Grunwergs 2, Land off Rockingham Street Sheffield, South Yorkshire

Post-excavation Assessment and Updated Project Design

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wessexarchaeology

Unit R6
Sheaf Bank Business Park
Prospect Road
Sheffield
S2 3EN

www.wessexarch.co.uk

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Project management by	Milica Rajic
Document compiled by	Ashley Tuck
Graphics by	Ian Atkins, additional graphics by Alvaro Mora-Ottomano
Contributions from	Alvaro Mora-Ottomano (archive research), Lorraine Mepham (finds), Fiona Eaglesham (environmental)

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Summary

Wessex Archaeology was commissioned by Watkin Jones Group, to undertake archaeological mitigation on a 0.4 ha parcel of land located at Land off Rockingham Street, Sheffield, South Yorkshire, S1 4EG centred on NGR 434950 387400 (SK 34950 87400).

Fragments of early structures survived across areas 1 and 2. Two lime mortared walls (4351 and 4352) seen under watching brief conditions do not correlate with historic maps and may be the oldest surviving structures on the site (early-19th century or older). The remaining lime mortared structures correlate with historic maps, suggesting a late 18th-/early-19th-century date of construction. The south wall of a crucible furnace cellar in area 2 contained many lime-mortared structures including a teeming pit and a curving staircase identifiable on historic maps. It is likely that an iterative sequence of furnaces of different types occupied this location. Elements of cellars of worker's housing in the south-east of area 1 survived a general redevelopment in the late 19th century and were probably absorbed into the works with an altered function. They were demolished during a localized redevelopment of unknown date, perhaps in the early 20th century. Fragments of structures correlating with back-to-back housing shown on historic maps were also present in area 3, although here little had survived a more thorough demolition.

The majority of surviving structures at the Bailey Lane iron, steel and file works were constructed in the late-19th century prior to the map of 1890. Recorded structures from this phase comprised two crucible furnaces, an engine pit with power transmission, an exhaust flue system with chimney and an implied heat exchanger situated outside the area of excavation, a weighbridge, cellars, stairs, ground-floor buildings, yards and drainage.

Two further crucible furnaces were recorded in area 4 in the south-east of the site. Map evidence suggests that these furnaces were early-20th-century in date. The construction of these furnaces probably represents an expansion of the Bailey Lane Works into an area previously used for worker's housing.

All of the recorded furnaces were partially bricked up during the 20th century to modify their cellars into storerooms or perhaps air-raid shelters as was seen nearby at Hoyle Street (Powell 2014).

The rationale for the excavation of area 3 was to test deep deposits identified during trial trenching. In area 3 these deposits were 3.6 m deep (over 4.9 m deep in the evaluation) and laid on undisturbed natural clay suggesting the locality had not been truncated by quarrying or other activity. The depth of deposits probably indicates that prior to development, the natural topography was complex. Made ground was probably imported to site prior to construction and can be dated to 1820–1853 on the basis of a single clay pipe bowl and historic maps; the recovered pottery was not particularly chronologically distinctive.

Beside a very limited number of files and file blanks, little evidence directly relating to file manufacture was identified.

The results of the watching brief were consistent with the results of excavation from the mitigation and evaluation. The watching brief demonstrated that pockets of archaeological preservation were present across the site, with remains from the early- and late-19th century represented.

Publication of the results in a local journal such as the Transactions of the Hunter Society is recommended. The archive resulting from the evaluation is currently held at the offices of Wessex Archaeology in Sheffield. Museums Sheffield has agreed in principle to accept the archive on completion of the project, under an accession code to be confirmed. This report will be submitted to South Yorkshire Sites and Monuments Record. An OASIS form under the ID number wessexar1-381925 has been completed and will be finalized at the time of deposition.

Acknowledgements

Wessex Archaeology would like to thank Watkin Jones Group for commissioning the archaeological evaluation, in particular Andrea Price. Wessex Archaeology is also grateful for the advice of Dinah Saich, who monitored the project for South Yorkshire Archaeological Service (SYAS), and to DEMEX for their cooperation and help on site.

The fieldwork was directed by Emily Eastwood, Emma Carter and Ashley Tuck, with the assistance of Michael Clarke, Viktoria Halldorsdottir, Andy Swann, Otis Gilbert, Jamal Bingham and Lewis Greenway. This report was written by Ashley Tuck, with contributions from Alvaro Mora-Ottomano (documentary research), Lorraine Mepham (finds) and Fiona Eaglesham (environmental). The report was edited by Milica Rajic and the environmental report was edited by Inés López-Dóriga. The project was managed by Milica Rajic on behalf of Wessex Archaeology.

Grunwergs 2, Land off Rockingham Street, Sheffield, South Yorkshire

Post-excavation Assessment and Updated Project Design

1 INTRODUCTION

1.1 Project and planning background

1.1.1 Wessex Archaeology was commissioned by Watkin Jones Group to undertake archaeological mitigation of a 0.4 ha parcel of land located at Land off Rockingham Street, Sheffield, South Yorkshire, S1 4EG centred on NGR 434950 387400 (SK 34950 87400) (**Fig. 1**).

1.1.2 A planning application (planning reference 18/02170) submitted to Sheffield Council, was granted, subject to conditions, for a mixed-use development comprising residential and student accommodation, commercial spaces, landscaping and limited off-street parking. Demolition of the former warehouse of Grunwergs Ltd was ongoing during the evaluation. The historic front of the J & Riley Carr building was preserved to be incorporated into the new development.

1.1.3 The mitigation comprised four excavation areas (**Fig. 1**). Areas 1 and 2 were approximately 15 m by 15 m each and were centred on evaluation trenches 8 and 10 respectively. Area 3 was approximately 10 m by 16 m and located in the south-west of the site. Area 4 was approximately 7 m by 15 m and was centred on evaluation trench 14.

1.1.4 In addition, archive research was conducted as presented in the background section below. The aim of the research was to identify former industrial premises which operated within the site from the early 19th century onwards, and their associated functions and process flow wherever possible.

1.1.5 This mitigation was part of staged approach, and followed other archaeological work, including desk-based assessment (Wardall Armstrong 2018), monitoring of a borehole survey (Wessex Archaeology 2019a), and trial trench evaluation (Wessex Archaeology 2020a).

1.1.6 All works were undertaken in accordance with a series of specification documents which detailed the aims, methodologies and standards to be employed in order to undertake the evaluation. A Written Scheme of Investigation (WSI; Wardell Armstrong 2019) contained an overview of the approach to archaeological works on the site. Three addendums to this WSI were produced, the first covering mitigation areas 1 and 2 (Wessex Archaeology 2020b), the second covering mitigation area 3 (Wessex Archaeology 2020c), and the third covering mitigation area 4 (Wessex Archaeology 2020d). Dinah Saich, Principle Archaeologist with SYAS, approved each specification document (the WSI and addendums) on behalf of the Local Planning Authority (LPA).

1.1.7 The mitigation was undertaken between 6 January 2020 to 21 February 2020.

1.2 Scope of the report

1.2.1 The purpose of this report is to provide the provisional results of the excavation, and the preceding evaluation, and to assess the potential of the results to address the research

aims outlined in the WSI. Where appropriate, this report will recommend a programme of further analysis work, and outline the resources needed to achieve the aims (including the revised research aims arising from this assessment), leading to dissemination of the archaeological results via publication and the curation of the archive.

1.3 Location, topography and geology

1.3.1 The following information is a summary of the details given in the WSI (Wardell Armstrong 2019).

1.3.2 The site was located on the premises of the former Grunwergs Ltd. which was until recently used as commercial warehouse. The site is bounded to the west by Rockingham Street and to the east by Bailey Lane. Commercial buildings are located immediately to the south of the site and Boden Lane borders the site to the north.

1.3.3 Existing ground levels vary slightly from 82.5 m to 81.5 m above Ordnance Datum (OD) sloping towards the north.

1.3.4 The underlying geology is mapped as siltstone and mudstone of the Lower Coal Measures Foundation with no superficial deposits recorded (British Geological Survey online viewer).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Introduction

2.1.1 The site has previously been subject to a desk-based assessment (Wardell Armstrong 2018), which included detailed historical narratives related to the general development of the site as well as a cartographic regression analysis. These provided the basis upon which additional archival research was undertaken to enhance the understanding of the development of the site, focusing on information of former residents and associated trades, as requested by SYAS.

2.2 Historical development

Late 18th century

2.2.1 Cartographic evidence indicates that the area of Sheffield where the site is located was developed broadly from the late-18th century through to the early-19th century. The area within the site formerly comprised enclosed fields to the south of Broad Lane as indicated by Gosling's plan issued in 1736 and Fairbank's plan issued in 1771 (Wardell Armstrong 2018, Appendix 2). The latter map shows enclosed fields labelled as 'Bailey Fields' bounded by Broad Lane to the north and Trippet Lane to the south, which is intersected by an 'Intended Street to be called Bailey Street'.

2.2.2 A 'Plan of Several Buildings Lots in Broad Lane' drawn by Fairbank in 1793 (not reproduced; Sheffield Archives ref: SheS 1546s) depicts the northernmost area of the site composed of two adjacent lots held by William Smith and the area to the south is labelled as 'Ground Unlet'. Additional streets were later constructed within this area of Sheffield as shown on the Fairbank's plan issued in 1797 (Wardall Armstrong 2018, Appendix 2) including 'Bailey Lane' and 'Rockingham Street' with two plots of lands to the north, separated by Boden Lane, of which the southern one corresponds to the northernmost area of the site. A subsequent plan drawn by Fairbank in 1799 (not reproduced; Sheffield Archives ref: SheS 1667s) shows the land already leased to William Smith with an 'addition' immediately to the south of the plot, as well as a small square lot held by John Jackson to the south-east of the addition.

Early- to mid-19th century

2.2.3 The Fairbank plan of Sheffield issued in 1808 (not reproduced, consulted at https://www.pictureshеffield.com/maps.php?file=018) shows the site developed comprising two plots (a square one to the north and a large rectangular one to the south) separated by a lane corresponding to the former Carr Lane which connected Bailey Lane to the east and Rockingham Street to the west. The southern boundary of the site consists of another narrow lane formerly known as Woodhouse Lane, and the northern boundary corresponds with the current Boden Lane. A virtually equivalent depiction of this plan is shown on Leather's Plan of Sheffield issued in 1823 (Wardell Armstrong 2018, Appendix 2). These block plans do not show details of the buildings although it is likely that these were occupied by back-to-back terraced housing and shops interspersed with some small-scale workshops including metal industry. The Wardle & Bentham trade directory issued in 1814–15 is the first source for the firm Carr, Woodhouse & Carr listed as 'saw and edge tool makers' at Bailey Lane. Subsequent trade directory entries of this partnership list them as 'saw and fender manufacturers and steel refiners' in 1817, and as 'merchants and manufacturers of saw, fenders, steel and composition doctor knives, files and edge tools' in 1825.

2.2.4 Further detail of premises and business within the site can be seen on the 1822 Fairbank plan (Wardell Armstrong 2018, Plate A) which shows the former Old Black Boy Public House and another building to the south, separated by a courtyard which in turn is divided with a diagonal wall denoting the different tenure.

2.2.5 A 'Plan of the Sheffield Estate of the late Thomas Holy Esqr.' by Fairbank issued in 1831 (not reproduced; Sheffield Archives ref: MD7160/1) shows the larger southern plot of the site between Carr Lane to the north and Woodhouse Lane to the south with individual lots bisected by a long and narrow lane aligned north to south.

2.2.6 The Carr, Woodhouse & Carr partnership was ended in 1832 when John Carr and Riley Carr created the John & Riley Carr company which became a prominent saw and file manufacturer as well as melting its own steel (Tweedale 2018, 113–115). The Pigot trade directory issued in 1834 includes the entry of 'Carr John & Riley, saw, ledger blade, spiral cutters and machine knife manufacturers, steel converters and refiners' at Bailey Lane. Steel converters are another name for cementation furnaces and thus, it is suggested that the premises included this type of furnace. Furthermore, a series of sketch plans of the works produced by Fairbank in 1834 (not reproduced; Sheffield Archives ref: M.B. 392) with accompanying notebook shows a workshop around a courtyard occupying land off Bailey Lane with a 'Cast steel furnace', a 'Hardening furnace', a 'coke shed' and various other buildings and warehouses. The precise location of these buildings is unknown although they appear to be depicted within the area bounded by Carr Lane and Bailey Lane. The narrow lane called Woodhouse Lane to the left (west) might have been a branch off the former Woodhouse Lane which previously bounded the southern end of the Site. However, the plan also depicts an adjacent plot labelled as 'Carr & R Carr' to the west of such a works, creating further uncertainty regarding their location.

2.2.7 The map of Sheffield published with White's History and Directory of Yorkshire in 1838 (not reproduced, consulted at https://www.pictureshеffield.com/maps.php?file=018) is virtually equivalent to the preceding editions, although it includes the name of 'Carr Lane'.

2.2.8 The 1853 OS map (**Fig. 2**) shows the site in detail with the component buildings clearly visible and road names including 'Woodhouse Lane' forming the southern boundary and 'Bowden Lane' later renamed Boden in the subsequent edition of 1890. The majority of buildings within the northern square plot appear to be back-to-back terraced houses arranged around a central courtyard to the north labelled as 'Smiths Square', taken the

name from the first holder William Smith, with a cart entrance facing Bailey Lane. The south-west corner of the northern plot includes a 'Coal yard' accessed from Carr Lane. The large rectangular plot to the south is clearly divided longitudinally by a narrow lane.

2.2.9 The western portion facing Rockingham Street contains the former 'Rockingham Hotel' to the north-western end, and the majority of the remaining structures are shown as back-to-back housing surrounding central courts accessed through passageways, also known as 'ginnels' or 'gennels'. The exception to this is a square parcel with a cart entrance facing Rockingham Street which may have contained industrial works including a chimney towards the north-eastern corner.

2.2.10 The eastern portion is characterized by a series of industrial premises including the 'Bailey Lane Works (Iron & Steel)' of the Carr & Riley company, occupying the northern half of the area. The works include a noticeable building to the north with two curved walls which could have been associated with two side-by-side cementation furnaces. The remaining buildings within the southern half includes several areas of housing, the 'Old Black Boy P. H.' and additional structures of uncertain nature. The courtyard to the south of the public house is depicted with the diagonal wall shown on the 1822 Fairbank plan described above.

2.2.11 Relevant contemporary trade directories from the 1854 Sheffield Directory include the entries of Bailey Lane: 'Carr John & Riley, steel converters & refiners, manufacturers of circular & vertical mill saws, veneer segments, files &c' at Bailey Lane; 38 Carr Lane: 'Makin Thomas & Son, manufacturers of files & steel, shoe, butchers' cook & farriers' knives, table and butchers' steels, doctors' & whip hooks & mounts'; 42 Carr Lane: 'Woolhouse Brothers, manufacturers of saws, files, machine knives & calico webs' (these two works at Carr Lane might have been located at the workshop formerly occupied by the Rockingham Hotel); and 60 Rockingham Street: 'Jones & Ronksley, brass, silver & bell founders, manufacturers' (possibly located at the works immediately to the north of court no 5 Rockingham Street as shown on the 1890 OS map).

2.2.12 Further relevant entries from the 1865 Sheffield Directory for the site indicate a range of industrial activities being undertaken as well as housing and shops including the Old Black Boy, tenanted by William Pitts. Metal works entries are represented by the following:

- 41 Bailey Lane: Carr John & Riley, merchants & manufacturers of saws, files, steel, machine knives &c. (Bailey Lane works);
- 38 Carr Lane: Makin Thomas & Son, manufacturers of files & steels, shoe, butchers' cook & farriers' knives, table & butchers' steels, doctors' & whip hooks & mounts;
- 42 Carr Lane: Woolhouse Brothers, manufacturers of saws, files, machine knives & calico webs.

Late 19th century

2.2.13 By the 1890 OS map (**Fig. 3**), the site was further developed with new works including a 'Swedish Steel & File Works' immediately to the south of Smith's Square, accessed from Rockingham Street. The Rockingham Hotel appears to have been replaced by a larger works and some of the courts with dwellings are now numbered. The Bailey Lane Works is shown to have been considerably expanded to the south integrating the former Old Black Boy public house including its southern area of the courtyard split diagonally creating a narrow Court no. 5. The works includes a chimney, a weighing machine and several external staircases at this time.

2.2.14 Contemporary trade directory entries for the site indicate a range of industrial activities being undertaken, as well as the housing and shops, including a coal dealer listed in Court 3 Bailey Lane as depicted on the 1890 OS map. Metal working is represented by Carr J & Riley, steel converters and refiners, engineering machine saw and file manufacturers at Bailey Lane; a scissor manufacturer at 15 Carr Lane; a cutlery founder at Carr Lane; and a bronzer and a brass founder both at Courts 1 and 3 Rockingham Street as depicted on the 1890 OS map.

20th century

2.2.15 The 1905 OS map (**Fig. 4**), although it is not very detailed, shows that the Swedish Steel & File Works has expanded towards the east; and Carr's Bailey Lane Works was also slightly extended to the south encompassing the former Court no 5 Bailey Lane.

2.2.16 By the 1923 OS map (**Fig. 5**), a significant number of terraced houses have been removed as part of a city-wide effort to clear the 19th-century slums and new larger workshops were built. Of note is an 'L'-shaped range now occupying the former court 3 Bailey Lane. Further clearance can be seen on the 1935 OS map (**Fig. 6**), and new workshops being built on the 1954 OS map (**Fig. 7**). The Bailey Lane Works is depicted in the 1954 OS map with a comparable plan as preceding editions including a chimney within a courtyard and is labelled as 'Saw Works'. The 'L'-shaped range depicted on the 1923 OS map to the south-eastern corner of the site is now shown to consist of three structural elements. Carr's continued to manufacture a wide range of saws, files, and machine knives until the business was liquidated in 1954. Subsequent to this, the works is listed as 'Fearnehough W. Ltd. mfrs. of machine knives (works)' in Kelly's trade directories dating from 1963 to 1971.

2.2.17 The works at corner between Carr Lane and Rockingham Street included the firm 'Whitely Williams & Sons (Sheffield) Ltd. scissor manufactures'; from the late 19th century through to the 1970s. A series of edge tool manufacturers were also listed within the premises, which became called Assam Works, from the 1940s to the 1970s.

2.2.18 Further developments comprised new workshops within the site as shown on the 1964 and 1977 OS maps (**Fig. 8 and 9**). Of note is that the former 'L'-shaped range to the south-eastern corner of the Site is still depicted on the 1977 OS map.

2.3 Previous archaeological work

Rockingham House, ARCUS

2.3.1 Pits dating to the Bronze Age were recorded during the development of the site at Rockingham House located to the west of the north end of the site. The pits were sealed by a buried soil, potentially of medieval date (ARCUS 2007). This soil was again recorded in 2008 at an adjacent plot at Bailey Fields (ARCUS 2008).

Watching brief on boreholes, Wessex Archaeology (2019a)

2.3.2 Anthropogenic layers were present across the site and recorded during the watching brief up to 6 m below ground level. A variety of possible structures were identified relating to industrial processes known to have taken place on the site, as well as structures associated with domestic houses shown on historic maps.

Archaeological Evaluation, Wessex Archaeology (2020a)

2.3.3 Ten of the twelve trial trenches recorded archaeological features and deposits. Well-preserved structural features were concentrated in the central east (trenches 8 and 10) and south-east (trench 14) of the site but were also present in the west (trench 7). The north of the site was either devoid of archaeological features (trenches 1 and 4), or heavily truncated

due to the foundations of the later Grunwergs warehouse (trenches 3 and 6). Structural remains largely correlated with buildings depicted on the 1853 OS map (the Bailey Lane works and associated furnace).

3 AIMS AND OBJECTIVES

3.1 General aims

3.1.1 The WSI addendums (Wessex Archaeology 2020b, c and d) identified the following aims in line with the *Standard and guidance for archaeological excavation* issued by CIfA (2014a):

- to examine the archaeological resource within a given area or site within a framework of defined research objectives;
- to seek a better understanding of the resource;
- to compile a lasting record of the resource; and,
- to analyse and interpret the results of the excavation and disseminate them.

3.2 Site-specific objectives

3.2.1 Following consideration of the archaeological potential of the site, Dinah Saich (pers. comm.) identified the following site-specific objective:

- to establish the historic development sequence from natural;
- to establish and understand the layout and uses of the buildings within the site and to record their changes over time;
- to enhance understanding of the development of the site and its associated buildings;
- to establish presence of crucible furnace and its technology;
- to establish relationship between industry and domestic activity on site;
- to establish presence of Sheffield metal trade industry, specifically file industry;
- to prepare a report on the results of the work;
- to disseminate the results of the work in a manner in keeping with their significance, eg, through publication in a suitable journal; and,
- to deposit the resulting site archive with a suitable museum.

3.3 Area 3 rationale

3.3.1 The rationale for Area 3 was given as to test for ‘the existence of… deep deposits seen during the evaluation of the site in trenches 9, 11 and 13’ (Wessex Archaeology 2020c, 1).

4 METHODS

4.1 Introduction

4.1.1 All works were undertaken in accordance with the detailed methods set out within the WSI (Wardell Armstrong 2019) and the addendums to the WSI (Wessex 2020b, c and d) and in general compliance with the standards outlined in CIfA guidance (CIfA 2014a). The methods employed are summarized below.

4.2 Excavation areas

4.2.1 The extent of the four excavation areas is shown on **Fig. 1** alongside the locations of the evaluation trenches.

4.2.2 Areas 1 and 2 were roughly 15 m by 15 m square and were centred on evaluation trenches 8 and 10. The two excavation areas were adjacent, and excavation was continuous between them. Area 3 was approximately 10 m by 16 m and located in the south-west of the site in an area previously untested by evaluation. Area 4 was approximately 7 m by 15 m and was centred on evaluation trench 14 in the south-east of the site.

4.2.3 The precise limits of each excavation area were defined by site conditions and the presence of below-ground and above-ground structures.

4.2.4 In addition, a watching brief was maintained on all ground works outside of the main excavation areas.

4.3 Fieldwork methods

General

4.3.1 A 360º tracked excavator equipped with a toothless bucket was used under the constant supervision and instruction of the monitoring archaeologist to remove level spits of approximately 50–200 mm until the upper archaeological horizon was exposed. The upper archaeological horizon was cleaned by hand and interventions were hand-excavated sufficient to address the aims of the excavation.

4.3.2 Spoil derived from both machine stripping and hand-excavation was visually scanned for the purposes of finds retrieval. Artefacts and other finds were collected and bagged by context.

4.3.3 Excavation was limited to steps of a maximum of 1.2 m. For excavations with multiple steps, the overall angle of repose was never greater than 45°. Both the maximum depth of a step and the overall angle of repose quoted here were maximums and shallower depths and angles were used depending on ground conditions.

Recording

4.3.4 All archaeological features and deposits were recorded using Wessex Archaeology's pro forma recording system. A complete drawn record of excavated features and deposits was made including both plans and sections drawn to appropriate scales (generally 1:20 or 1:50 for plans and 1:10 for sections) and tied to the Ordnance Survey (OS) National Grid. The Ordnance Datum (OD: Newlyn) heights of all principal features were calculated, and levels added to plans and section drawings.

4.3.5 The real time kinematic (RTK) survey of all excavated areas and features was carried out using a Leica GNSS connected to Leica's SmartNet service. All survey data was recorded in OS National Grid coordinates and heights above OD (Newlyn), as defined by OSGM15 and OSTN15, with a three-dimensional accuracy of at least 50 mm.

4.3.6 A full photographic record was made using film (black and white and colour) and digital cameras equipped with an image sensor of not less than 10 megapixels. This recorded both the detail and the general context of the principal features and the site as a whole. All images were subject to managed quality control and curation processes to ensure long term accessibility of the image set. Photographs were also taken of all areas, including access routes, to provide a record of conditions prior to and on completion of the excavation.

4.3.7 In addition, photogrammetry was used to record, survey and map the site.

4.4 Artefactual and environmental strategies

General

4.4.1 Appropriate strategies for the recovery, processing and assessment of artefacts and environmental samples were in line with those detailed in the WSI (Wardall Armstrong 2019) and the addendum to the WSI (Wessex Archaeology 2019a). The treatment of artefacts and environmental remains was in general accordance with: *Guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014b) and *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (Campbell *et al.* 2011).

4.4.2 All archaeological finds from excavated contexts were retained, although those from features of modern date (mid-20th century or later) were not retained.

4.5 Monitoring

4.5.1 Dinah Saich, Principle Archaeologist at SYAS, on behalf of the LPA, monitored the watching brief. Any variations to the WSI, if required to better address the project aims, were agreed in advance with both the client and the client and Dinah Saich.

5 STRATIGRAPHIC RESULTS

5.1 Introduction

Summary of archaeological features and deposits

5.1.1 Fragments of early structures survived across areas 1 and 2. Two lime mortared walls (4351 and 4352) seen under watching brief conditions do not correlate with historic maps and may be the oldest surviving structures on the site (early-19th century or older). The remaining lime mortared structures correlate with historic maps, suggesting a date of construction of 1771–1853. Among these were elements of cellars of worker's housing in the south-east of area 1. These cellars survived a general redevelopment in the late 19th century, probably absorbed into the works with an altered function. They were demolished during a localized redevelopment of unknown date, perhaps in the early 20th century. Fragments of structures correlating with back-to-back housing shown on historic maps were also present in area 3, although little had survived demolition.

5.1.2 The south wall of a crucible furnace cellar in area 2 contained many lime-mortared structures including a curving staircase identifiable on historic maps. It is argued below that there was a cementation furnace at this location in the early-19th century that was replaced by an intermediary crucible furnace in the early- or mid-19th century and finally by the extant crucible furnace some time before 1890. This sequence is open to interpretation and the evidence is not conclusive.

5.1.3 The majority of surviving structures at the Bailey Lane iron, steel and file works were constructed in the late-19th century prior to the map of 1890. Recorded structures from this phase comprised two crucible furnaces, a weighbridge, cellars, stairs, ground-floor buildings, yards, drainage, an engine pit with power transmission, and an exhaust flue system with chimney and an implied heat exchanger situated outside the area of excavation.

5.1.4 Two further crucible furnaces were recorded in area 4 in the south-east of the site. Map evidence suggests that these furnaces date from the early-20th-century. The construction

of these furnaces probably represents an expansion of the Bailey Lane Works into an area previously used for worker's housing.

5.1.5 Both sets of furnaces were partially bricked up during the 20th century to modify their cellars into storerooms or perhaps air-raid shelters as has previously been recorded nearby at Hoyle Street (Powell 2014).

5.1.6 Area 3 sought to test for the existence of deep deposits identified during trial trench evaluation, and the results reflect this potential. Undisturbed natural was reached at a depth of 3.6 m below ground level (in another location, evaluation excavation continued to 4.9 m below ground level without encountering geological deposits). These are unusually large depths especially in the context of an industrial site in Sheffield. The natural in area 3 comprised yellow clay (3046) that did not appear to be significantly truncated (the solid bedrock had not been exposed as has been seen at other sites eg Wessex Archaeology 2020e). No buried soil was identified, suggesting that soil, but not the underlying geological substrate, had been truncated prior to construction. The original ground level prior to construction in area 3 can therefore be said to have been a bit less than around 3.6 m below the present ground level, although in evaluation trench 9 it was at a depth greater than 4.9 m below ground level. The natural topography of the site was therefore complex. It does not seem to be likely that this topographic complexity was the result of quarrying or other human intervention due to the presence of the apparently unaltered natural clay that would have to have been removed prior to any extraction of stone or mineral resources.

