



Stonebridge Mills Leeds, West Yorkshire

Archaeological Watching Brief



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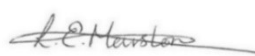


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Contents

Summary.....	iii
Acknowledgements.....	iii
Glossary.....	iv
1 INTRODUCTION	1
1.1 Project and planning background.....	1
1.2 Scope of the report.....	2
1.3 Location, topography, and geology	2
2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND	2
2.1 Introduction.....	2
2.2 The integrated textile mill, fulling, and beam engines.....	3
2.3 Stonebridge Mills.....	6
3 AIMS AND OBJECTIVES	8
3.1 Archaeological watching brief aims	8
3.2 Archaeological watching brief objectives.....	8
3.3 Research frameworks	9
4 METHODS.....	9
4.1 Introduction.....	9
4.2 Archaeological watching brief.....	9
5 STRATIGRAPHIC EVIDENCE.....	10
5.1 Introduction.....	10
5.2 Natural deposits	10
5.3 Building 10.....	10
5.4 Building 11.....	11
6 FINDS EVIDENCE.....	13
6.1 Introduction.....	13
7 ENVIRONMENTAL EVIDENCE	13
7.1 Summary	13
8 CONCLUSIONS	13
8.1 Summary	13
9 ARCHIVE STORAGE AND CURATION	13
9.1 Museum.....	13
9.2 Preparation of the archive	13
9.3 Selection policy	14
9.4 Security copy.....	14
9.5 OASIS	14
10 COPYRIGHT	14
10.1 Archive and report copyright	14
10.2 Third party data copyright.....	14
REFERENCES	16
Online sources.....	16
APPENDICES.....	17
Appendix 1: Context List.....	17
Appendix 2: Photographic record	18
Appendix 3: OASIS record.....	20
Appendix 4: WYAAS Brief	23



List of Figures

- Figure 1** Site location plan, with area of watching brief highlighted (Buildings 10 and 11)
Figure 2 Plan and section of recorded drain, Building 10
Figure 3 Plans and sections of exposed features, Building 11

List of Plates

- Cover** Wheel pit
Plate 1 Re-excavation to the north-eastern end of the northwest wall of Building 10, facing northwest
Plate 2 Re-excavation to the south-western end of the southeast wall of Building 10, facing northeast; includes the stone slab to (1003), (1002), and modern deposit (1007)
Plate 3 Re-excavation to the south-western end of the southeast wall of Building 10, facing southeast; showing the drain (1003), with slab removed, (1002), (1001), and brick structure (1005) in relation to the walls of the building (1008).
Plate 4 Client photograph 4, showing excavations within the southwest end of Building 10, facing southeast. Note the machine bases (top), redeposited natural (1002), and underlying natural (1001)
Plate 5 Client photograph 2, showing excavations within the southwest end of Building 10, facing southwest. Note the machine bases (left), redeposited natural (1002), and underlying natural (1001), with a linear brick structure right, leading to a cistern / well abutting the wall to Building 11
Plate 6 Client photograph 5, showing excavations within the southwest end of Building 10, revealing large stone machine beds, facing northwest
Plate 7 Client photograph 7, showing excavations within the southwest end of Building 10, revealing large stone machine beds adjacent to the doorway to Building 11, facing southwest
Plate 8 Client photograph 3, showing the exposed cistern / well feature within the southwest end of Building 10, facing west
Plate 9 Client photograph 6, exposed brick-paved surface within Building 10, facing southeast
Plate 10 Exposed threshold of former doorway to the boiler house from Building 11, facing south
Plate 11 Exposed engine bed (2007), with abutting concrete plinths (2006) for the later press, Building 11, facing southwest
Plate 12 The coolant pump base and remnant metal work, with the unexcavated wheel pit and the principal motion or bearing support structure for the engine's flywheel within the wall to Building 10, facing northeast
Plate 13 Excavated sondage within the wheel pit, facing southeast. Note the exposed pipe to its base
Plate 14 Exposed machine bases / engine bed (2007) within the southeast of Building 11, facing east
Plate 15 The northwest plinth and press base within Building 11, facing north
Plate 16 Lid of 'Red Heart' dog food tin, within (2003), Building 11
Plate 17 Building 11 following removal of the press, prior to the demolition of its southwest wall and excavation, facing west
Plate 18 The former void area to the south-eastern end of Building 11, facing northeast. Note the remnant ironwork in the location of the removed dividing wall and to the top right



Summary

Wessex Archaeology was commissioned by Caddick Construction, on behalf of Stonebridge Mills Limited, to carry out an archaeological watching brief as part of the redevelopment of Stonebridge Mills, Leeds, West Yorkshire, LS12 4QN, centred on National Grid Reference (NGR) 425586, 432875. The archaeological watching brief targeted Buildings 10 and 11, the Old Mill and its later Engine House.

The watching brief methodology and the aims of the project were only partially met. An absence of an archaeologist being present during the excavations within Building 10 have resulted in archaeological evidence being lost and removed without record. However, the archaeological monitoring during the excavations within Building 11 were successful. The work followed on from a programme of historic building recording, undertaken by Wessex Archaeology, that had documented and analysed the structures ahead of and during the on-site programme of redevelopment works. The results of the archaeological watching brief are typical of many former industrial sites: the former engine and machinery removed, spaces backfilled, and significant evidence for past processes erased. What remains in this instance casts some light on the former process of power transmission and the operation at the mill.

Within Building 10, former drainage features were recorded during the re-excavation of some areas, with a series of machine bases, a cistern / well, and a possible wheel pit recorded to the southwestern end of the room, along with sections of former brick paving.

Within Building 11, remains of the c.1860 beam engine bed were recorded, including a wheel pit and the location / remains of a possible coolant pump and supply pipe. The measurements of the former beam engine given in the *Register of Historic Steam Engines* c.1950s, were broadly confirmed, with a 19' diameter wheel fitting within the given span between the wheel pit and the support for its driveshaft within the dividing wall to Building 10. This confirms the observations made during the historic building recording exercise.

The archive resulting from the watching brief is currently held at the offices of Wessex Archaeology in Sheffield. Leeds Museum will be contacted regarding the deposition of the archive in due course. An OASIS form, wessexar1-431714 has been provisionally completed and will be finalised at the time of deposition of the archive with the museum.

Acknowledgements

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Glossary¹

Beam (engine)	A pivoting overhead beam used to apply the force from a vertical piston to a vertical connecting rod
Beam (weaving)	A cylindrical beam approximately 6 inches in diameter on which the warp is wound for use in the loom.
Blending	The process of mixing different wools or fibres. Blending mixes fibres of different physical qualities, market value and colour. It also ensures the consistency of end product.
Bobbin	A cylindrical spool or spindle for holding yarn.
Brushing	A finishing process in which fabric is passed over one or more revolving brushes.
Burling	Removing knots and blemishes from woven blankets.
Carding	The processing of wool to open the fibres up, remove knots and impurities, help comb out the fibres and blend them together to produce a fibre than can be spun. In the wool textile industry it is usually preceded by scribbling.
Combing	Combing carded wool to straighten the fibres and lay them parallel to one another. It is usually used with long fibre wool to create worsted
Condenser	A device for condensing a web of carded fibre into a loosely twisted rope
Finishing	The finishing processes are those undertaken after the raising, they include cutting, binding, folding and packing.
Fulling/milling	The process of cleaning and thickening (or felting) newly-woven cloth by beating or rolling it when wet. Friction causes the fibres to mat together reducing the size of the piece by as much as a third.
Raising	The process of raising a knap on the blankets
Scribbling	The initial stage of carding. It roughly cleans and mixes the fibres before they are passed on to the carding process, which does a similar job but more finely.
Shake Willey	As part of the willeying process, the shake willey shook the wool while cylinders fitted with iron spikes beat it and roughly opened it out. This got rid of much of the dust and dirt.
Sliver	The soft rope of fibres taken from the carding machine in which the fibres have been laid parallel and smoothed out
Sorting	Separating out the different qualities of wool found in the same fleece.
Spinning	The act of creating a yarn or thread by drawing out and twisting a rope or sliver of carded fibres.
Tentering	Hanging blankets out to dry on racks after fulling. Originally done on racks outside, but latterly by mechanical means.
Warp	The threads running through the length of a woven piece of fabric. Before the loom can be set up, all the warp threads are wound on to

¹ Glossary terms are reproduced from the glossary provided as part of the Witney Blanket Storey website, available at: <http://www.witneyblanketstorey.org.uk/WBP.asp?navigationPage=Glossary#tease1> [accessed 25/03/2021]



	the warp beam (warping)
Warping	Setting up a warp beam to carry the right number of warp threads
Weaving	Alternately crossing weft upon warp threads to produce a cloth
Weft	In weaving, the thread carried by the shuttle that is woven across the cloth between the warp threads.
Willeying	The process of roughly opening out the bales of wool and removing some of the dirt and dust
Woollen	Yarn spun from wools of various grades, and which is not classified as worsted
Worsted	A fine yarn spun from long or combed wool fibres



Stonebridge Mills, Leeds West Yorkshire

Archaeological Watching Brief

1 INTRODUCTION

1.1 Project and planning background

1.1.1 Wessex Archaeology was commissioned by Caddick Construction, on behalf of Stonebridge Mills Limited (hereafter 'the Client'), to carry out an archaeological watching brief as part of the ongoing redevelopment of Stonebridge Mills, Leeds, West Yorkshire, LS12 4QN, centred on National Grid Reference (NGR) 425586, 432875 (hereafter 'the Site', **Figure 1**). The archaeological watching brief targeted Buildings 10 and 11, the Old Mill and its later Engine House.

1.1.2 Planning and Listed Building Consent applications have been granted by Leeds City Council (LCC), subject to conditions, for the change of use and conversion of the mill buildings to provide 30 dwellings, and the construction of 82 new dwellings (112 dwellings in total) with associated access and landscaping (Application references: 18/02140/FU and 18/02141/LI).

1.1.3 Condition 12 of the Listed Building Consent states:

'No development shall take place within the area of archaeological interest comprising all the buildings upon the site until a programme of archaeological recording has been secured. This recording must be carried out by an appropriately qualified and experienced archaeological consultant or organisation, in accordance with a written scheme of investigation which has been submitted in writing to and approved in writing by the Local Planning Authority.

To ensure appropriate archaeological recording.'

1.1.4 In response, West Yorkshire Archaeology Advisory Service (WYAAS) produced a brief for the required archaeological works in April 2021 (WYAAS 2021). The watching brief was undertaken on the 20 April 2021 and 17 August 2021. This phase of works follows a comprehensive programme of historic building recording conducted for the Site between October 2020 and January 2021, which was covered within a separate report (Wessex Archaeology 2021). This report should be read in conjunction with the historic building record.

1.1.5 Wessex Archaeology were not present during the initial slab removal and ground reduction works within Building 10, only attending during a later phase of re-excavation for drainage installation in May 2021; features uncovered during the main phase of works were therefore not recorded archaeologically, with any observations within this report being derived from photographs taken by the client / site workers at the time. Those photographs are included within the digital archive, and are reproduced at the end of this report along with a copy of the primary Site photographic archive (**Appendix 2**). It is understood that, for the most part, original sandstone machine beds and drainage features encountered within Building 10 have largely been preserved *in situ*, other than



where there has been a requirement for remediation or removal to accommodate new drainage, as these occur below the intended finished floor level of the development.

1.2 Scope of the report

- 1.2.1 The purpose of this report is to provide the results of the archaeological watching brief, to interpret the results within their local or regional context (or otherwise), and to assess their potential to address the aims outlined in the brief, thereby making available information about the archaeological resource (a preservation by record).

