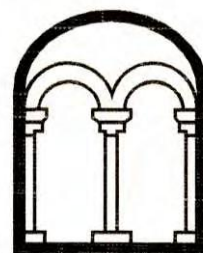


**20-22 SILVER STREET
BEDFORD**

**ARCHAEOLOGICAL OBSERVATION,
INVESTIGATION, RECORDING, ANALYSIS
AND PUBLICATION**

Albion
archaeology



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BEDFORD**

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Prepared for
Robinson + Hall

On behalf of
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Contents

1	INTRODUCTION	7
1.1	Project Background	7
1.2	Site Location and Description	7
1.3	Archaeological and Historical Background	7
1.4	Project Objectives	9
2	METHODOLOGY	10
3	RESULTS	11
3.1	Introduction	11
3.2	Undisturbed Geological Strata	11
3.3	Area within the Standing Buildings	11
3.4	Area to the Rear of the Properties	12
4	CONCLUSIONS	17
5	BIBLIOGRAPHY	19
6	APPENDIX 1: FINDS SUMMARY	20
6.1	Introduction	20
6.2	Pottery	20
6.3	Clay Tobacco Pipes and Associated Objects	21
6.4	Other Finds	22
6.5	Ecofacts	22

List of Tables

Table 1: Artefact Summary by feature type

Table 2: Pottery Type Series



List of Figures

Figure 1: Site location plan

Figure 2: Historical maps

Figure 3: Area within the standing buildings — All-features plan

Figure 4: Area within the standing buildings — Selected images 1 and 2

Figure 5: Area to the rear of the properties — All-features plan and selected sections

Figure 6: Area to the rear of the properties — Selected images 3 and 4

Figure 7: Area to the rear of the properties — Selected images 5 and 6

Figure 8: Clay tobacco pipe kiln — Selected images 7 and 8

Figure 9: Stamped clay tobacco pipe bowls from the pipe kiln — Images 9 and 10

Figure 10: Stamped clay tobacco pipe spurs from the pipe kiln — Images 11 and 12

Figure 11: Kiln furniture from the pipe kiln — Images 13 and 14

The figures are bound at the back of this report.



Preface

Every effort has been made in the preparation of this document to provide as complete a summary as possible within the terms of the method statement. All statements and opinions in this document are offered in good faith. Albion Archaeology cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party, or for any loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in this document.

Acknowledgements

Albion Archaeology was commissioned to carry out the archaeological works by Robinson + Hall, on behalf of St Johns Hospital Trust. The project was monitored on behalf of the Local Planning Authority by Geoff Saunders of the Historic Environment Team of Bedford Borough Council.

Fieldwork was carried out by Richard Gregson and Slawomir Utrata (Project Supervisors). This report has been prepared by Richard Gregson, Slawomir Utrata, Jackie Wells (Finds Officer) and Gary Edmondson (Project Manager). All Albion projects are under the overall management of Drew Shotliff (Operations Manager).

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Key Terms

Throughout this document the following terms or abbreviations are used:

BBC	Bedford Borough Council
DCLG	Department for Communities and Local Government
HER	Bedford Borough Council Historic Environment Record
HET	Historic Environment Team of Bedford Borough Council
IfA	Institute for Archaeologists
WSI	Written Scheme of Investigation



Non-Technical Summary

Albion Archaeology was appointed by Robinson + Hall, on behalf of their clients, St Johns Hospital Trust, to undertake a programme of archaeological works to fulfil planning conditions attached to granted planning applications submitted to Bedford Borough Council (12/00727/FUL and 12/00749/FUL — condition no. 2 in the case of each planning permission) for 20–22 Silver Street, Bedford.

As the development lay within an area of high archaeological interest, the Historic Environment Team (HET) of BBC recommended that a condition was attached to any planning consent, requiring the implementation of a programme of archaeological mitigation. This advice was in accordance with national policies contained in the National Planning Policy Framework as well as policies in the Bedford Borough Local Plan (2002) and the Bedford Borough Core Strategy and Rural Issues Plan (2008). No brief was issued by the HET, but following discussions, Albion formulated a Written Scheme of Investigation (WSI).

The site is located roughly mid-way along the southern side of Silver Street, centred on grid reference TL 049697 498262, within the old town of Bedford. Silver Street forms the northern side of a roughly square block of properties in the area immediately north of St Paul's Square, a short distance from the River Great Ouse.

The archaeological works were undertaken intermittently between 5th July and 2nd August 2012, in accordance with the works programme of the groundworks contractor. Works inside the standing buildings, which had potential to expose archaeological deposits, were monitored, revealing traces of backfilled cellars under the existing floors. It would appear that a coal cellar, with stepped footings occupied the area towards the street frontage, whilst further to the rear a vertically sided cellar was revealed. The tiled walls indicated a different function — possibly a storeroom with internal partitions. This element of the groundworks did not expose any earlier deposits or finds.

To the rear of the property the existing outbuildings were demolished and the ground level was then reduced, before a series of wall footings were excavated. All groundworks with potential to impact on archaeological deposits were monitored. The investigation revealed evidence for a complex series of events. The stratigraphically earliest, though undated, features were located towards the rear of the site, comprising a pit and a posthole. These predated an extensive cultivation soil which contained post-medieval finds and appeared to be garden plots in the interior of the block rather than ploughed land, based on the thickness of the material. This was truncated by a series of steep-sided features interpreted as the robbed walls defining elements of the footprint of a substantial stone building, which did not respect the present property boundaries. Dating material from these features was sparse with a single fragment of post-medieval roof tile being recovered from one of the features. The infill of these trenches was truncated by a series of pits of uncertain function, clustered at the western margin of the investigation area. These did not respect the current property boundaries. They were sealed by a disturbed cultivation soil, which is thought to be material removed from the street-front area when the current buildings were erected.



In the south-eastern area of the site the floor of a clay tobacco pipe kiln was exposed. The wares of several local pipe-makers were recovered; the forms indicate a mid-late 19th-century date. This feature was only revealed at the formation level of construction work, limiting the scope of investigation, and it has been preserved in situ beneath a geotextile membrane. A rectangular feature further west may have been associated with the kiln.

The western property boundary was established by at least the mid 19th century and possibly the turn of the century based on the Roper map. The southern and eastern boundaries underwent change, especially in the last century, moving northwards.

The investigation has provided evidence of sequential use of the site from at least the post-medieval period. This survived in the area beyond the main standing buildings. However, both the impact of the development on the buried archaeological deposits and the scope of the investigation were limited. There is no potential for further analysis and reporting of the remains beyond the scope of this document. However, summaries of the results of the work will be published in South Midlands Archaeology and Post-medieval Archaeology, cross-referenced to this document which will be uploaded onto the OASIS website.



1 INTRODUCTION

1.1 *Project Background*

Two planning applications (12/00727/FUL and 12/00749/FUL) for 20–22 Silver Street, Bedford have been granted by Bedford Borough Council (BBC). They are respectively for: the demolition of existing outbuildings, and construction of extensions to the rear and a bin compound; and replacement of shop front and formation of rear bin store compound.

As the development lay within an area of high archaeological interest, the Historic Environment Team (HET) of BBC recommended that a condition was attached to any planning consent, requiring the implementation of a programme of archaeological mitigation. This advice was in accordance with national policies contained in the National Planning Policy Framework as well as policies in the Bedford Borough Local Plan (2002) and the Bedford Borough Core Strategy and Rural Issues Plan (2008).