5.1.7 Deposits in area 3 comprise a sequence of made ground layers laid down prior to the construction of lime-mortared structures 3002–3004 identified with former worker's housing known from historic maps between 1853 and 1935 (**Fig. 2–6**). Finds from these layers were not chronologically distinctive and were of the same types recovered from later contexts on the site. The pottery supports a 19th-century date range (around 1805–1880) consistent with construction prior to 1853 as evidenced by the maps. A clay tobacco pipe bowl dating to *c.*1820–60 refines the date range slightly. Glass bottle fragments pre-date this date and must have been residual. A date range of *c*. 1820–1853 can therefore be proposed for the early made ground layers based on the synthesis of this information.

5.1.8 Many of these early made ground layers exhibited strong tipping angles indicating that they had been moved. This is consistent with a general picture seen across Sheffield (Cumberpatch 2005) that made ground was frequently imported from depots where material was stored prior to use. The undiagnostic chronology of the pottery assemblage is consistent with this interpretation.

5.1.9 Files and file blanks were recovered from only five contexts. Three of these (4197, 4201 and 5072) are post-demolition layers. Context 4148 is from phase 4, the undated demolition of worker's housing and construction of construction of sett surface 4149, and as such is not well-stratified. The remaining context (4346) pre-dated the construction of crucible furnace 4200 and may be the most interesting contextually (**Plate 74**). Overall, the recovery of evidence relating to file manufacture was were limited.

5.1.10 The results of the watching brief were consistent with the results of the mitigation and evaluation excavations. The watching brief demonstrated that pockets of archaeological preservation were present across the site, with remains from the early- and late-19th century represented.

Methods of stratigraphic assessment and quantity of data

5.1.11 All handwritten and drawn records from the excavation have been collated, checked for consistency and stratigraphic relationships. Data was primarily collected digitally and is available as a database, which can be updated during any further analysis. The excavation has been preliminary phased using stratigraphic relationships, the nature of materials used during the construction of structures and the spot dating of artefacts, particularly pottery and clay tobacco pipe.

5.1.12 **Table 1** (below) provides a quantification of the records from the excavation.

Table 1 Quantification of excavation records

Type	Quantity
Context records	499
Context registers	19
Graphics (A4 and A3)	33
Graphics registers	2
Environmental sample registers	1
Digital photographs	1,258

5.2 Areas 1 and 2: Bailey Lane Works

Introduction

5.2.1 Areas 1 and 2 (**Figs 10–20**), corresponding to evaluation trenches 10 and 8 respectively, were excavated as one continuous excavation area in the east of the site adjacent to Bailey Lane, and bounded to the north by Carr Lane. This area is identified on the 1853 and 1890 Ordnance Survey maps (**Figs 2 and 3**) as occupied by the 'Bailey Lane Works (Iron and Steel)' and 'Bailey Lane Works (Steel and File)' respectively. Between 1954 and 1960 cartographic evidence shows that the area was redeveloped (**Figs 7 and 8**).

Phase 1: late-18th/early-19th century: 1771–1853

5.2.2 Features assigned to phase 1 in areas 1 and 2 are shown on **Figure 11**. Examination of historic maps has established that areas 1 and 2 were first developed between 1771 and 1808 (see background section above). However, it is not until the Ordnance Survey map of 1853 (**Fig. 2**) that maps of the site have sufficient resolution to identify individual structures within plots. Remnants of early development were present in areas 1 and 2. These were easily distinguished from later development as the structures were bonded with lime mortar instead of ash mortar. The lime-mortared structures generally correlate with those shown on the 1853 map, and on the basis of the above cartographic evidence probably date from the period 1771–1853, though it cannot be ruled out that some surviving structures may be later rebuilds.

<u>South-east of area 1: cellars 4075, 4138, 4157, 4140, 4210 etc.</u>

5.2.3 In the south-east of area 1 were a series of cellars probably associated with worker's housing (**Pls 1–4**). This area is not depicted in detail on historic maps from any period (**Figs 2–9**); a blank augmented rectangle depicted in 1853 (**Fig. 2**) may have contained several worker's homes. These were probably terraced houses, although a back-to-back arrangement is also a possibility.

5.2.4 A pre-construction levelling layer (4209) formed the limit of excavation in the south-east of area 1 and comprised brick and stone rubble in a matrix of yellow brown silt clay redeposited natural. This material may be derived from earlier demolished structures (suggesting the

workers' housing were not the first structures to occupy this part of the site), or may have been imported for levelling prior to construction.

5.2.5 Wall 4075 (left side of **Pl. 1**) formed a significant boundary running approximately west to east in the south-east of area 1. At least five courses of the two-skin machine brick and lime mortar wall 4075 survived. Subsequent to the construction of wall 4075, a made ground levelling layer (4080) was built up north of the wall comprising tipping layers of mixed crushed brick rubble and grey brown deposits (also visible on **Fig. 17**, **Section 1**).

5.2.6 Wall 4138 (right side of **Pl. 1**) ran parallel to 4075 to the south and comprised at least six courses of a single skin of machine brick and lime mortar. A spring course (4139) near the top of wall 4138 indicated that the walls formerly carried vaulted ceilings.

5.2.7 Further south, sandstone and lime mortar wall 4157 (centre of **Pl. 2**) was 0.28 m wide and over 0.9 m high. Wall 4157 was accompanied by two probably contemporary buttresses or piers (4162 and 4158; **Pl. 2**). Structure 4162 situated to the north of the surviving west end of wall 4157 was of sandstone and lime mortar and was irregular, 0.8 m by 0.6 m in plan. A buttress (4158) was instead in handmade red brick and lime mortar and was 0.24 m square in plan.

5.2.8 These three walls (4075, 4138 and 4157) demarcated three parallel west to east aligned cellars probably associated with worker's housing. Each cellar contained a poorly-preserved staircase. In the north cellar between walls 4075 and 4138 was staircase group 4210 (**Pl. 1**); in the middle cellar between walls 4138 and 4157 was staircase group 4140 (rear of **Pl. 4**); and in the south cellar south of wall 4157 was staircase 4150 (**Pl. 2**). The staircases were initially built using lime mortar but had been repaired in black ash mortar (for the repairs see phase 2 below). The three staircases were dissimilar (particularly the north staircase), demonstrating that the parallel cellars did not conform to a standardized construction plan. The scant remains are not sufficient to suggest that the cellars were constructed in separate phases of work. The cellars probably represent dwellings of variable plan and form, although it is also possible that the stairs may have been modified or replaced following construction.

5.2.9 Construction cut 4206 was seen in one location (below scale on **Pl. 1** with dark fill) and truncated pre-construction levelling layer 4209. A series of lime-mortared red brick walls formed the northern staircase structure (group 4210). Wall 4218 formed an extra skin on the south of boundary wall 4075 and would have carried the treads of the staircase. Wall 4212 (centre of **Pl. 1**) was the opposite member, running west to east to the south of 4075. Walls 4208 and 4212 may have supported treads. Another wall (4215) contained an unusual apsidal keeping hole (4216; **Pl. 1**). The keeping hole was floored with a sandstone flag (4217) that resembled a partially-surviving stair tread (4219). Construction cut 4206 was backfilled with black ash (4207; **Pl. 1**).

5.2.10 The middle staircase (group 4140) comprised two lime-mortared walls (4144 and 4146) set at roughly 45° to carry stair treads (**Pl. 3**; rear of **Pl. 4**). Two fragments of the sandstone flag treads were uncovered (4147 and 4221; neither illustrated).

5.2.11 The southern staircase (group 4150) was only partially seen due to the presence of later surface 4149 (right of **Pl. 2**). A north to south aligned brick and lime mortar foundation (4159) carried a fragment of brick and lime mortar wall (4160). The corner between 4160 and 4157 contained the stairs (4161; **Pl. 2**) comprising sandstone treads and brick and lime mortar risers, although the upper treads had been removed.

5.2.12 The apparent west end of the building containing the cellars was visible as intermittent fragments of red brick and lime mortar wall 4178 and 4179 (**Pl. 5**). A sandstone buttress (4181) accompanied wall 4179 approximately where sandstone wall 4157 would have intersected it. It is possible that this represents one side of a doorway or other communication between the cellars of the middle and south dwellings. A later chimney (group 4100) was situated just west of walls 4178 and 4179, suggesting that the lime-mortared dwellings may have persisted until a late date and may have been extant during the life of the chimney.

Central yards

5.2.13 Under watching brief conditions at the end of the works, two sandstone and lime mortar walls (4351 and 4352; **Pl. 6**; not on plan) preserved below later yard surface 4041 were each 0.3 m wide and were orientated north to south. This area is depicted as a yard on the 1853 Ordnance Survey map (**Fig. 2**) so it is possible that these walls represent an earlier phase of activity and may be some of the oldest structures preserved on the site.

Wall 4123 in south-west corner of area 1

5.2.14 In the south-west corner of area 1 was a remnant of a lime mortared wall (4123; right of **Pl. 7**) that had been opportunistically incorporated into later development (see below). In 1853 (**Fig. 2**) wall 4123 was mapped within a building forming part of the Bailey Lane Works.

Area west of engine pit 4011

5.2.15 Under watching brief conditions at the end of excavation, a lime mortared sandstone wall (4362; not illustrated) was identified to the west of engine pit 4011. This wall had been incorporated as part of a later black-ash-mortared cellar described under phase 2 below. Wall 4362 was 0.4 m wide and aligned north to south. Again, in 1853 (**Fig. 2**) wall 4362 was within a building forming part of Bailey Lane Works.

Building fronting Bailey Lane south of weighbridge

5.2.16 Part of a lime-mortared wall (4093; front centre left on **Pl. 8**) was uncovered in a small sondage in the east of area 1 adjacent to Bailey Lane. Wall 4093 was part of a major division mapped in 1853 (**Fig. 2**) immediately south of a covered cart gate leading to Bailey Lane. Wall 4093 was an antecedent to later black-ash-mortared wall 4079 constructed on the same boundary.

North building (4300) fronting Bailey Lane

5.2.17 A series of fragmentary lime-mortared walls (group 4300; **Pl. 9**) survived in this area, probably representing interior divisions of a building. The Ordnance Survey map of 1853 (**Fig. 2**) depicts this area as the central part of a building extending to the north and south. Wall fragments 4280, 4282 and 4283 ran west to east perpendicular to Bailey Lane. Wall fragment 4281 ran south from walls 4280/4282. Further west, wall 4284 ran south, containing lead pipe 4285. After a short truncation, wall 4284 continued as 4277 before it was truncated again by cut 4240 for later building 4242 described below. Wall 4277 was accompanied by another fragment (4278) running west to east and also truncated by cut 4240. A further wall fragment (4288) ran west from wall 4284.

5.2.18 For later modifications in the area of group 4300, see below.

South side (4310) of crucible cellar and teeming pit 4320

5.2.19 In the north of area 2, later crucible furnace (4200, see below) was accompanied by a cellar to the south. The south side of this cellar mainly comprised phase 1 structures bonded with lime mortar that pre-dated the surviving furnaces.

5.2.20 In the east, wall 4318 (**Pl. 10**) ran west to east and comprised two skins of red brick and lime mortar. The 1853 map (**Fig. 2**) suggests that this may have been an interior division in the same building as group 4300 described above. At the west end of wall 4318 was a curving staircase (4314; **Pl. 11**; **Fig. 19**, **Section 6**) contained within a curving wall (sandstone 4315 and brick 4316) and supported by a sandstone wall (4313). This curving wall can be seen on the 1853 map (**Fig. 2**). It is possible that this curve is related to the shape of the chimney of a *cementation* furnace that may hypothetically have been an antecedent to crucible furnace 4200. The Wardall Armstrong WSI (2019, 4) identifies the curving wall on the 1853 map as evidence of a furnace, implying a cementation furnace. A Fairbank plan of 1834 (not reproduced; Sheffield Archives ref: M.B. 392) may support this theory although the location of the structures depicted on the plan is uncertain.

5.2.21 Extending west from stairs 4314 was a sandstone and lime mortar wall (4309 and 4312; **Pl. 12**; **Fig. 19**, **Section 6**) forming the south side of the crucible cellar. Wall 4309/4312 was on a parallel alignment as wall 4318 located east of the stairs. The upper courses of wall 4309 were instead firebrick and contained springers for brick vaulting (4331; **Fig. 19**, **Section 6**).

5.2.22 A series of lime mortared structures extended south from wall 4309 (**Pl. 13**), and were all truncated by modern wall 4272 (described below). Sandstone and lime mortar wall 4311 ran south from wall 4309 and contained a red brick 'L'-shaped wall (4319) between 4311 and 4309.

5.2.23 Moving west, the next structure extending south from wall 4309 was a square or rectangular feature interpreted as a teeming pit (4320; **Pl. 13**). This teeming pit was located halfway along the cellar and would have been accessed from ground level to pour out the contents of the heated crucibles into moulds. The position and form of teeming pit 4320 is similar to other examples (eg, at Hoyle Street, Powell 2014). The teeming pit comprised three walls: 4323 (west), 4324 (north) and 4325 (east), having been truncated in the south. Teeming pit 4320 was constructed of red brick and lime mortar, which importantly indicates that the teeming pit belongs to an earlier phase than the surviving crucible furnaces. However, teeming pit 4320 appears to lie in a yard area on the 1853 map. One possible sequence of development is that there was a cementation furnace in 1853 that was replaced by a lime-mortared crucible furnace that was in turn replaced by the surviving crucible furnace. If this is true, the teeming pit post-dates 1853.

5.2.24 West of the teeming pit, sandstone wall 4321 extended south from wall 4309. A fragment of a sandstone flag floor (4322) was present between wall 4332 and teeming pit 4320.

5.2.25 The floor of the cellar was only partially preserved but comprised sandstone flags (4234; **Pl. 12**) some 1.4 m below ground level (76.68 m above Ordnance Datum, OD). The missing flags may have been removed for re-use.

Phase 2: late-19th/early-20th century

Introduction

5.2.26 Features assigned to phase 2 in areas 1 and 2 are shown on **Figure 12**. The majority of structures recorded during excavation of areas 1 and 2 were bonded with black ash mortar. Where possible, modification and maintenance of phase 2 structures has been separated out and described under phase 3 below. Modifications to lime-mortared structures made in ash mortar have also been described under phase 2 here.

5.2.27 Black ash mortar typically indicates a late 19th-century or early-20th century date although a mid-19th century date is possible. The Ordnance Survey map of 1890 (**Fig. 3**) corresponds well with the recorded ash-mortared structures, although many of the walls

and divisions are also depicted on the 1853 Ordnance Survey map (**Fig. 2**). In some cases (eg, walls 4093 and 4079; walls 4075 and 4073) it is apparent that phase 1 structures were rebuilt during phase 2.

South-east of Area 1: cellars 4075, 4138, 4157, 4140, 4210 etc.

5.2.28 Lime-mortared staircase 4210 (described under phase 1 above; in the north of three cellars) had been repaired during use (**Pls 1–4**). The repairs were bonded with black ash mortar, whereas the original build was lime-mortared. Wall 4212 was repaired as 4213 and 4214 (right of **Pl. 3**), with a misalignment between walls 4213 and 4214 perhaps suggesting two phases of repair.

5.2.29 Wall 4138 dividing two cellars had been partially rebuilt on an alignment curving slightly north at the west end (4141 and 4143; **Pl. 4**). The reason for this is not obvious, but the realignment was at approximately 90° to the curve of stairs 4210. The vaulted ceiling above would have had to have been replaced during these works, necessitating major structural alterations to the building. At the same time, staircase 4140 (described in the previous section) was reinforced (4145) with a single skin wall. This may have been necessitated by the demolition of adjacent wall 4138 and reconstruction as 4143.

Chimney 4100 and associated flues and structures

5.2.30 A chimney visible on historic maps from 1890 until 1954 (**Figs 2–7**) was present in the south of area 1 (group 4100; **Pls 5, 14, 16, 19**).

5.2.31 A pre-construction levelling layer below the chimney was seen at the end of the excavation under watching brief conditions and contained a dump of lime mortar (4347; not illustrated).

5.2.32 Chimney 4100 comprised a circle of red bricks (4112) containing a red brick and firebrick surface (4113) forming the base of the chimney. The vertical structure of the chimney was constructed outside of this floor and comprised an inner skin of firebricks (4111) and three skins of curved red bricks (4110) forming a circle. Although chimney 4110 comprised three concentric skins, the same red bricks were used for each skin with the same radius of curve. Chimney 4100 was pierced twice to accommodate the ends of two flues, one running to the north and the other extending south-west. The flue extending north from chimney 4100 had been decommissioned and the entrance to the flue blocked from within the chimney by straight single-skin firebrick wall 4114. A small air gap was left at the top of this blocking wall (all **Pl. 14**).

5.2.33 Extending north were two parallel red brick walls defining a flue (4168 and 4169; **Pl. 15**). The remnants of flat sandstone capping (4180; not on plan) were present over the flue (bottom left of **Pl. 15**). Moving north, the flue passed through a single-skin red brick and firebrick arch structure (4171, 4170 and 4172; 4172 drawn in plan; **Pl. 15**) and continued as 4175 and 4176 (**Pl. 16**). Arch structure 4172 was connected to 4177 (**Pl. 16**), a black-ash-mortared repair of lime mortared wall 4178 (described above). The flue had pierced lime-mortared wall 4075 (also described above) and the wall was repaired with black ash mortar (4073) and reinforced with black-ash-mortared buttresses 4076. Wall repair 4073 was associated with a sandstone threshold (4074; **Pl. 16**) that marked a threshold between the area of chimney 4100 and a further yard to the north (see surfaces 1017, 4105 etc. below).

5.2.34 Beyond wall 4075/4073, the flue continued as walls 4065 (an opportunistic mix of firebrick and red brick bonded with black ash mortar) and vaulting 4066 (firebrick and ash mortar; **Pl. 16**; **Fig. 17, Section 1**). The flue was 0.58 m wide. The flue was built on made ground 4080 (described above), which was probably associated with the construction of phase 1 wall 4075.

5.2.35 Flue 4066 passed through major west to east aligned wall 4079 (described below), where wall 4079 had been repaired roughly as 4102 (**Fig. 17**, **Section 1**; right of **Pl. 16**). Under watching brief conditions at the end of the excavation works, the further course of the flue was investigated (4349; not illustrated). The flue quickly turned to the west through two 45° turns and entered an engine pit through wall 4033 (**Pl. 17**). The end of the flue had been bricked up (4350; not illustrated) as part of wall 4033 of an engine pit described below (**Pl. 18**). This suggests that the 'phase 2' remains described in this section were the result of more than one phase of activity.

5.2.36 A second flue extended south-west from chimney 4100 (**Pls 19–20**). The walls were single skins of red brick and black ash mortar (4134; not illustrated) covered by brick vaulting (4135). The flue was 0.94 m wide externally and 0.7 m wide internally. The interior of the flue was sooty, indicating that it carried exhaust gases as expected of a flue running to a chimney. The flue split into two (**Pl. 20**): one branch continuing south-west out of the area of excavation (vaulting 4164) and the other continued west (vaulting 4165). A stone block was set above vaulting 4165 and flue wall 4134. A later metal pipe (4166) had been inserted neatly through the flue, presumably after the flue had gone out of use. Where the vaulting had collapsed, the flue was partially backfilled by demolition rubble 4167.

5.2.37 This westwards running flue then passed through wall 4121 (recorded in the evaluation as 1013 and 1014), comprising two skins of red brick. Wall 4121 formed the west wall of stairs 4334 (described below) and the east wall of a complex red brick and firebrick trough where some unknown hot process took place (**Pls 7, 21–22**). West of wall 4121 was a small (0.3 m) iron gate (4130; **Pl. 21**) controlling the flow of gases from the flue 4165. Although flue 4165 was sooty, the structures north of gate 4130 were not sooty, indicating that only clean gases passed north and that the flue had multiple modes of operation. This suggests that there was a heat exchanger nearby, wherein some metal or brick structure was heated by hot exhaust gases and then the hot structure was used to heat clean fuel gases. The exchanger must have been situated beyond the limit of excavation to the west or south.

5.2.38 To the north of iron gate 4130 and east of wall 4121 was a trough comprising a complex series of brick contexts (**Pl. 7**). The eldest of these was lime-mortared wall 4123 (described above) and had been opportunistically re-used when the trough was constructed. Wall 4123 had been extended to the south as 4125 (black ash mortar and red brick). Built into the north end of the trough structure was an ash-mortared red brick arch (4122, recorded in the evaluation as 1012; **Pl. 7**) that would have provided access from cellar level to a space under the trough, although this had been bricked up. The east side of the trough was defined by red machine brick structure 4124 and the trough itself was constructed of firebricks (4126 and 4127) creating a space some 0.3 m wide and 2 m long. At the south end of the trough was a 0.3 m square shaft (4128) communicating with (**Pl. 22**) a small, 0.3 m wide firebrick flue (4129) connected to iron door 4130. The function of the trough area is unclear, however degradation of the firebricks clearly demonstrated that some hot process had taken place here, presumably fuelled by heated fuel gas supplied via shaft 4128, flue 4129 and door 4130. A boiler is a possible candidate.

5.2.39 The area around chimney 4100 and the associated flues was backfilled with rubble made ground 4136. A sandstone sett surface (4335) was then established at ground level (80.06 m OD) around the chimney, depicted as an outside area on historic maps (**Figs 2–6**).

Trench 10 cellar

5.2.40 A substantial cellar was present in the location of evaluation trench 10 in the centre-west of area 1 (**Pls 23–31**). Historic maps from 1853 to 1954 depict this cellar as part of the interior of the Bailey Lane Works (**Figs 2–7**).

5.2.41 The base of this cellar was identified in a hand dug intervention and comprised sandstone flags 4306 at a level of 2.1 m below ground level (78.5 m OD; **Fig. 17, Section 1; Pl. 23**). The cellar was filled with general demolition overburden brick rubble (1001).

5.2.42 At the south end of the cellar was a set of stairs providing access (**Pl. 24**; left of **Pl. 7**). The 1890 and 1954 Ordnance Survey maps depict these stairs (**Figs 3 and 7**; intermediate maps have insufficient resolution to show the stairs) alongside two further perpendicular staircases that may have provided access to upper storeys. The west side of the staircase comprised wall 4121 described above. The east side of the staircase was defined by eighteen courses of two-skin red brick and black ash mortar wall 4333; the wall was plastered on the visible side facing the staircase. Ten regular sandstone treads (4334) were uncovered leading down to the north and built into walls 4333 and 4121. The base of the stairs was not reached.

5.2.43 To the east of stairs 4334 were as series of firebrick and black ash mortar structures recorded during the trial trench evaluation (1002, 1003 and 1004). Wall 1004 formed the south wall of the cellar, and structures 1003 and 1002 were parallel to 1004. It is possible that these structures represented a base for some machine, perhaps a parallel process to that occurring to the west at trough 4127 (see above). Further firebricks disturbed during demolition (1005) were recorded during the evaluation and removed during mitigation cleaning. The north elevation of wall 1004 (**Fig. 17**, **Section 3**) contained an 0.28 m-square and 0.11 m deep iron box (1006) with a fitting that would have served as a bushing for a line shaft supplying power to machinery. A 0.05 m-wide iron pipe (1007) also extended from the north elevation of 1004. A piece of nearby wood (1008) proved to be part of rubble overburden 1001. A 0.75 m by 0.2 m red brick and ash mortar buttress (1009) supported the corner of wall 1004 and arch 1021 (= 4050).

5.2.44 The east side of the cellar was characterized by a 3.7 m-long vaulted red brick and ash mortar arch (1021; also recorded as 4050; **Fig. 17**, **Section 2**; **Pls 26–28**). The lower of two courses was edged with bull-nosed bricks. At the south end, buttress 1009 contained springers supporting arch 1021. Above the arch were deposits 1019 (in the south) and 1020 (in the north) comprising grey brown silt clay or loam with rubble and gravel inclusions. These layers were overlaid with black ash (1018 = 4049) that acted as bedding material for a sandstone flag surface (1017 = 4048; **Pl. 25**) rising gently to the south. This surface represented a fragment of more widespread surfaces including setts 4105 to the east that are depicted as a yard area on historic maps (eg, **Fig. 2**).

5.2.45 The east end of the north side of the trench 10 cellar (**Pl. 26**) was defined by a dividing wall or pier comprising sandstone foundation 4043 and brick and ash mortar structure 4038 repaired in similar materials as 4039 (**Fig. 17**, **Section 1**). Structure 4038 was 1.3 m long (west to east) and 0.61 m wide. Red brick and black ash mortar wall 4045 extended south from 4038 and supported the north end of brick arch 1021 (described above).

5.2.46 Below arch 1021, wall 4051 formed the east side of the cellar and was constructed of red brick and ash mortar in a header bond. A small square chimney (4070) was built into wall 4051 (**Pl. 28**). The height and off-centre position of chimney 4070 suggested that it may have been fed by a non-masonry conduit extending into the cellar and perhaps connected to some machine or boiler. The chimney interior was sooty and the bricks were heat

damaged although the heat damage did not extend much beyond the chimney structure itself. The chimney passed through sandstone wall 4067 = 4069 and brick wall 4068 which formed the rear (east side) of wall 4051 (**Pl. 27**). A thin (0.12 m thick) layer of grey brown sand clay made ground (4071) overlay sandstone wall 4069 and bedded a small fragment of flagstone surface (4072; **Pl. 26**) which was situated a few centimetres lower than flagstone surface 1017 = 4048 described above.

5.2.47 The centre of the north side of the trench 10 cellar was an opening communicating with an engine pit to the north (**Fig. 17**, **Section 1**; **Pl. 23**). The opening was defined by structures 4043, 4038 and 4039 to the east (**Pl. 27**) and by wall 4019 to the west (**Pls 30 and 31**). For later partial blockage 4017, see below.

5.2.48 Towards the base of brick wall 4038, an extra skin extending south had an upper surface sloping down to the west. This sandstone foundation 4038 continued this shape, which was mirrored in wall 4019 on the west side of the opening (**Fig. 17**, **Section 1**; **Pl. 27**). Striations on the walls indicated that a large wheel had been situated here (**Pl. 27**). A metal structure extending up from floor 4306 was a line shaft bush (4307; **Fig. 17**, **Section 1**; **Pl. 23**). It is probable that the line shaft drove the outside of a large flywheel. The flywheel probably supplied power to the engine pit to the north (described below).

5.2.49 Wall 4019 (**Pls 30, 31**) comprised fifteen courses of English-bonded red brick and black ash mortar. The wall was 0.41 m wide (four skins) and was defined by bull-nosed bricks at the east end. The south elevation of wall 4019 contained an unusual plastered apsidal recess (**Pl. 30**). The purpose of this recess was not obvious. Counterintuitively, an iron girder (4020; **Pls 30, 31**) was supported directly above the recess. At the west end of wall 4019, a separate context (4028) was issued as it was suspected that this was an earlier build to the bulk of the wall. A second girder (4021) was present near the west limit of excavation, carried by wall 4028 (**Fig. 17**, **Section 1**).

5.2.50 The two girders (4020 and 4021; **Pl. 31**) extended south. Girder 4020 had red bricks bonded with black ash mortar (4022) within the recesses in the 'I'-shaped beam (**Fig. 17, Section 1**; **Pls 30, 31**). It is probable that the girders carried jack-vaulted ceilings, at least in part. For later modifications of the surface carried by girders 4020 and 4021, see below.

