

BRUNSWICK ROAD, PENRITH, CUMBRIA

Archaeological Watching Brief



Client: Booths (Penrith) Ltd

NGR: 351210 530230

Planning Application Refs:
09/0256 and 10/0447

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August 2011



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Non-Technical Summary

An archaeological watching brief was carried out during the course of groundworks associated with the construction of new retail units, offices, storage, and associated parking at Brunswick Road, Penrith, Cumbria. The watching brief targeted two areas: the footprint of a 19th century saw mill (latterly occupied by the commercial premises of Rickerby's) and the area of a 19th century carriage works (occupied by Bowman's). The watching brief was carried out between 16th November 2010 and 19th April 2011.

Various structural elements were exposed within the footprint of the Rickerby's building, which probably related to the saw mill, and a north-west/south-east aligned wall was also revealed, which was closely aligned with a boundary wall shown on the tithe map of 1845. These earlier structural remains will effectively be preserved *in situ* since the depth of excavation caused only minimal damage to underlying features.

Much of the original structure of the carriage works, which was first constructed between 1891 and 1900, was preserved below ground in the Bowman's area. The surviving fabric of the original structure included much of the north-west and the north-east elevation, which incorporated a brick hearth; the remains of the south-east elevation of the original structure was also exposed, although it is likely that this wall was removed to the level of its foundations when the carriage works was extended to the south-east between 1925 and 1938. A structure with a similar construction was exposed at the south-east end of the area, which probably also formed part of the original structure of the carriage works and originally had access from the courtyard to the north-east. Three other structures were located within the footprint of the original carriage works, two of which were assumed to have had some sort of industrial function. The third one was probably in use as a vehicle inspection pit when the building was used as a bus depot after the building stopped being used as a carriage works. Structural remains were also encountered that corresponded to the extension of this block of buildings to the south-east, but they might equally relate to or incorporate structures built in this area between 1900 and 1925.

The earliest features in the Bowman's area were located at the north-west end of the site and were probably associated with the 19th century timber yard, but the majority of features in this area probably related to the subsequent use of the site as a coach and carriage works later in the 19th century. However, interpreting them is difficult because of their isolated nature and scattered arrangement.

A number of finds were recovered, some clearly of industrial type, but including fragments of apparent glass-making waste. In addition, deposits of what was apparently domestic rubbish were also found in some features, perhaps resulting from *ad hoc* disposal in convenient existing pits on the site. It is recommended that further analysis of the glass making waste be carried out, although without further documentary evidence to explain its context or source this may be of limited usefulness.

Acknowledgements

Greenlane Archaeology would like to thank Booths (Penrith) Ltd for commissioning the project and Tony Hills for providing a topographical survey of the site. Additional thanks are due to Jeremy Parsons, Historic Environment Officer at Cumbria County Council, for approving the project design. Thanks are also due to Steve Rawlinson, Mark Bibby, John Handley, and Andy Bourne for their assistance on site.

The watching brief was carried out by Tom Mace. The report was co-written by Dan Elsworth and Tom Mace and edited by Jo Dawson. The figures were produced by Tom Mace, and the finds were assessed by Jo Dawson, with the exception of the clay tobacco pipe, which was assessed by Peter Davey, and the glass making waste, which was assessed by Effie Photos-Jones (Scottish Analytical Services for Art and Archaeology (SASAA)). Dan Elsworth managed the project.

1. Introduction

1.1 Circumstances of the Project

1.1.1 Following the submission of a planning application (Refs. 09/0256 and 10/0447) for the construction of new retail units, offices, storage, and associated parking at Brunswick Road, Penrith, Cumbria (NGR 351210 530230), a condition was placed on the application by Eden District Council, which was worded as follows:

14) An archaeological watching brief shall be undertaken by a qualified archaeologist during the course of the ground works of the proposed development, in accordance with a written scheme of investigation which has been submitted to and approved by the local planning authority. Following its completion three copies of the report shall be furnished to the local planning authority. Reason - To afford reasonable opportunity for an examination to be made to determine the existence of any remains of archaeological interest within the site and the investigation and recording of those remains.

1.1.2 The proposed development site has already been subject to an archaeological desk-based assessment (ASUD 2009), which revealed that it was open fields until the 19th century and during the later part of that century it was utilised first by a saw mill with associated timber yard and latterly by a carriage works. There is no evidence for earlier archaeological remains on the site, although the medieval Penrith Castle is situated a short distance to the south-east.

1.1.3 Greenlane Archaeology produced a project design for the archaeological recording (*Appendix 1*) and carried out the watching brief between 16th November 2010 and 19th April 2011. A separate condition, requiring the recording of elements of 19th century structures that had been incorporated into the later buildings on site ahead of their demolition, was also placed on the planning application and the results the work from this phase are presented in a separate report (Greenlane Archaeology 2010).

1.2 Location, Geology, and Topography

1.2.1 The site is located near the industrial and commercial centre of Penrith and lies at approximately 147m above sea level (Ordnance Survey 2002; Figure 1). The route of the Penrith North Lakes Railway line passes close by to the west side of the site.

1.2.2 The underlying solid geology comprises red sandstone of the Permian Penrith Sandstone group with Carboniferous Limestone of the Dinantian series to the west (Moseley 1978, plate 1). This is overlain by glacially derived boulder clay and drift geology, and while the local landscape is heavily influenced by the formation of these deposits (Countryside Commission 1998, 40), within Penrith itself this has inevitably been much altered by urban development.

1.2.3 The watching brief targeted two areas of the site: the footprint of the 19th century saw mill at the south-west end of the site, which was most recently occupied by commercial premises named 'Rickerby's', and the area of the timber yard and carriage works to the north-east end of the site, which was most recently occupied by the showrooms and car park for 'Bowman's'. 'Bowman's' and 'Rickerby's' were the names of the commercial properties that were present on the site at the time of the building survey (Greenlane Archaeology 2010) and are used here to identify the two areas of the watching brief.

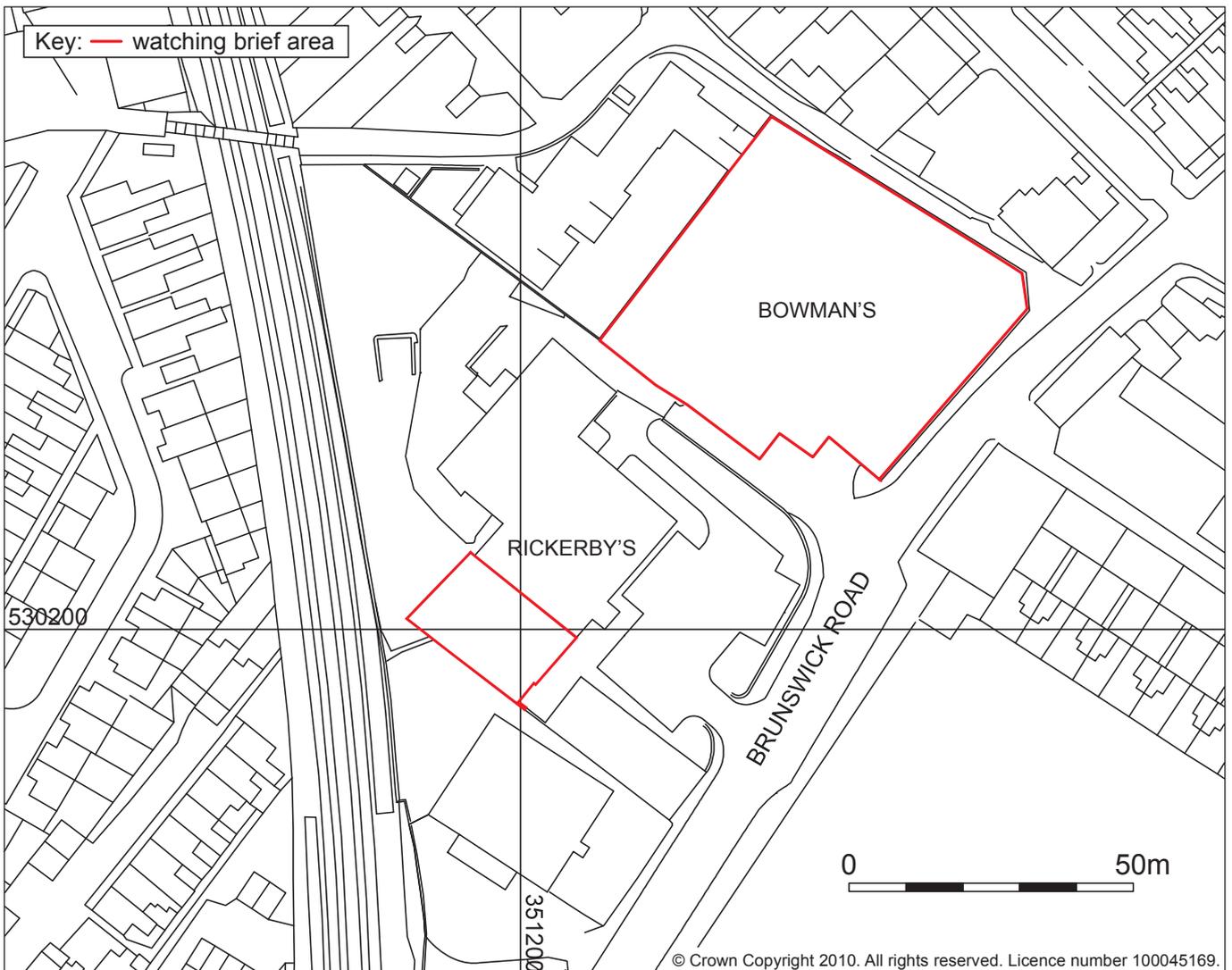
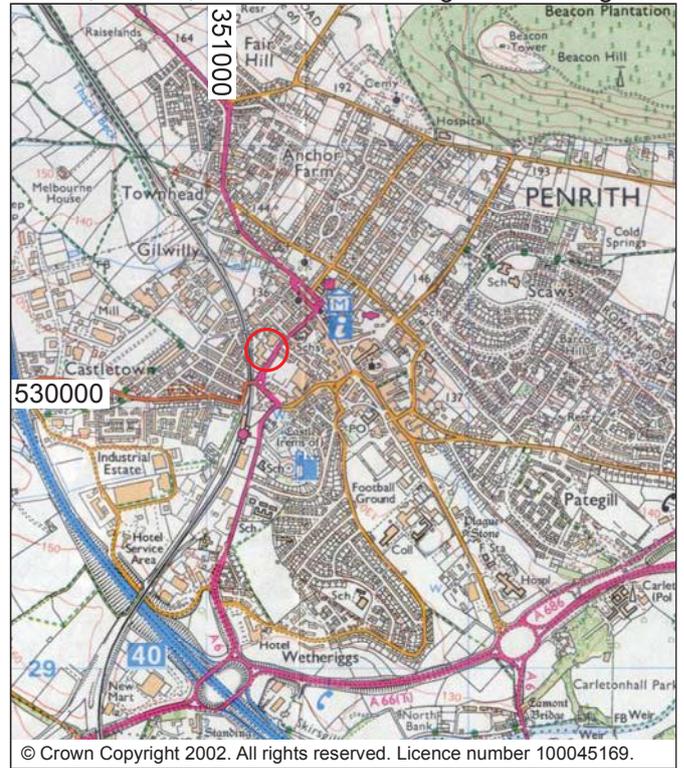
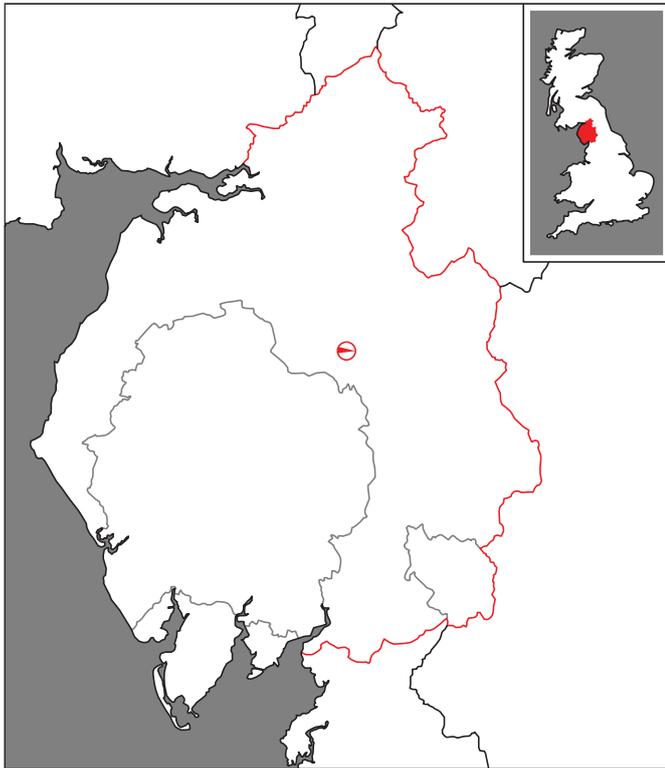


Figure 1: Site location

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2. Methodology

2.1 Introduction

2.1.1 A desk-based assessment was produced as part of the recording of the structural remains of the former 19th century saw mill and late 19th century carriage works ahead of their demolition (Greenlane Archaeology 2010). A summary of this information is provided in *Section 3*. The intention of the watching brief was to establish, where possible, whether any remains of archaeological significance were present on the site. All aspects of the work were carried out in accordance with the standards and guidance of the Institute for Archaeologists (IfA 2008).

2.2 Watching Brief

2.2.1 The area was reduced using a midsize tracked mechanical excavator and features of interest were cleaned by hand and recorded relative to the known location of nearby buildings and other structures that were evident on the site plans and Ordnance Survey maps. The watching brief covered an area of approximately 3100m²; the Rickerby's area comprised approximately 400m² (Figure 2) and the Bowman's area comprised approximately 2700m² (Figure 3). The underlying deposits and features were recorded in the following manner:

- **Written record:** descriptive records of all deposits and features were made using Greenlane Archaeology *pro forma* record sheets. In addition, a general record was made of the areas monitored and the day's events;
- **Photographs:** photographs in both colour print and colour digital format were taken of all archaeological features uncovered during the groundworks, as well as general views of the site, the surrounding landscape, and working shots. A selection of the colour digital photographs is included in this report. A written record of all of the photographs was also made using Greenlane Archaeology *pro forma* record sheets, which also notes the size of the scale bar in each photograph;
- **Drawings:** drawings were produced on site as follows:
 - i. a site plan and plans locating the areas monitored were produced at scales of 1:400, 1:200, and 1:50 as appropriate;
 - ii. detailed plans and cross-sections were produced of significant features at scales of 1:50 and 1:20 as appropriate;
 - iii. additional measured sketch plans and sections were produced on the watching brief record sheets.

2.3 Environmental Samples

2.3.1 No environmental samples were taken as no appropriate deposits were encountered.

2.4 Finds

2.4.1 **Processing:** all of the artefacts recovered during the watching brief were washed, with the exception of metal and glass, which were dry-brushed. They were then naturally air-dried and packaged appropriately in self-seal bags with white write-on panels.

2.4.2 **Assessment and recording:** the majority of the finds were assessed and identified by Jo Dawson. The finds were recorded on *pro forma* record sheets and a catalogue was produced (*Appendix 3*). In addition, specialist x-ray fluorescence (XRF) assessment of the glass-making waste was carried out by Effie Photos-Jones (SASAA) and the clay tobacco pipe fragments were assessed by Peter Davey.

2.5 Archive

2.5.1 A comprehensive archive of the project has been produced in accordance with the project design and current IfA and English Heritage guidelines (Brown 2007; English Heritage 1991). The paper and digital archive and a copy of this report will be deposited in the Cumbria Record Office in Carlisle on completion of the project. Three copies of this report will be provided for Cumbria County Council Historic Environment Service, one with the client, a digital copy with the client's agent, and one will be retained by Greenlane Archaeology. In addition a digital record of the project will be made on the *Online Access to the Index of Archaeological Investigations* (OASIS) scheme.

3. Desk-Based Assessment

3.1 Background History

3.1.1 This background history has been restricted to include information which is relevant to understanding the results of the watching brief; that is dealing solely with the 19th century onwards, which is when the site was first developed although the town of Penrith is at least medieval in origin. It includes a map regression and summaries of previous ground investigations on the site. This information is taken from the desk-based assessment that was carried out by Archaeological Services Durham University (ASDU 2009), which was adapted, corrected and enhanced to form part of the earlier archaeological building recording carried out by Greenlane Archaeology (Greenlane Archaeology 2010).