Albion Archaeology was commissioned by Robinson + Hall to carry out the archaeological work. No brief was been issued by the HET, but following discussions, a Written Scheme of Investigation (WSI) was formulated, setting out the procedures and methods that were employed during the project in order to fulfil the planning conditions (condition no. 2 in the case of each planning permission).

1.2 *Site Location and Description*

The site is located roughly centrally along the southern side of Silver Street, centred on grid reference TL 049697 498262 (Figure 1), within the old town of Bedford. Silver Street forms the northern side of a roughly square block of properties in the area immediately north of St Paul's Square, a short distance from the River Great Ouse. The plot is roughly rectangular in plan comprising two former plots 20 and 22, which at the time of the archaeological investigation comprised one unit, extending approximately 27m N-S by 12m wide. The site is bounded by a passageway immediately to the east, which bisects this square block of properties. The buildings at the street-front form part of a row of three brick-built properties, with features characteristic of the mid 19th century. Modern buildings are immediately to the west and beyond the passageway to the east.

The site is at a height of *c.* 23m OD, with a slight slope down to the south, towards the river. The geology of the area comprises river terrace deposits of sand and gravel overlying limestone of the Great Oolite series.

1.3 *Archaeological and Historical Background*

The site is considered to be within the core of the Saxon and medieval settlement of Bedford. It is close to the N-S aligned High Street that has been the main thoroughfare in Bedford from Saxon to modern times. It is also close to the putative 9th-century northern boundary of the town that shifted further north in a series of stages as the settlement extended in the following three centuries.



Probably in the medieval period, and at least by 1610 (based on the John Speed map), a routeway on roughly the same alignment as Mill Street, Silver Street and Midland Road had been established. It went E-W across the north of the town meeting at a central crossroads with the High Street. In contrast, the 19th-century routeway is off-set either side of the junction with the High Street, between Mill Street and Silver Street.

Speed's 1610 map indicates that three sides of the square were built-up along the street frontages facing south (*St Paules*), east (High Street) and north (Silver Street.), with the western side (*Sheps Chepping* corresponding to Harpur Street) being undeveloped. The interior was apparently subdivided into a number of plots, with at least five land parcels being defined (Figure 2: Map 1).

The Roper map of 1807 indicates that the junction between Silver Street to the west of the High Street and Mill Street to the east, had become off-set. (Figure 2: Map 2). If this was a genuine change from the situation in 1610, Silver Street is most likely to have shifted its position since it is at a slightly different angle to both Mill Street and Midland Road. The 1807 map also shows that properties have been built on all four sides of the block. Some of these properties, including the property at 20 Silver Street and the George Inn, have been extended to a lesser or greater extent into the interior of the block. A few new buildings have also been built in the interior the block. However, the interior is still mostly undeveloped. The corner of a limestone building (Scheduled Monument NHLE1004674) survives approximately 20m to the SE of the site; it is considered to have been part of the medieval George Inn. A passageway on the east side of 20 Silver Street had been established by 1807, possibly following an old land division.

The Mercer map of 1876-78 and the first edition Ordnance Survey Map of 1882 show that, by latter part of the 19th century, the area within the block had been extensively developed with little open ground remaining (Figure 2: Maps 3 and 4). Due to the density of activity, the blocked in buildings of the Mercer map of 1876-78 are easier to discern, with the series of buildings occupying the rear of the site. These buildings extend south of the present boundary, into the area which is now parking/access road.

A watching brief undertaken in 1986 monitored the excavation of two 15m long N-S aligned trenches at 20 Silver Street (Edgeworth 2004 194); this was probably associated with the southern extension to the street-front building. It revealed two limestone wall footings of possible medieval date and associated demolition deposits extending *c.* 1m below the current ground level. Beneath them to a depth of *c.* 3m below ground level was an earlier linear feature that was postulated to have been a large, E-W aligned ditch. Although it was identified in both trenches, suggesting that it was linear, its profile was not fully revealed preventing its definite characterisation as a substantial ditch.



1.4 Project Objectives

The immediate objective of the archaeological fieldwork was to monitor all sub-surface groundworks associated with the development that had the potential to reveal archaeological remains, and to investigate, characterise and record any archaeological deposits encountered within them.

Research frameworks that have been devised for the region are Research and Archaeology Revisited: a revised framework for the East of England (Medlycott 2011) and specifically for Bedfordshire: Bedfordshire Archaeology. Research and Archaeology: Resource Assessment, Research Agenda and Strategy (Oake et al 2007).

The location of the site within the Saxon core and medieval core of the settlement had potential to add to the understanding of the origins and development which is a local and regional research theme (Oake 2007, 14; Medlycott 2011, 70). The footing trenches had potential reveal the continuation of previously exposed limestone walls and associated deposits, as well as activity in the backlands of the property.



2 METHODOLOGY

All ground disturbance associated with the development, in particular wall footings and service trenches, which had the potential to reveal archaeological remains, were archaeologically monitored. When archaeological remains were encountered, groundworks were suspended allow recording and investigation of the deposits. Excavated soil was regular checked for finds. The client and HET team were regularly updated on the progress of the work.

Throughout the project the standards set out in the following documents were adhered to:

• Albion Archaeology	<i>Procedures Manual: Volume 1 Fieldwork</i> (2 nd ed, 2001).
• English Heritage	<i>Management of Research Projects in the Historic Environment (MoRPHE)</i> (2009)
	<i>Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation (Second Edition)</i> (2011)
• IfA	<i>By-Laws and Code of Conduct</i> (2010)
	<i>Standard and Guidance for Excavation</i> (2008)
	<i>Standard and Guidance for an Archaeological Watching Brief</i> (2008)

The project archive will be deposited with Bedford Museum (accession no. 2012.38). This report will be uploaded onto the Archaeology Data Service's OASIS website (albionar1-129602).

A detailed methodology is provided in the Written Scheme of Investigation (Albion Archaeology 2012).



3 RESULTS

3.1 Introduction

The monitored groundworks were undertaken intermittently between 5th July and 2nd August 2012, in accordance with the works programme of the groundworks contractor.

The results are discussed in terms of the area within the building (Figure 3 and Figure 4 (associated images)) and the area to the south of the properties (Figure 5 and Figures 6-11 (associated images)). The features are, where possible, discussed chronologically from earliest to latest.

3.2 Undisturbed Geological Strata

Undisturbed geological strata (10) consisted of friable to loose mid orange brown sandy gravel. This was revealed *c.* 1.4–1.5m below the present ground level. In the southern part of site, the undisturbed geological stratum was buried under an extensive series of deposits.

3.3 Area within the Standing Buildings

The initial monitoring works were undertaken within the standing buildings, with four test pits (Test Pits 1-4 on Figure 3) being opened to assess the footings of partition and external walls. Other works consisted of a water connection pit adjacent to the eastern external wall and drainpipe trenches that connected to an existing junction point within the building; this did not penetrate below deposits associated with the modern flooring.

3.3.1 Street-front cellar

The northernmost test pit (Test Pit 1) was excavated to a depth of 1.4m through concrete and into the backfilled front cellar of 20 Silver Street. This area had stepped footing (Figure 4: image 1). Underneath a layer of backfilled brick rubble was a thick deposit of coal dust. Adjacent to the partition wall were two brick pillars that appear to have been a later addition. It is likely that the front cellar had been used to store coal.