5.2.51 The south end of girders 4020 and 4021 were carried by black ash mortar and red brick pier 1011 (not on plan), which was 1.34 m wide from north to south. Moving south, brick pier 1011 carried the north ends of two further girders (1010 and 4120; **Pls 7 and 32**). The south end of these girders were inserted into mortices in walls 4123 and 4121, parts of the structure carrying trough 4127 (**Pl. 7**). Girders 1010 and 4120 originally carried 0.4 m-thick sandstone slabs forming a floor (4116, 4118 and 4119; **Pl. 32**). Above pier 1011, a red brick and black ash mortar structure (4117) partially survived, built on floor 4116, 4118 and 4119. Structure 4117 may have continued pier 1011 vertically into the ground floor.

Engine pit 4011

5.2.52 A large engine pit (group 4011; **Pls 33, 34**) was present to the north of the 'trench 10 cellar' in the north-west of area 1. Power to the engine pit probably came from a large flywheel housed in the cellar to the south as described above. The base of the engine pit was not reached, but may have been similar to flagstone floor 4306 seen to the south. No remains of any engine or machinery were present; the identification of this area as an engine pit relies on its form, location and relationship with the cellar to the south. Historic maps suggest that the engine pit was partially under a yard area. In 1853 (**Fig. 2**), buildings in the area of the engine pit were not attached to buildings to the south, suggesting that the connection with the 'trench 10 cellar' post-dates 1853.

5.2.53 The east wall of the engine pit (4033; **Fig. 18**, **Section 4**; **Pl. 33**) contained a complex variety of bonding arrangements indicating that it had been maintained and modified over time. Variations included stretcher, header and side-on bricks, re-use of handmade bricks and variation in the thickness of the mortar. Two iron drains had been inserted through the wall (4030 and 4037). The wall contained a sandstone sill (4034) perhaps a threshold between the engine pit and a yard area to the east. For later concrete repairs and inserted stanchion 4042/4343 see below.

5.2.54 The west wall of the engine pit (**Fig. 18**, **Section 4**; **Pl. 34**) was made up of a series of contexts indicating that it had developed piecemeal and had undergone modification and repair. Context 4015 was assigned to a variety of brick and stone bonds in the southern parts of the wall. A ceramic drain (4030) was set into the upper courses of 4015. In the north, the lowest part of the wall comprised sandstone blocks and black ash mortar (4302), which was overlain by two areas of red brick (4304 and 4303). At the end of the excavation, under watching brief conditions, part of the west wall of the engine pit was identified as a separate brick pier (4359) that may have pre-dated the rest of the wall. A vertical iron girder (4016; **Pl. 34**) may have been an in-situ structural element, however it is probable that this girder was instead part of the rubble backfill (1001) of the engine pit.

5.2.55 The north end of the engine pit had been removed by truncation, perhaps during demolition of the structures or at some other time during the 20th or 21st century. Brick rubble 4270 filled the area of truncation. A small amount of asbestos-bearing material was seen and immediately reburied. No further investigation of this area was undertaken for this reason.

Possible stairs north of engine pit 4011

5.2.56 To the north of the truncation filled with rubble 4270 was a curved partially-preserved two-skin red brick and black ash mortar wall (4299; **Pl. 35**) through which an iron pipe passed. It is possible that this wall represented the outside of a curving staircase used to access the engine pit.

Area west of engine pit 4011

5.2.57 An additional area of sandstone masonry (4301) overlaid by red brick (4026) and concrete (4032; not illustrated) was seen behind the west wall of the engine pit where this wall was intermittently poorly preserved. These structures related to a further cellar that was not fully explored. At the end of the excavation, under watching brief conditions, walls at the north end of this cellar were revealed (not on plan; 4357, **Pl. 36**; and 4354, **Pl. 37**). Wall 4354 contained an opening (4355) leading to a passage (4356), probably for human access. A further west to east aligned red brick and black ash mortar wall (4360) and a north-south aligned vaulted passage (4361) were also present, alongside a lime-mortared wall (4362) described under phase 1 above.

5.2.58 A series of red brick and black ash mortar walls (4012; **Pl. 38**) were shaped like a letter ‘E’ in plan and were 1.79 m long overall (0.35 m width was preserved). They had been incorporated into a later poured concrete floor (4006). An iron pipe (4013) was set into wall 4012.

Central yards

5.2.59 The centre of area 1 contained the remains of yards (**Pl. 39**) depicted on historic maps (**Figs 2–7**). In the south-west, a yard surface would have extended over flue 4066, however this was largely missing (although fragments 1017 and 4072 comprising sandstone flags remained as described above under Trench 10 cellar; **Pl. 25**). This area appears as a narrow passageway on historic maps (**Figs 2, 3, 5–7**).

5.2.60 Moving north, the area east of the large engine pit was floored with sandstone setts (4041; **Pl. 39**). These setts were truncated in the north where they were seen to be carried by brick vaulting (4305; **Pl. 40**). The presence of asbestos-containing materials in disturbed rubble 4270 prevented further investigation. The continuation of flue 4066 also ran below the setts as described above. To the east, in the area of a weighbridge (4269), setts 4041 were seen to be bedded on grey brown silt sand 4081 (not on plan). For later repairs and insertions to surface 4041, see below.

Weighbridge 4269

5.2.61 A weighbridge (group 4269; **Pls 41–43**) is depicted on the 1890 map (**Fig. 3**) by the letters 'W.M' (weighing machine) in the cart entrance to the central yard from Bailey Lane to the east. The presence of the weighbridge demonstrates that goods were brought in and/or out of the complex via this cart gate. An almost identical weighbridge was excavated by the author as part of the remains of a late-19th-century steelworks on the site of Sheffield Castle (Wessex Archaeology 2020e, trench 3).

5.2.62 The subterranean walls of the weighbridge (4083; **Pl. 41**) comprised two skins of red brick and black ash mortar. Excavation ceased at 1.2 m below ground level for safety reasons without reaching the bottom of the weighbridge. Eight courses (0.83 m) of wall 4083 were exposed; the top courses immediately below ground level were missing. Wall 4083 was observed to the north, west and south of the weighbridge. The east end was truncated by a modern wall fronting Bailey Lane. In each corner of the weighbridge was a sandstone block acting as a foundation (4084, 4085, 4097 and 4268; **Pl. 41**), each supported on a red brick pier (4108, 4109; not on plan). In the centre of the weighbridge was a sandstone pivot (4098; **Pl. 41**) carried on a red brick base (4099; not on plan).

5.2.63 Adjacent to the south wall of the weighbridge, a sandstone flag (4089; **Pl. 42**) perforated by a hole (perhaps for the insertion of a vertical pipe or bar) capped a small void to the south of the weighbridge within the adjacent building. A metal plate (4088) formed part of the north end of the void. It is possible that this was part of the indicator equipment for the weighbridge. The insertion of flag 4089 was probably associated with remodelling of the south wall of the weighbridge (4086 and 4087; machine brick and black ash mortar; **Pl. 43**).

Building fronting Bailey Lane south of weighbridge

5.2.64 In the east of area 1 was a series of structures situated between earlier wall 4075 (to the south, see above), flue 4066 (to the west, see above) and weighbridge 4269 (to the north, see above). These structures represent a building fronting Bailey Lane (**Pls 8, 42–44**).

5.2.65 The former ground surface was not preserved in the area of flue 4066. However, moving east towards Bailey Lane, preservation improved and a ground-level sandstone flag surface (4105; rear of **Pl. 44**) was revealed. Historic maps indicate that floor 4105 was in an interior area (**Fig. 3**). Flag surface 4105 was bedded on grey brown silt sand (4158), seen where one flag had previously been removed (perhaps during demolition). One part of floor 4105 may have been repaired (4106) in a mixture of flags and red brick. A wooden beam (4182) was built into the surface, perhaps acting as a foundation beam. A small domestic fireplace (4184; **Pl. 45**) was situated in the south-east corner of the room, at a 45° angle to the other walls. This angle mirrors another wall (4244) seen further north and may indicate architectural detailing of the building. The gap behind fireplace 4184 was filled with masonry infill 4191.

5.2.66 The room floored by flags 4105 was separated from a further room adjacent to Bailey Lane by a two-skin red brick and black ash mortar wall (4183; **Pl. 44**). Wall 4183 incorporated part of possible weighbridge indicator equipment 4089 at its north end (see above).

5.2.67 East of wall 4183, the ground had been built up during construction to around ground level with grey brown silt sand (4104 = 4188) carrying a series of structures. In the south, a single sandstone flag survived (4190; **Pl. 46**). Flag 4190 carried a diagonal single skin red brick wall (4192; **Pl. 46**) forming the opposite and adjacent corner to fireplace 4184 seen in the room to the west. A patch of red bricks (4189; **Pl. 46**) overlying sandstone flag 4190 may represent a replacement floor or could be demolition rubble, although they were quite regularly arranged. Two minor brick structures (4139 and 4194; **Pl. 44**) were present immediately to the north and may represent a partial extra skin added to the east of wall 4183. Moving north was a wooden surface (4187; **Pl. 44**) and rough red brick surface (4107; **Pl. 44**), similar to brick surface 4189 seen in the south.

5.2.68 It was unclear where the north end of this room ended. An 'L'-shaped single skin wall (4094; **Pl. 8**) enclosed a later poured concrete block (4095) containing a catch to secure a gate (**Pl. 8**). The gate would have sealed the cart passage so it is clear that this area was outside when the concrete fitting was added, though this was probably towards the end of the life of the works and may represent a late modification. A single flagstone (4186) survived immediately to the west.

Building fronting Bailey Lane north of weighbridge

5.2.69 North of the cart gate containing the weighbridge (4269) was a second area of structures (group 4242; **Pl. 47**) relating to a building fronting Bailey Lane. The layout and materials suggest that this building was a continuation of the building south of the weighbridge and that the two were connected above the ground floor. Building 4242 was bounded to the west by a yard area floored by setts 4041 (see above) and to the north by earlier building 4300.

5.2.70 A construction cut (4240 = 4276) containing building 4242 and a primary deposit (4241) comprising redeposited natural (yellow silt clay) with rubble inclusions.

5.2.71 Building 4242 (**Pl. 47**) was an irregular shape made up of a series of two-skin red brick and black ash mortar walls. Facing Bailey Lane was a short straight wall (4245) which turned 90° to form the south side of the building (4246). The wall then turned 45° towards the north-west (4247) as can be seen on historic maps in 1853, 1890 and 1954 (**Figs 2, 3 and 7**). A brick surface or step (4261) lined the inside of both walls 4246 and 4247. Wall 4247 ended in a pier (4248) before turning 45° to the west as 4249. The short west end of building 4242 comprised wall 4251. The north wall of the building was made up of three separate sections (4238, 4239 and 4243) possibly indicating a partial rebuild or repair. Finally, the east end of the north wall turned 45° to the south (4244).

5.2.72 Building 4242 contained a brick surface (4256), however much of the interior had been subject to later modification (see below).

5.2.73 Running north from building 4242 was a wall of black ash mortar, red bricks and opportunistically used firebricks (4237; right of **Pl. 47**). Wall 4237 was truncated by demolition or other later activity a short distance to the north, but was seen to pre-date sandstone sett surface 4041 (described above), which floored a yard to the west of building 4242.

5.2.74 Below setts 4041 immediately to the south-west of building 4242 was a ceramic pipe (4264) set in an area of disturbed ground (brown grey silt clay with gravel and brick fragments; 4263).

Repairs to earlier building 4300 fronting Bailey Lane

5.2.75 In the south-east of building 4300 (described above) a sandstone machine base had been inserted (4275; **Pl. 9**). It is possible that the machine base was contemporary with the lime mortared walls in this area, however, a small brick structure (4274; two courses and two skins for four bricks total) was bonded to base 4275 with black ash mortar suggesting that the base was itself a later addition. A ceramic down pipe (4279) was set vertically next to base 4275.

5.2.76 A small sandstone base with iron pins (4293) was present adjacent to the intersection of lime-mortared walls 4284 and 4283. A further sandstone machine base (4294) was situated to the south-west of base 4293.

5.2.77 Two pieces of different, unusual ash mortar-derived material (4286 and 4287; **Pl. 9**) were present in the corners between lime-mortared wall 4286 and 4287 and appeared to be fragments of former surfaces.

5.2.78 Extending to the west was a sandstone sett surface (4292; **Pl. 48**) representing a yard area as depicted on historic maps until 1954 (**Fig. 2–7**). Setts 4292 closely resembled setts 4041 seen to the south, and were probably a continuation of the same surface. A stone drain cap (4297) was built into surface 4292 and covered a machine brick and ash mortar inspection chamber (4348; not illustrated). Several areas of accretions had built up on the surface of sett surface 4292 representing occupation layers. Accretion patches 4291 and 4296 comprised brown yellow ash, mortar, slag and sand. A patch of concrete (4289) was a later modification to the surface.

5.2.79 A sandstone block (4295) south of surface 4292 may have been a threshold, however it is probable that it had been disturbed and was an element in late rubble deposit 4270.

5.2.80 The north end of surface 4292 was truncated by late-20th century wall 4272 (see below).

Modifications to south side of crucible cellar (4310) and teeming pit 4320

5.2.81 Lime-mortared sandstone wall 4309 forming the south side of a crucible cellar (group 4310) was partially rebuilt in black ash mortar and red brick (4332; **Fig. 19**, **Section 8**; **Pl. 12**). Wall 4332 included springer for vaulting, similar to lime-mortar and firebrick structure 4331 seen to the west. The west end of wall 4309 was also capped with a red brick and black ash mortar structure, possibly a pier (4308).

5.2.82 Curving wall 4315/4316 enclosing stairs 4314 was truncated and the north end repaired with black ash mortar as 4317 (**Fig. 19**, **Section 6**; **Pl. 11**).

5.2.83 A further wall (4236; **Pls 49, 50**) was aligned with the centre of the crucible cellar and extended west from the west end of the cellar. Wall 4236 comprised two skins of red brick and black ash mortar. It was later modified as described below.

5.2.84 These black ash mortar repairs to the structures on the south side of the area 2 crucible cellar (group 4310) were probably contemporary with the construction of surviving crucible furnace 4200.

Crucible furnace 4200

5.2.85 The north end of area 2 contained a well-preserved crucible furnace (4200; **Pls 50–57**). The furnace survived to approximately ground floor level, that is, the cellar-level structures of the furnace were extant.

5.2.86 At the end of the excavation under watching brief conditions, a layer of disturbed natural was identified (4346; not illustrated) comprising yellow grey silt clay with 15% grit and gravel inclusions. Clay tobacco pipe and metalwork recovered from this layer indicate that it was anthropogenic in origin. A pre-construction levelling layer (4266; not illustrated) comprised dark brown sand silt and gravel. The foundation of the furnace was identified as a sandstone structure (4353; not illustrated). This was overlain by the north wall of the furnace (4222; **Fig. 20**, **Section 9** and also **Fig. 19**, **Section 8**; **Pl. 51**) comprising reused handmade brick and black ash mortar with ten small airducts (**Pl. 52**). Historic maps (eg, **Fig. 3**) show that this furnace was adjacent to Carr Lane. The position of a second crucible furnace (4267, see below) set back from the first (4200) demonstrates that there would have been a gap between the north wall of furnace 4200 and the lane (consistent with the position of the air ducts on furnace 4200). The limit of archaeological preservation was the north side of the furnace, with no further remains surviving to the north.

5.2.87 At the front of the furnace (elevation **Fig. 20**, **Section 10**; **Pls 53**–**55**), the ash pit bays were constructed of reused handmade brick and black ash mortar with bull-nosed bricks at the entrances (4223). There were ten similar bays; this was a ten-hole furnace 9.32 m long (east to west) and 2.35 m wide (north to south). The brick structures between the bays (4223) were topped with large sandstone blocks (4225) incorporating springers to carry a vaulted ceiling over the adjacent crucible cellar. Metal ties (4229 = 4230) ran through the entire width of the furnace. To the north, metal plates at the end of the ties were extant, but to the south these had been removed, presumably for scrap. Carved indentations on sandstone springers 4225 indicated the former positions of the ties. Sandstone springers 4225 also carried a series of long iron bars running the length of the furnace (4336). Demolition had proceeded to the level of bars 4336 although the bars themselves had not been removed for scrap. The melting holes were lined with firebricks, which were extremely degraded from intense heat (4227; **Pl. 56**). The firebricks were degraded beyond the point where individual bricks could be identified and the dimensions of the holes could not be reliably established. The degraded interior of the melting holes had formed a slaggy purple black furnace lining (4226) derived from fuel slag and the firebricks. Each melting hole contained an iron grate (4224; **Pl. 57**) to support the fuel and crucibles.

5.2.88 The east end of the furnace had been modified with the addition of a machine brick and black ash mortar buttress (4233, **Fig. 20, Section 10**; **Pl. 55**). This buttress may have enhanced circulation of either air or people in the cellar area immediately north of the furnace. Although truncated, it is possible that this area communicated with Carr Lane.

Crucible furnace 4267

5.2.89 A second crucible furnace (4267) was present in the north-west corner of area 2. This furnace was only partially within the area of excavation and only the eastern two melting holes were revealed (**Pls 53, 58**). The furnace was set back slightly to the north of the alignment of furnace 4200. It is likely that furnace 4267 was directly adjacent to Carr Lane on the basis of historic maps (eg, 1890, **Fig. 3**). Furnace 4267 was constructed in identical materials and to the same design as furnace 4200: the two furnaces were contemporary.

5.2.90 The ash pit bays were of reused handmade brick and black ash mortar with bull-nosed bricks at the entrances (4231; not visible in plan). These carried large sandstone springers (4228) for a vaulted ceiling which were pierced to take iron tie bars (4229; not illustrated). The sandstone springers carried iron bars (4341) as in furnace 4200. Iron grates (4340) were set in each melting hole to carry fuel and crucibles, and the firebrick melting hole structures (4342) had degraded into a dark slaggy furnace lining (4339).

5.2.91 A diagonal wall (4336; **Pl. 58**) filled the gap created where furnace 4267 stepped back from the alignment of furnace 4200. This single-skin wall was constructed of reused red brick and firebrick and bonded with black ash mortar.

Phase 3: maintenance and modifications of black-ash mortared structures. Late 19th century to early-20th century

5.2.92 Features assigned to phase 3 in areas 1 and 2 are shown on **Figure 13**.

Chimney 4100 and associated flues and structures

5.2.93 Two pieces of poured concrete (4131, 4132) were present at the south-east limit of excavation in the area of flue 4134. These probably post-dated the demolition of the flue.

Trench 10 cellar

5.2.94 The central opening in the north side of the trench 10 cellar had been partially blocked on the east side by the addition of a short (0.5 m long) flimsy single skin wall (4017) extending from the bull-nosed east end of wall 4019 (**Pls 23, 30**). The purpose of wall extension 4017 was revealed by a small patch of surviving concrete to the north (4018) indicating that a floor had been added in the adjacent engine pit up to the extended wall. Only a fragment of concrete floor 4018 survived and its full extent could not be determined.

5.2.95 Girders 4020 and 4021 to the west of the 'trench 10 cellar' had initially carried a jack-vaulted ceiling (4022). This has been replaced in part by a concrete slab (4023; in distance in **Pls 31, 32**). The concrete slab (4023) carried a surface of black ash mortar and a mixture of reused bricks, some stamped 'Robinson' (not seen elsewhere in areas 1 and 2, but used for crucible furnaces in area 4; see below). Brick surface 4023 in turn carried another concrete slab (4025). The multiple iterative surfaces may suggest frequent maintenance of the building. It is possible that they represent a machine base.

Engine pit 4011

5.2.96 A stanchion comprising concrete (4343), red brick (4042) and a vertical iron 'I'-beam had been inserted into the east wall of the engine pit (**Fig. 18, Section 4**; **Pl. 59**). This stanchion relates to a modification from the load-bearing brick building method used in the majority of structures on site to a metal-framed building technique.

Possible stairs north of engine pit 4011

5.2.97 Possible staircase 4299 may have been repaired with a small patch of poured concrete (4298).

Area west of engine pit 4011

5.2.98 West of engine pit 4011 was an area that had been modified by the addition of a concrete floor. The lower layer of concrete (4014; **Fig. 18**, **Section 5**) was coarse and 0.17 m thick; the upper layer (4006; **Pl. 38**) was fine and provided a good quality surface.

5.2.99 A concrete inspection chamber (manhole; 4008) set in concrete surface 4006 provided access to drains including 4030 (seen in engine pit 4011 above). Drain 4037 seen in the east wall of the engine pit may also have led to this inspection chamber. Partially-preserved iron lid 4007 covered the inspection chamber. Shallow drainage channels (4009) scribed in the surface of concrete surface 4006 radiated out from inspection chamber 4008 (all **Pl. 38**).

5.2.100 An unusual 'bow-tie'-shaped concrete and brick pit was partially floored with a skin of red brick and black ash mortar (4055) overlain by a wall of similar materials (4053) forming the

south side of the pit. The rest of the pit was concrete (4054 and 4056; all **Pl. 38**). The pit was backfilled with 20th-/21st-century deposits described below.

5.2.101 A base or machine fitting (4010; **Pl. 38**) was also present.

Central yards

5.2.102 Sandstone sett surface 4041 near the centre of area 1 had been covered in concrete, which survived in some localities (4036), particularly at the west limit of sett surface 4041 at the east wall of the engine pit (concrete repairs 4035, 4040 and 4047; **Pl. 39**; see also section **Fig. 18**; **Section 4** for 4035).

5.2.103 A concrete inspection chamber had also been inserted (4061 and 4062; **Pl. 39**), containing ceramic drain 4064 which may have been the same as drain 4030 or possibly 4037 (both seen to the west and described above).

Weighbridge

5.2.104 The weighbridge adjacent to Bailey Lane (4269) was backfilled with demolition overburden 4005. Traces of concrete (4082) indicated that the weighbridge had been decommissioned and the cart gate resurfaced late in the life of the works (**Pl. 41**).

Building fronting Bailey Lane north of weighbridge

5.2.105 The interior of building group 4242 north of weighbridge 4269 had been extensively modified (**Pl. 47**). The interior surface had been re-laid in concrete (4250) containing an iron fixing (4257) and a red brick and black ash mortar inspection chamber (4258). The inspection chamber was filled with demolition or post-demolition deposit 4259 comprising brown grey silt clay with inclusions of gravel, brick fragments and asbestos-bearing materials which prevented further investigation. In the south of the room, brick step 4261 was accompanied by another step in concrete (4261). In the west, brick surface 4256 had been disturbed to insert iron pipe 4254, repaired with red brick and cement structures 4253 and 4252 and backfilled with brown grey silt with clinker and rubble (4255).

Crucible furnace 4200

5.2.106 Modifications were made to crucible furnace 4200 and to the associated cellars. These modifications were made after the end of the life of the furnace and may represent the conversion of the cellars into storerooms, or possibly into air-raid shelters as was done at Hoyle Street (Powell 2014).

5.2.107 Wall 4236 situated west of the crucible cellar was widened to four skins by the addition of skins to the both faces, bonded with cement (**Pls 49, 50**). A firebrick and cement wall (4235; **Pl. 49**) blocked the space between wall 4236 and wall 4309, partially blocking access to a cellar south of 4236 which mostly lay outside the area of excavation. However, blockage 4235 was only six courses high, topped with wood. It is unclear if a further wooden structure blocked the remaining opening (either a door or a wall), or if the wall was of limited height, perhaps to create a tank (*cf.* Hoyle Street, Powell 2014) or control groundwater or for some other purpose.

5.2.108 The entrance to each ash pit was bricked up with modern cement (4332; **Fig. 20**, **Section 10**; **Pls 53–55**). A similar adaptation was seen in area 4 (below) and at Hoyle Street (Powell 2014).

Phase 4: undated demolition of cellars and construction of sett surface 4149

5.2.109 Features assigned to phase 4 in areas 1 and 2 are shown on **Figure 14**.

South-east of Area 1: cellars 4075, 4138, 4157, 4140, 4210 etc.

5.2.110 Three deposits (4044 and 4148 not illustrated; 4220 plan **Fig. 10**) in the north and middle cellars appeared to be pre-demolition tertiary fills. These fills were primarily derived from the decay of multiple layers of distemper or whitewash lining the cellars. They may indicate a period of disuse prior to the demolition of the structures, although it is possible that the cellars became disused while the rooms upstairs were still inhabited.

5.2.111 The demolished north and middle cellars were backfilled and buried beneath made ground layer 4211, comprising brick and stone rubble and clinker in a matrix of grey brown silt clay. Curved bricks were noted amongst rubble 4211. These resembled bricks seen in later contexts (eg, chimney 4100), perhaps suggesting a late date for the demolition of the lime-mortared dwellings.

5.2.112 Probably the same demolition material as 4211 was recorded in the south cellar as 4156 (brick and stone rubble in brown clay silt). This layer was capped with redeposited natural (yellow grey silt clay) with common lime mortar inclusions (4155; not illustrated).

5.2.113 In the far south-east of area 1, above the cellar bounded to the north by wall 4157, was a late sandstone sett surface (4149; **Pl. 2**). Demolition material 4155 was truncated by a construction cut (4151; not illustrated). The cut was filled with black ash and clinker bedding (4152; not illustrated) for the set surface (4149). Surface 4149 was in turn truncated (4153) for the installation of a ceramic drain (4154).

5.2.114 Sett surface 4149 has been resistant to dating. The surface resembles exterior surfaces seen elsewhere in area 1 (eg, 4041), however no consulted historic map depicts an exterior area in this location (**Fig. 2–9**). The presence of setts 4149 overlying the cellars suggests that demolition of the worker's housing in this locality occurred prior to the main redevelopment of the site in 1954–1960. The appearance of the setts suggests that they may have been laid down in the late-19th- or early-20th century although this identification is not reliable. Chimney 4100 appears to respect the lime-mortared cellars and their ash mortar repair strongly suggests that the cellars persisted after the main late-19th century redevelopment of the site. It is possible that this vicinity was subject to localized redevelopment, perhaps in the early 20th century although the chronology of this detail cannot be resolved.

Phase 5: 20th century

Introduction

5.2.115 Features assigned to phase 5 in areas 1 and 2 are shown on **Figure 15**. This section mainly contains descriptions of demolition deposits that probably relate to the redevelopment of the site between the Ordnance Survey maps of 1954 and 1964 (**Figs 7 and 8**). A few late structures are also described.

Walls 4271, 4272 and inspection chamber 4273

5.2.116 A sequence of demolition and post-demolition made ground layers were recorded above teeming pit 4320 and below wall 4272. These 20th-century deposits comprised brown grey sand silt with rubble (4327; **Fig. 19**, **Section 8**; further deposits in sequence not illustrated), red purple redeposited heat-effected clay with stones (4326), brown grey sand silt with rubble (4329), yellow sand clay redeposited natural (4330), grey brown sand silt with gravel (4344 and 4345) and imported bright yellow clay with white streaks (4328).

5.2.117 Wall 4272 extended across the centre of area 2 truncating earlier structures and dividing earlier remains in two. A second wall (4271) was keyed into 4272 and ran along the frontage

of Bailey Lane. An inspection chamber (4273) was situated close to the intersection of walls 4271 and 4272. All three structures (4271, 4272 and 4273) were constructed of the same textured frogged brick and orange cement and were part of a 20th-century building demolished under archaeological supervision during machine excavation.

Overburden

Trench 10 cellar

5.2.118 Deposits 1016, 1015 and 1001 above floor 1017 and brick arch 1021 in the central-west trench 10 cellar of area 1 (**Fig. 17**, **Section 2**) represent post-demolition made ground layers and are of 20th- or 21st-century date. Deposit 1016 comprised rubble in brown sand silt and 1015 comprised crushed red brick. Made ground 1001 was the upper layer of overburden present on the site prior to the commencement of archaeological works, and comprised mixed brick rubble.