3.2 Owners and Occupiers

3.2.1 Several sources were examined in order to identify the occupiers of the site, although considerably fewer were available to identify the owners. Early trade directories were the primary source of material for identifying the occupiers of the site, although the first date at which the site can be identified with any certainty is only in the 1890s. A list of the businesses occupying the site is presented in Table 1 below:

Date	Occupier 1	Occupier 2	Source
1879		John D Dennison, saw mill	Slater 1879, 141
1894		John and Matthew Fidler, saw mill	Kelly and Co Ltd 1894, 413
1897		John and Matthew Fidler, saw mill	Kelly and Co Ltd 1897, 413
1906	John Kidd, coach and carriage builder		Kelly's Directories Ltd 1906, 349
1910	John Kidd, coach builder	John and Matthew Fidler, timber merchants	Kelly's Directories Ltd 1910, 235
1914	John Kidd, motor body builder	John and Matthew Fidler, timber merchants	Kelly's Directories Ltd 1914, 241-242
1921		J and M Fidler, timber merchants	Kelly's Directories Ltd 1921, 238
1925		John Richardson and Son, timber merchants	Kelly's Directories Ltd 1925, 440
1929		John Richardson and Son, timber merchants	Kelly's Directories Ltd 1929, 416
1934		John Richardson and Son, timber merchants	Kelly's Directories Ltd 1934, 423
1938		John Richardson and Son, timber merchant	Kelly's Directories Ltd 1938, 433
1954		Rickerby, agricultural engineers	County Publicity Ltd 1954, 5

Table 1: Occupiers of the site recorded in early trade directories

3.2.2 There are several difficulties with the sources in terms of identifying the businesses occupying the site. The earliest apparently relevant entry, from 1879, lists a saw mill at Station Mills, which is assumed to be the site on Brunswick Road, although this is not certain. In addition, as businesses clearly changed their activities over time they become more difficult to identify in the directories. Thirdly there is a distinct lack of regional directories covering the 1870s to early 1890s, which is when the site was most probably first occupied. It is also apparent from the map evidence (see *Section 3.3* below) that the saw mill was in existence by at least 1861.

3.2.3 The list of occupiers does provide some definite information, namely that the saw mill was constructed first, which is evident from the map evidence (see *Section 3.3* below), but also that it was in use for a much longer period than the coach works. It is also evident that during its lifetime the saw mill changed focus, from being described as simply a saw mill until the 1910s before becoming a timber merchants. Indeed, the full description from 1910 indicates that they were importing timber for sale as well as other materials, with the directory listing them as '*English and foreign timber merchants, slate and tile merchants, sawing mills & wood turners etc*' (Kelly's Directories Ltd 1910, 235).

3.2.4 By contrast, the coach and carriage works does not seem to have been established until at least the late 19th century, evidently converted to the building of bodies for motor vehicles during the early 20th century, and had apparently gone out of use by the 1920s, although this seems to be at odds to some extent with the map evidence (see *Section 3.3* below). Prior to operating on this site John Kidd is listed at 15 and 23 Little Dockray, Penrith (Kelly and Co Ltd 1894, 348; 1897, 347), which is only a short a distance away.

3.3 Map Regression

3.3.1 **Early maps:** Clark's map of 1787 shows that there were no buildings within the proposed development area at this time (Plate 1). Similarly, Wood's map of 1821-1832 shows the proposed development area as open ground, owned by the Duke of Devonshire (ASDU 2009, 6).

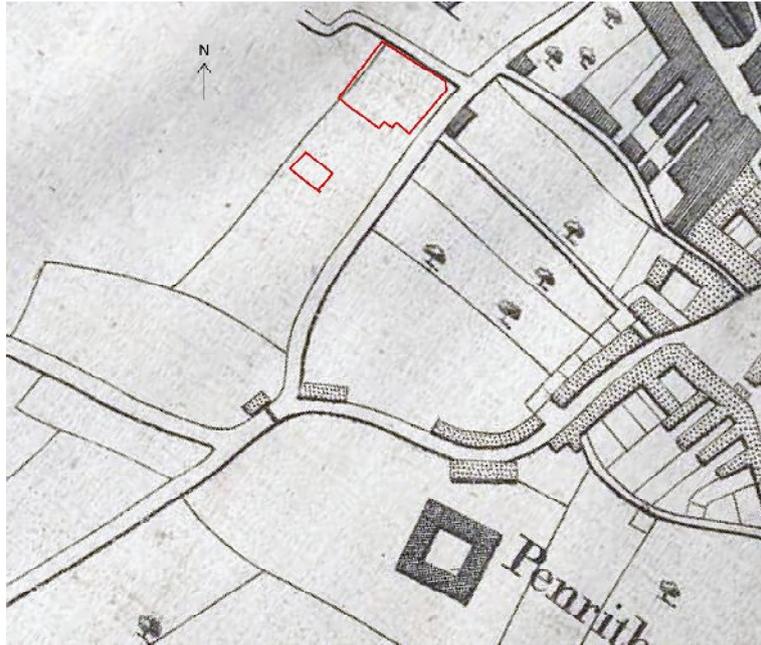


Plate 1: James Clarke's Map, 1787

3.3.2 **Tithe Map, 1845:** the tithe map shows the division of the area into plots (Plate 2). The fields in this area were named 'Clowers' in the apportionment and described as arable and meadow; the tithe barn shown to the south was owned by the Lancaster and Carlisle Railway Company (CRO(C) DRC/8/150 1845, cited in ASDU 2009, 5-6). The route of the railway is marked faintly on the map, although it is shown slightly further to the east than it is in reality.



Plate 2: Tithe Map, 1845

3.3.3 **Ordnance Survey, 1861:** remarkably there is a detailed, 1:500, Ordnance Survey map of Penrith from 1861, predating the subsequent standard 1:2,500 and 1:10,560 scale maps. This clearly shows the saw mill and associated timber yards with a number of associated smaller buildings.



Plate 3: Extract from the Ordnance Survey map of 1861

3.3.4 **Ordnance Survey, 1867:** this is considerably less detailed than the preceding map, but it shows essentially the same information; the saw mill is shown and labelled but the timber yards are not specifically named.

3.3.5 **Ordnance Survey, 1891:** this shows essentially the same information as the previous maps, with the timber yards and a saw mill along Scott Lane clearly depicted (Plate 4). The area around the saw mill was open ground at this point, apart from what appeared to be long sheds along the edges of the timber yards.

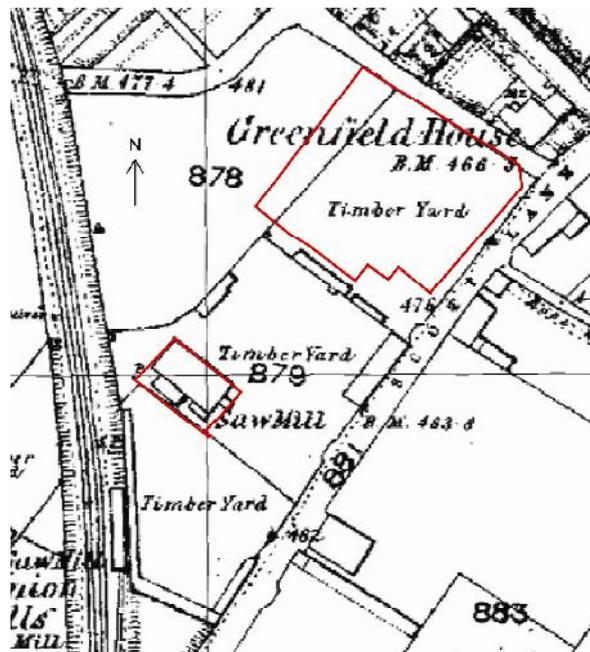


Plate 4: Ordnance Survey, 1891

3.3.6 **Ordnance Survey, 1900:** Scott Lane had been renamed Brunswick Road and the area both in and around the site had seen substantial development since 1867 (Plate 5; cf. Plate 4). The saw mill had been extended to the south-west and to the south-east and occupied its fullest extent. Several other buildings were also constructed within the timber yard next to the saw mill and the northern timber yard was then occupied by 'Northern Carriage Works'.

3.3.7 **Ordnance Survey, 1925:** a building at the north-east end of the carriage works had apparently been foreshortened by 1925, and other buildings had been constructed to its east and west (Plate 6).

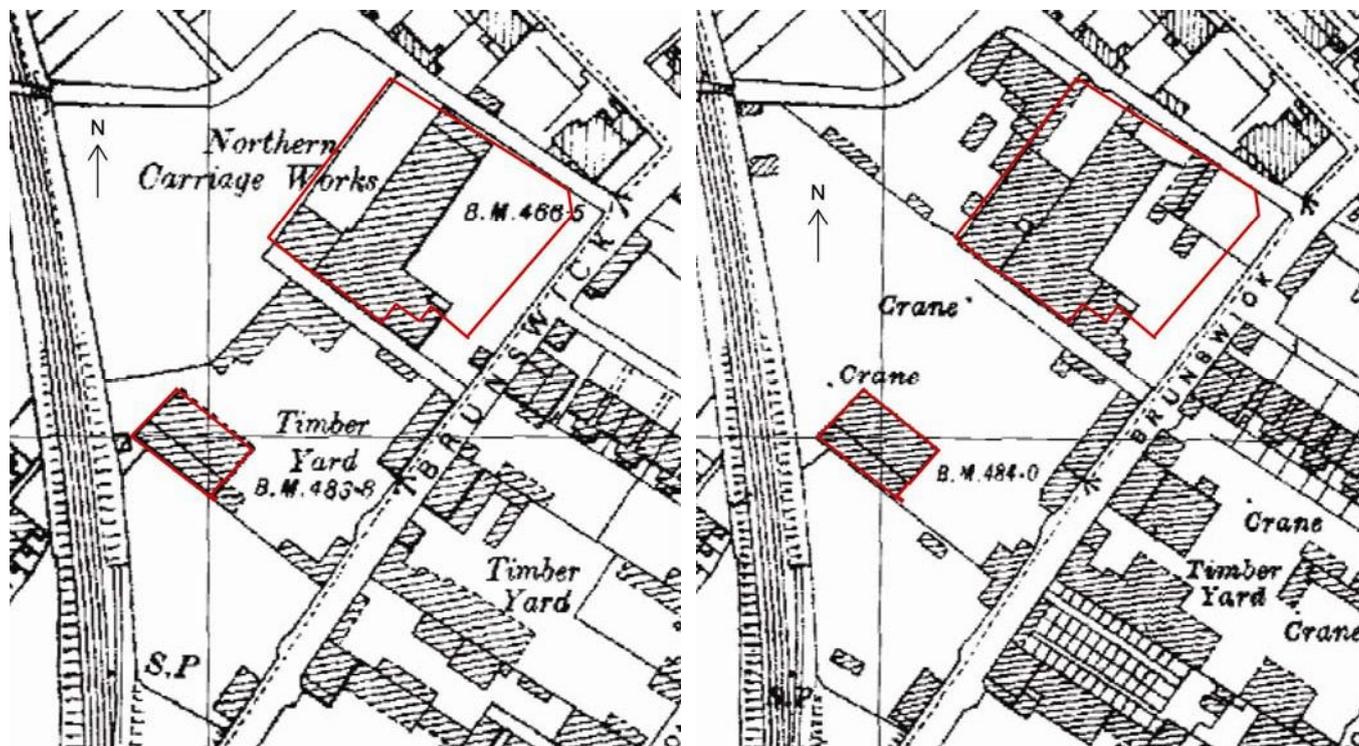


Plate 5 (left): Ordnance Survey, 1900

Plate 6 (right): Ordnance Survey, 1925

3.3.8 **Ordnance Survey, 1938:** this map is limited in detail due to its scale; however, it is clear that some alterations have taken place on the site since 1925. Two blocks of buildings have been constructed in the gap between the saw mill and the carriage works, although no detail of their use is given. The buildings which comprised the carriage works have also evidently been enlarged to the south-east and at the north-west end of the north-west elevation; however, the buildings to the south-east end of the north-west elevation appear to have been removed by this point. All of these alterations are shown as open blocks, although the reason for this is not certain.



Plate 7: Extract from the Ordnance Survey map of 1938

3.3.9 **Ordnance Survey, 1971:** this edition shows that the buildings which previously formed the 'Northern Carriage Works' were being used as a bus depot while the buildings which had formed the saw mill formed part of the 'Engineering Works' (Plate 8). The arrangement of buildings to the north-east of the bus depot had changed; there was a small building to the north-east side and another similar sized (possibly open-sided) structure to the south-east of this. The buildings to the west of the bus depot have been removed and replaced by an open-sided structure.

3.3.10 **Ordnance Survey, 1988:** the arrangement of the buildings is unchanged from the previous edition, although fewer of the internal divisions are shown (Plate 9). It is evident that by this date the entire site was being used as a depot.

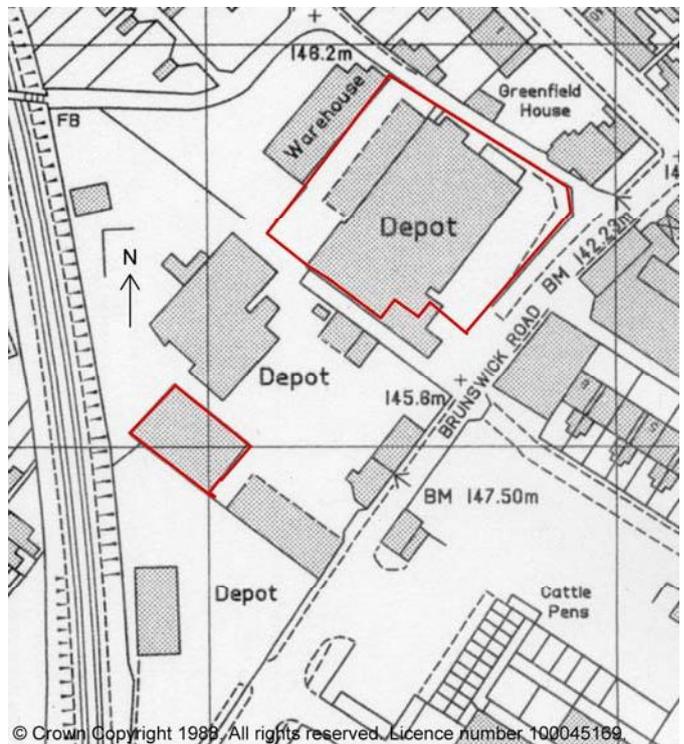
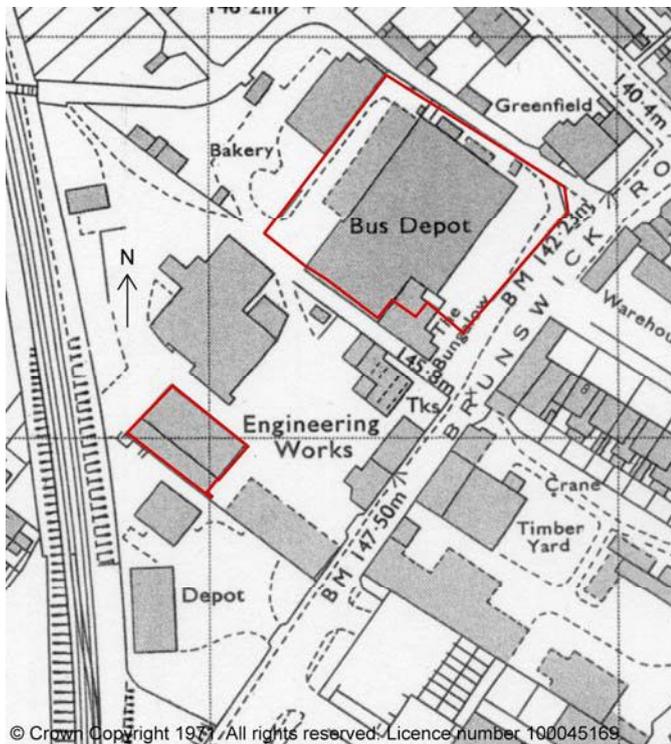


Plate 8 (left): Ordnance Survey, 1971

Plate 9 (right): Ordnance Survey, 1988

3.4 Ground investigations

3.4.1 **Geotechnical investigations undertaken by Arc Environmental (Ref. 06-342):** made ground deposits of tarmac, concrete, and hardcore over sandy gravel and black ash fill were recorded between 0.55m thick in the east part of site and up to 2m thick in the west part of site, closer to the railway (Arc Environmental 2006, 5).

3.4.2 **Possible industrial contamination:** a desk-top study for the Rickerby's site identified redundant and operational above ground fuel storage tanks and revealed sub-surface storage tanks which are understood to have been filled with concrete (Robinson Environmental 2005, 3). The results of an environmental review of the Bowman's part of the area and its immediate surroundings indicated a moderate-high potential risk for industrial contamination relating to historic industrial workings in the site (GroundSure 2007, 5).

3.5 Conclusion

3.5.1 Although Penrith has at least medieval origins, the cartographic evidence suggests that the current site was undeveloped until the saw mill was constructed some time between the publication of the Tithe map in 1845 and surveying of the first Ordnance Survey maps in 1860. The 18th and 19th century development of this part of Penrith is confirmed by previous archaeological work in the wider area. The saw mill remained much the same before being enlarged to the south by 1900, by which time the coach and carriage works had been constructed on the northern part of the site (between 1891 and 1900). These two original buildings saw relatively little alteration between 1900 and 1938, before the site was enlarged in several places with the addition of new buildings and additions to the carriage works. Subsequent to this the mapping indicates that the site saw relatively minimal alteration, although it was apparent that the former saw mill was massively enlarged after 1988 (Greenlane Archaeology 2010).

4. Watching Brief

4.1 Introduction

4.1.1 The ground surface within the watching brief area comprised areas of tarmac, concrete, and gravel, and rubble associated with the buildings that had been demolished on site ahead of this phase of the archaeological work (see Plate 10, Plate 11, and Plate 12).



