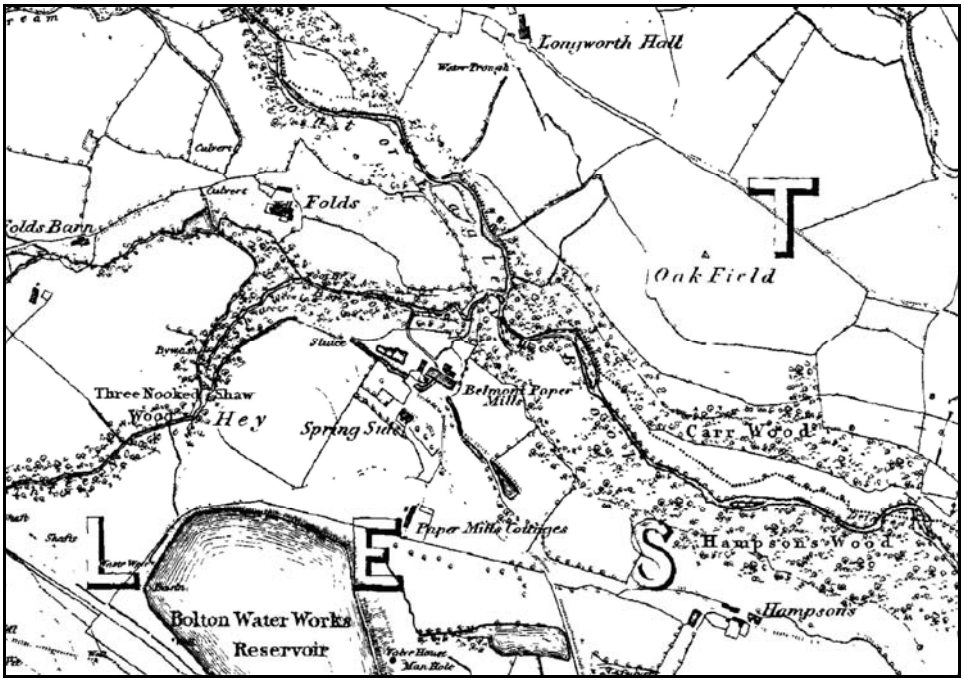
SPRINGSIDE PAPER WORKS, BELMONT, BOLTON, LANCASHIRE: AN ARCHAEOLOGICAL DESK-BASED ASSESSMENT



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Frontispiece: Springside (Belmont) Paper Mill c.1949

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1 SUMMARY

1.1 This report assesses the archaeological resource of a Proposed Development Area (PDA) in Belmont, Bolton, Lancashire, and is designed to support a proposed planning application to Bolton Council.

1.2 The PDA was only developed specifically as a paper mill in the early 19th century. Unusually it continued to function as a paper mill until the early 21st century. Historically the PDA was called 'Spring Side Paper Works' and the PDA features a succession of developments reflecting changing processing and process flows. Of historical and archaeological interest are the core 19th century historic buildings and related features which represent the original paper works and its power storage and supply.

1.3 The desk-based assessment reviews available sources for the Spring Side Paper Mill, and provides a context for the surviving historic buildings principally positioned at the centre of the present complex.

2 INTRODUCTION

2.1 This report has been commissioned by Mr A Walker of Urban Springside Limited as a baseline information source to inform future management decisions.

2.2 The PDA forms an irregular plan at the confluence of the Shaw and Eagley Brooks, Longworth Clough, southeast of Belmont, Lancashire (**Figure 1**) and extends across 7.6 hectares. The PDA was developed as a Paper Making Mill in 1834 by John Livesley and has ever since expanded and developed to its present extent.

2.3 To assess the Proposed Development Area (PDA) a study area with a 1km radius around the PDA has been devised establishing the PDA within its local historic context (**Figures 3-4**).

3 AIMS AND OBJECTIVES

3.1 The aim of the archaeological assessment is to review and present all readily available sources of information relevant to the PDA. The assessment will aim to gather sufficient information to establish the presence/absence, nature, date, quality of survival and importance of any archaeological remains and will enable or recommend further mitigation to assess the potential and significance of the PDA's archaeological resource.

4 PLANNING LEGISLATION AND GUIDANCE

4.1 Heritage Assets

Some heritage assets enjoy statutory protection. Guidance and policies relating to their protection, maintenance and enhancement are summarised below.

4.1.1 *Scheduled Monuments*
Scheduled Monuments, as defined under the Ancient Monuments and Archaeological Areas Act (1979) are sites which have been selected by a set of non-statutory criteria to be of national importance. These consist of rarity, documentation, group value, survival/condition, fragility/vulnerability, diversity and potential. Where scheduled sites are affected by development proposals there is a presumption in favour of their physical preservation. Any works, other than activities receiving class consent under The Ancient Monuments (Class Consents) Order 1981, as amended by The Ancient Monuments (Class Consents) Order 1984, which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up a Scheduled Monument, will require consent from the Secretary of State for the Department of Culture, Media and Sport.

4.1.2 Heritage Assets, the National Planning Policy Statement of March 2010, supersedes Planning Policy Guidance note 16 and 15 on archaeology and Listed Buildings. Particularly relevant policies include those of general heritage assets, HE 6, 7 and 8.

POLICY HE 6: INFORMATION REQUIREMENTS FOR APPLICATIONS FOR CONSENT AFFECTING HERITAGE ASSETS

HE 6.1 Local planning authorities should require an applicant to provide a description of the significance of the heritage assets affected and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage asset and no more than is sufficient to understand the potential impact of the proposal on the significance of the heritage asset. As a minimum the relevant historic environment record should be consulted and the heritage assets themselves should have been assessed using appropriate expertise where necessary given the application's impact. Where an application site includes, or is considered to have the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where desk-based research is insufficient to properly assess the interest, a field evaluation.

HE 6.2 This information together with an assessment of the impact of the proposal should be set out in the application (within the design and access statement when this is required) as part of the explanation of the design concept. It should detail the sources that have been considered and the expertise that has been consulted.

HE 6.3 Local planning authorities should not validate applications where the extent of the impact of the proposal on the significance of any heritage assets affected cannot adequately be understood from the application and supporting documentation.

4.1.3 Policy HE 7: POLICY PRINCIPLES GUIDING THE DETERMINATION OF APPLICATIONS FOR CONSENT RELATING TO ALL HERITAGE ASSETS.

HE 7.1, In decision-making local planning authorities should seek to identify and assess the particular significance of any element of the historic environment that may be affected by the relevant proposal (including by development affecting the setting of a heritage asset) taking account of:

(i) evidence provided with the application
(ii) any designation records
(iii) the historic environment record and similar sources of information
(iv) the outcome of the usual consultations with interested parties; and
(v) where appropriate and when the need to understand the significance of the heritage asset demands it, expert advice (from in-house experts, experts available through agreement with other authorities, or consultants, and complemented as appropriate by advice from heritage amenity societies).

HE 7.4 Local Planning authorities should take into account:

- the desirability of sustaining and enhancing the significance of heritage assets, and of utilising their positive role in place-shaping; and
- the positive contribution that conservation of the heritage assets and the historic environment generally can make to the establishment and maintenance of sustainable communities and economic vitality by virtue of the factors set out on in.

HE 7.5 Local Environment Policies should take into account the desirability of new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials and use.

4.1.4 POLICY HE 8: ADDITIONAL POLICY PRINCIPLE GUIDING THE CONSIDERATION OF APPLICANTS FOR CONSENT RELATING TO HERITAGE ASSETS THAT ARE NOT COVERED BY POLICY HE 9

HE 8.1, the effect of an application on the significance of such a heritage asset or its setting is a material consideration in determining the application. When identifying such heritage assets during the planning process, a local planning authority should be clear that the asset meets the heritage assets criteria set out in Annex 2. Where a development proposal is subject to detailed pre-application discussions (including where appropriate, archaeological evaluation (see HE 6.1)) with the local planning authority, there is a general presumption that identification of any previously unidentified heritage assets will take place during this pre- application stage. Otherwise the local planning authority should assist applicants in identifying such assets at the earliest opportunity.

4.1.5 POLICY HE 9: ADDITIONAL POLICY PRINCIPLES GUIDING THE CONSIDERATION OF APPLICATIONS FOR CONSENT RELATING TO DESIGNATED HERITAGE ASSETS

HE 9.1, there should be a presumption in favour of the conservation of designated heritage assets and the more significant the designated heritage asset, the greater the presumption in favour of its conservation should be. Once lost, heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. Loss affecting any designated heritage asset should require clear and convincing justification. Substantial harm to or loss of designated heritage assets of the highest significance, including scheduled monuments, protected wreck sites, battlefields, grade 1 and II, Listed Buildings and grade 1 and II* registered parks and gardens, World Heritage Sites, should be wholly exceptional.

4.1.6 *Hedgerows*

Hedgerows of historic importance are afforded protection under The Hedgerow Regulations 1997, section 97 of the Environment Act 1995. The scheme came into effect on 1 June 1997 and any hedgerow which is defined at that date as being of historical or ecological importance, may require consent from the local planning authority prior to removal.

5 METHODOLOGY

5.1 Desk-Based Assessment

5.1.1 This has placed the site within its study area and within its historic context, through a selection of historic maps and information from primary and secondary sources.

5.1.2 This report is based on the following information:

- A visual inspection of the site;
- Trade and Business Directories;
- Place name evidence;
- Plans and maps of the site and its environs, including historical, pictorial and surveyed maps and including pre- and post-war Ordnance Surveys up to the present day;
- Appropriate archaeological and historical journals and books;
- LCAS HER for sites and monuments within a 1km study area around the PDA (**Figures 3-4**);
- Listed Building/Conservation Area records.

5.1.3 The information was obtained from the following sources:

- English Heritage; for Scheduled Monuments, Listed Buildings (internet source 1) and aerial photography;
- LCAS HER for archaeological sites and interventions within the study area;
- Bolton Local Studies Library;
- Lancashire Records Office (Preston);
- Published and unpublished documentary sources (inc. internet sources 2-4).

5.1.4 *English Heritage*
English Heritage was consulted through the magic.gov website (Internet Source 1) for Scheduled Monuments together with listings for Listed Parks and Gardens and Historic Battlefields. No statutory sites are listed within the study area.

5.1.5 *Lancashire's Historic Environment Record (LHER)*
The LHER is a database made up of information assembled from the records of archaeological excavations, early map evidence, aerial photography, local knowledge and, more recently, historic landscape characterisation. This database is being continually updated, and the information for this study, namely all records relating to the sites contained within the study area and PDA, was consulted in August 2012. This produced 21 records **[1-21]** for the study area with three of these sites **[1, 19 & 22]** within the PDA. This information forms the basis of a site gazetteer (Appendix 1: **Figures 3-4**) of the known heritage assets. A summary of this information can be seen in Table 1 (below).

5.1.7 *Published and Documentary Sources*
This report has used a number of primary and secondary sources in order to provide archaeological and historical context, including place and street name evidence. CS Archaeology has also consulted sources available on the internet, such as the Government's Magic website, for statutory designations and the Access to Archives website for non statutory sites and background. Examination of cartographic sources added a further two heritage assets: leats and reservoirs and Spring side House [22 & 23] to the gazetteer (**Figures 3-4**).

5.1.8 *Previous Archaeological Work*.
In 1999, Lancaster University Archaeological Unit assessed the Longworth Clough Nature Reserve. The assessment established two principal landscapes. An agricultural one centred on the former Longworth Hall **[5**], which was demolished sometime after 1908, and an industrial landscape at Longworth mill (just outside the study area). The mill was powered via a water wheel which was fed by a mill leat and weir **[15] (Plate 1)**, from the Eagley or Belmont Brook.

5.2 Gazetteer of Sites

5.2.1 All of the sites within the study area have been collated into a gazetteer (Appendix 1: for a summary see table 1 below). The gazetteer provides full details of all the sites, together with National Grid References and the source for the collated information.

5.2.2 A total of 24 sites of archaeological significance have been identified within the study area (**Figure 2**) and two of these **[1& 19]** lie within the PDA. Designated heritage assets are fully bolded.

Table 1: Heritage Assets within the study area

Site No.	LHER No.	Name/Description	Period	Status
1	PRN7789	Springside Mill (Belmont Mill), Longworth Clough, Turton	Post Medieval	Non-statutory
2	PRN7792	Belmont Reservoir (Springside Reservoir)	Post Medieval	Non-statutory
3	PRN9647	Well	Post Medieval	Non-statutory
4	PRN9648	Weir – waste	Post Medieval	Non-statutory
5	PRN10466	Longworth Hall (Site of)	Medieval	Non-statutory
6	PRN10468	Mill Leat	Post Medieval	Non-statutory
7	PRN10473	Field Boundary (bank and ditch)	Post Medieval	Non-statutory
8	PRN10476	Field Boundary (earthwork)	Post Medieval	Non-statutory
9	PRN10477	Field Boundary (earthwork)	Post Medieval	Non-statutory
10	PRN10478	Field Boundary (earthwork)	Post Medieval	Non-statutory
11	PRN10480	Field Boundary (earthwork)	Post Medieval	Non-statutory
12	PRN10481	Field System (Ridge and Furrow)	Post Medieval	Non-statutory
13	PRN 10482	Trackway	Post Medieval	Non-statutory
14	PRN10483	Trough	Post Medieval	Non-statutory
15	PRN10485	Weir	Post Medieval	Non-statutory
16	**PRN10739**	**Farmhouse (Cruck farmed)**	**Post Medieval**	**Statutory**
17	**PRN10740**	**Farmhouse (1704)**	**Post Medieval**	**Statutory**

18	**PRN10751**	**Water Works Cottage (1824)**	**Post Medieval**	**Statutory**
19	PRN26392	Mausoleum	Post medieval	Non-statutory
20	PRN 30759	Plaque	Post medieval	Non-statutory
21	PRN37145	Barn (site of)	Post Medieval	Non-statutory
22a-c	**-**	Mill Reservoirs and leats	Post Medieval	Non-statutory
23	**-**	Spring Side House? (Site of)	Post Medieval	Non-statutory
24	PRN7792	Paper Mills Cottages	Post Medieval	Non-statutory

6 GEOLOGY AND TOPOGRAPHY

6.1 Introduction

6.1.1 Geological formations, natural topography and flora and fauna have always influenced the pattern of human settlement. These factors can never be assumed to be constant and therefore to have had a predictable influence at all times in the past. The influence of these factors on land use is a major element in determining the nature of the archaeological deposits (stratification) that have accumulated across archaeological sites.