1.3 Location, topography, and geology

- 1.3.1 The Site lies on the edge of Wortley, to the west of Leeds, and comprises an irregularly shaped parcel of land bounded by Stonebridge Lane to the northwest, Silver Road Hill to the north, and the A6110 Ring Road and Farnley Beck (alternatively referred to as 'Wortley Beck' on historic mapping) to the south (**Figure 1**). The Site is situated to the northeast of Farnley Beck, which runs on a straightened course along the Site's southwestern boundary.
- 1.3.2 The Site contains the former Stonebridge Mills complex, including four Grade II listed buildings. The form and development of the mill complex is set out in detail in the historic building record for the Site (Wessex Archaeology 2022). The archaeological watching brief was designed to specifically consider the areas of Buildings 10 and 11: the Old Mill (the earliest and most significant structure within the Site) and its associated engine house, in order to clarify their development and use, and to record any below-ground remains within their footprint.
- 1.3.3 The numbering system used for buildings within this report is taken from a fire insurance plan dated 1945, which is referred to in a schedule of existing buildings drawn up by the Royal Commission on the Historical Monuments of England (RCHME) during a survey undertaken in 1986. The same numbering system was subsequently used for several proposed development schemes and previous archaeological and architectural records. This numbering system has been used during the recording works to maintain consistency.
- 1.3.4 The bedrock geology within the Site area is recorded as Elland Flags sandstone, giving way to Pennine Lower Coal Measures to the north-eastern part of the mill complex. Superficial alluvial deposits are documented overlying the southwestern half of the Site, relating to the Farnley Beck (British Geological Survey).
- 1.3.5 The existing ground (floor) level within Building 10 was recorded as c. 50.49 m OD, while the ground level within Building 11 was recorded as c.50.60 m OD. Variations in the floor level within both buildings can be accounted for by variations in the compaction of made ground / fill deposits underlying the existing concrete floors (prior to works commencing), which had resulted in slumping and patch repairs.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Introduction

- 2.1.1 Information about the archaeological and historical background of the Site is drawn directly from the historic building record produced for the Site (Wessex Archaeology 2022), supplemented by information provided as part of the project brief (WYAAS 2021). In turn, much of the information presented within the historic building record was drawn from the RCHME survey conducted for the Site in 1986, as part of the Yorkshire Textile



Mills Survey (RCHME and WYAS 1992). The detailed RCHME report on Stonebridge Mills included a comprehensive study of the available archive records for the Site, deeds and documents held by the Site owners at the time, as well as an assessment of the Site itself, a full list of which is presented within the historic building record.

- 2.1.2 The following background considers the area and function of Buildings 10 and 11 specifically, with only a summary background of the surrounding Site.
- 2.1.3 A glossary of key technical terms is provided at the start of this report.

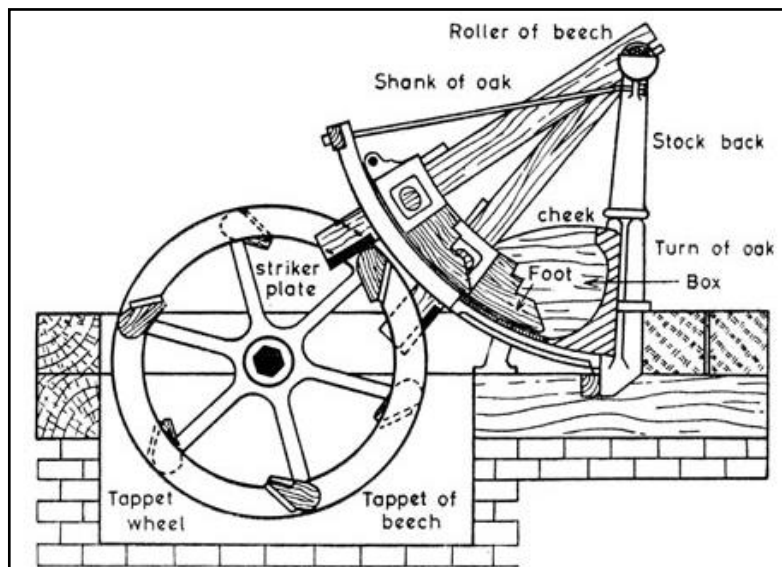
2.2 The integrated textile mill, fulling, and beam engines

- 2.2.1 Integrated textile mills, wherein several, if not all, stages of textile production occurred at a single site, began to appear from the late 18th century onwards, driven by the development of powered processes for textile manufacture. The Site comprises a former integrated woollen mill, meaning that all, or most, stages of the processes of producing woollen cloth were undertaken at the Site. At its largest extent, the Site incorporated buildings and spaces for the storage, cleaning, and sorting of raw wool, its processing, spinning, weaving, finishing, and packing, alongside administrative buildings and dwellings. Two principal wool-derived fabrics were produced at the Site: woollen and worsted. The earliest records for the Site account only for woollen, with worsted first mentioned in records from the early 20th century.
- 2.2.2 The raw wool would be brought to the Site and cleaned ('scoured'), sorted by quality, and blended – either by hand or machine. The blended wool would then undergo willeying to remove further dirt and oils (lanolin). Sometimes, oils, such as wood oil, would be added to the wool at this stage to protect the fibres and facilitate spinning. For the production of woollen, the next stage was for the wool to be carded, whereby it was fed through a series of spiked rollers to comb and combine the wool into loose cords, or 'slivers', ready for spinning; the woollen would be a mix of fibres, short and long, as opposed to combed long fibres used for worsted. The carding process was three-stepped, first the wool was passed through a scribbler, which would roughly open up the wool blend and further remove residual dirt. Second, the wool would be fed into the carder, for finer combing and mixing. Third, the carded wool would be run through a condenser which condensed the carded wool into narrow strips which were then rubbed between leather belts to form the slivers.
- 2.2.3 The slivers would then be ravelled onto bobbins and taken to be spun into threads (weft). Spinning was originally done by hand, but was later machine powered. The development from hand, animal, and water/steamed powered, to coal and finally electrically powered spinning, underpinned the industrial revolution in textiles. The weft would be wound onto a cylindrical beam for weaving, in a process known as warping. Those beams would be moved to a weaving shed, where they would be mounted on a loom and woven into cloth; a process firstly carried out by hand, and latterly by powered looms within the Site.
- 2.2.4 For worsted, the willeyed wool would be combed to draw out and align, rather than mixing, long wool fibres, resulting in a finer, tighter cord or 'top'. Shorter fibres would be removed and could be reused for woollen.
- 2.2.5 The raw cloth would undergo a number of processes for 'finishing'. The material would be washed and 'cleansed' with any residual contaminants (burls) or loose threads being removed or remedied (a process referred to as burling). The cloth would be subject to milling or fulling – whereby it would be repeatedly pounded by heavy hammers with water to affect the necessary shrinking to produce a quality finished material and to remove any

oils from the cloth. To dry, the cloth would be stretched over a framework, either of timber, or of mechanical construction – a process known as tentering. Any bleaching would also occur as part of this process. The cloth would then be ready for any final finishing or processing relevant to its intended purposes, before being pressed and packaged for shipping.

Fulling

- 2.2.6 The ground floor of Building 10 would have originally been used for fulling cloth, perhaps with an engine housed within its southeast bay, before the c. 1860 construction of Building 11, which was constructed to house the engine as part of the modernisation of the Site.
- 2.2.7 A typical fulling stock would have comprised stone, wooden, and, later, cast-iron components, with wrought iron tie-down bolts. Due to the stresses involved the components were large and of robust proportions. Cloth would be placed in a fulling trough, a wooden box with a curved base that was firmly attached to the floor of the workshop by iron fittings. The trough was positioned at the base of an iron stock or column which carried a roller or axle. Two overlong shanks or beams of oak were attached to the axle. Each shank had a foot or hammer attached towards its far end. These hammers were free to move back and forward inside the fulling trough following a short arc. A tappet wheel of c. 1.6m diameter, sat in a masonry-built pit behind the fulling stock. The pit allowed the wheel to be properly positioned with reference to the other components. As the tappet wheel turned, the attached tappets lifted and released the end of each oak shank, letting the foot drop on to the cloth being fulling. These would be arranged to strike the cloth in the fulling box around 40 times per-minute (WYAAS 2021).



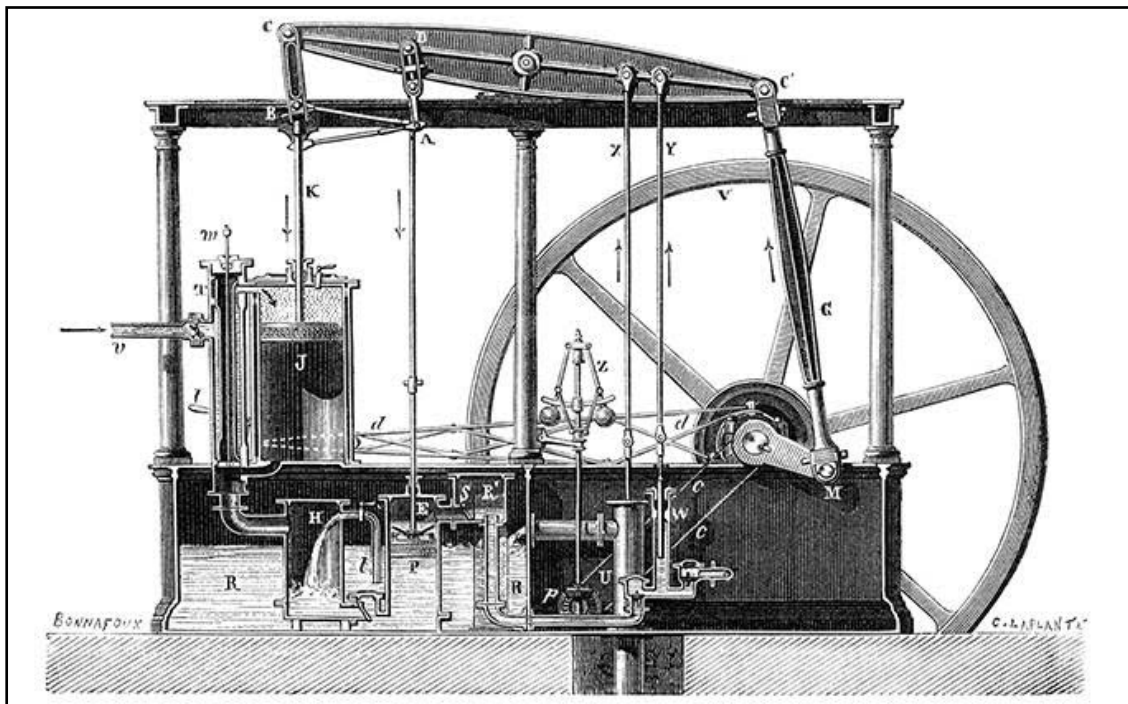
A cross section of a typical fulling stock (after WYAAS 2021)

- 2.2.8 In addition to the fulling stock the mill also required a supply of water, drains to carry away used and excess water, and a means of powering each stock. The most common solution to the latter problem in a steam mill was to arrange the fulling stocks in a line and power them in pairs from a recessed drive shaft with suitably positioned gearing or pit wheels to transfer drive to the tappet wheels (as seen in water and windmills). While no evidence for wheel pits for tappet wheels was noted during the works, the site of immediate power transmission from Building 11 was recorded, in alignment with a substantial wall box situated in within the party wall between Buildings 10 and 11, below the location of the engine's main driveshaft; presumably this represents the course of transmission to the

former tappet wheels, or a later phase of milling machines. Drains were noted running the length of the room, including one observed and recorded as part of the watching brief, draining towards the centre of the room.

Beam engines

- 2.2.9 Building 11 comprised a former engine house, a later addition attached to Building 10, likely replacing an engine housed within the Old Mill's (Building 10) south-eastern bay. The Bradford City Libraries *Register of Historic Steam Engines* (WYAS 55D81), conducted at some point in the 1950s, recorded the engine within Building 11 as a single cylinder beam engine. The engine was recorded within the ownership of Andrew Mellish and was used for 'driving [the] woollen mill'. The make and last date of use of the engine are not recorded, nor were any photographs taken at the time. The beam engine was dated by the surveyor to c.1860. The machine featured 30" cylinders, with a 6' stroke, slide valve gearing, and a 19' diameter flywheel. The engine could produce 250 bhp, rotating at 25 rpm at a working steam pressure of 65 lbs. The surveyor noted that the engine was 'very ornate'. The measurements given fit with a series of machine beds and a wheel pit recorded within Building 11 as part of the watching brief, with the drive shaft of the engine's wheel centred on a substantial arched stone opening in the party wall between the two buildings (see **Figure 3**).



Example schematic of a single-cylinder beam engine; V steam intake from boiler, J cylinder / piston, R coolant cistern / tank, U and X coolant pump, W and Y feed pump for boiler, P and Z governor, V flywheel

- 2.2.10 Steam was raised to power the engine within Building 12, the Boiler House, powering the engine's single cylinder, situated above the existing floor level to the southwest of the room, in front of the plinth area where the room's main stair would have been situated, servicing a gallery above (all since removed). The steam drove a piston within the cylinder, driving the beam, and its flywheel in turn. A pump would have been situated adjacent to the flywheel, driven in parallel, to raise water as a coolant, which was delivered to a large cistern housing a series of condensers, linking to the base of the cylinder. Condensed water and coolant would be drawn off in turn by a second pump within the cistern, with waste water being pumped to the boiler house. A cistern / well and

tap within Building 10, documented adjacent to the wall to Building 11 during ground reduction works by site workers, may relate to an overflow from the coolant tank, which could then be recycled, via a fixed outlet within the cistern, as coolant. It is probable that drainage from the fulling process fed this well, to be drawn through as coolant in turn. During the course of the watching brief, it was observed that only some stone machine beds, the wheel pit for the fly wheel, and a section of iron pipework for the coolant pump, remained within the engine house. Much of the engine house's former plant and machine beds were removed to accommodate a large press at some point during the mid-20th century. Observed excavation as part of the recent works terminated at the top of the machine beds, so it is not clear if any further plant / features survive below that level.

