



## BATH VALE WORKS, CONGLETON, CHESHIRE

Archaeological Watching Brief Report





**BATH VALE WORKS,  
CONGLETON, CHESHIRE**

**Archaeological Watching Brief**

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\* I= INTERNAL DRAFT E= EXTERNAL DRAFT F= FINAL

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**Contents**

	Summary.....	v
	Acknowledgements.....	vi
<b>1</b>	<b>INTRODUCTION.....</b>	<b>1</b>
	1.1 Project Background.....	1
	1.2 The Site, Location and Geology.....	1
<b>2</b>	<b>METHODOLOGY.....</b>	<b>1</b>
	2.1 Aims and Scope.....	1
	2.2 Watching Brief.....	2
	2.3 Best Practice.....	2
	2.4 Copyright.....	2
<b>3</b>	<b>ARCHAEOLOGICAL AND HISTORICAL BACKGROUND.....</b>	<b>2</b>
	3.1 Previous Studies.....	2
	3.2 Introduction.....	2
	3.3 Development of Site.....	3
	3.4 Previous Investigations.....	4
<b>4</b>	<b>RESULTS.....</b>	<b>4</b>
	4.1 Introduction.....	4
	4.2 Stratigraphic Sequence.....	4
	4.3 Area 1.....	5
	4.4 Area 2.....	6
	4.5 Area 3.....	6
	4.6 Area 4.....	7
<b>5</b>	<b>FINDS.....</b>	<b>8</b>
	5.1 Results.....	8
<b>6</b>	<b>DISCUSSION.....</b>	<b>9</b>
	6.1 Summary.....	9
	6.2 Waterwheels.....	10
	6.3 Conclusion.....	11
<b>7</b>	<b>ARCHIVE.....</b>	<b>11</b>
	7.1 Preparation.....	11
	7.2 Deposition.....	11
<b>8</b>	<b>REFERENCES.....</b>	<b>13</b>
	8.1 Bibliography.....	13
<b>9</b>	<b>APPENDIX.....</b>	<b>14</b>
<b>10</b>	<b>FIGURES AND PLATES.....</b>	<b>18</b>

**Front cover** General working shot during the remediation of the wheel pit in Area 1

**Back cover** General view of the wheel pit in Area 4

**Figure 1** Site location

**Figure 2** Plan of Area 1

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<b>Figure 3</b>	Plan of Area 2
<b>Figure 4</b>	Plan of Area 3
<b>Figure 5</b>	Plan of Area 4
<b>Figure 6</b>	Sections through wheel pits in Areas 1 and 4
<b>Figure 7</b>	Location of trenches in relation to standing and demolished structures (after UMAU 2007a)
<b>Plate 1</b>	General view across Bath Vale Mill from northeast
<b>Plate 2</b>	Exposed remnant of mill building <b>115</b> from the northwest
<b>Plate 3</b>	General view from the northwest showing <b>128</b> between mill <b>115</b> and wheel pit <b>110</b> structures from the northwest
<b>Plate 4</b>	Detail of fragmentary floor surface <b>125</b> and culvert <b>126</b> within <b>128</b>
<b>Plate 5</b>	General view of wheel pit structure <b>110</b>
<b>Plate 6</b>	Detail of northeast facing elevation of <b>110</b>
<b>Plate 7</b>	General view of Area 2 showing stone wall <b>221</b> to southeast
<b>Plate 8</b>	Detail of section showing cut for wall <b>223</b> and later brick cladding <b>206</b>
<b>Plate 9</b>	General view of flues <b>209</b> and <b>212</b> towards northeast of Area 2
<b>Plate 10</b>	Detail of brick flue <b>216</b> in eastern corner of Area 2
<b>Plate 11</b>	General view of Area 3 showing structures associated with a former engine and boiler house
<b>Plate 12</b>	Detail of boiler base <b>308</b>
<b>Plate 13</b>	General view of curved flue <b>310</b>
<b>Plate 14</b>	General view of truncated stone and brick structure from the southeast
<b>Plate 15</b>	Detail of paved opening <b>329</b> between walls <b>330</b> and <b>326</b>
<b>Plate 16</b>	General view of wheel pit structure <b>403</b> in Area 4
<b>Plate 17</b>	Detail of axel mount <b>411</b> for water wheel in northeast wall of <b>403</b> , viewed from the south
<b>Plate 18</b>	General view of Area 4 during remediation showing headrace <b>406</b> from the north
<b>Table 1</b>	Details of finds by context
<b>Table 2</b>	Archive index
<b>Table 3</b>	Sediment descriptions: Area 1
<b>Table 4</b>	Sediment descriptions: Area 2
<b>Table 5</b>	Sediment descriptions: Area 3
<b>Table 6</b>	Sediment descriptions: Area 4

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**BATH VALE WORKS,  
CONGLETON, CHESHIRE****Archaeological Watching Brief****Summary**

Wessex Archaeology were commissioned by CgMs Consulting Ltd. to undertake an archaeological watching brief during ground reduction at the site of the former Bath Vale Works, Brookhouse Lane, Congleton, Cheshire (hereafter the 'Site') in advance of a proposed housing development. The site was approximately located at National Grid Reference (NGR) 3873 3633.

The aim of the archaeological watching brief was to identify features associated with the mill's power systems, focussing on three areas identified during previous assessments.

Bath Vale Mill was built on the Site at the beginning of the 19<sup>th</sup> century by John Vaudrey for the production of both cotton and silk, for which it continued to be used until the early 20<sup>th</sup> century. The works was then subsequently used as a chemical works in the 1920s-30s, a Ministry of Defence store in the early 1940s and in manufacturing and engineering from 1947.

A number of structures were observed during the watching brief that related to the power systems of the 19<sup>th</sup> century mill. These included two substantial stone built wheel pit structures within the north and southwest of the Site. The level of preservation of the wheel pits was very good, with sufficient evidence remaining to reconstruct elements of their operation. Whilst evidence was also uncovered for a later steam engine installation, it had unfortunately been largely truncated by historic episodes of demolition and landscaping.

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**BATH VALE WORKS,  
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This project was commissioned and managed by CgMs Consulting Limited and Wessex Archaeology is grateful to Cathy Patrick in this regard. Wessex Archaeology would also like to thank George Holliday of Urban Regen for his co-operation and for providing a number of digital images. The work was monitored by Mark Leah on behalf of Cheshire County Council.

The archaeological watching brief was undertaken, and the report written, by James Thomson. The project was managed for Wessex Archaeology by Oliver Jessop.

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**BATH VALE WORKS,  
CONGLETON, CHESHIRE****Archaeological Watching Brief****1 INTRODUCTION****1.1 Project Background**

1.1.1 Wessex Archaeology was commissioned by CgMs Consultancy (hereafter 'the Client') to undertake an archaeological watching brief during remediation work at the former Bath Vale Works, Brookhouse Lane, Congleton, Cheshire (hereafter 'the Site') in advance of a proposed housing development. The Site is approximately centred on National Grid Reference (NGR) 3873 3633 (**Figure 1**).

1.1.2 A Written Scheme of Investigation (WSI) was prepared by the Client, and approved by Cheshire County Council, detailing the scope of the archaeological monitoring and the methods and standards to be employed. This report presents a brief description of the methodology followed, the results of the monitoring, and an interpretation of the findings.

**1.2 The Site, Location and Geology**

1.2.1 The Site is located approximately 1.5km east of Congleton town centre on the northern side of Brookhouse Lane, and at the confluence of Timbers Brook and Daneinshaw Brook. The site lies at approximately c.93.5m AOD, with the land to the east terraced 3m higher.

1.2.2 The former land use within the Site was industrial, originally a textile mill and latterly an engineering works. At the time of survey the majority of the buildings on the Site had been demolished, with hard standing covering the majority of the Site.

1.2.3 The underlying geology of the area is Lower Keuper Marl of the Triassic with overlying alluvial deposits along Timber Brook flanked by glacial sands and gravels, and boulder clay to the west of the site.

**2 METHODOLOGY****2.1 Aims and Scope**

2.1.1 The principal aim of the watching brief was to enhance understanding of the Site whilst mitigating the impact of redevelopment on archaeological deposits. The specific aims were:

- to map and record archaeological features associated with the former mill's power systems during the ground reduction works; and
- to carry out limited excavation and cleaning of features where appropriate.

2.1.2 The scope of the watching brief proposed in the WSI focussed on three specific areas (Areas 1-3, see **Figure 1**), which previous investigations (UMAU 2007a and 2007b) had identified as sensitive due to the potential for



survival of the former mill's waterwheel house, engine house and boiler house.

- 2.1.3 An additional area was incorporated into the watching brief during the course of the programme (Area 4 see **Figure 1**), where an additional wheel pit was uncovered beyond the proposed monitoring areas.

## **2.2 Watching Brief**

- 2.2.1 In accordance with the WSI (CgMs 2010), an archaeological watching brief was maintained by a suitably qualified member of Wessex Archaeology staff on all groundworks within the designated monitoring areas.
- 2.2.2 Groundworks were carried out by a tracked 360° excavator utilising a toothed bucket to remove hard-standing and toothless grading bucket in archaeologically sensitive areas. Intervention areas were accurately tied into the National Grid using a Leica GNSS.
- 2.2.3 All recording was undertaken using Wessex Archaeology's *pro forma* recording system, supported by a photographic record. The photographic record comprised 3 black and white 35mm films, 3 colour slide films, and 135 digital images.
- 2.2.4 Archaeological deposits were planned at a scale of 1:50 with cross-sections through wheel pits drawn at a scale of 1:50. Drawings were made on inert materials and adhered to accepted drawing conventions.