Plate 10 (left): Pre-excitation view of the Rickerby's site, looking north-west

Plate 11 (right): Pre-excitation view of the Rickerby's site, looking south-west



Plate 12: Pre-excitation view of the Bowman's site, looking north-east

4.2 Results

4.2.1 **Rickerby's**: the excavation of a test pit approximately 4.5m by 6.7m, located to the north-east side of the Rickerby's site (Figure 2), revealed a north-west/south-east aligned wall (**104**) at a depth of approximately 0.7m below the current ground surface (Plate 13). This wall appeared to be constructed from fairly neatly cut sandstone blocks, which was similar to the fabric used in the construction of the 19th century elements of the Rickerby's and Bowman's buildings before they were demolished (Greenlane Archaeology 2010, 15), and was closely aligned with a field boundary shown on the tithe map of 1845 (Plate 2). The wall was set in a mid to dark brown silt layer (**103**), below a darker brown silt deposit (**102**) that was in turn covered by various made ground deposits, up to 0.3m thick (**101**). A concrete stanchion

was also removed from this area. The underlying natural (**105**) was exposed at a depth of approximately 1.0m to 1.1m where the test pit was stepped down to the south-west (Plate 14).



Plate 13 (left): Possible boundary wall (104)

Plate 14 (right): Layers exposed within the test pit to the north of the Rickerby's site

4.2.2 An area approximately 4.8m by 5.8m was excavated to the north-west end of the Rickerby's site to a depth of 1.2m without the supervision of a trained archaeologist (Plate 15). The north-west elevation of the saw mill (**107**) and the associated foundation cut (**108**) and fill deposit (**106**) were revealed in section (Plate 16). The section was drawn (Figure 2) and photographed subsequently, but it could not be cleaned because space was prohibitive and the ground was frozen.

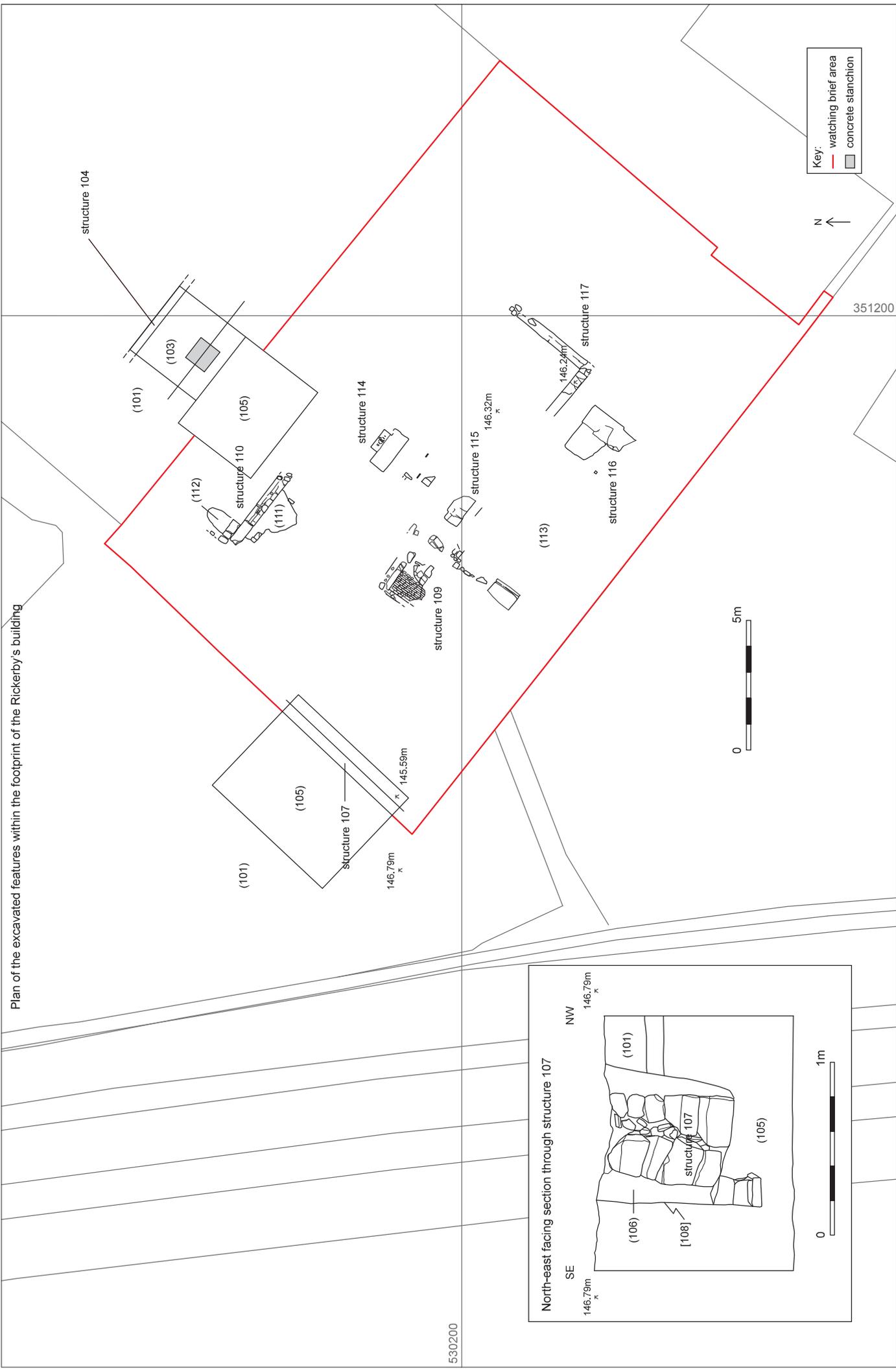
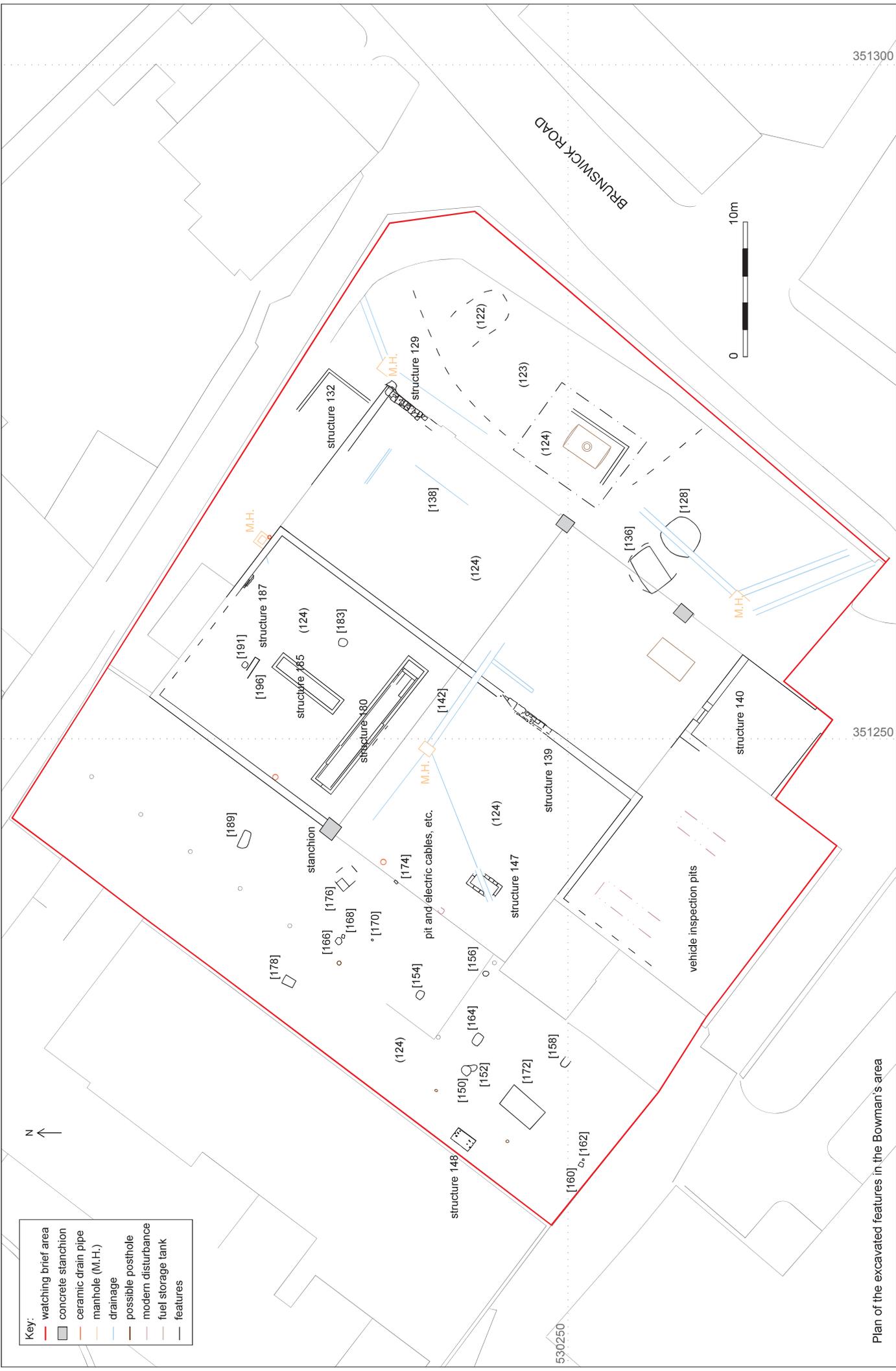


Figure 2: Plan of the Rickerby's area and north-east facing section through structure 107



- Key:
- watching brief area
 - concrete stanchion
 - ceramic drain pipe
 - manhole (M.H.)
 - drainage
 - possible posthole
 - modern disturbance
 - fuel storage tank
 - features



Plan of the excavated features in the Bowman's area

Figure 3: Plan of the Bowman's area



Plate 15 (left): Excavated area at the north-west end of the Rickerby's site

Plate 16 (right): Section through the north-west elevation of the saw mill

4.2.3 Excavation within the footprint of the Rickerby's building itself revealed various other structural elements (**109**, **110**, and **117**) at a depth of approximately 0.5m below the current ground surface that were probably internal walls of the saw mill that was located here during the 19th century. These features were underlying a layer of rubble within a blackish, silty matrix, between 0.3 and 0.5m thick (**113**), and appeared to be set into the underlying natural (**105**). They were usually of a very similar construction, built using fairly neatly cut reddish-orange sandstone blocks, often with a light pinkish orange mortar and occasionally with a rubble core (see Plate 17 and Plate 18). The only exception was the corner of a room to the north-west (**109**), which had a yellowish brick floor (see Plate 19 and Plate 20). This brick floor was noted to coincide with the location of an alcove, possibly relating to a hearth, which was recorded in the dividing wall of the Rickerby's building ahead of its demolition (Greenlane Archaeology 2010, 25). Some larger sandstone blocks were also partially exposed, notably to the south-west side (part of **109**) and across the centre of the site (notably structures **114** and **115**, which were on a parallel alignment), which might have functioned as engine beds and possibly mark the location of cutting machines within the mill (see Plate 21 to Plate 25; one of these blocks (forming part of **114**) was noted to have metal attachments (Plate 23).



Plate 17 (left): Wall 110

Plate 18 (right): Corner of building 117 exposed by hand



Plate 19 (left): General view of the north-west end of the site

Plate 20 (right): Detail of the brick floor 109



Plate 21: North-west end of the Rickerby's site, looking north



Plate 22 (left): Possible machine base (114) situated towards the centre of the Rickerby's site

Plate 23 (right): Detail of the metal attachments set within one of the possible engine beds



Plate 24 (left): Partially exposed sandstone block (part of structure 109) on the south-west side of site

Plate 25 (right): Partially exposed sandstone surface 116

4.2.4 Only two undisturbed deposits of archaeological interest were encountered within the footprint of the Rickerby's building beneath the rubble and made ground deposits and above the surviving structural remains. These distinct areas of thin, dark, blackish brown silt (**111** and **112**) were located either side of the most northerly wall (structure **110**) (Plate 17). The deposit to the south side of this wall (context **111**) was observed to contain undiagnostic industrial residue (perhaps some form of slag), some decayed timber, fragments of clay tobacco pipe stem, and window glass fragments. Both deposits may represent a floor surface either side of wall **110**.

4.2.5 Unfortunately, the relationship between many of these underlying features could not be determined since they were only partially exposed during the course of the ground works (e.g., Plate 21); excavation was usually halted approximately 0.08m above the level of these earlier walls. Many of the features were exposed more fully by hand once the intervention level set by the development had been reached (see especially Plate 18, Plate 22, and Plate 25; see also Plate 73) but since only a limited area of these structures was exposed they could effectively only be viewed in isolation.

4.2.6 **Bowman's**: excavation along the embankment and below what was the car parking area against Brunswick Road to the south-east side of the area revealed a basic sequence of deposits. A layer of topsoil (**118**) overlay the embankment against Brunswick Road, to the west of which the majority of the area was covered in a layer of rubble (**119**). Below this layer there was a dark brown silt layer (**120**) above a black ash-type deposit and a further patchy layer of red sandstone rubble (**121**). Below this there was a patchy deposit of clinker and slag-like material (**122**) and a layer of dark grey-brown silt and gravels (**123**), which comprised a subsoil layer. The underlying geological natural layer in this area (**124**) was a firm, orangey-brown sandy layer (probably a variation of **105**). These layers were observed to continue across most of the site; the natural was exposed at between 0.5 and 0.9m across the area.

4.2.7 Various drainage features and associated manholes were exposed beneath the car parking area at the south-east side of the site (Plate 26), a large area of which was excavated more deeply to remove a sub-surface fuel storage tank and the contaminated soil that was associated with it (Plate 27). The tank, which had been filled with concrete, appeared to be located within a small bricked area, which was made from frogged bricks marked 'WHITEHAVEN' (each measuring 230 x 130 x 90mm) and might have had a concrete floor. It presumably related to the 20th century bus depot.



Plate 26 (left): The south-east side of the Bowman's area

Plate 27 (right): Removal of a concrete-filled sub-surface fuel storage tank

4.2.8 The drains in this area cut a large pit (**128**). This sub-circular pit contained three fills, including what may have been some sort of industrial residue (**126**) and possibly furnace slag (**127**). This lower fill was too hard to excavate by hand, but it is evident that this feature derived from or was filled by the result of an industrial process of some type.

4.2.9 Another pit (**136**) was observed to the north west of pit **128**. The loose gritty black ash fill (**135**) of this pit was widely spread on the surface; however, the underlying cut was approximately rectangular in shape and had straight and steep sides and a firm, stone-lined base. The fill contained a large quantity of dumped domestic refuse, including a broken plant pot, and was not fully excavated.



Plate 28 (left): Pit 128

Plate 29 (right): Spread of fill deposit 135

4.2.10 Pit **136** was located between two concrete stanchions; these concrete stanchions approximately marked the location of the concrete pillars at the south-west end of the south-east elevation of Bowman’s (Greenlane Archaeology 2010, 15-16). To the north-west of the south-easternmost pillar was another sub-surface fuel storage tank (visible to the right of the red barrier in Plate 30), which was removed. This tank had not been filled with concrete and would have been beneath the floor of the Bowman’s building in front of the small offices at the southern end of the block of buildings (Greenlane Archaeology 2010, figure 2).



Plate 30: Sub-surface fuel storage tank

4.2.11 Part of a neatly cut red sandstone block wall (structure **129**) was exposed at the location of the north-west end of the south-east elevation of Bowman’s (Plate 31 and Plate 32). The wall returned to the north-west at its north-east end (Plate 33) but was severely truncated to the south-west (Plate 31). This red sandstone structure had a pale yellow concrete base (**130**) (see Plate 34 and Plate 35; Figure 4), which was not characteristic of the other structures in this area, such as structure **139** and structure **140**, which are likely to be older (see Sections 4.2.15 and 4.2.13 respectively). A small concrete plinth (**131**) or section of a concrete foundation was present at its north-easternmost extent (Plate 35).



Plate 31 (left): South-east elevation of structure 129

Plate 32 (right): Raised view of structure 129



Plate 33 (left): Return wall of structure 129 (marked by the ranging rod)

Plate 34 (right): View of the interior space of structure 129

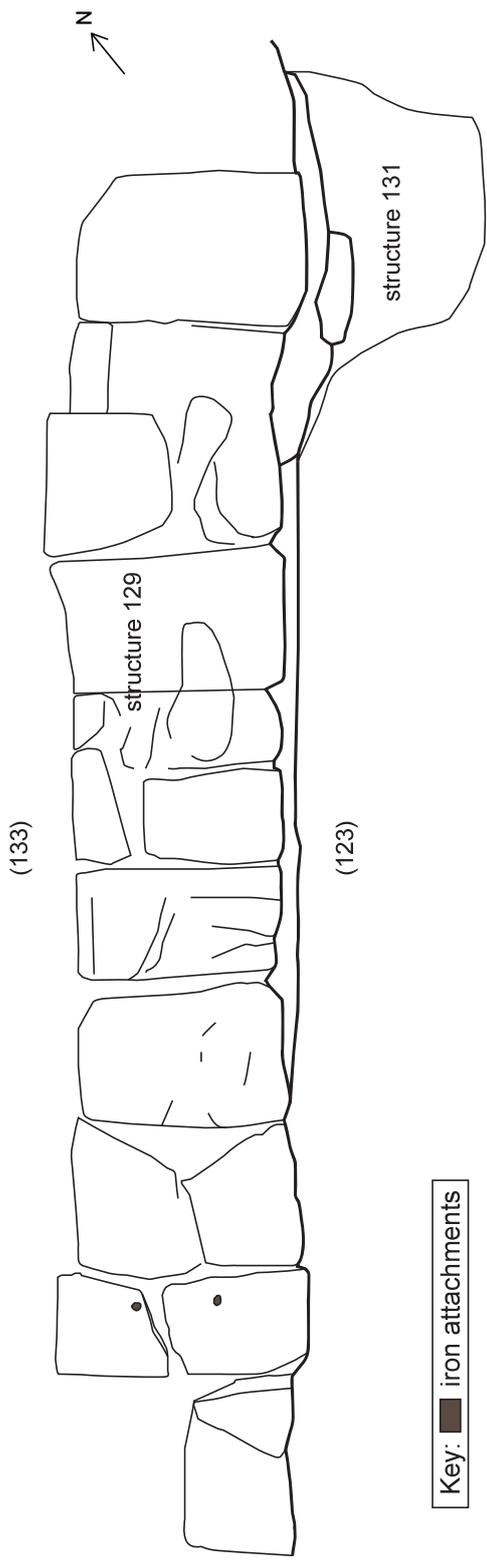


Plate 35 (left): Detail of the construction of structure 129

Plate 36 (right): View of structure 129 from the east corner of structure 132

4.2.12 Adjacent to the north-west/south-east aligned return in structure **129** was a rectangular structure (structure **132**) built from modern, machine-made red brick (visible in the foreground of Plate 36). This small structure can be seen on the later editions of the Ordnance Survey maps and was built sometime between 1971 and 1988.

