



Historic Building Recording at Springfield Mill, Sandling Road, Maidstone, Kent

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Summary

SWAT Archaeology has been commissioned by Redrow Homes Ltd to carry out a programme of historic building recording at Springfield Mill, Sandling Road, Maidstone in Kent.

The site (Plate 1.1 & Figure 1.1) is currently occupied by a number of buildings associated with the sites use as a paper mill. The site is of some significance due to its age, interesting features of paper production and historic development. It was therefore required that a detailed record be made of some of the non-listed buildings on the site, prior to their demolition. This would serve to mitigate the negative effects of the demolition of the buildings by 'preservation by record'.

The following buildings and structures have been identified for recording in the SWAT Building Recording Specification dated 28th June 2018:

- (2) Drying Room (Dating from 1863-1883 and not Listed)
- (3) Packing and Weighing Room (Dating from 1863-1883 and not Listed)
- (4) Salle (dating from 1883 much altered and not listed)

(5) PMC Plant Building (former Rag Store dating from the mid 19th century and not listed)

- (6) Smithy (mostly 20th century construction and not listed)
- (7) Warehouse with Kent Machine (Early 20th century and not listed)
- (8) Air raid shelters (not listed)

These buildings can be identified on Figures 1.1-7.1. and Plate 1.1. A Drone Survey of the site and Building Recording Video has been carried out and can be viewed here: <u>http://swatarchaeology.co.uk/recording.aspx</u>

1 INTRODUCTION

1.1 Project background

1.1 Planning permission has been granted (17/502432/FULL) for demolition of the existing non-listed paper mill buildings, and development of 295 residential units (use class C3), including 218 x 1-2 bed apartments and 77 x 2-4 bed houses, including associated car parking, public realm and landscaping works, The Grade II Listed Rag Room is to be preserved and re-used for community (D1), office (B1) or residential (C3) use.

A condition (3) has been attached to the permission requiring that a programme of building recording be undertaken in advance of any site development works.

(3) No demolition shall take place until the applicant, or their agents or successors in title, have secured and implemented a programme of building recording of the pre-1948 mill buildings in accordance with a written specification and timetable which has been submitted to and approved in writing by the Local Planning Authority. The building recording shall be to Level 3 as defined by the Historic England 'Understanding Historic Buildings - A Guide to Good Recording Practice' (2016) guidance document. Reason: To ensure that historic building features are properly examined and recorded.

This report has been prepared in accordance with the approved Building Recording Specification (SWAT Archaeology 28/06/18).

1.2 The building recording specification (SWAT 2018) sets out a set of standards and requirements for the completion of the Level 3 historic building recording programme and was submitted pursuant to Condition 3 of planning permission (17/502432/FULL). The intention was to provide a record of some of the existing non-listed structures that are due for demolition. The work has been undertaken in accordance with:

- Historic England Understanding Historic Buildings, A guide to good recording practice; and
- CIFAs Standards and Guidance for Historic Building Recording.
- KCC Historic Building Recording Requirements. Part C.
- SWAT Archaeology Building Recording Specification (SWAT 2018).

2 METHODS: Introduction

2.1 The aim of the programme of historic building recording was to make a permanent record of the buildings on the Site prior to any demolition works. This would serve to mitigate the negative effects of the demolition of the buildings by 'preservation by record'. This is Phase 3 of the archaeological investigation and recording programme to enable residential development to proceed.

2.2 This recording programme was achieved through a combination of photographic, measured and drawn survey, written record and documentary research. Particular attention was paid to any evidence for functional details or machinery associated with the use of the site as a paper mill, although following demolition in the 1990's, some of the former machinery had been removed from the Site. Despite this, the recording works have attempted to detail the processes undertaken at the Site with previous employees talking to camera around the Site and discussion on how the buildings developed and altered over time with video recording.

This can be viewed at: <u>http://swatarchaeology.co.uk/recording.aspx</u>

2.3 The recording programme included detailed description and analysis, highquality digital and film and drone photographic record and a drawn record taken from the measured survey of the buildings.

3. Documentary Research

3.1 A search of relevant primary and secondary sources was carried out in the following repositories/locations:

- Kent History and Library Centre, Maidstone
- Kent Historic Environment Record (HER)
- Maidstone Council (through discussions with the MC Conservation Officer)

3.2 In addition to the above-mentioned repositories, a search for information was also carried out via SWAT Archaeology's own library and via the internet.

3.3 The buildings were recorded to Level 3, as described in the document *Understanding Historic Buildings: a Guide to Good Recording Practice* (Historic England, published May 2016). In addition the recording was carried out in accordance with the Written Scheme of Investigation for the site published by SWAT Archaeology (SWAT 2018), and guidance given by the Chartered Institute for Archaeologists' Standard and Guidance for the archaeological investigation and recording of standing buildings and structures (CIFA 1996, revised 2008 and 2016).

4. Site visits

4.1 The Site was visited from 4th September to 10th November 2018 by a team of surveyors and buildings archaeologists from SWAT Archaeology during which the buildings were subject to GPS scanning, measured survey, analysis and drone and rectified photography.

4.2 During the site visits, some 26 black & white and 178 colour digital photographs were taken using analogue SLR camera equipped with Zeiss optics. In addition 152 high-quality digital images were taken using a Nikon digital SLR camera (with 50 mega-pixel capability) and a further set taken with a high-grade full frame DSLR camera equipped with a 22.3 mega-pixal sensor. The hi-res geo rectified photographs were captured from tripod with a longer exposure time and comprise a digital archive of 232 frames.

4.3 Due to varying lighting conditions encountered during the site visits (due to time of day or poorly lit interiors), some of the buildings were digitally photographed a number of times, with varying timed exposure ratings (bracketed shots). A metric photographic scale has been included in all detailed shots and the buildings photographed within their setting to further explain the layout of the site.

4.4 All photographic views were recorded on photographic registers which give the direction of the view and a brief description of the subject. A selection of the digital photographic record has been used to illustrate this report (**Plates 1.1- 8.20**). Plans showing the location of photographic plates used to illustrate the report are included as figures in the report (**Figure 1.2**). 4.5 All GPS survey were conducted using either a Leica 1200 Dual Frequency GPS RTK Rover Kit or NovAtel OEM2 Dual Frequency GPS/single frequency GNSS (GPS + GLONASS) RTK Rover Kit on Site. This survey technique was augmented with traditional hand-measuring techniques using measuring tapes and a Leica TCR 805 Total Station to produce an accurate survey of the buildings, which were recorded to a level of detail suitable for production of plans and cross-sections at 1:50 - 1:100 scale.

4.6 The plans, cross-sections and elevations produced from the metric surveys are presented in the report as **Figures 1.1-7.1**

5 THE SITE

5.1 Site location and description

5.1 The site is located immediately north of the urban boundary of Maidstone and approximately 500m north from Maidstone East Railway Station. The site is adjacent to the River Medway to the west and Royal Engineers Road to the east, the southern boundary is defined by Mill Lane, beyond which is a library and football stadium.

5.2 The site is 6.5 hectares (16 acres) in size. The site has highways access from James Whatman Way and Mill Lane from the south. This access is proposed to be retained within the development proposals. The northern half of the site is predominantly dominated by a wooded/ scrub area, and the southern half by the buildings associated with the Springfield Mill, including the Grade II listed Rag Room and parts of the 1806 Boulton & Watt beam engine set on a plinth.