6.2 Geology

6.2.1 The underlying geology of the study area consists of Lower Carboniferous Coal Measures intermixed with course sandstone (millstone grit). Drift Geology consists of Glacial Boulder Clay.

6.3 Topography and Drainage

6.3.1 Spring Side, Belmont is situated on the northeast facing side of Longworth Clough and the Eagley Brook (Belmont Brook) between the 265-230m AoD contour lines. Drainage across the PDA flows northeast. The natural water courses have been modified by the introduction of leats and reservoirs [22] which have acted as a catchwater.

7 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

7.1 Introduction

7.1.1 No previous archaeological work is known to have taken place within the PDA, and therefore the potential significance of the PDA has never previously been fully realised. The western half of the study area has been the subject of an

archaeological assessment (Newman & Scurfield 1999). Sites within the study area are denoted in the text by a number sequence within square brackets [1-24].

7.1.2 No early archaeological/ historical sites within the study area have so far been revealed. The first evidence of activity in the study area comes during the medieval period.

7.2 The Medieval period (AD 1066 - 1530)

7.2.1 During the early Medieval period the Belmont lay within the manor of Sharples and in AD 1292 was called *Scharlples*. In 1315-16 Roger de Sharples granted to Sir William de Holland his manor of Sharples and all his land there, together with his goods in the manor (house?) and his share of the waste (moorland/commons). Sharples was assessed as four oxgangs of land and was held of Robert Grelley by Roger de Samlesbury and Alexander de Harwood with and paid 3 shillings rent. The study area is believed to have lain within an area referred to as the '*Folds'* a subdivision of Lower Sharples. The Folds consisted of 4,000 acres (1618 Ha) which in 1437 was occupied Richard son of Thurstan de Holland and in 1473 by the heir of Henry de Radcliffe. During the 15th century the manor is recorded to have been occupied by Richard and Robert Sharples and Richard Holland of Denton with the Earl of Witton reputed to be lord of the manor. Local families adopted the name Sharples (Farrer and Brownbill 1907, 260).

7.2.2 There is one probable medieval site within the study area, Longworth Hall [5], seat of the Longworth family. The hall is no longer extant and was demolished during construction of the Deplh Reservoir between 1908 and 1921 (LHER 2012). The manor was owned by the Lords of Manchester.

7.3 The Post-Medieval period (AD 1530-1900)

7.3.1 This period incorporates the majority of sites from the study area [1-4, 6-24]. There are 12 agricultural related sites. These sites include extant and non-extant field boundaries [7-12], the site of a barn [21], a sandstone trough, well [3], and trackway [14 & 13], and an area of ridge and furrow [12], which evidences arable agriculture. Settlement is represented by Hampson's and Lower Fold's farmhouses [16, 17], both designated heritage assets. There are 11 Industrial sites [1-2, 4, 6, 18-20, 22-24], the earliest of these, Longworth mill's weir [15] and leat [6], date to perhaps the 17th century, the medieval leat is believed to have been constructed further down stream. In the 1820s the Belmont Reservoir [2], plaque [20], weir [4], and cottages [18] were constructed to supply Bolton's drinking water. Then, during the 1830s, Livesey's Springside Paper Mill [1], together with leats and reservoirs [22], Springside House [23], and cottages [24] were built. A Mausoleum [19] in proximity to the site of Springside House is also listed in the LHER.

7.3.2 In 1723 Lord Fauconberg sold the manor of Sharples. By 1796 it is recorded in land tax returns that Right, Lord Grey de Wilton and Lawson were the chief landowners. The Wright estate was during the 19th century, bought by the Bolton Water Corporation for waterwork purposes (Farrer and Brownbill 1907, 262).

7.3.3 Travelling in the area Daniel Defoe notes that there was nothing remarkable in the town of Bolton, but noticed that the cotton manufacture had reached it (Farrer and Brownbill 1907, 235).

7.3.4 From the late 18th century Bolton was transformed by the industrial revolution. It grew very rapidly. Samuel Crompton, a native of Bolton invented the spinning mule in 1779 and opened his first cotton mill in 1780. The cotton industry then grew at a tremendous rate and came to dominate Bolton.

7.3.5 In 1773 the population of Bolton was 5,339. It then began to grow rapidly. It reached 17,416 in 1801 and rose to 168,000 in 1851 creating a focal point for goods and services with its hinterland initially drawing water power from the western Pennines.

7.3.6 Road communications in this part of Lancashire had been substandard with poorly maintained roads preventing industrial scale expansion. It wasn't until the construction of the Manchester, Bolton and Bury canal in 1795 (Hampson n.d.), that mill owners had efficient transportation of raw materials and finished products to national and international markets. The first railway from Bolton to Leigh opened in 1828, and then to Manchester in 1838, Preston in 1843 and to Blackburn in 1848.

7.3.7 Cotton continued to flourish in 19th century Bolton. Other important industries in Bolton were papermaking and bleaching. Coal mining started in the Bolton area in the Middle Ages but it boomed in the 19th century when many new pits opened. There were also iron foundries in Bolton.

7.3.8 The origins of the Springside Mill can be found in the industrial aspirations of two of Bolton's entrepreneurs: John Livesey and John Magnall. John Magnall had developed cotton manufacture and in 1820s the Bolton Water Works. He had then gone into partnership with John Livesey in developing the Springfield Mill Paper Works at Haulgh. The partnership ended in court action in May 1834 when John Magnall became sole proprietor of the Springfield Mill. The inventory from the Springfield, is interesting in terms of the scale of investment needed, it included: steam engines, rag and other engines, paper and other machines, calendars, presses, gearing and all other machines, machinery, wheels and implements needed to manufacture paper on an extensive sale. The scale and value of this machinery was considerable and emphasises the investment required to establish a paper works from scratch. John Livesey moved to Belmont to establish Spring Side Mill on a 'green field' site, built on a series of enclosures or folds also in 1834 (Lyddon & Marshall 1975, 146), as a purpose built paper making mill.

7.3.9 Unfortunately Livesey's venture last barely a year because in 1839 the mill was re-opened by Robert Orell, and until very recently, the mill was under the management of Charles Turner & Co. Ltd. Trade and business directories confirm that Springside mill was under Charles Turner & Co. ownership from 1853 (Bolton Directory). In 1861 the firm is also credited with office at 41 Portland Street, Manchester.

7.3.10 In 1843 Thomas Wright, Robert Orrell, Charles Turner and George and James Slater petitioned the House of Commons for a bill to enlarge the Belmont reservoir, this was presumably to secure an improved water supply to the Springside Mill [1].

7.3.11 Relative scale of the paper making business in Bolton can be attested by the scale of the operations. Springfield Mill had 18 beating engines, second only to Farnworth with 34, and Springside Mill had 8 beating engines (Lyddon & Marshall 1975, 147). Clearly the Springside Mill was at the lower end of production.

7.3.12 Information from the census returns of 1841 and 1861 offer further insights into the occupations of people living and working at Springside Paper Mill. The 1841 census

lists 10 'Paper Makers' a 'Castor and a 'Fireman' (Mr J Holt). Charles Turner, the presumed owner of the mill is plainly listed as a 'paper maker' with no dependants. Also paper related occupations are listed in the surrounding area. For example at High Houses *'Hookes, an Engineer, a Bleacher, a Watersmith, a Millwright, a Finisher,* and *a Bleachers Clerk'* are noted. This emphasies the supporting economy that was provided by the Springside Paper Mill. The 1861 census lists Charles Turner (aged 67) as a *'Paper Manufacturer and Employer of Hands'* a more apt description but still no dependants are listed. Eleven houses are listed for the Paper Works consisting of 22 men and 27 women. Also in the 1861 census occupations are noted in more detail. The men have occupations *'Retired Paper Makers, a Shoddy Dresser to Mill, a Stoker at the Print Works'* (probably unrelated), an *'Engine Driver Paper Mill'* (Mr J Holt), and Paper '*Sorters, Cutters, Finishers, Layers'*, Rag '*Pickers, Grinders and Washers'*.

7.3.13 Ownership of the mill [1] is confirmed from a lease that states that Thomas Edward Lawence of Bourton House, Moreton in the Marsh, Gloucestershire, leased: the land, the paper mill and ten cottages, to WH Clemson and R Orell Spencer both of Belmont (Lease 1897).

7.3.14 In September 1911 disaster struck the mill in the form of fire which destroyed the *'Rag House and Engine House'*. These buildings would probably have been located close to the chimney. The chimney is depicted on the Ordnance Survey Map of 1908-9 (**Figure 6**). There is no direct narrative of the fire but it must have had a devasting affect on the business because it targeted the power generating centre of the mill complex. Notes on the rebuilding (BLSL. Ref. BGH/285/D) indicate that the cost for putting out the fire alone was £44/75 in wood, nails and men's time. JC & F Woods of Bolton submitted a tender for six queen post roof principals (trusses) with the necessary stanchions, walling, gutters and flashings, purlins, ridge spars, patent glazing and slating complete, to be *'fixed into position so that the roof can be stripped during the forthcoming Bolton June holidays'* for the sum of £365/10/0. The full refurbishment costs were higher with what was termed Risk No. 2-6 £1,964/4/9, Risk No. 7 (Engine House) £146/6/5 and Risk No. 8 £423/15/6. NB no plan was available w.r. to Risk Nos. Business must have soon picked up, probably aided by the war, because from 1919 tenders for the extension and repair of the mill have been retained and include:

- a new paper storage building c. 1919.
- fireproof steel sliding doors (c. 1925) in order to minimise additional fire insurances;
- extension to the lower machine house in 1933 (£1822/8/0) and Beater House (£277/5/6); in a further tender document the works to he Beater House involve *removing defective roof from Old Wheel Chamber';*
- tender in 1933 for the insertion of a girdered floor to the 'Old Wheel Chamber' and the 2'8" x 5" girders might be fixed in the position of the old arch (a tantalising reference to a possible fly wheel housing to the engine or a the mill leat tunnel);
- repair to the chimney c. 1928[1];
- erection of two new closets (toilets), c. 1934.

7.4 History of Paper Making in the Bolton Area

[1]*Shown working on an aerial photograph from 1927 (AFL/60437/EPW).*

7.4.1 The paper making industry only developed during the 19th century when the quality of paper increased and became more cheaply available. Paper had, during the 18th century, been mainly manufactured from rags a coarse, brown paper used increasingly for wrapping. A few mills made paper for newspaper, or book printing, then a growth area due to an upsurge in literacy. In the 19th century, technological developments revolutionised the paper-making process, and mills became larger and fewer (Hatcher 1985).

7.4.2 There were two major developments at about the middle of the eighteenth century in the paper industry in the UK. The first was the introduction of the rag-engine or *hollander*, invented in Holland sometime before 1670, which replaced the stamping mills which had previously been used for the disintegration of the rags and beating of the pulp. The second was in the design and construction of the mould used for forming the sheet. Early moulds had straight wires sewn down on to the wooden foundation, this produced an irregular surface showing the characteristic *laid* marks, and, when printed on, the ink did not give clear, sharp lines. Baskerville, a Birmingham printer, wanted a smoother paper. James Whatman the Elder developed a woven wire fabric, thus leading to his production of the first *wove* paper in 1757(Internet Source 5).

7.4.3 Increasing demands for more paper during the late eighteenth and early nineteenth centuries led to shortages of the rags needed to produce the paper. Part of the problem was that no satisfactory method of bleaching pulp had yet been devised, and so only white rags could be used to produce white paper. Chlorine bleaching was being used by the end of the eighteenth century, but excessive use produced papers that were of poor quality and deteriorated quickly. By 1800 up to 24 million lb of rags were being used annually, to produce 10,000 tons of paper in England and Wales, and the home market was supplemented by imports, mainly from the continent. Experiments in using other materials, such as sawdust, rye straw, cabbage stumps and spruce wood had been conducted in 1765 by Jacob Christian SchÃffer. Similarly, Matthias Koops carried out many experiments on straw and other materials at the Neckinger Mill, Bermondsey around 1800, but it was not until the middle of the nineteenth century that pulp produced using straw or wood was utilised in the production of paper.

7.4.4 By 1800 there were 430 (564 in 1821) papermills in England and Wales (mostly single vat mill) but all the production was by hand and the output was low. The first attempt at a paper machine to mechanise the process was patented in 1799 by Frenchman Nicholas Louis Robert, but it was not a success. However, the drawings were brought to England by John Gamble in 1801 and passed on to the brothers Henry and Sealy Fourdrinier, who financed the engineer Bryan Donkin to build the machine. The first successful machine was installed at Frogmore, Hertfordshire, in 1803. The paper was pressed onto an endless wire cloth, transferred to a continuous felt blanket and pressed again, it would have been cut off the reel into sheets and loft dried in the same way as hand made paper. In 1809 John Dickinson patented a machine that used a wire cloth covered cylinder revolving in a pulp suspension, the water being removed through the centre of the cylinder and the layer of pulp removed from the surface by a felt covered roller (later replaced by a continuous felt passing round a roller). This machine was the forerunner of the present day *cylinder mould* or *vat* machine, used mainly for the production of boards. Both these machines produced paper as a wet sheet which required drying after removal from the machine, but in 1821 Thomas B Crompton patented a method of drying the paper continuously, using a woven fabric to hold the sheet against steam heated drying cylinders. After it had

been pressed, the paper was cut into sheets by a cutter fixed at the end of the last cylinder (Internet Source 5). Crompton came from a line of paper makers, in 1674 a Compton held the Darley Mill, which was south of Bolton. Throughout the 18th century Cromptons worked the mill and in 1807 the mill passed to John and Thomas B Crompton (Ashmore 1982, 95). It was the Crompton innovation which led to the growth of paper making in the Irwell valley around Bolton, in the 19th century.