DETAILED PLAN OF STRUCTURE 129



Key: ■ iron attachments

SOUTH-EAST ELEVATION OF STRUCTURE 129

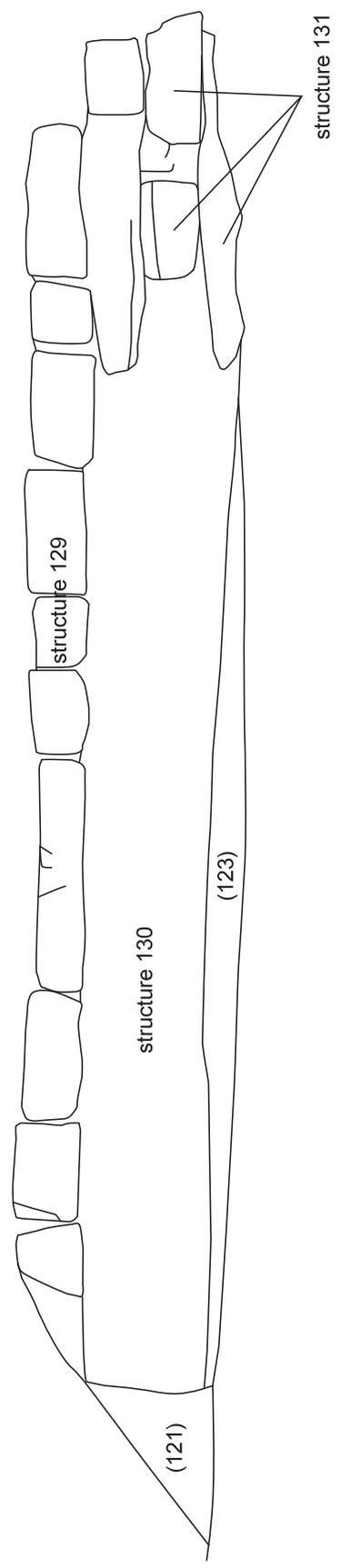


Figure 4: Structure 129

4.2.13 A red sandstone wall (structure **140**) was exposed which was aligned along the north-east elevation of the small offices that stood at the south-west end of the Bowman's building and had a stone threshold at the north-west end (see Plate 37 and Plate 38). This would originally have led from inside the carriage works to the courtyard before the buildings were extended in this direction between 1925 and 1938 at which point the doorway may have become redundant. This wall returned to the south-west at its north-west end (Plate 37; the return wall is visible in section below the slabs of concrete on the edge of the area of excavation) and was of a similar construction to structure **139** (see Section 4.2.15). The south-east and south-west walls of the offices were modern red brick.



Plate 37 (left): Structure 140



Plate 38 (right): Stone threshold to structure 140

4.2.14 It was observed at the time of the building recording that the room to the north-west of these small offices had recently been used as a garage (Greenlane Archaeology 2010, 20). Two vehicle inspection pits were exposed within the footprint of this garage, which were in-filled with brick rubble, the bricks marked 'WHITEHAVEN'. These pits had been concreted over and had been visible on the garage floor at the time of the building recording (*ibid*). At that time they lined up with the sliding doors which led to the showrooms, but they were most likely inserted originally when the carriage works was extended and when the site became a bus depot. The rubble fill contained modern rubbish, which was not retained.



Plate 39: Vehicle inspection pit at the south-west end of the site

4.2.15 The foundations of the north-east elevation of the garage were partially intact and this reddy-orange sandstone block wall returned and continued north-west/south-east across the centre of the area (see Plate 40, Plate 41, Plate 42, and Plate 43). This wall (forming part of structure **139**) had a gritty pinkish cement mortar and at least two courses of it remained intact (see Plate 40 and Plate 41). It is likely that this was the foundation of the south-east elevation of the original structure of the carriage works and probably dates to its earliest phase of construction (between 1891 and 1900). It contained some evidently re-used worked stone but otherwise had a very similar construction to parts of the structures associated with the saw mill (see *Section 4.2.3*) and did not have a concrete foundation, unlike structure **129** which was probably later in date (see *Section 4.2.11* for comparison). This north-west/south-east wall may have become redundant and was likely removed to the level of its foundations when the carriage works was extended to the south-east between 1925 and 1938; indeed, the later editions of the Ordnance Survey maps do not show an internal 'dividing' wall where this wall would have stood. The south-east elevation of structure **139** was continuous along the length of the Bowman's building before returning along the alignment of what would have been the north-east (Plate 44 and Plate 45) and north-west elevations of the original carriage works (Plate 46), however, the south-west corner of the structure was heavily truncated and the foundations to the south-east side were observed to have been truncated by later drains (drain **142**). The north-east elevation incorporated a brick hearth with a slate base (structure **187**; see Figure 5) against which there was a mixed, dark grey silty-clay residue (deposit **186**). Somewhat incongruously this feature appears to line up with a blocked doorway that was recorded in the north-east elevation of Bowman's during the building survey (Greenlane Archaeology 2010, 31). There were various features located inside the area of structure **139**, including structures **180**, **185**, and **147**, and pits **183**, **191**, and **196**.



Plate 40 (left): Illustrated section of structure **139**

Plate 41 (right): Detail of structure **139**



Plate 42 (left): Continuation of the north-east/south-west section of structure 139

Plate 43 (right): North-east corner of structure 139



Plate 44 (left): Return wall at the north-east end of the south-east elevation of structure 139

Plate 45 (right): North-east elevation of structure 139, showing the location of structure 187



Plate 46 (left): The north-east end of the original carriage works (structure 139)

Plate 47 (right): Detail of hearth structure 187

4.2.16 Structure **180** was aligned north-west/south-east and located close to the centre of the area enclosed by structure **139**. The date of its construction is uncertain; it was initially thought to be relevant to the carriage works because of its central location within the footprint of the original structure (as demarcated by structure **139**); it may of course be later. If it does relate to the carriage works, it seems that it later saw use as a vehicle inspection pit when the building was used as a bus depot. The structure was a mix of brick, concrete, and stone (Plate 48 and Plate 49; Figure 6); the 'outer' lining of red bricks was frogged and marked 'CLAUGHTON MANOR / BRICK C^o CATON', and it had been purposefully back-filled. A steel grill and a broken sign for a bus stop were amongst the rubble, which was heavily contaminated with diesel. The grill may relate to a 20th century industrial installation or perhaps more likely was simply used to cover over a vehicle inspection pit. The sign was labelled 'Cumberland', so pre-dates 1974 and the creation of the current county of Cumbria.



Plate 48 (left): Structure 180

Plate 49 (right): Oblique view of structure 180

4.2.17 Structure **185** was located a short distance to the north-east of structure **180** (Plate 50) and was approximately centrally situated along its length and aligned perpendicularly to it (Plate 51; Figure 6) within the area enclosed by structure **139**. Structure **185** may have been associated with structure **180** in

some way. However, structure **185** was made from unfrogged and more roughly made orange brick, which might suggest that it was an earlier construction than structure **180**, which was made from machine-made frogged brick. The base of structure **185** was stone and had iron attachments (Figure 6).



Plate 50 (left): Oblique view of structures 180 and 185 (to the right)

Plate 51 (right): View of structure 180 from on top of structure 185



Plate 52 (left): South-east side of structure 185

Plate 53 (right): Section through the rubble fill of structure 185

4.2.18 There were three discrete pits near to structures **180** and **185**: pits **183**, **191** and **196**. Pit **183** and **191** were similarly sized but of unknown purpose. Pit **183** contained two fills (**181** and **182**; see Figure 6), the upper one of which mostly comprised a large rusted bolt; pit **191** contained a single fill (**190**; see Figure 5). Pit **196** was lined with sawn pieces of timber (**195**) and contained three fill deposits (**192** to **194**; see Figure 5) which contained a large amount of slag-like material and various metal objects. It also contained the rubber tyre tread, which suggests a 20th century date for the feature. It is assumed that this pit had some sort of industrial function but it is uncertain as to what that might have been.



Plate 54 (left): Pit 183



Plate 55 (right): Pit 191

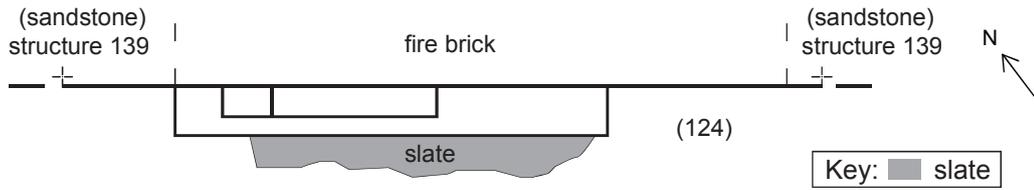


Plate 56 (left): Pit 196 viewed from the south-west (pit 191 is visible to the top of the photograph)

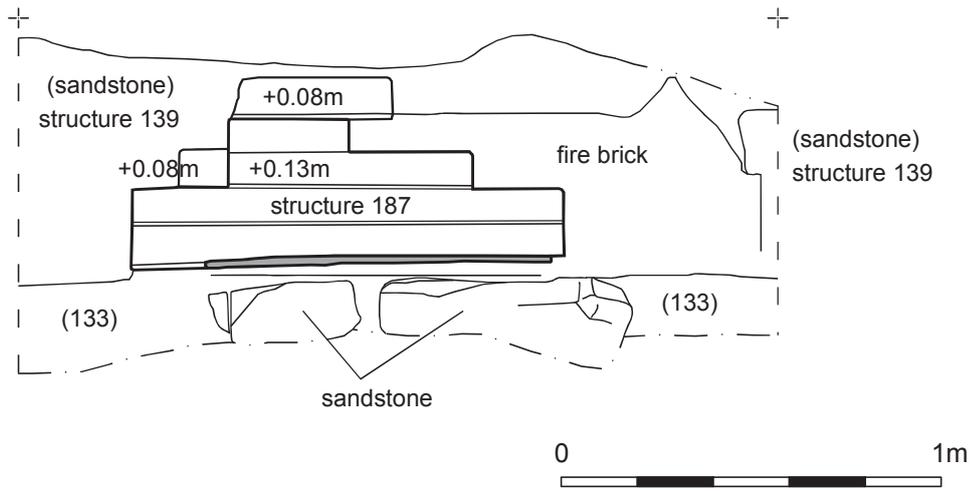


Plate 57 (right): Section across pit 196 and 191 (to the right)

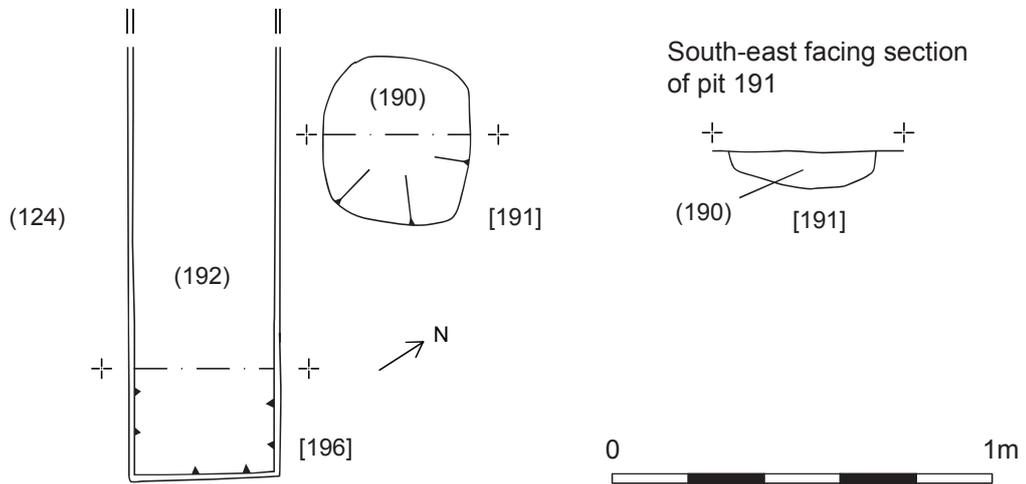
Detailed plan of structure 187



South-west elevation of structure 187



Detailed plan of pits 191 and 196



South-east facing section of pit 196

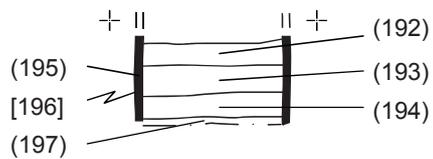


Figure 5: Structure 187 and pits 191 and 196

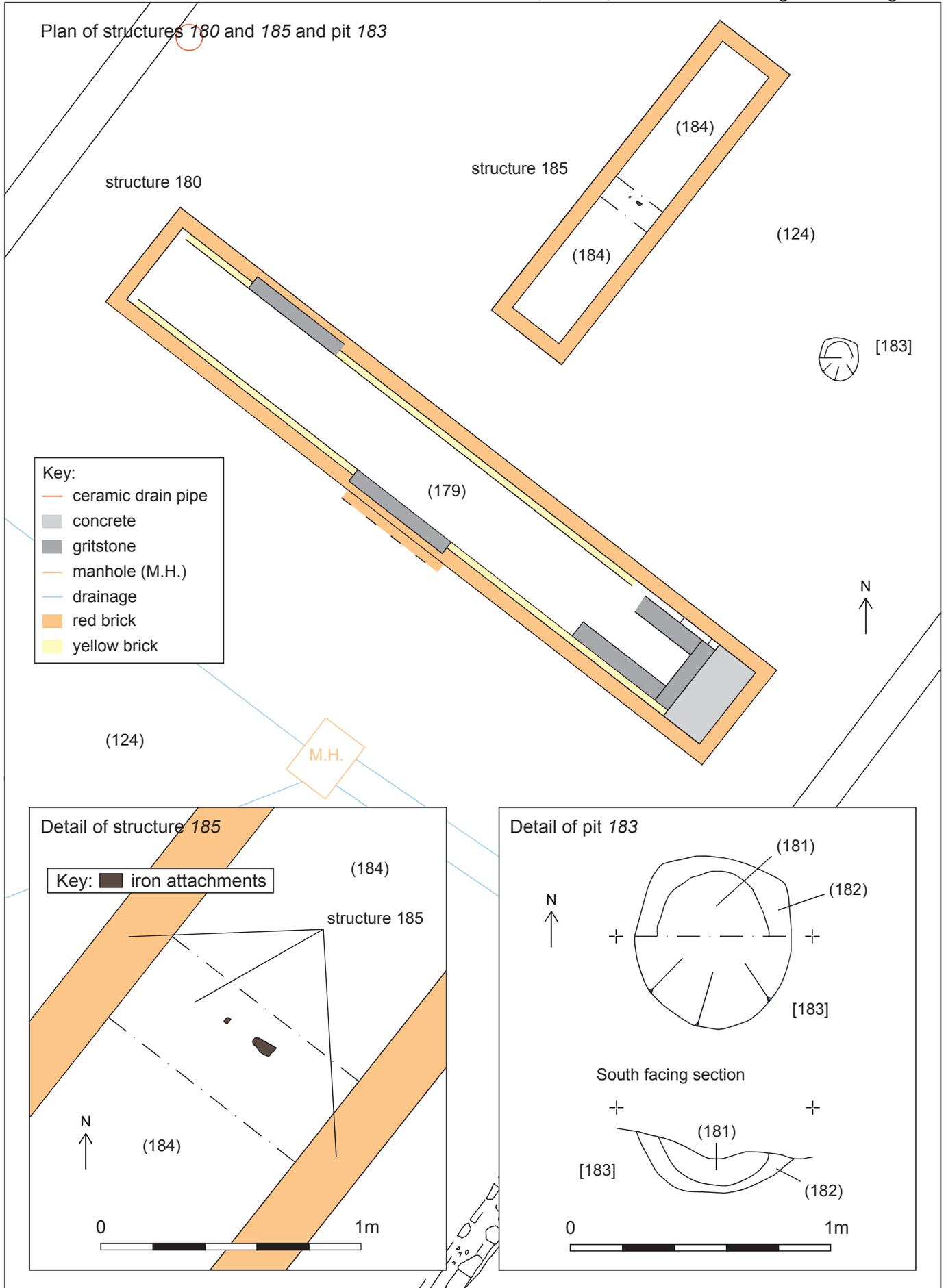


Figure 6: Structures 180 and 185 and pit 183

Client: Booths (Penrith) Ltd

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4.2.19 Structure **147** was also inside the area that was demarcated by structure **139** and was aligned north-east/south-west. It was built from neatly cut rectangular sandstone blocks and had a flagged floor with iron attachments (Plate 58 and Plate 59; see Figure 7). It is assumed that this pit originally had some sort of industrial function. It had then been deliberately filled in with rubble (**145**), including fragments of brick marked 'WHITEHAVEN', and there was some industrial residue (**146**), containing glass and slag, concentrated towards the base of the pit. Other finds from this context included various iron finds with a possible date range from the 19th to 20th century. This residue was also slightly dispersed within the rubble fill, probably as a result of disturbance caused by a later drain (**144**) which cut diagonally across the feature.