2.3 Stonebridge Mills

- 2.3.1 At the time of its inception at the beginning of the 19th century, Stonebridge was a steam-powered fulling, scribbling and carding mill, with surviving insurance documents from the early 19th century indicating that these powered processes were contained in a single three-storey mill building (Building 10). Fulling would likely have taken place on the ground floor, owing to the need for water and heavy machinery to pound woven cloth, with scribbling and carding taking place of the upper floors. The earliest iteration of the mill was associated with a row of buildings along the northwest frontage of the Site, for sorting, hand-spinning, weaving, finishing, and storage.
- 2.3.2 The earliest clear reference to a mill at Stonebridge dates to 4th April 1805; an insurance policy taken out by Dawson and Stephen Humble, woolscribblers of Leeds, for '*Stone Bridge fulling and scribbling mil at Wortley*' (Document ref: Guildhall 11937/64 Sun C.R. 774805 4th April 1805). A second insurance document of similar date (Document ref: Guildhall 11937/63 Sun C.R. 771333, 2nd January 1805), relating to holdings of a Thomas Pawson and John Haley, exists, although it is not clear whether it relates to the Site, or a differing premise. Nevertheless, by 1819, Thomas Pawson was certainly occupying all or a greater part of the Site, and it is presumed that he held an interest from the beginning (RCHME 1986). It is likely that Dawson and Humble owned the mill, which was leased to Pawson and Haley.
- 2.3.3 An insurance document dated to 1819, for '*Thomas Pawson and Son of Stonebridge Mill at Farnley*', details how they were woollen merchants and manufacturers, with the mill described as a carding, fulling, and scribbling mill (Document ref: Guildhall Sun C.R. 11937/127 No.952490, 11th March 1819).
- 2.3.4 The chief evidence for the period suggests that Pawson was the main tenant at the Site, and drove its development. In 1821, insurance documentation indicates that Pawson added a dyehouse to structures insured (Guildhall Sun C.R. 11937/189 No.1124033 12th April 1821). The document provides a description of the mill complex at the time, in particular the connection between the boiler house and mill. It is clear that the existing boiler house and engine house were likely not constructed by this date, as a span of '4 yards' existed between the boiler house and engine house at that time; a conclusion supported by the structural relationship between these recorded buildings and the original mill.
- 2.3.5 In 1823, a James Hutchenson of Leeds and Hugh Maltby, of London, are recounted insuring the property "...in the tenure of Thomas Pawson..." to a value of £3,400.00. It would appear that they had acquired ownership of the mill from Thomas Farrer, and that the mill remained primarily within the tenure of Pawson (Document ref: Guildhall Sun C.R. 11937/142 No.1002447 8th April 1823). Importantly, the insurance document notes that the complex comprised "...fulling, carding and scribbling mill and engine house **under one**



roof at Wortley...", giving credence to the theory of an internal end-engine house at the time.

- 2.3.6 A series of policies from 1819 (Document ref: Guildhall Sun C.R. 11937/127 No.952490, 11th March 1819), 1823 (Document ref: Guildhall Sun C.R. 11937/142 No.1002449 8th April 1823), and 1828 (Document ref: Guildhall Sun C.R. 11937/127 No.952490, 18th April 1828) account for the value of the premises' steam engine - £200.00, £1,000.00, and £400.00 in turn - possibly reflecting an earlier engine, its replacement, and its depreciation (RCHME 1986).
- 2.3.7 In 1831, Thomas Pawson died, passing the ownership by will (dated 22nd December 1830) onto his family: successive generations willed the property in family hands (after *Abstract of Title of Albert Henry Pawson to Stone Bridge Mills, 1896*, presented with the RCHME report).
- 2.3.8 The Site is first shown on detailed mapping in 1846, when it is depicted on the Wortley Tithe mapping (not reproduced). The mill complex is recorded in the associated award documentation as being owned and occupied by a 'Pawson, William', indicating that the Pawson family had acquired the ownership of the Site by that time. The main mill building, Building 10, can be seen at the centre of the Site, with a complex of buildings attached to its south and southwest. It appears that the existing engine and boiler houses (Buildings 11 and 12) had been constructed by this time, as there is no significant change to their footprint on subsequent mapping. The other structures depicted southeast of the mill differ markedly from the later depictions of the Site, indicating that they were later replaced/rebuilt. The mapping also shows a possible former mill run or canalised water course within the fields to the southeast of the mill, cutting through the southern part of the Site. It is likely this feature was to provide fresh water for processes such as scouring and fulling.
- 2.3.9 The original engine within Building 11 was apparently replaced c.1860, likely in parallel with an expansion of the Site, and due to a requirement for greater power. The 1860 engine remained in use until the end of the woollen industry at the Site in the mid-20th century.
- 2.3.10 In 1871, Pawson is recorded as still in occupancy at the Site, making a return to the Rivers Pollution Commission. An extract from an indenture between John Edward Pawson and Albert Henry Pawson and Robert Wood and J. E. Pawson dated 1879 describes the extended mill at that time (extract included with the RCHME report, 1986):

"Mills and various messuages, houses and buildings (mistal, 2 dwelling houses, wool factory house, top counting house, cart shed, press shop, perching shop, low counting house, wool warehouse with picking room above, willey house, watch house, warerooms, cottages, stable, hen house, wash house and oil warehouses, old gashouse, waste room, storeroom, balk and brushing room, dressing burling and tenter houses, drawing room, joiners house, dryhouses and storeroom, scouring place, dyehouse, chimneys and hoist and other messuages and buildings and reservoir and all engines, boilers and shafting going gear and machinery."

- 2.3.11 The document accounts for more than one engine, indicating that the second engine house, within Building 2, and its associated mill and buildings which form the New (Middle) Mill Group (Buildings 1 to 4), had been constructed by this time.



- 2.3.12 Ordnance Survey mapping dated to 1893 shows the Site in detail, greatly expanded (not reproduced). Pawson's occupation of the Site ended in 1896, when they sold their holdings to an Andrew Mellish of Leeds (RCHME 1986). A plan apparently accompanied the conveyance document, and is referred to throughout the RCHME report, as it indicated the use of the buildings within the Site at that time. Following Mellish's death in 1902, the mill passed to Mellish Richardson and Company Ltd, which were recorded as "*Manufacturers of Worsteds, vicunas, and serges. Raincoating Specialists. Sole licensees of the well-known Nymphaea Waterproofing Process*" in advertisements from both 1915–16 and 1920.
- 2.3.13 In 1931, Fred A Lodge and Sons acquired the mill complex from Mellish Richardson and Company Ltd for £9,000, being insured in 1934 for £60,000. Through the inter- and post-war periods, and in parallel with the decline of the textile industry within the UK, the mill ceased to operate as an integrated textile mill, instead being adapted to non-textile uses. During this period, the mill shifted from steam to electric power. An electrically powered cloth press was installed in the engine house as part of the Site's continued development, replacing the former 1860s engine; as part of its construction the former plant was removed, including substantial sections of stone machine beds, with new concrete footings and brick plinths being constructed to support the press.
- 2.3.14 By 1954, detailed Ordnance Survey mapping (not reproduced) records the Site as 'Stone Bridge Mills (Woollen and Worsted)'. By 1986 the complex, still in the ownership of the Lodges, had been converted to a range of light industrial uses, including garages, workshops, cobblers, and storage.

3 AIMS AND OBJECTIVES

3.1 Archaeological watching brief aims

- 3.1.1 The aims of the archaeological watching brief, as stated in the brief (WYAAS 2021), were:
- *to identify and record the presence/absence, extent, condition, character, and date (as far as circumstances permit) of any archaeological features and deposits disturbed or exposed as a result of ground works within the Old Mill and engine house, and to deposit a report on this work with the West Yorkshire Historic Environment Record.*

3.2 Archaeological watching brief objectives

- 3.2.1 In order to achieve the above aims, the objectives of the archaeological watching brief, were:
- *to determine the presence or absence of archaeological features, deposits, structures, artefacts, or ecofacts within the specified works area*
 - *to record and establish, within the constraints of the works, the extent, character, date, condition, and quality of any surviving archaeological remains (a preservation by record)*
 - *to place any identified archaeological remains within a wider historical and archaeological context in order to assess their significance; and*
 - *to make available information about the archaeological resource on the site by preparing a report on the results of the watching brief.*

3.3 Research frameworks

- 3.3.1 Given the character and historical context of the Site, the regional research agenda for Industrial Archaeology was identified as being relevant to the watching brief (Gomersall 2009). In particular, the research agenda notes ‘machinery related to power-generation and transmission does not survive well... so the physical evidence for power surviving within the structural fabric [of textile mills] is of particular significance’ (op. cit. 25).

4 METHODS

4.1 Introduction

- 4.1.1 Excavation with Building 10 was undertaken without the presence of an archaeologist, contrary to the agreed Brief (WYAAS 2021; **Appendix 4**). However, archaeological watching brief works monitoring the re-excavation within Building 10, and the excavation of Building 11 were all undertaken in accordance with the methodology set out within the Brief (**Appendix 4**) and in general compliance with the standards outlined in ClfA guidance (ClfA 2020a). The methods employed are summarised below.

4.2 Archaeological watching brief

Scope of the works

- 4.2.1 **Figure 1** shows the location of the watching brief, which was carried out on groundworks within Buildings 10 and 11 (the Old Mill and Engine House); re-excavation within Building 10 only.
- 4.2.2 The archaeological watching brief monitored below-ground excavation (or re-excavation, where applicable) works to their target depth, with no further investigations or material removed below that depth (except for a single sondage within the wheel pit within Building 11).

Fieldwork methods

- 4.2.3 All mechanical excavation was, where possible, undertaken using a toothless ditching bucket, and was monitored by the watching archaeologist, with the exception of Building 10, which was not monitored.
- 4.2.4 Where necessary, the surface of archaeological deposits was cleaned by hand. Spoil derived from both machine stripping and hand-excavation was visually scanned for the purposes of finds retrieval. In addition, a metal detector was used to scan exposed surfaces and spoil. Artefacts and other finds were to be collected and bagged by context; however, no finds were encountered.

Recording

- 4.2.5 All exposed monitored archaeological deposits and features were recorded using Wessex Archaeology’s pro forma recording system.
- 4.2.6 A drawn record of excavated and recorded archaeological features and deposits was made including plans and sections, drawn to appropriate scales (generally 1:20 or 1:50 for plans, 1:10 for sections) and tied to the Ordnance Survey (OS) National Grid.
- 4.2.7 A full photographic record was maintained, using black and white 35 mm film, with a film speed of ISO400. This was supplemented by digital photography, using a Canon Mark II full-frame camera. The photographic record illustrates both the detail and the general context of the principal features. All digital photography follows the Historic England



Guidance on Digital Image Capture and File Storage (2015a) and will be supplied to the HER in both JPEG and TIFF format, with metadata embedded in the TIFF file. The metadata will include the following: the commonly used name for the site being photographed, the relevant centred OS grid coordinates for the site to at least six figures, the relevant township name, the date of photograph, the subject of the photograph, the direction of shot and the name of the organisation taking the photograph. Digital images will be supplied to WYAAS on gold CDs accompanying the hard copy of the report by the archaeological contractor.

5 STRATIGRAPHIC EVIDENCE

5.1 Introduction

5.1.1 The following section summarises the results contained in the site archive, with context descriptions tabulated in **Appendix 1**.

5.2 Natural deposits

5.2.1 Excavation halted at the contractor's target level. In the instance of Building 10, only the re-excavation of the area was monitored. However, natural geology (1001) was encountered both during the unmonitored works, and in the areas observed during the watching brief, comprising a firm mid-yellow brown sandy clay, giving way to a mid-yellow grey sandy clay with depth (**Plate3-5**).

5.3 Building 10

5.3.1 Due to a break down in communications, the majority of the groundworks within Building 10 was undertaken prior to archaeological monitoring. The areas observed therefore relate to two small areas re-excavated, following the insertion of modern crush / levelling material (1007), in order to form new openings through the external walls of Building 10 to accommodate drainage / services (**Plate 1 and 2**). One of these areas revealed remains of archaeological interest; that situated to the building's south-eastern wall (see **Figure 2**).

5.3.2 A loose, redeposited natural (1002) was recorded overlaying the natural and later features in the areas observed during the watching brief, and can also be seen in the photographs provided by the client for the unmonitored works (**Plates 3-5**). Within the area recorded to the building's south-eastern wall, the redeposited natural sat within and above a drain cut 1005. The drain / cut was not excavated, being situated below the client's target level. The drain (1003), situated at 49.85 m OD, comprised the tapered terminus of a simple brick channel, orientated southeast–northwest, of a minimum of six courses of unmortared brick, 430 mm wide, set 250 mm out from the walls of Building 10 (1008). The drain measured approximately 420 mm in depth to the top of its fill (1004), and was sealed by a large stone slab. The drain extended to the northwest. The drain fill comprised a mid-grey / black silty clay.