## **2.3 Best Practice**

- 2.3.1 All works were conducted in compliance with the Institute for Archaeologists' *Standards and Guidance for an Archaeological Watching Brief* (Revised 2008).

## **2.4 Copyright**

- 2.4.1 This report 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 we are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferrable by Wessex Archaeology. You are reminded that you remain bound by the conditions of the Copyright, Designs and Patents Act 1988 with regard to multiple copying and electronic dissemination of the report.

# **3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND**

## **3.1 Previous Studies**

- 3.1.1 A detailed historical background for the Site was prepared during the production of an archaeological desk-based assessment by the University of Manchester Archaeology Unit (UMAU 2007a). The results of this assessment are summarised below.

## **3.2 Introduction**

- 3.2.1 Congleton lay at the centre of Cheshire's large silk and cotton trade. Whilst initially silk production was the major textile industry in Cheshire, by the late

18<sup>th</sup> and early 19<sup>th</sup> centuries, cotton spinning was introduced as an alternative, becoming increasingly prevalent in the northern fringes of the district.

- 3.2.2 The expansion of industry in Congleton during the 18<sup>th</sup> century was largely the result of the economic climate of the time and Congleton's geographic location. The town lay not only on the principal route between the north and south and in proximity to the growing textile industries in Manchester, but the unsuitability of the surrounding landscape for profitable agriculture as well as the powerful River Dane and its tributaries made the area of Congleton ideally suited for establishing mills.

### **3.3 Development of Site**

- 3.3.1 Bath Vale Mill was built on the Site at the beginning of the 19<sup>th</sup> century by John Vaudrey for the production of both cotton and silk, for which it continued to be used until the early 20<sup>th</sup> century. The works was then subsequently used as a chemical works in the 1920s-30s, a Ministry of Defence store in the early 1940s and in manufacturing and engineering from 1947. Throughout these occupations the built environment across the site was repeatedly changed and adapted to meet the needs of the industry.
- 3.3.2 The earliest mill on the Site, as depicted on a plan produced in 1806 of land owned by the Vaudreys, comprised of two ranges: one roughly at a right angle to Timbers Brook, and the other, to its west, roughly parallel to the brook.
- 3.3.3 A plan of 1837 produced by the Boundary Commission indicated a substantial pond had been created to the east of the mill to provide a head of water from Timbers Brook. John Vaudrey's will of 1827 makes reference to 'pools of water..., Watercourses, Dams, Banks, [and] Sluices', suggesting that the millpond may already have been in operation by this date. The will also makes reference to a steam engine, and water wheel or wheels.
- 3.3.4 By the production of the Buglawton tithe map of 1841 the mill had been expanded to four ranges around a central courtyard, with a range extending south from the southwest corner. The irregular arrangement of the buildings on the map suggests that the mill may have been expanded piecemeal. A further structure, roughly cruciform in plan, had been built to the east of the main mill that is suggested to be an engine and boiler house.
- 3.3.5 In 1868 the mill was put up for sale by the Vaudreys, and an advertisement described the site as comprising 'two mills (one of which is newly erected in stone), engine house, boiler house, blowing room, office, warehouse, mechanic's shop, gas house, and large yards'. Fixtures were said to include 'two excellent steam engines, mill gearing and shafting, steam, water and gas piping, and other fixtures throughout'.
- 3.3.6 Several of the buildings described in the advertisement were likely to have been built between 1841 and 1873, with the 1873 OS indicating a new L-shaped structure connecting the main mill to the cruciform structure, and a larger rectangular building to the south of the Site. The latter building was the new mill described in the advertisement, which was still standing in

the 1980s when it was described as three storeys, brick built and stone faced, with jack-arched ceilings on tall columns.

- 3.3.7 Between 1873 and 1897 the earlier mill complex with its central yard was demolished and the Site remained vacant. Around the same time the cruciform structure was partially demolished with the remainder incorporated into the second mill of 1841-1873. Other than the mill, only the L-shaped block to the north remained.
- 3.3.8 In the mid twentieth century the works was massively expanded by the addition of a shed over the site of the early mill complex, and a large continuous range to the east. The remainder of the cruciform structure had been demolished and replaced with a ramp up to the new range.
- 3.3.9 The remaining elements of the 19<sup>th</sup> century mill were demolished in the 1970s-80s, with only the offices and mill house remaining.

### **3.4 Previous Investigations**

- 3.4.1 The mill was visited during the East Cheshire Textile Mill Survey in the early 1980s when the later mill building was still standing. The results of the survey were published (Calladine & Fricker 1993) and an archive collection of notes and photographs compiled from the survey is deposited with Macclesfield Silk Museum.
- 3.4.2 An archaeological buildings survey of the Mill House was also previously undertaken by UMAU (2007b). The building was found to have 18<sup>th</sup> century origins. Extensive remodelling and extensions had been made to it over the following two centuries that mirrored documented periods of expansion and change in the mill proper.

## **4 RESULTS**

### **4.1 Introduction**

- 4.1.1 Archaeological monitoring was undertaken in a total of four areas to locate features associated with the former mill's power systems. Limited excavation and cleaning of features was undertaken to facilitate recording during the ground reduction works.
- 4.1.2 The following sections provide a summary of the information held in the site archive. Observed features and contexts for each trench are tabulated as **Appendix 1**.

### **4.2 Stratigraphic Sequence**

- 4.2.1 Demolition contexts associated with the late-19<sup>th</sup> century demolition of the mill were observed across Areas 1, 3 and 4. These comprised mid to dark brown sandy clayey silt with moderate to frequent inclusions of construction material fragments (**106**, **301**, & **402**). Overlying these deposits to the northeast of Area 1 was a further demolition layer **105** that likely corresponded to the demolition of the L-shaped range located towards northeast of the Site in the mid to late 20<sup>th</sup> century.
- 4.2.2 Over these demolition deposits were coarse gravel bedding layers for concrete floor surfaces associated with the mid-20<sup>th</sup> century sheds. A clear

division was visible between the concrete slab within the former sheds **102** and that outside of it to the northeast **101**.

4.2.3 Natural geology was observed in all monitored areas to comprise of orange clay with occasional grey patches. The level of the natural appeared to have been heavily truncated along the centre of the site where terracing had been created.

### 4.3 Area 1

4.3.1 Area 1 (**Figure 2**) was located towards the north side of the Site within an area measuring approximately 20 x 15m. Substantial structural elements survived within the area at a good level of preservation comprising the north-eastern red brick wall of the former mill, and a stone and brick wheel house structure which projected from it to the northeast.

4.3.2 The red brick structure **113** comprised of an 'L' shaped section of wall built of handmade bricks (measuring 24 x 11 x 7.5cm) laid five courses thick with a light grey sandy lime mortar (**Plate 2**). Although the south-eastern corner of the mill was not observed it was possibly truncated during the construction of the mid 20<sup>th</sup> century sheds. The foundations of the wall were cut into the natural **118** to a depth of 90.53m AOD.

4.3.3 Extending from the eastern end of the northeast face of **113** were two parallel three course thick red brick walls. The walls enclosed a 6.5 x 2m space **128** that was filled with a sandy silt deposit containing frequent ash and moderate demolition rubble **116** (**Plate 3**). A partial stone flag floor **125** was observed within **128** at 91.50m AOD covering a brick lined culvert (**Plate 4**) connected to the northeast to a cast iron pipe **124** leading into the wheel pit structure and to the southeast to a brick lined culvert **114** leading out beyond the structure. This arrangement of culverts was a later insertion that had likely served as a drainage system.

4.3.4 Abutting **113** to the northeast was a contemporary rectangular sandstone wheel pit structure **110** (**Figure 6**) measuring 6.06 x 4.26m at c93m AOD (**Plate 5**). The structure formed a 4m deep wheel pit with 0.5m thick ashlar sandstone block walls with tooled faces and smooth margins. The southwest and northeast walls (**Plate 6**) of the structure widened to 1.1m thick at a 91.92m AOD and incorporated centred arched openings at a similar level (**111** & **129**), which had been blocked but had previously likely been axle mounts. A further arched opening at the base of the west side of the northwest wall had led out to a stone culverted tailrace to the Timber Brook.

4.3.5 The south-eastern face of the wheel pit comprised of ashlar stonework forming a curved surface **123** which would have closely embraced the water wheel. Towards the top of the wall where two narrow sockets and shaped stonework **122** indicating the likely location of a pen trough structure.

4.3.6 The north-western wall of the wheel pit **109** was of irregular stone blocks laid to courses and represented a later alteration abutting the northeast and southwest walls of the wheel pit. At the base of the wall a rectangular opening had been incorporated which was flanked on either side by brick piers **120** supporting a timber sluice.