7.4.5 By the middle of the nineteenth century the pattern for the mechanised production of paper had been set. Subsequent developments concentrated on increasing the size and production of the machines. Similarly, developments in alternative pulps to rags, mainly wood and esparto grass, enabled production increases. Conversely, despite the increase in paper production, there was a decrease, by 1884, in the number of paper mills in England and Wales to 250, production being concentrated into fewer, larger units. Geographical changes also took place as many of the early mills were small and had been situated in rural areas. The change was to larger mills in, or near, urban areas closer to suppliers of the raw materials (esparto mills were generally situated near a port as the raw material was brought in by ship) and the paper markets (Internet Source 5).

7.4.6 The basic production of paper at Springside would have involved the rag-house where women and children sorted and cut up the linen rags. The rags were then beaten to a fibrous pulp with water in a primitive water-powered stamping machine. This aqueous suspension, or stuff, was then transferred to the vat-house where it was poured into a large wooden, circular vat and brought to the desired consistency with water. Into this the vatman dipped his mould and deckle and retrieved a uniform film of fibres on the mesh of the mould, giving it at the same time a shake, in which he took great pride, to ensure a maximum degree of uniformity. The vatman's assistant, the coucherman, now removed the deckle and transferred the sheet from the mould by pressing it face downwards on a felt. This process was repeated until a pile of sheets and felts, a sort of paper sandwich had been produced. When enough had been stacked in this way the pile was taken to a hand-operated press and as much water as possible squeezed out of it. The sheets were then peeled off the felts, one at a time, by the partner and taken by the dryerman who hung them to dry in the drying loft. The vatman was a highly skilled journeyman and served a seven year apprenticeship. It was not until the 1880s wood pulp was used (Hampson, n.d, 14).

8 MAP REGRESSION ANALYSIS OF THE PDA

8.1 The earliest detailed depiction of Springside Paper Mill dates to 1849 (**Figure 5**) when it is referred to as the 'Belmont Paper Mills'. NB no tithe map for this area was ever made. Still evident in the 1854 map is the pre-industrial landscape of woodland and large enclosures. Southwest of the mill is the Belmont (Springs) reservoir [2] which had been built to supply Bolton with drinking water. The subsequent Dingle reservoir had not been excavated. Along the northern edge of the Belmont Reservoir is a linear boundary (wall?) which delineates it.

8.2 By 1854 the configuration of the mill had been established. There were three mill buildings; the main northwest to southeast aligned mill, building [1A] and two detached buildings, an 'L' plan shaped building [1B] to the northeast and northwest of building [1A] a rectangular plan, building [1C]. The function of these detached buildings is unknown. Building [1C] may have been a detached engine house, but the date of transition from water to steam at Springside is at the moment unknown, but must have been relatively late 19th century, when finally a more reliable power supply could be devised. The main building (Building 1A) was supplied with water by a mill leat with controlling 'sluice' and would have contained the power transmission gears and drives to the Beating House probably on the lower floor. This mill leat [22b] can be traced bisecting Shaw Brook, to a small reservoir [22a] and is also linked to further reservoirs [22c] southeast of the main mill building. The leat not only acted as a conduit from the reservoirs but presumably acted as a catch-water for all the northeastern drainage flows off Hampson's Pasture. This elaborate water supply system, was designed to capitalise on the available water supply which was limited after the construction of the Belmont Reservoir. Immediately north of the mill is a mill stream which returns the water to the Eagley Brook further upstream than the nature water course which is still depicted. Northwest of the mill is a graduated series of ponds. These ponds were probably part of soaking or retting of rags. A fourth building simply referred to as 'Spring Side' [1D] is depicted southwest of the main mill higher up the valley side and would have overlooked the whole mill complex. Access to the mill is just visible as a trackway along the line of the current road.

8.3 By 1892 (**Figure 6**) the mill had expanded all round with both additional and amalgamated buildings (**Plates 3 & 7**), reservoirs with associated weir and sluice. There was a new processing building [1E], featuring an extended leat, east of the old mill buildings and a new east flowing mill stream (**Plates 4-5**). To the southeast of the main mill a 'T' shaped building G, had been constructed with buttresses along the northern end of the southeast elevation. Building 1G (**Plate 6**) had an access road along its southeast elevation; this formed a circuit with a new road coming up the valley floor through a 'ford' across the Eagley Brook. Towards the centre of the main mill building is a small rectangle, the site of the Chimney, Building 1H, since this is labeled chimney, '*Chy.*' in the 1908-9 map. A large rectangular building [1I] with good road access had been constructed just to the west of the main mill building immediately south of the mill leat [22]. Another 'new' building is an 'L' shaped range of buildings (building 23A), close to and northwest of Springside House [23]. Springside House [23] had been expanded and probably served as the mill owners/manager's accommodation. Building 23A was single storied garages/sheds and are photographed from the air, and were therefore still extant in 1988 (**Plate 2**), unlike the Spring Side House which had by that time been demolished.

8.4 The map of 1908-9 features further extensions and additions to the complex. A range of outbuildings associated with Spring Side House extends northwestwards towards a

glass house and detached probable pig-sties [23B]. A further southwest facing garden building [23C], possible site of the Masoleum [19], has been established though its function is unknown. Turning back to the industrial complex, building [1G] had been extended to the southeast [1K] and featured covered roadway, indicative of an, at least 2-storey building, and was built south of the reservoir and the processing building [1E]. There is also a further leat and terminal building [1L] which is associated with further reservoirs/tanks along the valley bottom.

8.5 By 1927 the terminal building [1L] has been demolished and building [1K] considerably expanded to the southeast, effectively removing the former roadway, but still features a staggered road way between the main mill and the annexe (Building 1G).

8.6 No further significant changes occurred until the 1963 Ordnance Survey map depicts a series of new buildings. A further shed [1M] is depicted, southeast of building [1G] and a an 'L' shaped building [1N] to the northwest of the main mill building with a scattering of circular and rectangular storage facilities [1O] immediately north of the main building. A 'Refuse Tip' is also evident and abutts the Eagley Brook.

8.7 As evidenced by the aerial photographs (e.g. Plate 2) the succession of mill buildings can still be discerned. These are characterised by gabled steel sheds with a scatter of older hipped slate roofs which probably date to the late 19th century expansion.

8.8 Post 1988 the number of these older Victorian buildings were demolished to facilitate room for a large steel shed across the footprint of a proportion of the original mill building [1A].

9 SIGNIFICANCE AND POTENTIAL

9.1 The archaeology of Springside Mill has evidently been affected by business success and changing processing and layout requirements. These changes have affected the PDA's archaeological resource namely the original 1830s mill. From desk-based sources the archaeological resource has been subject to a succession of truncation episodes. Because access inside the buildings is restricted on health and safety grounds (presence of asbestos) precisely how many and to what extent the original features survives is uncertain.

9.2 There is therefore limited survival potential for the survival of the original standing buildings c. 1849 (**Figures 7-8**). Later Victorian buildings do survive and will offer evidence for the changing role of paper production during the late 19th century.

9.3 There is a high below ground potential for industrial archaeology, and there is a high potential for information on the water supply and power generation. Also evidence in the form of ground floor plans and vats could be revealed.

10 RECOMMENDATIONS

10.1 Further work is recommended in order to inform the future management of the archaeological resource.

10.2 Once access to the buildings is obtained an assessment of the survival of standing buildings should be implemented. This will allow suitable mitigation measures to be recommended and implemented in consultation with Mr D Moir of the Lancashire Archaeology Service.

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12.2 Cartographic References

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1848-52 The Ordnance Survey map 6" to 1 mile (web site 2.)

1892 The Ordnance Survey 1st Ed, 25 inch, map 78, sheet 16

1908-9 The Ordnance Survey 2nd Ed, 25 inch, map 78, sheet 16

1927 The Ordnance Survey 3rd Ed, 25 inch map 78, sheet 16

1963 The Ordnance Survey map, 25 inch map 78, sheet 16

2012 The Ordnance Survey, digital map

12.1 Aerial Photographs (verticals and obliques)

Sortie	Frame No.	Date	Plate
Verticals			
RAF/3G/TUD/UK/187	5305	09 MAY 1946	
RAF/3G/TUD/UK/187	5306	09 MAY 1946	
RAF/3G/TUD/UK/187	3079	09 MAY 1946	
RAF/3G/TUD/UK/187	3080	09 MAY 1946	
RAF/CPE/UK/2496	450	11 MAR 1948	
RAF/CPE/UK/2496	451	11 MAR 1948	
RAF/540/1673	449	12 JUL 1955	
RAF/540/1673	450	12 JUL 1955	
RAF/540/1673	41	12 JUL 1955	
RAF/540/1673	42	12 JUL 1955	
RAF/540/1681	76	14 JUL 1955	
RAF/540/1681	77	14 JUL 1955	
RAF/58/6102	61	20 DEC 1963	
RAF/58/6102	62	20 DEC 1963	
RAF/543/2750	61	11 MAR 1964	
RAF/543/2750	62	11 MAR 1964	
RAF/543/2750	5027	11 MAR 1964	
RAF/543/2750	5028	11 MAR 1964	
RAF/3G/TUD/UK/186	258	09 MAY 1946	
RAF/3G/TUD/UK/186	259	09 MAY 1946	
OS/92311	260	16 MAY 1992	
OS/92311	565	16 MAY 1992	
OS/92311	566	16 MAY 1992	
OS/92310B	3	16 MAY 1992	
OS/92310B	4	16 MAY 1992	
OS/90131	5	31 MAY 1990	
OS/90131	6	31 MAY 1990	
OS/90131	15	31 MAY 1990	
OS/90131	16	31 MAY 1990	
OS/99982	5305	19 DEC 1999	
OS/99982	5306	19 DEC 1999	
AFL 60437	3079	SEP 1927	
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AFL 60437	450	SEP 1927	
AFL 60437	451	SEP 1927	
NMR 4129	449	24 JUN 1988	
NMR 4129	450	24 JUN 1988	
NMR 4129	41	24 JUN 1988	
NMR 4129	42	24 JUN 1988	
NMR 4129	76	24 JUN 1988	
AFL 60437	77	SEP 1927	
AFL 60437	61	SEP 1927	
Oblique			
CLU 3393	/ 19	MAR 1987	
CLU 3393	/ 21	MAR 1987	
CLU 3393	/ 22	MAR 1987	
AFL 60437	/ EPW019359	SEP 1927	
AFL 60437	/ EPW019360	SEP 1927	
AFL 60437	/ EPW019361	SEP 1927	
AFL 60437	/ EPW019362	SEP 1927	
NMR 4129	/ 02	24 JUN 1988	**2**
NMR 4129	/ 03	24 JUN 1988	
NMR 4129	/ 04	24 JUN 1988	
NMR 4129	/ 05	24 JUN 1988	
NMR 4129	/ 06	24 JUN 1988	
AFL 60437	/ EPW019355	SEP 1927	
AFL 60437	/ EPW019357	SEP 1927	

12.4 Internet Sources

1. http://www.magic.gov.uk
2. http;//www.old-maps.co.uk
3. http://www. wigan.gov.uk
4. http://www.nationalarchives.gov.uk/a2a
5. http://baph.org.uk/oxfordpapers.html (British Associations of Paper Historians)

13 ACKNOWLEDGEMENTS

The author would like to thank Mr Walker of Urban Springside Limited for commissioning this report and to Mr T Dean (Dainswell) for facilitating and accessing the site. Thanks also to Mr K Davies (LCAS) for providing the background data and to Mr D Moir (LCAS) for his advice on mitigation measures.