5.2.119 A similar sequence was recorded just north of evaluation trench 10 during mitigation machining. Five layers of overburden were recorded: grey brown sand silt with bricks and cement (4005), purple brown ash (4004), black silt sand with concrete and sandstone (4003), orange brown silt sand with ash, brick, bitumen etc. (4002), and yellow brown silt sand with sandstone (possibly redeposited natural, 4001). The earliest of these deposits represent 20th-century activity including demolition; the later layers represent 21st-century works undertaken immediately prior to archaeological mitigation.

West of engine pit 4011

5.2.120 'Bow-tie'-shaped pit 4053–4056 was backfilled with 20th-/21st-century deposits comprising purple brown sand silt (4059; not illustrated), yellow brown clay redeposited natural including rubble, a spark plug (not retained) and other metal objects (4058; not illustrated), and rubble in grey brown sand (4057).

Central yards

5.2.121 Concrete inspection pit 4061 was backfilled with demolition or post-demolition rubble 4063 (not illustrated) comprising grey brown grit sand with gravel and rubble.

Crucible furnaces 4200 and 4267

5.2.122 Overburden from within the melting holes of crucible furnaces 4200 and 4267 were removed by hand. This material was introduced to the melting holes during demolition or afterwards. A separate context number was assigned to the overburden from each melting hole to facilitate the location of any recovered finds. Contexts 4198, 4199 and 4201–4205 were assigned to furnace 4200 and 4342 to furnace 4267 (not illustrated). The material generally comprised red brown grit sand with rubble and furnace lining, although black ash with slag (4198) and grey brown sand silt with rubble, slag and furnace lining (4267) were also recorded.

5.2.123 In addition, blue-black sand clay with slag, clinker and rubble (4197; not illustrated) filled the eastern ash pit of crucible furnace 4200.

5.3 Area 3

Introduction

5.3.1 Area 3 (**Fig. 21**; **Pls 60–61**) was situated in the south-west of the site and contained a sequence of made ground deposits, fragments of lime-mortared structures and also 20th-century structures.

Natural

5.3.2 The undisturbed natural geological substrate was reached at the base of area 3 at around 3.6 m below ground level (roughly 79 m OD) and comprised yellow clay (3046; **Fig. 21**, **plan and Section 13**; **Pl. 60**).

Early made ground sequences

5.3.3 A sequence of industrial made ground layers overlay natural 3046 (**Pl. 60**). These deposits were typically steeply sloped (up to 45°) indicating that they had been tipped and as such probably represented imported material, sourced either nearby or from some distance.

5.3.4 Overlying natural 3046 was black brown sand silt with rare bricks and sandstone (3044; **Fig. 21**, **Section 13**), orange grey brown sand clay with gravel (3021; **Fig. 21**, **Sections 13 and 14**) and black brown clay silt with gravel (3022).

5.3.5 Elsewhere, the lowest deposit reached was a layer of redeposited natural (3010; yellow sand clay with stones and brick rubble; **Fig. 21**, **Section 11**).

5.3.6 Both layers 3022 and 3010 were overlain by two successive layers of rubble: 3011 and 3012 comprising dark brown grey silt or clay sand with brick and lime mortar inclusions (**Fig. 21**, **Sections 11, 12 and 14**).

5.3.7 Two sequences were recorded with rubble 3012 at their base. In one sequence (**Fig. 21**, **Section 14**), grey yellow sand clay with gravel (3024) and black brown sand silt with stone (3025) overlaid 3012. These deposits were tipped from the west. A further deposit (3027; brick rubble in a matrix of grey sand silt or clay) was tipped from the east. The gap between deposits 3025 and 3027 was filled by deposit 3026, which resembled 3027.

5.3.8 Elsewhere (**Fig. 21**, **Section 15**) 3027 was overlaid by black ash with stones and crushed brick (3028), brick and stone rubble with lime mortar inclusions in matrices of grey sand (3029), red brown sand (3030), grey brown grit/sand silt (3031 = 3048) and 3032, the latter with fragments of crucible, and brown grey sand silt (3041).

5.3.9 Returning to layer 3021, it was overlain in another location by layer 3047 (comprising grey brown sand loam rubble with ash; not illustrated), in turn overlaid by rubble 3031 = 3048 (described above).

5.3.10 In other locations, layer 3021 was also overlain by two further deposits (**Fig. 21**, **Section 13**): yellow brown silt clay with brick rubble (3043), overlaid by grey brown silt sand with gravel (3042).

5.3.11 Returning to the deposits overlying rubble 3012, a further sequence (**Fig. 21**, **Section 12**) began with rubble 3013 (comprising light grey brown clay with stone inclusions). Layer 3014 comprised mottled mid-brown, orange and yellow silt clay with rare gravel inclusions and was overlaid by stone rubble in a matrix of grey yellow silt clay (3015), and was overlaid by four primarily brown silt clay layers with gravel inclusions: 3016, 3017, 3018 = 3023 and 3019. A layer of rubble (3006, in a matrix of dark grey brown sand clay with lime mortar inclusions) and a layer of redeposited natural (3007, yellow clay silt with stones) followed. These layers appeared to have been tipped from the south, suggesting that they were deposited together.

Phase 1: lime mortared structures

5.3.12 A sandstone flag surface at 81.08 m OD (3003; **Pl. 61**) was bonded with lime mortar and was a total of 0.07 m thick and was exposed over an area of 3.4 m by 0.9 m. A single course

of a two-skin red brick and lime mortar wall (3002) survived built on surface 3003 (**Fig. 21**, **plan and Section 15**).

5.3.13 An irregular alignment of bricks, some on edge (3004; **Fig. 21**; **Section 11**; **Pl. 61**) may have represented an unbonded surface or wall but are probably another rubble deposit. Bricks 3004 were bedded on made ground layer 3009 comprising brown silt clay with brick and lime mortar inclusions. Layer 3009 overlay layer 3013 described above, however this position in the made ground sequence suggests a much earlier phasing for surface 3004 due to the sloping form of the deposits.

5.3.14 These lime-mortared structures are almost certainly fragments of back-to-back worker's housing first depicted on the Ordnance Survey map of 1853 (**Fig. 2**). The back-to-back housing is depicted in detail on every map until 1923 (**Figs 2–5**). The outline of the buildings is present on the 1935 map (**Fig. 6**) although the detail has gone, despite depiction of similar buildings on the other side of Rockingham Street. This may indicate either than the buildings had been adapted and amalgamated, or perhaps that they had been abandoned and were derelict. By 1954 area 3 had been redeveloped (**Fig. 7**).

Demolition of lime mortared structures

5.3.15 In-situ demolition material (3036 and 3037 comprising grey brown sand silt or clay with rubble and lime mortar inclusions) was present on both sides of wall 3002. A 0.22 m-deep cut (3038) through demolition material 3037 was filled with more demolition material (3039 and 3040: brown sand silt with rubble) (all **Fig. 21**, **Section 15**).

Phase 5: 20th century

5.3.16 Surface 3003 and part of demolished wall 3002 had been covered by a poured concrete surface (3001; not illustrated).

5.3.17 Layer 3008 overlay concrete 3001 (not illustrated) and made ground layers 3007 and 3042 (**Fig. 21**, **Sections 11–13**), tying three separate sequences together (see above). Made ground 3008 comprised brown sand clay with rubble and was in turn overlaid by made ground layer 3045 (grey brown sand silt with bricks; **Fig. 21**, **Section 13**).

5.3.18 Demolition material 3036 (see above) was partly overlain by a deposit of modern orange builder's sand (3035; **Fig. 21**, **Section 15**). Area 3 was sealed by modern yellow white sand and silt hardcore (3005 = 3034; **Fig. 21**, **Sections 11 and 15**). Different parts of area 3 were covered by either a concrete surface incorporated ring beam foundations (3000; **Fig. 21**, **Section 11**) or by tarmac (3033; not illustrated).

5.4 Area 4

Introduction

5.4.1 Two crucible furnaces (5010 and 5080) were recorded along with ancillary structures in area 4 in the south-east of the site (**Figs 22 and 23**). The two furnaces shared a single cellar (**Pl. 62**). All brick structures were bonded with black ash mortar and probably represent a single phase of development. The two furnaces were of similar design and are contemporary. The bricks comprising the furnace structures were stamped 'Robinson'. In area 1, Robinson bricks were used in one late structure only (4023), suggesting that the area 4 furnaces post-dated the majority of remains in areas 1 and 2. Historic maps appear to corroborate this. Area 4 was occupied by a yard associated with back-to-back housing from 1853 to 1905 (**Fig. 2–4**). Between 1905 and 1923 (**Fig. 4 and 5**), area 4 was redeveloped and it is probable that this is the date of the construction of the crucible cellars. This may be equivalent to 'phase 3' in areas 1 and 2 described above. The crucible furnaces

in area 4 are therefore late examples of this type of furnace. Their form is consistent with the typical form of crucible furnaces, although they are small (six melting holes each).

5.4.2 The crucible cellar was adapted for alternative use before the stairs were bricked up. Further concrete structures represent 20th-century redevelopment.

Phase 3: early 20th-century

Cellar shared by furnaces 5010 and 5080

5.4.3 A pre-construction levelling layer (5078; not illustrated) comprised grey brown sand silt with gravel, and carried a sandstone flag surface (5022, 5023 and 5087) forming the floor of the crucible cellar. An inspection chamber (iron lid 5090) was sunk below this floor, probably to access drainage. A series of brick piers with bull-nosed corners (5020, 5021, 5024; **Pl. 63**) formed a line across the centre of the cellar and would have supported the ceiling and floor above. The piers were around 1.2 m long and 0.5 m wide.

5.4.4 A staircase was located at the west end of the cellar with the steps leading up to the north next to the west end of furnace 5010. Walls 5062 and 5063 enclosed the staircase to the west and south and formed the west end of the cellar. Four sandstone treads were revealed (5071) supported by brick risers (5073) culminating in a slightly larger sandstone threshold (5061) at ground level. The base of the stairs was later bricked up (5056, see below).

5.4.5 The east side of stairs 5071 was defined by wall 5059 running north to south and keyed into wall 5032 forming an 'L'-shape at the west end of furnace 5010.

5.4.6 On the opposite side of furnace 5010, the front wall continued to the east as blank wall 5018. A further wall, 5019 ran parallel to the east end of furnace 5010 between wall 5018 and wall 5057 extending from the rear of furnace 5057 to the east. A parallel rear wall to the north of furnace 5010 comprised three skins of west to east aligned frogged brick and black ash mortar (5058).

Crucible furnace 5010

5.4.7 Crucible furnace 5010 (**Fig. 22 and 23**; **Pl. 64–67**) was south-facing and situated in the north of area 4. There were six ash pits, of which the western two were accessible. All six had been whitewashed internally. The furnace had been truncated above the level of the base of the air vents below the melting holes (**Pl. 65**). The three eastern air vents had been constructed from firebrick (5039–5041); the three western air vents were in red brick (parts of 5031). The two western air vents contained loose firebricks (5037, 5038) placed there during the operation of the furnace to control the air flow.

5.4.8 Each ash pit was floored with a metal plate (5043–5048). Four in-situ ash deposits were recorded, comprising black and red ash (5027–5030; not illustrated). The ends of the ash pits were finished with bull-nosed bricks. Between each ash pit would have been a large sandstone springer carrying a brick vaulting ceiling. However, only two of these springers partially survived (5048 and 5049; **Pl. 64, 66**). Iron tie bars ran through the furnace from front to back, passing through springers 5048 and 5049 and secured by plates (5050 and 5051).

Crucible furnace 5080

5.4.9 Crucible furnace 5080 was north-facing and situated in the south of area 4. Furnace 5080 was identified under watching brief conditions at the end of the works and only the front face of the ash pits was revealed (**Pl. 68**). The furnace had six melting holes built from frogged machine red brick and black ash mortar. The entrances to the ash pits were finished with

bull-nosed bricks (5079). The face of the crucible furnace continued to the east and west as blank walls (5088 and 5089). Each ash pit was floored with a metal plate (5081–5086; not illustrated). The ash pits were backfilled with general overburden 4003 (see below).

Other structures

5.4.10 To the east of the crucible cellar were a series of structures facing north. Pier 5024 was larger than the other piers and measured 2.6 m north to south. Immediately east of pier 5024, three single skin walls (5006 in the west, 5004 in the west and 5009 in the south but not visible in plan) formed a bay (**Pl. 69**). The bay carried a brick arch (5007 and 5008; not visible in plan) supporting a sandstone flag cap (5005), possibly a remnant of the floor above. The bay was probably a small (0.4 m wide) storage area and may have been the foundation for something like a teeming pit or annealing oven on the ground floor.

5.4.11 East of the bay formed by 5004/5006/5009 was a three-skin north to south aligned wall (5016). The south end of 5016 was keyed into west to east aligned four-skin wall 5014 and two-skin walls 5013 and 5015 ran north from 5014 forming an 'E' shape in plan (**Pl. 70**). These two further bays were a storage area as evidenced by a collection of iron pipes and bars that remained in-situ here (5017). These included pipes of various diameters and iron piers (**Pl. 70**).

5.4.12 A series of walls (5092) to the east of the crucible furnaces were glimpsed under watching brief conditions and indicate that the cellar system continued from the furnaces towards Bailey Lane.

Phase 5: 20th-century

Crucible cellar shared by furnaces 5010 and 5080

5.4.13 The crucible cellar was at least partly re-floored in concrete (5011 and 5077; not illustrated).

5.4.14 Staircase 5071 at the west end of the crucible cellar was walled up at the base of the stairs with frogged brick and cement (5056). Unless there was alternative access to the cellar, this was presumably the latest modification to the cellar and furnaces. The stairs were then backfilled with brown, grey and yellow clay, silt and ash with slag and rubble (5072).

Crucible furnace 5010

5.4.15 The entrances to the ash pits of crucible furnace 5010 had been bricked up with frogged brick and cement (5052–5055; **Fig. 23**; **Pl. 64, 66**). This pattern was the same as seen in area 2 (above) and at Hoyle Street (Powell 2014). This modification suggests that the cellar continued to be used after the end of the life of the furnace, perhaps as a storeroom, or, as at Hoyle Street, possibly as an air raid shelter. Furnace 5080 on the other side of the cellar was not modified in the same way (**Pl. 68**). Where the ash pits had been bricked up, concrete had been poured behind the decommissioning walls, filling the ash pits (5033–5036; **Pl. 66**). This probably occurred during or after demolition.

5.4.16 The ash pits of furnace 5010 were backfilled with demolition material comprising black brown sand silt with brick rubble, metal objects, furnace lining, slag and glass (5025; not illustrated).

Overburden

5.4.17 The area was redeveloped as a car park, levelled with made ground (5003) comprising brown silt clay with clinker and rubble. Made ground 5003 was overlain with hardcore (5001) bedding a tarmac surface (5000). A concrete drain (5060) was present in the north-west of the area.

5.4.18 Some spoil from works on site immediately prior to excavation of area 4 (5002) overlay the car park tarmac.

5.5 Watching brief

5.5.1 At the same time as the mitigation excavations, a watching brief was maintained on groundworks undertaken by contractors working on the site. Nine areas contained archaeological remains of various kinds and were recorded as trenches 20–25 and 27–29 (the number 26 was skipped).

Watching brief trench 20

5.5.2 Four phases of structures were identified in trench 20. The earliest structure was a north to south aligned flue (2002) bonded with lime mortar. The flue had been walled up with firebricks and lime mortar (2009). A single-skin north to south aligned wall (2008) were also bonded with lime mortar. Wall 2008 was then widened with black ash mortar (2003). Other black ash mortared structures included a west to east aligned wall (2001), and a vaulted cellar comprising vaulting (2004), and an end wall (2005). Subsequently, a construction cut (2007) had been excavated to install a riveted steel tank with a rounded base 1.8 m in diameter.

Watching brief trench 21

5.5.3 A black ash mortar and machine brick wall running west to east (2101) was noted in trench 21.

Watching brief trench 22

5.5.4 Trench 22 contained a sandstone and lime mortar wall running north to south (2201).

Watching brief trench 23

5.5.5 The sole structure recorded in trench 23 was a red brick and black ash mortar wall aligned west to east (2301).

Watching brief trench 24

5.5.6 Two red brick and black ash mortar walls (2401 and 2402) were recorded in trench 24.

Watching brief trench 25

5.5.7 Again, two red brick and black ash mortar walls (2501 and 2502) were present in trench 25. Walls 2501 and 2502 were parallel, aligned west to east.

Watching brief trench 27

5.5.8 A sandstone and lime mortar wall (2701) was aligned north to south and was described as a ‘boundary wall’.

Watching brief trench 28

5.5.9 Perpendicular stone walls 2801 and 2802 were uncovered in trench 28.

Watching brief trench 29

5.5.10 A layer of black silt (2901) was recorded as it contained a high proportion (95%) of 20th-century steel tools such as spanners. These tools were probably dumped as demolition waste during 20th-century redevelopment.

6 ARTEFACTUAL EVIDENCE

6.1 Introduction

6.1.1 This section covers the finds from the excavation; an assemblage of moderate size was recovered, which augments that recovered from the evaluation (Wessex Archaeology 2020a). Finds were primarily obtained from pre-construction early made ground layers and post-demolition 20th-century made ground layers, with a small quantity from well-stratified contexts (see **Table 3** below). The majority of the finds are therefore likely to represent redeposited material and are not all necessarily related to activity on the site itself.

6.1.2 Finds from the excavation replicate but expand significantly the range seen from the evaluation (see **Table 2**). Datable items are, as before, entirely of post-medieval/modern date, with a likely date range of 18th–20th century. They include an element of domestic refuse (pottery, vessel glass, clay tobacco pipe, animal bone and shell, found largely in Area 3) alongside metallurgical and industrial residues (largely from Areas 1 and 2, the site of the Bailey Lane Works), which suggest an association with industrial activity on the site; there are also a few fragments of bone-working waste, all probably from cutlery handle manufacture, and shell offcuts from button manufacture.

Table 2 All finds by material type (number/weight in grammes)

	EVALUATION		EXCAVATION		TOTAL	
Material Type	**No.**	**Wt. (g)**	**No.**	**Wt. (g)**	**No.**	**Wt. (g)**
Animal Bone	9	108	7	123	16	231
Ceramic Bdg Material	-	-	5	2615	5	2615
Clay Tobacco Pipe	14	44	33	120	47	164
Fibre	-	-	2	-	2	-
Glass	6	447	18	1698	24	2145
Leather & Textile	-	-	5	-	5	-
Metal	14	-	110	-	124	-
Other Ceramic	-	-	56	26,751	56	26,751
Plaster	1	-	12	-	13	-
Pottery	36	1093	135	3174	171	4267
Shell	1	-	8	-	9	-
Slag	-	-	69	33,186	69	33,186
Stone	1	-	21	-	22	-
Synthetics/composite	6	-	6	-	12	
Worked Bone	2		1	-	3	-

6.1.3 All finds have been quantified by material type within each context, and the results are presented in **Table 3**. More detailed catalogues by material type are presented in the following sections, with some miscellaneous finds combined in Appendix 3.

Table 3 All finds by context (number/weight in grammes)

Context	Phase	CTP	Glass	Metal (no.)	Other Ceramic	Pottery	Slag	Stone	Other finds
1011	2								5 composite
2901	5			19					
3006	0	1/2			1/75	2/14			

Context	Phase	CTP	Glass	Metal (no.)	Other Ceramic	Pottery	Slag	Stone	Other finds
3008	5				6/405	10/339			2 shell offcuts
3010	0					1/38			
3014	0	1/3				2/7			
3018	0					2/25			1 CBM
3019	0					1/12			
3022	0					1/2			
3025	0	2/5				10/88			
3026	0	3/6				10/49			
3027	0	1/3			1/124	1/11			
3031	0	1/1				5/66			
3032	0	3/8				8/101			1 oyster shell
3036	5					2/5			
3039	5					1/13			
3041	0	5/15	4/291		2/207	5/29			1 synthetic
3042	0					1/4			
3043	0					4/12			
3044	0				1/1547	4/70			
3045	0	1/2				5/105			4 shell offcuts
3047	0			1	2/340	6/126			
3048	0	1/11	3/628			25/510			
4044	4								12 plaster
4065	2					19/1297			
4080	1				9/1459		3/574	1 grind stone	
4123	1								1 fibre; 3 leather
4130	1			1					
4148	4			41					
4156	5	2/17	4/393	2		5/135			1 CBM; 4 animal bone; 1 worked bone
4197	2 or 5		1/19	2	2/1088	4/39	1/313		1 fibre; 1 oyster shell
4198	5							5 slate	
4199	5			1			6/8169		
4201	5			2			3/672		
4202	5						3/691		1 CBM
4203	5						7/5089		
4204	5						1/55		
4205	5				2/2430				
4327	5					1/83		1 slate	1 animal bone
4342	5		1/103		2/1603				
4344	5			9	9/4340				

Context	Phase	CTP	Glass	Metal (no.)	Other Ceramic	Pottery	Slag	Stone	Other finds
4345	5	7/27	1/135	5	10/11,036		10/13,253	1 bdg mat?	2 animal bone
4346	0–2	4/10		5	2/687				
5003	5			7				1 grind stone	
5025	5		4/129	4			9/794		
5026	5			2	2/324				
5027	5				1/683		7/912		
5028	5			1	6/403		4/642		1 CBM
5029	5						7/720		1 CBM
5030	5			1			8/1032		
5072	5			7				12 grind stones	
unstrat		1/10							
Total		**33/120**	**18/1698**	**110**	**56/26,751**	**135/3174**	**69/33,186**	**21**	

CBM = ceramic building material; CTP = clay tobacco pipe
Phases: 0 = early made ground; 1 = late-18th-/early-19th-century; 2 and 3 = late-19th/early-20th century; 4 uncertain; 5 = 20th century

6.2 Pottery

Introduction

6.2.1 The pottery assemblage amounts to 135 sherds, weighing 3174 g. The assemblage is entirely of post-medieval/modern date. Condition is fair to good; although the assemblage is fragmentary, sherds are relatively unabraded. Mean sherd weight is 23.5 g, although this is slightly skewed by the presence of the thicker-walled sherds and heavier rims of some of the utilitarian wares. Despite the condition, the assemblage can be considered as largely redeposited, as the majority derived from deposits of 'made ground' or demolition debris.

Methods of assessment

6.2.2 The assemblage has been quantified (sherd count and weight) by ware type within each context; **Table 4** gives a quantified breakdown of the assemblage by ware type. Details of identifiable vessel form (where known) and decoration have also been recorded. Estimated Vessel Equivalents (EVEs) have not been used as many of the rims have unmeasurable diameters; as an alternative means of quantification, the maximum Number of Vessels (MNV) has been used, counting each non-joining sherd as a separate vessel except where there is a high probability of a context containing same-vessel sherds (the fragmentation of the assemblage is reflected in the total MNV, which is 124). The level of recording accords with the 'basic record' advocated for the purpose of characterizing an assemblage rapidly (Barclay *et al.* 2016, section 2.4.5). A full breakdown of pottery by context, including the pottery from the evaluation, is given in **Appendix 2**.

Table 4 Pottery totals by ware type

Ware type	No. sherds	Wt. (g)	MNV
Black-glazed Redware	27	1395	26
Buff/yellow Ware	3	91	3
Creamware	14	230	14
Developed Creamware	22	149	21

English Stoneware	28	735	24
Pearlware	27	272	23
Porcelain	2	12	2
Redware	6	236	6
Refined White Ware	6	54	5
TOTAL	**135**	**3174**	**124**

The assemblage

6.2.3 The assemblage shows an almost equal division (in terms of sherd count) between utilitarian wares (coarse redwares, either black- or brown-glazed, stonewares and buff/yellow ware) and refined tea-/tablewares (creamware, pearlware, refined whiteware, porcelain). The stonewares, all of which are of Nottinghamshire-type with characteristic lustrous salt-glaze (although also made elsewhere in the Midlands), and the redwares both appear in jar and bowl forms for food storage and preparation; the cane-coloured wares too were used for kitchen bowls. There are also two horticultural wares: a flowerpot and shallow dish in unglazed redware. Tea-/tablewares comprise plates, serving dishes, cups, saucers and a jug. Some are transfer-printed but no designs are complete enough to be recognisable, although one serving dish is probably in Willow pattern. One of the two pieces of porcelain is a green-glazed cube used for the game of Five Stones, popular during the Victorian period (Licence 2015, fig. 84).

6.2.4 The redwares have a broad potential date range, but the associated wares suggest that there is little or nothing here that is earlier than 18th century (and probably mid-century), while the scarcity of refined whitewares, introduced *c.*1805 and superseding pearlwares by *c.*1840, suggest that the assemblage does not extend far beyond the early 19th century. In fact, most of the assemblage could be accommodated within a date range of *c.*1740–1840, which would also accord with the dating provided by clay tobacco pipes and bottle glass (see below). The assemblage is entirely typical of working-class domestic refuse.

Distribution

6.2.5 Pottery was recovered from contexts in Areas 1, 2 and 3. The majority (106 sherds) came from Area 3, and in that area exclusively from 'made ground' deposits. These divide into two phases: those deposited prior to construction of lime-mortared structures 3002–3004 (**Plates 71–73**) and those connected with the 20th-century demolition of those structures. The range of types recovered is not particularly distinctive, revealing a 19th-century date of deposition for the early made ground layers (spot-dates accommodate a date of deposition between 1805 and 1880). This same range of types was recovered from the 20th-century demolition deposits, suggesting that the demolition deposits were largely derived from the earlier material. The only well-stratified context from which pottery was recovered was flue 4065, where a similar range of types (albeit from a smaller sample size) suggested a similar date range. Assessment of the pottery assemblage has therefore not produced information with sufficient granularity to meaningfully date the stratigraphic sequence. This is consistent with and origin for these deposits incorporating waste material from refuse dumps elsewhere in the city.

6.3 Ceramic building material (CBM)

6.3.1 Five fragments of CBM were recovered (see **Appendix 3**). Three of these comprise fragments of refractory brick (from furnace lining), with slagged surfaces; these came respectively from crucible furnace 4200 and from two of the chimneys in Area 4. The other two CBM fragments comprise a small piece from a flat roof tile (made ground 3018) and the

rim from an internally blackened chimney pot (demolition material 4156). All these items are post-medieval/modern in date and are assumed, on the basis of associated structures and finds, to date to the 18th century or later.

6.4 Clay pipe

6.4.1 Of the 33 fragments of clay pipe recovered, 30 are stems (see Table 5). These can be only broadly dated as 17th-century or later although, as for the pottery, they are unlikely to date prior to the 18th century.

Table 5 Clay pipe by context (including evaluation)

Context	Phase	No. stems	No. bowls	Date of bowls
EVALUATION				
620	5	3		
703	5	5	Part of spurred bowl	
915	0	2		
916	0	1		
1110	0	2		
EXCAVATION				
3006	0	1		
3014	0	1		
3025	0	2		
3026	0	3		
3027	0	1		
3031	0	1		
3032	0	3		
3041	0	5		
3045	0	1		
3048	0		1	*c* 1820–60
4156	5	1	1 decorated	c 1840+
4345	5	7		
4346	0–2	4		
Unstrat			1	c 1840+

Phases: 0 = early made ground; 1 = late-18th-/early-19th-century; 2 and 3 = late-19th/early-20th century; 4 uncertain; 5 = 20th century

6.4.2 There are three bowls, all with complete profiles. All are 19th-century types paralleled amongst the London sequence for this period. One example, from made ground 3048 (an upper layer within the made ground sequence), dates *c.*1820–60 (Atkinson and Oswald 1969, type 28), while the other two (one unstratified, one from demolition material 4156) date after *c.*1840 (*ibid*., type 33). Both examples of type 33 are decorated, the unstratified pipe with moulded scalloped edge below the rim. The pipe from 4156 is elaborately decorated with a milled rim above a row of small rosettes, and a fluted base; between these there is a band featuring Masonic symbols.