#### **4.4 Area 2**

- 4.4.1 Area 2 (**Figure 3**) was located on the raised ground towards the east of the Site and measured approximately 20 x 15m (**Plate 7**). A retaining wall bounded the northwest edge of the area and comprised of a number of phases in stone and brick incorporating a rectangular projection beyond the line of the retaining wall. The initial phase of walling comprised of stone laid to uneven courses with red brick alterations built on top of it and to the entirety of the northwest face of the projection. The most recent phase was in a grey brick comprising a structure which was recorded in 2007 by UMAU (2007b), which had been demolished down to floor level at approximately 97m AOD.
- 4.4.2 Beneath the concrete floor surface of the latter structure was a demolition deposit comprising of red brick rubble and large quantities of fragmented asbestos roof sheet to a depth of approximately 96.1m AOD.
- 4.4.3 Underlying the rubble within the area was homogenous compact clay with occasional grey patches that appeared to be undisturbed natural **204**, although may have been redeposited within the north-western projection. A clear cut **207** had been made around the southeast corner of the area for the stone wall **223** and filled with sandy clay with frequent stone and brick rubble **208** (**Plate 8**). The southwest side of **223** had been clad in grey cement bricks **206**.
- 4.4.4 Towards the centre of the area was a 'L' shaped narrow brick culvert **209** cut slightly into **204** (**Plate 9**) which was connected to a larger flue **212** by a shallow curved cut **210** that had been filled with a charcoal rich sandy clay with moderate brick rubble **211**. **212** was roughly orientated northwest-southeast and comprised of a vertically truncated circular flue lined with curved refractory tiles and filled with rubble of the same with frequent coal and ash **213** (**Plate 9**).
- 4.4.5 The southwest half of the area was enclosed to the southeast by a wall **221** of stone blocks laid to courses directly onto **204**. The absence of any depth to the foundations of **221** would suggest the structure over Area 2 had not supported any above ground structures of significant weight.
- 4.4.6 The ground to the northeast of **212** comprised of redeposited natural **218** containing moderate quantities of brick and ash. Cut through **218** was a shallow linear cut **214** from **212** to beyond Area 2 to the northeast. To the west of the cut, at the northern end of Area 2, was a truncated brick surface **220**. To the southwest of **212** the top of a 0.75m wide brick lined flue **216** was exposed (**Plate 10**). The flue was blackened on the interior and inclined down towards the northwest.

#### **4.5 Area 3**

- 4.5.1 Area 3 (**Figure 4**) measured 16 x 5m and was located towards the centre of the Site within the sloping ground of a former access road between the different levels of the site. A number of structures were identified within the area (**Plate 11**), which despite being largely truncated to the west and south appear to be the remnants of a boiler/engine house. The bricks used throughout the walls and machine bases within this area were comprised

handmade bricks measuring 24 x 12 x 8 cm, indicating the structures were likely to have been of a single phase of construction.

- 4.5.2 The area was covered by a demolition deposit **301** which overlay made ground of mid brown clay with common coal and red brick fragments **302**. Underlying the made ground was a natural deposit of homogenous orange clay with occasional grey patches **303**.
- 4.5.3 At the eastern end of Area 3 a two skin red brick wall **305** was observed running roughly north-south, overlain to the east by a fragmentary brick surface **304** at a higher level. **305** was cut into homogenous orange clay natural with occasional grey patches.
- 4.5.4 Located towards the centre of the area was a large brick machine base (**Plate 12**) comprising of a crescent shaped flue **310** (**Plate 13**) that had been truncated towards the west, and an 'L' shaped base of heavily heat affected bricks **321** incorporating a narrow sloping brick surface **318**. Between **310** and **321** was a curved brick surface **322** onto which a short brick wall and drain **317** had been built towards the west. The drain was a later alteration and related to a trench cut to the west of **318** which contained a ceramic pipe, and continued beyond the area to the southwest.
- 4.5.5 A three skin thick red brick wall **326** abutted the west of the machine base **321** and had likely formed part of an enclosing structure. Further elements of walling observed to its southeast of **308** suggested the structure had continued in that direction.
- 4.5.6 Towards the western end of the area was a second structure (**Plate 14**) consisting of a truncated brick and stone structure with associated floor surfaces. The main element comprised of a roughly east-west orientated three-skin thick red brick wall (**326 & 330**) with a paved opening **329** running through it (**Plate 15**). The eastern end of the wall had been truncated by a large inserted drain **323** orientated roughly north-south. Incorporated into the south of the wall was a contemporary stone and concrete structure **327**, and abutting the north was a rubble built stone wall **328**, both of indeterminate function.
- 4.5.7 Abutting the western end of the wall was a heavily mortared brick surface **331** to the south and the remnant of a quality brick surface **332** adjacent to the paved opening on the north of the wall. Slightly beyond the wall to the south was an additional brick surface **333** partially covered with tarmac **334**.

#### **4.6 Area 4**

- 4.6.1 Area 4 (**Figure 5**) was located towards the west of the Site, adjacent to the Mill House. The area contained a single stone built subterranean wheel pit structure (**Plates 17-18**) (**Figure 6**) in an excellent state of preservation at approximately 92m AOD.
- 4.6.2 The structure measured 5.0 x 5.2m and was approximately 5.2m deep to 87.25m AOD. The exterior walls of the structure **403** were of ashlar sandstone masonry 0.3m thick and widening internally to the northwest and southeast at 90m AOD to 1.1m. A brick vaulted ceiling **405** covered the structure incorporating an off centre hole **414**, possibly for power

transmission. A brick staircase **409** led down to the level of the widened wall from the southeast.

- 4.6.3 The northwest and southeast walls featured centred recesses for axle mounts (**411** and **412**) at the level of the internal step out, whilst the internal face of the southwest wall sloped outwards towards the base **408** having originally followed the curve of the waterwheel.
- 4.6.4 A narrow opening positioned above the curved face in the southwest wall opened into a long stone lined culvert **406** from Daneinshaw Brook. The stonework around the opening appeared to have been a later alteration **410** reducing its width, and thus increasing the velocity of the water through it. Water having entered into the wheel pit exited from an arched opening in the northwest wall **407** leading along a tailrace to Timber Brook.

## 5 FINDS

### 5.1 Results

- 5.1.1 A very small quantity of finds was recovered from the Site, deriving from three contexts, and comprising one fragment of clay tobacco pipe and four sherds of pottery. Details of these finds, all of which are of post-medieval date, are presented below in **Table 1**.
- 5.1.2 The clay pipe stem is not more closely datable. The pottery consists entirely of refined whitewares, which date from the end of the 18th century onwards; the decorative treatments on the sherds from deposits **105** and **402**, which are commonly occurring types, do not help to narrow the data range closer than late 18th to early 20th century.
- 5.1.3 Given the very small quantity of finds, and their date range, retention for long-term curation is not recommended, and the finds will be discarded prior to archive deposition.

**Table 1: details of finds by context**

Context	Material	No.	Wt. (g)	Description
105	Pottery	1	12	Refined whiteware; transfer printed (Wild Rose design); plate or dish
116	Clay Pipe	1	2	Plain stem
116	Pottery	2	18	Refined whiteware; 1 jug handle & 1 plate rim
402	Pottery	1	12	Refined whiteware; slip banded decoration

## **6 DISCUSSION**

### **6.1 Summary**

- 6.1.1 A number of structures were observed during the watching brief at Bath Vale Mill that related to the power systems of the 19<sup>th</sup> century mill depicted on a phased plan produced by UMAU (UMAU 2007a) (**Figure 7**).
- 6.1.2 The northeast wall of part of the early 19<sup>th</sup>-century mill building was observed to comprise of a five skin thick wall with foundations to an approximate depth of 3.5m below ground level **115**. The width and depth of the foundations suggest that the structure had comprised of multiple storeys. No internal floor structure/surface was observed during the watching brief, suggesting that a degree of levelling had taken place prior to the erection of the structures which subsequently covered the area in the mid-20<sup>th</sup> century.
- 6.1.3 Structures observed within Area 2 to the southeast of the Site were largely insubstantial with no evidence for heavy machinery. The area was within a structure bounded to the southeast by a stone wall with very shallow foundations, and to the northwest by a brick retaining wall containing several mounting blocks which had likely related to structures to the west. Flues observed towards the northern end of Area 2 were industrial in appearance, but had possibly lain outside of this structure and been associated with an industrial structure to the east beyond the monitoring area.
- 6.1.4 During the course of the monitoring two substantial stone built wheel pit structures were exposed in Areas 1 **108** and 4 **403** to the north and southwest of the Site. The level of preservation of the wheel pits was very good, with sufficient evidence remaining to reconstruct elements of their operation.
- 6.1.5 Whilst minor alterations appeared to have been made to both wheel pits, only the blocking of the former axle mounts (**129 & 111**) in **108** appeared to inhibit the structure from supporting a wheel. The blocking in the southeast wall of the wheel pit **108** incorporated a length of cast iron pipe **124** which was contemporary with a brick culvert (**114 & 126**) leading out of the area to the northeast. It was possibly that the alterations had been made following the removal of the wheel with the culvert indicating it had possibly been retained as part of a drainage system.
- 6.1.6 The narrow room created between the mill **115** and the wheel pit **108** that contained the culvert **126**, could have originally been intended to enclose the primary power transmission from the wheel to the various floors of the mill.
- 6.1.7 Remnants of a possible engine house were recorded within Area 3, towards the centre of the Site. Although fragmentary, it was possible to discern a portion of a heavily heat affected brick boiler base in the centre of the Area. A small section of brick and stone structure to its west was associated with a couple of surfaces and has been tentatively interpreted as a remnant of an engine base. The majority of this structure is believed to have been truncated during the historic demolition and landscaping in the mid 20<sup>th</sup> century when a ramp was constructed between the mill and the upper reservoir levels.