Plate 58 (left): Section across structure **147**

Plate 59 (right): Flagged base of structure **147**, viewed from above

4.2.20 Pits **176** and **178** were located to the north-east side of the excavated area to the rear of Bowman's and are assumed to relate to earlier test pitting activities. Both pits had near vertical sides and contained very mixed fills. Pit **189** was also of recent origin and contained partially melted glass. There were no other features beyond these three pits towards the north corner of the site. To the south-west of these modern intrusions there were several small pits and postholes, which each contained a single fill. These features included pits **150**, **152**, **154**, **156**, **158**, **160**, **162**, **164**, **166**, **168**, **170**, **172**, and **174** (from Plate 60 to Plate 68; see Figure 8 and Figure 9). This area was part of the timber yard during the 19th century but by 1900 the south-west end of this area was occupied by the carriage works (pit **164** is situated approximately along this line). The whole of the area occupied by this cluster of pits was then built over by 1925 before the area was again opened out by 1938. Clay tobacco pipe stems were recovered from several of these features, which would suggest that several of these features probably relate to the 19th century timber yard rather than 20th century activity on the site. A large sandstone block (structure **148**), probably an engine bed or crane base, with metal attachments (see Plate 69 and Plate 70; Figure 8), was located in the area of these pits to the south-west, but it was unclear if this was its original position.



Plate 60 (left): Pits 150 and 152

Plate 61 (centre): Pit 154

Plate 62 (right): Pit 156



Plate 63 (left): Pit 158

Plate 64 (centre): Pits 160 and 162

Plate 65 (right): Pit 164



Plate 66 (left): Pits 166 and 168

Plate 67 (centre): Pit 172

Plate 68 (right): Pit 174



Plate 69 (left): Possible engine bed (structure 148) located against the north-west boundary wall

Plate 70 (right): The engine bed (structure 148) after cleaning

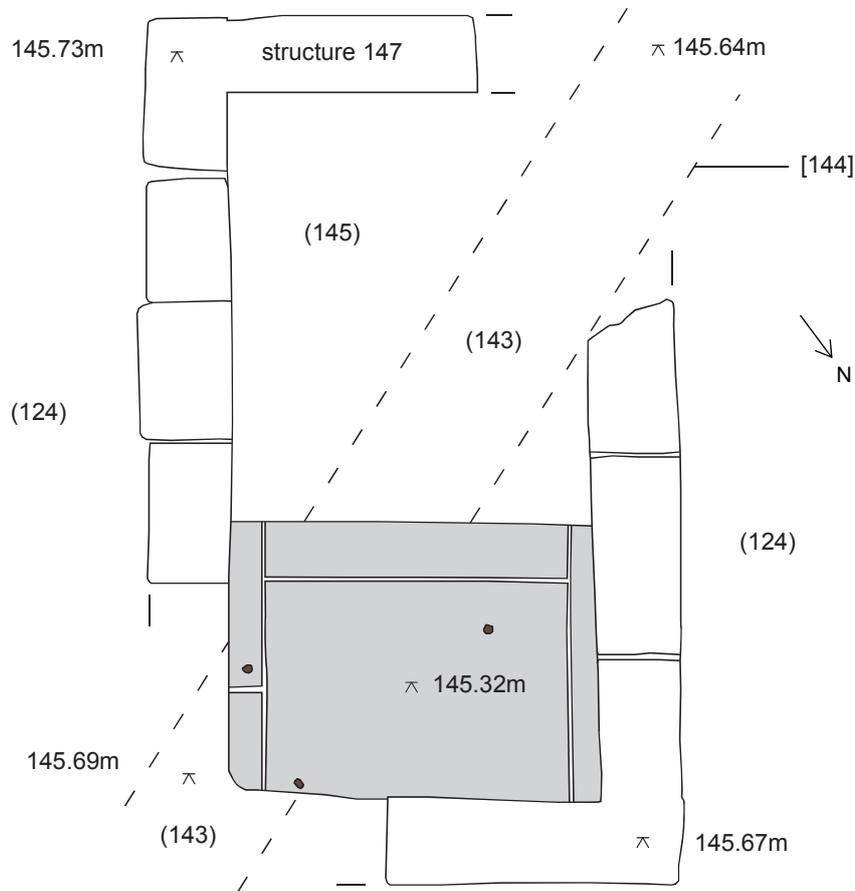
4.2.21 Of the pits located at the west end of the site pit **172** was of particular interest. The cut was approximately rectangular in plan (see Plate 67 and Plate 71) and had near vertical sides, but the base was not fully exposed since the feature began to fill with water at a depth of around 0.2m. It contained a loosely compacted, very dark grey, silty deposit (**171**), and large quantities of slag. Finds from this context suggest a 19th to 20th century date for the feature. It also contained the base of a barrel, which appeared to have been neatly sawn (Plate 72).



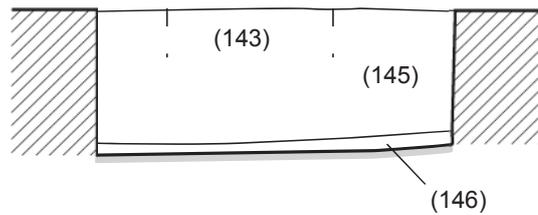
Plate 71 (left): Pit 172 showing the location of a nearby posthole (next to the ranging rod)

Plate 72 (right): The base of a barrel in the fill of pit 172

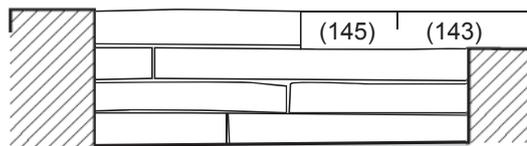
DETAILED PLAN OF STRUCTURE 147



North-east facing section



South-west facing elevation



Key:

- iron attachments
- ▨ cross-sectional wall
- flags

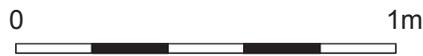


Figure 7: Structure 147

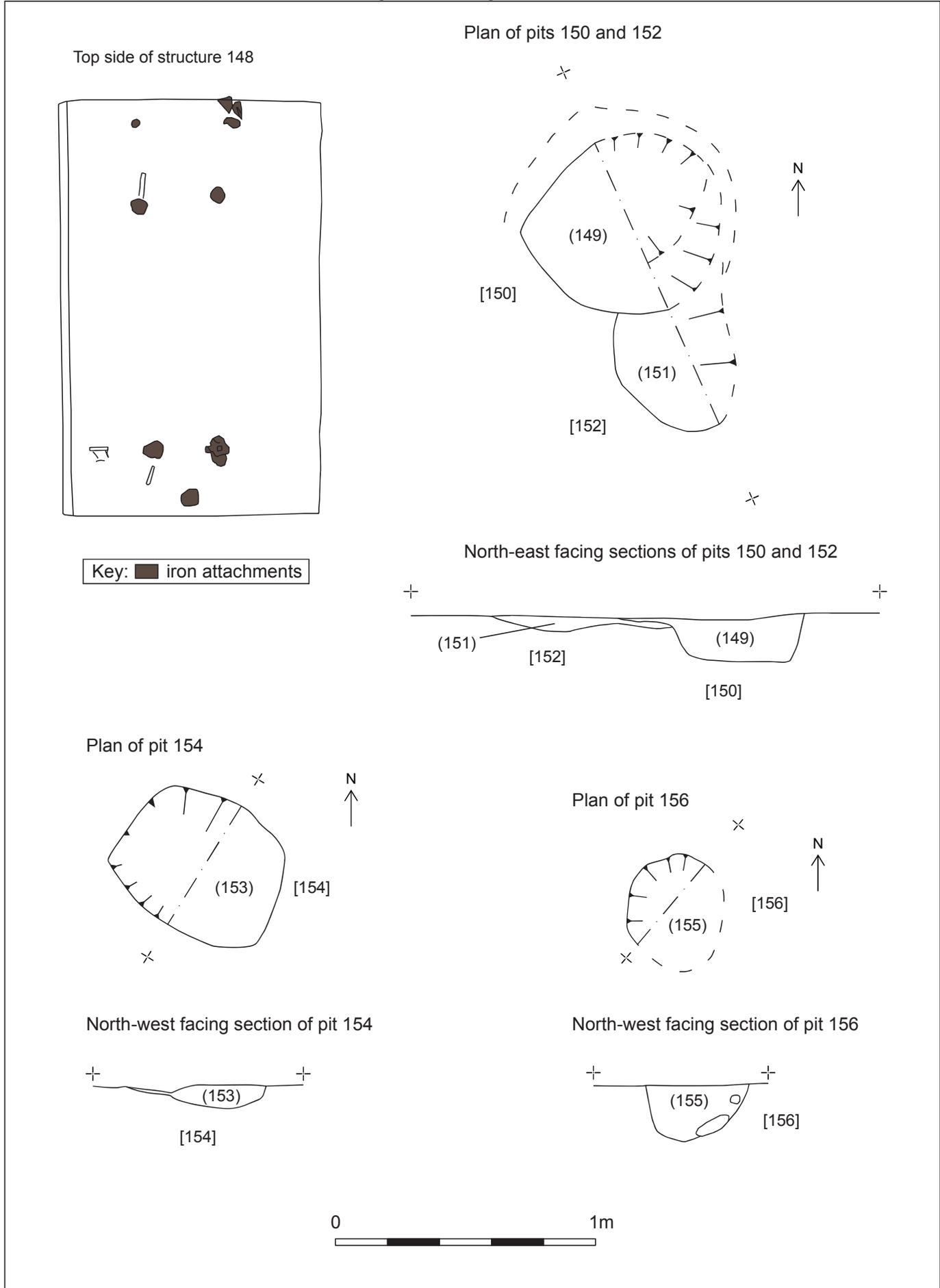
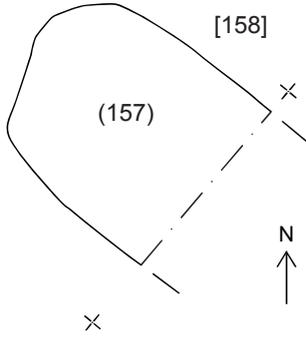
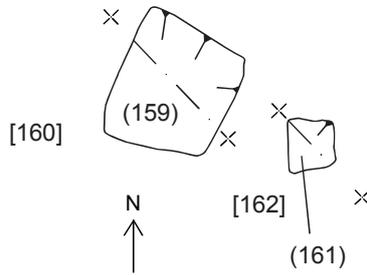


Figure 8: Structure 148 and pits 150, 152, 154, and 156

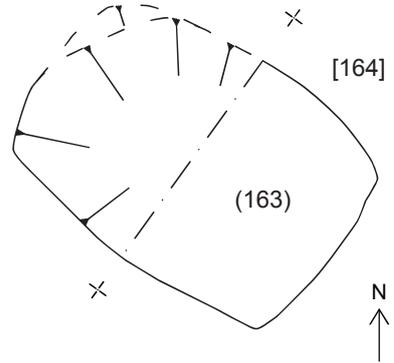
Plan of pit 158



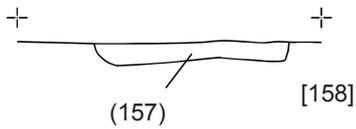
Plan of pits 160 and 162



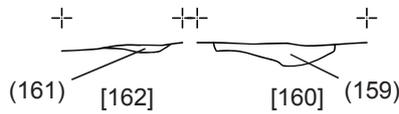
Plan of pit 164



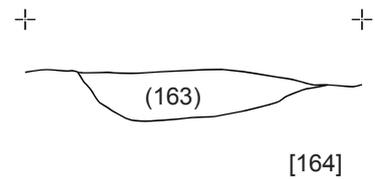
South-east facing section of pt 158



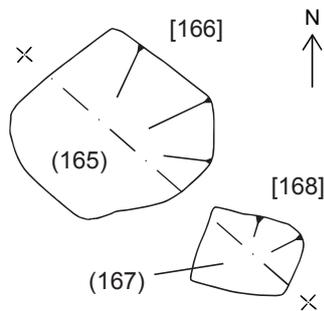
North-east facing sections of pit 160 and 162



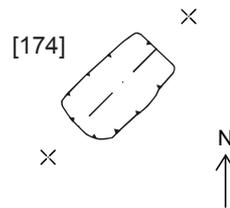
North-west facing section of pit 164



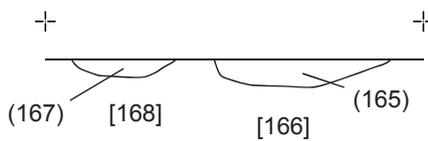
Plan of pits 166 and 168



Plan of pit 174



North-east facing sections of pit 166 and 168



South-east facing section of pit 174

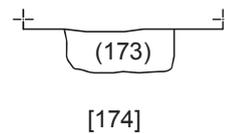


Figure 9: Pits 158, 160, 162, 164, 166, 168, and 174

4.3 Finds

4.3.1 All of the finds are post-medieval in date and potentially range in date from the late 17th to 20th century. Unfortunately, the suggested date ranges for many of the pottery types are very approximate, and the exact date at which these wares were introduced and when they went out of use is uncertain. However, they are generally consistent with the majority of activity on site taking place during the 19th century and 20th century. A number of the finds are indicative of industrial activity fitting that which is known to have taken place on the site, such as the three iron files and probably many of the other metal objects, although most were not readily identifiable. There were also quite large amounts of finds suggestive of domestic rubbish being dumped, such as from contexts **125** and **135**. These might be taken to indicate periods of relative inactivity on the site, or simply opportunistic filling of available pits and similar features.

4.3.2 Of particular interest are the fragments of apparent glass-making waste recovered from two contexts – 10 from **146**, and five from **171**, although these would all need further analysis to confirm their origin. A fragment of melted glass from **188** may relate to a similar process but seems to be much more recent and is perhaps a result of accidental burning. An initial assessment of these using x-ray fluorescence (XRF) gave a result of transparent to sodium, suggestive of waste from plate glass manufacture, but more detailed analysis would be required to provide further information.

5. Discussion

5.1 Results of the Watching Brief

5.1.1 **Rickerby's**: excavation of the Rickerby's area partially exposed structural elements which probably related to internal features of the 19th century saw mill. The level to which the area was being reduced caused minimal damage to these underlying features because the depth of intervention was sufficiently shallow to effect their preservation *in situ* (Plate 73). Unfortunately, the relationship between these features, which were effectively viewed in isolation, could not be determined during the course of the watching brief. The apparently structural features encountered, such as blocks **114**, **115** and **116** and walls **110** and **117**, are suggestive of elements relating to a large steam-powered saw, and the area of brick flooring (**109**), which corresponded closely to the position of a large aperture in the wall present during the building recording, is probably connected to a steam engine; perhaps the charging floor for loading the boilers with coal.



Plate 73: Exposure of underlying features which will effectively be preserved *in situ*

5.1.2 **Bowman's**: much of the original structure of the carriage works was preserved below ground in the Bowman's area. The original fabric, dating to the earliest phase of construction of the carriage works, was represented by the neatly cut sandstone block walls, which dated to between 1891 and 1900. Structure **139** comprised much of the surviving fabric of the original structure and included the north-east elevation, which incorporated a brick hearth (structure **187**), as well as much of the north-west elevation of the carriage works. These walls formed part of the standing remains of the carriage works, which were incorporated into later buildings on the site, and as such were also recorded as part of the archaeological building survey of the site ahead of their demolition (Greenlane Archaeology 2010). The remains of the south-east elevation of the original structure was also exposed, although it is likely that this wall was removed to the level of its foundations when the carriage works was extended to the south-east between 1925 and 1938.

5.1.3 Structure **140** was of a similar construction to structure **139** and probably also formed part of the original structure of the carriage works. It originally had access from the courtyard to the north-east; however, this point of access may have become redundant when the block of buildings was extended between 1925 and 1938.

5.1.4 The location of structure **129** corresponds to the extension of the block of buildings to this point between 1925 and 1938 but it may relate to or incorporate structures built in this area between 1900 and 1925. It is worth noting that structure **129** did not extend the entire length of the front elevation of Bowman's, but this is probably due to the severe truncation of the wall to the south-west (Plate 31). Structure **129** had a concrete base (**130**) which was not characteristic of structures **139** or **140** which are thought to date to the earliest phase of construction on site (between 1891 and 1900).