5.3.3 Contemporaneous with the drain, a loose square arrangement of three bricks (1006) was situated to the southwest, abutting the walls to Building 10 (1008); the function of the bricks was not clear. More redeposited natural (1002) appeared to overlay the drain and brick arrangement. It was not clear to what extent the recent works had resulted in the observed coverage of redeposited natural.

5.3.4 It is probable that the drain related to the building's former function, accommodating runoff from the fulling process. On site workers noted that a long linear drain had been found running the length of the room northeast to southwest (not viewed or recorded by Wessex Archaeology). It is presumed that this central drain was fed in turn by a series of drains

from the side of the room (such as 1006), feeding into a well / cistern structure to the southwest, shown in photographs provided by the client (**Plate 5**), although it may have alternatively served as a drive shaft tunnel. The cistern was formerly enclosed within a stone structure, sunk into the underlying clay, and abutting the wall to Building 11 (**Plate 8**). Two large iron pipes serviced the cistern – possibly an intake and outlet, servicing the engine house as part of its coolant supply.

- 5.3.5 The photographs provided by the client also show a series of machine bases to the south-western end of the room; these comprise substantial stone blocks, approximately 0.50 m in depth, with remnant ties (either steel or iron) for plant (**Plate 6 and 7**). The location of these bases suggest that they may relate to the power transmission from Building 11 (thus potentially dating to c.1860) and may have supported gearing. The stone blocks appear to have been set directly onto the underlying clay. A probable wheel pit was noted abutting the party wall with Building 11, adjacent to the machine beds. To the southeast of the machine beds, to the northwest side of the building, a rough brick-paved surface was also documented (**Plate 9**).
- 5.3.6 It is understood that much of the drainage and stone machine bases remain *in situ*, where it lies beneath the target floor level of the development and does not pose a structural risk or impediment to new services. None of the photographs provided, nor any discussions with the on-site workers present, provided information in relation to any remains associated with the fulling process within the building. In addition, none of the photographs supplied provide any evidence with regards to an earlier engine housed within the building's south-western bay. Nevertheless, as no qualified archaeologist was present during the excavation works, no conclusions on the presence or absence of any such archaeological remains can be made.

5.4 Building 11

- 5.4.1 All excavations within Building 11 were fully monitored by the attending archaeologist. The earliest features recorded within Building 11 are the building's external walls (2009), followed by machine bases (2007) and a water pipe (2008) (see **Figure 3**). The walls / footings to Building 11 abut the south-western wall of Building 10 to their northeast (1008). A probable doorway was noted to the southwest wall of Building 11, in line with a blocked opening recorded as part of the historic building recording exercise, characterised by a stone threshold with a moulded edge (**Plate 10**). To the southeast of the building, a former dividing wall to an area described as a 'void space' in the building record has been removed; this wall appears to have been a later insertion, of uncertain date.
- 5.4.2 The machine bases (2007) within Building 11 comprised large rectangular sandstone blocks, typically 500 mm in depth, forming a bed for the former beam engine (**Plate 11**). A large proportion of the engine bed has been lost to the later construction of the press (see section 2.3 above). The remaining stonework outlines a large flywheel pit to the northeast side of the room, aligned with a large stone arched feature in the party wall with Building 10, which formed the housing and support for the former flywheel's main drive (**Plate 12 and 13**). A sondage was excavated within the wheel pit, revealing a stone base at 49.10 m OD, with the south-eastern end of the wheel pit comprising crudely cut-back stonework, to accommodate the wheel. The depth of the wheel pit, and distance to the crook of the substantial stone blockwork within the arched feature within the wall to Building 10, matches the given diameter of the engine's wheel within the *Register of Historic Steam Engines*, at 19', or 5.79 m (**Figure 3**). Adjacent to the wheel pit, to the southwest, a large block formed a support for a former coolant pump. The southwest edge of this block had been crudely cut back to accommodate a large metal cylinder, since largely lost. A remnant section of metalwork remained *in situ*, with a projected diameter of >600 mm.

The cylinder may relate to a former coolant pump, fed from below by a large metal intake pipe (2008), which was observed within the base of the wheel pit, running to the northeast. However, it may also represent an air pump to provide a vacuum, or a boiler water return pump; certainty on its function cannot be afforded on the present evidence. The pipe had a diameter of 320 mm. Sections of stone base to the south-eastern end of the room outline two square openings within the floor, which may have housed the coolant cistern and / or the base of the engine's cylinder (**Plate 14**), truncated by the insertion of the later press. To the southeast of the wheel pit, a limited investigation through (2003) revealed the top of a possible opening through the wall to Building 10 (2009); this may have been for a drainage feature related to the coolant cistern (see **Figure 3**). The majority of the stone blocks were situated at 50.00 m OD, with some upstanding supports extending to 50.45 m OD, at the edges of the wheel pit and coolant pump bed, and 50.36 m OD in the location of the former coolant cistern / cylinder bases.

- 5.4.3 The building was dominated by footings for the cloth press. The construction of the press necessitated the removal of the earlier engine and the majority of its bed structure, to accommodate two substantial concrete footings / plinths (2006), situated at 50.00 m OD. During the demolition of the earlier engine, to make good the floor surface, a mix of demolition material (2003), including some substantial sections of stonework relating to the former engine bed, along with crushed sandstone and brick, was deposited within the room, filling earlier voids such as the wheel pit. This material formed the base of, and was packed around and over, the two concrete press plinths (2006); the south-eastern edge of the northwest plinth had clearly been poured directly onto the demolition material, resulting in ragged edge to the concrete, fusing with some of the demolition material (**Plate 15**). A lid of a tin of Morrell's 'Red Heart' dog food was found within the demolition material² (**Plate 16**). The company, started just prior to the Second World War, with 'Red Heart' becoming a market leader in the early post-war years (Grace's Guide 2021). The presence of the tin lid confirms a mid-20th-century date for the installation of the press.
- 5.4.4 The concrete plinths formed a footing for the press' brick bases / columns (2002). These comprised stepped bases, 2.5 m², rising above floor level (50.60 m OD) as pairs of substantial brick columns, bonded with a cement mortar, to carry the mass of the former press at first-floor level. The brick bases were constructed partially atop surviving machine bases also, making use of the existing fabric within the building where this suited the aims of the construction.
- 5.4.5 The made ground / demolition material was packed around the base of the brick press bases, sealed in turn by a concrete floor surface (2001) (**Plate 17**). The concrete floor surface varied in depth, averaging 100 mm. The floor had slumped and been patch repaired in places, owing to irregularities in the underlying demolition material. The top of the concrete floor was situated at 50.60 m OD.
- 5.4.6 To the south-eastern end of the room, the former 'void' area was situated at a higher level than the remainder of the building, at 50.99 m OD. The area was underlain by a mixed demolition material (2005), similar to (2003), and paved with concrete (2004). Excavation was limited here, with no features / deposits predating the made ground exposed. It may be that this area housed the original stair for servicing / viewing the engine, or it provided access or power transmission between Buildings 11, 10 and 9; note the truncated sections of ironwork, exposed in the location of the removed partition wall (**Plate 18**), and

² The tin lid was not retained



former wall boxes previously recorded as part of the programme of historic building recording (Wessex Archaeology 2022).

- 5.4.7 Excavations ceased at 50.00 m OD, with the stone bases left *in situ*. It is possible that further remains related to the former beam engine will survive at greater depth.

6 FINDS EVIDENCE

6.1 Introduction

- 6.1.1 No artefacts meeting the criteria for retention set out in the brief were encountered.

7 ENVIRONMENTAL EVIDENCE

7.1 Summary

- 7.1.1 No deposits suitable for environmental sampling were encountered.

8 CONCLUSIONS

8.1 Summary

- 8.1.1 The watching brief methodology and the aims of the project were only partially met. The absence of an archaeologist being present during the excavations within Building 10 have resulted in archaeological evidence being lost and removed without record. However, the archaeological monitoring during the excavations within Building 11 were successful. The results are typical of many former industrial sites: the former engine and machinery removed, spaces backfilled, and significant evidence for past processes erased. What remains in this instance casts some light on the former process of power transmission and the operation at the mill.
- 8.1.2 Within Building 10, former drainage features were recorded during the re-excavation of some areas, with a series of machine bases, a cistern / well, and a possible wheel pit recorded to the southwestern end of the room, along with sections of former brick paving.
- 8.1.3 Within Building 11, remains of the c.1860 beam engine bed were recorded, including a wheel pit and the location / remains of a possible coolant pump and supply pipe. The measurements of the former beam engine given in the *Register of Historic Steam Engines* c.1950s, were broadly confirmed, with a 19' diameter wheel fitting within the given span between the wheel pit and the support for its driveshaft within the dividing wall to Building 10. This confirms the observations made during the historic building recording exercise.

9 ARCHIVE STORAGE AND CURATION

9.1 Museum

- 9.1.1 The archive resulting from the watching brief and historic building recording is currently held at the offices of Wessex Archaeology in Sheffield. Leeds Museum will be contacted for the deposition of the archive in due course. No finds have been retained / will be included within the archive.

9.2 Preparation of the archive

- 9.2.1 The archive, which includes paper records, graphics, and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material

by Leeds Museum, and in general following nationally recommended guidelines (SMA 1995; ClfA 2020b; Brown 2011; ADS 2013).

9.2.2 All archive elements will be marked with the accession code, and a full index will be prepared. The physical archive currently comprises the following:

- 1 files/document cases of paper records, photos, and A3/A4 graphics.

9.3 Selection policy

9.3.1 Wessex Archaeology follows national guidelines on the selection and retention of artefacts (SMA 1993; Brown 2011, section 4). In this instance, no artefacts were recovered.

9.4 Security copy

9.4.1 In line with current best practice (e.g., Brown 2011), on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

9.5 OASIS

9.5.1 An OASIS (online access to the index of archaeological investigations) record (<http://oasis.ac.uk/pages/wiki/Main>) has been initiated, with key fields completed (Appendix 2). A .pdf version of the final report will be submitted following approval by the WYAAS on behalf of the LPA. Subject to any contractual requirements on confidentiality, copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service (ADS) ArchSearch catalogue.

10 COPYRIGHT

10.1 Archive and report copyright

10.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the *Copyright, Designs and Patents Act 1988* with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the *Copyright and Related Rights Regulations 2003*. In some instances, certain regional museums may require absolute transfer of copyright, rather than a licence; this should be dealt with on a case-by-case basis.

10.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research or development control within the planning process.

10.2 Third party data copyright

10.2.1 This document and the project archive may contain material that is non-Wessex Archaeology copyright (e.g., Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound



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REFERENCES

- ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service and Digital Antiquity Guides to Good Practice
- Brown, D H 2011 *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (revised edition). Archaeological Archives Forum
- CIfA 2020a *Standard and Guidance for an Archaeological Watching Brief* (revised edition June 2020). Reading, Chartered Institute for Archaeologists
- CIfA 2020b *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives* (revised edition June 2020). Reading, Chartered Institute for Archaeologists
- Gomersall, H 2009 *Research Agenda: Industrial Archaeology*. West Yorkshire Archaeology Advisory Service
- Historic England 2015a *Digital Image Capture and File Storage: Guidelines for Best Practice*.
- Royal Commission on the Historical Monuments of England (RCHME) 1986 *Yorkshire Textile Mills Survey: Stonebridge Mills, Wortley, Leeds, West Yorkshire (M.75), March 1986*. York, RCHME.
- Royal Commission on the Historical Monuments of England (RCHME) and West Yorkshire Archaeology Service (WYAS) 1992 *Yorkshire Textile Mills. The Buildings of the Yorkshire Textile Industry 1770-1930*. London, HMSO
- SMA 1993 *Selection, Retention and Dispersal of Archaeological Collections*. Society of Museum Archaeologists
- SMA 1995 *Towards an Accessible Archaeological Archive*. Society of Museum Archaeologists
- Wessex Archaeology 2022 *Stonebridge Mills, Leeds, West Yorkshire: Historic Building Record*. Report ref. 100671.02
- West Yorkshire Archaeology Advisory Service (WYAAS) 2021. *Specification for an Archaeological Watching Brief at Stonebridge Mills, Wortley, Leeds, West Yorkshire*

Online sources

- British Geological Survey (BGS) online viewer
<http://mapapps.bgs.ac.uk/geologyofbritain/home.html> [accessed November 2020]
- Grace's Guide 2021 *John Morrell and Co*. Available at:
https://www.gracesguide.co.uk/John_Morrell_and_Co [accessed 30/09/2021]