## 6.2 Waterwheels

- 6.2.1 Although it had been recognised from the early 18<sup>th</sup> century that where there was a relatively low head of water the breastshot wheel was the most efficient wheel design, it was not until 1800 that the design had become widely implemented (Reynolds 1983: 280). The utilisation of high breastshot wheels in Bath Vale Mill is therefore likely to be concurrent with the late 18<sup>th</sup>-to early 19<sup>th</sup>-century construction date suggested by historical records (see UMAU 2007a).
- 6.2.2 The two waterwheels uncovered during the course of the archaeological watching brief (**Figure 6**) are representative of two phases in the early development of the mill. The wheel pit uncovered in Area 4 lay in the approximate location of the earliest incarnation of the mill depicted on the 1806 plan. Consequently this wheel was likely to have been the earliest, with the second wheel likely constructed sometime before 1827.
- 6.2.3 Due to the independent water systems associated with each wheel there is the possibility that both wheels could have been operated simultaneously. It is unclear from John Vaudrey's will from 1827 (UMAU 2007a) whether one or more water wheels were in operation, although it does indicate the presence of the millpond that supplied the second wheel.
- 6.2.4 The earlier waterwheel, which would have occupied the pit observed in Area 4, was installed at basement level in order to raise the head of water put to the wheel due to the relatively low level of Daneinshaw Brook. To further improve efficiency a curved masonry breast was constructed which would have come very close to, but not touched, the edges of the blades of the waterwheel in order so that the wheel would retain water as it turned until it came to the bottom.
- 6.2.5 Water for the operation of the wheel appeared to originate from Daneinshaw Brook, south of the weir over which Brookhouse Lane bridges the brook. A sluice gate must also have been located at this point for the moderation of water allowed to enter the culverted headrace, however the opening is no longer visible. From the wheelhouse the water would have then discharged back into Daneinshaw Brook along a culverted tailrace.
- 6.2.6 Power was likely to have been taken from the wheel via line shafting running through a circular opening observed in the brick barrel vaulted ceiling over the wheel pit. The exact nature of the coupling is uncertain but could potentially have been from the edge of the wheel rather than from the axle.
- 6.2.7 The installation of the second wheel to the north of the mill addressed a number of issues with the primary wheel and was likely part of wider expansion to Bath Vale Mill's output. In moving the location of the wheel to the north of the site a much higher (c3m) head of water was created by constructing a weir in Timber Brook. Furthermore a mill dam was constructed which allowed a store of water to be made to facilitate operation of the mill through short periods of drought. These additions improved not only the potential power of the wheel but also increased its operational efficiency.

6.2.8 Based on the size of the wheel pit and the sloping face within it the first water wheel had likely measured around 4m in diameter and been no more than 2.5m wide, whilst the second wheel had likely measured around 5m in diameter and been at most 2m wide.

### **6.3 Conclusion**

6.3.1 Historic documentation compiled during previous work on the site had been interpreted to indicate the possible location of two engine houses and a wheel house. Monitoring during remedial work targeted these areas and the findings, though not wholly consistent with the predictions, did locate and record related structures.

6.3.2 The results of the archaeological watching brief revealed details of two water wheels that comprised the earliest phases of power generation at Bath Vale Mill. Whilst evidence was also uncovered for a later steam engine installation, it had unfortunately been largely truncated by historic episodes of demolition and landscaping which had affected the rest of the site to a lesser degree.

## **7 ARCHIVE**

### **7.1 Preparation**

7.1.1 The project archive, consisting of all primary written documents, plans, sections, photographs, and electronic data, will be prepared by Wessex Archaeology staff in accordance with the requirements of the repository museum and in line with guidelines published by the United Kingdom Institute for Conservation (1990), Museums and Galleries Commission (1992), and English Heritage (1991).

### **7.2 Deposition**

7.2.1 The physical Site archive will be deposited with the relevant Museum archive under an accession number to be confirmed.

7.2.2 Two copies of the report will be prepared for the client and additional copies will be submitted with the Site archive, and to the Historic Environment Record (HER).

7.2.3 An OASIS form will be completed at <http://ads.ahds.ac.uk/project/oasis/> for inclusion in the ADS database. This will include an electronic copy of the report in PDF format.

**Table 2: Archive index**

<b>Paper archive</b>				
<b>Folder no.</b>	<b>Folder type</b>	<b>Item(s)</b>	<b>No.</b>	
<b>1</b>	A4 ring binder	Written Scheme of Investigation (CgMs)	1	
		Risk Assessment	1	
		Desk Top Assessment (UMAU)	1	
		Historic Building Assessment (UMAU)	1	
		Day Book (copied)	1	
		Number Record Sheet	1	
		Trench Location Plan	1	
		Test Pit/Trial Trench Record	7	
		Graphic Register	1	
		Drawings	8	
		Photographic Record	6	
		Bound copy of the report	1	
<b>Material archive</b>				
<b>Box no.</b>	<b>Box type</b>	<b>Material(s)</b>	<b>Context / Object nos.</b>	<b>Wt. (kg)</b>
<b>1</b>	Small	Ceramics	105, 116, & 402	0.5

## 8 REFERENCES

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**9 APPENDIX**
**Table 3: Sediment descriptions: Area 1**

<b>Area 1</b>			
<b>Depth bgl</b>	<b>Context</b>	<b>Sediment description</b>	<b>Interpretation</b>
0.00-0.16m	101	Concrete slab	c1960s exterior surface
0.00-0.23m	102	Concrete slab	c1960s interior surface
0.16	103	Coarse sub-angular sandstone gravel	Bedding layer to [101]
0.23-0.25m	104	Coarse sub-rounded sandstone gravel	Bedding layer to [102]
0.23-0.62m	105	Mid brown sandy silt with moderate fragments of handmade brick.	Made Ground
0.62-1.00m	106	Dark brown clayey sand with frequent fragments of handmade brick and mortar	Made Ground
1.00-	107	Mid brown sand with frequent fragments of handmade brick and mortar, fills structure group [108]	Made Ground
-	108	Sandstone structure group number	Group number
1.00-5.50m	109	Northwest wall of [108] comprised of slabby irregular sandstone layed to courses	Wheel Pit wall
1.00-5.50m	110	Northeast, southeast, and southwest walls of [108] comprised of sandstone ashlar with tooled face and smooth margins. Walls to Northeast and Southwest widen internally in a level step at c.91.8m aOD	Wheel Pit walls
0.20-2.00m	111	Arched opening in northeast wall of [108] blocked with squared sandstone blocks	Former Axle Mount
0.85-2.50m	113	Redbrick wall of five coarse comprised of deep red unfrogged handmade bricks with sparse inclusions of mica, pebble & charcoal (measuring 9 1/2 x 4 3/8 x 3 inches) in a light grey mortar with moderate quantities of unexploded lime	Red brick mill structure
0.80-0.95m	114	Brick lined culvert orientated southeast-northwest emerging from southeast of [128] and abutting [115]	Drain
-	115	Red brick mill structure group number	Group number
0.90-1.20m	116	Black ash rich sandy soil within [128]	Deposit
0.20m	117	Ash rich sandy soil to northeast of [108], fragments of sandstone paving slabs on surface suggest it was paved.	Historic ground surface
0.90m	118	Dark orange clay with occasional grey patches.	Natural
1.20m	119	Mid brown grey sandy silt with frequent fragments of redbrick and sandstone slab, underlies (116)	Made Ground
3.00-5.50m	120	Two brick piers abutting northwest wall of wheel pit. Between them is a tailrace (possibly secondary) and remains of a wooden sluice.	Alterations to Wheel pit tailrace
4.50-5.50m	121	Arched opening into tailrace in northeast	Tailrace

		side of wheel pit	
1.00-2.00m	122	Two parallel grooves and slots in southeast face of wheel pit	Scar from pentrough
2.50-5.00m	123	Curved sloping masonry breast to southeast wall of wheel pit	Wheel pit floor
1.00m	124	Cast iron pipe from culvert beneath [128] through [129]	Drain
1.20m	125	Broken sandstone flag floor, overlying culvert [128]	Former floor surface
1.20-1.40m	126	Red brick culvert comprised of handmade or early machine bricks with sparse mica and grog (measures 23.5 x 11 x 7cm)	Drain
4.25-5.00m	127	Dark water logged greyish brown silt with coal tar contaminate	Deposit
-	128	Room between [108] and [115]	Group number
1.00-2.00m	129	Blocking in southwest wall of 110 with probable arch as 111	Former axle mount

**Table 4: Sediment descriptions: Area 2**

<b>Area 2</b>			
<b>Depth bgl</b>	<b>Context</b>	<b>Sediment description</b>	<b>Interpretation</b>
-	201	Made ground comprising grey brown sandy silty clay	Modern overburden
0.00-0.10m	202	Concrete	Modern overburden
0.10-0.93m	203	Rubble made ground containing brick concrete and asbestos fragments	Made ground
0.93m	204	Mid red sandy clay	Natural
0.93m	205	Grey sandy clay	Natural
0.00-3.29m	206	Grey concrete brick wall around southwest boundary wall of Area 2.	Retaining wall
0.93-3.29m	207	Deep straight construction cut for [223]	Cut
0.93-3.29m	208	Sandy clay with abundant stone and brick rubble.	Fill of [207]
0.93-1.06m	209	Curved single brick wide culvert formed of red bricks measuring 23 x 11 x 7	Culvert
0.93-1.05m	210	Shallow curved cut from [209] to [212]. Possibly resulting from grubbed out structure.	Cut
0.93-1.05m	211	Sandy clay with abundant rubble and charcoal.	Fill of [210]
0.93-1.15m	212	Flue formed from curved pale ceramic segments with a blackened tar covered internal face	Flue
0.93-1.15m	213	Tar covered rubble and coal	Fill of [212]
0.50-0.60m	214	Shallow scooped linear cut from [212] to [220]	Cut
0.50-0.60m	215	Sandy clay with frequent rubble and charcoal.	Fill of [214]
0.50-1.22m	216	Large arched brick lined culvert/flue running E-W across Area 2	Culvert/flue