PLATES

Plate 1: the curved Longworth Mill weir [5] represented by large ashlared sandstone blocks, looking northeast

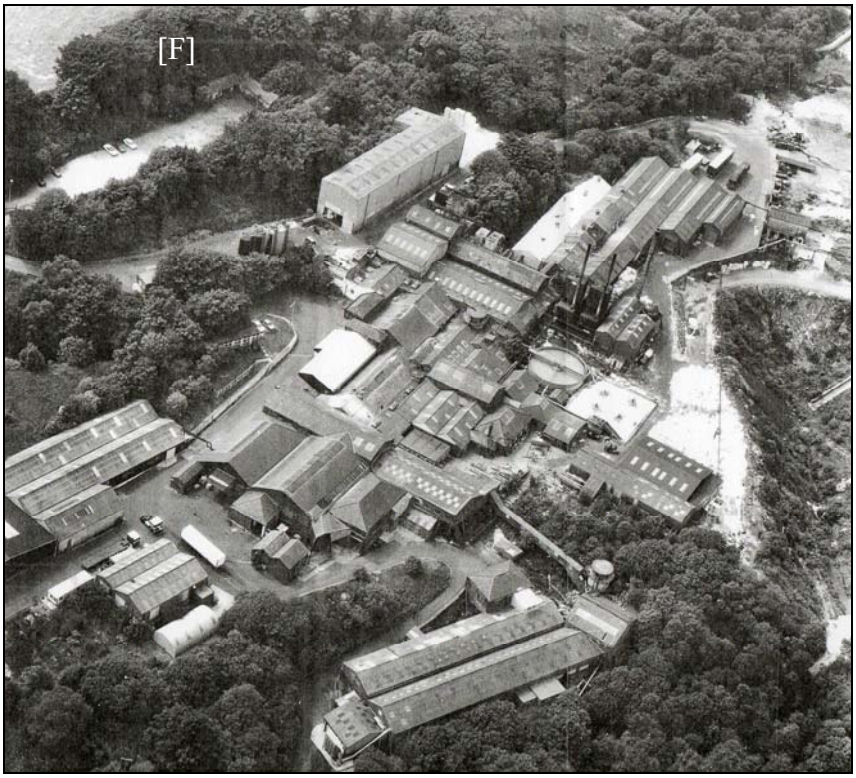

Plate 2: aerial view of the works c. 1988, from the east

Plate 3: view of the late Victorian administration buildings, c. 2012, from the southwest

Plate 4: view of building 1E with its arched mill stream, from the north

Plate 5: view of arched mill stream [1E], from the north

Plate 6: view of building [1G], from the northeast

Plate 7: view across the modern asbestos sheeted roofs of the main mill building, from the southwest

FIGURES

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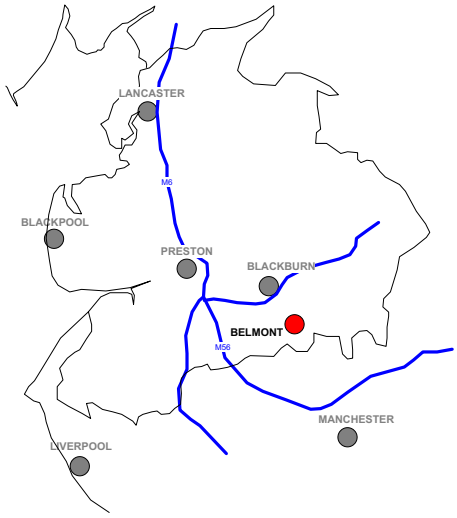
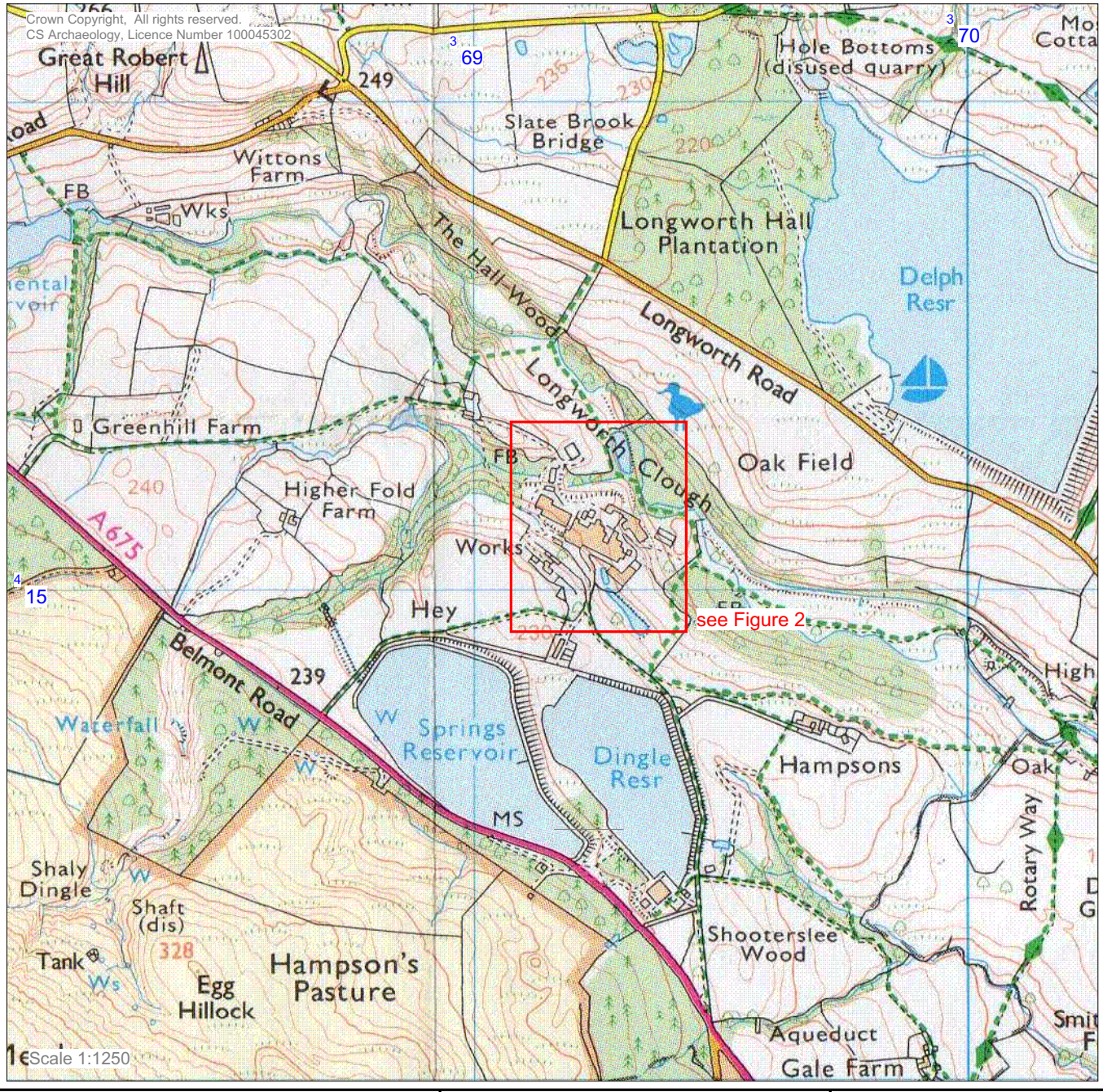
LANCASHIRE

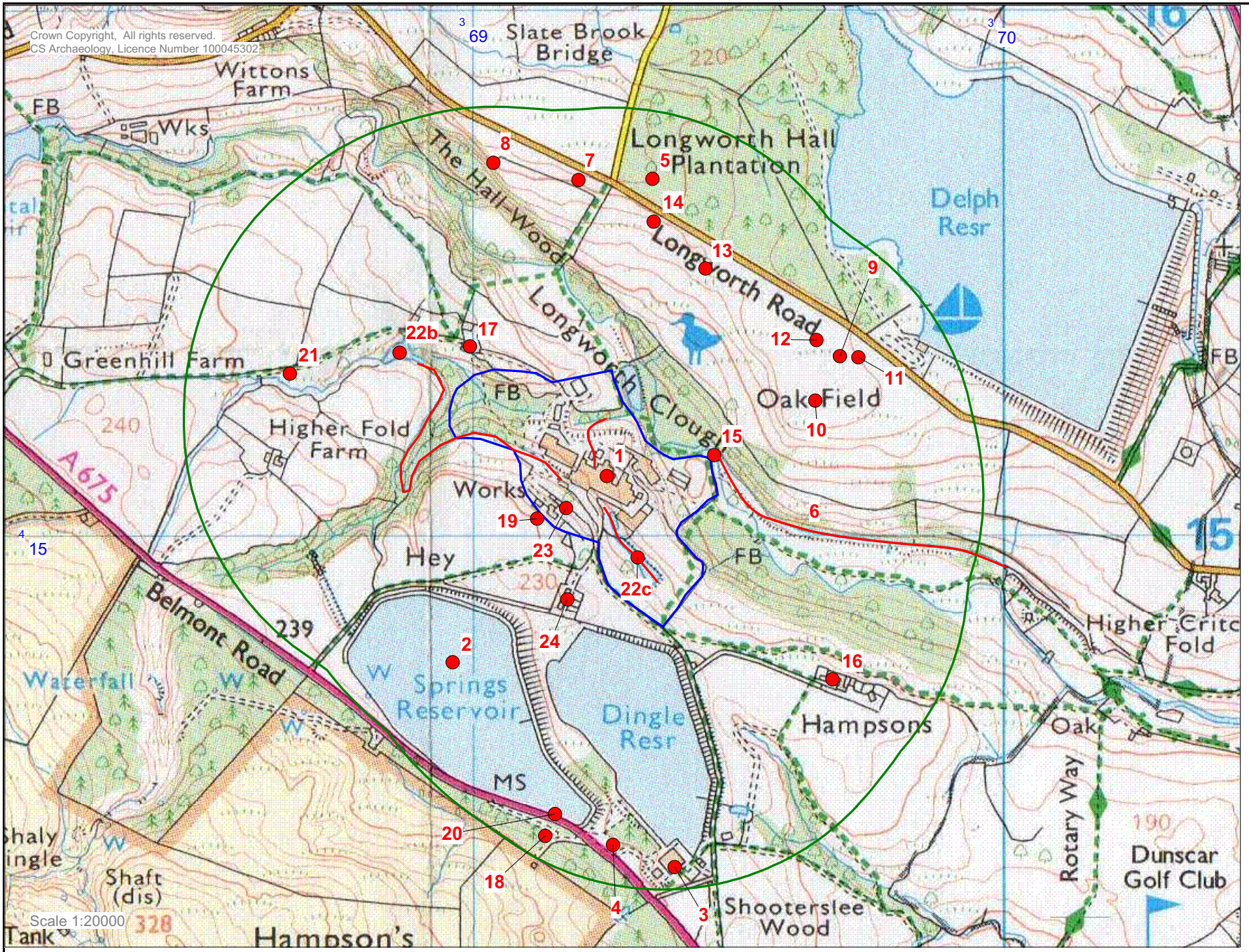




Spring Side Paper Works, Belmont, Bolton, Lancashire: A Desk-based Assessment	Figure 1: Location Map	CS Archaeology September 2012

Scale 1:2500

Spring Side Paper Works, Belmont, Bolton, Lancashire: A Desk-based Assessment	Figure 2: The Central Proposed Development Area (PDA)	CS Archaeology September 2012



Spring Side Paper Works, Belmont, Bolton, Lancashire: A Desk-based Assessment

- Heritage Assets
- Designated Heritage Assets
- The Study Area
- The Proposed Development Area

Figure 3: The Study Area with Heritage Assets

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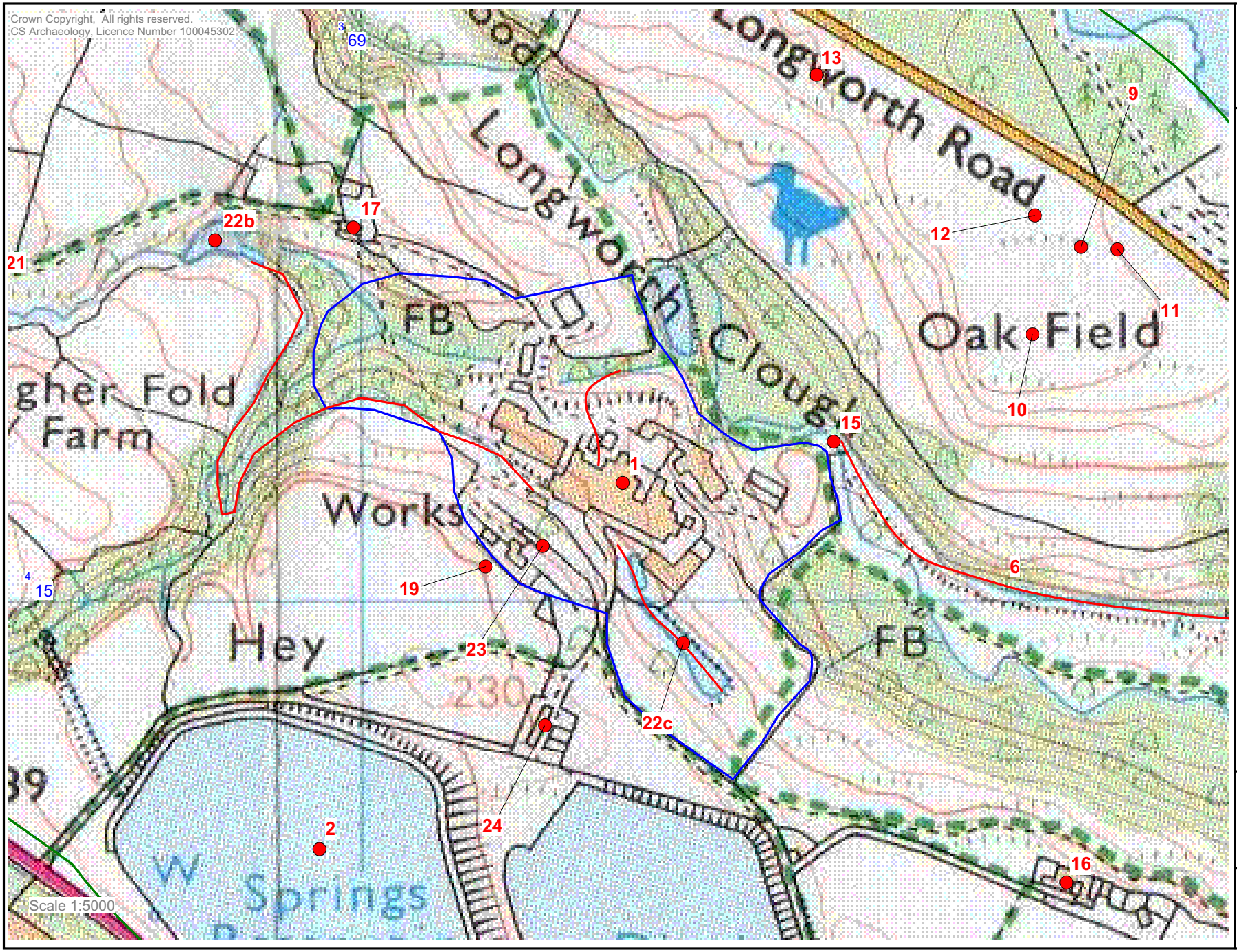