5.3 A large expanse of hard standing is located to the south of the buildings and this has previously been used as car parking. A number of the trees within the northern part of the site are protected by Tree Preservation Orders (TPO) and there are also two ponds within the site.

5. 4 The topography of the Site generally slopes east to west with the high point being Royal Engineers Road, with a relatively steep gradient.

5.5 Part of the site adjacent to the river falls within Flood Zones 2 and 3, according to online Environment Agency records. Studies show that most of the heritage assets are in threat from flooding and (for instance) the Drying Room will flood with climate change by 2.90m and this figure will become higher with the most recent data (Plate 1.2).

6 HISTORICAL BACKGROUND 6.1 Site Development: 1869-2015

6.1 Paper making developed as a major industry in the Maidstone area from the late C17 due to the suitability of the River Len for water-power and its proximity to London, the major market for paper and source of rags, its raw material. There were seven functioning paper mills between 1671 and 1700 and by 1733 there were 14 mills. By 1865 this number had increased to around 40.

6.2 Springfield Mill (Figures 1-7), the first paper mill to be successfully powered solely by steam, was founded in 1805 by William Balston (1759-1849). Balston (below) had been apprenticed in 1774 to James Whatman II (1741-1798), owner of Turkey Mill and one of the most successful paper makers of the C18. By 1794, when Whatman sold Turkey Mill, Balston was his



principal subordinate and he entered into partnership with the new owners to form Hollingworths and Balston with a loan of £5,000 from Whatman.

6.3 The outbreak of war with France in 1793 had cut off the import of superior French paper and the new firm prospered. By 1805 Balston had decided to open his own steam-powered mill on the banks of the River Medway at a site with a spring that provided the clean water necessary for the paper making process. The new mill, with its 36 horsepower Boulton and Watt beam engine powering a 'Hollander' (the machine which broke down the rags into a pulp) opened at the end of 1807. Running for 440 ft, parallel with the Medway, it consisted of a Drying Room at the north and Rag Room at the south with rooms for the various processes, and the engine and its boilers, set between them (Figure 1.2).



6.4 William Balston was succeeded by his two sons, William and Richard, but in November 1862 the mill was severely damaged by a fire (above) necessitating the rebuilding the Drying Room and much of the central section of the mill (MAP 2). The beam engine, however, remained in use until it was de-commissioned in 1896-7 (MAP 4). The mill continued to be enlarged, largely to the east, into the 1930s (MAP 7) and presents a complex picture of different phases of development. During the early 20th century it was the largest producer of hand-made paper in the world (MAP 8). The mill remained in the ownership of the Balston family until 1974 when W & R Balston merged with Angel Reeve International to form Whatman Angel Reeve, later Whatman International Ltd.

6.5 The site (Figure 1.1) is located immediately north of the urban boundary of Maidstone and approximately 500m north from Maidstone East Railway Station. The site is adjacent to the River Medway to the west and Royal Engineers Road to the east, the southern boundary is defined by Mill Lane, beyond which is a library and football stadium. The site is 6.5 hectares (16 acres) in size (Plate 1.2).

6.6 The northern half of the site is predominantly dominated by a wooded/ scrub area, and the southern half by the buildings associated with the

Springfield Mill, including the Grade II listed Rag Room. A large expanse of hard standing is located to the south of the buildings and this has previously been used as car parking. A number of the trees within the northern part of the site are protected by Tree Preservation Orders (TPO) and there are also two ponds within the site. The part of the site adjacent to the river falls within Flood Zones 2 and 3, according to online Environment Agency records. The topography of the Site generally slopes east to west with the high point being Royal Engineers Road, with a relatively steep gradient (Plates 1.1-1.4).

6.7 For clarity, the listed buildings include the former Rag Room (1), which is separated from the central core to the north by a narrow alley and is a long two-storey building running north-south, built of stock brick Flemish Bond with a slate half-hipped roof and is already listed as Grade II (Figure 1.2 and front cover). To the south of the office block stands the iron beam from the 1806 Boulton and Watt beam engine set on a plinth itself Grade II. The factory chimney is also separately listed at Grade II (Figure 1.2 and Plate 10).



6.8 The Paper mill was originally opened in 1807 by William Balston. Largely destroyed in a fire in 1862 and subsequently rebuilt and enlarged in multiple phases from 1863 until the late 20th century (above 1814 plan).

6.9 The mill, despite the rebuilding of much of its fabric following the fire of 1862 and with later enlargements, retains the essential layout of the original building of 1807 with a long Drying Room to the north (rebuilt after 1862); and a largely single- storey production area in the centre (of various phases but

with little evidence of original early C19 fabric and extended to the east mainly between 1883 and 1936).

6.10 It is clear that overall Springfield Mill has a high degree of historical interest. As the first practical application of steam power to the paper making process it is clearly of interest for its technological innovation and its association with William Balston who, along with his former master, James Whatman II, was one of the principal paper makers of the late C18 to early C19. This is reflected in the existing Grade II listing of the former Rag Room and the beam from the 1806 Boulton and Watt beam engine.

6.11 However, the other parts of the mill complex are not from the original early C19 mill but, partly as a result of rebuilding after the major fire in 1862 and partly because of later expansion in reaction to changing operational requirements, date from the 1860s to the late 20th century. Importantly, apart, notably, from the chimney, and possibly a pair of gable ends, nothing survives of the structures relating to the early period of steam power which provides much of the mill's interest, aside from the existing listed structures.

6.12 Some of the later buildings, such as the re-built Drying Room with timber louvers retain elements of their character that relate to their former function. However, the central core of the building has seen continuous alteration into the late 20th century, so that the original stages of the paper making process within this building are no longer legible.

7. Ordnance Survey Mapping and Aerial Photographs 7.1 Historic OS maps

7.1 The OS map survey in 1865 is of particular interest as it was surveyed just three years after the fire of 1862 and shows that all the buildings destroyed or damaged by fire have been rebuilt. The map also shows that Springfield House just to the north east of the paper mill is still extant with its own entrance off Sandling Road whilst the paper mill had its own entrance further downslope and to the south with its own gate house (MAP 1). 7.2 The OS map of 1868 shows more detail than the previous map with details of the formal gardens of Springfield House and greenhouses to the north but facing south and built against a retaining brick wall, a formal planted orchard to the south within the curtilage of the paper mill. Fountains and wells are annotated and even individual posts. To the west of the main paper mill buildings the 19th century rag store can be identified and adjacent to the north a dock for barges off the River Medway leading to a 'Coal Pen'. The Drying Room the most northerly of the paper mill buildings is shown in such details that the three bays can be identified on the OS map joined to the main building complex by a narrow corridor and to the east a sub-rectangular pond (8a) can be indentified (MAPs 2 & 2A).

7.3 Just a year later the OS map of 1869 shows that Springfield House has been demolished and some paper mill buildings to the south and adjacent to the Smithy have also been demolished (MAP 3).

7.4 The OS map of 1895 shows that the orchard situated in the south-east area of the Site has been reduced in size (MAP 4).