0.50m	218	Redeposited mid red sandy clay natural with moderate brick and charcoal fragments	Redeposited natural
0.50-0.55m	219	Shallow ferrous deposit between [212] and [216]	Deposit
0.40-0.51m	220	Uneven fragmentary brick surface towards northern end of Area 2	Surface
0.00-3.29m	221	Stone wall around east of Area 2	Retaining wall
0.00-3.29m	222	Stone built wall to north of Area 2	Retaining wall
0.00-3.29m	223	Stone built wall to south of Area 2	Retaining wall
0.00-3.29m	224	Stone built wall to west of Area 2	Retaining wall

**Table 5: Sediment descriptions: Area 3**

<b>Area 3</b>			
<b>Depth bgl</b>	<b>Context</b>	<b>Sediment description</b>	<b>Interpretation</b>
0.00-0.30m	301	Dark brown sandy clayey silt with frequent demolition fragments	Made ground
0.30-0.50m	302	Mid brown clay with common charcoal and red brick fragments	Made ground
0.50m	303	Mid brown clay with occasional grey patches	Natural
0.20-0.30m	304	Brick surface composed of a handmade red brick	Surface
0.60m	305	Two skin thick redbrick wall composed of handmade bricks with sandy ash mortar	Wall
0.50m	306	Construction cut for [305]	Construction cut
0.60m	307	Sandy limestone gravel	Fill of [306]
-	308	Boiler structure	Group No.
0.20-0.50m	309	Two skin thick redbrick wall composed of handmade bricks with sandy lime mortar	Wall
0.50m	310	Crescent shaped two skin thick redbrick flue	Flue
0.50m	311	Sandy redbrick rubble deposit	Fill of [310]
0.50m	312	Construction cut for [309] and [310]	Construction cut
0.50m	313	Ashy and sandy rubble deposit	Full of [308]
0.40m	314	Triangular remnant of redbrick wall	Structure
0.50m	315	Sloping brick surface within [321]	Machine base
0.30m	316	Four skin thick redbrick wall comprised of handmade bricks in sandy lime mortar	Wall
0.30m	317	Short two skin thick wall and drain overlying [313]	Drain
0.21m	318	Linear cut	Cut for [319]
0.25m	319	Ceramic drain	Drain
0.20m	320	Sandy silt with moderate large cobbles	Fill
0.15m	321	Heat affected redbrick machine base	Machine base
0.15-0.49m	322	Sloping brick surface comprised of handmade redbricks	Machine base
0.20m	323	Linear cut	Cut for [325]
0.20m	324	Stone overlying [325]	Structure
0.20m	325	Ceramic pipe	Drain
0.20m	326	Three skin thick redbrick structure truncated to east	Wall
0.25m	327	Stone structure abutting south of [326]	Structure

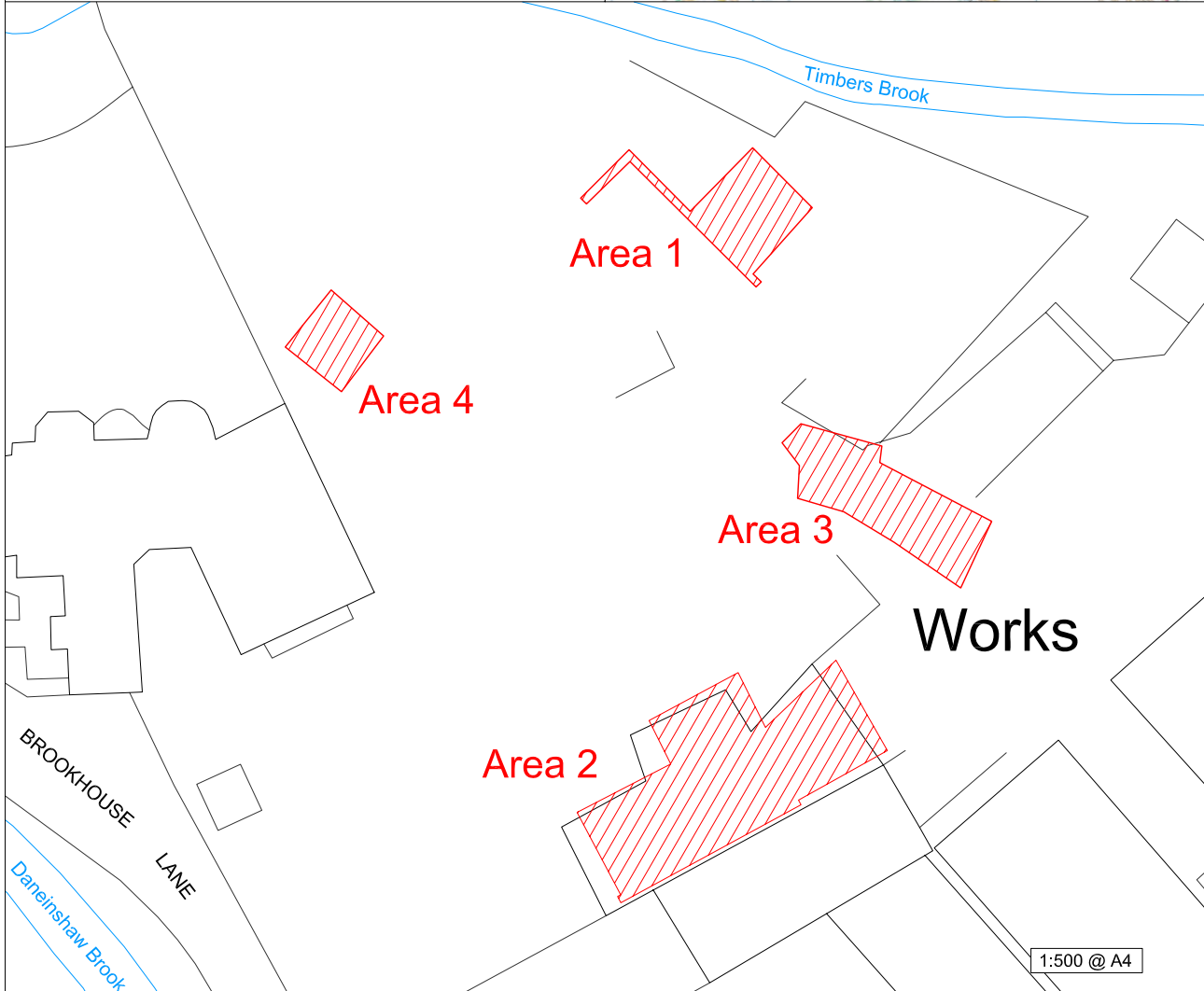
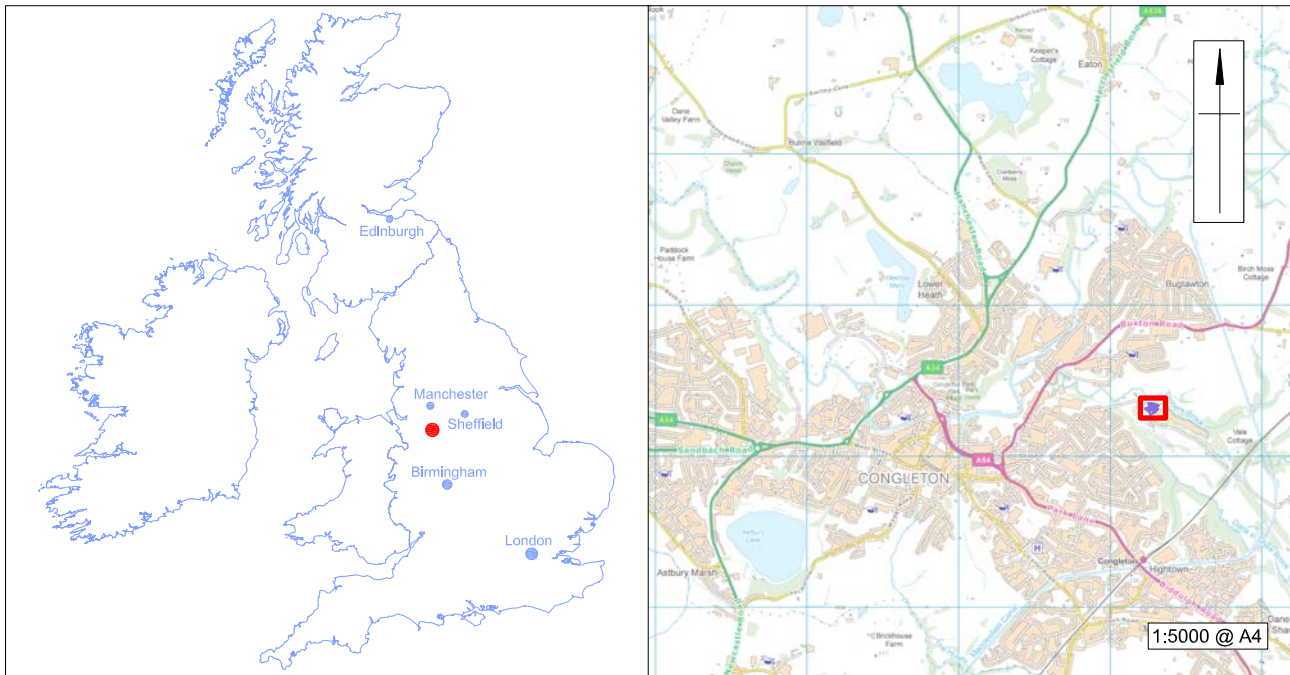
0.20m	328	Stone structure abutting north of [326]	Structure
0.20m	329	Stone paving slabs between [326] and [330]	Surface
0.17m	330	Three skin thick redbrick structure truncated to west	Wall
0.30m	331	Brick surface to north of [329]	Surface
0.20m	332	High quality brick surface to north of [326]	Surface
0.30m	333	Partial brick surface to southwest of Area 3	Surface
0.20m	334	Tarmac surface overlying [333]	Surface
0.20m	325	Degraded brick structure between [308] and [322]	Structure
-	326	Possible engine house structure	Group number