Spring Side Paper Works, Belmont, Bolton, Lancashire: A Desk-based Assessment

Heritage Assets

Designated Heritage Assets

The Study Area

The Proposed Development Area

Figure 4: The PDA with Heritage Assets

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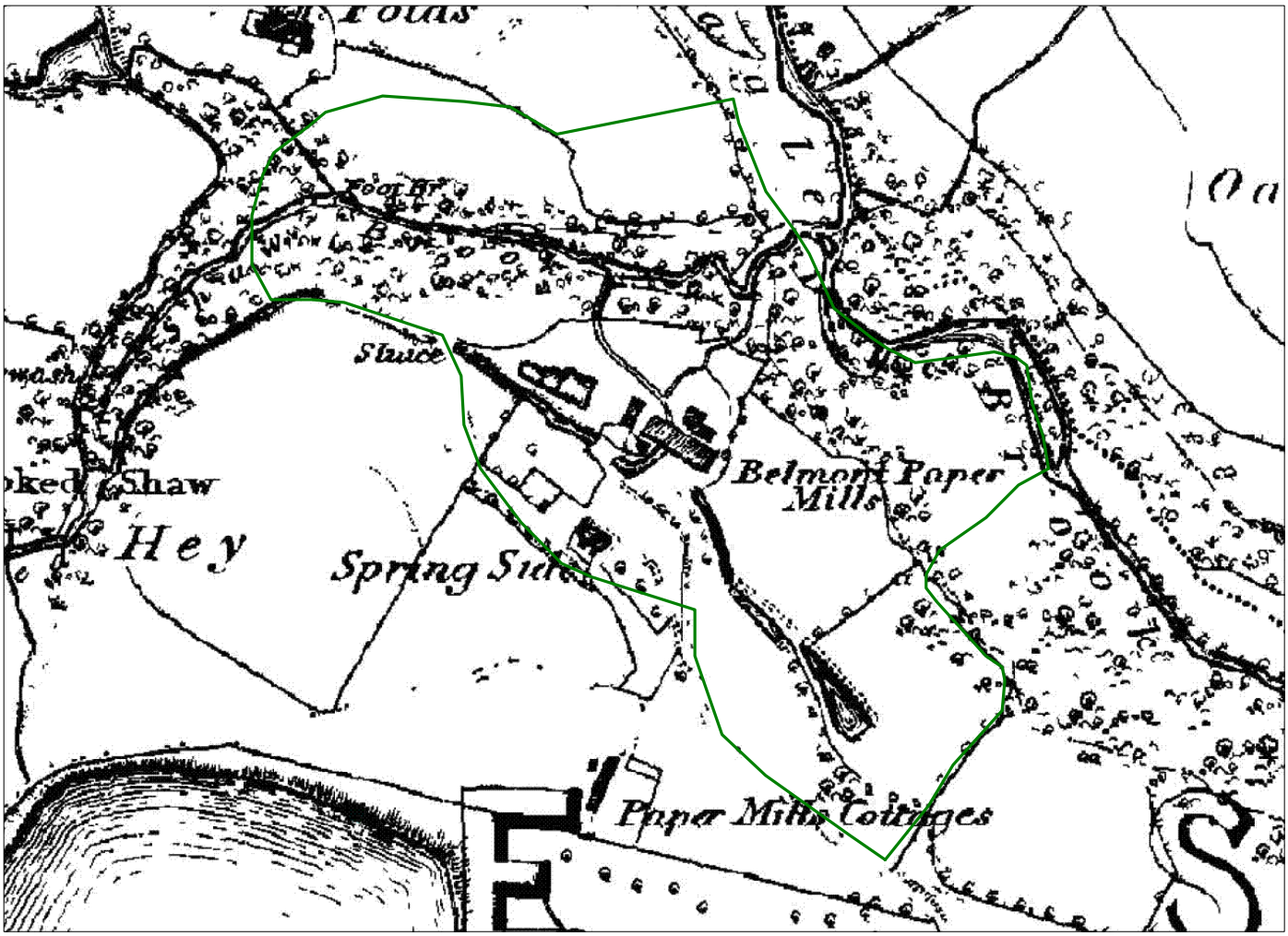
1786 Yates

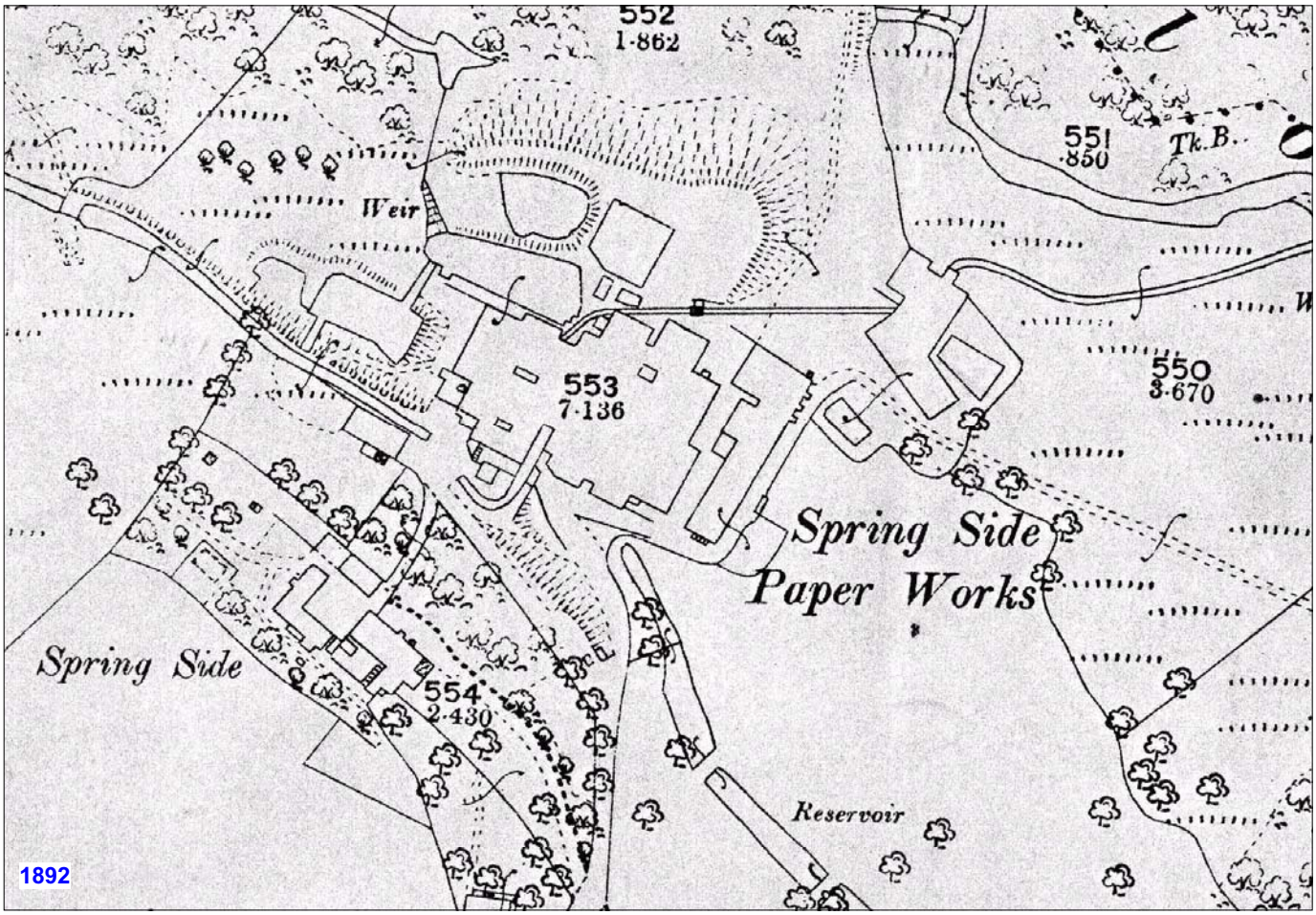
1829 Hennet

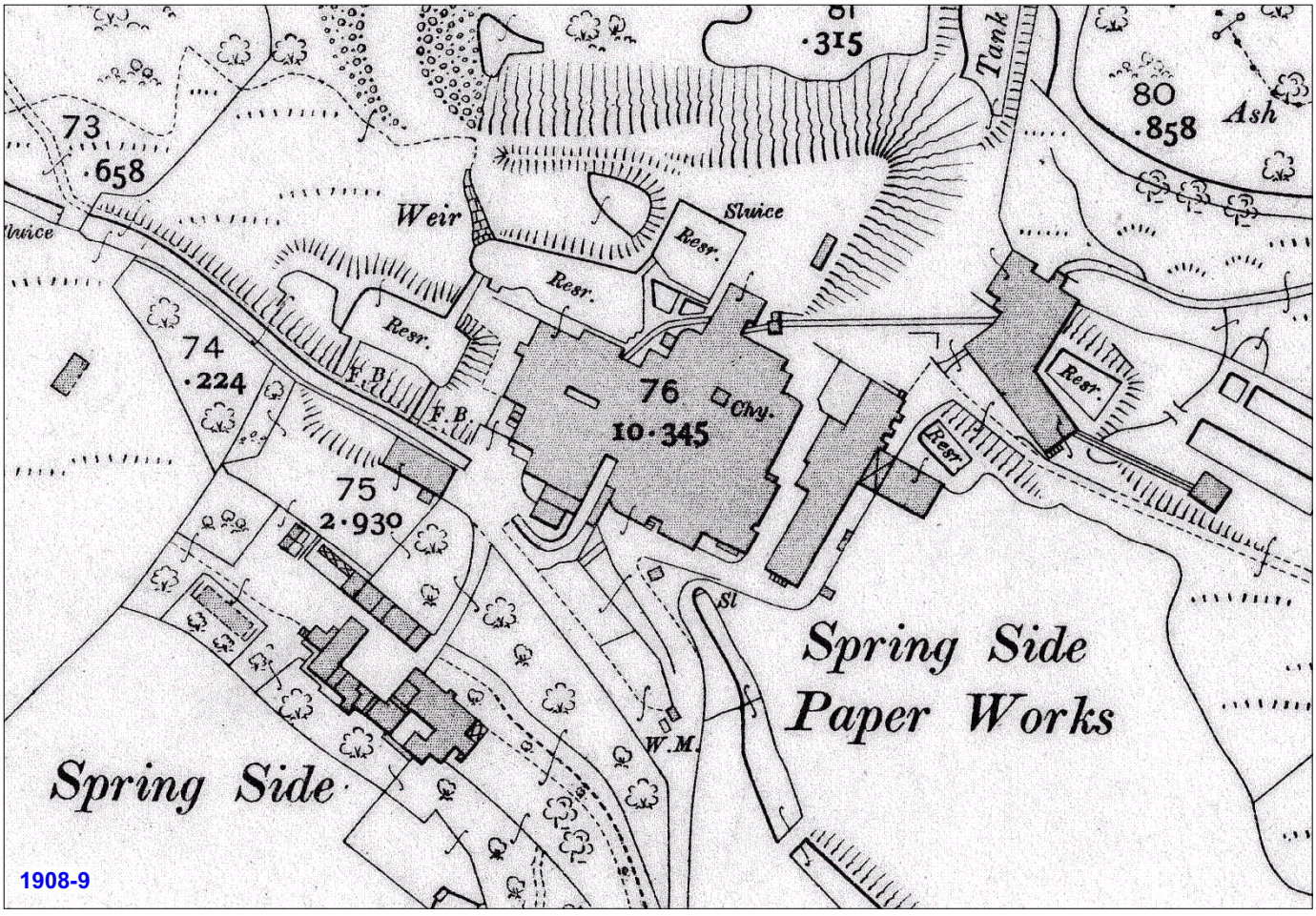


1854

The PDA

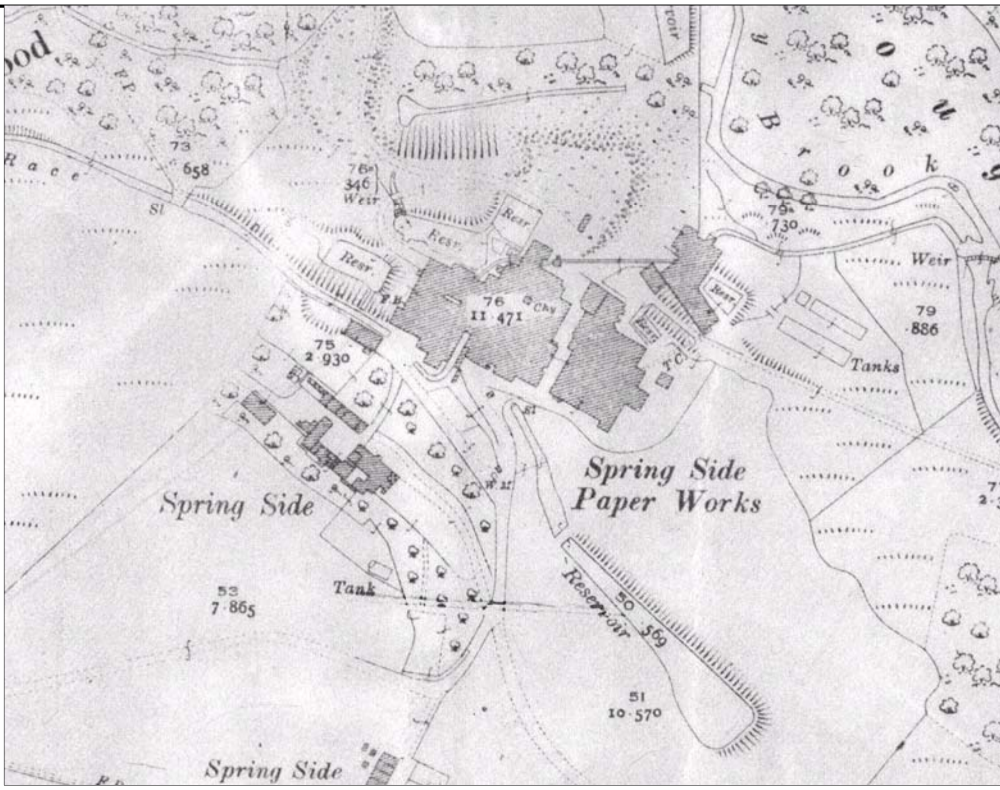
Spring Side Paper Works, Belmont, Bolton, Lancashire: A Desk-based Assessment	Figure 5: Historic Maps 1786 -1849 not to scale	CS Archaeology September 2012