APPENDICES

Appendix 1: Context List

Context Number	Type	Category	Fill of/Filled With
1001	Layer	Natural	n/a
Firm mid-yellow brown sandy clay with mudstone inclusions			
1002	Fill	Redeposited Natural	1005
Loose mid-yellow brown sandy clay with mudstone and grit inclusions, redeposited above / around (1003)			
1003	Structure	Drain	1005
Brick drain capped by stone slab, top at 49.78 m OD; not excavated, below target level			
1004	Fill	Drain fill	1003
Mid-grey black silty clay, fill of drain; not excavated, below target level			
1005	Cut	Construction cut	1002 - 1004
Cut for drain (1003); not excavated, below target level			
1006	Masonry	Bricks	n/a
Square arrangement of three bricks adjacent to drain (1003) and exterior wall of Building 10 (1008); not excavated, below target level			
1007	Layer	Modern fill of Building 10	n/a
Course grit / crush fill introduced as part of the ongoing construction works to level the interior of Building 10			
1008	Structure	Walls to Building 10	n/a
Exterior walls / footings of Building 10			
2001	Structure	Concrete floor of Building 11	n/a
Concrete floor, some evidence for patch repair and slumping in places, contemporaneous with press bases (2002); situated at 50.60 m OD			
2002	Structure	Press Bases / columns	n/a
Mid-20th century brick plinths / columns with cement mortar, for press (removed)			
2003	Layer	Made ground	2009
Demolition material / backfill of mottled black / grey / red sandy clay with frequent large stone, brick, sand, debris inclusions, including some substantial ex-situ gritstone blocks – contemporaneous with (2001), (2002), (2006)			
2004	Structure	Concrete floor to plinth / void area of Building 11	n/a
Concrete floor, set at a higher level to (2001) at southeast end of Building 11; likely location of the former engine room stair. Situated at 50.99 m OD			
2005	Layer	Made ground	2009
Mottled black / grey / red gritty sand with frequent stone and brick debris; same as (2003), but beneath plinth / void area at southeast end of Building 11; not excavated as ground level not required to be reduced as part of works			
2006	Structure	Concrete base	n/a
Concrete bases to brick press plinths / columns, situated at 50.00 m OD			
2007	Structure	Machine bases	n/a
Ashlar course sandstone blocks forming a series of contemporaneous machine bases for former engine; a single structure, situated between 50.44 – 50.00 m OD			
2008	Structure	Pipe	n/a
Iron supply pipe for coolant pump of engine, situated at c.49.40 m OD			
2009	Structure	Walls to Building 11	n/a
Exterior walls / footings of Building 11, including probable doorway / sill of blocked opening to southwest wall, to Building 12			



Appendix 2: Photographic record

Primary Archive

Format		35mm	Type	B&W	Photographer	Seth Price		
Film number	Plate	Description			Scale	View from	Date	
Film 1								
1.1	-	Marker shot			-	-	20.05.2021	
1.2	-	Wall box beneath supporting structure for flywheel, dividing wall between Buildings 10 and 11			1m	NE	20.05.2021	
1.3	-	Wall box and supporting structure for flywheel, dividing wall between Buildings 10 and 11			1m	NE	20.05.2021	
1.4	1	Re-excavated area to the north end of Building 10, exposing underlying clay and base of the building's walls			1m	SE	20.05.2021	
1.5	2	Re-excavated area to the southwest end of Building 10's southeast wall, with exposed stone top to a drain (1003)			1m	NW	20.05.2021	
1.6	-	Re-excavated area to the southwest end of Building 10's southeast wall, with exposed stone top to a drain (1003)			1m	SW	20.05.2021	
1.7	3	Drain (1003) with slab-top removed, and exposed brick structure (1006), with walls to Building 10 (1008) beyond			1m	NW	20.05.2021	
1.8	-	Drain (1003) with slab-top removed, and exposed brick structure (1006)			1m, 0.4m, 0.2m	S	20.05.2021	
1.9	-	Detail of drain (1003) with slab-top removed, and exposed brick structure (1006)			0.4m, 0.2m	S	20.05.2021	
1.10	-	Top-down detail of drain (1003) with slab-top removed			0.4m, 0.2m	-	20.05.2021	
Film 2								
2.1	-	Marker shot			-	-	17.08.2021	
2.2	-	Wall box and supporting structure for flywheel, dividing wall between Buildings 10 and 11			2m	SW	17.08.2021	
2.3	18	Void area and removed partition wall, with exposed steelwork to former stair			1m	SW	17.08.2021	
2.4	-	Removal of concrete floor (2001) from within Building 11			-	NW	17.08.2021	
2.5	-	Removal of concrete floor (2001) from within Building 11			-	S	17.08.2021	
2.6	16	'Red Heart' dog food lid within demolition fill (2003)			-	-	17.08.2021	
2.7	-	Exposed stone machine base to the former coolant pump (2007 / 2008), concrete plinths and brick bases for the press (2002 / 2006) and wall to Building 10 with exposed door sill (2009)			1m	SW	17.08.2021	
2.8	15	Press base and concrete plinth (2002 / 2006)			1m, 0.4m	S	17.08.2021	
2.9	12	Machine base with remnant metalwork of coolant pump (2007 / 2008), with location of wheel pit beyond, including support structure for the wheel driveshaft and the part exposed wall box below			1m, 0.4m	SW	17.08.2021	
2.10	-	Press base and plinth (2002 / 2006)			1m, 0.4m	W	17.08.2021	
2.11	10	Exposed door sill, southwest wall of Building 11			1m, 0.4m	N	17.08.2021	
2.12	-	Machine bases within the southeast of Building 11 (2007), above presumed coolant tank			1m	S	17.08.2021	
2.13	14	Machine bases within the southeast of Building 11 (2007), above presumed coolant tank, with area of former void beyond (2004 / 2005)			1m	W	17.08.2021	
2.14	-	Overview of Building 11 during works			1m	SE	17.08.2021	
2.15	-	Wheel pit and machine beds (2007), including remnant metalwork to the coolant pump (2008)			1m	SW	17.08.2021	
2.16	13	Wheel pit with machine beds (2007), with coolant pipe at base of the wheel pit (2008)			1m	W	17.08.2021	
2.17	-	Wheel pit with machine bed (2007), with coolant pipe at base of the wheel pit (2008)			1m, 0.4m	N	17.08.2021	
2.18	-	Detail of former tie / fixing holes within machine beds (2007) adjacent to the wheel pit			0.4m	-	17.08.2021	
2.19	-	Overview of Building 11 during works, final level			-	SE	17.08.2021	
2.20	-	Overview of Building 11 during works, final level			-	S	17.08.2021	
2.21	-	Oblique view to the wheel pit and supporting structure for the wheel driveshaft in party wall to Building 10			1m	S	17.08.2021	
2.22	-	Oblique view to the wheel pit and supporting structure for the wheel driveshaft			1m	S	17.08.2021	



		in party wall to Building 10			
2.23	-	Overview of Building 11 during works, final level	1m	SE	17.08.2021
2.24	11	Overview of Building 11 during works, final level	1m	NW	17.08.2021

Client Photographs

Format		Digital	Type	Colour	Photographer	Client		
Photo number	Plate	Description				Scale	View from	Date
Client photos								
1	-	Excavations within southwest of Building 10, with exposed natural (1001)				-	N	01.02.2021
2	5	Excavations within southwest of Building 10, with exposed natural (1001) and cistern, note possible brick drain to the right of the trench				-	NE	01.02.2021
3	8	Excavations within southwest of Building 10, cistern detail				-	NE	01.02.2021
4	4	Excavations within southwest of Building 10, with exposed natural (1001)				-	NW	03.02.2021
5	6	Excavations within southwest of Building 10, exposed stone blocks / machine bases, with possible wheel pit to left				-	SE	20.05.2021
6	9	Excavations within southwest of Building 10, exposed brick paving				-	NW	20.05.2021
7	7	Excavations within southwest of Building 10, exposed stone blocks / machine bases by opening to Building 11				-	NE	20.05.2021
8	-	Excavations within southwest of Building 10, detail of exposed stone blocks / machine bases by opening to Building 11, with unknown metal element (left)				-	NE	20.05.2021
9	-	Excavations within southwest of Building 10, detail / section of exposed stone blocks / machine bases by opening to Building 11				-	NE	20.05.2021
10	-	Excavations within southwest of Building 10, detail of steel ties				-	NE	20.05.2021
11	-	Excavations within southwest of Building 10, detail of stone block to entrance of Building 11, with unusual scoop				-	SE	20.05.2021
12	-	Excavations within southwest of Building 10, section through concrete floor surface				-	E	20.05.2021



Appendix 3: OASIS record

OASIS ID: wessexar1-431714

Project details

Project name	Stonebridge Mills, Leeds, West Yorkshire: archaeological watching brief
Short description of the project	Wessex Archaeology (WA) was commissioned by Caddick Construction, on behalf of Stonebridge Mills Limited, to carry out an archaeological watching brief as part of the ongoing redevelopment of Stonebridge Mills, Leeds, West Yorkshire, LS12 4QN, centred on National Grid Reference (NGR) 425586, 432875. The archaeological watching brief was specifically targeted at Buildings 10 and 11, the Old Mill and its later Engine House. Within Building 10, former drainage features were recorded, with a series of machine bases, a cistern / well, and a possible wheel pit recorded to the southwestern end of the room, along with sections of former brick paving. Within Building 11, remains of the c.1860 beam engine bed were recorded, including a wheel pit and the location / remains of a coolant pump and supply pipe. The measurements of the former beam engine given in the Register of Historic Steam Engines c.1950s, were broadly confirmed, with a 19' diameter wheel fitting within the given span between the wheel pit and its driveshaft support within the dividing wall to Building 10; confirming the observations made during the historic building recording exercise.
Project dates	Start: 20-05-2021 End: 30-09-2021
Previous/future work	Yes / No
Any associated project reference codes	100672 - Contracting Unit No.
Any associated project reference codes	18/02140/FU - Planning Application No.
Any associated project reference codes	18/02141/LI - Planning Application No.
Type of project	Field evaluation
Site status	Listed Building
Current Land use	Industry and Commerce 1 - Industrial
Current Land use	Other 2 - In use as a building
Monument type	MILL Post Medieval
Monument type	ENGINE HOUSE Post Medieval
Significant Finds	NONE None
Methods & techniques	"Measured Survey", "Photographic Survey"
Development type	Urban residential (e.g. flats, houses, etc.)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)



Project location

Country	England
Site location	WEST YORKSHIRE LEEDS LEEDS Stonebridge Mills
Postcode	LS12 4QN
Study area	0 Hectares
Site coordinates	SE 25571 32891 53.791488869189 -1.611796952003 53 47 29 N 001 36 42 W Point

Project creators

Name of Organisation	Wessex Archaeology
Project brief originator	West Yorkshire Archaeology Advisory Service
Project design originator	WYAAS
Project director/manager	Lucy Marston
Project supervisor	Seth Price

Project archives

Physical Archive Exists?	No
Digital Archive recipient	West Yorkshire Archaeology Advisory service
Digital Contents	"none"
Digital Media available	"Images raster / digital photography", "Text"
Paper Archive recipient	Leeds Museum
Paper Contents	"none"
Paper Media available	"Context sheet", "Drawing", "Photograph", "Plan", "Report", "Section", "Survey "

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Stonebridge Mills, Leeds archaeological watching brief
Author(s)/Editor(s)	Price, S
Date	2021
Issuer or publisher	Wessex Archaeology
Place of issue or publication	Sheffield
Entered by	Seth Price (s.price@wessexarch.co.uk)



Entered on 30 September 2021



Appendix 4: WYAAS Brief

SPECIFICATION FOR AN ARCHAEOLOGICAL WATCHING BRIEF AT STONEBRIDGE MILLS, WORTLEY, LEEDS, WEST YORKSHIRE

SE 25587 32903

This specification was prepared at the request of Lucy Marston of Wessex Archaeology (Unit R6, Sheaf Bank Business Park, Prospect Road, Sheffield S2 3EN Tel.: 03303 133504 Email l.marston@wessexarch.co.uk) and on behalf of Leeds City Council.

It details the requirements of an archaeological watching brief at Stonebridge Mills during the ground works associated with the construction of new dwellings within the original mill building (Planning permission 18/02140/FU and 18/02141/LI).