**Table 6: Sediment descriptions: Area 4**

<b>Area 4</b>			
<b>Depth bgl</b>	<b>Context</b>	<b>Sediment description</b>	<b>Interpretation</b>
0.00-0.17m	401	Concrete slab	Overburden
0.17-0.40m	402	Mid brown silty sand with frequent fragments of structural debris	Made ground
-	403	Square sub ground level wheel house	Group number
0.60-5.50m	404	Squared sandstone blocks forming a three sides of square structure 403	Wheel pit
0.40-0.60m	405	Redbrick vaulted ceiling springing from [404] from northwest to southeast	Ceiling to wheel pit
	406	Headrace from Daneinshaw Brook to [403]. Stone lined at wheel pit, brick lined after 8m. Not excavated.	Headrace
5.00-5.50m	407	Stone lined arched tailrace to Timbers Brook. Not excavated.	Tailrace
5.50m	408	Curved masonry wall/floor from southwest.	Floor to wheel pit
0.40-2.50m	409	Brick staircase entering [403] from south	Staircase
0.50-2.00m	410	Secondary alterations made to exit from headrace in slabby sandstone	Alterations to pentrough
2.50-3.00m	411	Recess in northwest wall of [404], remnant of axel mount	Axel mount
2.50-3.00m	412	Recess in northwest wall of [404], remnant of axel mount	Axel mount
2.50m	413	Narrow sandstone crawl board adjacent northeast wall	Surface
0.40-0.60m	414	Sub circular opening in centre of [405], possibly for former line shafting.	Structure



**10      FIGURES AND PLATES**



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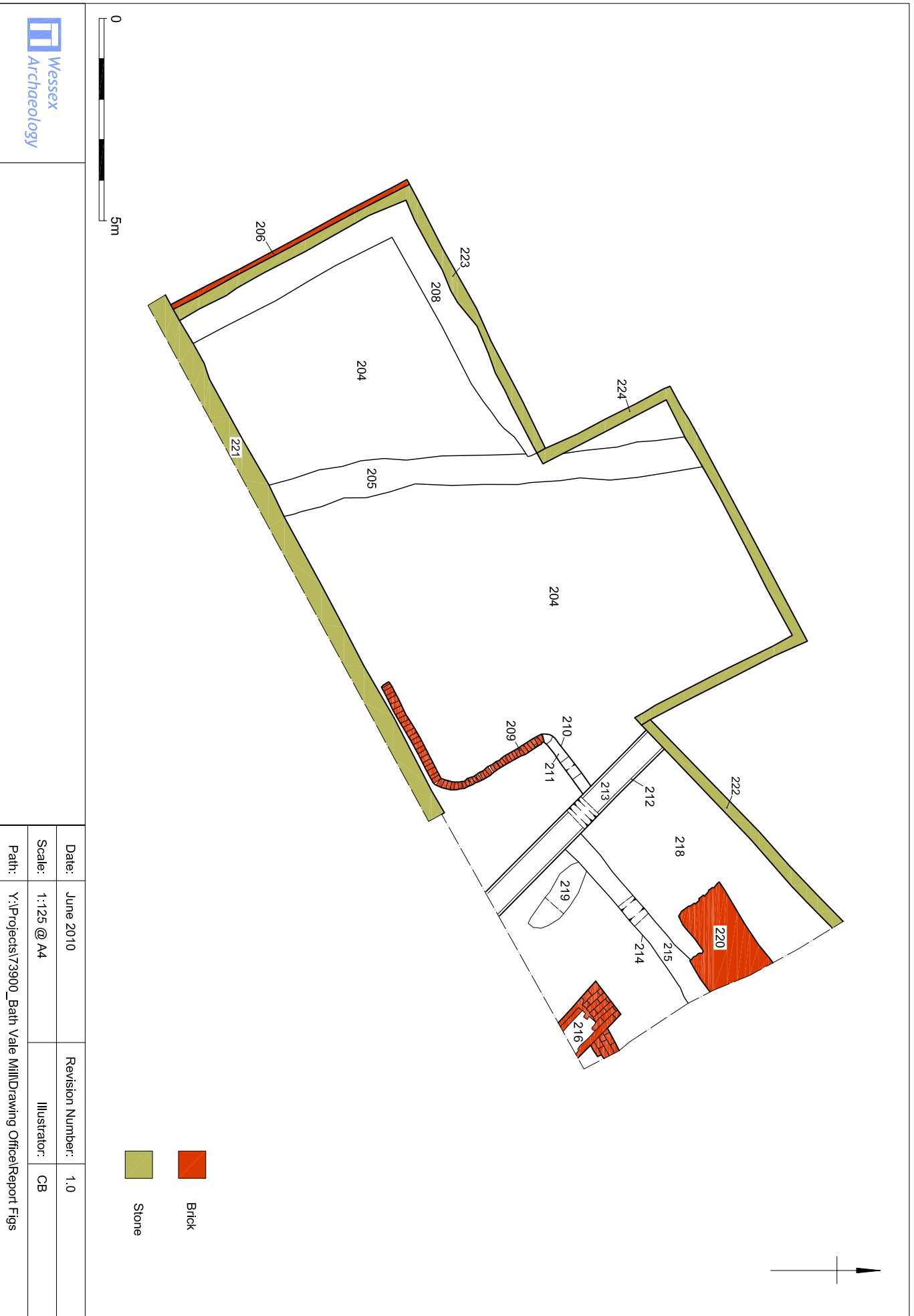




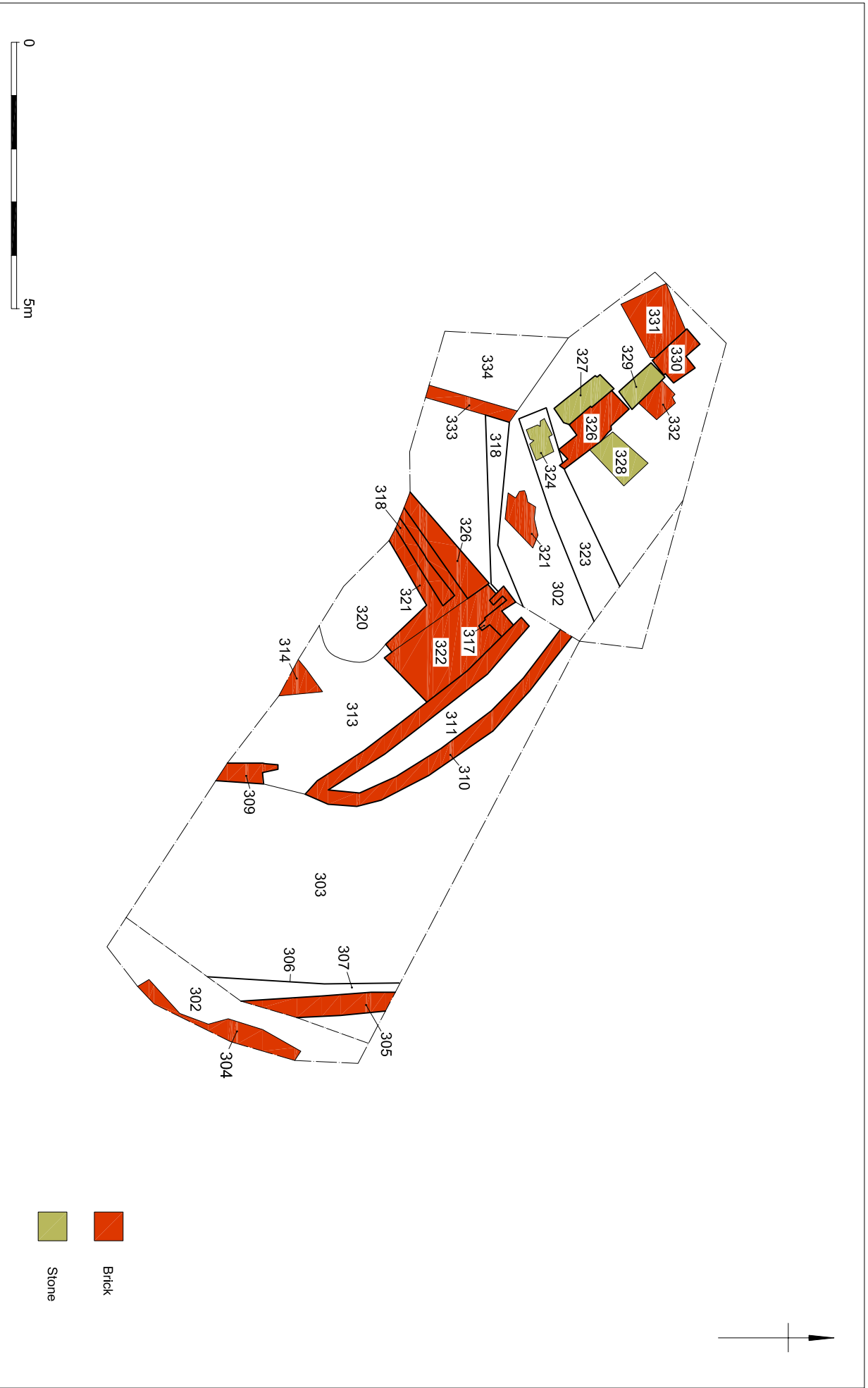
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Plan of Area 1