7.5 Twelve years later the OS map of 1907 shows that the orchard has disappeared and the road leading to the paper mill leading off Sandling Road has been named 'Mill Lane' (MAP 5) and the OS map of 1908 shows little change apart from the Gate House being rebuilt on a larger scale with the addition of a small extension on the NW side (MAP 6).

7.6 The OS map of 1932 shows additional buildings to the north and east of the original mill and the addition of a miniature Rifle Range to the south of the main complex (MAP 7).

7.7 The OS map of 1938 (MAP 8) shows to the south of the paper mill the location of; ROMAN HOUSE (Site of).

7.8 Nine years later the OS map of 1947 shows additional buildings (red circle) attached to the Smithy (MAP 9).

7.9 The OS map of 1968 (MAP 10) the Gate House is now labelled 'Lodge' (red circle) and extended with a greenhouse and adjacent shed. To the west 'El Sub Sta' is marked and additional buildings south of the Smithy. To the west of the Smithy additional building have been erected whilst to the east numerous tanks have been installed.

7.10 The OS map of 1995 (MAP 11) shows the site almost as it is today with the buildings still surviving. To the east Sandling Road has been rebuilt on a different alignment cutting a swathe through the grounds of Springfield Mill and isolating the 'Lodge' on the wrong side of the road the paper mills Plates 1.2, 1.3).

8. Building Recording: The Site

8.1 The central section of the mill consists of a complex series of contiguous brick buildings of various dates forming a roughly U-shaped plan. Most buildings are oriented north-south but with some groups, particularly in the north-east and south-west corners, running east-west (Plate 1.2).

8.2 The central core can be broadly divided in western and eastern sections, joined in the north but otherwise separated by a narrow alley. The western section largely dates from the 1860s rebuilding (but with some possible fragmentary early-C19 fabric at the southern end) while the eastern section mainly consists of buildings added southwards in various phases between 1883 and 1936 (Plate 1.1).

8.3 Central Core – Western Section

Extending west and adjoining the Drying Room at right-angles is a hip-roofed, two-storey plus basement block built between 1863 and 1883. Originally the Salle (where the finished sheets of paper were sorted), this is of yellow stock brick laid in Flemish bond with a Kentish ragstone plinth. Fenestration to the north elevation is of paired six-pane timber casements in plain square-headed openings on the ground floor and continuous four-pane timber sashes on the upper floor. Between 1897 and 1908 the core of the mill was extended westwards towards the river with a north-south aligned Finishing Room of 12 bays providing most of the west elevation. This was again of two-storeys plus basement with a hipped roof, built of yellow stock brick laid in English bond with a rendered plinth. Gault bricks are used in the detailing and identify buildings of this period. Fenestration is of timber casement windows set in segmental arched openings with stone cills on the lower floor and square heads on the upper (Plates 1.1, 1.2).

8.4 This part of the western elevation is completed by the slightly projecting, and originally free-standing, Paper Store built between 1883 and 1897. This is of two-storeys plus basement (expressed as a lower storey on the western elevation due to the slope of the ground towards the River Medway) and of four bays. It is of stock brick laid in Flemish bond with a ragstone plinth/basement and hipped roof.

Fenestration is of multi-pane iron windows in arched brick openings with stone sills. The southern return has an original goods door at first-floor level and a modern cargo door on the ground-floor (Plate 1.1).

8.5 The western elevation continues with the gable ends of two east-west buildings. These probably were part of the post-1863 rebuild but the upper parts of the gables have arched windows and oculi with cream brick dressings suggesting they were partly rebuilt between 1897 and 1908. The western end of the southern of these two buildings forms a covered way giving access into the interior of the complex (Plate 1.2).

8.6 The buildings at this end of the mill originally contained the beam engine and boilers but little evidence of fabric relating to its original building is apparent. The boiler room was demolished in the 1960s. Two small gable ends on the southern elevation, built of stock brick in Flemish bond similar to the Rag Room, may be of early-C19 date and be surviving elements of one of two store rooms shown on a plan of 1814. One of the gables has later brickwork at ground level and both have single iron windows in arched openings on the first floor (Plate 1.2).

8.7 Two north-south buildings of c.1863 date form the eastern side of the western section of the mill, separated from the eastern section by a narrow

alley. Both have been re-roofed with flat felted roofs in the late 29th century (Plate 1.2).

8.8 Central Core – Eastern Section

The eastern section consists of a series of long brick, mainly single-storey, sheds with pitched roofs. From north to south they consist of; a series of mostly east-west orientated buildings ranging in date from 1863 to 1936; four adjacent north-south ranges dating from 1883-1897; and lastly, at the southern end, three adjacent north-south buildings probably dating from 1929, the date shown on the southern gable of the central range (Figure 1.2. Plate 1.3).

9. BUILDING DESCRIPTIONS: The Site

9.1 The OS map of 2018 (Figure 1.2) shows the buildings that have been recorded in detail and annotated:

- (2) Drying Room ((Dating from 1863-1883 and not Listed)
- (3) Packing and Weighing Room (Dating from 1863-1883 and not Listed)
- (4) Salle (dating from 1883 much altered and not listed)
- (5) PMC Plant Building (former Rag Store dating from the mid 19th century)
- (6) Smithy (mostly 20th century construction)
- (7) Warehouse with Kent Machine (20th century of no historic interest)

9.2 The analysis and building recording for each building also includes a summary assessment of the heritage considerations:

9.3 The Rag Room (1) Listed Grade II

Built in 1806 by William Balston for the sorting of the rags used in making paper (front cover). The building is to be retained (Plates 9-10).

9.4 Former Rag Room (Listed at Grade II). This is separated from the Central Core to the north by a narrow alley and is a long two-storey building running north-south, built of stock brick laid in Flemish bond with a slate half-hipped roof. The western elevation is of 14 bays on the ground floor, each bay with double two-over-two timber sashes in square openings.

The first floor, which housed the rag room where the rags were sorted and cut into small pieces, has continuous glazing of two-over-two timber sashes. The southern (entrance) elevation has later metal-framed windows in arched openings with stone sills. Internally, the roof is of queen post construction of adzed oak beams.

9.5 The 14-bay west elevation is of stock brick laid in English bond on the ground floor and Flemish bond on the upper floor except for the final five southern bays which are of Flemish bond throughout suggesting this is a later extension. Fenestration is of continuous glazing of two-over-two timber sashes on the upper floor and 14 paired two-over-two timber sashes with flat arches on the ground floor. The south elevation, which is adjoined by a late-C19 office block, is of four bays with multi-paned windows set in segmental arched openings with Gault brick surrounds.

9.6 The ground floor has boxed in iron columns. This was originally used for storage. The first floor was the Rag Room (front cover).

9.7 The Drying Room (2)

The Drying Room, rebuilt c1863 on the footprint of the original building destroyed in the fire of 1862, is a long rectangular, double-height, single-storey building adjoining the central part of the mill at its southern end. It is built of yellow stock brick with the upper level of timber louvres and a pitched slate roof. The building is divided into three large bays by brick cross walls rising above the pitch of the roof (Figures 2.1, 2.2, 2.3. Plates 2.1, 2.2).

9.8 The southern bay has been altered by the insertion of windows to light a later mezzanine floor. A series of late-C20 timber single-storey outshuts have been added to the western elevation (Figure 2.2. Plates 2.3, 2.4).