6.5 Glass

Table 6 Glass by context (including evaluation)

Context	Phase	No.	Wt. (g)	Description	Date

620	5	2	377	Aqua bottles: 1 square base with slight kick; 1 Codd closure	C19/EC20
703	5	4	70	1 x free-blown green wine bottle neck; 1 colourless small bottle neck with laid-on rim; 2 pale blue bottle/jar	E/MC18-C20
3041	0	4	291	Free-blown green wine bottle; 2 body; 1 base; 1 rim	*c.*1800–10
3048	0	3	628	Free-blown green wine bottle; 1 body & 2 bases	*c.*1735–1820
4156	5	4	393	Free-blown green wine bottle; 1 neck/shoulder (rim missing); 1 base	*c.*1735–1820
4197	2 or 5	1	19	Aqua body from beverage bottle (?Hamilton); embossed …ON	C19
4342	5	1	103	Base, green beverage bottle, embossed [?SHEFFI]ELD	LC19/C20
4345	5	1	135	Free-blown green wine bottle base	*c.*1735–1820
5025	5	4	129	Colourless bottle: 2 body; 2 conjoining neck from milk bottle (embossed [STER]ILISED MILK); 1 other neck	C20

Phases: 0 = early made ground; 1 = late-18th-/early-19th-century; 2 and 3 = late-19th/early-20th century; 4 uncertain; 5 = 20th century

6.5.2 The glass is all vessel glass and comprises fragments of containers (bottles or jars; **Table 6**).

6.5.3 The majority of fragments belong to free-blown or mould-blown cylindrical green wine bottles dating *c.*1735–1820 (Dumbrell 1983). Only one piece can be dated more closely within this period: a rim from made ground 3041 which dates *c*.1800–10 (*ibid*., 93).

6.5.4 Six pieces are later and belong to machine-made bottles of 19th-/20th-century date. These include the base from a green beverage bottle (beer or soda), from fill 4342, with part of an embossed mark: [?SHEFFI]ELD, although this may relate to the maker of the bottle rather than the contents. A second marked piece from a secondary fill (4197) of crucible furnace 4200 (associated with iron grate 4224), may be from a 19th-century Hamilton (torpedo) bottle, but the mark (…ON) is too small to decipher. Four colourless fragments from made ground 5025 include the neck from a milk bottle and a second from another beverage bottle, both 20th-century.

6.6 Stone

6.6.1 This category includes portable objects (grindstones) as well as building material (roofing slate) (see **Appendix 3**). Three complete grindstones of varying sizes were recovered as well as 11 fragments. These came mainly from Area 4 (two complete stones and 11 fragments), from two made ground deposits (5003, 5072). One complete small grindstone was also recovered from made ground deposit 4080. Roofing slate came from a rubble fill in crucible furnace 4200, and from made ground 4327.

6.7 Metalwork and industrial residues

6.7.1 Due to restrictions on working conditions occasioned by the coronavirus pandemic, the assemblage has been assessed by the external specialist (R Mackenzie) remotely, using a comprehensive catalogue of photographs. As no physical analysis of any items in the assemblage has been performed, the findings of this assessment should be regarded as provisional.

Results

6.7.2 The assemblage contains a mixture of slag-like residues, metal fragments and refractory materials, such as fragments of crucibles and firebrick (**Table 7**). The majority derived from contexts in Areas 1 and 2 (the area occupied by the Bailey Lane Works), with smaller quantities from Areas 3 and 4.

Table 7 Metalwork and industrial residues by context (including evaluation)

Context	Phase	Material	No.	Wt. (g)	Description
620	5	Metal	1	286	Large file
703	5	Metal	6	656	1 file; 1 scissor blade; 1 bar; 3 sheet frags poss from container rim/base
1016	5	Metal	6	1804	3 files (1 large, 2 blanks); 1 rod; 2 strip/bar (possible blade fragments)
2901	5	Metal	19		Set of 7 open ended and 5 ring spanners, 2 socket wrenches and 4 halves of adjustable pliers - most have 'Gordons Tools' brand name
3006	0	Other ceramic	1	75	Used crucible frags
3008	5	Other ceramic	1	63	Fragment of ganister with vitrified slagged surface
3008	5	Other ceramic	3	342	Used crucible frags
3027	0	Other ceramic	1	124	Used crucible frags
3041	0	Other ceramic	2	207	Used crucible frags
3044	0	Other ceramic	1	1547	Base of used crucible
3047	0	Other ceramic	2	340	Used crucible frags
3047	0	Metal	1	-	Small undiagnostic fragment
4080	1	Other ceramic	7	1076	Used crucible frags
4080	1	Other ceramic	2	383	Used crucible frags
4080	1	Slag	3	574	Potentially metallurgical - further inspection required to verify
4130	1	Metal	1	-	Possible 'bit' for power chisel
4148	4	Metal	41	-	Pulley, 5 engineers files, ring spanner, tablespoon, valve wheel, chain link, broken hook and possible scrap of sheet metal offcut.
4156	5	Metal	1	-	Small piece of stamped copper alloy sheet - function not known
4156	5	Metal	1	-	Nail
4197	2 or 5	Other ceramic	1	200	Fragment of 'dozzle' (refractory clay funnel for filling casting moulds)
4197	2 or 5	Other ceramic	1	888	Fragment of used crucible lid
4197	5	Metal	2	-	Engineers' files
4197	5	Slag	1	313	Fuel ash slag
4199	5	Metal	1	-	Abrasive wheel?
4199	5	Slag	3	146	Fuel ash slag
4199	5	Slag	3	8023	Fuel ash slag
4201	5	Metal	2	-	Engineer's file

Context	Phase	Material	No.	Wt. (g)	Description
4201	5	Slag	3	672	Fuel ash slag
4202	5	Slag	3	691	Fuel ash slag
4203	5	Slag	3	2589	Fuel ash slag
4203	5	Slag	4	2500	Fuel ash slag
4204	5	Slag	1	55	Fuel ash slag
4205	5	Other ceramic	1	1124	Part of base of used crucible
4205	5	Other ceramic	1	1306	Clay base that crucible would have stood on in furnace
4342	5	Other ceramic	2	1603	Clay base that crucible would have stood on in furnace
4344	5	Other ceramic	9	4340	8 crucible lids, possibly fired but not used in steelmaking furnace; 1 possible fragment of crucible fabric with weathered Cu alloy deposits
4344	5	Metal	2	-	Heavily corroded fragments, some from structural fixtures & fittings
4344	5	Metal	7	-	Unidentified
4345	5	Other ceramic	3	344	Used crucible frags
4345	5	Other ceramic	1	872	Fragment of used crucible lid
4345	5	Other ceramic	6	9820	5 used crucible lids (complete); 1 fragment of fired but unused crucible, attached to fragment of slagged used crucible
4345	5	Metal	5	-	Heavily corroded fragments, some from structural fixtures & fittings
4345	5	Slag	1	8700	Fuel ash slag
4345	5	Slag	4	3600	Fuel ash slag
4345	5	Slag	5	953	Fuel ash slag
4346	0–2	Other ceramic	2	687	Used crucible frags
4346	0–2	Metal	1	-	Heavily corroded/concreted engineer's file (**Plate 74**)
4346	0–2	Metal	4	-	Heavily corroded undiagnostic fragments
5003	5	Metal	1	-	Flanged cast metal base with fixing holes, with a cast concrete post hole. Possible base for streetlamp type post(?)
5003	5	Metal	1	-	Piece of flat iron bar
5003	5	Metal	5	-	2 spanners (1 broken adjustable); 2 door/window fittings; 1 heavily corroded bar fragment
5025	5	Metal	4	-	3 nails and possible architectural/machinery fitting
5025	5	Slag	9	794	Fuel ash slag
5026	5	Metal	2	-	Spanner and architectural/machinery fixture or fitting
5026	5	Slag	2	324	Furnace lining material with fuel ash slagged surfaces
5027	5	Other ceramic	1	683	Used 'dozzle' (refractory clay funnel for filling casting moulds)
5027	5	Slag	7	912	Fuel ash slag
5028	5	Metal	1	-	Possible broken off end of an ingot
5028	5	Slag	4	642	Fuel ash slag
5029	5	Slag	7	720	Fuel ash slag

Context	Phase	Material	No.	Wt. (g)	Description
5030	5	Metal	1	-	Bar
5030	5	Slag	8	1032	Fuel ash slag
5072	5	Metal	7	-	Broken engineer's file, possible bracket, fragment of bar and four discs of plate metal

Phases: 0 = early made ground; 1 = late-18th-/early-19th-century; 2 and 3 = late-19th/early-20th century; 4 uncertain; 5 = 20th century

6.7.3 The metal items in the assemblage include recognisable items, such as hand tools (spanners, pliers and files), along with pieces of what appear to be structural or possibly machinery fixtures and fittings. There are also a few fragments of what may be waste sheet metal off-cuts, including the metal discs from made ground 5072. It is not known whether the pieces of sheet metal are waste offcuts from items being manufactured at the site, or scrap metal bought in for recycling.

6.7.4 It is interesting that two of the 11 spanners, and one of the four halves of pliers have the brand mark 'Gordon Tools', Sheffield. The halves of pliers suggest that these were waste from production or assembly. Gordon Tools operated at the Assam Works (located on the corner of Carr Lane and Rockingham Street, on the western side of the Site) from the 1950s to the early 1970s (Grace's Guide).

6.7.5 The fragments of broken crucibles in the assemblage all appear to be from used steelmaking crucibles. Almost all of the crucible lids also show signs of being used, although a small number from made ground deposits 4344 and 4345 appear to have possibly been fired but unused.

6.7.6 Other refractory materials include fragments of firebrick, many of which have areas of vitrified and slagged surfaces (see above, **Ceramic building material**). The surface of the slag on the fragments suggests that it is fossil fuel ash derived. There is one fragment of what looks like a type of refractory stone (ganister) from made ground 3008, and this also has a fuel ash type slag adhering to its surface. Ganister was commonly used in Sheffield for lining cementation and Bessemer furnaces. References to the site in the trade directories suggest that cementation furnaces were present there in the mid-1830s.

6.8 Organics

6.8.1 This category includes fragments of textile and leather (see **Appendix 3**). Two small bundles of textile were found. One from wall 4123 comprises brown close-woven cloth; this is crumpled and torn, but there are no definitive signs that it belonged to a garment. The bundle from crucible furnace 4200 consists of fragment in a coarse mesh weave mixed with twisted 'ribbons' of woven cloth.

6.8.2 Three small strips of leather were recovered from wall 4123. All are short lengths, ranging in width from 20 mm to 60 mm. The narrowest strip has traces of stitching along both edges, while the widest strip has a pair of perforations at the single surviving end. The strips are of uncertain origin, but appear unlikely to represent items of personal apparel (belts, etc).

6.9 Worked bone

6.9.1 There is one worked bone object, a scale handle blank, recovered from demolition layer 4156. Such objects are ubiquitous across the industrial centre of Sheffield (see also Animal Bone, below). Another possible handle blank was found during the evaluation, as well as a bone point.

6.10 Animal bone

6.10.1 Animal bone was recovered from three contexts, all in Areas 1 and 2, all either made ground or demolition deposits. Identifiable species comprise cattle and sheep, and the bones include one sawn offcut (with a very abraded cut end) from a cattle metapodial, almost certainly representing the debris from cutlery handle manufacture (see also Worked Bone, above). Another metapodial offcut was found during the evaluation.

6.11 Marine shell

6.11.1 This category includes consumption waste (two oyster shells, from made ground and crucible furnace 4200 respectively) and manufacturing waste (six offcuts of mother-of-pearl from button manufacture, from two made ground deposits in Areas 1 and 2) (see **Appendix 3**). As for the better-known Birmingham button industry (White 1977), button-making in Sheffield is likely to have used imported shells from various far-flung sources. The waste material seen here comprises fragments of cut shell, all showing the removal of multiple circular blanks (Bevan *et al.* 2009, fig. 8.7). Pearl button manufacture in Sheffield, Birmingham and elsewhere in Britain declined from the 1850s. The Sheffield button-making industry is not as well documented as that in Birmingham, and apparently operated on a much smaller scale. Similar shell offcuts have been found in small quantities across the industrial centre of Sheffield (eg, Bell 2009; Wessex Archaeology 2019b).

6.12 Other finds

6.12.1 Other finds comprise very small quantities of plaster from staircase 4210 (monochrome, some pink-washed), and a small group of electrical fittings (ceramic/synthetic light switches, etc) from wall 1011.

6.13 Conservation

6.13.1 Objects in potentially unstable condition, and therefore possibly in need of conservation treatment, comprise the metalwork, fibre and leather. The ironwork in particular is in poor condition and heavily corroded. The metalwork is currently packed in as stable a condition as possible, in airtight polythene tubs with drying agent (silica gel). The leather is packed waterlogged, in airtight plastic tubs. The fibre is dry and is packed in an airtight plastic tub with buffering silica gel. Both leather and fibre are stored in dark conditions.

7 ENVIRONMENTAL EVIDENCE

7.1 Introduction

7.1.1 Four bulk sediment samples were taken and processed. Three of the samples (from contexts 4044, 4058 and 4198) were taken from tertiary and demolition contexts. The remaining sample primarily comprised degraded brick from trough 4126 associated with an unknown hot process.

7.2 Aims and methods

7.2.1 The size of the bulk sediment samples varied between 7 and 39 litres, and on average were around 18.5 litres. The samples were processed by standard bucket flotation methods; the flot retained on a 0.25 mm mesh, residues fractionated into 5.6 mm and 1 mm fractions. The coarse fractions (>5.6 mm) were sorted by eye and discarded. The environmental material extracted from the residues was added to the flots. The flots and fine residue fractions were scanned using a stereo incident light microscopy (Leica MS5 microscope) at magnifications of up to x40. Different bioturbation indicators were considered, including the percentage of roots, the abundance of modern seeds and the presence of mycorrhizal fungi

sclerotia (eg, *Cenococcum geophilum*) and animal remains, such as burrowing snails (*Cecilioides acicula*), or earthworm eggs and insects, which would not be preserved unless anoxic conditions prevailed on site. The preservation and nature of the charred plant and wood charcoal remains was recorded.

7.3 Results

7.3.1 The flots from the bulk sediment samples were of variable volume (**Appendix 4**). Small numbers of roots and modern seeds were indicative of little stratigraphic movement and low possibility of contamination, however the origin of three of the samples from tertiary and demolition contexts indicates that the contents of these samples are not chronologically secure. Environmental evidence comprised fragments of wood charcoal and uncharred wood, preserved in generally small quantities. No other environmental evidence was preserved in the bulk sediment samples. A large proportion of the flots was composed of coal; smaller amounts of hammerscale and slag were also present.

7.4 Discussion

7.4.1 The lack of charred plant remains from the samples taken suggests no plant processing activities have taken place on the site. The small quantity of wood charcoal recovered is unsuitable for further analysis. The majority of the fuel at the site seems to have been coal, consistent with the modern chronology of the deposits.

7.4.2 Samples 4001, 4002 and 4004 were obtained from chronologically insecure contexts and should not be retained. Sample 4003 (from brick trough 4126) did not contain any significant material; the hammerscale identified within this sample was present in small quantities consistent with an industrial metalworking site but not suggestive of a focus of a specific activity.

8 STATEMENT OF POTENTIAL

8.1 Stratigraphic potential

8.1.1 The full stratigraphic potential of the results has been fulfilled by the description given above. There is no potential for further stratigraphic analysis of the results of the mitigation excavation to fulfil the aims of the project.

8.2 Finds potential

Industrial

8.2.1 The assemblage of slag-like-residues, metal objects and refractory materials, and also grindstones, is precisely what one might expect to find on a former steel manufacturing site of the 19th- to 20th-century period in Sheffield. They can provide general information on the industrial processes represented, but should be considered as supporting the information gleaned from the documentary sources rather than adding significantly to it. The only possibly significant material in the assemblage (a group of name-branded tools from a company based in the later 20th century at the Assam Works on Rockingham Street) was recovered from a demolition deposit which means that its archaeological potential is limited. The brand-marked spanners and pliers are nevertheless of local interest.

8.2.2 Other industrial debris comprises a few fragments of bone handle-making and shell button-making waste. In neither case do the quantities recovered suggest on-site production, and these fragments in any case could have been redeposited from elsewhere.

Domestic refuse

8.2.3 This material (pottery, vessel glass, clay pipe) came largely from a series of made ground deposits in Area 3. Spot dates suggest that despite the stratigraphic sequence, the deposits cannot be separated chronologically on the basis of datable finds, and it is likely that these were introduced to the site from refuse dumped elsewhere. The extent of residuality is one of the most striking aspects of early modern assemblages in Sheffield, and was probably the result of the deliberate reuse of domestic refuse in the preparation of sites for building work. Pottery assemblages, for example, often include substantial amounts of material which owe little to activity on the sites themselves but rather relates to a process of large-scale redistribution and redeposition of material drawn from across the city (Cumberpatch 2005).

Recommendations and proposed methodologies for analysis

8.2.4 Given the very limited potential of the finds assemblage, only limited analysis is proposed. The pottery should be submitted to a specialist in post-medieval pottery from Sheffield to confirm if the chronology of the assemblage can be refined. Otherwise, the information presented in this report can be adapted for incorporation in the publication report.

Conservation

8.2.5 On the basis of the condition of the metal objects, their nature, date range and provenance, no conservation work in terms of cleaning and/or stabilization is proposed. It is proposed that all identifiable objects (other than nails, or miscellaneous bar fragments) are photographed to create a basic archive record for this material type, for which selective retention is proposed (see **Appendix 6**, Selection Strategy).

8.2.6 No further conservation treatment is proposed for the leather or fibre, which have a negligible archaeological value and no further research potential, and these items are not recommended for retention (see **Appendix 6**, Selection Strategy).

8.3 Environmental potential

8.3.1 The environmental assemblages have little potential and require no further analysis. The environmental materials are recommended for discard once this report has been accepted.

8.4 Documentary records

8.4.1 Some documentary research has already been performed to enhance the historical background of the archaeological results. However, the crucible furnaces from Area 4 were an unexpected find late in the work and further documentary research is warranted on these furnaces, particularly to establish their relationship with the Bailey Lane works. This research should examine trade directories, and illustrative sources should be sought including Britain from Above aerial photographs. Illustrative sources should also be sought for the crucible furnaces adjacent to Carr Lane, particularly with regard to their set-back arrangement, and to clarify construction phases across the site.

8.4.2 An outline of the results of standing building recording on Bailey Lane by Wardell Armstrong should be integrated into the narrative of the below ground excavations.

8.5 Summary of potential

8.5.1 The results of the project add to the growing corpus of information about Sheffield metal trades, in particular the form, arrangement and chronology of crucible furnaces, but also with valuable information about chimneys, exhaust systems and attendant heat exchangers,

9.6 Management structure

9.6.1 Wessex Archaeology operates a project management system. The team will be headed by a Project Manager, who will assume ultimate responsibility for the implementation and execution of the project specification as outlined in the Updated Project Design, and the achievement of performance targets, be they academic, budgetary, or scheduled.

9.6.2 The Project Manager may delegate specific aspects of the project to other key staff, who will both supervise others and have a direct input into the compilation of the report. They may also undertake direct liaison with external consultants and specialists who are contributing to the publication report, and the museum named as the recipient of the project archive. The Project Manager will have a major input into how the publication report is written. They will define and control the scope and form of the post-excavation programme.

9.6.3 The Project Manager will be assisted by the Senior Research Manager and the Senior Publications Manager, who will help to ensure that the report meets internal quality standards as defined in Wessex Archaeology's guidelines.

10 STORAGE AND CURATION

10.1 Museum

10.1.1 The archive resulting from the evaluation is currently held at the offices of Wessex Archaeology in Sheffield. Museums Sheffield has agreed in principle to accept the archive on completion of the project, under the accession code TBC. This report will be submitted to South Yorkshire Sites and Monuments Record. An OASIS form under the ID number wessexar1-381925 has been provisionally completed and will be finalized at the time of deposition.

10.2 Preparation of the archive

Physical archive

10.2.1 The archive, which includes paper records, graphics, artefacts and ecofacts, will be prepared following the standard conditions for the acceptance of excavated archaeological material by Museums Sheffield, and in general following nationally recommended guidelines (SMA 1995; CIfA 2014c; Brown 2011).

10.2.2 All archive elements will be marked with the accession number, and a full index will be prepared. The physical archive currently comprises the following:

- 1 box of artefacts, ordered by material type, plus unboxed large objects (grindstones)
- 1 file/document case of paper records

10.2.3 Archive quantities, particularly for finds boxes, are likely to be reduced significantly following implementation of the proposed archive selection strategy (see below).

Digital archive

10.2.4 The digital archive generated by the project (including the evaluation records), which comprises born-digital data (eg, site records, survey data, databases and spreadsheets, photographs and reports), will be deposited with a Trusted Digital Repository, in this instance the Archaeology Data Service (ADS), to ensure its long-term curation.

10.2.5 Digital data will be prepared following ADS guidelines (ADS 2013 and online guidance) and accompanied by full metadata; full details of data collection, documentation and management are given in the project Digital Management Plan (see **Appendix 7**).

10.3 Selection policy

10.3.1 It is widely accepted that not all the records and materials (artefacts and ecofacts) collected or created during the course of an archaeological project require preservation in perpetuity. These records and materials will be subject to *selection* in order to establish what will be retained for long-term curation, with the aim of ensuring that all elements selected to be retained are appropriate to establish the significance of the project and support future research, outreach, engagement, display and learning activities, ie, the retained archive should fulfil the requirements of both future researchers and the receiving museum.

10.3.2 The selection strategy, which details the project-specific selection process, is underpinned by national guidelines on selection and retention (Brown 2011, section 4) and generic selection policies (SMA 1993) and follows CIfA's 'Archive Selection Toolkit'. It should be agreed by all stakeholders (Wessex Archaeology's internal specialists, external specialists, SYAS, Museums Sheffield) and be fully documented in the project archive.

10.3.3 In this instance, the main interest of the site lies in the recovery of evidence for its former use for industrial activity (manufacture of metal tools); however, the potential of the industrial assemblage is lessened by its provenance largely from made ground deposits that are not chronologically distinctive and were probably imported to the site. The element of domestic refuse is of lesser significance and largely comprises material that was probably imported to the site. It therefore duplicates comparable larger, better stratified assemblages from other sites in the region. Nonetheless, this assemblage may have significant research value should dating techniques improve in the future and may facilitate reappraisal of these results.

10.3.4 Detailed selection proposals for the complete project archive (combining evaluation and excavation), comprising finds, environmental material and site records (analogue and digital), are made in the site-specific Selection Strategy (**Appendix 6**). The proposals are summarized here.

Finds

10.3.5 This assemblage is relatively small, not very well stratified, and replicates several other larger and better preserved assemblages from sites in Sheffield's industrial centre. There are few items of intrinsic interest. It is recommended that the pottery is retained at least until the analysis stage (when the selection strategy may be reviewed), with very selective retention proposed for other material categories.

Documentary records

10.3.6 Paper records comprise site registers (other pro-forma site records are digital), drawings and reports (Written Scheme of Investigation, client report). All will be retained and deposited with the project archive.

Digital data

10.3.7 The digital data comprise site records (tablet-recorded on site) in spreadsheet format; finds records in spreadsheet format; survey data; photographs; reports. All will be deposited, although site photographs will be subject to selection to eliminate poor quality and duplicated images, and any others not considered directly relevant to the archaeology of the site.

10.4 Security copy

10.4.1 In line with current best practice (eg, Brown 2011), on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardized version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

10.5 OASIS

10.5.1 An OASIS online record (http://oasis.ac.uk/pages/wiki/Main) has been initiated, with key fields (wessexar1-381925). A .pdf version of the final report submitted. Subject to any contractual requirements on confidentiality, copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service ArchSearch catalogue.

11 COPYRIGHT

11.1 Archive and report copyright

11.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the *Copyright, Designs and Patents Act* 1988 with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the *Copyright and Related Rights Regulations* 2003. In some instances, certain regional museums may require absolute transfer of copyright, rather than a licence; this should be dealt with on a case-by-case basis.

11.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research or development control within the planning process.