Summary

- 1.1. This specification covers the requirements for an archaeological watching brief at Stonebridge Mills during the belowground works associated with the construction of 7 dwellings within the Old Mill and adjacent Engine House.
- 1.2. **Failure to fully comply with the terms of this specification will be treated as a breach of planning consent by WYAAS.**
- 1.3. **Please note the WYAAS require a hard copy of the final report to be submitted to the West Yorkshire Historic Environment Record to enable the results of fieldwork to be made publically accessible as required by the National Planning Policy Framework. The WYAAS will only recommend discharge of any archaeological planning condition once all analysis and reporting have been carried out to a satisfactory standard.**

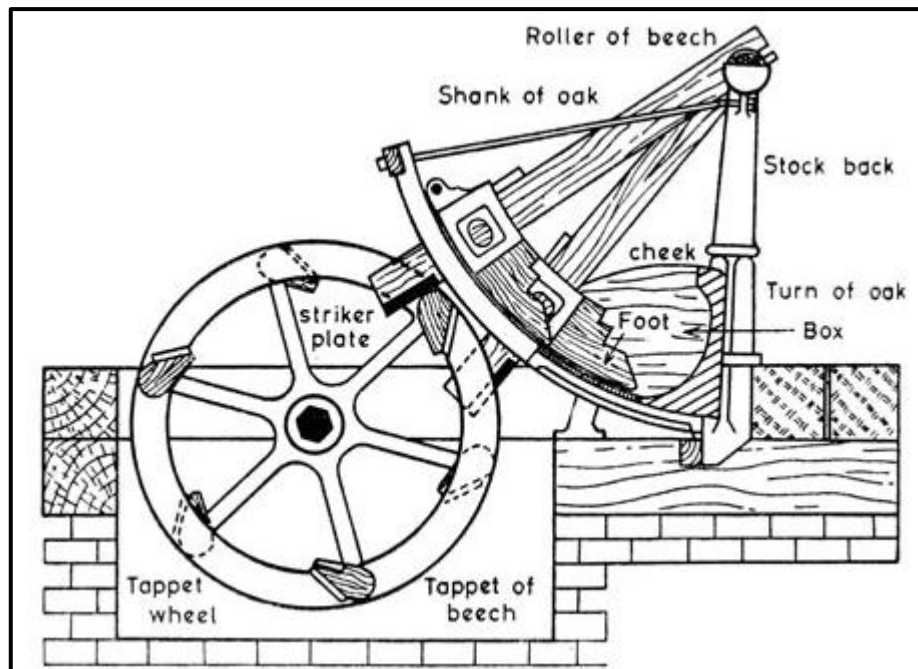
2. Archaeological / Architectural Interest

- 2.1. Stonebridge Mills lies to the northeast of the Leeds Ring Road and to the southeast of Stonebridge Lane, on the outskirts of Wortley, near Leeds. The site is bounded to the north by Silver Royd Hill and to the south-west by Farnley Beck. The mill is located in the historic township of Wortley and comprises both listed buildings and Class I and III Areas of Archaeological Interest (National Heritage List for England No. 1255993 and West Yorkshire Historic Environment Record PRN 3583).
- 2.2. For the purposes of this description and of the following specification, Stonebridge Lane is presumed to run north/south. The numbering system is taken from the schedule of existing buildings drawn up by the RCHME during a survey in the 1980s and subsequently used when considering several proposed development schemes and previous archaeological and architectural recording. This is not the numbering scheme employed in the applicant's heritage statement.
- 2.3. Work will focus on the Old Mill (Building 10), a three storey spinning/fulling mill; and the adjoining three-storey engine house (Building 11).

- 2.4. The production of woollen cloth became an important regional industry in the Pennine Hills to the north and west of Leeds from the later medieval period. By the 18th century this craft based system had developed into a sophisticated business of interrelated skills and specialist services. Woollen yarn was produced and distributed to self-employed weavers working from their homes. The often undyed “piece” they produced was then finished by other specialists for a fee and sold to merchants at the famous cloth market on Briggate, Leeds (originally the market was located on Leeds Bridge). The merchants might then carry out more finishing such as cropping and dyeing prior to selling their stock on.
- 2.5. As demand and capacity to produce cloth rose various processes were mechanised. Both craft societies (known as clubs) and cloth merchants built mills to carry out the finishing of cloth and often the preparation of yarn. Initially these mills were powered by water and then from the 1780s and 90s steam engines.
- 2.6. Fulling or walking is the process whereby woollen cloth is pounded to raise and thicken its nap and thus make it more waterproof and weather resistant. Fulling in a trough with wooden hammers was mechanised by the 13th century and from the 16th century there are an increasing number of fulling mills recorded on the rivers of the Pennine valleys. By the late 18th century the practice of adding stocks to full one or two pieces of cloth to an existing mill was being superseded by the construction of dedicated fulling mills, such as Armley Mills on the River Aire (PRN 3584). A set of water powered fulling stocks have been excavated at Flay Crow Mill, Sovereign Street, Leeds (PRN 11241). These mills were in turn superseded by steam powered mills independent of the region’s rivers and streams. Bean Ings Mill (PRN 3586) was first of these, while Stonebridge Mill was likely part of a second wave with a slightly smaller fulling capacity.
- 2.7. By 1805 Stonebridge Mills is recorded as a scribbling and fulling mill with facilities for hand weaving (and possibly spinning yarn). This early mill is assumed to have been steam-powered and to date no evidence for a water powered mill has been identified. The fulling process would have relied on the availability of power to drive heavy machinery on the ground floor of Building 10, the Old Mill.
- 2.8. The Old Mill probably housed an end-internal steam engine in its southern bay with a floor level or recessed drive shaft providing power to the fulling stocks. This arrangement was also seen at Bean Ing Mills during excavations in 2017.
- 2.9. A typical fulling stock would have comprised stone, wooden and later cast iron components and wrought iron tie-down bolts. Due to the stresses involved the components were large and of robust proportions (see illustration below).
- 2.10. Cloth was placed in a Fulling trough, this was wooden box with a curved base that was firmly attached to the floor of the workshop by iron fittings. The trough was positioned at the base of an iron stock or column which carried a

roller or axle. Two overlong shanks or beams of oak were attached to the axle. Each shank had a foot or hammer attached towards its far end. These hammers were free to move back and forward inside the fulling trough following a short arc. A tappet wheel of c. 1.6m diameter, sat in a masonry pit behind the fulling stock. The pit allowed the wheel to be properly positioned with reference to the other components.

- 2.11. When the tappet wheel turned the attached tappets lifted and then released the end of each oak shank and let the foot drop on to the cloth being fulling and arranged to strike the cloth in the fulling box around 40 times pre-minute (Kilburn 1931).



A Cross Section of a typical fulling stock

- 2.12. In addition to the fulling stock the fulling mill also required a supply of water, drains to carry away used and excess water and a means of powering each stock. The most common solution to the latter problem in a steam mill was to arrange the fulling stocks in a line and power them in pairs from a recessed drive shaft with suitably positioned gearing or pit wheels to transfer drive to the tappet wheels (as seen in water and windmills). Narrow pits for tappet wheels have been recorded at both the water powered Flaycrow and steam powered Bean Ing Mills.
- 2.13. Before the 1840s it is likely that much of the drive system would have been constructed from wood with iron fittings rather than the continuous wrought iron line shafting of the later 19th century.
- 2.14. Substantial expansion of the mill appears to have taken place by the 1860s. A new engine and boiler houses were built to the south of the Old Mill (Bldgs. 11, 12). This represent a re-fitting-out of the mill with a relatively large beam engine and its attendant steam generating plant indicating an increase in the capacity with the construction of Middle Mill and weaving sheds. The

method of powering the fulling mill may have changed at this time. It should also be born in mind that means of finishing cloth also changed in the later 19th century with the introduction of the textile milling machine. These required much less specialist infrastructure when compared to the complex arrangements required for a fulling trough.

2.15. For further details the RCHME' historical survey of Yorkshire's textile industry should be consulted (Giles and Goodall 1992 Yorkshire Textile Mills 1770 – 1930; HMSO) as should Baine's Account of the Woollen Manufacture of England for information on the pre mechanisation and later integration of the woollen textile industry) and E Kilburn Scott 1931 Early Cloth Fulling and its Machinery, Newcomen Society Volume 12. Available for consultation via the HER if necessary.

2.16. For an understanding of relevant archaeological research priorities relating to the industrial period in West Yorkshire please see the research agendas available as PDF documents to download from the WYAAS website:

<http://www.wyjs.org./archaeologyuk-advisory/>

3. Aims of the Watching Brief

3.1 The aim of the watching brief is to identify and record the presence/absence, extent, condition, character and date (as far as circumstances permit) of any archaeological features and deposits which are disturbed or exposed as a result of ground works within the Old Mill and engine house and to deposit a report on this work with the West Yorkshire Historic Environment Record (West Yorkshire Archaeology Advisory Services, West Yorkshire Joint Service, Nepshaw Lane South, Morley, Leeds LS27 7JQ; email wyher@wyjs.org.uk).

3.2 This work is intended to mitigate the destruction of any buried archaeological remains that may be revealed / disturbed through 'preservation by record'.

3.3 The archaeologist shall not excavate any area beyond those to be disturbed/destroyed by the development.

4. General Instructions

4.1 Health and Safety

4.1.1 The archaeologist on site will naturally operate with due regard for Health and Safety regulations. In this case, where archaeological work is carried out at the same time as the work of other contractors, regard should also be taken of any reasonable additional constraints that these contractors may impose. This work may require the preparation of a Risk Assessment of the site, in accordance with the Health and Safety at Work Regulations. The West Yorkshire Archaeology Advisory Service and its officers cannot be held responsible for any accidents or injuries that may occur to outside contractors engaged to undertake this watching brief while attempting to conform to this

specification. Any Health and Safety issues which may hinder compliance with this specification should be discussed with WYAAS at the earliest possible opportunity (see section 11).

4.2 Confirmation of Adherence to Specification

4.2.1 Prior to the commencement of any work, the archaeological contractor must confirm adherence to this specification in writing to WYAAS, or state (with reasons) any proposals to vary the specification. Unauthorised variations are made at the sole risk of the contractor (see para. 11.2 below). Modifications presented in the form of a re-written specification/project design will not be considered by WYAAS.

4.3 Confirmation of Timetable and Contractors' Qualifications

4.3.1 Prior to the commencement of any work, the archaeological contractor must provide WYAAS in writing with:

- a projected timetable for the site work
- details of the staff structure and numbers
- names and CVs of key project members (the project manager, site supervisor, any proposed specialists, sub-contractors *etc.*)

4.3.2 All project staff provided by the archaeological contractor must be suitably qualified and experienced for their roles. The timetable should be adequate to allow the work to be undertaken to the appropriate professional standard, subject to the ultimate judgement of WYAAS.

4.4 Notification

4.4.1 The Local Authority and WYAAS should receive at least one week's notice in writing of the intention to start fieldwork.

5. Fieldwork Methodology

5.1 All archaeological work will also be undertaken in accordance with the relevant standards of the Chartered Institute for Archaeologists.

5.2 An archaeologist should be present on site during any excavation. The archaeologist should view the area as it is being dug and any trench sections after excavation has been completed. Where archaeology is judged to be present, the excavated area should be rapidly cleaned and the need for further work assessed. Where appropriate, any features and finds should then be quickly hand excavated, sampled if appropriate, and recorded.

5.3 Any features/deposits of archaeological interest should be accurately located on a site plan and recorded by photographs, scale drawings and written descriptions sufficient to permit the preparation of a report. Section drawings (at a minimum scale of 1:20) must include heights O.D. Plans (at a minimum

scale of 1:50) must include O.D. spot heights for all principal strata and any features.

5.3 The actual areas of ground disturbance (even if no archaeological remains are present) should be recorded on a suitable base map/development plan and the stratigraphic sequence and the depth of the excavations will be briefly recorded. If archaeological remains are identified, their location is to be accurately tied into the National Grid and located on an up-to-date 1:1250 O.S. map base. (Also see para. 8.5 below).

5.4 Excavated soil should be searched as practicable for finds. All finds, except unstratified 20th & 21st century material, should be collected and retained for processing (see metal detecting below).

5.5 All securely stratified contexts should be sampled for environmental analysis and scientific dating. Additional 'spot' samples should be taken if suitable material is encountered during the watching brief.

5.6 If, in the professional judgement of the archaeologist on site, the watching brief reveals below-ground conditions which indicate that potentially archaeological deposits are absent, the archaeologist should contact WYAAS to discuss reducing or curtailing the requirements. The work may only be curtailed with the prior agreement of WYAAS and written confirmation of this agreement will be provided by WYAAS.

5.7 Except where otherwise requested, black and white photography using orthodox monochrome chemical development should be used. Film should be no faster than ISO400. Slower films should be used where possible as their smaller grain size yields higher definition images. Technical Pan (ISO 25), Pan-F (ISO50), FP4 (ISO125) and HP5 (ISO400) are recommended. The use of dye-based films such as Ilford XP2 and Kodak T40CN is unacceptable due to poor archiving qualities. Black and white photography should be supplemented by colour photography; this should be in transparency format (i.e. slides or digital photography as an acceptable alternative, see paragraph 5.1.8 below).