Figure 2



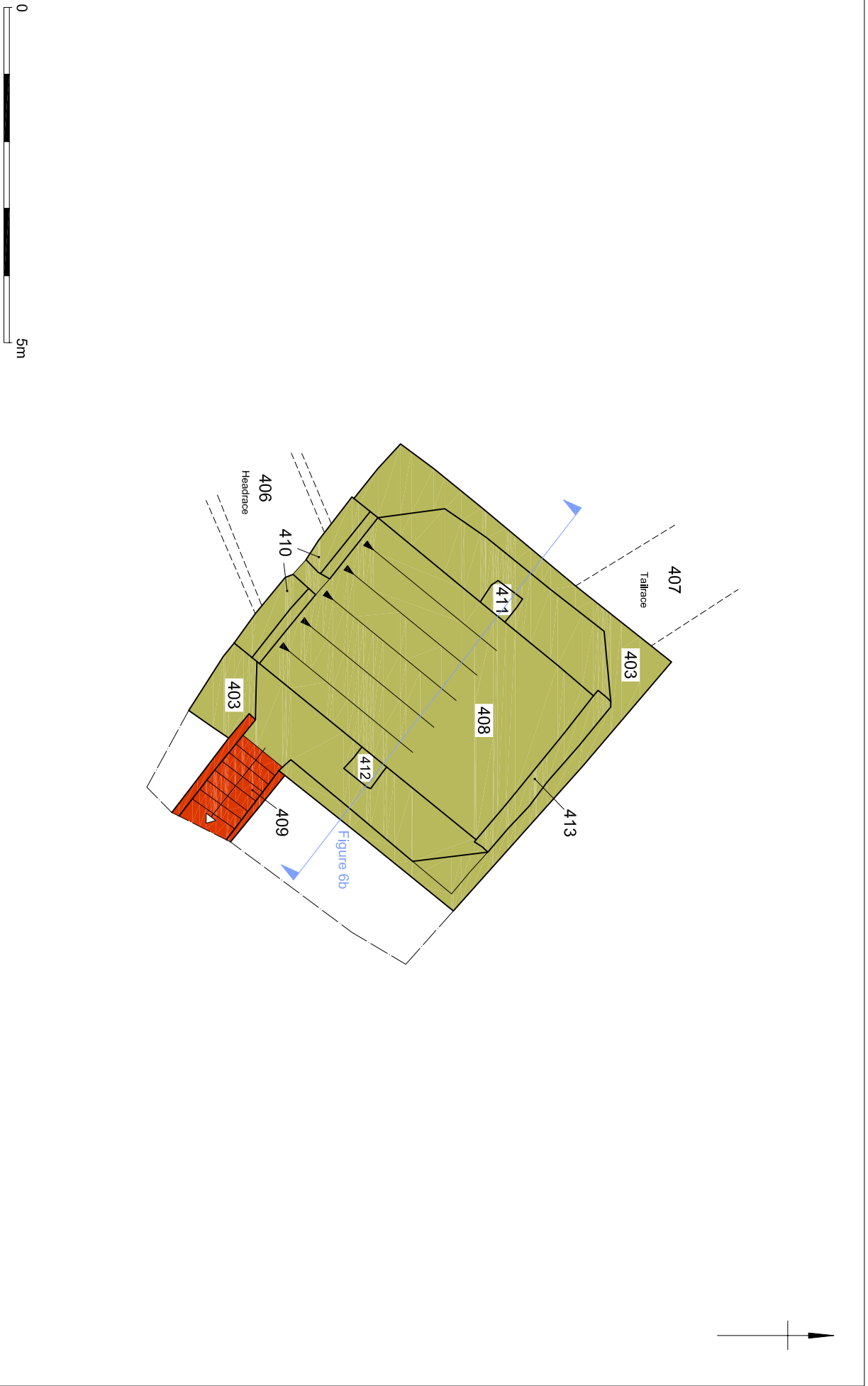
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Plan of Area 3