11.2 Third party data copyright

11.2.1 This document and the project archive may contain material that is non-Wessex Archaeology copyright (eg, Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the conditions of *the Copyright, Designs and Patents Act* 1988 with regard to multiple copying and electronic dissemination of such material

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Grace's Guide https://www.gracesguide.co.uk/Gordon_Tools

Old Maps: http://www.old-maps.co.uk/index.html

Picture Sheffield: www.pictureshеffield.com

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1736 Gosling plan of Sheffield

1771 Fairbank plan of Sheffield

1793 Fairbank plan of several buildings lots in Broad Lane (Sheffield Archives ref: SheS 1546s)

1797 Fairbank plan of Sheffield

1799 Fairbank plan of several buildings lots in Bailey Lane (Sheffield Archives ref: SheS 1667s Fairbank 1799)

1808 Fairbank plan of Sheffield (available: https://www.pictureshеffield.com/maps.php?file=018)

1822 Fairbank plan of buildings lots in Bailey Lane

1823 Leather plan of Sheffield

1831 Fairbank plan of Sheffield Estate of the late Thomas Holy Esqr (Sheffield Archives ref: MD7160/1)

1834 Fairbank sketch plans of workshops (Sheffield Archives ref: M.B. 392)

1838 map of Sheffield published in White's History and Directory of Yorkshire (available https://www.pictureshеffield.com/maps.php?file=018)

1853 Ordnance Survey map

1890 Ordnance Survey map

1905 Ordnance Survey map

1923 Ordnance Survey map

1935 Ordnance Survey map

1954 Ordnance Survey map

1964 Ordnance Survey map

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1814–15 The Wardle & Bentham trade directory

1834 The Pigot trade directory

1838 White's History and Directory of Yorkshire (available https://www.pictureshеffield.com/maps.php?file=018)

1854 Sheffield Directory

1865 Sheffield Directory

APPENDICES

Appendix 1: Context list

Areas 1 and 2

Context	Type	Category	Fill of/Filled with
4001	**Layer**	**Made ground**	**n/a**
Light yellowish brown silty sand with course gravel and broken sandstone inclusions			
4002	**Layer**	**Made ground**	**n/a**
Mid-orange brown silty sand with 3% industrial waste, 3%broken bricks, 4 % broken sandstone, 1% bitumen inclusions. Archaeological components: Charcoal,			
4003	**Layer**	**Made ground**	**n/a**
Dark blackish brown silty sand with 8% broken concrete and sandstone, 4% charcoal inclusions			
4004	**Layer**	**Made ground**	**n/a**
Mid-purple brown ash			
4005	**Layer**	**Made ground**	**n/a**
Mid-greyish brown sandy silt with common broken bricks and wood and cement inclusions			
4006	**Masonry**	**Surface**	**n/a**
Linear surface aligned N–S with straight sides and a flat base. Constructed from concrete (very dirty). Maximum height: 0.12 m.			
4007	**Masonry**	**Inspection chamber lid**	**n/a**
Rectangular inspection chamber lid aligned E-W with straight sides and a flat base. Constructed from metal. Maximum height: 0.17 m.			
4008	**Masonry**	**Inspection chamber**	**n/a**
Rectangular inspection chamber aligned E-W with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.20 m.			
4009	**Masonry**	**Drain**	**n/a**
Circular drain with straight sides and an unknown base. Constructed from cement.			
4010	**Masonry**	**Base**	**n/a**
Rectangular base with unknown sides and a flat base. Constructed from not sure, cement maybe and bonded with light material, unknown. Maximum height: 0.03 m.			
4011	**Group**	**Machine pit**	**n/a**
Machine pit associated with floor surface 4006 and other structures for example 4010, 4009, 4012. What type of machine or purpose this pit had is unclear. Group components: 4053, 4054, 4055, 4056			
4012	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N-S with unknown sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.05 m.			
4013	**Masonry**	**Metal pipe**	**n/a**
Linear metal pipe. Constructed from metal and bonded with black ash mortar.			
4014	**Masonry**	**Foundation**	**n/a**
Unknown foundation aligned N-S with irregular sides and an irregular/undulating base. Constructed from very dirty concrete with sandstone inclusions. Maximum height: 0.17 m.			
4015	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.32 m.			
4016	**Masonry**	**Stanchion?**	**n/a**
Possible irregular stanchion with straight sides and an unknown base. Constructed from metal. Maximum height: 1.10 m.			
4017	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.30 m.			
4018	**Masonry**	**Surface**	**n/a**
Irregular surface with straight sides and a flat base. Constructed from concrete. Maximum height: 0.13 m.			
4019	**Masonry**	**Wall**	**n/a**

Context	Type	Category	Fill of/Filled with
Linear wall aligned E–W with convex sides and an unknown base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 2.00 m.			
4020	**Masonry**	**Girder**	**n/a**
Linear girder aligned N–S with straight sides and a flat base. Constructed from iron girder and bonded with black ash mortar. Maximum height: 0.20 m.			
4021	**Masonry**	**Girder**	**n/a**
Linear girder aligned N–S with straight sides and a flat base. Constructed from iron girder and bonded with black ash mortar at north end. Maximum height: 0.21 m.			
4022	**Masonry**	**Wall**	**n/a**
Sub-rectangular wall with straight sides and a flat base. Constructed from red brick, unfrogged and bonded with black ash mortar. Maximum height: 0.25 m.			
4023	**Masonry**	**Surface**	**n/a**
Rectangular surface with straight sides and a flat base. Constructed from concrete. Maximum height: 0.23 m.			
4024	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned E–W with stepped sides and a flat base. Constructed from red brick, mix of frogged stamped Robinson Sheffield and unfrogged until stamped. and bonded with black ash mortar. Maximum height: 2.30 m.			
4025	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned N–S with straight sides. Constructed from concrete slab. Maximum height: 0.12 m.			
4026	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N–S with straight sides and a flat base. Constructed from red brick and bonded with one course visible, header bond. Maximum height: 0.08 m.			
4028	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E–W with straight sides and an unknown base. Constructed from red brick, unfrogged and bonded with black ash mortar. Maximum height: 0.70 m.			
4029	**Masonry**	**Stone block**	**4031**
Rectangular stone block with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.06 m.			
4030	**Masonry**	**Drainpipe**	**n/a**
Linear drainpipe aligned E–W with concave sides and a concave base. Constructed from iron.			
4031	**Cut**	**Uncategorized**	**4020, 4029**
Rectangular uncategorized with steep, straight sides and a flat base. Width: 0.23 m. Depth: 0.06 m.			
4032	**Masonry**	**Foundation**	**n/a**
Sub-rectangular foundation aligned N–S with straight sides and an irregular/undulating base. Constructed from concrete. Maximum height: 0.18 m.			
4033	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick, firebrick and sandstone and bonded with black ash mortar. Maximum height: 1.10 m.			
4034	**Masonry**	**Foundation**	**n/a**
Rectangular foundation with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.21 m.			
4035	**Masonry**	**Sill**	**n/a**
Rectangular sill with straight sides and a flat base. Constructed from concrete and bonded with bonded to bricks with black ash mortar. Maximum height: 0.15 m.			
4036	**Masonry**	**Surface**	**n/a**
Rectangular surface aligned N–S with unknown sides and an unknown base. Constructed from concrete. Maximum height: 0.05 m.			
4037	**Masonry**	**Drain**	**n/a**
Unknown drain with concave sides and a concave base. Constructed from clay.			
4038	**Masonry**	**Wall**	**n/a**
Linear wall aligned E-W with straight sides and a flat base. Constructed from red brick and one course of sandstone and bonded with black ash mortar. Maximum height: 1.10 m.			
4039	**Masonry**	**Wall**	**n/a**

Context	Type	Category	Fill of/Filled with
Rectangular wall with straight sides and a flat base. Constructed from red brick machine made and bonded with black ash mortar. Maximum height: 0.88 m.			
4040	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned N–S with irregular sides and an unknown base. Constructed from poured concrete slab. Maximum height: 0.08 m.			
4041	**Masonry**	**Surface**	**n/a**
Irregular surface aligned N–S with unknown sides and an unknown base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.20 m.			
4042	**Masonry**	**Stanchion**	**n/a**
Irregular stanchion with straight sides and an unknown base. Constructed from metal and bonded with black ash mortar. Maximum height: 0.07 m.			
4043	**Masonry**	**Foundation**	**n/a**
Rectangular foundation aligned E–W with straight sides and an unknown base. Constructed from sandstone. Maximum height: 0.85 m.			
4044	**Layer**	**Tertiary fill**	**n/a**
4045	**Masonry**	**Wall**	**n/a**
L-shaped wall aligned N–S with straight sides and an unknown base. Constructed from red brick, sandstone and bonded with black ash mortar. Maximum height: 1.00 m.			
4046	**Masonry**	**Wall**	**n/a**
Linear wall with irregular sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.43 m.			
4047	**Masonry**	**Surface**	**n/a**
Irregular surface with irregular sides and an unknown base. Constructed from concrete (dirty) and bonded with black ash mortar. Maximum height: 0.08 m.			
4048	**Masonry**	**Surface**	**n/a**
Linear surface aligned N–S with irregular sides and a sloping base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.06 m.			
4049	**Layer**	**Layer**	**n/a**
4050	**Masonry**	**Barrel Arch Vault**	**n/a**
Barrel arch vault. Maximum height: 0.70 m.			
4051	**Masonry**	**Wall**	**n/a**
Unknown wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.40 m.			
4052	**Masonry**	**In-fill structure**	**n/a**
Linear in-fill structure aligned N–S with straight sides and an irregular/undulating base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.30 m.			
4053	**Masonry**	**Wall**	**n/a**
L-shaped wall aligned N–S with straight sides and an unknown base. Constructed from red brick, machine made and bonded with black ash mortar. Maximum height: 0.51 m.			
4054	**Masonry**	**Wall**	**n/a**
Unknown wall aligned N–S with straight sides and a flat base. Constructed from concrete. Maximum height: 0.51 m.			
4055	**Masonry**	**Foundation**	**n/a**
Linear foundation with unknown sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.02 m.			
4056	**Masonry**	**Surface**	**n/a**
Sub-circular surface with unknown sides and an unknown base. Constructed from poured concrete.			
4057	**Layer**	**Made ground**	**4011**
Might greyish brown sand with majority is mixed gravel, bricks inclusions			
4058	**Layer**	**Made ground**	**4011**
Light yellowish brown clay with common gravel (7%), broken red brick and sandstone inclusions. Archaeological components: Metal objects and sparkling plug			
4059	**Layer**	**Made ground**	**4011**
Mid-purple brown sandy silt with 3% charcoal, 2% gravel inclusions			
4060	**Masonry**	**Foundation**	**n/a**

Context	Type	Category	Fill of/Filled with
Linear foundation aligned E–W with concave sides and an unknown base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.36 m.			
4061	**Masonry**	**Inspection chamber**	**n/a**
Rectangular inspection chamber aligned N–S with straight sides and a flat base. Constructed from metal and bonded with black ash mortar. Maximum height: 0.06 m.			
4062	**Masonry**	**Inspection chamber**	**n/a**
Rectangular inspection chamber aligned N–S with straight sides and an unknown base. Constructed from red brick, machine made and bonded with black ash mortar. Maximum height: 0.72 m.			
4063	**Fill**	**Tertiary fill**	**4062**
Mid-greyish brown gritty sand with gravel, common broken bricks and other demolition rubble inclusions. Archaeological components: Metal			
4064	**Masonry**	**Drain**	**n/a**
Linear drain with concave sides and a concave base. Constructed from ceramic and bonded with black ash mortar.			
4065	**Masonry**	**Flue**	**n/a**
Linear flue aligned N–S with convex sides and an unknown base. Constructed from red brick, 2% firebrick and bonded with black ash mortar. Maximum height: 0.58 m.			
4066	**Masonry**	**Flue**	**n/a**
Linear flue aligned N–S with convex sides and an unknown base. Constructed from firebrick and bonded with black ash mortar. Maximum height: 0.20 m.			
4067	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.51 m.			
4068	**Masonry**	**Wall**	**n/a**
L-shaped wall with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.85 m.			
4069	**Masonry**	**Wall**	**n/a**
Wall aligned N–S. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.51 m.			
4070	**Masonry**	**Chimney**	**n/a**
Sub-square chimney with straight sides and a flat base. Constructed from redbrick and bonded with black ash mortar. Maximum height: 0.72 m.			
4071	**Layer**	**Made ground**	**n/a**
Mid-grey brown sandy clay with 7% charcoal, 5% broken bricks fragments inclusions			
4072	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.08 m.			
4073	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and a flat base. Constructed from red brick wall and bonded with black ash mortar. Maximum height: 0.94 m.			
4074	**Masonry**	**Sill**	**n/a**
Linear sill aligned E–W with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.20 m.			
4075	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and a flat base. Constructed from red brick, machine made and bonded with lime mortar. Maximum height: 0.38 m.			
4076	**Masonry**	**Wall**	**4077**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.80 m.			
4077	**Cut**	**Construction cut**	**4076, 4078**
Construction cut with moderate, concave sides. Length: >0.40 m. Depth: 0.24 m.			
4078	**Fill**	**Made ground**	**4077**
Dark blackish brown silty sand with common charcoal and industrial waste material inclusions			
4079	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an irregular/undulating base. Constructed from red brick wall and bonded with black ash mortar. Maximum height: 0.48 m.			

Context	Type	Category	Fill of/Filled with
4080	**Layer**	**Made ground**	**n/a**
Light greyish brown mixed with crushed brick, charcoal inclusions			
4081	**Layer**	**Made ground**	**n/a**
Mid-greyish brown sandy silt with mixed demolition inclusions			
4082	**Masonry**	**Surface**	**n/a**
Irregular surface with straight sides and a flat base. Constructed from dirty concrete mix. Maximum height: 0.40 m.			
4083	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.83 m.			
4084	**Masonry**	**Foundation**	**n/a**
Rectangular foundation with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.24 m.			
4085	**Masonry**	**Foundation**	**n/a**
Rectangular foundation with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.23 m.			
4086	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.70 m.			
4087	**Masonry**	**Wall**	**n/a**
L-shaped wall with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.55 m.			
4088	**Masonry**	**Metal plate**	**n/a**
Linear metal plate aligned E–W. with straight sides and an unknown base. Constructed from metal. Maximum height: 0.08 m.			
4089	**Masonry**	**Foundation**	**n/a**
Sub-rectangular foundation aligned N–S with straight sides and a flat base. Constructed from sandstone. Maximum height: 0.54 m.			
4090	**Masonry**	**Foundation**	**n/a**
Rectangular foundation aligned E–W with unknown sides and an unknown base. Constructed from sandstone. Maximum height: 0.11 m.			
4091	**Layer**	**Filling layer**	**n/a**
Mid-greyish brown sandy silt with common gravel, 5% charcoal inclusions			
4092	**Layer**	**Made ground**	**n/a**
Mid-greyish brown sandy silt with common gravel, 5% charcoal inclusions			
4093	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W. with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.21 m.			
4094	**Masonry**	**Wall**	**n/a**
L-shaped wall with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.30 m.			
4095	**Masonry**	**Structure**	**n/a**
Irregular structure with irregular sides and an irregular/undulating base. Constructed from poured concrete. Maximum height: 0.32 m.			
4096	**Masonry**	**Metal**	**n/a**
Linear metal aligned N–S with straight sides and an unknown base. Constructed from metal. Maximum height: 0.13 m.			
4097	**Masonry**	**Foundation**	**n/a**
Rectangular foundation aligned E–W with straight sides and an unknown base. Constructed from sandstone. Maximum height: 0.24 m.			
4098	**Masonry**	**Foundation**	**n/a**
Linear foundation aligned N–S with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.20 m.			
4099	**Masonry**	**Wall**	**n/a**

Context	Type	Category	Fill of/Filled with
Linear wall aligned N–S with straight sides and an irregular/undulating base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.43 m.			
4100	**Group**	**Chimney**	**n/a**
This group represents in the southern end of the Mitigation area. The outer skins of the chimney are redbrick 4110 and on the inside it has firebrick 4111. Both sit on a foundation 4112 with 4113 surface in the middle. Out of the chimney lie two flues, one going south West and another heading north, at one stage the northern one has been blocked up by firebrick 4114. As only one flue was blocked up it seems they didn't use that one anymore but continued to use the SW flue. Chimney is 1.5 m deep, with 1 m lime mortar foundation 4347. Group components: 4110, 4111, 4112, 4113, 4114, 4115, 4347			
4101	**Group**	**Flue**	**n/a**
This group represents flue coming out of chimney on the west side and heading south West. The flue 4135 attached to the chimney 4100 splits into two flues, one 4164 heading towards SW and the other 4165 towards the south. The flues which are made from Firebrick are lined on the outside by redbrick 4134. In flue 4135 is a metal pipe 4166 running through it. Group components: 4134, 4135, 4164, 4165, 4166, 4167, 4168, 4175			
4102	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with irregular sides and an irregular/undulating base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.36 m.			
4103	**Masonry**	**Drain**	**n/a**
Linear drain aligned N–S with concave sides and a concave base. Constructed from ceramic. Maximum height: 0.14 m.			
4104	**Layer**	**Made ground**	**n/a**
Mid-greyish brown sandy silt with 5% broken bricks, charcoal, inclusions			
4105	**Masonry**	**Surface**	**n/a**
Rectangular surface aligned N–S with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.05 m.			
4106	**Masonry**	**Surface**	**n/a**
Rectangular surface with straight sides and a flat base. Constructed from sandstone and red brick and bonded with black ash mortar. Maximum height: 0.08 m.			
4107	**Masonry**	**Foundation**	**n/a**
Irregular foundation with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.10 m.			
4108	**Masonry**	**Foundation**	**n/a**
Rectangular foundation with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.11 m.			
4109	**Masonry**	**Support**	**n/a**
Rectangular support with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.10 m.			
4110	**Masonry**	**Chimney**	**n/a**
Circular chimney with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.17 m.			
4111	**Masonry**	**Chimney**	**n/a**
Circular chimney with straight sides and an unknown base. Constructed from fire brick and bonded with black ash mortar. Maximum height: 0.99 m.			
4112	**Masonry**	**Surface**	**n/a**
Circular surface with straight sides and an unknown base. Constructed from red brick. and bonded with black ash mortar. Maximum height: 0.08 m.			
4113	**Masonry**	**Surface**	**n/a**
Circular surface with unknown sides and an unknown base. Constructed from fire brick and red brick and bonded with black ash mortar. Maximum height: 0.08 m.			
4114	**Masonry**	**Wall**	**n/a**
Rectilinear wall aligned NW–SE. with straight sides and an unknown base. Constructed from fire brick. and bonded with black ash mortar. Maximum height: 0.81 m.			
4115	**Layer**	**Made ground**	**n/a**

Context	Type	Category	Fill of/Filled with
Black silt with very common fire brick and red brick, common cobbles and gravels. very common ash inclusions			
4116	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned E–W with straight sides and a flat base. Constructed from irregular sandstone blocks and bonded with black ash. Maximum height: 0.30 m.			
4117	**Masonry**	**Surface**	**n/a**
L-shaped surface aligned E–W with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.12 m.			
4118	**Masonry**	**Surface**	**n/a**
Rectangular surface with straight sides and a flat base. Constructed from sandstone block. Maximum height: 0.33 m.			
4119	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface with straight sides and a flat base. Constructed from sandstone blocks and bonded with black ash mortar. Maximum height: 0.40 m.			
4120	**Masonry**	**Girder**	**n/a**
Rectangular girder with straight sides and a flat base. Constructed from iron and bonded with black ash mortar. Maximum height: 0.15 m.			
4121	**Masonry**	**Wall**	**n/a**
L-shaped wall with straight sides and an unknown base. Constructed from 2 skins of unfrogged machine made red bricks running N–S and bonded with black ash mortar. Maximum height: 0.18 m.			
4122	**Masonry**	**Arch**	**n/a**
Rectangular arch aligned E–W with straight sides. Constructed from 4 skins of machine made red brick and bonded with black ash mortar. Maximum height: 0.23 m.			
4123	**Masonry**	**Wall**	**n/a**
Rectangular wall with straight sides. Constructed from machine made red brick. and bonded with lime mortar. Maximum height: 0.23 m.			
4124	**Masonry**	**Surface**	**n/a**
Rectangular surface with straight sides. Constructed from red brick, machine made, unfrogged. and bonded with black ash mortar.			
4125	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.36 m.			
4126	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N–S with straight sides and a flat base. Constructed from red brick machine made, some frogged. and bonded with black ash mortar. Maximum height: 0.14 m.			
4127	**Masonry**	**Trough**	**n/a**
Rectangular trough aligned N–S with straight sides and a flat base. Constructed from mix of firebrick and red brick. single skin laid stretcher. and bonded with black ash mortar. Maximum height: 0.15 m.			
4128	**Masonry**	**Flue**	**n/a**
Rectangular flue with straight sides and an unknown base. Constructed from firebrick 6 courses and bonded with black ash. Maximum height: 0.38 m.			
4129	**Masonry**	**Flue**	**n/a**
Rectangular flue aligned E–W with straight sides and an unknown base. Constructed from firebrick and bonded with black ash mortar. Maximum height: 0.70 m.			
4130	**Masonry**	**Sluice gate**	**n/a**
Irregular sluice gate aligned E–W with straight sides and an unknown base. Constructed from metal. Maximum height: 0.70 m.			
4131	**Masonry**	**Floor surface**	**n/a**
Rectangular floor surface aligned N–S with straight sides and a flat base. Constructed from concrete. Maximum height: 0.10 m.			
4132	**Masonry**	**Block**	**n/a**
Rectangular block aligned E–W with concave sides and an unknown base. Constructed from concrete and bonded with concrete. Maximum height: 0.15 m.			
4133	**Masonry**	**Stone block**	**n/a**
Rectangular stone block aligned N–S with straight sides and a flat base. Constructed from stone. Maximum height: 0.11 m.			

Context	Type	Category	Fill of/Filled with
4134	**Masonry**	**Flue**	**n/a**
Rectangular flue aligned E–W. Constructed from firebrick/redbrick and bonded with black ash mortar.			
4135	**Masonry**	**Flue**	**n/a**
Incomplete flue with 45° bend aligned East to South-West with unknown sides and an unknown base. Constructed from fire brick and bonded with black ash mortar. Maximum height: 1.18 m.			
4136	**Fill**	**Made ground**	**n/a**
Mid-brown, grey mixed with small and mid-size mix of red brick, stone, slate, soil and other debris inclusions. Archaeological components: Glass, metal, pottery, pipes			
4137	**Fill**	**Silt Layer**	**4127**
Red brown fine silt			
4138	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made frogged red brick and bonded with lime mortar. Maximum height: 0.50 m.			
4139	**Masonry**	**Vaulting**	**n/a**
Linear vaulting aligned E–W with concave sides and a flat base. Constructed from machine made red brick and bonded with black ash mortar. Maximum height: 0.30 m.			
4140	**Group**	**Cellar**	**n/a**
Cellar with stairs (blocked up). Main surviving wall runs E–W, with a vaulted ceiling. Stairs and related walls use lime mortar, while the main cellar is all black ash. It is possible that the stairs are a survivor from earlier housing similar to 4150. 4148 is a black silt layer on top of step 4147, it contained a large assemblage of ferrous metal artefacts. Group components: 4138, 4139, 4141, 4142, 4143, 4144, 4145, 4146, 4147, 4148, 4221			
4141	**Masonry**	**Wall**	**n/a**
Curvilinear wall running E–NW with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.50 m.			
4142	**Masonry**	**Vaulting**	**n/a**
Linear vaulting aligned E–W with concave sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.50 m.			
4143	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.50 m.			
4144	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.15 m.			
4145	**Masonry**	**Buttress**	**n/a**
Linear buttress aligned E–W with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.07 m.			
4146	**Masonry**	**Wall**	**n/a**
Linear wall aligned NE–SW with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.14 m.			
4147	**Masonry**	**Step**	**n/a**
Irregular step aligned N–S with unknown sides and an unknown base. Constructed from sandstone flag and bonded with lime mortar.			
4148	**Layer**	**Tertiary fill**	**n/a**
Black silt. Archaeological components: Pot, clay pipe, glass and a very large quantity of ferrous metal			
4149	**Masonry**	**Surface**	**4151**
Rectangular surface aligned N–S with straight sides and a flat base. Constructed from sandstone flags and bonded with black ash mortar bonding, context 4152 as bedding. Maximum height: 0.10 m.			
4150	**Group**	**Building**	**n/a**

Context	Type	Category	Fill of/Filled with
Stairway and dividing wall of terraced housing on site, all lime mortared. Cut by 4151 construction cut of surface 4149 and cut by 4153 construction cut for a modern ceramic drain 4154. It has a set of 4 steps of sandstone curving from the south to the east, and a buttress 4158 which may have acted as a pier for the rest of the steps, likely wooden and removed on demolition. The base rubble layer 4156 likely related to the demolition contained a clay pipe with clear masonic marks. Group components: 4156, 4157, 4158, 4159, 4160, 4161, 4162			
4151	**Cut**	**Construction cut**	**4149, 4152**
Sub-rectangular construction cut with steep, straight sides and a flat base. Length: >3.00 m. Width: >3.00 m. Depth: 0.20 m.			
4152	**Fill**	**Bedding layer**	**4151**
Black silt with clinker and black ash mortar inclusions			
4153	**Cut**	**Construction cut**	**4154**
Linear construction cut with vertical, straight sides and a flat base. Length: 4.00 m. Width: 0.40 m. Depth: 0.20 m.			
4154	**Masonry**	**Drain**	**4153**
Linear drain aligned E–W with convex sides and a concave base. Constructed from 6 inch diameter ceramic drain and bonded with loose rubble. Maximum height: 0.25 m.			
4155	**Layer**	**Made ground**	**n/a**
Yellow grey silty clay with very common lime mortar inclusions			
4156	**Layer**	**Demolition material**	**n/a**
Dark brown clay- silt with common brick and stone rubble inclusions. Archaeological components: Clay pipe (decorated with masonic symbols), pot, cu alloy fragments			
4157	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from sandstone masonry and bonded with lime mortar. Maximum height: 0.90 m.			
4158	**Masonry**	**Pier**	**n/a**
Rectangular pier with straight sides and an unknown base. Constructed from red brick, possibly handmade and bonded with lime mortar. Maximum height: 0.90 m.			
4159	**Masonry**	**Foundation**	**n/a**
Linear foundation aligned N–S with straight sides and an unknown base. Constructed from red brick, possibly handmade and bonded with lime mortar. Maximum height: 0.38 m.			
4160	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from red brick, possibly handmade and bonded with lime mortar. Maximum height: 0.20 m.			
4161	**Masonry**	**Staircase**	**n/a**
Irregular staircase with straight sides and a flat base. Constructed from wedge shaped sandstone flags for steps, red brick, possibly handmade for dividers and bonded with lime mortar. Maximum height: 0.95 m.			
4162	**Masonry**	**Foundation**	**n/a**
Rectangular foundation aligned E–W with straight sides and an unknown base. Constructed from sandstone masonry and bonded with lime mortar. Maximum height: 0.15 m.			
4164	**Masonry**	**Flue**	**n/a**
Unknown flue aligned SW–NW with unknown sides and an unknown base. Constructed from fire brick and bonded with black ash mortar. Maximum height: 0.90 m.			
4165	**Masonry**	**Flue**	**n/a**
Linear flue aligned E–W with unknown sides and an unknown base. Constructed from fire brick and bonded with black ash mortar. Maximum height: 0.86 m.			
4166	**Masonry**	**Metal pipe**	**n/a**
Linear metal pipe aligned N–S with concave sides and a concave base. Constructed from metal and bonded with black ash mortar. Maximum height: 0.37 m.			
4167	**Layer**	**Made ground**	**n/a**
Black silt with very common red brick. very common cobbles and gravels. common ash inclusions			
4168	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red machine brick and bonded with black ash mortar. Maximum height: 0.89 m.			
4169	**Masonry**	**Wall**	**n/a**

Context	Type	Category	Fill of/Filled with
Linear wall aligned N–S. with straight sides and an unknown base. Constructed from red machine brick and bonded with black ash mortar. Maximum height: 1.03 m.			
4170	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red machine brick. and bonded with black ash mortar. Maximum height: 0.13 m.			
4171	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from voussoir firebrick and bonded with black ash mortar. Maximum height: 0.25 m.			
4172	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red machine brick and bonded with black ash mortar. Maximum height: 0.11 m.			
4173	**Masonry**	**Arch**	**n/a**
Linear arch aligned E–W. with straight sides and an unknown base. Constructed from firebrick, voussoir. and bonded with black ash mortar. Maximum height: 0.91 m.			
4175	**Masonry**	**Flue**	**n/a**
Linear flue aligned N–S with straight sides and an unknown base. Constructed from firebrick. and bonded with black ash mortar. Maximum height: 0.65 m.			
4176	**Masonry**	**Flue**	**n/a**
Linear flue aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.41 m.			
4177	**Masonry**	**Wall**	**n/a**
Square wall with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.84 m.			
4178	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.11 m.			
4179	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with unknown sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.18 m.			
4180	**Masonry**	**Block**	**n/a**
Irregular block with irregular sides and an unknown base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.09 m.			
4181	**Masonry**	**Block**	**n/a**
Square block with straight sides and an unknown base. Constructed from sandstone and bonded with lime mortar. Maximum height: 0.12 m.			
4182	**Masonry**	**Wooden beam**	**n/a**
Linear wooden beam with straight sides and a flat base. Constructed from wood. Maximum height: 0.04 m.			
4183	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from redbrick and bonded with black ash mortar. Maximum height: 0.14 m.			
4184	**Masonry**	**Fireplace**	**n/a**
Sub-rectangular fireplace aligned NE-SW with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.14 m.			
4185	**Layer**	**Made ground**	**n/a**
Mid-greyish brown sandy silt with common gravel and small broken bits of sandstone inclusions			
4186	**Masonry**	**Surface**	**n/a**
Incomplete surface aligned E–W with straight sides and a flat base. Constructed from sandstone. Maximum height: 0.05 m.			
4187	**Masonry**	**Wood**	**n/a**
Incomplete wood with irregular sides and an unknown base. Constructed from wood. Maximum height: 0.05 m.			
4188	**Layer**	**Made ground**	**n/a**
Mid-greyish brown silty sand with common gravel inclusions			
4189	**Masonry**	**Foundation**	**n/a**
Irregular foundation with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.08 m.			