5.1.5 Various other built structures were located inside the area demarcated by structure **139**, including structures **147**, **180**, and **185**. Structures **147** and **185** were assumed to have had some sort of industrial function as the stone bases of each one appeared to have iron attachments, possibly for a machine or engine. Structure **147** was built from sandstone blocks, possibly suggesting that it was an earlier construction than structure **185**, which was made from unfrogged and roughly made orange brick. Structure **185** was approximately centrally situated along the length of structure **180** and was aligned perpendicularly to it and may have been associated with it in some way; however, structure **180** was made from machine-made frogged brick, which might suggest a later construction date than structure **185**. Structure **180** was initially thought to be relevant to the carriage works because of its central location within the footprint of the original structure (as demarcated by structure **139**), however, it may date from much later; finds from the rubble deposit (**179**) within structure **180** suggest that it was probably in use as a vehicle inspection pit when the building was used as a bus depot. Three discrete pits (**183**, **191**, and **196**) were also exposed within the footprint of structure **139**.

5.1.6 The earliest features on site were located at the north-west end of the area. The cluster of pits and postholes at this end of the site (features **150**, **152**, **154**, **156**, **158**, **160**, **162**, **164**, **166**, **168**, **170**, **172**, and **174**) was probably associated with 19th century activity on the site relating to the timber yard. The timber yard occupied the area from at least 1861 until this end of the site was built over by the carriage works between 1891 and 1900 and again between 1900 and 1925. It was unclear if structure **148**, which was probably an engine bed or crane base located nearby, was related to the timber yard or the later carriage works.

5.1.7 Various other drainage features and modern features were observed, including pits **176** and **178**, which were assumed to relate to recent test pitting activities, and pit **189**, which contained melted glass.

5.1.8 **Finds:** finds from the site were consistently post-medieval in date, and very few seemed to pre-date the known industrial use of the site in the late 19th century. Those that did come from a thin layer of subsoil (**133**), which probably represents the original agricultural soil present on the site prior and up to its development in the late 19th century. Of particular interest is the collection of fragments of glass waste, indicative of glass production on the site or the immediate vicinity. This material is difficult to explain; it occurred in late 19th century contexts with a range of other finds and was in relatively small quantities and therefore not suggestive of large-scale glass production. There is also no known history of glass production in Penrith at that time; indeed the whole county only ever seems to have had a very small-scale glass industry. It is perhaps most likely that this material represents waste from glass being processed within the carriage works for use in lamps and carriage windows, rather than a larger glass making industry.

5.2 Conclusion

5.2.1 The watching brief revealed a remarkable number of features, all of which appear to be late 19th or 20th century in date, and are most likely to relate to the various industrial processes that took place on the site. Interpreting them in detail is difficult, however, as they were typically spatially and stratigraphically isolated from one another and did not apparently form part of larger structures, nor was their relationship with the former standing buildings on the site apparent in most cases, although the structures within the former sawmill do seem likely to relate directly to its use and the position of machinery within it. The presence of the glass-making waste is of particular interest, but in the absence of further documentary evidence it seems likely that this relates to glass making or working associated with the carriage works.

5.3 Recommendations

5.3.1 The nature of the development means that there is clearly no scope for further work on the site, but the extensive amount of clearance, the majority of which was monitored in line with the requirements of this project, means that little more could probably be learned. However, there is potential for further, more detailed, interpretation of the site combining the results of the building recording and the watching, especially if further documentary sources could be identified relating to the carriage works that would further elucidate the manner in which it operated and the way in which different parts of the site were

used. The majority of the finds are also of little wider significance and are not worth retaining. However, the glass waste is of interest since its source is uncertain, and if it did represent the remains of larger-scale glass-making near the site it would be of some significance as this has not previously been identified. Further analytical analysis of these pieces using a scanning electron microscope and XRF is therefore recommended in order to determine in more detail what process or processes it derived from, although without further understanding of its context, i.e. whether it did indeed derive from processes taking place at the carriage works or from another nearby site, this might be of limited use.

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Appendix 1: Project Design

BRUNSWICK ROAD, PENRITH, CUMBRIA

Archaeological Building Recording and Watching Brief Project Design



Client: Booths (Penrith) Ltd

Planning Application Refs: 09/0256 and 10/0447

NGR: 351210 530230

September 2010

1. Introduction

1.1 Project Background

1.1.1 Following the submission of a planning application (Refs. 09/0256 and 10/0447) for the construction of new retail units, offices, storage, and associated parking at Brunswick Road, Penrith, Cumbria (NGR 351210 530230), a request was made by Eden District Council that a level 3-type archaeological building recording (English Heritage 2006) of the remains of a former saw mill and railway carriage works of late 19th to early 20th century be carried out prior to any on-site works commencing. In addition, a watching brief was to be carried out on ground works associated with the development following demolition. These conditions were worded as follows:

13) Prior to the carrying out of any construction works the late 19th century/early 20th century structural remains that are incorporated into the existing buildings shall be recorded in accordance with a Level 3 survey as described by English Heritage's document Understanding Historic Buildings - a Guide to Good Recording Practice, 2006 and, following its completion, three copies of that survey report shall be furnished to the local planning authority. Reason - To ensure that a permanent record is made of the buildings of historic interest prior to their demolition as part of the proposed development.

14) An archaeological watching brief shall be undertaken by a qualified archaeologist during the course of the ground works of the proposed development, in accordance with a written scheme of investigation which has been submitted to and approved by the local planning authority. Following its completion three copies of the report shall be furnished to the local planning authority. Reason - To afford reasonable opportunity for an examination to be made to determine the existence of any remains of archaeological interest within the site and the investigation and recording of those remains.

1.1.2 The proposed development site has already been subject to an archaeological desk-based assessment (ASUD 2009), which revealed that it was open fields until the 19th century and during the later part of that century it used utilised first by a saw mill with associated timber yard and latterly by a railway carriage works. There is no evidence for earlier archaeological remains on the site, although the medieval Penrith Castle is situated a short distance to the south-east.

1.2 Greenlane Archaeology

1.2.1 Greenlane Archaeology is a private limited company based in Ulverston, Cumbria, and was established in 2005 (Company No. 05580819). Its directors, Jo Dawson and Daniel Elsworth, have a combined total of over 18 years continuous professional experience working in commercial archaeology, principally in the north of England and Scotland. Greenlane Archaeology is committed to a high standard of work, and abides by the Institute for Archaeologists' (IfA) Code of Conduct. The desk-based assessment and building recording will be carried out according to the Standards and Guidance of the Institute for Archaeologists (IfA 2008a; 2008b).

1.3 Project Staffing

1.3.1 The project will be managed and carried out by **Dan Elsworth (MA (Hons)), Alfa**. Daniel graduated from the University of Edinburgh in 1998 with an honours degree in Archaeology, and began working for the Lancaster University Archaeological Unit, which became Oxford Archaeology North (OA North) in 2001. Daniel ultimately became a project officer, and for over six and a half years worked on excavations and surveys, building investigations, desk-based assessments, and conservation and management plans. These have principally taken place in the North West, and Daniel has a particular interest in the archaeology of the area. He has managed and carried out a number of recent projects in Cumbria and Lancashire including several archaeological building recordings. Recent projects include the recording of farm buildings at Sowerby Lodge (Greenlane Archaeology 2007a) and Sowerby Hall (Greenlane Archaeology 2007b), but also larger buildings and complexes such as a Georgian mansion at Galgate (Greenlane Archaeology 2008), and groups of industrial buildings in Barrow-in-Furness (Greenlane Archaeology 2007c), most recently a group of former railway engineering buildings (Greenlane Archaeology 2010).

2. Objectives

2.1 Rapid Desk-Based Assessment

2.1.1 To examine additional secondary and primary sources in order to further elucidate the form and function of buildings recorded on the site in the previous desk-based assessment and also place the results of the building recording and watching brief in their historic context.

2.2 Building Recording

2.2.1 To undertake a programme of archaeological building recording to a level 3-type standard (English Heritage 2006). This will provide an adequate record of the structures, as well as providing outline information about their development, form, and function.

2.3 Watching Brief

2.3.1 To identify any surviving archaeological remains and to investigate and record any revealed archaeological remains or deposits.

2.4 Report

2.4.1 To produce a report detailing the results of the building recording which will outline the character, form, and development of the historic fabric, and provide a permanent record of the structure.

2.5 Archive

2.5.1 Produce a full archive of the results of the building recording.

3. Methodology

3.1 Rapid Desk-Based Assessment

3.1.1 A rapid examination of easily available sources, particularly maps, relating to the site will be carried out. These will include:

- **Cumbria Record Office (Carlisle):** the majority of original and secondary sources relating to the site are deposited in the Cumbria Record Office in Carlisle, although as this is currently closed during relocation records may need to be accessed elsewhere or may not be available. Of principal importance are early trade directories and original documents that might elucidate the form and function of the buildings being recorded. In addition, any details of the buildings' architect(s), patrons, owners, and occupiers will be acquired where available, and additional information relating to the site will be obtained as necessary to place the results on the project in their local context;
- **Greenlane Archaeology:** a number of copies relevant secondary sources are held by Greenlane Archaeology. These will be consulted in order to provide information about the site and the local history as well as details from comparable buildings.

3.2 Archaeological Building Recording

3.2.1 A programme of archaeological building recording to level 3-type standards is required (English Heritage 2006). This is a medium level of investigation intended to record the form, function, and basic phasing of the buildings with the discussion incorporating the evidence obtained during the desk-based assessment. It will comprise three types of recording for each building:

- **Drawn Record:** plans of all of the principal floors will be produced, indicating alterations to the building and the location of each photographed feature of architectural or historic interest. These are compiled through hand measured survey techniques utilising 'as existing' architect's plans provided by the client's architect. These are then drawn up in an industry standard CAD package to produce the final illustrations. In addition, a plan showing the location of the building in relation to other nearby buildings, structures, and landscape features will also be produced;
- **Written Record:** descriptive records of all of the elements of the building will be made on Greenlane Archaeology standard *pro forma* record sheets. These records will describe the building's plan, form, function, age, and construction materials. They will then be used to provide an account of the development

of the building. In addition, the landscape and historic setting of the building will be described, in particular its relationship with other nearby buildings, field systems, settlements, and other structures;

- **Photographic Record:** photographs in colour print film and colour digital format will be taken. These will cover both general and detailed shots of the external elevations, individual rooms, and circulation areas, but also scaled photographs of specific features of architectural or archaeological interest. In addition, a record of the associated landscape and nearby buildings will also be made. The digital photographs will be used for illustrative purposes within the report, and a written record will be kept of all of the photographs that are taken.

3.3 Watching Brief

3.3.1 Any groundworks under undertaken within the development area shall be monitored, with one archaeologist on site.

3.3.2 The watching brief methodology will be as follows:

- Groundworks such as foundation trenches or trenches for services will be excavated by machine under supervision by staff from Greenlane Archaeology;
- All deposits of archaeological significance will be examined by hand if possible in a stratigraphic manner, using shovels, mattocks, or trowels as appropriate for the scale;
- The position of any features, such as ditches, pits, or walls, will be recorded and where necessary these will be investigated in order to establish their full extent, date, and relationship to any other features. If possible, negative features such as ditches or pits will be examined by sample excavation, typically half of a pit or similar feature and approximately 10% of a linear feature;
- All recording of features will include detailed plans and sections at a scale of 1:20 or 1:10 where practicable or sketches where it is not, and photographs in both colour print and colour digital format;
- All deposits, drawings and photographs will be recorded on Greenlane Archaeology *pro forma* record sheets;
- All finds will be recovered during the watching brief for further assessment as far as is practically and safely possible. Should significant amounts of finds be encountered an appropriate sampling strategy will be devised;
- All faunal remains will also be recovered by hand during the watching brief as far as is practically and safely possible, but where it is considered likely that there is potential for the bones of fish or small mammals to be present appropriate volumes of samples will be taken for sieving;
- Deposits that are considered likely to have preserved environmental remains will be sampled. Bulk samples of between 10 and 40 litres in volume, depending on the size and potential of the deposit, will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches) and occupation deposits such as hearths and floors. An assessment of the environmental potential of the site will be undertaken through the examination of samples of suitable deposits by specialist sub-contractors (see *Section 1.3.4* above), who will examine the potential for further analysis. All samples will be processed using methods appropriate to the preservation conditions and the remains present;
- Any human remains discovered during the watching brief will be left *in situ*, and, if possible, covered. Cumbria CHES will be immediately informed as will the local coroner. Should it be considered necessary to remove the remains this will require a Home Office licence, under Section 25 of the Burial Act of 1857, which will be applied for should the need arise;
- Any objects defined as 'treasure' by the Treasure Act of 1996 (HMSO 1996) will be immediately reported to the local coroner and secured stored off-site, or covered and protected on site if immediate removal is not possible;
- Should any significant archaeological deposits be encountered during the watching brief these will immediately be brought to the attention of the Cumbria CHES so that the need for further work can be confirmed. Any additional work and ensuing costs will be agreed with the client and according to the requirements of the Cumbria CHES, and subject to a variation to this project design.

3.4 Report

3.4.1 The results of the building investigation will be compiled into a report, which will provide a summary and details of any sources consulted. It will include the following sections:

- A front cover including the appropriate national grid reference (NGR);
- A concise non-technical summary of results, including the date the project was undertaken and by whom;
- Acknowledgements;
- Project Background;
- Methodology, including a description of the work undertaken;
- Results, including an historical background describing the development of the site;
- Discussion of the results including phasing information, and a consideration of the development of the building;
- Bibliography;
- Illustrations at appropriate scales including:
 - a site location plan related to the national grid;
 - extracts from historical maps of the site as appropriate;
 - a plan showing the location of the buildings in relation to nearby structures and the local landscape;
 - plans of all of the principal floors of the buildings showing the location of each photographed feature of architectural or archaeological interest;
 - cross-sections through the buildings as appropriate;
 - photographs of the building, features of architectural/historic interest, and the surrounding landscape, accompanied by appropriate descriptions;
 - plan showing areas monitored during the watching brief;
 - plans and sections of any features encountered during the watching brief;
 - photographs of features encountered during the watching brief.

3.4.2 If necessary a separate draft report detailing the results of the building recording will be produced prior to demolition.

3.5 Archive

3.5.1 The archive, comprising the drawn, written, and photographic record of the building, formed during the project, will be stored by Greenlane Archaeology until it is completed. Upon completion it will be deposited with the Cumbria Record Office in Barrow-in-Furness. The archive will be compiled according to the standards and guidelines of the IFA (Brown 2007), and in accordance with English Heritage guidelines (English Heritage 1991). In addition details will be submitted to the Online AccesS to the Index of archaeological investigationS (OASIS) scheme. This is an internet-based project intended to improve the flow of information between contractors, local authority heritage managers and the general public.

3.5.2 A copy of the report will be supplied to the client, a digital copy will be supplied to the client's agent, and within two months of the completion of fieldwork, three copies will be provided for Cumbria County Council Historic Environment Service. In addition, Greenlane Archaeology Ltd will retain one copy.

4. Work timetable

4.1 Greenlane Archaeology will be available to commence the project on 27th September 2010, or at another date convenient to the client. It is envisaged that the project will comprise tasks in the following order:

- Task 1: rapid desk-based assessment;
- Task 2: on-site building recording including compilation of written, photographic, and drawn record;

- Task 3: production of draft building recording report including illustrations as necessary;
- Task 4: watching brief;
- Task 5: production of final report incorporating results of building recording and watching brief;
- Task 6: feedback, editing, and production of final report;
- Task 7: finalisation and deposition of archive.

5. Other matters

5.1 Access and clearance

5.1.1 Access to the site will be organised through co-ordination with the client and/or their agent(s). In addition, the buildings will be cleared by the client in order to allow internal photographs to be taken without obstructions. Greenlane Archaeology reserves the right to increase the price if the buildings have not been cleared at the time of recording, if this results in additional trips to photograph the buildings' interiors once they have been cleared. Similarly, the client will ensure that the exterior of the buildings is free from obstruction as far as is practicable to allow photography and recording to take place. Greenlane Archaeology reserves the right to increase the price if the exterior of the buildings is obstructed at the time of recording if this results in additional trips to photograph the buildings' exterior once it has been made fully visible.

5.2 Health and Safety

5.3.1 Greenlane Archaeology carries out risk assessments for all of its projects and abides by its internal health and safety policy and relevant legislation. Health and safety is always the foremost consideration in any decision-making process.

5.3 Insurance

5.3.1 Greenlane Archaeology has professional indemnity insurance to the value of £500,000, employer's liability to the value of £10,000,000 and public liability to the value of £5,000,000. Details of this can be supplied if requested.

5.4 Environmental and Ethical Policy

5.4.1 Greenlane Archaeology has a strong commitment to environmentally and ethically sound working practices. Its office is supplied with 100% renewable energy by Good Energy, uses ethical telephone and internet services supplied by the Phone Co-op, has floors finished with recycled vinyl tiles, and is even decorated with organic paint. In addition, the company uses the services of The Co-operative Bank for ethical banking, Naturesave for environmentally-conscious insurance, and utilises public transport wherever possible. Greenlane Archaeology is also committed to using local businesses for services and materials, thus benefiting the local economy, reducing unnecessary transportation, and improving the sustainability of small and rural businesses.