3.3.2 Rear cellar

The middle test pit (Test Pit 2 on Figure 3) was excavated to a depth of 0.8m through concrete and into a back cellar that had been in-filled with brick rubble. In contrast to the northernmost cellar, this cellar had vertical walls that had been faced with glazed white and black tiles (Figure 4: image 2).

The water connection pit was located internally, adjacent to the eastern wall of 20 Silver Street. It was excavated to a depth of 0.8m through the backfilled brick rubble within what was probably the same back cellar as the middle test pit; however, this wall was not tiled.

3.3.3 Remainder of the area

The southernmost test pit (Test Pit 3 on Figure 3) was only excavated to a depth of 0.3m because reinforced concrete was encountered.



A further test pit was located internally, adjacent to the western wall of 22 Silver Street within a lean-to building at the rear of the former shop. The test pit (Figure 3 - Test Pit 4) was excavated to a depth of 0.8m. Within it was a layer of concrete supporting sleeper walls aligned E-W, *c.* 0.16m wide and 0.8m apart, which had probably been used to support a suspended timber floor.

The trenches for drains were excavated to a maximum depth of 0.45m, generally cutting through deposits associated with the modern floor; however, occasionally traces of possible cellar backfill were exposed in the base of the trenches.

3.4 Area to the Rear of the Properties

The all-features plan of this area (Figure 5) with associated sections has been colour-coded for clarity. Where possible the features will be discussed stratigraphically from earliest to latest, integrating finds information, while more detailed finds information is provided in Appendix 1. The investigation area extended marginally westwards, beyond the footing for the former property boundary wall [3], which was removed during the construction works.

3.4.1 Undated early features

The stratigraphically earliest archaeological features were identified towards the southern margin of the site (Figure 5 - green features).

Probable pit [9]

Only the northern part of the feature was exposed, as it had been severely truncated by later activity, which hindered determination of form and profile (Figure 5: sections 1 and 2 and Figure 6: image 3). However, the feature was at least 0.32m deep, with a flat base, though the sides were lost to later activity. The mid brown sandy silt contained no finds.

Posthole [25]

Only the northern part of this feature was revealed. It had a semi-circular form in plan, 0.3m across and 0.26m deep with vertical sides and concave base (Figure 5: section 1 and Figure 7: image 5). The sole fill consisted of dark brown clayey silt, with occasional small stones, though no packing stones or post-pipe were observed.

3.4.2 Possible post-medieval cultivation soil (7/20)

The dark grey brown sandy silt was 0.34–0.5m thick, with a horizontal, well-defined lower boundary (Figure 5 – brown hatched deposit on sections 1, 2 and 3 and Figure 7: images 5 and 6). This is interpreted as a cultivation soil. Its location and depth suggest it was a hand-dug soil, rather than traces of an arable ploughed field — the latter is typically only *c.* 0.3m thick. The presence of ceramic building material (CBM) was noted in (20) in the east whilst (7) towards the western margin of the site had fewer inclusions. No finds were recovered from this deposit. The presence of CBM would suggest that this soil was still cultivated in the post-medieval period.



An associated service trench opened on the Silver Street frontage revealed a very similar deposit.

3.4.3 Robber trenches

A series of perpendicular, deep, linear features were identified towards the southern margin of the site (Figure 5 – light blue features). These features continued both to the west and south, beyond recent property boundaries. The linear features ranged in size from 0.7–1.8m wide, with steep to vertical sides. All of these features continued below the formation level, indicating depths ranging from at least 0.78m to over 1.2m (Figure 5: sections 1-3 and Figure 6: images 3 and 4 and Figure 7: images 5 and 6). There were no direct links between the features, though they had similar relationships and so are assumed to be contemporary. All of the cuts truncated the friable sandy gravel geological strata, indicating that they were not open for an extended period of time, as the material forming the edges would have collapsed.

Aligned E-W, robber trench [11] extended from the western limit of investigation, measuring 0.7m wide and at least 0.78m deep, with a very steep southern edge, which became vertical, lower down the profile. Only the vertical lower portion of the northern side survived, due to later truncation. The trench truncated the buried cultivation soil (20) (Figure 5: section 2 and Figure 6: images 3 and 4). Two fills were defined. The upper deposit consisted of dark grey brown sandy silt up to 0.48m thick. The lower fill was slightly lighter in colour: a mid grey clay silt with medium and large slabs of limestone up to 0.32m across. These are considered to be discarded remnants of the robbed masonry wall. Small quantities of animal bone and oyster shell were recovered from the feature (Table 1).

Robber trench [21] was aligned N-S extending from the southern limit of investigation. It was traced for 4.1m to a squared limit in the north, defined against cultivation soil (7/20). In section, the cut was 1.8m wide and at least 1.2m deep with vertical edges, continuing below the limit of investigation (Figure 5: sections 1 and 3, Figure 7: images 5 and 6). The main fill of the feature (22) consisted of dark brown grey clayey silt, at least 1.1m thick; no large stones were visible in this deposit. There was no evidence of weathering or collapse of the sandy gravel edges within the fill, indicating that this material was probably backfilled shortly after the feature had been excavated. A small fragment of post-medieval roof tile (106g) was recovered from this deposit. The other three deposits (23), (43) and (24) were confined to the upper eastern edge of the feature (Figure 5: sections 2 and 3). While (22) and (23) were 0.2–0.4m thick and light yellow brown to mid brown grey in colour, intermediate deposit (43) was a distinctive mixed ashy deposit of dark grey to black, up to 0.14m thick. These deposits are considered to be the results of dumps of material into a hollow left by settling of (22), rather than a later pit. The lowest asymmetrical fill (23) contained a considerable amount of oyster shells.

A short distance to the east, a third robber trench [29] was identified (Figure 5 section 3, Figure 7: image 6). It was a substantial feature, at least 1.3m E-W by 0.95m deep, with near vertical edges. As only a short segment was



revealed in the footing trench, its alignment is not certain. However, it was not identified in the parallel footing trench, *c.* 1.5m to the north, which may suggest an E-W alignment, perpendicular to adjacent substantial trench [21]. The sole fill (30) comprised dark brown grey clayey silt with lenses of clayey mid yellow material. No artefacts were recovered from this deposit, and no large stones were visible. The cut is very similar to the other robber trenches, and it also truncates the old cultivation soil [20], extending well into the geological strata.

Towards the eastern margin of the site, one of the footing trenches clipped the edge of a substantial feature [41] — (blue feature on Figure 5). This was at least 0.8m deep and was initially interpreted as a deep pit, though it may be part of the robber trenches. The sole fill (42) was dark brown grey clayey silt with lenses of clayey mid yellow material. No artefacts were recovered from the deposit; however, the feature did truncate old cultivation soil (7/20). The combination of its stratigraphic location and its form may suggest that it is part of another robber trench.

3.4.4 Possible post-medieval pitting [14], [18] and [27]

Confined to the western margin of the area, beneath the property boundary wall [3], a cluster of three pits were identified (Figure 5 and section 2 - solid brown features). Pits [14] and [18] were intercutting in the west, while [27] was further to the east. Only parts of each feature were exposed, though the revealed elements suggest that [14] and [27] were smaller deeper pits, while [18] would appear to have been much larger, with a shallower profile.