Context	Type	Category	Fill of/Filled with
4190	**Masonry**	**Surface**	**n/a**
Irregular surface with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.04 m.			
4191	**Masonry**	**Structure**	**n/a**
Irregular structure with unknown sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.07 m.			
4192	**Masonry**	**Foundation**	**n/a**
Curvilinear foundation aligned NW-SE with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.08 m.			
4193	**Masonry**	**Made ground**	**n/a**
Irregular made ground with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.08 m.			
4194	**Masonry**	**Foundation**	**n/a**
Linear foundation aligned N–S with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.08 m.			
4195	**Masonry**	**Foundation**	**n/a**
Irregular foundation with straight sides and a flat base. Constructed from fire brick and bonded with lime mortar. Maximum height: 0.08 m.			
4196	**Group**	**Uncategorized**	**n/a**
This group number represents a structure contemporary with weight bridge as it's built in the southern wall of it. The structure consists of walls forming a rectangular alcove in southern wall of weight bridge. It's covered with sandstone 4089 and singular metal plate 4088. It's possible it's a foundation for some machinery, the sandstone 4089 has a circulate hole in it. Group components: 4086			
4197	**Fill**	**Secondary fill**	**4224**
Blueish black sandy clay with ash 15% abundant slag/clinker/rubble			
4198	**Layer**	**Tertiary fill**	**n/a**
Dark black ash. Archaeological components: Slag metal files pottery glass			
4199	**Layer**	**Tertiary fill**	**n/a**
Mid-reddish brown gritty sand and rubble with bits of furnace lining. Archaeological components: Metal, crucible debris			
4200	**Group**	**Crucible furnace**	**n/a**
Crucible furnace foundations are 4353 To the west it's butted to an older crucible furnace 4267. The main noticeable difference between the two is the fire pits. The older fire pits are narrower by 4 cm. Additionally the location of a shelf inside the firepits are not the same, the younger having shelving lower in the firepit. Group components: 4204, 4222, 4223, 4224, 4225, 4226, 4227, 4229, 4230, 4231, 4233, 4234, 4236, 4265, 4336, 4353			
4201	**Layer**	**Tertiary fill**	**n/a**
Mid-reddish brown gritty sand and rubble. Archaeological components: Metal			
4202	**Layer**	**Tertiary fill**	**n/a**
Mid-reddish brown gritty sand with rubble inclusions			
4203	**Layer**	**Tertiary fill**	**n/a**
Mid-reddish brown gritty sand with exhaust ash, rubble inclusions			
4204	**Layer**	**Tertiary fill**	**n/a**
Mid-grey brown gritty sand with rubble and furnace lining waste inclusions			
4205	**Layer**	**Tertiary fill**	**n/a**
Mid-reddish brown gritty sand with rubble furnace lining inclusions			
4206	**Cut**	**Construction cut**	**4207, 4208**
Sub-rectangular construction cut. Length: 0.95 m. Width: >0.30 m.			
4207	**Fill**	**Made ground**	**4206**
Black grey silty clay with very common ash and clinker inclusions			

Context	Type	Category	Fill of/Filled with
4208	**Masonry**	**Wall**	**4206**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.40 m.			
4209	**Layer**	**Made ground**	**n/a**
Yellowish brown silty clay with rare stone and brick rubble inclusions			
4210	**Group**	**Staircase**	**n/a**
A brick, stone and lime mortar staircase with an apsidal keeping hole. Some later brick and black ash mortar walls also exist on the southern side. Group components: 4044, 4206, 4212, 4213, 4214, 4215, 4216, 4217, 4218, 4219, 4220			
4211	**Layer**	**Made ground**	**n/a**
Grey brown silty clay with bricks (including 4211a and 4211b), stone rubble, clinker inclusions			
4212	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 1.20 m.			
4213	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made red brick and bonded with black ash mortar. Maximum height: 1.20 m.			
4214	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick machine made and bonded with black ash mortar. Maximum height: 0.20 m.			
4215	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.74 m.			
4216	**Masonry**	**Wall**	**n/a**
Curvilinear wall aligned N–S, bowing east with convex sides and a flat base. Constructed from red brick on edge and bonded with lime mortar. Maximum height: 0.50 m.			
4217	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned N–S with straight sides and a flat base. Constructed from sandstone flag and bonded with lime mortar. Maximum height: 0.05 m.			
4218	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.70 m.			
4219	**Masonry**	**Staircase**	**n/a**
Sub-rectangular staircase aligned N–S with unknown sides and an unknown base. Constructed from sandstone flags and red brick and bonded with lime mortar. Maximum height: 0.35 m.			
4220	**Layer**	**Tertiary fill**	**n/a**
White lime mortar with common brick rubble inclusions			
4221	**Masonry**	**Step**	**n/a**
Linear step aligned E–W with straight sides and a flat base. Constructed from sandstone flag and bonded with lime mortar. Maximum height: 0.05 m.			
4222	**Masonry**	**Furnace**	**n/a**
Linear furnace aligned E-W with straight sides and a flat base. Constructed from mostly handmade red brick and bonded with greyish black ash mortar. Maximum height: 0.84 m.			
4223	**Masonry**	**Crucible bays**	**n/a**
Rectangular crucible bays aligned E–W with straight sides and a flat base. Constructed from handmade red brick and bonded with black ash mortar. Maximum height: 1.20 m.			
4224	**Masonry**	**Grate bar**	**n/a**
Rectilinear grate bar. Constructed from iron rod			
4225	**Masonry**	**Springer**	**n/a**
Springer. Constructed from sandstone and bonded with black ash mortar.			
4226	**Layer**	**Furnace lining**	**n/a**
Dark purple black furnace lining. Archaeological components: Slag			
4227	**Masonry**	**Furnace melting holes**	**n/a**
Incomplete furnace melting holes. Constructed from degraded fire brick, no dimensions as so degraded .			

Context	Type	Category	Fill of/Filled with
4228	**Masonry**	**Springer**	**n/a**
Springer. Constructed from worked sandstone blocks and bonded with ?.			
4229	**Masonry**	**Iron ties**	**n/a**
Iron ties aligned N–S. Constructed from iron tie pins			
4230	**Masonry**	**Iron ties**	**n/a**
Rectangular iron ties. Constructed from metal.			
4231	**Masonry**	**Crucible bays**	**n/a**
Rectangular crucible bays aligned N–S with straight sides and an unknown base. Constructed from handmade red brick and bonded with light grey black ash mortar. Maximum height: 0.77 m.			
4232	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E-W with straight sides and a flat base. Constructed from machine extruded frogged red brick and bonded with sandy cement. Maximum height: 1.20 m.			
4233	**Masonry**	**Buttress**	**n/a**
Rectangular buttress aligned N–S with straight sides and an unknown base. Constructed from machine frogged red brick and bonded with black ash mortar. Maximum height: 1.10 m.			
4234	**Masonry**	**Surface**	**n/a**
Surface aligned E-W. Constructed from flagstone.			
4235	**Masonry**	**Wall**	**n/a**
Rectangular wall with straight sides and an unknown base. Constructed from fire brick and bonded with black ash mortar. Maximum height: 0.42 m.			
4236	**Masonry**	**Wall**	**n/a**
Linear wall aligned E-W with straight sides and a flat base. Constructed from red brick. Maximum height: 1.40 m.			
4237	**Masonry**	**Foundation**	**4240**
Sub-rectangular foundation aligned N–S with straight sides and an unknown base. Constructed from red brick and fire brick and bonded with black ash mortar and cement. Maximum height: 0.18 m.			
4238	**Masonry**	**Wall**	**4240**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made square frogged red brick, roughly broken into half bricks in top course and bonded with black ash mortar. Maximum height: 0.55 m.			
4239	**Masonry**	**Wall or pier**	**4240**
Rectangular wall or pier aligned E–W with straight sides and an unknown base. Constructed from red brick and fire brick on west end, some roughly broken into half bricks and bonded with black ash mortar. Maximum height: 0.26 m.			
4240	**Cut**	**Construction cut**	**4242**
Irregular construction cut Length: 4.10 m. Width: 2.80 m.			
4241	**Layer**	**Made ground**	**n/a**
Mid-yellow silty clay with common stone rubble, rare brick rubble inclusions			
4242	**Group**	**Room**	**n/a**
Room/basement in middle of eastern edge of the mitigation area, not deep. Inspection pit in the middle, thin concrete floor and red brick and black ash mortar walls. unclear usage. Group components: 4240, 4245, 4246, 4249, 4251, 4252, 4253, 4254, 4255, 4256, 4257, 4258, 4259, 4261, 4262			
4243	**Masonry**	**Wall**	**4240**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made red brick and bonded with black ash mortar. Maximum height: 0.26 m.			
4244	**Masonry**	**Wall**	**4240**
Linear wall aligned NW-SE with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.24 m.			
4245	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.24 m.			
4246	**Masonry**	**Wall**	**n/a**

Context	Type	Category	Fill of/Filled with
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made red brick square frogged, some frogs stamped 'Robinson Sheffield' and bonded with black ash mortar. Maximum height: 0.66 m.			
4247	**Masonry**	**Wall**	**4240**
Linear wall aligned NW-SE with straight sides and an unknown base. Constructed from machine made frogged red brick. some has square frogs, and some has oval frogs. and bonded with black ash mortar. Maximum height: 0.50 m.			
4248	**Masonry**	**Wall / pier**	**4240**
Sub-rectangular wall / pier aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.33 m.			
4249	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made red brick and bonded with black ash mortar. Maximum height: 0.26 m.			
4250	**Masonry**	**Floor surface**	**4240**
Irregular floor surface aligned E–W with unknown sides and an unknown base. Constructed from concrete. Maximum height: 0.04 m.			
4251	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red bricks and half bricks and bonded with black ash mortar. Maximum height: 0.20 m.			
4252	**Masonry**	**Wall repair**	**n/a**
Linear wall repair aligned N–S with straight sides and a flat base. Constructed from machine made red brick and bonded with sandy cement. Maximum height: 0.28 m.			
4253	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from machine made red brick, with two ferrous metal pins and bonded with cement. Maximum height: 0.51 m.			
4254	**Masonry**	**Pipe**	**n/a**
Linear pipe aligned E–W with concave sides and a concave base. Constructed from 0.05m diameter ferrous metal pipe and bonded with cement. Maximum height: 0.05 m.			
4255	**Layer**	**Made ground**	**n/a**
Mid-brown grey silt with common clinker, slate chips and brick fragments inclusions			
4256	**Masonry**	**Surface**	**n/a**
L-shaped surface aligned E–W with unknown sides and an unknown base. Constructed from red brick and bonded with black ash mortar.			
4257	**Masonry**	**Plate or pin**	**n/a**
Linear plate or pin aligned E–W with straight sides and an unknown base. Constructed from ferrous metal plate or pin and bonded with 4250 concrete.			
4258	**Masonry**	**Inspection pit**	**n/a**
Rectangular inspection pit aligned NW-SE with straight sides and an unknown base. Constructed from red brick machine made, some square frogged and bonded with black ash mortar.			
4259	**Layer**	**Tertiary fill**	**n/a**
Mid-brown grey silty clay with common angular gravel and brick fragments inclusions			
4260	**Layer**	**Layer**	**n/a**
Dark yellowish brown sandy silt with 7% gravel sand, 4% charcoal inclusions			
4261	**Masonry**	**Surface**	**n/a**
Rectilinear surface aligned E–W then SE–NW with unknown sides and an unknown base. Constructed from red brick and bonded with black ash mortar.			
4262	**Masonry**	**Surface**	**n/a**
Rectilinear surface aligned E–W then SE–NW with straight sides and an unknown base. Constructed from concrete and bonded with n/a.			
4263	**Layer**	**Made ground**	**n/a**
Mid-brown grey silty-clay with common gravel and brick fragments inclusions			
4264	**Masonry**	**Drain**	**n/a**
Linear drain aligned E–W with concave sides and a concave base. Constructed from ceramic pipe and bonded with n/a. Maximum height: 0.22 m.			
4265	**Masonry**	**Wall**	**n/a**

Context	Type	Category	Fill of/Filled with
Irregular wall. Constructed from red brick. Maximum height: 0.15 m.			
4266	**Layer**	**Made ground**	**n/a**
Dark brown sandy silt with gravel, inclusions			
4267	**Group**	**Furnace**	**n/a**
Crucible furnace most likely older than furnace 4200. Group components: 4228, 4232, 4235, 4338, 4339, 4340, 4341			
4268	**Masonry**	**Foundation**	**n/a**
Rectangular foundation aligned E–W with straight sides and an unknown base. Constructed from sandstone. Maximum height: 0.05 m.			
4269	**Group**	**Weighbridge**	**n/a**
U-shaped wall 4083 with 4169 in the southern wall forms a room with its purpose as a weighbridge. There are four sandstone blocks (4085, 4084, 5097, 4268) in the corners of the room with square metal fixings. Additionally is another sandstone block 4098 sticking out of northern wall. Sandstone 4098 is much longer and wider than the others and runs N-S. See sketch			
4270	**Layer**	**Made ground**	**n/a**
Dark grey black silt with common clinker, ash, brick fragments inclusions			
4271	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from machine made red brick with square frogs and bonded with orange cement. Maximum height: 2.50 m.			
4272	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides. Constructed from square frogged red brick and bonded with orange cement. Maximum height: 2.00 m.			
4273	**Masonry**	**Inspection pit**	**n/a**
Inspection pit aligned E–W. Constructed from square frogged red brick and bonded with orange cement. Maximum height: 0.07 m.			
4274	**Masonry**	**Wall or buttress**	**n/a**
Linear wall or buttress aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.19 m.			
4275	**Masonry**	**Base**	**n/a**
Sandstone base aligned E–W. . Maximum height: 0.45 m.			
4276	**Cut**	**Construction cut**	**4241**
Rectangular construction cut. Length: 3.29 m. Width: 2.40 m.			
4277	**Masonry**	**Wall or pier**	**n/a**
Rectangular wall or pier. Constructed from red brick and bonded with lime mortar. Maximum height: 0.10 m.			
4278	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.10 m.			
4279	**Masonry**	**Drain**	**n/a**
Circular drain with straight sides and an unknown base. Constructed from ceramic pipe. Maximum height: 0.18 m.			
4280	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.08 m.			
4281	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.17 m.			
4282	**Masonry**	**Wall**	**n/a**
Wall aligned E–W. Constructed from red brick and bonded with lime mortar. Maximum height: 0.08 m.			
4283	**Masonry**	**Wall**	**n/a**
Wall aligned E–W. Constructed from red brick and small sandstone masonry and bonded with lime mortar. Maximum height: 0.11 m.			
4284	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.36 m.			

Context	Type	Category	Fill of/Filled with
4285	**Masonry**	**Pipe**	**n/a**
Curvilinear pipe aligned N–S with convex sides and a concave base. Constructed from lead pipe. Maximum height: 0.18 m.			
4286	**Masonry**	**Surface**	**n/a**
Irregular surface aligned N–S with concave sides and an unknown base. Constructed from blue ash block, like a brick made from ash and bonded with black ash mortar. Maximum height: 0.14 m.			
4287	**Masonry**	**Surface**	**n/a**
Irregular surface aligned E–W with straight sides and a flat base. Constructed from black ash mortar. Maximum height: 0.06 m.			
4288	**Masonry**	**Wall or foundation**	**n/a**
Wall or foundation aligned E–W. Constructed from sandstone blocks and bonded with lime mortar. Maximum height: 0.11 m.			
4289	**Masonry**	**Base**	**n/a**
Rectangular base aligned E–W with straight sides and an unknown base. Constructed from concrete. Maximum height: 0.09 m.			
4290	**Masonry**	**Pipe**	**n/a**
Linear pipe aligned E–W with concave sides and a concave base. Constructed from ferrous metal pipe (2 pieces). Maximum height: 0.10 m.			
4291	**Layer**	**Surface**	**n/a**
Mid-brown to light yellow black ash mortar, slag and sand			
4292	**Masonry**	**Surface**	**n/a**
Irregular surface with straight sides and a flat base. Constructed from stone setts and bonded with earth and black ash mortar. Maximum height: 0.10 m.			
4293	**Masonry**	**Base**	**n/a**
Rectangular base aligned N–S with unknown sides and an unknown base. Constructed from sandstone block, with slag like surface. Maximum height: 0.03 m.			
4294	**Masonry**	**Base**	**n/a**
Rectangular base aligned N–S with unknown sides and an unknown base. Constructed from sandstone block and bonded with black ash mortar. Maximum height: 0.05 m.			
4295	**Masonry**	**Threshold**	**n/a**
Rectangular threshold aligned E–W with straight sides and an unknown base. Constructed from sandstone block and bonded with n/a. Maximum height: 0.19 m.			
4296	**Layer**	**Surface**	**n/a**
Mid-brown to yellow black ash mortar, slag and sand			
4297	**Masonry**	**Drain**	**n/a**
Rectangular drain with straight sides and an unknown base. Constructed from sandstone capping of a drain and bonded with black ash mortar. Maximum height: 0.22 m.			
4298	**Masonry**	**Surface**	**n/a**
Incomplete surface aligned E–W with straight sides and a flat base. Constructed from concrete poured. Maximum height: 0.19 m.			
4299	**Masonry**	**Wall**	**n/a**
Curvilinear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.84 m.			
4300	**Group**	**Surface**	**n/a**
Surface made mainly of sandstone setts in between red brick walls of differing dates. Two drains are present in the group alongside 4 machine bases. 4348 is an inspection pit underneath. Group components: 4274, 4275, 4277, 4278, 4279, 4280, 4281, 4282, 4283, 4284, 4285, 4286, 4287, 4288, 4289, 4290, 4292, 4293, 4294, 4295, 4297, 4298, 4299, 4348			
4301	**Masonry**	**Foundation**	**n/a**
Incomplete foundation aligned N–S with irregular sides and a flat base. Constructed from sandstone masonry and bonded with black ash mortar. Maximum height: 0.23 m.			
4302	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from sandstone masonry rough and bonded with black ash mortar. Maximum height: 0.95 m.			

Context	Type	Category	Fill of/Filled with
4303	**Masonry**	**Foundation**	**n/a**
Linear foundation aligned N–S with straight sides and a flat base. Constructed from red half bricks and bonded with black ash mortar. Maximum height: 0.19 m.			
4304	**Masonry**	**Foundation**	**n/a**
Irregular foundation aligned E–W with irregular sides and an unknown base. Constructed from red brick, iron girder and sandstone masonry and bonded with black ash mortar. Maximum height: 0.81 m.			
4305	**Masonry**	**Vaulting**	**n/a**
Linear vaulting aligned E–W with concave sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.24 m.			
4306	**Masonry**	**Surface**	**n/a**
Linear surface aligned as a stone floor not applicable. with straight sides and a flat base. Constructed from stone, sandstone and bonded with cement, grey fine. Maximum height: 0.70 m.			
4307	**Masonry**	**Line shafting bush**	**n/a**
Irregular line shafting bush aligned Not applicable with stepped sides and a flat base. Constructed from metal and bonded with fine grained cement. Maximum height: 0.65 m.			
4308	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 1.23 m.			
4309	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from rough sandstone masonry, with red brick repairs and bonded with lime mortar. Maximum height: 1.16 m.			
4310	**Group**	**Stone walls and staircase**	**n/a**
Substantial stone walls 4308-13, near crucible furnace 4200. Reused as crucible air cellar wall. With staircase 4314 and related walls 4315-19 Group components: 4308, 4312, 4313, 4314, 4315, 4316, 4317, 4318, 4319			
4311	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from sandstone masonry and bonded with lime mortar. Maximum height: 0.48 m.			
4312	**Masonry**	**Wall**	**n/a**
Curvilinear wall aligned E–W with straight sides and an unknown base. Constructed from stone dressed masonry and bonded with lime mortar. Maximum height: 0.90 m.			
4313	**Masonry**	**Wall**	**n/a**
Linear wall aligned NE-SW with straight sides and an unknown base. Constructed from sandstone dressed masonry and bonded with lime mortar. Maximum height: 0.80 m.			
4314	**Masonry**	**Staircase**	**n/a**
Curvilinear staircase aligned SW-N with stepped sides and an unknown base. Constructed from sandstone blocks x 6 and bonded with dark made ground and lime mortar. Maximum height: 1.30 m.			
4315	**Masonry**	**Wall**	**n/a**
Curvilinear wall aligned SW–N with straight sides and an irregular/undulating base. Constructed from sandstone dressed masonry and bonded with lime mortar. Maximum height: 0.74 m.			
4316	**Masonry**	**Wall**	**n/a**
Linear wall aligned SW-NE with straight sides and an irregular/undulating base. Constructed from handmade red brick and bonded with lime mortar. Maximum height: 0.88 m.			
4317	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned NW-SE with straight sides and an unknown base. Constructed from red brick machine made square frogged and bonded with black ash mortar. Maximum height: 1.00 m.			
4318	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with lime mortar. Maximum height: 1.20 m.			
4319	**Masonry**	**Wall**	**n/a**
L-shaped wall aligned N–S with straight sides and an unknown base. Constructed from red brick, unfrogged and bonded with lime mortar. Maximum height: 0.29 m.			
4320	**Group**	**Teeming pit**	**n/a**

Context	Type	Category	Fill of/Filled with
Teeming pit serving the crucible furnace 4200 to the north. The pit structure includes various red brick, firebrick and sandstone walls that divide the area into potentially 3 areas for casting the molten steel in the ingots (not present). E-W running wall 4309, comprising redbrick and sandstone, forms the north side. 4309 is abutted by N–S running redbrick and sandstone walls 4321 and 4311 which form the western and eastern boundaries of the teeming pit respectively. A layer of rubble 4327 backfilled this entire area. Group components: 4309, 4311, 4321, 4322, 4323, 4324, 4325, 4331			
4321	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N–S with straight sides and a flat base. Constructed from 5 courses of red brick, unfrogged and sandstone block and bonded with lime mortar. Maximum height: 0.57 m.			
4322	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface with straight sides and an irregular/undulating base. Constructed from fractured brick and stone.			
4323	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N–S with straight sides and a flat base. Constructed from red brick, unfrogged and bonded with lime mortar. Maximum height: 0.30 m.			
4324	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E–W with straight sides and a flat base. Constructed from red brick, unfrogged and bonded with lime mortar. Maximum height: 0.08 m.			
4325	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N–S with straight sides and a flat base. Constructed from red brick unfrogged and bonded with lime mortar. Maximum height: 0.36 m.			
4326	**Layer**	**Made ground**	**n/a**
Mid-red, purple clay with small and mid-size red clay stones inclusions			
4327	**Layer**	**Made ground**	**n/a**
Mid-brown, grey sandy silt with small stones, crushed brick inclusions. Archaeological components: Pottery, clay pipe, small animal bone			
4328	**Layer**	**Made ground**	**n/a**
Bright yellow with white streaks clay			
4329	**Layer**	**Made ground**	**n/a**
Mid-brown, grey sandy silt with crushed brick, small stones, fine gravel inclusions			
4330	**Layer**	**Made ground**	**n/a**
Dark yellow sandy clay with small stones inclusions			
4331	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E–W with straight sides and a flat base. Constructed from firebrick, 2 courses to skins. and bonded with lime mortar. Maximum height: 0.11 m.			
4332	**Masonry**	**Vault**	**n/a**
Linear vault aligned E–W with concave sides and an irregular/undulating base. Constructed from red brick, standard machine made, not custom vaulting form and bonded with black ash mortar. Maximum height: 0.51 m.			
4333	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.73 m.			
4334	**Masonry**	**Step**	**n/a**
Linear step aligned N–S with unknown sides and an unknown base. Constructed from sandstone blocks and bonded with black ash mortar. Maximum height: 1.85 m.			
4335	**Masonry**	**Surface**	**n/a**
Sub-square surface with irregular sides and an unknown base. Constructed from sandstone setts and bonded with black ash mortar. Maximum height: 0.10 m.			
4336	**Masonry**	**Iron bars**	**n/a**
Linear iron bars and a flat base. Constructed from metal.			
4338	**Masonry**	**Wall**	**n/a**
Curvilinear wall aligned NW–SW with straight sides and an unknown base. Constructed from fire brick and red brick and bonded with black ash mortar.			
4339	**Masonry**	**Furnace lining**	**n/a**

Context	Type	Category	Fill of/Filled with
Sub-oval furnace lining with concave sides and an irregular/undulating base. Constructed from furnace lining.			
4340	**Masonry**	**Iron grate**	**n/a**
Sub-rectangular iron grate with straight sides and a flat base. Constructed from iron grid bars.			
4341	**Masonry**	**Iron grate**	**n/a**
Rectangular iron grate aligned E-W with straight sides and a flat base. Constructed from iron bar.			
4342	**Fill**	**Tertiary fill**	**4267**
Dark greyish brown sandy silt with broken bricks, slag, furnace lining, inclusions. Archaeological components: Glass, metal,			
4343	**Masonry**	**Stanchion**	**n/a**
Irregular stanchion with irregular sides and an irregular/undulating base. Constructed from concrete mixed. Maximum height: 0.32 m.			
4344	**Layer**	**Tertiary fill**	**n/a**
Dark grey brown sandy silt with fine gravel, with medium stones inclusions. Archaeological components: Crucible lids, ingot mould, pottery, clay pipe, slag			
4345	**Layer**	**Made ground**	**n/a**
Dark grey, brown sandy silt with medium and fine gravel with 5% crushed brick inclusions. Archaeological components: Crucible lids, pottery, metal			
4346	**Layer**	**Natural**	**n/a**
Yellowish grey silty clay silty clay with 15% unsorted grit inclusions. the layer is substantially mixed with gravel inclusions			
4347	**Masonry**	**Made ground**	**n/a**
Circular made ground with straight sides and a flat base. Constructed from lime mortar with gravel and brick fragments. Maximum height: 1.10 m.			
4348	**Masonry**	**Inspection pit**	**n/a**
Rectangular inspection pit with straight sides and an unknown base. Constructed from machine made red brick and bonded with black ash mortar. Maximum height: 2.00 m.			
4349	**Masonry**	**Flue**	**n/a**
Curvilinear flue aligned S–W with straight sides and an unknown base. Constructed from fire brick and bonded with lime mortar. Maximum height: 1.50 m.			
4350	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.20 m.			
4351	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from sandstone masonry and bonded with lime mortar. Maximum height: 0.50 m.			
4352	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from sandstone masonry and bonded with lime mortar. Maximum height: 0.80 m.			
4353	**Masonry**	**Foundation**	**n/a**
Unknown foundation aligned E–W with unknown sides and an unknown base. Constructed from sandstone masonry.			
4354	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 2.00 m.			
4355	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.40 m.			
4356	**Masonry**	**Passage**	**n/a**
Linear passage aligned N–S with straight sides and an unknown base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.40 m.			
4357	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 2.50 m.			
4358	**Masonry**	**Tank**	**n/a**

Context	Type	Category	Fill of/Filled with
Incomplete tank aligned E–W with straight sides and an unknown base. Constructed from red brick and steel piping and bonded with black ash mortar. Maximum height: 1.00 m.			
4359	**Masonry**	**Pier**	**n/a**
Sub-rectangular pier with straight sides and an unknown base. Constructed from red brick, with bullnose corners and bonded with black ash mortar. Maximum height: 2.00 m.			
4360	**Masonry**	**Foundation**	**n/a**
Linear foundation aligned E–W with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 0.70 m.			
4361	**Masonry**	**Tunnel**	**n/a**
Linear tunnel aligned N–S with straight sides and a flat base. Constructed from unfrogged red brick and bonded with black ash mortar. Maximum height: 2.00 m.			
4362	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from sandstone masonry and bonded with lime mortar or dry. Maximum height: 3.00 m.			