Internally, the timber king-post roof trusses remain in place, supported in places by a modern steel frame. All the full-height drying racks which lined the walls have been removed, replaced by modern plant (Figure 2.3. Plates 2.14-2.19).

9.9 In summary, it has been heavily internally altered to include a modern supporting steal frame and first floor mezzanine within the southern bay. Similarly, externally the building has also been heavily altered to include a series of western extensions, and new window openings at upper levels, each of which are at odds with character and appearance of a building of this type and age (Plate 2.9).

9.10 The building is NNW-SSE aligned and located at the northern end of Paper mill building complex. On the north side of the building a small brick building with flat roof is abutted. On the east side 2 small single floor buildings were abutted. One cage building with corrugated sheet plastic roof and the other built of wood with corrugated metal sheet roof. To the south building is abutted to the paper mill complex. Alongside western wall a number of flat roofed single floor wooden buildings are located, erected on the concrete platform and accessible from the Building 2. The entry doors are located on every side of the building (Figure 2.1. Plate 2.9).

9.11 The building was designed as a single floor rectangular-shaped building with gable roof although in southern section of the building upper floor was added. The building measures 54.15m in length and 10.96m in width and a height to gutter of 5.95m and to ridge of roof 8.9m. The maximal height to the ridge of gable wall is 9.26m. Internal floor area on the ground floor is 467 sq metres and second floor area is 76.77 sq metres (Figure 2.1. Plate 2.7).

9.12 The building is divided by two internal load-bearing brick walls into three sections: middle one has length of 15.62 m northern and southern sections have length of 18.60m. English bond was used for brickwork.
Eastern and western walls were built of bricks to the height of 1.24m and above of wood. The wooden section of the wall was designed as a shutter. It had a mechanism allowing creating opening in the wall for purpose of ventilation (Figure 2.1. Plate 2.8).

9.13 The ground floor was rendered with concrete with drain gullies covered with grills. Upper floor was supported by number of steel pillars and beams. The floor internal structure was covered with wooden boards. Carpet was used to produce the floor surface of the upper level (Plate 2.14).

The floors were connected by wooden half landing stairs and the roof was supported by wooden king-post trusses and overbuilt with wooden boards. (Plates 2.15-2.20)

10. Packing and Weighing Room (3)

The building is ENE-WSW aligned and located in the North West part of the paper mill building complex. Only part of northern elevation is exposed to the outside (Plates 3.1, 3.2).

10.1 The building consist two floors and a basement. It is rectangular-shaped building with hipped roof at WSW end and gable roof at ENE end.
Building measures 29.12m in length, 8.86m in width, a height to gutter of 5.95m and to ridge of roof 8.46m. Internal floor area on the ground floor is 239.56sq metres, second floor area is 239.56 sq metres and basement area is 52.59 sq metres (Figure 3.1. Plates 3.3, 3.4).

10.11 English bond was used for brickwork pattern in northern wall while Flemish bond in eastern and western wall. Part of the northern wall below ground floor level was built of dressed ragstone. On south and west side, floors and the roof are supported by number of steel columns and beams creating open spaces with surrounding buildings, one of those is Building 4 (Plate 3.5).

10.12 The ground floor is rendered with concrete on the main corridor and carped is laid in office/locker rooms. Wooden boards were used to produce the floor surface of the upper floor in main room. Carpet was used in corridor, linoleum on the stairway and in the eastern room (Plate 3.7).

The floors were connected by wooden quarter turn landing stairs enclosed in wooden staircase. The roof was supported by wooden king-post trusses (Figures 3.3, 3.4. Plates 3.8, 3.9, 3.18, 3.19).

10.13 The basement was accessible from outside through a basement located in the western neighbouring building where entry doors where located in the northern and western outer walls. The ground floor structural elements contain massive oak beams and joists. Basement floor level was located 2.17 metres below ground floor level (Plates 3.33, 3.34, 3.35).

11. Salle (4)

11.1 The building is NNW-SSE aligned and located in the North West part of the paper mill building complex. Only southern elevation is exposed to the inner yard. The building consist two floors. It is a rectangular-shaped building with a hipped roof (Figure 3.5).

The building measures 17.53m in length, 6.97m in width, a height to gutter of 5.95m and to ridge of roof 7.94m. Internal floor area on the ground floor is 108.54sq metres; second floor area is 108.54 sq metres (Plates 4.1- 4.5).

11.2 Flemish bond was used for brickwork pattern in southern wall. On east, north and west side, floors and the roof are supported by a number of steel columns and beams creating open spaces with surrounding buildings, one of those is Building 3 located on the north side of the building 4. The ground floor is rendered with concrete (Figure 4.1. Plates 4.3-4.8).

11.3 Wooden boards were used to produce the floor surface of the upper floor. The floors were connected by stairs located in adjoining buildings. The roof was supported by wooden king-post trusses. Ground floor space was divided by partition walls creating rooms which extended beyond the building footprint (Plate 4.11).

12. PMC Plant (5) (former Rag Store)

12.1 The building has been heavily doctored and altered over time. Window and door openings have been removed, added and widened and large concrete lintels have been inserted above, with additional modern mechanical plant added to elevations on an *ad-hoc* basis. Furthermore, the eastern face also shows further alterations and extensions have been completed and removed. The fabric and appearance of the building is no longer representative of its previous mid-19th century origins (Figure 4.2. Plates 5.1-5.3).

12.2 The building is WSW-ESE aligned and located in the south west part of the Paper mill building complex. The detached building consists of two floors and a basement. It is rectangular-shaped in plan with hipped roof. On the west side a single floor extension is located (Plate 5.1).

12.3 The building measures 21.59m in length, 10.02m in width, a height to gutter is 8.57m and to ridge of roof is 11.56m. Internal floor area on the ground floor is 185.54sq metres; second floor area is 166.23 sq metres; basement area is 185.54sq m. Flemish bond was used for brickwork pattern. Building floors were rendered with concrete except the two rooms and corridor located on upper floor in the east part of the building were linoleum was used for finished floor surface (Figure 4.8. Plate 5.3).

12.4 The floors were connected by steel dog legged stairs with landing located in south west part of the building. Also access to the upper floor was possible through the stairs located outside of the building on its eastern and western side. The roof was supported by steel trusses overbuilt with wooden boards. The structural components of upper floor were made of steel. There is a void area of 20 sq m in the upper floor, just beyond central gate, allowing crane lifting operations (Figure 4.3, 4.7. Plates 5.18, 5.19).

12.5 To bear extensive weight of machinery additional concrete pillars and beams were added in the basement providing support to the internal steel structure (posts and beams) supporting upper floor and a crane located on upper floor. Elements of steel structure were overbuilt with wooden boards and some hidden within partition walls. On northern and southern wall three rows consisting 4 blocked window openings were present (5.37).

On the external walls blocked door and window opening were located at ground and upper levels and extensive brickwork repair was noted (Figures 4.4, 4.5, 4.6. Plate 5.10).

13. Smithy (6)

13.1 The former smithy (single height corner building), which has been continually altered and now represents a heavily compromised site structure of predominantly 20th century construction. Consequently, it now features a mid-20th century northern extension, as well as a number of mid- 20th century windows and rebuilding works (Figure 5.1. Plates 6.1-6.3).