Early western pit [14] was 1.88m long by at least 0.3m wide and 0.6m deep, continuing below the base of the trench in the west (Figure 5: section 2 and Figure 6: image 3). This feature would appear to be a rubbish pit. Its main mid grey brown sandy silt fill (15) was at least 0.38m thick and contained occasional charcoal flecks and a small quantity of animal bone (not retrievable). Above this was a series of ashy dumps (16) which were up to 0.25m thick and contained a considerable amount of charcoal. This deposit is a deliberate dump of material. The upper fill (17) consisted of mid brown grey clayey silt, 0.1m thick. It is not clear if this was a deliberate dump of material or had formed due to the settling of earlier deposits.

Immediately to the east, pit [27] was visible, extending a short distance from the eastern edge of the footing trench. The pit was at least 1.5m long N-S, by at least 0.2m wide and 0.6m deep, continuing below the base of the trench. The mid grey brown sandy silt fill (28) contained no finds.

Pit [18] was larger than the others, extending 3.4m N-S, by at least 0.5m wide and up to 0.33m deep, with steep sides and a generally flat base (Figure 5: section 2). The mixed fill of dark brown grey clayey silt contained small-medium sized stones. CBM fragments were observed in section but were not retrieved; this material would indicate a post-medieval date. This pit marginally truncated earlier pit [14].



3.4.5 Post-medieval–modern upper cultivation soil (1/6)

A 0.5m thick layer of dark grey brown sandy silt sealed all the features discussed previously (Figure 5: sections 1-3 — horizontal brown hatching). The deposit was observed across the whole stripped area. It was very similar in color and texture to the old cultivation soil (7/20), but contained many more inclusions including pottery, CBM fragments, stones and charcoal. The pottery ranged in date from the post-medieval to modern periods (Appendix 1). It seems likely that it had been a cultivation deposit, probably removed from the part of the site closer to the street frontage on Silver Street during construction works, and spread in the backs of the properties, possibly as a garden soil.

3.4.6 Clay tobacco pipe kiln [35]

Located in the SE corner of the site, part of a kiln for firing clay tobacco pipes was revealed. It survived beneath layers of modern rubble and tarmac, 0.2–0.5m thick. As the kiln was exposed at the formation level for the groundworks, investigation was restricted to cleaning and recording at this level to ensure that it was preserved *in situ*.

The kiln consisted of a central flue / ash pit with associated kiln floor made from bricks (38) and (39), extending 0.44m beyond the edges of the flue (orange area on Figure 5) with areas of a crumbling yellow mortar to either side of the brick floor, defining a band up to 0.48m wide (Figure 5 — yellow feature and Figure 8: images 7 and 8). The kiln would appear to have been rectangular 2.3m (7'6") wide (E-W) and at least 1.4m long, with the central flue being 0.52m wide (*c.* 1'7"); the exposed face of the flue indicated that the floor was constructed of at least two courses of bricks (Figure 8: image 7). At the northern limit, adjacent to a modern service trench and the associated 1986 building extension, the scar of a wall was just discernable, extending across the northern limit of the flue / ash pit (Figure 8: images 7 and 8). This would appear to be the northern wall of the kiln. This would indicate that the stokepit was to the south and that the kiln was extensively robbed once it was no longer required. The stokepit for these kilns is typically large, tending to be of a size similar to the floor area of the kiln. The form and dimensions of the kiln appear similar to one excavated at Hurst Court, Manchester in 1980/81 (Arnold 1983).

The flue / ash pit was filled with a white/dark grey ashy deposit (40), containing charcoal, clinker, brick rubble as well as numerous clay pipe fragments and fragments of kiln furniture. A selection of this material was recovered from the surface of the deposit (Figures 9–11), with the pottery and forms of the clay pipes indicating a mid-late 19th-century date. The stamps of three pipe-makers were recovered, two of which are the name stamps of local pipe-makers, F Covington and Willshaw (Figures 9: images 9 and 10). R Willshaw also used a mould with his initials on the spur of the pipe, below the bowl (Figure 10: image 11). The spur stamp of another unidentified pipe-maker was also recovered (Figure 10: image 12). The Post Office directories of the 1850s and 1860s indicate that Frederick Thomas Covington and Richard Willshaw were operating in the locality. It is not unusual for several pipe-makers to use the same kiln for firing their wares. Based on the presence of



charcoal in the fill of the flue, this would indicate that wood or possibly charcoal rather than coal was used for the firing.

A variety of fragments of kiln furniture, specific to clay tobacco pipe kilns, were recovered, all made from white pipe clay (Figure 11: images 13 and 14). This material is not local and would have had to be imported specially for making pipes; the nearest recorded source is in Northamptonshire. Kiln furniture includes 'ring wads', which were flattened rolls of pipe clay used as supports during firing and circular discs known as 'buns' (Figure 11: image 13). A fragment of possible 'sagger' or small 'muffle' of indeterminate form, (Figure 11: image 14) was also recovered. This would have contained pipes to protect them from direct heat during firing. This fragment incorporates broken fragments of clay pipes to provide reinforcement, which is one of the characteristics of muffles. The presence of buns, which were used to stack and support the kiln, suggests that muffles were used in the kilns.

The form of the kiln, with the flue / ash pit comprising a channel which penetrated the solid base of the kiln, suggests a muffle type rather than an open flame kiln. Above the flue / ash pit in a vertical stack would have been the fire box followed by the firing chamber and finally the chimney. In contrast, open flame kilns had multi-flues and used saggars to protect the clay pipes from direct contact with the flames during firing. However, both types of kiln could be converted over time, e.g. if updraft or downdraft was required — the latter being a late development to reduce fuel consumption. In a downdraught kiln, the hot gases rise to the crown of the chamber; the chimney then draws these gases down to the exit flue in the kiln floor.

A series of remains identified in the SW corner of the area are thought to represent the NE corner of a shallow brick-lined feature [31] (Figure 5 and section 1 — yellow hatched feature). This would appear to be a sunken square or rectangular structure, at least 2m by 2m wide and 0.55m deep with vertical sides and flat base. The northern edge was defined by a 0.45m thick, E-W aligned brick wall (32), whilst the eastern extent was defined by fragments of soft friable mortar (33) up to 0.4m thick. The latter may be remnants of a mortar raft for a wall, damaged by subsequent robbing and by a modern service. It cut through garden soil (1/6) and was buried under modern make-up layer (Figure 5: section 1). This may be associated with the kiln as the finds are of a similar date to the kiln.

The upper part of this feature appears to have been demolished and robbed, with the interior being backfilled with brick and mortar rubble mixed with mid reddish grey sandy silt (34). This deposit contained frequent small to large stones, a large amount of 19th-century pottery, as well as vessel glass, clay tobacco pipe fragments and oyster shells (Appendix 1). This fill was disturbed by modern activity (Figure 5 — red features).



4 CONCLUSIONS

The investigations have provided a useful insight into the development of this part of the historic settlement of Bedford during the post-medieval period. Whilst the work within the standing building indicates the presence of extensive cellarage, which would have removed all but the deepest deposits, the investigation of the southern part of the site, beyond the standing buildings, revealed a sequence of deposits which had survived below extensive later disturbance.

Within the standing buildings, the area towards the street-frontage would appear to have been occupied by a coal cellar, with stepped footings. Further to the rear a vertically sided cellar was revealed. The tiled walls of this cellar indicate a different function, possibly a storeroom with internal partitions. This element of the groundworks did not expose any earlier deposits or finds.