5.8 Digital photography may be employed as an alternative to the use of colour transparencies and retained by the WYAAS. Good quality digital photography may be supplied, using cameras with a minimum resolution of 10 megapixels. RAW format may be used for image capture before archiving in tiff format. Digital photography should follow the guidance given by Historic England in Digital Image Capture and File Storage: Guidelines for Best Practice, July 2015. Note that conventional black and white print photography is still required and constitutes the permanent record. Digital images will only be acceptable as an alternative to colour slide photography if each image is supplied as both a JPEG and a TIFF versions. The latter as an uncompressed 8-bits per channel TIFF version 6 file of not less than 25Mbs (See section 2.3 of the Historic England guidance). The contractor must include metadata embedded in the TIFF file. The metadata must include the following: the commonly used name for the site being photographed, the relevant centred OS grid coordinates for the site to at least six figures, the relevant township name (Wortley), the date

of photograph, the subject of the photograph, the direction of shot and the name of the organisation taking the photograph. Any digital images are to be supplied to WYAAS on gold "archive quality" CDs by the archaeological contractor accompanying the hard copy of the report.

6. Use of Metal Detectors on Site

- 6.1 The site should be scanned during excavation to obtain a sample of artefacts from the top and sub-soils. The exposed site and, spoil heaps should also be scanned for non-ferrous metal artefacts. A metal detector capable of making this discrimination should be used and operated by an experienced metal detector user (if necessary, operating under the supervision of the contracting archaeologist).
- 6.2 The make and model of the instrument used and any finds made by metal detector should be included in the relevant section of the site report.
- 6.3 The make and model of the instrument used should be given in the methodology section of the contractors report and metal detected finds identified in the relevant section.
- 6.4 Modern artefacts are to be noted but not retained (19th-century material and earlier should be retained.)
- 6.5 If a non-professional archaeologist is to be used to carry out the metal-detecting, a formal agreement of their position as a sub-contractor working under direction must be agreed in advance of their use on site. This formal agreement will apply whether they are paid or not. To avoid financial claims under the Treasure Act a suggested wording for this formal agreement with the metal detectorist is: "In the process of working on the archaeological investigation at [location of site] between the dates of [insert dates], [name of person contributing to project] is working under direction or permission of [name of archaeological organisation] and hereby waives all rights to rewards for objects discovered that could otherwise be payable under the Treasure Act 1996 (as amended)."

7.0 Human Remains

- 7.1 Any human remains that are discovered must initially be left in-situ, covered and protected. WYAAS will be notified at the earliest opportunity. If removal is necessary the remains must be excavated archaeologically in accordance with the ClfA Technical Paper 14 "Excavation and Post-Excavation Treatment of Cremated and Inhumed Remains (Mckinley and Roberts 1994). The treatment of human remains will be in accordance with Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England (Advisory Panel on the Archaeology of Burials in England 2017), a valid Ministry of Justice licence and any local environmental health regulations.
- 7.2 Human remains are not expected at Stonebridge Mill.

8.0 Unexpectedly Significant or Complex Discoveries

8.1 Should there be, in the professional judgement of the archaeologist on site, unexpectedly significant or complex discoveries made that warrant more detailed recording than possible within the terms of this specification, then the archaeological contractor is to urgently contact WYAAS with the relevant information to enable the matter to be resolved with the developer. The terms of the Treasure Act, 1996 as amended, and the Treasure (Designation) Order 2002 must be followed with regard to any finds, which might fall within its purview.

8.2 Any such finds must be removed to a safe place and reported to the local coroner as required by the procedures laid down in the 'Code of Practice'. Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.

9.0 Post-excavation Analysis and Reporting

9.1 On completion of the fieldwork, any samples shall be processed and all finds shall be cleaned, identified, analysed, dated (if possible), marked (if appropriate) and properly packed and stored in accordance with the requirements of national guidelines. As a general rule finds of 20th & 21st century date should be quantified and summarily described, but can then be discarded if appropriate. All finds of 19th century or earlier date should be retained and archived.

9.2 The archaeological contractor, their specialists and the district museum curator should develop an archive material selection plan based on the significance of the material excavated and its ability to answer the project's and other more general research questions. This process should include the views of the district museum's archaeological curator, WYAAS and relevant and experienced specialists. The archive selection plan should be explicitly detailed in the archaeological report.

9.3 A fully indexed field archive shall be compiled consisting of all primary written documents, plans, sections, and fully labelled photographs/slides. Standards for archive compilation and transfer should conform to those outlined in Archaeological Archives – a guide to best practice in creation, compilation, transfer and curation (Archaeological Archives Forum, 2011).

9.4 A quantified index to the field archive should form an appendix to the report. The original archive is to accompany the deposition of any finds, providing the landowner agrees to the deposition of finds in a publicly accessible archive (see Section 10 below). In the absence of this agreement the field archive (less finds) is to be deposited in the West Yorkshire Historic Environment Record.

9.5 A fully illustrated report should be produced, which should include background information on the need for the project, a description of the methodology employed, and a full description and interpretation of the results, placing them in a local and regional, and if appropriate, national context. It is not envisaged that the report is likely to be published, but it should be produced with sufficient care and attention to detail to be of academic use to future researchers.

- 9.6 Any digital prints in the report must be made on paper and with inks which are certified against fading or other deterioration for a period of 75 years or more when used in combination. If digital printing is employed, the contractor must supply details of the paper/inks used in writing to the WYAAS, with supporting documentation indicating their archival stability/durability.
- 9.7 Location plans should be produced at a scale which enables easy site identification and which depicts the full extent of the areas covered by the watching brief (a scale of 1:50,000 is not regarded as appropriate unless accompanied by a more detailed plan or plans). Plans should be at an appropriate scale showing: areas excavated and the identified (and, where possible, predicted) archaeological features/deposits. Trench and feature plans must include O.D. spot heights for all principal strata and any features. Section drawings must include O.D heights and be cross-referenced to an appropriate plan.
- 9.8 All artefacts and environmental material will be analysed by a qualified and experienced specialist. Artefact analysis is to include the production of a descriptive catalogue. Finds critical for dating and interpretation should be illustrated. Reporting on ceramic artefacts and pottery should follow the guidance given in 'A Standard for Pottery Studies in Archaeology' (2016) and endorsed by the Prehistoric Ceramics Research Group; the Study Group for Roman Pottery & the Medieval Pottery Research Group.
- 9.9 Details of the style and format of the report are to be determined by the archaeological contractor, but should include a full bibliography, a quantified index to the site archive, details of the current and intended location of the archive and, as an appendix, a copy of this specification.

10.0 Report Submission and Deposition with the HER

- 10.1 A recommendation to discharge the archaeological recording condition will only be made on receipt of a satisfactory hard copy of the full final report by the WYAAS.
- 10.2 A hard copy of this report (plus a digital copy on "archive" quality gold disk in ISO 10005-1 compliant (PDF/A) format) will be submitted directly to the WY Archaeology Advisory Service in a timely manner to allow further analysis work, if necessary, to be scheduled and the planning application to be determined.
- 10.3 **The archaeological contractor will supply a hard copy of the report to the client and copies directly to the WYAAS within a period of one month following completion of fieldwork, unless a revised date has been agreed in writing with WYAAS.** A copy of the final report (in .pdf format) shall also be supplied to the Historic England Science Advisor, Andy Hammon (Andy.Hammon@HistoricEngland.org.uk). Completion of this project and a recommendation from WYAAS to discharge the planning condition are dependent on receipt by WYAAS of a satisfactory report which has been

prepared in accordance with this specification. Any comments made by WYAAS in response to the submission of an unsatisfactory report will be taken into account and will result in the reissue of a suitably edited report to all parties, within a timescale which has been agreed with WYAAS.

- 10.4 The report will be supplied on the understanding that it will be added to the West Yorkshire Historic Environment Record and will become publicly accessible once deposited with the WYAAS.
- 10.5 Copyright - Please note that by depositing this report, the contractor gives permission for the material presented within the document to be used by the WYAAS, in perpetuity, although the Contractor retains the right to be identified as the author of all project documentation and reports as specified in the Copyright, Designs and Patents Act 1988 (chapter IV, section 79). The permission will allow the WYAAS to reproduce material, including for commercial use by third parties, with the copyright owner suitably acknowledged.
- 10.6 The West Yorkshire HER supports the Online Access to Index of Archaeological Investigations (OASIS) project. The overall aim of the OASIS project is to provide an online index to the mass of archaeological grey literature that has been produced as a result of the advent of large-scale developer funded fieldwork. The archaeological contractor must therefore complete the online OASIS form at <http://ads.ahds.ac.uk/project/oasis/>. Contractors are advised to contact the West Yorkshire HER officer prior to completing the form. Once a report has become a public document by submission to or incorporation into the HER, the West Yorkshire HER may place the information on a web-site. Please ensure that you and your client agree to this procedure in writing as part of the process of submitting the report to the case officer at the West Yorkshire HER.
- 10.7 A note or longer article should also be supplied to the next volume of the annual Council for British Archaeology's Yorkshire Forum publication (please contact the editor or CBA's website for more information contact: associate.editor@cba-yorkshire.org.uk).

11.0 Archive Deposition

- 11.1 Before commencing the project, the archaeological contractor must contact the Leeds museum's district archaeological curator to determine the museum's requirements for the deposition of an excavation archive (see paragraph 6.4.3 above).
- 11.2 It is the policy of Leeds Museums to accept complete excavation archives, including primary site records and research archives and finds, from all excavations carried out in the District that it serves.
- 11.3 It is the responsibility of the archaeological contractor to endeavour to obtain consent of the landowner, in writing, to the deposition of finds with Leeds Museum.

- 11.4 It is the responsibility of the archaeological contractor to meet Leeds Museums' requirements with regard to the preparation of excavation archives for deposition

12.0 General Considerations

12.1 Authorised Alterations to Specification by Contractor

12.1.1 If, on first visiting the site or at any time during the course of the recording exercise, it appears in the archaeologist's professional judgement that:

- I. a part or the whole of the site is not amenable to recording as detailed above, and/or
 - II. an alternative approach may be more appropriate or likely to produce more informative results,
- then it is expected that the archaeologist will contact WYAAS as a matter of urgency in order that the matter can be resolved in liaison with the developer and the Local Planning Authority.

12.2 Unauthorised Alterations to Specification by Contractor

12.3 11.3 Technical Queries

12.3.1 Similarly, any technical queries arising from the specification detailed above, should be addressed to WYAAS without delay.

12.4 11.4 Valid Period of Specification

12.4.1 This specification is valid for one year. After that time it may need to be revised to take into account new discoveries, changes in policy or the introduction of new working practices or techniques.

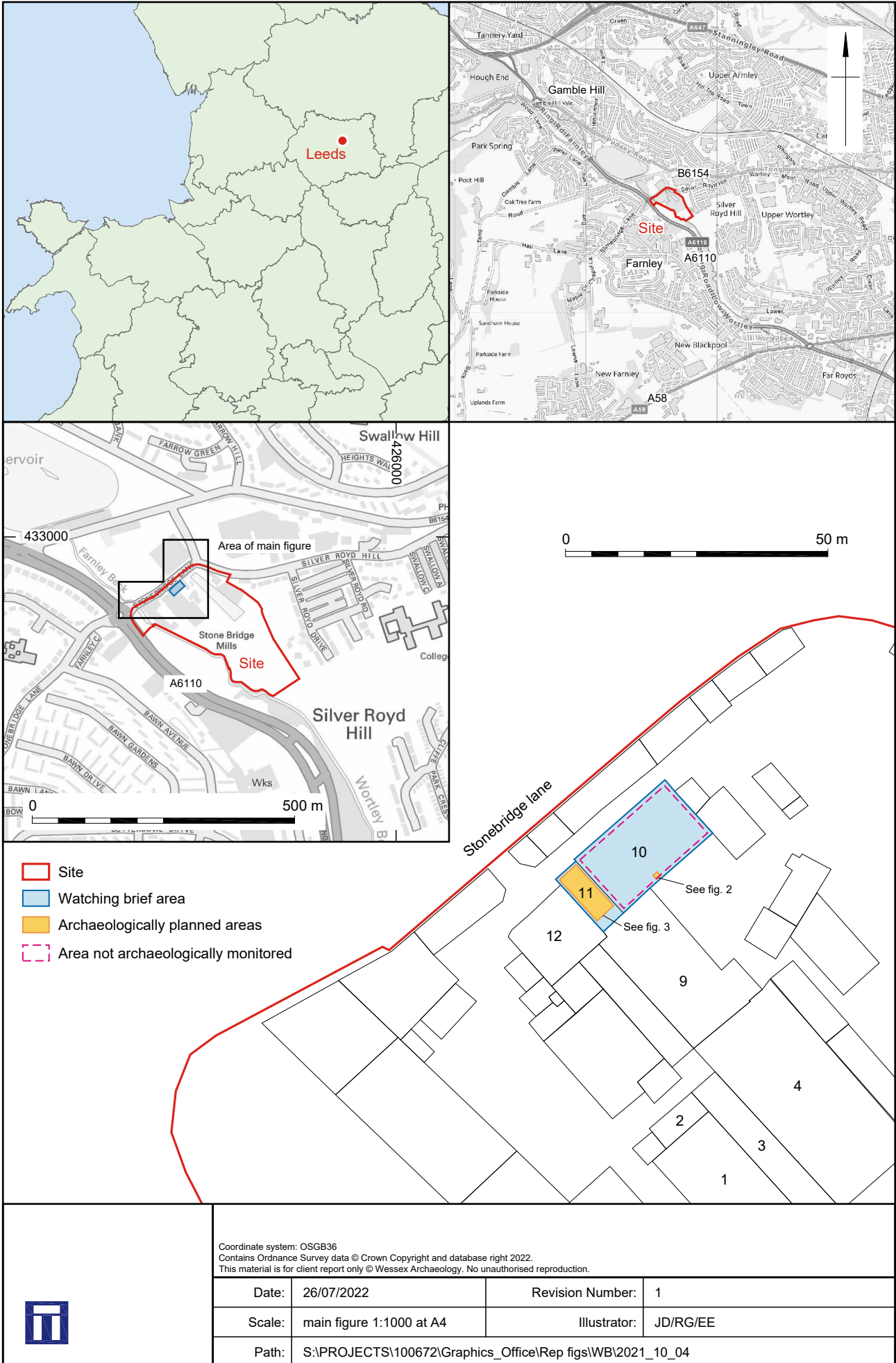
David Hunter

April 2021

**West Yorkshire Archaeology Advisory Service
West Yorkshire Joint Services,
Nepshaw Lane South,
Morley,
Leeds
LS27 7JQ**