13.2 The small single-storey building with a curved south-east corner and pitched slate roof. It appears on a ground plan of the mill of c1833. Originally built of Kentish ragstone, which survives as the lower part of the walls on the south and east elevations, the building has been much altered with later C20 brickwork and an early C20 northern extension (Figure 5.1. Plate 6.1).

13.3 The building is NNW-SSE aligned and located in the south east part of Paper mill building complex. The building consist a single floor. It is L-shaped in plan with cross gable roof. The building was built inside the perimeter of boundary wall on its south east rounded corner adopting boundary wall as eastern and southern wall of the building. The western and northern walls were built of salvaged bricks. The taller southern section of the building was built using Flemish brick pattern and English bond was present in northern part of the building (Plate 6.1).

13.4 The building measures 12.79m in length, 7.46m in width, a height to gutter is 3.05m and to ridge of roof respectively 4.50m and 5.13 in taller and lower part of the building. Internal floor area is 61.86 sq metres. The roof in northern part of the building was supported by king bold trusses when in southern part only ridge beam, purlins and common rafters were used and the floor was rendered with concrete (Plate 6.12).

14. Warehouse with Kent Machine (7)

14.1 Many of the remaining buildings within the central core of the site date to c.1863-1897, built after a substantial fire broke out and destroyed large swathes of the original mill site in November 1862. These buildings now interlink with one another and evidently form a series of simple connected

warehouse type structures that are of limited architectural interest. They have largely been stripped of historic machinery and now remain as a series of basic spaces housing entirely modern paper manufacturing machinery (Plate 7.1).

14.2 A number of these buildings have also been substantially altered over time, with an eclectic mix of 20th century windows, new internal and external structural openings and roof extensions (Edinburgh Machine Room). Fundamentally, many of these building have been heavily compromised, or simply no longer exist in their original pre-1896/7 form. The interiors consist of various interconnecting warehouse-like spaces with, mainly, boarded roofs. Some retain their timber roof trusses whilst others have been replaced with steel trusses. The two-storey Paper Store has cast-iron columns and a boarded timber ceiling on the ground floor. A timber stair gives access to the upperstorey which has a modern suspended ceiling. All machinery in the Central Core is modern.

The Warehouse with Kent Machine (7) is located in the north east part of paper mill building complex and consists of two perpendicularly aligned rectangular in plan, single floor buildings (Figure 6.1. Plate 7.6).

14.3 The northern building 7A is WSW-ESE aligned and measures 30.28m in length, 11.50m in width, a height to gutter is 3.39m and to ridge of roof is 5.63m. Internal floor area is 324.6sq metres with a wooden Fink roof truss (Figure 6.3). The southern Building 7B is NNW-SSE aligned, measures 27.76m in length, 8.89m in width, a height to gutter is 6.16m and to ridge of roof is 8.51m. Internal floor area is 217.08sq metres and has a Steel Triangular Fan Truss roof (Figure 6.1, 6.2, 6.2a. Plate 7.24).

14.4 Air raid shelters

The location of the WWII air raid shelters is within the bank on the eastern area of the site. The layout can be seen in Figure 7.1 and the corridors are cut into the natural strata of the bank and comprise an curved entrance protected by reinforced concrete blast walls (Plate 8.3) with a shelter room constructed of reinforced concrete and reused vertical steel railway lines as posts with a WC with an underground access from the factory buildings located under the perimeter road to the west (Plates 8.4, 8.5, 8.6).

15. Chimney

15.1 The eastern Chimney is also tied to the steam phased development on site. It was one of William Balston's early design revisions (c.1809) to the site, used to extract the smoke discharged on Site (unpolluted air being essential to the manufacture of high quality white paper). It was initially constructed on the eastern boundary of the site and connected to the mill by an underground flue roughly 150m in length. The original chimney was located in the mill itself but due to pollution from the chimney affecting the paper a new chimney was built in the present position in c1809.

15.2 This chimney, however, fell into disrepair after problems with the flue meant use transferred back to the original chimney. The detached chimney was subsequently rebuilt and brought back into use from 1837. It is built of stock brick, laid in header bond, with a pronounced taper and has four iron reinforcing bands at the upper levels.

A later extension to the top of chimney was removed in early 2015. The flue is understood to remain intact but was not inspected (Plates 9.0, 9.1).

16. DISCUSSION

16.1 It is clear that overall Springfield Mill has a high degree of historical interest. As the first practical application of steam power to the paper making process it is clearly of interest for its technological innovation and its association with William Balston who, along with his former master, James Whatman II, was one of the principal paper makers of the late C18 to early C19. This is reflected in the existing Grade II listing of the former Rag Room and the beam from the 1806 Boulton and Watt beam engine (Plate 10.1).

16.2 However, the other parts of the mill complex are not from the original early C19 mill but, partly as a result of rebuilding after the major fire in 1862 and partly because of later expansion in reaction to changing operational requirements, date from the 1860s to the late 20th century.

16.3 Importantly, apart, notably, from the chimney, and possibly a pair of gable ends, nothing survives of the structures relating to the early period of steam

power which provides much of the mill's interest, aside from the existing listed structures. Some of the later buildings, such as the re-built Drying Room with timber louvers retain elements of their character that relate to their former function. However, the central core of the building has seen continuous alteration into the late C20, so that the original stages of the paper making process within this building are no longer legible.

16.5 This is compounded by the loss of all historic machinery relating to the paper making process, making it hard to determine how the internal spaces were used in the production of paper. The former Rag Room, the beam from the 1806 Boulton and Watt beam engine and the chimney have a historical value and these assets have been identified by Historic England and listed Grade II.

17. ARCHIVE

17.1 Preparation and Deposition

The Site Archive, to include all project records, will be prepared in accordance with Guidelines for the preparation of excavation archives for long-term storage (UKIC 1990).

On completion of the project SWAT Archaeology will arrange for the archive to be deposited with the appropriate repository (to be advised). Any alternative arrangements will be agreed with the County Archaeologist and the Local Planning Authority.

- 17.2 The historic building record archive will include:
- hard copy of the report
- pdf copy of the report on CD
- full photographic record with photographic registers
- field notes and sketches

17.3 Following approval of the report, SWAT Archaeology will provide the Kent Historic Environment Record (HER) with copies of all reports in both hard copy and digital format. 17.5 Upon completion of the on-site programme of historic building recording SWAT Archaeology will supply the Kent HER with a completed HER form.

18. Copyright

18.1 The full copyright of the written/illustrative archive relating to the Site will be retained by SWAT Archaeology under the Copyright, Designs and Patents Act 1988 with all rights reserved. The designated repository, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use shall be nonprofit making, and conforms to the Copyright and Related Rights regulations 2003.

19. REFERENCES

19.1 Primary sources

The bulk of the Ordnance Survey records are held at the Public Record Office located at Kew, historic photographs were provided by the past employee's and architects drawings by Bartek Cichy.

19.2 Secondary sources

SWAT Archaeology, 2015: Archaeological Desk-Based Assessment of Springfield Paper Mills

Understanding Historic Buildings: a Guide to Good Recording Practice (Historic England, published May 2016).