To the rear of the property, the existing outbuildings were demolished. This area was then reduced before a series of wall footings were excavated. All groundworks with potential to impact on archaeological deposits were monitored. The investigation revealed a complex series of events. The earliest features were located to the rear of the site and were undated. However, they pre-date an extensive cultivation soil containing a small quantity of post-medieval finds, though it is not clear how long this cultivation extended. The soil would appear to be associated with cultivation of the interior of the block as garden plots, rather than ploughed land of open fields.

A series of steep to vertically sided features are thought to be robbed trenches defining the line of a building located towards the rear of site and extending beyond the limits of the current plot. If these are robber trenches rather than pits, the building would appear to be extensive, with evidence from the backfill of the features suggesting a stone building with deep footings — none of these features were bottomed. The location and form of this postulated building does not correlate with any structure depicted on historical maps of the area, which extend back to 1610. Finds from the fills of these features were sparse, with a fragment of roof tile suggesting that the building stone was removed in the post-medieval period.

The infill of these trenches was truncated by a series of pits of uncertain function, clustered at the western margin of the investigation area. These pits did not respect the current property boundaries. The presence of fragments of roof tile, observed in the section, would indicate a post-medieval date, though the lack of other finds prevented more accurate dating. The pits were sealed by a disturbed cultivation soil, which is thought to be material removed from the street-front area when it was developed. The large quantity of material may suggest that it was derived from the digging of cellars. Post-medieval to modern finds were recovered from this deposit.

In the SE area of the site the floor of a clay tobacco pipe kiln was exposed, with the wares of several local pipe-makers being recovered. The kiln would



appear to have been in use in mid-late 19th century. Subsequently the superstructure was demolished and removed. The kiln floor was only revealed at the formation level of construction work, limiting the scope of investigation but allowing it to be preserved *in situ* beneath a geotextile membrane. Although documentary evidence indicates a number of families making clay tobacco pipes in Bedford, this is the first kiln to be investigated and recorded within the town. A rectangular feature further west may have been associated with the kiln.

The western property boundary was established by at least the mid 19th century and possibly the turn of the century based on the Roper map. The southern and eastern boundaries underwent change, especially in the last century, moving northwards.

Although the investigations have provided an insight into the history and development of Bedford, the restricted scope of the work has limited both damage to the archaeological deposits but also potential to undertake further analysis and reporting. The finds assemblage is limited, as is the potential for further analysis of the structural remains to understand the features revealed. There is no potential for further analysis or publication. However, summaries of the results of the work will be published in *South Midlands Archaeology* and *Post-medieval Archaeology*, cross-referenced to this document which will be uploaded onto the OASIS website.



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6 APPENDIX 1: FINDS SUMMARY

6.1 Introduction

Investigations yielded a finds assemblage comprising mainly pottery, fragmentary clay tobacco pipes and objects relating to pipe manufacture. The material was examined to ascertain its nature, condition and, where possible, date range (Table 1).

Feature	Description	Context	Date range	Finds Summary
1	Cultivation soil	1	Modern	Pottery (3g)
6	Cultivation soil	6	Post-medieval	Pottery (13g)
11	Robber trench	12	Undated	Animal bone (127g); oyster shell (13g)
21	Robber trench	22	Post-medieval	Ceramic roof tile (106g)
21	Robber trench	23	Undated	Oyster shell (11g)
31	Brick-lined feature	34	19th century	Pottery (920g); vessel glass (153g); oyster shell (135g); clay tobacco pipe (33g)
35	Clay tobacco pipe kiln	40	19th century	Clay tobacco pipe (98g); vitrified clay (178g); pipe kiln furniture (569g)

Table 1: Artefact Summary by feature type

6.2 Pottery

Twenty-two post-medieval and modern pottery sherds, weighing 936g were recovered. Sherds are sizeable, with an average weight of 43g, and survive in good condition. Nine fabric types were identified using common names and type codes in accordance with the Bedfordshire Ceramic Type Series, currently maintained by Albion Archaeology (Table 2).

Fabric Type	Common name	Sherd No.	Context/Sherd No.
<i>Post-medieval</i>			
P01	Glazed red earthenware	1	(6):1
P03	Black-glazed earthenware	2	(34):2
<i>Modern</i>			
P38	Creamware	4	(34):4
P39	Mocha ware	3	(1):1, (34):2
P43	Pearlware	1	(34):1
P45	Transfer-printed ware	6	(34):6
P48	English stoneware	1	(34):1
P50	Stoneware	1	(34):1
MOD	Miscellaneous mass-produced ware	3	(34):3

Table 2: Pottery Type Series

The earliest pottery occurred within cultivation soil (6) and as a residual find in brick-lined feature [31]; it comprises three glazed earthenware bowl sherds (323g) datable to the 17th century. With the exception of a modern sherd from cultivation soil (1), the remainder of the assemblage derived from brick-lined feature [31]. A standard range of 18th- and 19th-century mass-produced earthenwares and stonewares is represented, including ‘willow-pattern’ plates and stoneware bottles. It is proposed that none of the pottery be retained.



6.3 Clay Tobacco Pipes and Associated Objects

6.3.1 Pipes

Twenty-one clay tobacco pipe fragments (131g) were recovered, the majority associated with pipe kiln [35], and the remainder with brick-lined feature [31].

The assemblage comprises fourteen stem fragments (the longest measuring 170mm) and seven complete or partial pipe bowls. The majority survive in good condition, with little abrasion, and all are burnished. Three bowls have partially blackened internal surfaces, indicating use; three are unused, suggesting they were deposited soon after manufacture. Examination of bowl and spur forms suggests a 19th-century date for the assemblage (*cf.* Oswald 1975, 37-41). Locally, forms correspond with mid-late 19th-century types O and R, recovered from earlier excavations in Bedford (Baker and Hassall 1979, 242).

One pipe bowl bears a simple moulded leaf motif, and a second has a more elaborate moulded floral / botanical decoration common to 19th-century pipes. The underside of one stamped bowl is decorated with a moulded foliage motif (*cf.* Baker and Hassall 1979, fig. 155/1037).

The backs of two bowls are stamped 'F COVINGTON BEDFORD' and 'WILLSHAW BEDFORD', referencing local manufacturers Frederick Thomas Covington and Richard Willshaw, known to have been pipe-making during the mid and late 19th century (Oswald 1975, 160). The spurs of two pipe bowls are stamped 'RW' representing Willshaw's initials. Another spur bears the stamp of a third, unidentified pipe-maker. The presence of pipes from more than one manufacturer indicates the common practice of sharing kilns.

6.3.2 Kiln furniture

A number of kiln furniture fragments were recovered from ashy deposit (40) within the flue / ash pit of kiln [35]. They comprise pieces of five 'ring wads' (Type WA5; Peacey 1996, Section 7) — pipe clay rolls bent into a circular or near circular shape and then flattened. The term 'wad' is used to describe any piece of clay used while still plastic to form a joint or bedding between other objects (*ibid.*; 1996).

Two complete pipe clay 'buns' (Type BU2; Peacey 1996, Section 6), with diameters of approximately 75mm (3") were collected. 'Bun' refers to disc-shaped pieces of kiln furniture, of circular plan, with a height less than the diameter. Buns are known to have been used severally in conjunction with props to form a column of mushroom-shaped supports within the muffle (Peacey 1996, Glossary 3).

The deposit also contained a vitrified base fragment of a possible sagger or small muffle of indeterminate form (214g), measuring 25–50mm in thickness, and incorporating broken fragments of clay pipe stem. The sagger / muffle would have contained pipes to protect them from direct heat during firing. Three pieces of highly vitrified clay / brick (178g), with glassy surfaces,



ranging in thickness between 25–40mm were also recorded. They may represent part of the kiln lining.