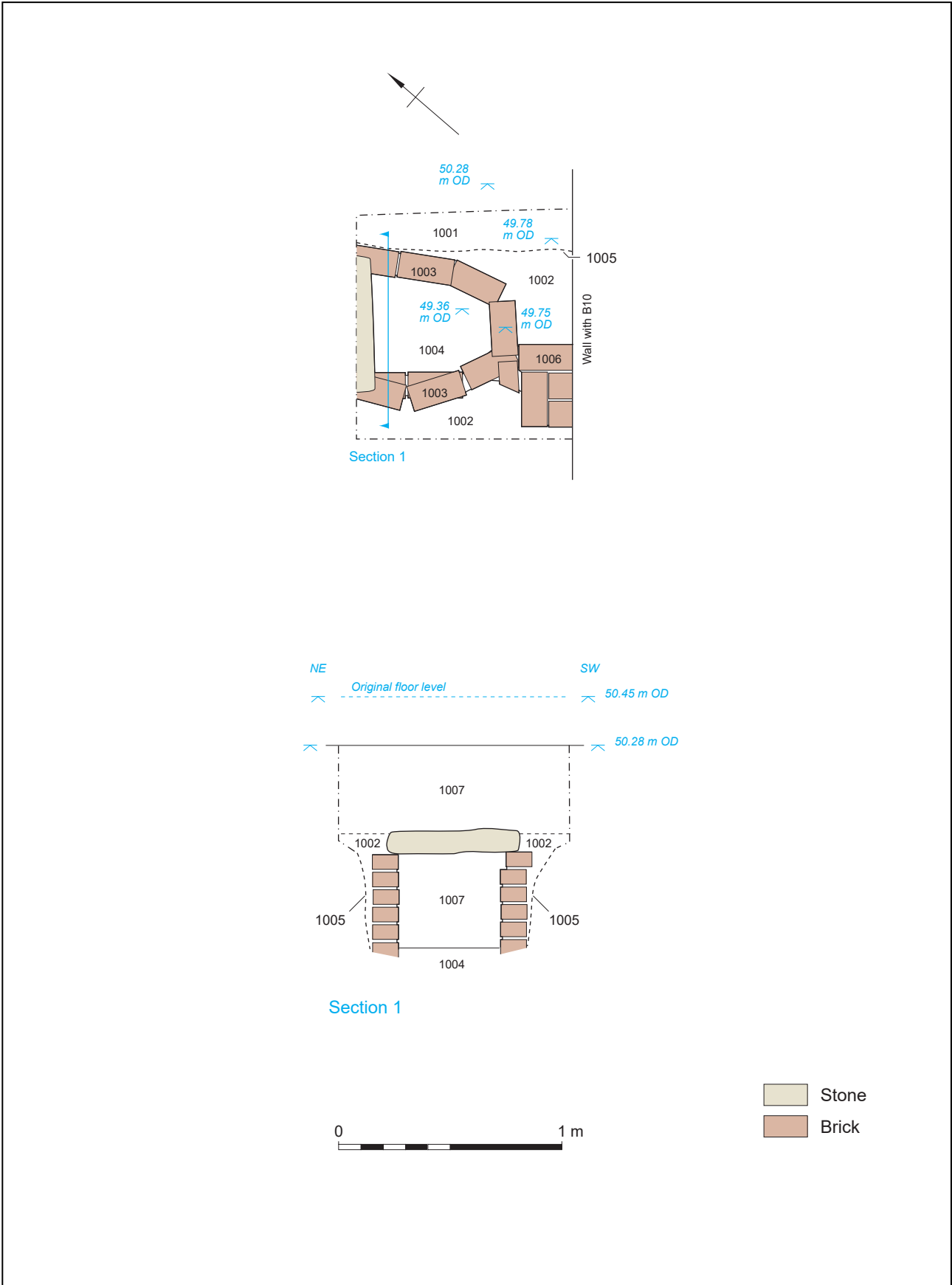
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Site location plan, with area of watching brief highlighted (Buildings 10 and 11)

Figure 1



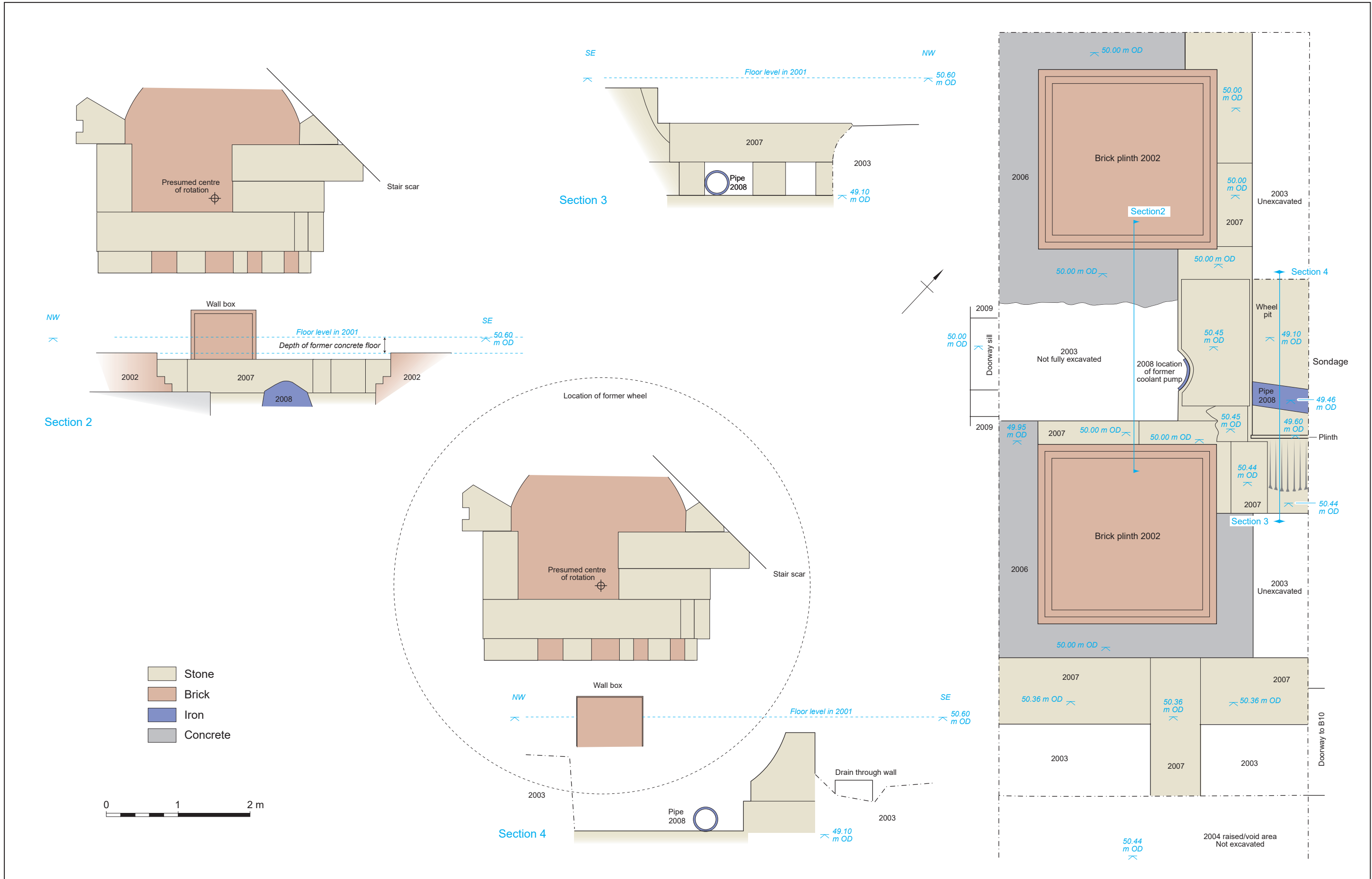
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Plan and section of recorded drain, Building 10

Figure 2



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Plans and sections of exposed features, Building 11

Figure 3



Plate 1: Re-excitation to the north-eastern end of the northwest wall of Building 10, facing northwest



Plate 2: Re-excitation to the south-western end of the southeast wall of Building 10, facing northeast; includes the stone slab to (1003), (1002), and modern deposit (1007)



Plate 3: Re-excavation to the south-western end of the southeast wall of Building 10, facing southeast; showing the drain (1003), with slab removed, (1002), (1001), and brick structure (1005) in relation to the walls of the building (1008).



Plate 4: Client photograph 4, showing excavations within the southwest end of Building 10, facing southeast. Note the machine bases (top), redeposited natural (1002), and underlying natural (1001)



Plate 5: Client photograph 2, showing excavations within the southwest end of Building 10, facing southwest. Note the machine bases (left), redeposited natural (1002), and underlying natural (1001), with a linear brick structure right, leading to a cistern / well abutting the wall to Building 11



Plate 6: Client photograph 5, showing excavations within the southwest end of Building 10, revealing large stone machine beds, facing northwest



Plate 7: Client photograph 7, showing excavations within the southwest end of Building 10, revealing large stone machine beds adjacent to the doorway to Building 11, facing southwest



Plate 8: Client photograph 3, showing the exposed cistern / well feature within the southwest end of Building 10, facing west



Plate 9: Client photograph 6, exposed brick-paved surface within Building 10, facing southeast



Plate 10: Exposed threshold of former doorway to the boiler house from Building 11, facing south



Plate 11: Exposed engine bed (2007), with abutting concrete plinths (2006) for the later press, Building 11, facing southwest (see Figure 3)



Plate 12: The coolant pump base and remnant metal work, with the unexcavated wheel pit beyond and the principal motion or bearing support structure for the engine's flywheel within the wall to Building 10, facing northeast



Plate 13: Excavated sondage within the wheel pit, facing southeast. Note the exposed pipe to its base



Plate 14: Exposed machine bases / engine bed (2007) within the southeast of Building 11, facing east



Plate 15: The northwest plinth and press base within Building 11, facing north



Plate 16: Lid of 'Red Heart' dog food tin, within (2003), Building 11

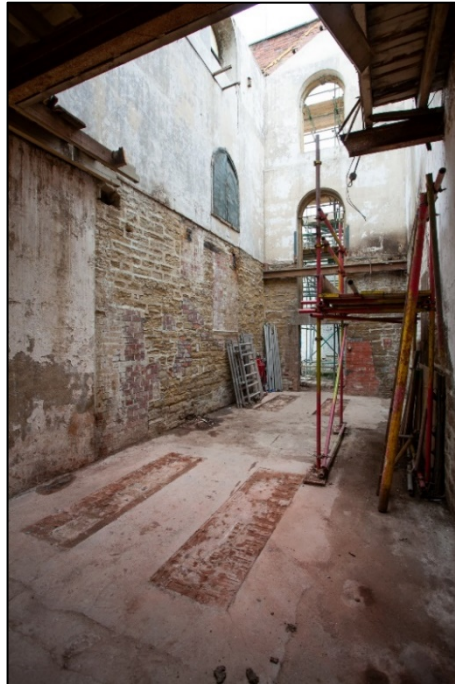


Plate 17: Building 11 following removal of the press, prior to the demolition of its southwest wall and excavation, facing west



Plate 18: The former void area to the south-eastern end of Building 11, facing northeast. Note the remnant ironwork in the location of the removed dividing wall and to the top right



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