Written Scheme of Investigation for the site published by SWAT Archaeology (SWAT 2018

Chartered Institute for Archaeologists' Standard and Guidance for the archaeological investigation and recording of standing buildings and structures (CIfA 1996, revised 2008 and 2016).

Springfield Mill through History Stephen P. Hill 2015



Figure 1.1: Site location map, scale 1:5000.



Figure 1.2: Site plan and plate location

License number: 100031961



Figure 2.1: Building 2 - Floor plans



Figure 2.2: Building 2 - East and west elevation



Figure 2.3: Building 2 - South and north elevation; cross-section and roof truss



Figure 3.1: Building 3 and 4 - Basement plan



Figure 3.2: Building 3 and 4 - Ground floor plan



Figure 3.3: Building 3 and 4 - First floor plan


Figure 3.4: Building 3 - Elevations and sections





Figure 3.5: Building 4 - Elevation and section









Figure 4.2: Building 5 - Ground floor plan





Figure 4.3: Building 5 - First floor plan









Figure 4.5: Building 5 - East elevation





Figure 4.6: Building 5 - West elevation





Figure 4.7: Building 5 - Longitudinal section









Figure 5.1: Building 6 - Floor plan and section







Figure 6.1: Building 7 - Floor plan



SECTION A-A











Figure 6.2a: Building 7 - Longitudinal section

















Figure 7.1: Air Raid Shelter

Plates



Plate 1.1: Aerial photo of the Mill building complex



Plate 1.2: Aerial photo of the Mill building complex, looking west



Plate 1.3: Looking north-east at Mill building complex



Plate 1.4: Looking north west at the Mill buildings from car park

Plates of Building 2



Plate 2.1: Looking north at building 2



Plate 2.2: Looking north-east at the building 2



Plate 2.3: Looking south-south-west at eastern elevation of Building 2



Plate 2.4: Looking north-west at eastern elevation of Building 2



Plate 2.5: Looking west-south-west at eastern elevation of Building 2



Plate 2.6: Looking south at eastern elevation of Building 2 - south end



Plate 2.7: Looking north-east-north at western elevation of Building 2



Plate 2.8: Looking east-north-east at western elevation of Building 2 – south end



Plate 2.9: Looking east-north-east at western elevation of Building 2 – middle part



Plate 2.10: Looking south-south-east at north elevation of Building 2



Plate 2.11: Looking west-south-west at east elevation of building 2 – north end. Originally wood made part of the walls was acting as giant shutters for a purpose of ventilation allowing opening of the building sidewalls throughout the length of the building.



Plate 2.12: Looking south-south-east at roof vents located in the middle section of Building 2



Plate 2.13: Roof vent



Plate 2.14: Building 2: Looking north- west at room 1



Plate 2.15: Building 2: Looking east at room 2 and 3 from west corner of room 1



Plate 2.16: Looking east-north-east at room 3



Plate 2.17: Building 2: Looking north- west at room 4



Plate 2.18: Building 2 – Room 4: Looking east at the stairs leading to the corridor 14 and office rooms 15-21



Plate 2.19: Building 2 – Room 4: Looking north-north-west at the room 4 from the stair landing. Plant machinery visible to the left and walls of room 5 to the right



Plate 2.20: Building 2 – Room 4: Looking north-north-west at roof trusses



Plate 2.21: Building 2 – Room 5: Looking north at the room



Plate 2.22: Building 2 – Room 6: Looking north-north-west at the room with Cornwall machine occupying majority of the space



Plate 2.23: Building 2 - Room 6: Looking south-south-east at the from its north end



Plate 2.24: Building 2 – Room 7: Looking south-south-east at the room towards the entrance to the room 6. North end of Cornwall machine visible in the centre



Plate 2.25: Building 2 – Room 8: Looking north-north-west at the corridor located in north end of the building


Plate 2.26: Building 2 – Room 9: Looking north-north-west at the room that was functioning as a laboratory



Plate 2.27 Building 2 – Room 10: Looking north-north-west at the room that was functioning as a changing room. Doorway leading to corridor 6 is visible in the centre



Plate 2.28: Building 2 – Room 11: Looking north-west at the room. Doorway leading to the next building is visible on the left.



Plate 2.29: Building 2 – Room 13: Looking south west at the room accommodating machinery. Window and doorway to small operating room 12 are located on the right



Plate 2.30: Building 2 – Upper floor, corridor between building 2 and 3: Looking north-north- west at the doorway located at south end of the building, leading to corridor 14.



Plate 2.31: Building 2 – Upper floor, Room 14: Looking north-north- west at the corridor with office rooms 15-21 on both sides and doorway leading to stairs landing in room 6



Plate 2.32: Building 2 – Upper floor, Room 16: Looking east-north-east at the room. All the rooms 15-18 had the same dimensions.



Plate 2.33: Building 2 – Upper floor, Room 19: Looking east at the room and doorway leading to the corridor 14



Plate 2.34: Building 2 – Upper floor, Room 20: Looking west-south-west at the room.



Plate 2.35: Building 2 – Upper floor, Room 21: Looking west-south-west at the room.

Plates of Building 3



Plate 3. 1: Looking south- east at Building 3



Plate 3. 2: Looking west at the building



Plate 3. 3: Looking south-south-east at north elevation of building 3



Plate 3. 4: Looking east at north elevation of the building



Plate 3. 5: Looking south-south-east at north elevation of building 3. Visible here are Rag-stone foundation wall and part of the wall face rebuilt with bricks.



Plate 3. 6: Looking west-north-west at South elevation of building 3



Plate 3. 7: Looking north-north-west at South elevation of building 3



Plate 3. 8: Building 3 - Room 1: Looking south west at east end of the corridor and stairs leading to upper floor



Plate 3. 9: Building 3 - Room 1: Looking east-north-east at the corridor from a building located to the west of building 3. Rooms 2-9 are located to the left, alongside the corridor; Door and windows of Room 10 are visible in the distance at the end of corridor



Plate 3. 10: Building 3 - Room 2: Looking north-north-west



Plate 3. 11: Building 3 - Room 3: Looking north-north-west



Plate 3. 12: Building 3 - Room 4: Looking north-north-west



Plate 3. 13: Building 3 - Room 5: Looking north-north-west



Plate 3. 14: Building 3 - Room 6: Looking north-north-west



Plate 3. 15: Building 3 - Room 8: Looking north-north-west



Plate 3. 16: Building 3 - Room 10: Looking north-north-west



Plate 3. 17: Building 3 - Room 10: Looking east-north-east at the doorway to Building 7



Plate 3. 18: Building 3 – First Floor, Room 11: Looking west at the room from its eastern corner



Plate 3. 19: Building 3 – First Floor, Room 11: Looking west-south-west at western wall of building 3



Plate 3. 20: Building 3 – First Floor, Room 11: Looking east-north-east at eastern end of the room and doorway to Room 13



Plate 3. 21: Building 3 – First Floor, Room 11: Looking east at the roof trusses.



Plate 3. 22: Building 3 – First Floor, Room 11: Looking south-south-east at southern wall of building 3 with window onto neighbouring building.



Plate 3. 23: Building 3 – First Floor, Room 11: Looking north-east at doorway to Room 12 and Room 13 on the right.



Plate 3. 24: Building 3 – First Floor, Room 12: Looking south-south-east throughout the corridor at the doorway to Room 11, before which a doorway to stair landing is located to the left.