6.4 Other Finds

Vessel glass recovered from brick-lined feature [31] comprises a light blue-green glass body sherd from a mineral water bottle, and a high kick base from an olive green cylindrical wine/beer bottle (Noel Hume type 22), the latter datable to *c.* 1790-1820. A sand tempered piece of post-medieval flat roof tile (106g) derived from robber trench [21].

6.5 Ecofacts

Eighteen animal bone fragments (127g) were recovered from undated E-W aligned robber trench [11]. They comprise indeterminate long bone, mandible and tooth fragments, the latter including a cow incisor and molar. Seven pieces of oyster shell (159g) derived from robber trenches [11], [21], and brick-lined feature [31].

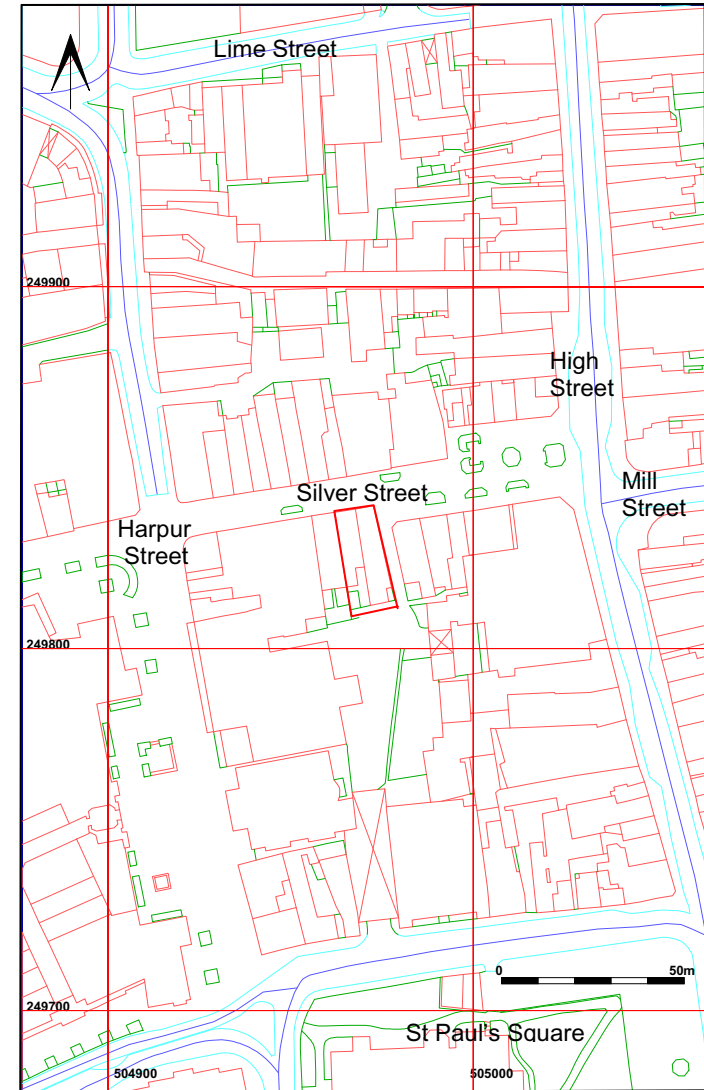
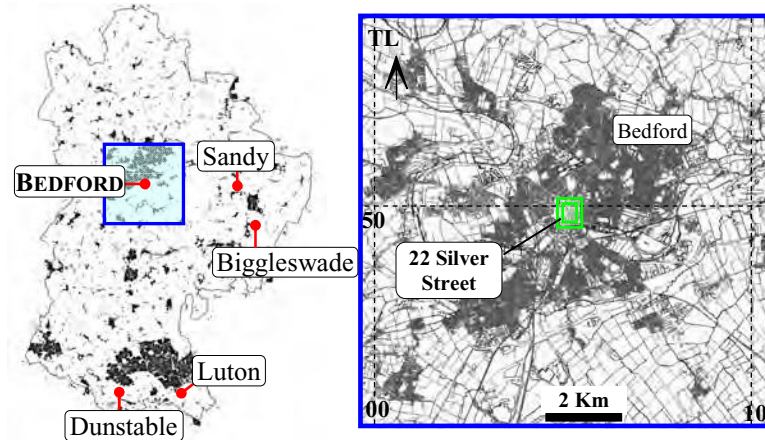
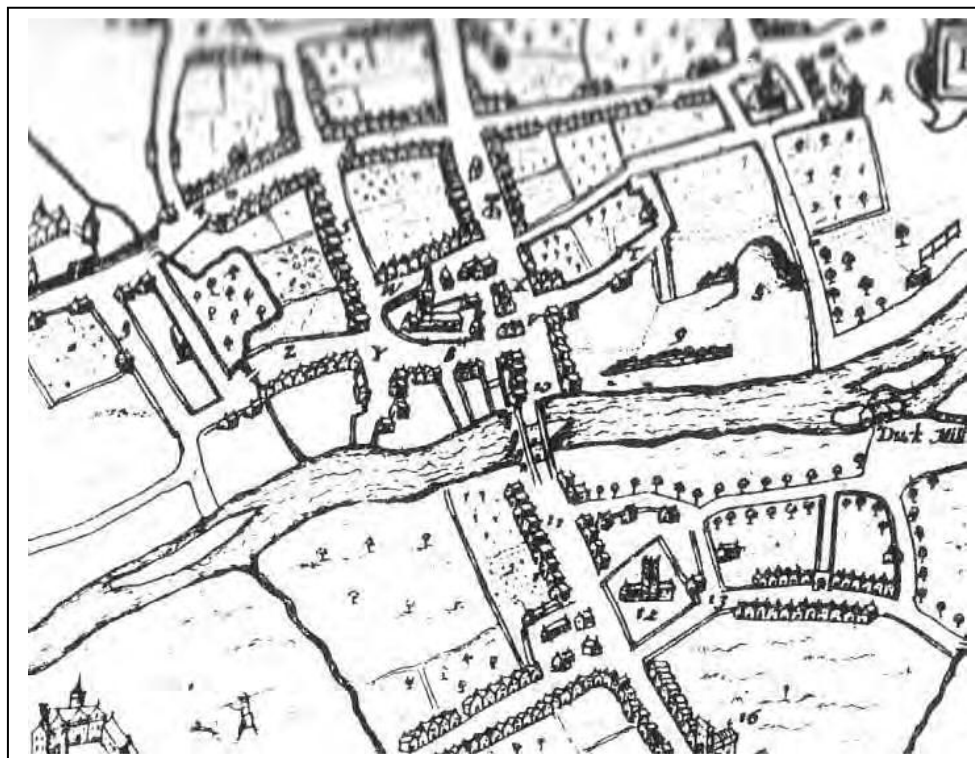
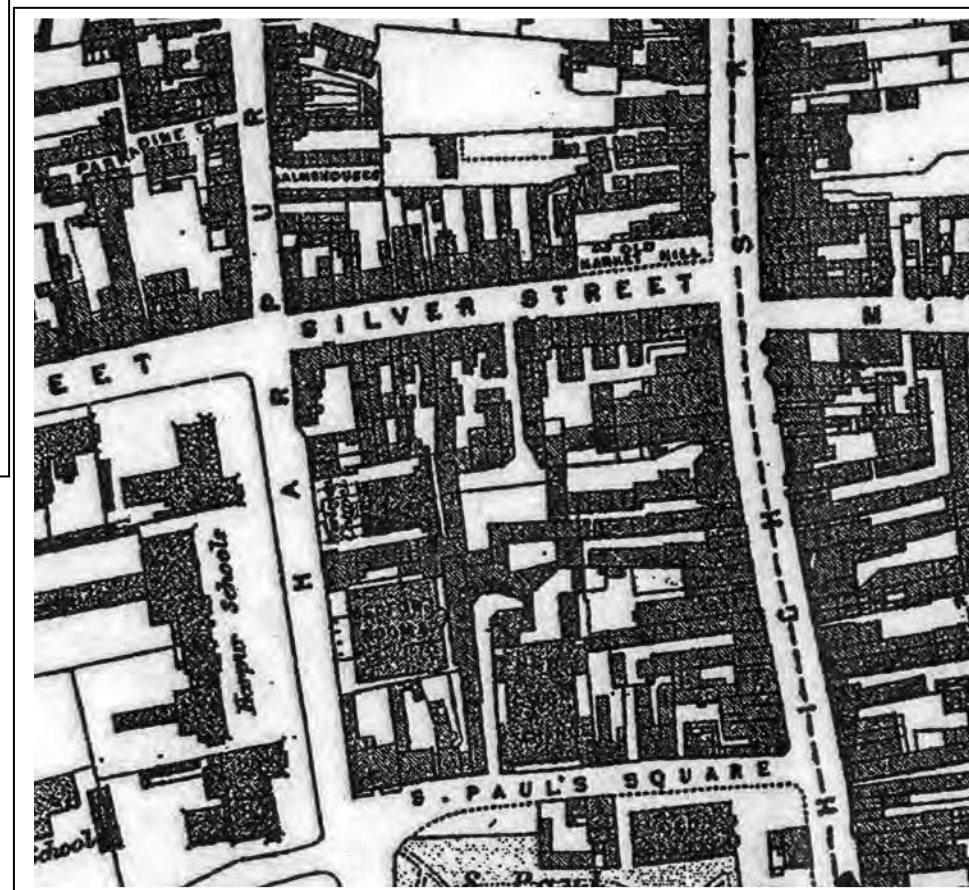