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Appendix 2: Summary Context List

Context	Type	Description	Interpretation
Note: contexts 101 to 117 were recorded during the course of groundworks in the area of Rickerby's			
101	Deposit	Variable, coarse, light orangey-pink gravel, forming the uppermost layer of various made ground deposits. This deposit was cut by later water pipes and other services and contained a concrete stanchion, which was removed.	Gravel and various made ground deposits forming the current ground surface.
102	Deposit	Loosely compacted, dark brown, silt. 0.4m thick below 101 .	Possible topsoil layer / silt deposit above 103 .
103	Deposit	Friable mid brown silt with no inclusions. 0.4-0.5m thick, below 102 .	Possible subsoil? Contained relict wall 104 .
104	Structure	Two courses or a north-west/south-east aligned, orangey sandstone(?) brick wall, 0.3m wide, extending beyond the limits of excavation to the north-west and south-east. The edge of the wall was very clear as it was exposed in plan and it appeared to be mortared. It was surrounded either side by 103 but no cut for it was observed. Since it was only observed in plan, the number of rows that remained of its original construction was not determined.	This wall lines up very closely with the boundary wall shown on the tithe map of 1845. It had a similar fabric and construction to the walls of the earliest elements of the saw mill and carriage works.
105	Deposit	Loose, gravelly, orange sand layer, with frequent large rounded boulders and cobbles, which extended across the area of the site.	Natural underlying geological deposit.
106	Deposit	Light brown, friable, silt deposit. 0.95m deep by 0.18m wide, along the south-east side of the north-west elevation of the saw mill.	Fill of foundation cut 108 for the north-west elevation of the saw mill, structure 107 .
107	Structure	North-east/south-west aligned red sandstone and limestone block, rubble-filled wall, approximately 0.5m wide, located within foundation cut 108 . This wall extends up to 1m below the current ground surface.	North-west/south-east aligned wall, forming the north-west elevation of the saw mill.
108	Cut	Linear, north-west/south-east aligned cut. 0.61m wide by 0.95m deep, extending the length of the north-west elevation of the saw mill. This cut had vertical sides and a flat base with sharp edges. It was not truncated and contained structure 107 and fill 106 .	Foundation cut for structure 107 , the north-west wall of the saw mill. It cuts the natural 105 to the south-east and either cuts or is possibly butted against made ground deposits (probably a variation of 101) to the north-west side.
109	Structure	Red sandstone block walls surrounding a yellow brick floor (ea. 0.06m by 0.06m on the end, but of variable length), with sandstone slabs to the south and east. The floor measures approximately 0.8m by 1.2m. The wall has a gritty pinkish white mortar and possibly a rubble core. Below the rubble and made ground deposits 113 .	Edge of a building exposed within the area of the saw mill with a yellow brick floor and sandstone walls.
110	Structure	North-west/south-east aligned red sandstone block wall with pinkish gritty mortar and rubble core.	Possible internal dividing wall of a structure, located within the footprint of the Rickerby's building, with black silty deposits to the north and south. Possibly associated with the 19 th century saw mill.

Context	Type	Description	Interpretation
111	Deposit	Thin, blackish-brown, friable, silt deposit, with no notable inclusions, located to the south side of structure 110 ; contained some slag and window pane glass.	Some slag / industrial residue was recovered from this deposit, which might suggest that it was possibly associated with the engineering works, although this interpretation is perhaps too late for this feature. Possible industrial deposit inside structure 110 .
112	Deposit	This deposit was similar to 111 , but did not contain slag or glass and was located to the north side of structure 110 .	Possible floor deposit from within structure 110 ?
113	Layer	Rubble and gravels within a friable, dark, blackish-brown, silt matrix, up to 0.5m thick.	Fairly modern, mixed demolition rubble and gravels within a layer extending across the area of the Rickerby's site. Possibly a variation of layer 101 .
114	Structure	Large, cemented over sandstone plinth(?), with a sandstone slab, with metal attachments, located to the north-east side. Aligned north-west/south-east	Possible machine base?
115	Structure	A similar, more roughly cut sandstone structure to feature 114 with a white lime mortar; on a parallel alignment to feature 114 .	Possible machine base?
116	Structure	Large sandstone slab partially exposed towards the south corner of the Rickerby's site.	Possible floor surface or engine bed?
117	Structure	South corner of a north-west/south-east aligned structure with a similar rubble-filled construction to structure 109 .	South corner of a structure, possibly associated with the 19 th century saw mill.
Note: contexts 118 to 197 were recorded during the course of groundworks in the area of Bowman's			
118	Deposit	Friable, dark brown silt, up to 0.3m thick, with some angular and sub-angular gravels (<0.1m) and rubble inclusions.	Topsoil layer on the embankment to the south and east of what was Bowman's car park.
119	Deposit	Variation of 113 .	Layer of gravels and rubble.
120	Deposit	Dark brown, soft, friable silt, up to 0.3m thick, with sparse gravel inclusions.	Uppermost silt layer within the Bowman's area, possibly continuous across the site, but thinning towards the north-west.
121	Deposit	A patchy deposit of red sandstone rubble within the Bowman's area, it was usually between 0.15 and 0.2m thick but elsewhere it was less than 0.05m thick. It petered out towards the south-west and only sporadically occurred to the north and west.	A makeup layer or possibly demolition rubble in the Bowman's area.
122	Deposit	Patchy slag and clinker deposit towards the north-east corner of the Bowman's area; <0.22m thick.	Industrial waste.
123	Deposit	Friable, dark grey-brown silt, with infrequent angular pebbles and gravels and sub-angular cobbles.	Lower-level silty subsoil layer.
124	Deposit	Firm, mid to light (slightly orangey) brown sandy layer, with frequent well-sorted gravel and sub-angular stone inclusions.	Natural underlying geological deposit. Variation of 105 .
125	Deposit	Friable, grey-brown silt, with small angular gravel inclusions.	Uppermost fill of pit 128 .
126	Deposit	Firm to very firm, black ash-like industrial residue	Centre fill of pit 128 ; possibly some sort of industrial residue.
127	Deposit	Very hard, light brown to yellow deposit with some small stone pebble inclusions.	Lowest fill of pit 128 ; probably industrial (furnace slag?) residue.

Context	Type	Description	Interpretation
128	Cut	Sub-circular pit, with concave, rounded sides. The base of the pit was assumed to be concave due to the nature of the slope of deposit 127 , but this deposit was too hard to be excavated by hand. This feature was truncated by later drains.	Possible industrial pit (or furnace?) with a firm lining of slag and ash at the base.
129	Structure	Neatly cut red sandstone block wall, aligned north-east/south-west on top of 130 .	North-east/south-west aligned wall. It is aligned to Bowman's front wall, which was extended to this extent between 1925 and 1938, but it may in fact relate to structures built in this area between 1900 and 1925.
130	Structure	Pale yellowy concrete, with frequent stone inclusions and cobble-sized sandstone fragments.	Possible concrete base or foundation below the sandstone block wall 129 .
131	Structure	North-west/south-east aligned concrete foundation for structure 129 or possible plinth, comprising red sandstone fragments set in Portland cement. This feature ran up to structure 129 and was on top of subsoil 123 . No cut was apparent.	Possible plinth or concrete foundation for the sandstone block wall 129 .
132	Structure	Rectangular structure to the north-east of Bowman's built from modern, machine-made red brick; approximately 4m wide from the north-east wall of Bowman's towards the south-east end of the north-east elevation. It was sat atop a pinkish white concrete foundation above a bedding material on top of the subsoil 133 .	Small room to the north-east of Bowman's, which can be seen on the later editions of the Ordnance Survey maps. It was built sometime between 1971 and 1988.
133	Deposit	Friable, mid greyish-brown silty-sand deposit, with frequent (10-15%) well-sorted sub-rounded cobbles (0.05-0.09m) and sub-angular gravels (<0.04m). Appears to be continuous below structure 132 .	Possible variation of subsoil 123 ; apparently cut by walls 129 and 131 .
134	Structure	Possible sandstone blocks construction at the south-west end of the south-east elevation of Bowman's. Unfortunately there was very little left of this possible structure, which amounted to only two blocks or so, located near the column and oil tank near structure 140 .	Although it was thought that this might have been continuation of the sandstone block wall 129 this is unlikely since the structure was in other ways dissimilar. For instance, these blocks were not set atop a concrete base.
135	Deposit	Loose, gritty, black ash.	Spread fill of pit 136 .
136	Cut	The upper fill of this pit was very widely spread; however, the underlying cut of the pit was approximately rectangular in shape and orientated north-east/south-west. The cut had straight and steep sides and a firm, stone-lined base. It was not fully excavated.	Ash pit? This pit contained a large quantity of dumped domestic refuse, including a broken plant pot.
137	Deposit	Friable, very dark, greyish (blackish) brown silt.	Fill of drain 138 .
138	Cut	North-east/south-west aligned linear cut. 0.2m wide and <0.05m deep, with a very shallow concave base. Not truncated.	Possible drain cut exposed at the interface between the subsoil 133 and natural 124 . Potentially an undulation in the natural such as a small gully?

Context	Type	Description	Interpretation
139	Structure	A detailed section of a north-west/south-east aligned reddy-orange sandstone block wall, with a gritty pinkish cement mortar was recorded in some detail when it was exposed; each course was 0.14 to 0.16m high and at least two courses were exposed. A clay tobacco pipe stem was recovered from within the cement/mortar. This structure was observed to continue across the length of the site and had return walls corresponding to the location of the north-east and north-west elevations of the original carriage works. Some evidently re-used worked stone was incorporated into the construction of the wall, including a curved fragment of roughly worked stone.	The section of wall which was recorded in some detail was probably part of the original south-east elevation of the carriage works and likely dates to its earliest phase of construction (between 1891 and 1900). It was later observed to continue across the centre of the area and was observed to have a very similar construction to the saw mill. This north-west/south-east wall may have become redundant and was likely removed to the level of its foundations when the carriage works was extended to the south-east between 1925 and 1938; indeed, the later editions of the Ordnance Survey maps do not show a 'dividing' wall where this wall would have stood. The structure marks the north-eastern extent of the original carriage works.
140	Structure	North-west/south-east aligned wall, with a similar construction to structure 139 . It had a stone threshold at the north-west end.	If the original buildings on the site of the carriage works is considered to form an inverted T-shape, the location of structure 140 corresponds to the south-east end of the branch of the 'T' shown on the 1900 Ordnance Survey map (Plate 5). This section of the carriage works is shown as a separate block on the 1925 edition (Plate 6). The stone threshold at the north-west end of this section of the wall would originally have led from inside the carriage works to the courtyard before the buildings were extended in this direction between 1925 and 1938 at which point the doorway may have stopped being used; certainly there was no evidence for this doorway at the time of the building survey (Greenlane Archaeology 2010).
141	Deposit	Firmly-compacted, dark greyish-brown silt, with very frequent (50%) sub-angular and sub-rounded pebbles and cobbles (<0.15m).	Fill of drain 142 .
142	Cut	North-west/south-east aligned linear cut (<0.70m wide).	Drain cut, seemingly cutting through structure 139 .
143	Deposit	Friable, darkish brown, sandy-silt with no inclusions; contained fragments of ceramic drain pipe.	Fill of drain 144
144	Cut	Linear cut; cutting deposit 145 , which was the uppermost fill of structure 147 .	Drain.
145	Deposit	Loose, greyish silty matrix with some frogged 'Whitehaven' brick fragments.	Uppermost rubble fill of structure 147 . Possible variation of 119
146	Deposit	Loose, blackish, gritty-silt deposit, containing industrial residue, glass and slag.	Industrial, gritty fill of structure 147 . It was generally concentrated towards the base of structure 147 but was also slightly dispersed within 145 (possibly as a result of disturbance by the later drain cut 144).

Context	Type	Description	Interpretation
147	Structure	Neatly cut rectangular sandstone block structure with a flagged floor. The flags in the floor had iron fittings.	Industrial pit?
148	Structure	This comprised a large sandstone block with metal attachments to the top. The top was neatly finished and flattened apart from along one edge which was chamfered; the sides of the block were more roughly hewn. The top of the block measured exactly 39 by 63 inches (1.0x1.6m) and was two foot (0.6m) high.	Large engine bed or crane base? With metal attachments.
149	Deposit	Friable, mid brownish-grey silt, comprising up to 60% sub-rounded pebbles and cobbles.	Fill of pit 150
150	Cut	Sub-circular cut with near-vertical sides and a flat base. Fill 149 appeared to have been spread to the south and east.	Pit.
151	Deposit	Loose, black grit.	Fill of pit 152 . Possibly cut by pit 150 .
152	Cut	Shallow sub-circular pit, with a slightly concave base.	Possible pit.
153	Deposit	Friable, brownish-grey silt with sparse inclusions.	Fill of pit 154 .
154	Cut	Shallow sub-rounded pit with a concave base.	Pit.
155	Deposit	Soft, grey, silty-sand, with infrequent sub-rounded stone pebble inclusions.	Fill of pit or possible tree bole 156 .
156	Cut	Sub-circular cut, with concave sides at an angle of approximately 60 to 70 degrees to the horizontal and a concave rounded base.	Possible pit or tree bole.
157	Deposit	Friable, mid brownish-grey slightly sandy silt.	Fill of pit 158 .
158	Cut	It was only possible to record the north-west end of this pit during the course of the excavation. It was shallow and north-west/south-east aligned, with a fairly flat base.	Truncated pit.
159	Deposit	Friable, dark brownish-grey silt, with frequent sub-rounded and sub-angular pebbles and cobble-sized inclusions.	Fill of pit 160 .
160	Cut	This cut was almost square in plan and aligned north-east/south-west, and had concave and gently sloping sides and a slightly rounded base.	Pit.
161	Deposit	Friable, dark brownish-grey silt.	Fill of pit 162 .
162	Cut	This cut was almost square in plan and aligned north/south. It was very shallow and had concave and gently sloping sides and a concave base.	Posthole.
163	Deposit	Friable, brownish-grey slightly sand-silt with <5% small, sub-rounded pebbles and cobbles.	Fill of pit 164 .
164	Cut	Rectangular cut; aligned north-west/south-east. It had slightly concave sides at approximately 40 to 50 degrees to the horizontal and a slightly concave base.	Pit.
165	Deposit	Friable, brownish-grey silt with sparse inclusions.	Fill of pit 166 .

Context	Type	Description	Interpretation
166	Cut	Sub-square cut. The north-west side of the cut was gently sloping at an angle of 30 degrees to the horizontal whereas the south-east side of the cut was more nearly vertical. The base was mildly concave.	Pit / timber posthole.
167	Deposit	Friable, brownish-grey silt with sparse inclusions.	Fill of posthole 168 .
168	Cut	Shallow cut with a concave base.	Posthole.
169	Deposit	Friable, dark brownish-grey silt.	Fill of posthole 170 .
170	Cut	Very shallow cut, possibly the base of a very small posthole.	Very small posthole.
171	Deposit	Loosely compacted, very dark grey, silty deposit, containing large quantities of slag, frequent gravels, sub-angular pebbles and cobbles, and some industrial residue. This deposit also contained the base of a barrel, which appeared to have been neatly sawn.	Fill of pit 172 .
172	Cut	The cut was approximately rectangular in plan and had near vertical sides. It was aligned north-east/south-west. The base was not fully exposed since the feature began to fill with water at a depth of around 0.2m.	Large pit containing the base of a barrel
173	Deposit	Mid, greyish-brown sandy-silt and timber post with no other inclusions.	Fill of posthole 174 .
174	Cut	Near vertically-sided rectangular cut with a flat base.	Posthole with timber post.
175	Deposit	Mixed, friable, dark brownish-grey silt, containing broken fragments of ceramic drain.	Fill of pit 176
176	Cut	The fill 175 of this deposit had spread but lower down the cut appeared to form a narrow, near vertically-sided, rectangular cut, aligned north-east/south-west.	Probably a test pit.
177	Deposit	Mixed, dark grey silt, with mixed and modern finds. The deposit seemed to be disturbed and included fluorescently painted gravel, which would indicate its recent origin.	Fill of pit 178 .
178	Cut	Near vertically-sided, rectangular cut, aligned north-east/south-west.	Probable test pit.
179	Deposit	Angular brick and concrete rubble in a mid grey-brown silty matrix. A steel grill was observed within the deposit and a broken sign for a bus stop in 'Cumberland' was recovered from this deposit, which was heavily contaminated with diesel.	Fill of structure 180 . The grill may relate to a 20 th century industrial installation or perhaps more likely was simply used to cover over a vehicle inspection pit, which is what structure 180 may have been used for. Since the bus stop sign is labelled 'Cumberland', this find and likely also the deposit pre-date 1974 and the formation of the current county of Cumbria.