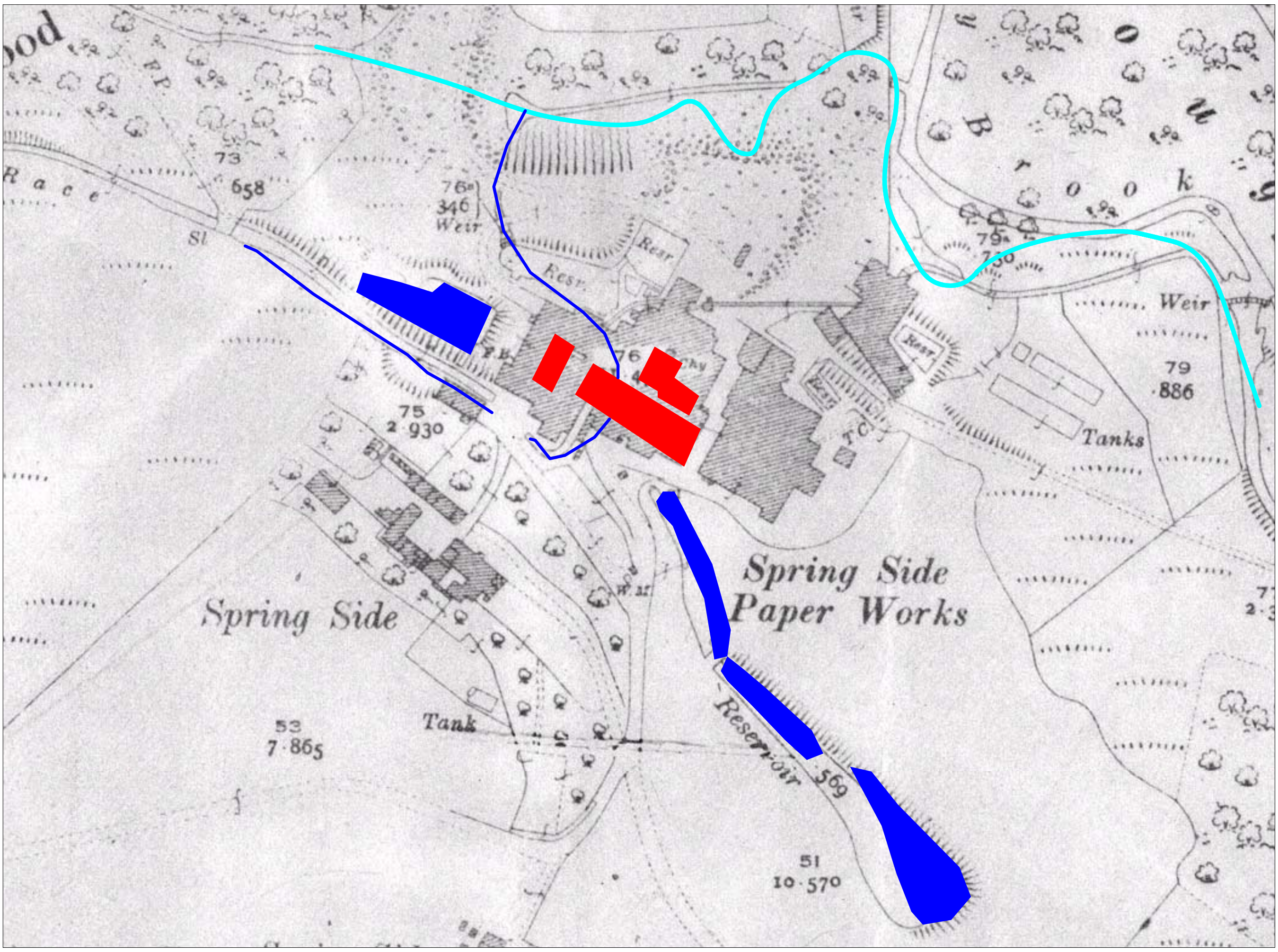


Spring Side Paper Works, Belmont, Bolton, Lancashire: A Desk-based Assessment	Figure 6: Historic Maps 1892-1909 not to scale	CS Archaeology September 2012

not to scale



1927



1927 (1854)

Spring Side
Coittages

Buildings
Reservoirs
Mill Race
Mill Race

Spring Side Paper Works, Belmont, Bolton, Lancashire: A Desk-based Assessment

Figure 7: The 1927 Ordnance Survey Map with overlay of the Original Industrial Features c.1849

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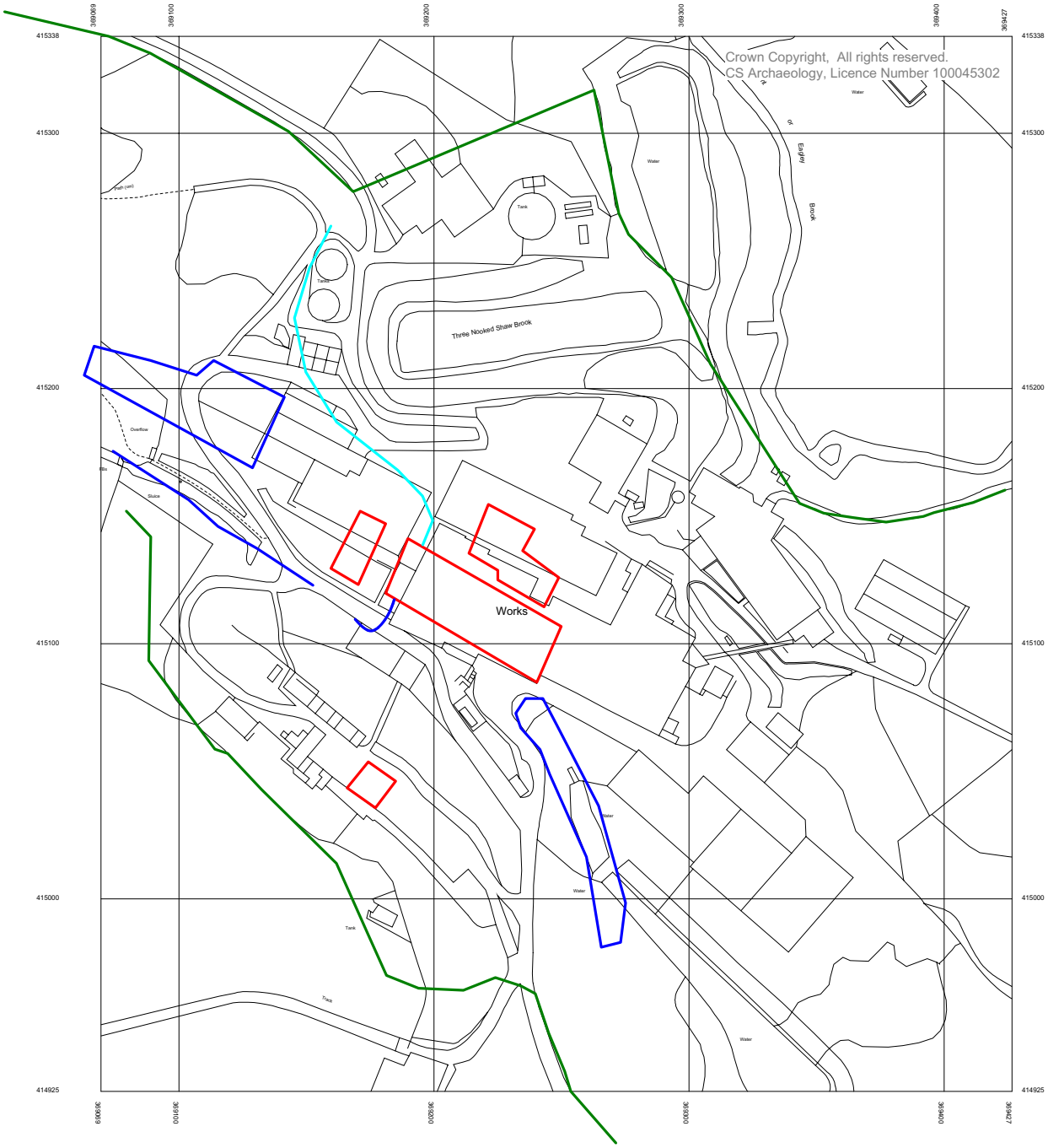

Spring Side Paper Works, Belmont, Bolton, Lancashire: A Desk-based Assessment	Figure 8: Areas of Archaeological Potential	CS Archaeology September 2012

APPENDICES

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Appendix 1: Site Gazetteer

Site No.	**1**
Site Type/Name	Springside Paper Mill (Belmont Mill), Longworth Clough, Turton
Period	Post medieval (Paper mill, founded 1834 by John Livesey)
NGR	SD 69221 15110
Site Description	Belmont Paper Mill, on Eagley Brook, is shown on the OS first edition 1:10560 map, sheet 78. On the current sheet there are works of some sort on the same site, and also a disused mill stream and weir shown. Belmont (Springside) paper mill, on Eagley Brook. It is shown on OS first edition map. It was founded in 1834 and is still in use today. {5} The site is shown on the 1894 1:2,500 mapping, where it is named Springside Paper Mill, and it would appear that at least some of the buildings shown on that map still survive.
Source	LHER No. PRN7789
Status	Non-statutory

Site No.	**2**
Site Type/Name	Belmont Reservoir (Bollton Waterworks) and House
Period	Post Medieval (c 1820s)
NGR	SD 69079 14806
Site Description	Extensive Late Georgian civil engineering project which is first depicted on the 1st Ed OS map of 1854.
Source	LHER No. PRN7792
Status	Non-statutory

Site No.	**3**
Site Type/Name	Well
Period	Post Medieval
NGR	SD 68421 14393
Site Description	First depicted on the 1st Ed OS map of 1854.
Source	LHER No. PRN9647
Status	Non-statutory

Site No.	**4**
Site Type/Name	Weir (waste)
Period	Post Medieval
NGR	SD 69250 14430
Site Description	an element of the Belmont Reservoir c.1820s first depicted on the 1st Ed OS map of 1854.
Source	LHER No. PRN9648
Status	Non-statutory

Site No.	**5**
Site Type/Name	Longworth Hall, Longworth Road, Belmont Monument Site of hall (Manor House?) and farmstead. Demolished post-1907 and the site wooded.
Period	Medieval?/Post Medieval
NGR	SD 69371 15651
Site Description	Longworth Hall, the seat of the Longworth family, is named in a deed of 1630. It later became a farmhouse, and was demolished during the construction of Delph Reservoir between 1908 and 1921. The site is shown on the 1849 1:10,560 mapping and the 1894 1:2,500 sheet, where it appears to be a farmstead. Longeworthe, 1254; Lunggewrthe, 1278; Longeworth, 1290. Longworth occupies the south-western slope of Turton Moor and the tongue of lower land to the south-east, between the Longworth and Delph Brooks. In the latter part of the township the hall is situated, but there is no village nor any considerable hamlet within the boundary. For local government the township was in 1898 joined to Turton, ceasing to have a separate existence. No house in the township had more than two hearths in 1666, except Thomas Lacy's, which had seven. The total was 21.
Source	LHER No. PRN10466
Status	Non-statutory

Site No.	**6**
Site Type/Name	Longworth mill leat
Period	Medieval?/Post Medieval
NGR	SD69819 14967
Site Description	A mill leat (c800m long) serving Longworth Mill (PRN 10467), is first shown on a map of 1839, but was probably built to serve the earlier mill mentioned in documents from 1608 onwards. This linear feature extends from the weir (PRN 10485) to the north of the site of the mill; at this point there is a steep incline, probably on the course of a directed water flow, a wooden duct or robbed-out pipework, which would have powered the mill. The channel forms a linear depression marked by standing water and reeds 5m wide with an associated embankment to the south-west (3m wide and up to 2m high). the construction of the millrace appears to be contemporary with the weir as evidenced by the stonework lining the channel and the weir. It is notable that the line interpreted as that of the leat on the estate mapping of 1839 (above) is apparently only a boundary line on the OS 1:10,560 mapping of 1849 and that the water supply to Longworth Mill (noted as a small building directly on the north bank of the river and annotated as in ruins) is not indicated in 1849. The leat is shown on the 1894 mapping, where it follows the line apparently set out in 1839. The length of the leat would seem excessive for an early mill (although not impossibly so) and a much shorter leat or direct drive from the river at the mill site itself would look much more probable. As a consequence this leat and the adjacent weir would date to the reconstruction of the mill in 1860 -see description in PRN 10467.
Source	LHER No. PRN10468
Status	Non-statutory

Site No.	**7**
Site Type/Name	Earthwork – bank and ditch, Longworth Clough, Turton
Period	Post medieval
NGR	SD 6917 1568
Site Description	This is the north-eastern boundary of a triangular shaped field to the northwest of 'Oak Field'. The boundary has been formed by a bank being cut into the southwest facing slope above Hall Wood. The bank stands 1.5m high x 2m wide, creating an adjacent ditch marked by reeds. Access into the field was gained from the western corner where a series of trackways (one goes into Oak Field) led down from the modern road junction.
Source	LHER No. PRN10473
Status	Non-statutory