Figure 1: Site location plan

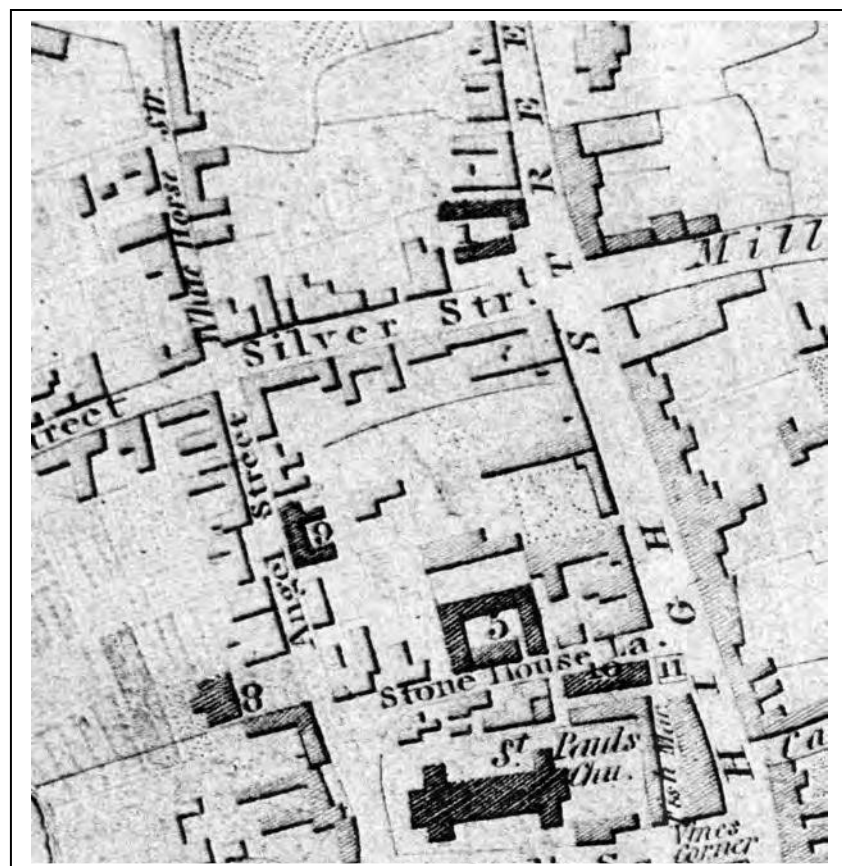
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Map 1: Detail of Speed's 1610 map



Map 3: Detail of Mercer's map of 1876-78



Map 2: Detail of Roper's Map of 1807



Map 4: Detail of 1st edition Ordnance Survey map of 1881

Figure 2: Historical maps



Figure 3: Area within the standing buildings — All-features plan

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Image 1: Stepped footings of brick partition wall. The black deposit below the rubble is coal dust, suggesting that a coal cellar occupied the area towards the street frontage.



Image 2: Evidence for a second cellar revealed toward rear of building. The change in tiles may suggest a subdivision of this area.

