. In the E bay (probably a later extension), the roof is supported on cast-iron Wilkinson pipes. A-frame timber truss exposed in E gable. Lean-to extensions to S.

Interior

Although the building is now a single space internally, excavation in 1987 revealed traces of internal walls parallel to the external walls. These were probably removed to enable the building's reuse. Braced king-post roof, the king-post at the intersection of massive cross tie-beams. In the centre of the underside of the post, a cast-iron bracket has a central hole, probably associated with C19 agricultural machinery.

Reason for designation

Listed at grade II* as one of the few extant buildings associated with Wilkinson's Bersham Ironworks, and for its exceptional interest as a purpose-designed cannon foundry of highly unusual form.