Site No.	**8**
Site Type/Name	Earthwork – bank and ditch, Longworth Clough, Turton
Period	Post Medieval
NGR	SD 6905 1572
Site Description	A boundary bank and ditch formed the northern edge of a field associated with Longworth Hall. The bank is orientated southwest to north-east and is 19m long. There is a distinct corner to the north-east where it joins boundary PRN 10473. The bank is the up-cast from an internal ditch, indicates that it was intended to keep stock inside.
Source	LHER No. PRN10476
Status	Non-statutory

Site No.	**9**
Site Type/Name	Earthwork – Field boundary
Period	Post Medieval
NGR	SD 69691 15344
Site Description	A bank and ditch formed a field boundary, which is mainly orientated south-west to north-east and at its south-western end it forms a right angled bend to the north-west. The bank is 2.5m wide with a possible associated ditch to the south-east. The bank runs across the contours of the hill and extends towards the Longworth Road where it becomes less well defined. The boundary does not correspond to any shown on the Ordnance Survey first edition map.
Source	LHER No. PRN10477
Status	Non-statutory

Site No.	**10**
Site Type/Name	Earthwork – Field boundary
Period	Post Medieval
NGR	SD 69647 15223
Site Description	This bank forms the southern edge of Oak Field which is marked on the Ordnance Survey first edition map. The bank is just over 1m wide with a possible ditch, 0.5m wide, to the north-east. The bank closely follows the line of the top break of slope and so delineates the upper, flatter terrain from the south-facing slopes
Source	LHER PRN10478
Status	Non-statutory

Site No.	**11**
Site Type/Name	Earthwork – Field boundary
Period	Post Medieval
NGR	SD 69720 15338
Site Description	Orientated south-west to north-east, this bank is 1m wide and extends 60m from the Longworth Road. It appears to be parallel to boundary PRN 10477 and may be associated. Neither appear on the OS first edition map, and as such may predate later enclosures.
Source	LHER PRN10480
Status	Non-statutory

Site No.	**12**
Site Type/Name	Earthworks - Oak Field, Longworth Road, Belmont Monument Ridge and furrow
Period	Post Medieval
NGR	SD 69644 15372
Site Description	An area of ridge and furrow is sited on gently sloping north-west facing ground. the ridges were 3m apart and were aligned south-west to north-east, which appeared parallel to boundaries 10480 and 10477, and they would appear to be related.
Source	LHER PRN10481
Status	Non-statutory

Site No.	**13**
Site Type/Name	Trackway – Oak Field, Longworth Road
Period	Post Medieval
NGR	SD 6944 1551
Site Description	An 'S' shaped trackway would have provided access to the lower ground to the south-west of Oak Field. It was probably associated with the pre-1849 and pre-enclosure field system represented by boundaries PRN 10480 and 10477.
Source	LHER PRN10482
Status	Non-statutory

Site No.	**14**
Site Type/Name	Trough
Period	Post Medieval
NGR	SD 6935 1560
Site Description	A trapezoidal shaped trough is set into the south-west facing slope of Oak Field. It is 1.75m wide across its longest side. It was fed by a cast iron water pipe from a spring, c15m to the north, and a 'U' shaped outlet has been cut into the centre of the south-west facing side. The site is annotated 'Water Trough' on the OS first edition 1:10,560 mapping.
Source	LHER PRN10483
Status	Non-statutory

Site No.	**15**
Site Type/Name	Weir, Longworth Clough
Period	Post Medieval
NGR	SD 69463 15147
Site Description	This comprises a series of in situ and dislocated 1 x 1.5m x 1.5m deep ashlared blocks which contributed to a monumental weir structure. The in situ blocks were

consistent with diverting the watercourse into the mill's leat (PRN 10468). It is notable that this weir, and the leat it fills (PRN10468), are not apparently shown on the OS 1:10,560 first edition mapping of 1849, but appear on the first edition 1:2,500 map of 1894. Whilst it could have been the site of an earlier weir serving the C17th Longworth Mill (PRN 10467), the course of the river as set out on the 1849 map would suggest a location for the earlier weir further downstream and much closer to the mill site.

Source LHER PRN10485
Status Non-statutory

Site No. **16**
Site Type/Name Dingle House, formerly Hampsons Farmhouse, off Belmont Road
Period Post Medieval
NGR SD 69696 14718
Site Description Cruck-framed farmhouse, probably C16, altered and enlarged in C17, renovated c.1980, now house. Shown as Hampsons Grange on current OS mapping (2009). Farmhouse, probably C16, altered and enlarged in C17, renovated c.1980, now house. Sandstone blocks and rubble, slate roof, external chimney at right end. Cruck-framed range of 4 bays with projecting wing to front of 4th bay. Two storeys; entrance by modern lean-to porch in the angle with the wing; blocked doorway with large lintel in 1st bay; ground floor of main range has 4 windows with chamfered mullions but otherwise all different, 2 having square lights; 1st floor has one very small window in the 3rd bay, and inserted window to the left. Wing has a 5-light double-chamfered stone mullion window with a hoodmould on each floor, and the right return wall of this wing breaks back round an external chimney stack, and has at 1st floor of the gable end a garderobe with moulded corbels. Rear wall altered. Interior: 3 full cruck trusses, the first 2 with finely shaped blades of large scantling, the 3rd inferior in both respects, all with spurs and dorsals which carry trenched purlins, some windbraced; collars remain but tie-beams have been severed. In the wing is a large rectangular fireplace with chamfered surround, the lintel probably originally Tudor-arched but now altered, and the chimney-piece incorporating at the upper corners corbels supporting the ceiling beams.
Source LHER PRN10739
Status Designated Heritage Asset (Grade II Listed Building)

Site No. **17**
Site Type/Name The Farmhouse, Lower Folds
Period Post Medieval
NGR SD 68990 15370
Site Description Farmhouse, dated 1704 on lintel, now house. Coursed sandstone rubble with quoins, slate roof with a chimney at the right gable, another at left front corner. Present entrance in original rear (east) wall. Three-bay end-baffle-entry plan, with front outshut to 1st bay. Two storeys; continuous dripcourse to front wall; doorway at right has large lintel lettered H ; I.E 1704 to the left of this the dripcourse steps over a long recessed window which has 2 chamfered mullions to the centre light and square lights on each side; square windows in each wall at angle with outshut, coupled square windows in the front wall of this; 1st floor has a round-headed light over the door, a 4-light window in the 2nd bay (lacking 2 mullions), and 2 smaller windows in the angle. Rear has doorway with hoodmould at the right end (1st bay), at ground floor 2 widely separate recessed windows with hoodmoulds, of 2 lights (lacking mullion) and 3 lights (lacking one mullion), and at 1st floor 5 modern casements. Interior altered.

Source LHER PRN10740
Status Designated Heritage Asset (Grade II Listed Building)

Site No. **18**
Site Type/Name Waterworks Cottage, Belmont
Period Post Medieval
NGR SD 6914 1444
Site Description House, dated 1824 in the gable. Large ashlar blocks, slate roof with central chimney. Roughly T-shaped plan; 2-bay 2-storey range with gable to road, with a single bay 2-storey wing to the right and a short single-storey wing to the left. In Tudor style. In the right re-entrant is a gabled porch which has a Tudor-arched doorway to the front, with a hoodmould, and a tall Tudor-arched window in the right side; otherwise, most windows are mullioned with 2 Tudor-arched lights and hollow spandrels, chamfered surrounds, and hoodmoulds: one on each floor in the front gable wall, one at the left end, one at the right end, and others in the side wall to the rear. In the front gable is a relief plaque depicting a seated female figure pouring water into a vessel held by a child, lettered along the bottom: BOLTON WATERWORKS ESTABLISHED AD1824 House overlooks reservoir.
Source LHER PRN10751
Status Designated Heritage Asset (Grade II Listed Building)

Site No. **19**
Site Type/Name Spring Side, Belmont
Period Post Medieval
NGR SD 69172 15031
Site Description C19? Mausoleum near paper mill [1]
Source LHER PRN26392
Status Non-statutory

Site No. **20**
Site Type/Name Wall Plaque
Period Post Medieval
NGR SD 69159 14459
Site Description Large relief plaque set in wall beside Bolton Road, probably 1824. The relief depicts a seated female figure pouring water into a vessel held by a child.
Source LHER PRN30759
Status Non-statutory

Site No. **21**
Site Type/Name
Period Post Medieval (Pre-1848)
NGR SD 6867 1531
Site Description Barn shown on the 1st ed OS map of 1849
Source LHER PRN37145
Status Non-statutory

Site No. **22**
Site Type/Name Reservoirs and leats: Springside Paper Mill
Period Post Medieval
NGR SD 69221 15110
Site Description Related infrastructure to the paper mill which secured an adequate water supply. Control was provided by sluice gates, the mill leat provided water to the northwest

	end of the main mill building and a mill stream had a convoluted course back into Eagley Brook.
Source	Ordnance Survey map of 1849
Status	Non-statutory

Site No.	**23**
Site Type/Name	Spring Side House? (Site of)
Period	Post Medieval
NGR	SD 69176 15045
Site Description	Demolished prior to 1988 this house was probably built in association with the original mill and is depicted on the OS map facing over the mill within its own enclosure and two rear offshuts. Subsequent developments: glass house landscaping and stables/sheds suggest a domestic function, the house probably provided accommodation for the mill owner or managers.
Source	Ordnance Survey map of 1849
Status	Non-statutory

Site No.	**24**
Site Type/Name	Paper Mills Cottages
Period	Post Medieval
NGR	SD 69169 14881
Site Description	Series of workers cottages aligned SW-NE
Source	Ordnance Survey map of 1849: LHER PRN7792
Status	Non-statutory

APPENDIX 2: THE WSI

CS Archaeology
September 2012

WRITTEN SCHEME OF INVESTIGATION FOR AN ARCHAEOLOGICAL DESK-BASED ASSESSMENT ON THE SITE OF SPRINGSIDE PAPER WORKS, BELMONT, BOLTON, LANCASHIRE

CS Archaeology

August 2012

0 SUMMARY

0.1 This Written Scheme of investigation outlines CS Archaeology's approach to the archaeological mitigation which is to be prepared in advance of detailed planning application.

0.2 Before site works commence a rapid data gathering exercise and desk-based survey will collate and update our knowledge of the area's archaeological background and provide a basis for the proposed redevelopment works to the Proposed Development Area (PDA). This will contribute to the assessment of potential heritage assets which still lie within the PDA.

0.3 It is only after initial remediation works (asbestos removal) the archaeological resource in terms of its standing buildings can be assessed.

1 INTRODUCTION

1.1 Details

1.1.1 *Site Name*: Springside Paper Works

1.1.2 *Location:* Belmont, Bolton, Lancashire

1.1.3 *Status:* extant non-statutory industrial buildings, with an outline application for redevelopment

1.1.4 *NGR:* SD 6925 1508 (centre)

1.1.5 *Area of site:* c. 7.6 hectares

1.1.6 *Purpose of the work:* to collate and update our knowledge of the area's archaeological background and provide a basis for the proposed redevelopment works to the PDA

1.2 Planning Background

1.2.1 This assessment will accompany future planning application.

1.3 Archaeological Background

1.3.1 No previous archaeological work has taken place within the PDA, and details and the significance of the PDA has not been fully archaeologically realised.

1.3.2 The paper making industry only developed during the 19th century when quality paper became more cheaply available. Paper had during the 18th century been mainly manufactured from rags a course, brown paper used increasingly for wrapping. A few mills made paper for newspaper, or book printing, then a growth area due to an upsurge in literacy. In the 19th century, technological developments revolutionised the paper-making process, and mills became larger and fewer (Hatcher 1985).

1.3.3 Springside Mill was a nineteenth century 'greenfield' site, built on a series of enclosures or folds and was started by John Livesey in 1834 (*Lyddon & Marshall 1975, 146*) as a purpose built paper making mill. Livesey had to close the mill but it was reopened in 1839, by Robert Orell soon after, and until very recently, the mill was under the management of Charles Turner & Co. Ltd.

1.4 The PDA

1.4.1 Land use within the current PDA was until earlier this year largely covered by an agglomeration of modern and historic industrial buildings (**Plates 1-2**). Detailed internal examination of the historic buildings was not able to be carried out due to asbestos related issues.

1.4.2 Based on a site visit (07/2012), and cartographic sources, areas of archaeological potential have been highlighted in **Figures 1-2**.

2 OBJECTIVES

2.1 The aim of the archaeological assessment is to review and present all readily available sources of information relevant to the PDA. The assessment will aim to gather sufficient information to establish the presence/absence, nature, date, quality of survival and importance of any archaeological remains and will enable or recommend further mitigation to assess the potential and significance of the PDAs archaeological resource.

3 METHODOLOGY

3.1 Desk-based Assessment

3.1.1 This will involve the examination of readily available primary and secondary sources. This information will be collated into the report, and supplied to the client and LCAS in advance of site works in order to guide any archaeological management decisions.

3.1.2 The report will be based on the following information:

- Visual inspection of the site, including interiors and exteriors of the standing buildings & their setting;
- Geotechnical data;
- Survey drawings of existing and former buildings on the site, including foundations and basements;
- Plans and maps of the site and its environs, including historical pictorial and surveyed maps and including pre- and post-war Ordnance Surveys up to the present day;
- Place and street name evidence;
- Trade and Business Directories;
- Historical documents and photographs held in libraries, archives and museums;
- Relevant archaeological archives held by museums;
- Appropriate archaeological and historical journals and books;
- The Historic Environment Record (HER) for monuments and archaeological interventions within a 1km radius around the PDA;
- Listed Building/Conservation records;
- Aerial photographs, including those held by the National Library of Aerial Photographs (verticals & obliques), for 1 km around the site.