Plate 3. 25: Building 3 – First Floor, Room 12: Looking east-north-east throughout the corridor at the doorway to Room 13 visible at the end to the right, the doors on the left leads towards Building 2



Plate 3. 26: Building 3 - First Floor, Room 13: Looking north-east throughout the room at eastern wall of building 3



Plate 3. 27: Building 3 - First Floor, Room 13: One of the vent openings located at eastern wall of building 3



Plate 3. 28: Building 3 - First Floor, Room 13: Looking south-south-east throughout the room at southern wall of building 3



Plate 3. 29: Building 3 - First Floor, Room 13: Looking north-west throughout the room. Visible are doorway to the corridor-Room 12, ceiling and walls of a staircase behind the shelves



Plate 3. 30: Building 3 - First Floor, Room 13: Heater located under the shelves



Plate 3. 31: Building 3 - First Floor, Room 13: Looking west. Doors visible on the left are leading to Room 11. In their right corner an air vent opening is located



Plate 3. 32: Building 3 - First Floor, Room 13: Air vent



Plate 3. 33: Building 3 - Basement: Looking south-south-east at the northern elevation of the building abutted to the west of building 3. Entrance to the basement through is visible next to 2m scale.



Plate 3. 34: Building 3 - Basement: Looking east-north-east at the eastern elevation of the building 3 from the basement of the building abutted to the west of building 3. Entrance to the basement of Building 3 is visible next to 2m scale



Plate 3. 35: Building 3 – Basement of the building to the west of building 3: Looking south-east at the floor beams



Plate 3. 36: Building 3 - Basement: Looking east-north-east at the entrance to the basement of building 3



Plate 3. 37: Building 3 - Basement: Looking east-north-east at the basement from its west end



Plate 3. 38: Building 3 - Basement: Looking east-north-east towards the end of basement corridor



Plate 3. 39: Building 3 - Basement: Looking west-south-west at the basement from its eastern part. Walls here are rendered with concrete.



Plate 3. 40: Building 3 - Basement: Looking north-west at the cavity.



Plate 3. 41: Building 3 - Basement: Looking west-south-west at the remains of original stone pillar replaced by brick one.

Plates of Building 4



Plate 4.1: Building 4 – south elevation



Plate 4.2: Building 4 – south elevation



Plate 4.3: Building 4 – south elevation



Plate 4.4: Building 4 – Ground floor. Looking south-east at the pillar located on north-west corner of Building 4.



Plate 4.5: Building 4 – Ground floor: Looking north-west at east elevation.



Plate 4.6: Building 4 – Ground floor: Looking west-south-west at Room 1 – corridor.



Plate 4.7: Building 4 – Ground floor, Room 2: Looking north-east at machinery room



Plate 4.8: Building 4 – Ground floor, Room 3: Looking north-east at warehouse room



Plate 4.9: Building 4 – First floor, Room 4: Looking south-south-east at the room from Room 11 in Building 3



Plate 4.10: Building 4 – First floor, Room 4: Looking south-south-east at the room and roof truss



Plate 4.11: Building 4 – First floor, Room 4: Looking north-north-west at the room



Plate 4.12: Building 4 – First floor, Room 4: Looking north west at the columns and beams supporting roof structure



Plate 4.13: Building 4 – First floor, Room 4: Looking south-south-east at the roof trusses



Plate 4.14: Building 4 – First floor, Room 5: Looking west-south-west at the room

Plates of Building 5



Plate 5.1: Building 5, looking north-west



Plate 5.2: Building 5, looking north-west



Plate 5.3: Building 5: Looking north-north-west at south elevation of the building



Plate 5.4: Building 5: Looking north-north-west at south elevation of the building


Plate 5.5: Building 5: Looking north at south west corner of the building



Plate 5.6: Building 5 – west elevation: Looking east-north-east at west entry door leading to first floor



Plate 5.7: Building 5 – west elevation: Looking north-east at upper part of building wall



Plate 5.8: Building 5 – east elevation: Looking west-south-west, 5m scale.



Plate 5.9: Building 5 – North elevation: Looking south-west



Plate 5.10: Building 5 – North elevation: Looking south-south-east at



Plate 5.11: Building 5 – North elevation: Looking south-south-east at one of the blocked window



Plate 5.12: Building 5 – Ground Floor, Room 1: Looking north-north-west at the room from the entrance



Plate 5.13: Building 5 – Ground Floor, Room 1: Looking south-south-east at the entrance door



Plate 5.14: Building 5 – Ground Floor, Room 1: Looking north-east at the overbuilt steel columns and beams supporting upper floor



Plate 5.15: Building 5 – Ground Floor, Room 2: Looking south at the gate



Plate 5.16: Building 5 – Ground floor, Room 2: Looking north at the room from the gate



Plate 5.17: Building 5 – Ground floor, Room 2: Looking east-north-east at the room



Plate 5.18: Building 5 – Ground floor, Room 3: Looking south-west at the room



Plate 5.19: Building 5 – Ground floor, Room 3: Looking north east at the room



Plate 5.20: Building 5 – Ground floor, Room 3: Looking east-north-east at the sliding door leading to Room 3



Plate 5.21: Building 5 – First floor, Room 4: Looking south-west at the room



Plate 5.22: Building 5 – First floor, Room 4: Looking north-east at the room



Plate 5.23: Building 5 – First floor, Room 4: Looking north-north-west at the roof steel beams overbuilt with wood boards



Plate 5.24: Building 5 – First floor, Room 4: Looking north-north-east at the roof truss overbuilt with wood boards



Plate 5.25: Building 5 – First floor, Room 4: Looking south-east at the roof truss and wall plate



Plate 5.26: Building 5 – First floor, Room 4: Looking east-north-east at the door leading to Room 5



Plate 5.27: Building 5 – First floor, Room 5: Looking east-north-east at the room. The beam at the top is a lift.



Plate 5.28: Building 5 – First floor, Room 5: Looking north-east at the room



Plate 5.29: Building 5 – First floor, Room 5: Looking north-north-east at the room



Plate 5.30: Building 5 – First floor, Room 5: Looking east at the room



Plate 5.31: Building 5 – First floor, Room 5: Looking east-north-east at the roof trusses



Plate 5.32: Building 5 – First floor, Room 5: Looking north-north-west at the in filled window opening



Plate 5.33: Building 5 – First floor, Room 6: Looking east-north-east at the corridor



Plate 5.34: Building 5 – First floor, Room 6: Looking south-south-east at the corridor and Room 8 on the right



Plate 5.35: Building 5 – First floor, Room 7: Looking north-west at the kitchen



Plate 5.36: Building 5 – North elevation: Looking south-south- east at the basement doors



Plate 5.37: Building 5 – Basement: Looking east at the concrete pillars supporting floor



Plate 5.38: Building 5 – Basement: Looking east at the concrete pillars and beams supporting floor



Plate 5.39: Building 5 – Basement: Looking west at the wall



Plate 5.40: Building 5: Looking south - east at the water pump located outside at west end of the building



Plates of Building 6



Plate 6.1: Building 6: Looking west at the building



Plate 6.2: Building 6 – East elevation: Looking west-south-west at the building



Plate 6.3: Building 6 – South elevation: Looking north-north-west at the building