Context	Type	Description	Interpretation
180	Structure	This structure was a mix of brick, concrete, and stone. The 'outer' lining of red bricks was frogged and stamped 'CLAUGHTON MANOR / BRICK C ^o CATON' and each brick measured 0.24 by 0.11m. The inside of the structure was 'lined' with a 'crumbly' yellow brick and stone was used intermittently along its edge. Concrete was also used at the south-east end and along the base. The base of the feature filled with contaminated water.	The date of construction of this feature is uncertain. The feature was thought to be relevant to the carriage works because of its central location within the footprint of the original structure of the carriage works (as demarcated by structure 139). It may of course be later. If its original construction does relate to the carriage works, it is not impossible that it later saw use as a vehicle inspection pit when the building was used as a bus depot.
181	Deposit	Rusty, sandy orangey-brown deposit, containing a large rusted bolt.	Upper fill of posthole 183 .
182	Deposit	Friable, mid grey-brown silt.	Lower fill of posthole 183 .
183	Cut	Sub-circular cut, with gently sloping, concave sides and a concave base.	Posthole containing a large bolt.
184	Deposit	Rubble deposit	Fill of structure 185
185	Structure	This structure was made from orange bricks, which were unfrogged and more roughly made. Each measured 240x115x80mm. The base of the structure was stone and had metal attachments.	Brick lined pit with a stone base.
186	Deposit	Mixed, dark grey silty-clay.	Residue against possible furnace or hearth 187 .
187	Structure	This structure was a yellow fire brick structure with a gritty pinkish sandy mortar and was incorporated into and jutted out from the red sandstone wall 139 . The base of 187 was slate and there appeared to be further red sandstone blocks placed in the subsoil 133 below the level of this slate and below 139 .	Possible brick hearth with a slate base incorporated into 139 . (Oddly, the location of this feature appears to line up with a blocked doorway which was observed in the north-east elevation of Bowman's Room 3 (Greenlane Archaeology 2010, 31)).
188	Deposit	Blackish sandy deposit with a burnt ash or possibly tar-like fill? Containing partially melted glass.	Fill of pit 189 .
189	Cut	D-shaped cut, apparently cutting through the subsoil 133 .	Modern dump / burnt waste pit.
190	Deposit	Friable, mid grey-brown silt.	Fill of pit 191 .
191	Cut	Sub-circular cut with a concave base and concave sides.	Pit.
192	Deposit	Mid to light, gritty orange deposit containing a large amount of slag.	Upper fill of cut 196 .
193	Deposit	Firm, black ash and slag deposit.	Centre fill of pit 196 .
194	Deposit	Very firm, dark orange-brown slag-like deposit.	Lower fill or pit 196
195	Structure	Sawn rectangular pieces of timber, each approximately 20mm thick, lining pit cut 196 .	Timber lining of pit 196
196	Cut	Vertically-sided rectangular cut with a timber lining (195) and various slag-like deposits (194 , 193 , and 192).	Timber lined pit, possibly with an industrial function. Its fills contained a large quantity of rusted iron products and slag.
197	Deposit	Fairly firm, light, grey-brown sandy-silt.	Possible variation of subsoil below 194 and cut by 196 ; possibly burnt?

Appendix 3: Summary Finds List

This excludes the clay tobacco pipe fragments, which are summarised in *Appendix 4*

Context	Type	Qty	Description	Date range
u/s	Pottery	1	White earthenware, 'Willow' transfer printed plate(?) rim	19 th to early 20 th century
u/s	Pottery	1	Brown-glazed red earthenware crock rim	Late 17 th to early 20 th century
u/s	Glass	2	Light turquoise Hamilton bottle pointed base and body fragment	1814 – 1870s (Fletcher 1974, 50)
u/s	Pottery	1	Black-glazed red earthenware strap handle fragment	Late 17 th to early 20 th century
u/s	Pottery	2	White earthenware hollow-ware body fragment and saucer base with blue transfer print	19 th to early 20 th century
u/s	Pottery	1	Buff-coloured stoneware bottle base	19 th to early 20 th century
u/s	Animal bone	1	Large mammal long bone fragment	Not closely dateable
u/s	Fe	3	File blade and tang (serrations on surface visible on some)	Post-medieval
u/s	Fe	1	Wall spike bracket with right-angled return	Post-medieval
u/s	Cu alloy	1	Small broken strip	Not closely dateable
u/s	Glass	1	Dark green cylindrical wine(?) bottle base with high kick	19 th – 20 th century
u/s	Pottery	9	White earthenware with blue and black transfer print – 'Willow' base, 'Broseley' mug, body and bowl rim, 'Marble' (in purple) chamber pot/basin rim, brown wood grain sheet pattern handle with orangey lustre, basin base, blue sponge-printed basin(?) body, small blue acorns and oak leaf band (chamber pot), potted meat pot 'Tebbat & Cos potted m[eat]/Melton Mowb[ray]' etc plus two refitting chips.	19 th – early 20 th century
u/s	Pottery	1	Brown-glazed red earthenware large pancheon rim with four white slip stripes	Late 17 th – early 20 th century
u/s	Pottery	2	Bone china saucer rim with pink enamel stripe, plus rim from unidentified vessel	Mid 19 th to 20 th century
u/s	Pottery	3	White earthenware 'Willow' pattern pie dish rim and plate rim, brown floral transfer-printed vessel base	19 th to early 20 th century
u/s	Pottery	1	Small blue transfer printed plate(?) rim	Late 19 th to early 20 th century
u/s	Pottery	1	Bone china saucer base with gilded line	Mid 19 th to 20 th century
u/s	Pottery	1	Pearlware(?) – slightly burnt small fragment with blue shell edge, plate rim	Late 18 th to early 19 th century
u/s	Pottery	1	Creamware press-moulded plate rim (possibly late copy)	Mid 18 th to 20 th century
u/s	Pottery	1	White earthenware ironstone coffee cup(?) rim, navy blue 'Prunus and Cracked Ice' transfer printed pattern, enamelled and with lustre	Mid 19 th to 20 th century
u/s	Pottery	1	Bone china saucer base with gilded line	Mid 19 th to 20 th century
u/s	Pottery	1	White earthenware green enamel lined plate rim, blue floral transfer pattern fragment	Mid 19 th to 20 th century?
u/s	Pottery	1	Red earthenware flower pot(?) body fragment with white slip strips (unglazed)	19 th to 20 th century
u/s	Pottery	1	White salt-glazed stoneware cup base, thickly potted	18 th to 19 th century?
111	Glass	1	Very light turquoise flat pane fragment	Post-medieval
112	Fe	1	Bolt with large rounded head	19 th – 20 th century

Context	Type	Qty	Description	Date range
120	Pottery	5	White earthenware cup base (late foot rim type), jar base, 'Asiatic Pheasants' transfer-printed ashet(?) rim, 'Mayfield' transfer-printed soup plate(?) rim, botanic transfer-printed basin(?) body	Mid 19 th to 20 th century
120	Pottery	1	Black-glazed red earthenware coarseware lid fragment with lug handle terminal scar, unglazed internally – unusual	Late 17 th to early 20 th century
120	Pottery	1	Brown-glazed red earthenware crock(?) body with white slip coating internally	19 th to early 20 th century
120	Pottery	1	Buff-coloured earthenware (factory-produced) hollow ware body fragment	19 th to 20 th century
120	Animal bones	5	Small and medium mammal bones: 3 complete or partially complete long bones, 2 phalanges	Not closely dateable
122	Pottery	1	Buff-coloured earthenware (factory-produced) jug base, relief moulded	19 th to 20 th century
122	Pottery	4	White earthenware: 'Willow' transfer-printed rim, dark green ivy transfer-printed cup rim, red lined hotel ware, Cornish ware blue slip striped/banded jug rim with foliate handle terminal	Late 19 th to early 20 th century
125	Pottery	2	Bone china: cup rim and handle with applied lilac sprig, and cup base	19 th – 20 th century
125	Pottery	7	White earthenware: three refitting porringer rim to base fragments with dark green sponge-print, small blue sponge print, lilac-coloured geometric transfer-printed plate rim, plus two plain fragments	19 th – early 20 th century
125	Pottery	1	Creamware hollow-ware rim	Mid 18 th – early 19 th century
125	Pottery	1	Glazed buff-coloured earthenware (factory-produced) colander base	Mid 18 th – early 20 th century
125	Pottery	1	Red earthenware chimney pot(?) or similar rim plus small chip. No sooting so may be large flower pot	Late 18 th – 20 th century
125	Animal bone	1	Almost complete bird bone	Not closely dateable
125	Glass	1	Very light turquoise flat pane fragment obscured on one surface	19 th – 20 th century
125	Glass	2	Colourless bottle(?) body fragments and moulded tableware	19 th – 20 th century
125	Pottery	2	Brown-glazed red earthenware refitting complete crock base	Late 17 th to early 20 th century
125	Animal bone	6	Small and medium mammal: including 3 x near-complete long bones, 1x fragment of rib, 1 x fragment of pelvis	Not closely dateable
133	Pottery	1	Bone china cup rim, edge of handle terminal and traces of enamel stripes on rim	Late 19 th – early 20 th century
133	Pottery	1	White earthenware base (oval) with 'Willow' transfer print	19 th – early 20 th century
133	CBM	1	White earthenware blue transfer-printed toilet(?) fragment	Late 19 th – early 20 th century?
133	Pottery	6	White earthenware: 'Asiatic Pheasants' transfer print plate rim to base plus base fragment, relief-moulded jug fragment with blue slip-coated interior, hotel ware plate rim with enamelled greenish band and red line, rim, body	Mid 19 th to 20 th century
133	Pottery	2	Bone china bowl(?) rim with gilded line and moulded hollow-ware body	19 th – 20 th century
133	Pottery	1	Tin-glazed earthenware plate(?) rim with blue painted pattern	18 th century

Context	Type	Qty	Description	Date range
133	Pottery	1	Glazed buff-coloured earthenware pancheon rim. Unusual as external glaze is brown and similar to mottledware	Late 17 th to early 20 th century
133	Pottery	1	Glazed red earthenware with white slip coated interior and 'tortoiseshell' decoration	18 th to early 20 th century
133	Pottery	1	White earthenware 'Willow' transfer printed ashet rim	19 th century
133	Pottery	1	Black-glazed red earthenware coarseware body fragment	Late 17 th – early 20 th century
133	Cu alloy	1	Buckle	Post-medieval
135	Pottery	1	Brown-glazed red earthenware pancheon rim with four white slip stripes	Late 17 th – early 20 th century
135	Pottery	1	Red earthenware flower pot base	Mid 18 th – 20 th century
135	Pottery	1	Bone china saucer rim with purple transfer print	Mid 19 th – early 20 th century
135	Pottery	7	White earthenware: 'Willow' transfer printed ashet rim to base, blue transfer-printed base, small blue striped saucer rim to base, two rims and one body fragment from green transfer-printed basin, green transfer-printed saucer rim	19 th – early 20 th century
135	Pottery	1	Brown-glazed red earthenware crock rim with lug handle and white slip-coated interior	19 th – early 20 th century
135	Cu alloy	1	Fragmentary object like cylindrical bangle	Not closely dateable
135	Pottery	7	Bone china: 'Broseley' transfer-printed side plate rim to base and rim, cup base, plate rim with pink enamelled band and line, three refitting cup rims with handle and lustre bands and enamelled red lines	19 th – early 20 th century
135	Marine shell	1	Oyster valve	Not closely dateable
135	Pottery	3	Brown-glazed red earthenware crock rim and body with lug handle and white slip coated interior, pancheon rim with white slip-coated interior and brown rim with decoration similar to tortoise shell	19 th to early 20 th century
135	Glass	1	Very light turquoise burst lip complete bottle with stopper-and-washer type closure – complete	19 th – early 20 th century
135	Pottery	6	Ironstone(?) relief-moulded jug with fern pattern plus body and handle, relief-moulded basin rim with holly pattern	Mid 19 th – early 20 th century
135	Pottery	4	White earthenware 'Asiatic Pheasants' transfer printed plate rim, two refitting plate base (different vessels), base fragment	Mid 19 th – mid 20 th century
135	Pottery	4	White earthenware 'Willow' transfer printed very large ashet/meat plate base, at least two pieces refitting	19 th century
135	Pottery	4	White earthenware 'Willow' transfer printed vegetable dish(?) refitting base x 2, side x 1, and rim x 1	19 th century
135	Pottery	14	White earthenware: small 'Willow' transfer printed ashet rim refitting x 3, plus chip, with makers mark, probably John Wilkinson of Whitehaven (Kowalski and Kowalski 1999, 368)	1824-1863
135	Pottery	2	White earthenware jug fragments with navy blue chinoiserie transfer print with red enamel and lower handle terminal	19 th century
135	Pottery	1	Pearlware jug(?) base	Late 18 th – early 19 th century
137	Pottery	1	White earthenware brown transfer-printed flat ware rim with clobbered enamel	Mid – late 19 th century
137	Pottery	1	White earthenware 'Willow' transfer printed plate rim to base	19 th – early 20 th century
141	Glass	1	Brown body fragment	19 th – 20 th century

Context	Type	Qty	Description	Date range
146	Industrial residue	4	Glass making waste	Post-medieval
146	Glass	6	Thick fragments, some vessel glass(?), warped by exposure to high temperatures	Post-medieval
146	Glass	1	Dark green bottle base, marked on side '269' and with part of number/letter on base	19 th – 20 th century
146	Cu alloy	1	Rod	Not closely dateable
146	Industrial residue	2	Undiagnostic slag	Not closely dateable
146	Fe	1	Large drill bit(?)	19 th – 20 th century
146	Fe	7	Large nails, some highly corroded, all round in section. 1 x flat head, 1 x rose head	19 th – 20 th century
146	Fe	1	Bolt	19 th – 20 th century
149	Fe	2	Nails, highly corroded, 1 x flat head	19 th – 20 th century
158	Glass	2	Blue bottle fragment	19 th century?
158	Pottery	2	White earthenware 'Broseley' transfer printed hollow-ware fragment and blue-glazed(?) fragment	19 th – early 20 th century
163	Timber	2	Small pegs, perhaps from roof jointing or holding slates	Not closely dateable
171	Leather	1	Fragmentary sole of shoe	Not closely dateable
171	Textile	1	Fragment of thick woven material, sack cloth(?)	Not closely dateable
171	Timber	1	Fragment of barrel base/top	Post-medieval?
171	Timber	1	Fragmentary barrel base/top with parts of side planks and iron banding remaining (impregnated with oil and so not possible to fully examine)	Post-medieval?
171	Timber	5	Odd pieces, some evidently originally cut square but badly burnt	Not closely dateable
171	Fe	11	Nails, some large, at least 1 x flat head	Post-medieval
171	Fe	1	Wall spike/bracket with right-angled end	Post-medieval?
171	Fe	1	Sheet fragment	Not closely dateable
171	Fe	1	Horseshoe-shaped bracket with fixing holes at either end	Post-medieval?
171	Cu alloy	1	Pipe fragment	Post-medieval?
171	Celluloid?	1	Washer	Late 19 th – 20 th century?
171	Leather	1	Fragment	Not closely dateable
171	Industrial residue	2	Undiagnostic slag containing iron fragments and melted glass	Post-medieval
171	Glass	3	Including 1 x comprising several sheets melted together and folded, 1 x thick shaped piece, slightly convex/concave, with protruding rim and vesicular slag adhering to it	Post-medieval
171	CBM	1	Bull-nosed brick fragment, part-glazed, frogged, with mark 'SHA[W?...]' one side and '[...K]BURN' on other	Late 19 th to 20 th century
171	Pottery	1	White earthenware fragment, base(?)	19 th – 20 th century
171	Pottery	1	White or buff-coloured earthenware body fragment from unidentified large vessel, unglazed on inside, burnt	19 th – 20 th century
171	CBM	1	Electrical porcelain, burnt; fragment of two-wire cleat (Myers 2010)	Post-1892
175	Pottery	1	Bone china fluted saucer base	19 th – 20 th century
175	Pottery	1	Pearlware(?) blue sponge-printed base	Late 18 th – early 20 th century
177	Glass	1	Flat colourless pane fragment	19 th – 20 th century?
177	Aluminium	1	Flat strip, pierced hole at one end, snapped at other, with number '12578..' embossed into one side	20 th century

Context	Type	Qty	Description	Date range
179	Plastic	1	Sign with aluminium(?) bracket: 'Bus Stop cms Cumberland'	20 th century
181	Fe	2	Cylindrical fragments, probably large nails	Not closely dateable
184	Fe	1	Thick rectangular sheet with two fixing holes(?)	Not closely dateable
184	Fe	1	Screw shaft	19 th – 20 th century
186	Fe	1	Long bolt	19 th – 20 th century
186	Fe	1	Nail(?)	Post-medieval?
188	Glass	1	Heat-affected and slightly warped pane fragment, ribbed to form frosting(?)	Late 19 th – 20 th century
192	Leather	1	Tapering strip or strap end	Not closely dateable
192	Fe	1	Washer	19 th – 20 th century
192	Fe	1	Screw	19 th – 20 th century
192	Fe	7	Flat strips or off cuts	Not closely dateable
192	Fe	1	Cylindrical rod with flat flange at one end	Not closely dateable
192	Fe	6	Cylindrical rods, probably nails or bolts	Not closely dateable
192	Fe	1	Long cylindrical rod	Not closely dateable
192	Fe	2	Tapering bracket(?) with holes for screw fixing and bent end	Post-medieval
192	Glass	1	Fragment of light turquoise pane	Post-medieval
192	Rubber	1	Vehicle tyre tread	20 th century
192	Industrial residue	6	Undiagnostic slag	Not closely dateable
193	Cu alloy	2	Thin fragmentary sheet	Not closely dateable
193	Industrial residue	2	Undiagnostic slag, iron smithing?	Not closely dateable

Appendix 4: Summary Clay Tobacco Pipe Catalogue

Context	Fabric	Qty	Description
u/s	Clay pipe	12	11 stem fragments, 1 with part of impressed mark, + 1 bowl fragment
103	Clay pipe	1	Stem fragment
111	Clay pipe	1	Stem fragment
125	Clay pipe	9	8 stem fragments, 1 complete bowl with stem
133	Clay pipe	13	Stem fragments
135	Clay pipe	4	3 with complete or partial bowl with stem, complete ones decorated, 1 stem fragment
135?	Clay pipe	1	Stem fragment
137	Clay pipe	1	1 stem fragment
139	Clay pipe	1	Stem fragment
141	Clay pipe	2	Stem fragments
149	Clay pipe	1	Stem fragment
153	Clay pipe	2	Stem fragments
159	Clay pipe	1	Stem fragment
169	Clay pipe	2	Stem fragments
177	Clay pipe	3	2 stem fragments, 1 bowl fragment
Total		54	