3.1.3 The above information will be obtained from the following sources:

- English Heritage for designated heritage assets and aerial photographs;
- Lancashire Archaeology Service Historic Environment Record (HER);
- The county record office at Preston as well as local study libraries;
- Primary cartographic sources;
- Published and unpublished documentary sources.

4 REPORT PREPARATION, CONTENTS AND DISTRIBUTION

4.1 A report is to be produced that assembles and summarises the known evidence.

4.2 The results will be synthesised, put in context, and the character of the archaeology present discussed; the contribution of the standing buildings to the historic character of the area will also be discussed.

4.3 The report will comment on the quality and reliability of the evidence and indicate whether it might need to be supplemented by site evaluation/building appraisal.

4.4 A representative selection of photos of the site, the interior and exterior of the buildings and of their setting will be included, to illustrate key points (reproduced at not less than laser photocopy quality).

4.5 If present a rectified plan of crop mark evidence on & immediately adjacent to the site (for a minimum of 500m around the site) will be included; a sketch plot of cropmarks within the remainder of the search area can be indicated by sketching only.

4.8 All sources referred to should be included in the bibliography, even if the results were negative; N.B. references should always include relevant page numbers.

5 General Points

5.1 The Lancashire County Archaeology Service (LCAS) will be responsible for monitoring the project.

5.2 Copies of the report will be sent to the client, for submission to the local planning authority.

5.3 A printed and bound copy of the report is to be supplied direct to LCAS, for incorporation into Lancashire's Historic Environment Record.

5.4 A digital copy of the report will also be supplied in Adobe Acrobat pdf.. format.

5.5 If employed rectified aerial photographic information will be supplied to LCAS in digital format i.e. MAPINFO Interchange format(*.MIF).

5.6 The information content of the report will become publicly accessible once it has been deposited in the South Yorkshire SMR (normally 6 months after receipt by the LCAS).

5.7 CS Archaeology will also complete the online OASIS form at http://ads.ahds.ac.uk/project/oasis/.

6 COPYRIGHT, CONFIDENTIALITY AND PUBLICITY

6.1 Unless the individual/organisation commissioning the project wishes to state otherwise, the copyright of any written, graphic or photographic records and reports rests with CS Archaeology. Agreements on copyright will be agreed with the commissioning body at the outset of the project.

6.2 The circumstances under which the report or records can be used by other parties will be identified at the commencement of the project, as will the proposals for distribution of the report (see 5 above). CS Archaeology will respect the commissioning body's requirements over confidentiality, but the archaeologist will endeavour to emphasise their professional obligation to make the results of archaeological work available to the wider archaeological community within a reasonable time.

6.3 The archaeologist undertaking the recording brief has a duty of confidence to the client commissioning the work. All aspects of publicity will be agreed at the outset of the project between the commissioning body and the archaeological organisation or individual undertaking the project.

7. BIBLIOGRAPHY

Hatcher J. 1985. *The Industrial Architecture of Yorkshire*, Phillimore& *Co. Ltd.*

Lyddon D. & P Marshall 1975. *Paper in Bolton: A Papermaking Tale*, Altrincham

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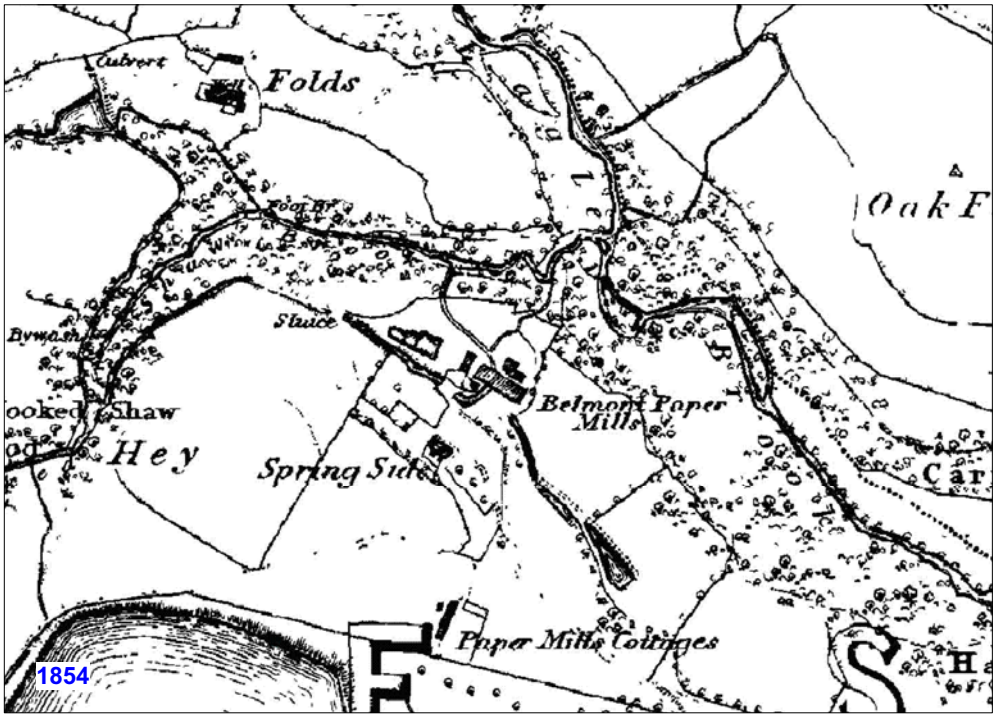
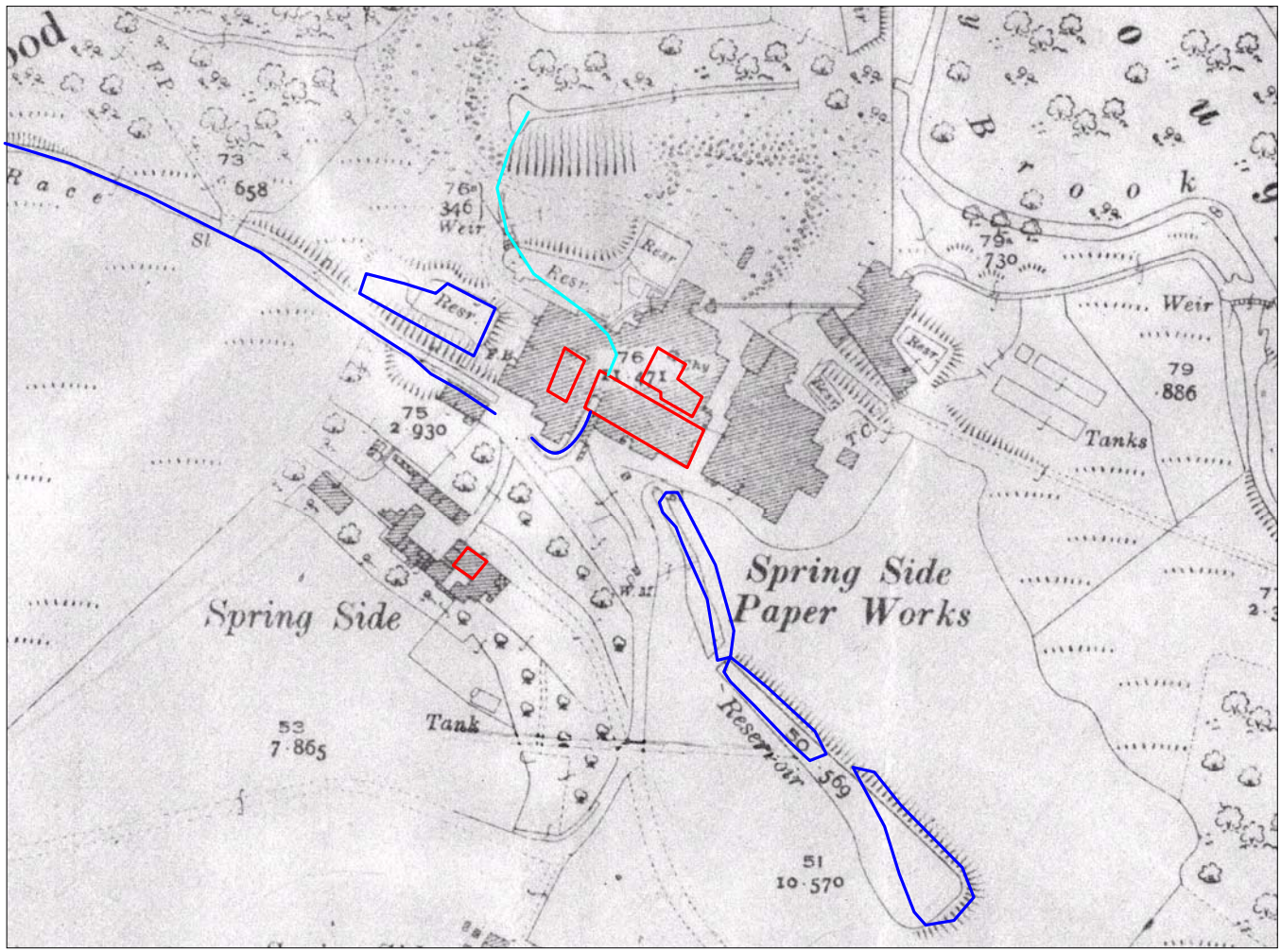
FIGURES

not to scale

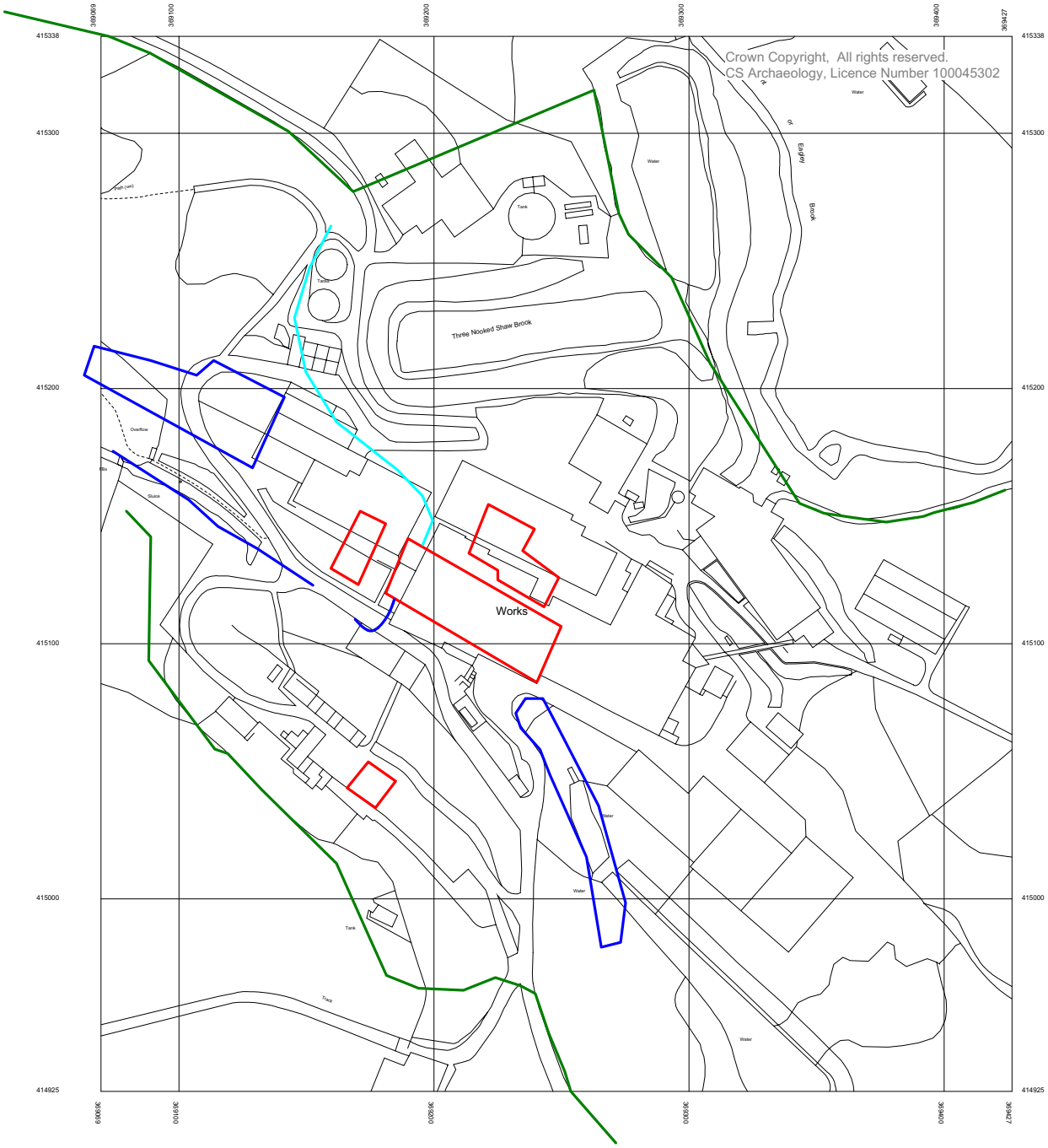




Features c. 1854

- Early mill buildings
- Reservoirs
- Mill Race
- Mill Stream

Spring Side Paper Works, Belmont, Bolton, Lancashire: A WSI	Figure 1: 1927 Ordnance Survey Map with overlay of the Original Paperwork Features c 1854	CS Archaeology August 2012



Spring Side Paper Works, Belmont, Bolton, Lancashire: A WSI	Figure 2: Areas of Archaeological Potential	CS Archaeology August 2012