Plate 6.4: Building 6 – West elevation: Looking south-east at the building



Plate 6.5: Building 6 – West elevation: Looking east-north-east at the building



Plate 6.6: Building 6 – North elevation: Looking south-south-east at the building



Plate 6.7: Building 6 – North elevation: Looking south-south-east at the building



Plate 6.8: Building 6 – North elevation: Looking south-south-east at the building



Plate 6.9: Building 6 – North elevation: Looking south-east at the gable wall and eaves



Plate 6.10: Building 6 – Room 1: Looking south-south-east at the room from entrance door



Plate 6.11: Building 6 – Room 1: Looking south-south-east at the end of the room



Plate 6.12: Building 6 – Room 1: Looking north-north-west at the room from entrance door



Plate 6.13: Building 6 - Room 1: Looking north-north-west at the north wall and ceiling



Plate 6.14: Building 6 - Room 1: Looking south-south-east at the ceiling (lower section of the roof)



Plate 6.15: Building 6 – Room 1: Looking south-south-east at the ceiling (higher section of the roof)



Plate 6.16: Building 6 – Room 1: Looking south-west at ceiling in Room 2 (higher section of the roof)



Plate 6.17: Building 6 – Room 2: Looking south-west at the room



Plate 6.18: Building 6 – Room 2: Looking north-west at the room

Plates of Building 7



Plate 7.1: Building 7: Looking west at the roof of the building



Plate 7.2: Building 7 - north elevation: Looking south



Plate 7.3: Building 7 - west elevation: Looking east at the entrance to Room 2 from building 3



Plate 7.4: Building 7 - Room 2: Looking north-east from its south west end. Room 3 - box is visible on the right



Plate 7.5: Building 7 – Room 2: Looking north-east at blocked openings



Plate 7.6: Building 7 – Room 2: Looking south west at walls and window of the room 4. Doorway leading to Building 3 is visible on the right



Plate 7.7: Building 7 – Room 2: Looking east at the room. Located on the right sliding doors leads to outside and to the room 1. Doorway to Room 8 is visible on the left.



Plate 7.8: Building 7 – Room 2: Looking north east at the room



Plate 7.9: Building 7 – Room 2: Looking south east at the wall with doorway leading outside.



Plate 7.10: Building 7 – Room 2: Looking south east at the wall with left doorway leading to room 1.



Plate 7.11: Building 7 – Room 2: Looking south west at sliding door mechanism



Plate 7. 12: Building 7 – Room 2: Looking south west at the room from its north east end



Plate 7. 13: Building 7 – Room 2: Looking north- west at the room from its north east end. Visible doorway opening leads to room 9



Plate 7.14: Building 7 – Room 2: Looking south west at the room and the ceiling.



Plate 7. 15: Building 7 – Room 2: Looking west at the ceiling and roof trusses



Plate 7. 16: Building 7 – Room 1: Looking south east at the room from its NW end. Kent machine occupies the whole area of the room.


Plate 7. 17: Building 7 – Room 1: Looking north east at the wall with doorway leading to another building.



Plate 7.18: Building 7 – Room 1: Looking at the N wall of the room with doorway leading to room 2



Plate 7.19: Building 7 – Room 1: Looking south at the western wall of the building with doorway leading to another building



Plate 7. 20: Building 7 – Room 1: Looking at the south east at southern end of the room and the building.



Plate 7. 21: Building 7 – Room 1: Looking north east at the doorway leading to another building – picture taken in S end of the building



Plate 7. 22: Building 7 – Room 1: Looking at the S wall of the room with opening leading to another building.



Plate 7. 23: Building 7 – Room 1: Looking north-west at the crane rail



Plate 7. 24: Building 7 – Room 1: Looking north-north-west at roof trusses



Plate 7. 25: Building 7 – Room 1: Looking south east at roof trusses



Plate 7. 26: Building 7 – Room 5: Looking north east at the doorway to room 5



Plate 7. 27: Building 7 – Room 5: Looking south east at the room



Plate 7. 28: Building 7 – Room 5: Looking south east at the ceiling and roof truss



Plate 7.29: Building 7 – Room 6: Looking north west at the corridor with doorway on the left leading to room 5 and the one to the right leading to the room 7



Plate 7.30: Building 7 – Room 7: Looking north east at the room



Plate 7. 31: Building 7 – Room 7: Looking south west at the room



Plate 7. 32: Building 7 – Room 8: Looking north east at the room with room 2 located to the right



Plate 7. 33: Building 7 – Room 8: Looking south west at the room. Columns on the right are indicate northern boundary of the building.

Plates of Building 8 – Air Raid Shelter



Plate 8.1: Air Raid shelter: Looking south east at retaining wall



Plate 8. 2: Air Raid shelter: Looking north at retaining wall and entrance to the shelter



Plate 8. 3: Air Raid shelter: Looking north-north-east at the entrance to the shelter



Plate 8. 4: Air Raid shelter – Room 1: Looking north-north-east at the door to the WC



Plate 8. 5: Air Raid shelter – Room 1: Looking north-east at the toilet bucket.



Plate 8. 6: Air Raid shelter – Room 1: Looking south-east at the shelter room



Plate 8. 7: Air Raid shelter – Room 1: Looking north east at the entrance to the tunnel – Room 2



Plate 8. 8: Air Raid shelter – Room 2: Looking north east at the tunnel – Room 2



Plate 8. 9: Air Raid shelter – Room 3: Looking east north east at the blocked tunnel



Plate 8. 10: Air Raid shelter: Looking west at the top of blocked tunnel visible in plate 8.9



Plate 8. 11: Air Raid shelter – Room 3: Looking west-south-west at the tunnel and tunnel 4 starting after bend.



Plate 8. 12: Air Raid shelter – Room 4: Looking west-north-west at the tunnel



Plate 8. 13: Air Raid shelter – Room 5: Looking south-south-west at the junction with tunnel 4



Plate 8. 14: Air Raid shelter – Room 5: Looking north-north-west at the top of the stairway



Plate 8. 15: Air Raid shelter – Room 5: Looking east north east at the top of the concrete stairs



Plate 8. 16: Air Raid shelter – Room 5: Looking west-south-west at bottom of the stairway and end of the tunnel leading to the factory buildings



Plate 8. 17: Air Raid shelter – Room 5: Looking east-north-east at slightly flooded tunnel, stairs and steel beam oddly running across the corridor.



Plate 8. 18: Air Raid shelter – Room 5: Looking north-east at the entrance to the tunnel from basement located in Mill building complex



Plate 8. 19: Air Raid shelter – Room 5: Looking south-west at the water pouring from drain pipe. Water flows further through the hole in the wall visible on the left



Plate 8. 20: Air Raid shelter - Room 5: Looking east-south-east at the entrance to the basement



MAP 1. OS map 1865



MAP 2. OS map 1868



MAP 2A. OS map 1868



MAP 3. OS map of 1869



MAP 4. OS map of 1895



MAP 5.OS map of 1907



MAP 6. OS map of 1908



MAP 7. OS map of 1932



MAP 8. OS map of 1938



MAP 9. OS map of 1947



MAP 9. OS map of 1947



MAP 10. OS map of 1968



MAP 11. OS map of 1995