Figure 4



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Plan of Area 4

Figure 5

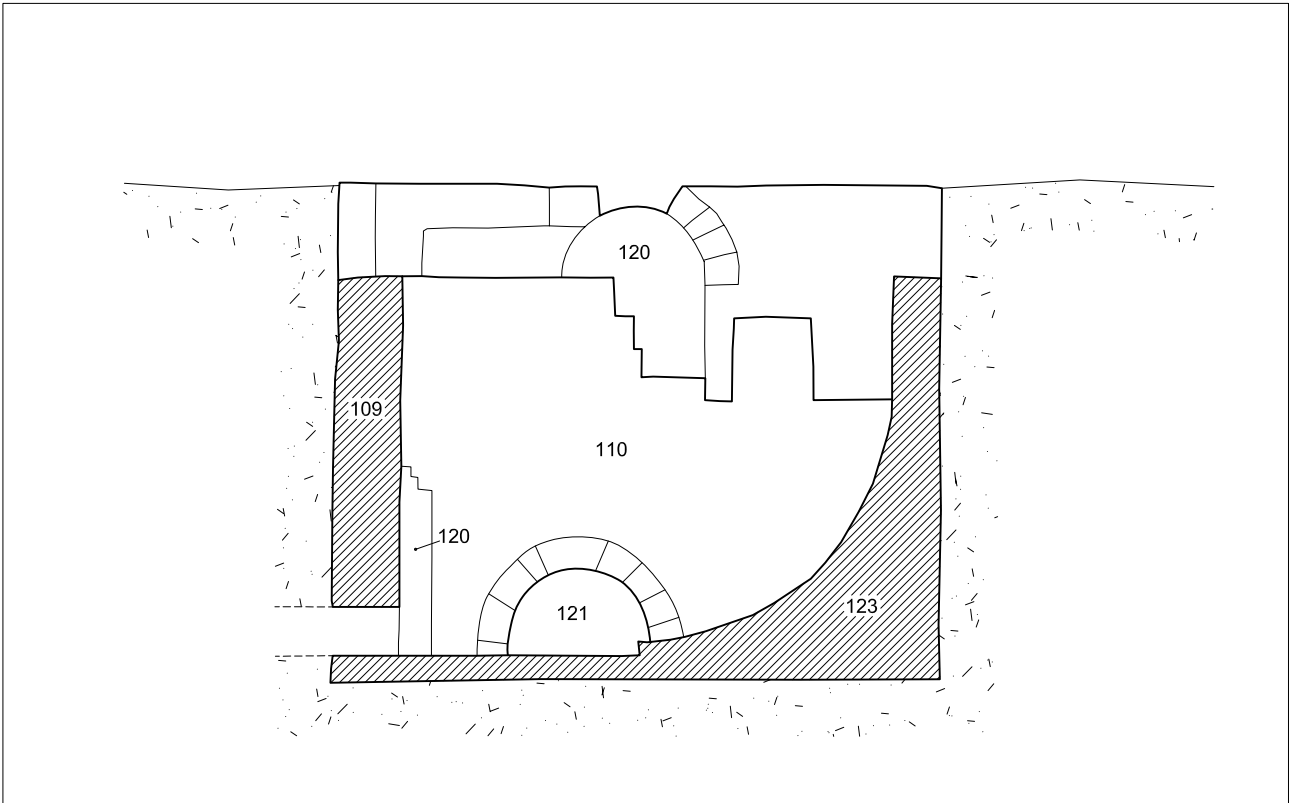


Fig. 6a Section through Area 1

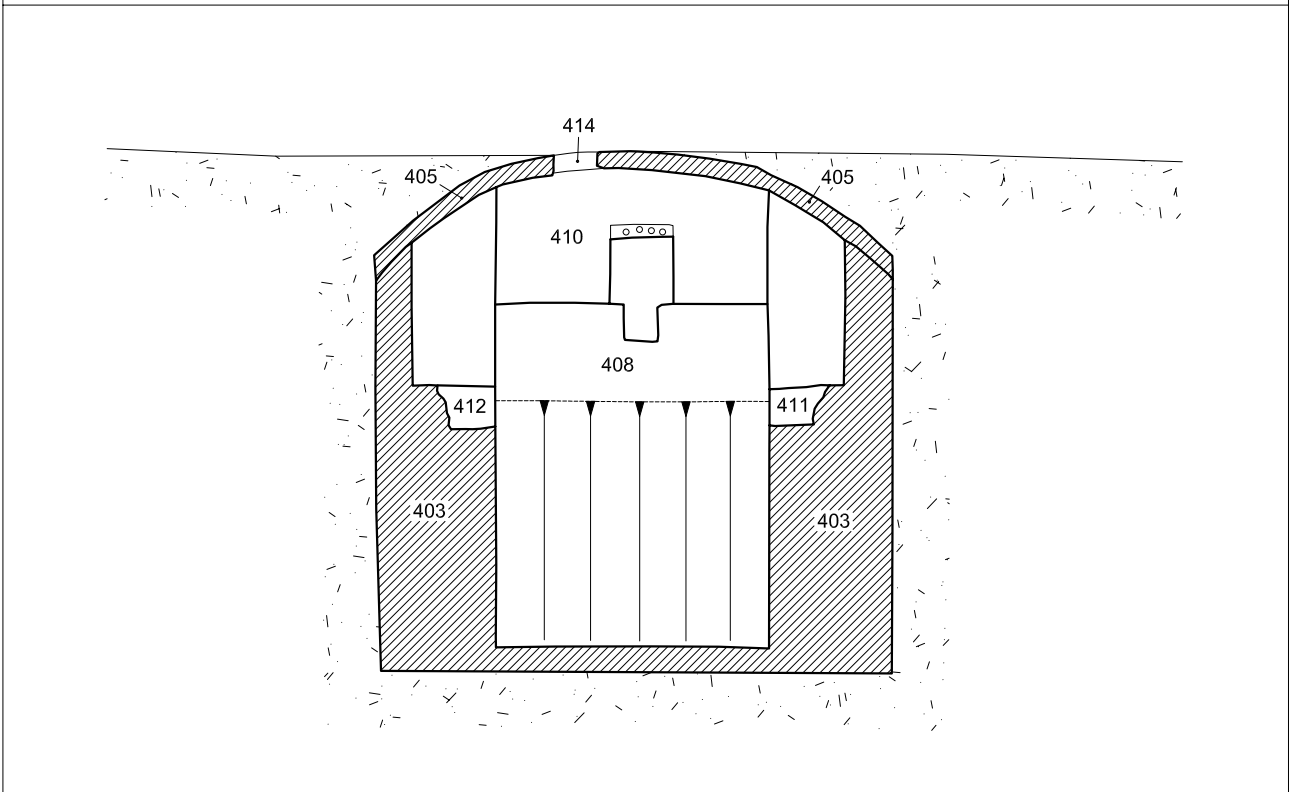




Fig. 6b Section through Area 4



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 Standing & demolished buildings

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Location of trenches in relation to standing & demolished structures (after UMAU 2007a)

Figure 7





Plate 1: General view across Bath Vale Mill from north-east



Plate 2: Exposed remnant of mill building **115** from the north-west

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Plate 3: General view (from the north-west) showing space **128** between mill **115** and wheel pit **110** structures



Plate 4: Detail of fragmentary floor surface **125** and culvert **126** within **128** from the north-west

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Plate 5: General view of wheel pit structure **110** from the north-west



Plate 6: Detail of north-east facing elevation of **110**

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Plate 7: General view of Area 2 showing stone wall **221** to south-east

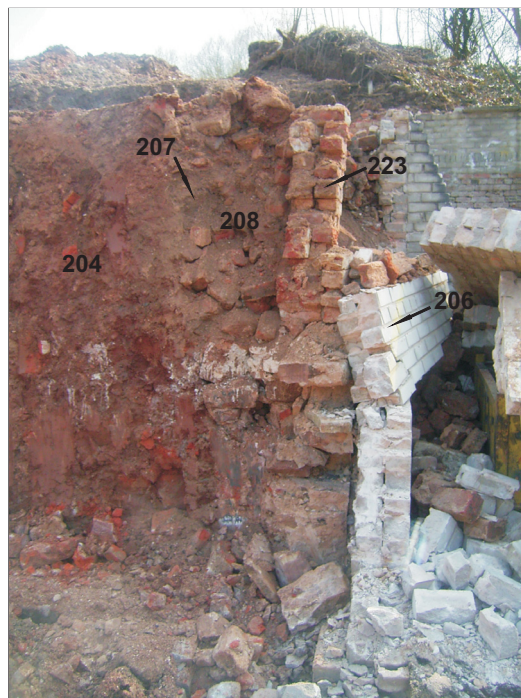


Plate 8: Detail of section showing cut for wall **223** and later brick cladding **206** from the north-west

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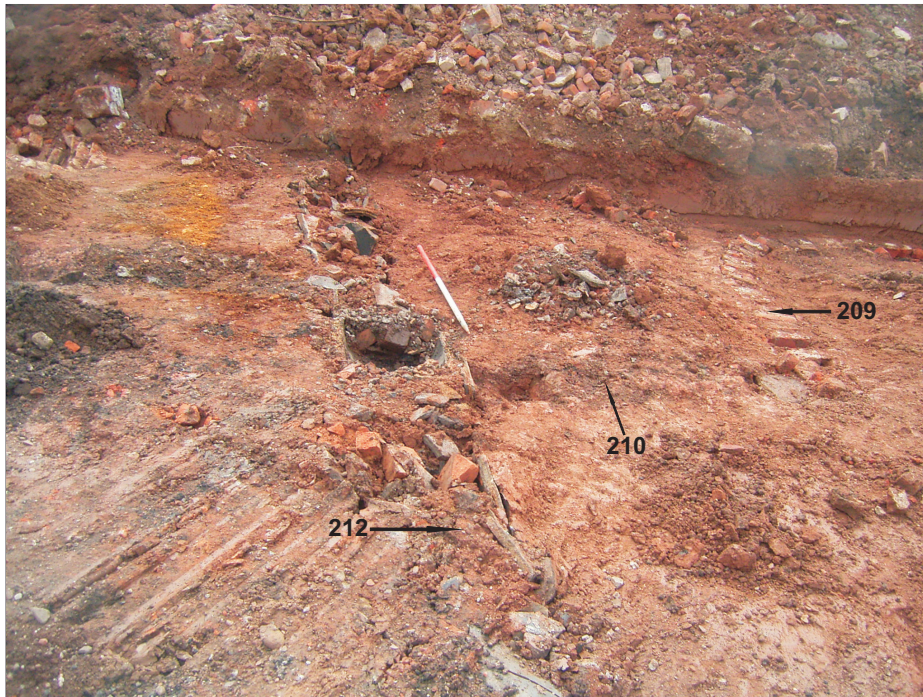


Plate 9: General view of flues **209** and **212** towards north-east of Area 2



Plate 10: Detail of brick flue **216** in eastern corner of Area 2

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Plate 11: General view of Area 3 from the north-west showing structures associated with a former engine and boiler house.

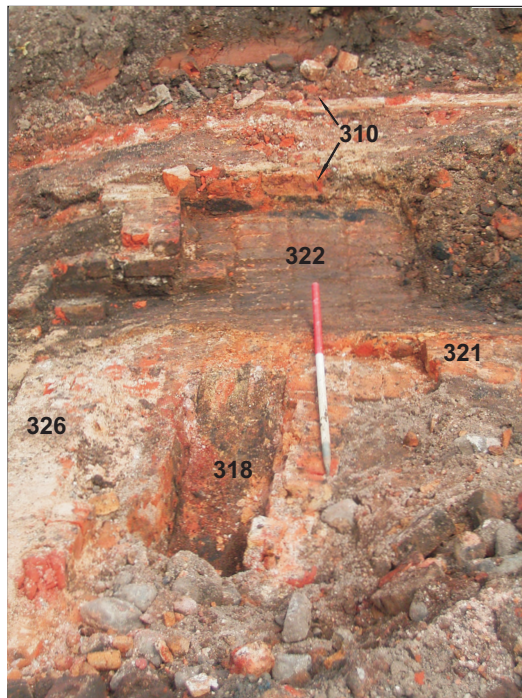


Plate 12: Detail of boiler base 308 from the south-west

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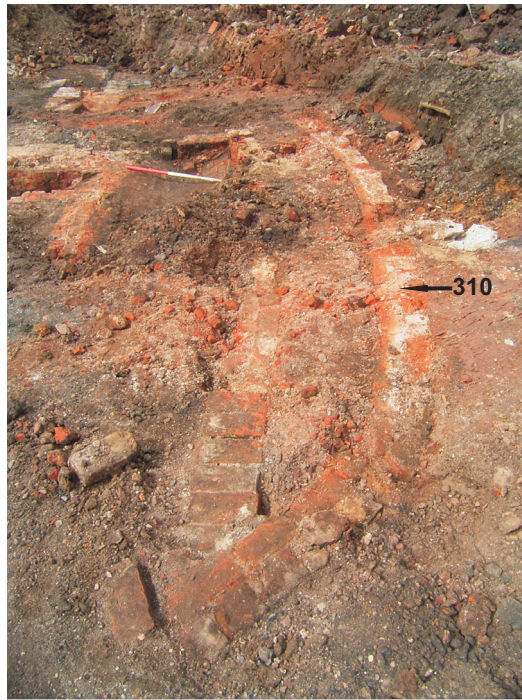


Plate 13: General view of curved flue **310**



Plate 14: General view of truncated stone and brick structure from the south-east

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Plate 15: Detail of paved opening **329** between walls **330** and **326**



Plate 16: General view of wheel pit structure **403** in Area 4 from the east

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Plate 17: Detail of axle mount **411** for water wheel in northeast wall of **403**. Viewed from the south.



Plate 18: General view of Area 4 during remediation showing Head Race **406** from the north.

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