Figure 4: Area within the standing buildings — Selected images 1 and 2

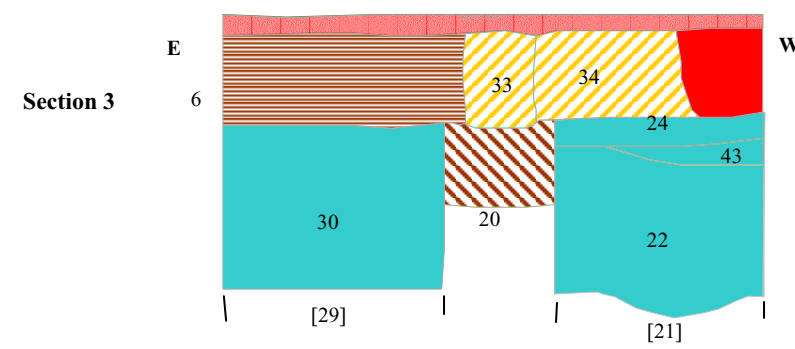
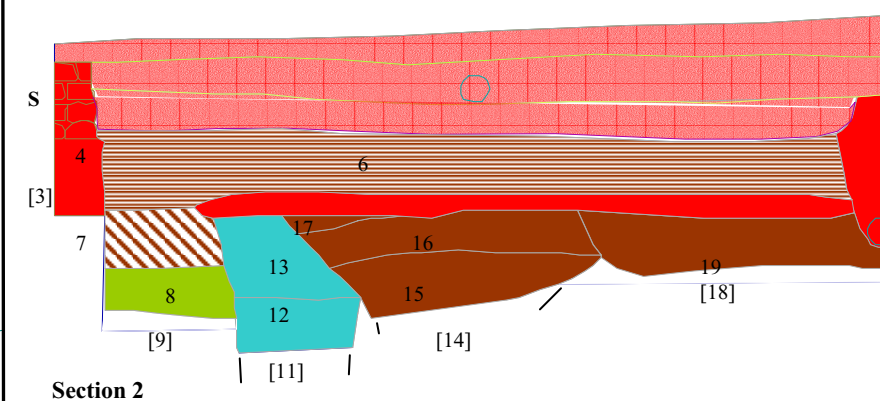
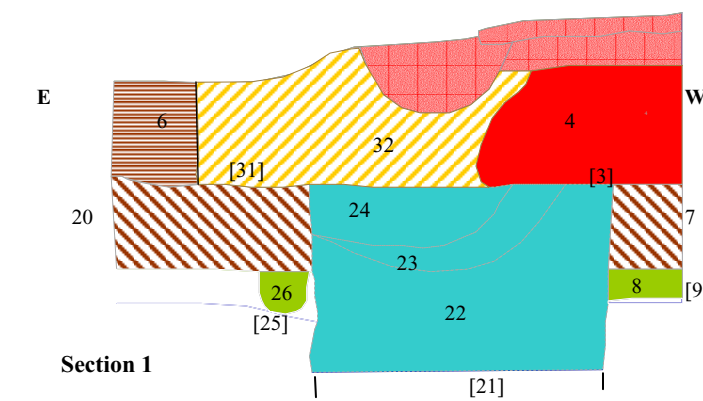
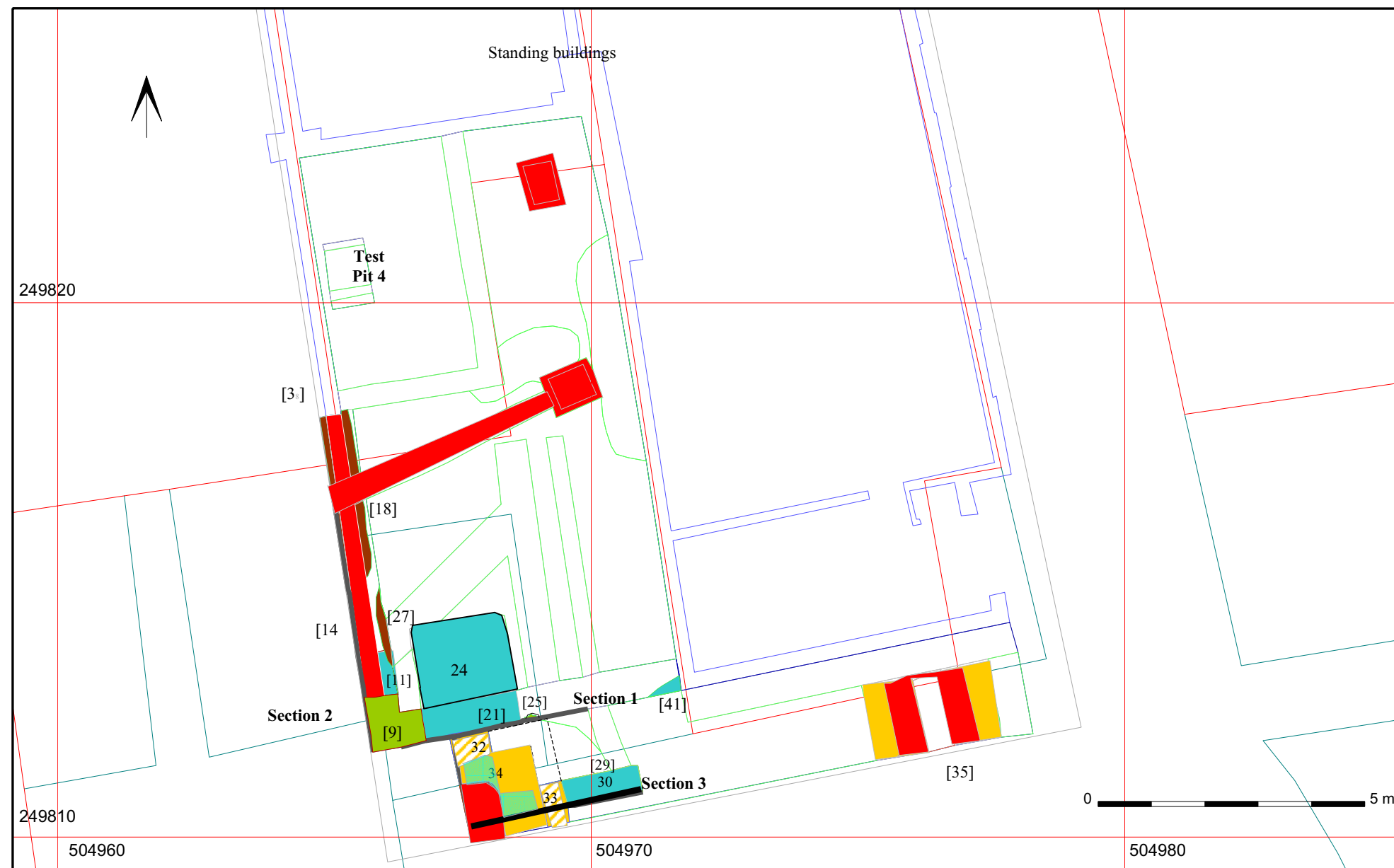


Figure 5: Area to the rear of the properties — All-features plan and selected section

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Image 3: Southern part of western section, showing a series of features. The deepest is robber trench [11] with earlier pit [9] to left and later pit [14] to right (compare with section 2). The continuation of boundary wall [3] can be seen at the extreme left of the image. Scale 1m in 50cm divisions.



Image 4: Vertical view of robber trench [11], with undisturbed geological strata to either side. Large stones can be seen in the exposed fill (12). The scale is on the fill of pit [14]. Scale 1m in 50cm divisions.

Figure 6: Area to the rear of the properties — Selected images 3 and 4



Image 5: Southern face of E-W footing trench showing large robber trench [21] continuing below level of machining. Posthole [25] can be seen immediately to the left. The remains of boundary wall footing [3] are visible in the upper part of the image. Scale 1m in 50cm divisions.



Image 6: Elements of robber trenches [21] and [29] separated by a patch of undisturbed geological strata, above which is cultivation soil (20) – compare with section 3. Scale 1m in 50cm divisions.

Figure 7: Area to the rear of the properties — Selected images 5 and 6



Image 7: Looking across floor of clay tobacco pipe kiln. The face of the flue indicates that the floor was formed of at least two courses of bricks. Adjacent to modern service pipe are traces of a wall, which crosses the flue and appears to define the northern wall of the kiln. Scale 1m in 50cm divisions.



Image 8: Floor of kiln with central flue. Brick structure at end of flue appears to be the back wall of the kiln, indicating that the stoke pit is in the vicinity of the viewer. Scale 1m in 50cm divisions.

Figure 8: Clay tobacco pipe kiln — Selected images 7 and 8



Image 9: Bowl stamp of pipe-maker, F Covington of Bedford



Image 10: Bowl stamp of pipe-maker, Willshaw of Bedford

Figure 9: Stamped clay tobacco pipe bowls from the pipe kiln — Images 9 and 10



Image 11: Spur stamped with initials RW (Richard Willshaw) on a plain bowl



Image 12: Spur stamp from unidentified pipe-maker

Figure 10: Stamped clay tobacco pipe spurs from the pipe kiln — Images 11 and 12



Image 13: Selection of pieces of kiln furniture – ‘ring wads’ and ‘buns’ recovered from the clay tobacco pipe kiln. All the pieces are made from pipe clay. Scale 5cm in 1cm divisions.



Image 14: Fragment of possible ‘muffle’ or ‘sagger’ made from pipe clay and incorporating clay pipe stem fragments. Scale 5cm in 1cm divisions.

Figure 11: Kiln furniture from the pipe kiln — Images 13 and 14

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