Area 3

Context	Type	Category	Fill of/Filled with
3000	**Masonry**	**Surface**	**n/a**
Rectangular surface aligned N–S with straight sides and a flat base. Constructed from concrete slab, and steel reinforced concrete ring beam. Maximum height: 0.32 m.			
3001	**Masonry**	**Surface**	**n/a**
Rectangular surface aligned N–S with straight sides and a flat base. Constructed from concrete, not reinforced. Maximum height: 0.09 m.			
3002	**Masonry**	**Wall**	**n/a**
Rectilinear wall aligned N–S with straight sides and a flat base. Constructed from red brick and bonded with lime mortar. Maximum height: 0.08 m.			
3003	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned N–S with straight sides and a flat base. Constructed from sandstone flags and bonded with lime mortar. Maximum height: 0.07 m.			
3004	**Masonry**	**Possible structure**	**n/a**
Linear possible structure aligned N–S with irregular sides and a flat base. Constructed from red brick and bonded with earth. Maximum height: 0.08 m.			
3005	**Layer**	**Made ground**	**n/a**
Light yellow white sand and silt with sub-angular gravel common inclusions			
3006	**Fill**	**Made ground**	**n/a**
Dark grey brown sandy clay with common lime mortar, common brick fragments, rare gravel inclusions			
3007	**Fill**	**Made ground**	**n/a**
Mid-yellow clay silt with sub-angular gravel and cobbles common inclusions			
3008	**Fill**	**Made ground**	**3020**
Mid-brown sandy clay with common brick fragments and stone rubble inclusions			
3009	**Layer**	**Bedding layer**	**n/a**
Mid-brown silty clay with common lime mortar, rare brick fragments inclusions			
3010	**Layer**	**Made ground**	**n/a**
Mid-yellow sandy clay with common stone rubble my rare brick fragments inclusions			
3011	**Layer**	**Made ground**	**n/a**
Dark brown grey silt-sand with common brick fragments , rare lime mortar inclusions			
3012	**Layer**	**Made ground**	**n/a**
Dark brown clay sand with rare stone rubble and brick fragments inclusions			
3013	**Layer**	**Made ground**	**n/a**
Light grey brown clay with common stone rubble inclusions			
3014	**Layer**	**Made ground**	**n/a**
Mottled mid-brown, orange and yellow silty clay with rare gravel inclusions			
3015	**Layer**	**Made ground**	**n/a**
Light grey yellow silty clay with rare stone rubble inclusions			

Context	Type	Category	Fill of/Filled with
3016	**Layer**	**Made ground**	**n/a**
Dark brown clay with rare gravel inclusions			
3017	**Layer**	**Made ground**	**n/a**
Light yellow white silty clay with rare gravel inclusions			
3018	**Layer**	**Made ground**	**n/a**
Mid-brown yellow silty clay with rare gravel inclusions			
3019	**Layer**	**Made ground**	**n/a**
Mottled mid-orangish grey brown silty clay			
3021	**Layer**	**Made ground**	**n/a**
Mid/light orangish grey brown sandy clay with occasional small subangular gravels inclusions			
3022	**Layer**	**Made ground**	**n/a**
Dark blackish brown clayey silt with occasional small subangular and sub-rounded gravel inclusions			
3023	**Layer**	**Made ground**	**n/a**
Mid-brownish orange silty clay with occasional small and medium subangular gravel inclusions			
3024	**Layer**	**Made ground**	**n/a**
Mid-greyish yellow sandy clay with some gravel, common charcoal inclusions			
3025	**Layer**	**Made ground**	**n/a**
Dark blackish brown sandy silt with common charcoal, and small sandstone inclusions			
3026	**Layer**	**Made ground**	**n/a**
Dark greyish brown sandy silt with common broken redbrick, charcoal and small sandstone inclusions			
3027	**Layer**	**Made ground**	**n/a**
Light and dark grey sand clay with small and medium stones, mortar, crushed brick inclusions. Archaeological components: Crucible fragments, slag, charcoal			
3028	**Layer**	**Made ground**	**n/a**
Black ash with grit, small stones, coal, charcoal, crushed brick inclusions			
3029	**Layer**	**Made ground**	**n/a**
Mid-grey with white flecks sand with lime mortar, crushed brick, small irregular stones inclusions. Archaeological components: Clay pipe			
3030	**Layer**	**Made ground**	**n/a**
Dark red, brown sandy clay with brick fragments, small and medium size stones with occasional fragments of coal inclusions			
3031	**Layer**	**Made ground**	**n/a**
Dark grey, brown grit silt with brick fragments, small stones, lime mortar, charcoal inclusions. Archaeological components: Pottery fragments, clay pipe			
3032	**Layer**	**Made ground**	**n/a**
Mid-grey brown sandy silt with brick, lime mortar, heat affected mid-size stones, burnt materials inclusions. Archaeological components: Pottery, clay pipe, slag			
3033	**Layer**	**Surface**	**n/a**
3034	**Layer**	**Made ground**	**n/a**
Light greyish white sandy silt			
3035	**Layer**	**Made ground**	**n/a**
Orange sand			
3036	**Layer**	**Demolition material**	**n/a**
Mid-grey brown sandy silt with small stones. lime mortar, crushed brick inclusions. Archaeological components: Pottery,			
3037	**Unexcavated**	**Demolition material**	**n/a**
Black, dark brown sandy clay with red brick, lime mortar inclusions			
3038	**Cut**	**Uncategorized**	**3039**
Uncategorized Length: 0.24 m. Depth: >0.22 m.			
3039	**Fill**	**Fill**	**3038**
Dark greyish brown sandy silt with 10% broken bricks, 15% gravel inclusions. Archaeological components: Pot			
3040	**Layer**	**Fill**	**n/a**
Dark brown sandy silt with 7% gravel, 7% broken bricks and sandstone inclusions. Archaeological components: Charcoal, pot,			

Context	Type	Category	Fill of/Filled with
3041	**Layer**	**Made ground**	**n/a**
Mid-brown, grey sandy silt with crushed brick, lime mortar, small and medium sized stones inclusions. Archaeological components: Pottery, clay pipe, charcoal			
3042	**Layer**	**Made ground**	**n/a**
Light yellowish brown silty clay with some broken bricks, rare charcoal inclusions. Archaeological components: Pot			
3043	**Layer**	**Made ground**	**n/a**
Mid-greyish brown silty sand with some charcoal and gravel inclusions. Archaeological components: Pot			
3044	**Unexcavated**	**Made ground**	**n/a**
Dark blackish brown sandy silt with rare broken bricks, sandstone. common charcoal inclusions. Archaeological components: Pot			
3045	**Layer**	**Made ground**	**n/a**
Mid-greyish brown sandy silt with broken bricks, common gravel inclusions. Archaeological components: Pot			
3046	**Unexcavated**	**Natural**	**n/a**
3047	**Layer**	**Made round**	**n/a**
Dark grey, brown sandy loam with cbm fragments and crushed, medium boulders, ash, small grit inclusions. Archaeological components: Pottery, clay pipe, fine slag, charcoal			
3048	**Layer**	**Made ground**	**n/a**
Mid-brown, grey sandy loam with broken red brick 50%, small and medium stones, small grit inclusions. Archaeological components: Pottery, large fragments some 30cm. clay pipe, charcoal			

Area 4

Context	Type	Category	Fill of/Filled with
5000	**Layer**	**Surface**	**n/a**
Dark black tarmac			
5001	**Layer**	**Made ground**	**n/a**
Light yellowish-white hardcore			
5002	**Layer**	**Made ground**	**n/a**
Dark reddish-brown sandy silt with common redbrick fragments and demolition debris inclusions			
5003	**Layer**	**Made ground**	**n/a**
Mid-brown silty clay with clinker, brick and stone rubble inclusions			
5004	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from redbrick machine made square frogged and bonded with black ash mortar. Maximum height: 1.60 m.			
5005	**Masonry**	**Sandstone flag surface**	**n/a**
Rectangular sandstone flag surface aligned E–W with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar. Maximum height: 0.09 m.			
5006	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from redbrick and bonded with black ash mortar. Maximum height: 1.64 m.			
5007	**Masonry**	**Arch**	**n/a**
Linear arch aligned E–W with straight sides and a flat base. Constructed from redbrick wall and bonded with black ash mortar. Maximum height: 0.24 m.			
5008	**Masonry**	**Arch**	**n/a**
Rectangular arch aligned E–W with straight sides and a concave base. Constructed from redbrick wall and bonded with black ash mortar. Maximum height: 0.18 m.			
5009	**Masonry**	**Wall**	**n/a**
Linear wall with straight sides and a flat base. Constructed from redbrick wall and bonded with black ash mortar. Maximum height: 0.30 m.			
5010	**Group**	**Furnace**	**n/a**

Context	Type	Category	Fill of/Filled with
Crucible furnace in the south east corner of site. Blocked up in the early to mid-20th century and demolished around or before 1984. Mostly in machine made red brick and black ash mortar, although fire brick and metallic elements are present. Group components: 5018, 5019, 5023, 5031, 5032, 5033, 5035, 5036, 5039, 5040, 5041, 5042, 5043, 5044, 5045, 5046, 5047, 5048, 5050, 5051			
5011	**Masonry**	**Surface**	**n/a**
Linear surface aligned E-W with straight sides and an unknown base. Constructed from poured concrete slab and bonded with n/a. Maximum height: 0.30 m.			
5012	**Masonry**	**Vault**	**n/a**
Linear vault aligned E-W with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.35 m.			
5013	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick machine made and bonded with black ash mortar. Maximum height: 1.20 m.			
5014	**Masonry**	**Wall**	**n/a**
L-shaped wall aligned South to North, then east to west with straight sides and an unknown base. Constructed from square frogged machine made red brick and bonded with black ash mortar. Maximum height: 1.30 m.			
5015	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from square frogged machine made red brick and bonded with black ash mortar. Maximum height: 1.30 m.			
5016	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from square frogged machine made red brick and bonded with black ash mortar. Maximum height: 1.30 m.			
5017	**Masonry**	**Pipes**	**n/a**
Irregular pipes aligned N–S with unknown sides and an unknown base. Constructed from ferrous metal pipes various types and bonded with none. Maximum height: 1.30 m.			
5018	**Masonry**	**Wall**	**n/a**
Linear wall aligned E-W with straight sides and a flat base. Constructed from red brick and bonded with black ash mortar. Maximum height: 1.10 m.			
5019	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick machine made square frogged and bonded with black ash mortar. Maximum height: 1.40 m.			
5020	**Masonry**	**Pier**	**n/a**
Sub-rectangular pier aligned E–W with straight sides and an unknown base. Constructed from square frogged machine made red brick, bull nosed at corners and bonded with black ash mortar. Maximum height: 1.40 m.			
5021	**Masonry**	**Pier**	**n/a**
Sub-rectangular pier aligned E–W with straight sides and an unknown base. Constructed from square frogged machine made red brick, bull nosed at corners and bonded with black ash mortar. Maximum height: 1.28 m.			
5022	**Masonry**	**Surface**	**n/a**
Rectangular surface aligned E–W with unknown sides and an unknown base. Constructed from poured concrete slab. Maximum height: 0.05 m.			
5023	**Masonry**	**Surface**	**n/a**
Rectangular surface aligned E–W with unknown sides and an unknown base. Constructed from sandstone flags and bonded with earth.			
5024	**Masonry**	**Wall**	**n/a**
Sub-rectangular wall aligned N–S with straight sides and an unknown base. Constructed from square frogged machine made red brick, bull nosed at corners and bonded with black ash mortar. Maximum height: 1.57 m.			
5025	**Fill**	**Tertiary deposit**	**n/a**
Dark blackish-brown sandy silt with common redbrick fragments and metal objects inclusions. Archaeological components: Furnace lining, slab and glass			
5026	**Layer**	**Tertiary deposit**	**n/a**
Dark blackish-brown sandy silt with common redbrick fragments and metal objects inclusions. Archaeological components: Slag, spanner and glass			
5027	**Layer**	**Tertiary deposit**	**n/a**
Mottled black-red ash-silt. Archaeological components: Slag, melted red brick, ceramic ingot mould			

Context	Type	Category	Fill of/Filled with
5028	**Layer**	**Tertiary deposit**	**n/a**
Mottled black-red ash-silt. Archaeological components: Slag, ceramic ingot mould			
5029	**Layer**	**Tertiary deposit**	**n/a**
Mottled black-red ash-silt. Archaeological components: Slag, iron object			
5030	**Layer**	**Tertiary deposit**	**n/a**
Mottled black-red ash silt. Archaeological components: Slag (not recovered)			
5031	**Masonry**	**Furnace**	**n/a**
Rectilinear furnace aligned E–W with straight sides and an unknown base. Constructed from machine made red brick square frogged, stamped Robinson Sheffield, bullnose for crucible air holes and bonded with black ash mortar. Maximum height: 1.90 m.			
5032	**Masonry**	**Wall**	**n/a**
L-shaped wall aligned north to south, then east to west with straight sides and an unknown base. Constructed from machine made red brick square frogged stamped Robinson Sheffield, bull-nosed on crucible air holes corner and bonded with black ash mortar. Maximum height: 1.20 m.			
5033	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned N–S with straight sides and a flat base. Constructed from poured concrete. Maximum height: 0.50 m.			
5034	**Masonry**	**Foundation**	**n/a**
Sub-rectangular foundation aligned N–S with straight sides and a flat base. Constructed from poured concrete. Maximum height: 0.50 m.			
5035	**Masonry**	**Foundation**	**n/a**
Sub-rectangular foundation aligned N–S with straight sides and a flat base. Constructed from poured concrete. Maximum height: 0.50 m.			
5036	**Masonry**	**Surface**	**n/a**
Sub-rectangular surface aligned N–S with straight sides and a flat base. Constructed from poured concrete. Maximum height: 0.20 m.			
5037	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E–W with straight sides and a flat base. Constructed from fire brick and red and bonded with earth. Maximum height: 0.14 m.			
5038	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E–W with straight sides and a flat base. Constructed from fire brick and bonded with earth. Maximum height: 0.14 m.			
5039	**Masonry**	**Cap**	**n/a**
Rectangular cap aligned N–S with straight sides and a flat base. Constructed from double length fire bricks + red brick and bonded with black ash mortar. Maximum height: 0.07 m.			
5040	**Masonry**	**Cap**	**n/a**
Rectangular cap aligned N–S with straight sides and a flat base. Constructed from single and double length fire brick + red brick and bonded with black ash mortar. Maximum height: 0.36 m.			
5041	**Masonry**	**Cap**	**n/a**
Rectangular cap aligned N–S with straight sides and a flat base. Constructed from single and double length fire brick, red brick and bonded with black ash mortar. Maximum height: 0.21 m.			
5042	**Layer**	**Made ground**	**n/a**
Black silty clay with brick and stone rubble inclusions			
5043	**Masonry**	**Metal**	**n/a**
Rectangular metal aligned N–S with straight sides and a flat base. Constructed from single ferrous metal plate and bonded with black ash mortar. Maximum height: 0.03 m.			
5044	**Masonry**	**Metal**	**n/a**
Rectangular metal aligned N–S with straight sides and a flat base. Constructed from single ferrous metal plate and bonded with black ash mortar. Maximum height: 0.03 m.			
5045	**Masonry**	**Metal**	**n/a**
Rectangular metal aligned N–S with straight sides and a flat base. Constructed from single ferrous metal plate and bonded with black ash mortar. Maximum height: 0.03 m.			
5046	**Masonry**	**Metal**	**n/a**
Rectangular metal aligned N–S with straight sides and a flat base. Constructed from single ferrous metal plate and bonded with black ash mortar. Maximum height: 0.03 m.			

Context	Type	Category	Fill of/Filled with
5047	**Masonry**	**Metal**	**n/a**
Rectangular metal aligned N–S with straight sides and a flat base. Constructed from single ferrous metal plate and bonded with black ash mortar. Maximum height: 0.03 m.			
5048	**Masonry**	**Springer**	**n/a**
Incomplete springer aligned N–S with straight sides and a flat base. Constructed from single sandstone block and bonded with black ash mortar. Maximum height: 0.16 m.			
5049	**Masonry**	**Springer**	**n/a**
Incomplete springer aligned N–S with straight sides and a flat base. Constructed from single sandstone block and bonded with black ash mortar. Maximum height: 0.18 m.			
5050	**Masonry**	**Iron pin**	**n/a**
Linear iron pin aligned N–S with unknown sides and an unknown base. Constructed from ferrous metal plate and pin. Maximum height: 0.31 m.			
5051	**Masonry**	**Iron pin**	**n/a**
Linear iron pin aligned N–S with unknown sides and an unknown base. Constructed from ferrous metal plate and pin. Maximum height: 0.50 m.			
5052	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E–W with straight sides and a flat base. Constructed from red brick and bonded with cement. Maximum height: 1.10 m.			
5053	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N–S with straight sides and a flat base. Constructed from red brick machine made and bonded with cement. Maximum height: 1.20 m.			
5054	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned E–W with straight sides and a flat base. Constructed from red brick and bonded with cement. Maximum height: 1.20 m.			
5055	**Masonry**	**Wall**	**n/a**
Rectangular wall aligned N–S with straight sides and a flat base. Constructed from red brick and bonded with cement. Maximum height: 1.45 m.			
5056	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and a flat base. Constructed from machine made square frogged red brick and bonded with cement. Maximum height: 1.32 m.			
5057	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made square frogged red brick and bonded with black ash mortar. Maximum height: 0.90 m.			
5058	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made square frogged red brick and bonded with black ash mortar. Maximum height: 1.40 m.			
5059	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from machine made square frogged red brick and bonded with black ash mortar. Maximum height: 0.66 m.			
5060	**Masonry**	**Drain**	**n/a**
Square drain with straight sides and an unknown base. Constructed from concrete drain inlet. Maximum height: 0.60 m.			
5061	**Masonry**	**Threshold**	**n/a**
Rectangular threshold aligned E–W with straight sides and a flat base. Constructed from single sandstone flag and bonded with earth. Maximum height: 0.07 m.			
5062	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from machine made square frogged red brick and bonded with black ash mortar. Maximum height: 1.30 m.			
5063	**Masonry**	**Wall**	**n/a**
Rectilinear wall aligned South to West with straight sides and an unknown base. Constructed from machine made square frogged red brick and bonded with black ash mortar. Maximum height: 1.30 m.			
5064	**Masonry**	**Buttress**	**n/a**
Linear buttress aligned N–S with straight sides and an unknown base. Constructed from 1 course red brick, then concrete underneath. Maximum height: 0.70 m.			
5065	**Group**	**Metal plates**	**n/a**

Context	Type	Category	Fill of/Filled with
Metal plates within crucible air holes to allow easier ash removal. Part of 5010.			
5066	**Group**	**Wall**	**n/a**
Walls infilling crucible air holes and chimney flues. Part of 5010 Group components: 5037, 5038, 5052, 5053, 5054, 5055			
5067	**Group**	**Foundation**	**n/a**
Concrete foundation postdating furnace use Group components: 5034			
5068	**Group**	**Fixtures**	**n/a**
Fixtures of furnace 5010. Sandstone springers, and ferrous metal supports. Part of 5010 Group components: 5049			
5069	**Group**	**Ash deposit**	**n/a**
Ash deposit within the chimneys of the furnace, in situ. Some ingot moulds and slag were found within. Part of 5010. Group components: 5028, 5030			
5070	**Group**	**Capping**	**n/a**
Fire brick chimney flue capping. Part of 5010.			
5071	**Masonry**	**Stairway**	**n/a**
Rectangular stairway aligned N–S with stepped sides and an unknown base. Constructed from flagstone and red brick and bonded with black ash mortar. Maximum height: 1.10 m.			
5072	**Layer**	**Made ground**	**n/a**
Mid-brown, grey, yellow clay, silt and ash with slag, red bricks, fire brick inclusions. Archaeological components: Slag, iron objects, grindstones			
5073	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with stepped sides and an unknown base. Constructed from machine made square frogged red brick and bonded with black ash mortar. Maximum height: 0.40 m.			
5074	**Masonry**	**Pillar**	**n/a**
Sub-rectangular pillar aligned E–W with straight sides and a flat base. Constructed from machine made red brick square frogged, bull-nosed at corners and bonded with black ash mortar. Maximum height: 1.20 m.			
5075	**Masonry**	**Pier**	**n/a**
Sub-rectangular pier aligned E–W with straight sides and a flat base. Constructed from machine made red brick square frogged, bull-nosed on corners and bonded with black ash mortar. Maximum height: 1.30 m.			
5076	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and a flat base. Constructed from machine made red brick square frogged and unbonded. Maximum height: 0.80 m.			
5077	**Masonry**	**Foundation**	**n/a**
Rectangular foundation aligned E–W with straight sides and a flat base. Constructed from poured concrete. Maximum height: 0.25 m.			
5078	**Layer**	**Made ground**	**n/a**
Dark greyish brown sandy silt with 8% gravel inclusions			
5079	**Masonry**	**Furnace**	**n/a**
Rectangular furnace aligned E–W with straight sides and a flat base. Constructed from machine made frogged red bricks, stamped Robinson Sheffield. bullnose for crucible fire holes and bonded with black ash mortar. Maximum height: 1.10 m.			
5080	**Group**	**Furnace**	**n/a**
Crucible furnace most likely contemporary with other crucible furnace to the north, (5010). Group components: 5079, 5081, 5082, 5083, 5084, 5085, 5086, 5088, 5089, 5984, 5985			
5081	**Masonry**	**Metal**	**n/a**
Rectangular metal with straight sides and a flat base. Constructed from single ferrous metal plate and bonded with black ash mortar. Maximum height: 0.04 m.			
5082	**Masonry**	**Metal**	**n/a**

Context	Type	Category	Fill of/Filled with
Metal aligned N–S. Constructed from single ferrous metal and bonded with black ash mortar. Maximum height: 0.04 m.			
5083	**Masonry**	**Metal**	**n/a**
Rectangular metal aligned N–S with straight sides and a flat base. Constructed from single ferrous metal and bonded with black ash mortar. Maximum height: 0.04 m.			
5084	**Masonry**	**Metal**	**n/a**
Rectangular metal aligned N–S with straight sides and a flat base. Constructed from single ferrous metal and bonded with black ash mortar. Maximum height: 0.04 m.			
5085	**Masonry**	**Metal**	**n/a**
Rectangular metal with straight sides and a flat base. Constructed from single ferrous metal and bonded with black ash mortar. Maximum height: 0.04 m.			
5086	**Masonry**	**Metal**	**n/a**
Rectangular metal aligned N–S with straight sides and a flat base. Constructed from single ferrous metal and bonded with black ash mortar. Maximum height: 0.04 m.			
5087	**Masonry**	**Surface**	**n/a**
Linear surface with straight sides and a flat base. Constructed from sandstone and bonded with black ash mortar.			
5088	**Masonry**	**Wall**	**n/a**
Linear wall with straight sides and a flat base. Constructed from red bricks machine made square frogged and bonded with black ash mortar. Maximum height: 1.20 m.			
5089	**Masonry**	**Wall**	**n/a**
Linear wall with straight sides and an unknown base. Constructed from red bricks and bonded with black ash mortar. Maximum height: 0.60 m.			
5090	**Masonry**	**Inspection pit lid**	**n/a**
Rectangular inspection pit lid aligned E-W with straight sides and a flat base. Constructed from steel. Maximum height: 0.02 m.			
5091	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from redbrick and bonded with black ash mortar.			
5092	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S, then E–W with straight sides and an unknown base. Constructed from redbrick and bonded with black ash mortar. Maximum height: 0.60 m.			

Watching brief

Context	Type	Category	Fill of/Filled with
2001	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made oval frogged red brick and bonded with black ash mortar. Maximum height: 0.50 m.			
2002	**Masonry**	**Flue**	**n/a**
Linear flue aligned N–S with straight sides and an unknown base. Constructed from fire brick and bonded with lime mortar (pink, likely heat affected). Maximum height: 1.40 m.			
2003	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from machine made frogged red brick and bonded with black ash mortar. Maximum height: 0.70 m.			
2004	**Masonry**	**Vaulting**	**n/a**
Linear vaulting aligned N–S with straight sides and an unknown base. Constructed from machine made frogged brick and bonded with black ash mortar. Maximum height: 1.30 m.			
2005	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made frogged brick and bonded with black ash mortar. Maximum height: 0.70 m.			
2006	**Masonry**	**Tank**	**n/a**
Circular tank with straight sides and a concave base. Constructed from rivetted steel plates forming a rounded cylinder, with on the bottom surviving. Maximum height: 0.40 m.			
2007	**Cut**	**Construction cut**	**2006**

Context	Type	Category	Fill of/Filled with
Circular construction cut with vertical, straight sides and a flat base. Length: 2.00 m. Width: 0.40 m. Depth: 0.60 m.			
2008	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from red brick, unfrogged and bonded with lime mortar. Maximum height: 0.60 m.			
2009	**Masonry**	**Wall**	**n/a**
Linear wall with straight sides and an unknown base. Constructed from fire brick and bonded with heat affected lime mortar. Maximum height: 0.40 m.			
2101	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from machine made red brick unfrogged. and bonded with black ash mortar. Maximum height: 1.00 m.			
2201	**Masonry**	**Foundation**	**n/a**
Linear foundation aligned N–S with straight sides and an unknown base. Constructed from sandstone masonry and bonded with lime mortar. Maximum height: 1.40 m.			
2301	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and a flat base. Constructed from machine made oval frogged red brick and bonded with black ash mortar. Maximum height: 0.90 m.			
2401	**Masonry**	**Wall**	**n/a**
Linear wall aligned N–S with straight sides and an unknown base. Constructed from machine made red brick and bonded with black ash mortar. Maximum height: 0.60 m.			
2402	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from red brick, highly degraded and bonded with black ash mortar. Maximum height: 1.10 m.			
2501	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from handmade red brick and bonded with black ash mortar. Maximum height: 2.20 m.			
2502	**Masonry**	**Wall**	**n/a**
Linear wall aligned E–W with straight sides and an unknown base. Constructed from hade made red brick and bonded with black ash mortar. Maximum height: 0.80 m.			
2701	**Masonry**	**Boundary wall\ foundation**	**n/a**
Linear boundary wall\ foundation aligned N–S with straight sides. Constructed from rough masonry and bonded with lime mortar. Maximum height: 1.00 m.			
2801	**Masonry**	**Retaining wall**	**n/a**
Linear retaining wall aligned N–S with straight sides and an unknown base. Constructed from stone masonry and bonded with unclear. Maximum height: 3.00 m.			
2802	**Masonry**	**Retaining wall**	**n/a**
Linear retaining wall aligned E–W with straight sides and an unknown base. Constructed from stone masonry and bonded with unclear. Maximum height: 1.50 m.			
2901	**Layer**	**Tertiary deposit**	**n/a**
Black silt. Archaeological components: Steel tools 95%			

Appendix 2: Pottery by context (including evaluation)

Context	~~Phase~~	Ware type	No. sherds	Wt. (g)	MNV	Comment	Date
EVALUATION							
613	2	Black-glazed redware	1	16	1	Body sherd	C18+
613	2	Redware	1	2	1	Brown-glazed body sherd	C18+
620	5	Redware	1	4	1	Brown-glazed body sherd	C18+
620	5	Redware	1	2	1	Brown-glazed body sherd	C18+
703	5	Black-glazed redware	2	601	2	Body & base sherds, int glaze	C18+
703	5	Buff/Yellow ware	2	15	2	Body sherds	1800+
703	5	English stoneware	1	86	1	Body sherd, cylindrical bottle/jar	C18+
703	5	Refined whiteware	5	27	5	Body & rim sherds, slip-banded bowl	1805+
911	0 or 5	Pearlware	1	17	1	Base, transfer-printed	1770-1840
915	0	Redware	1	30	1	Brown-glazed body sherd	C18+
915	0	English stoneware	1	22	1	?Notts-type, body sherd	C18+
915	0	Refined whiteware	4	22	4	Body sherds, 1 transfer-printed	1805+
916	0	English stoneware	3	76	3	?Notts-type, body sherds	C18+
916	0	Refined whiteware	4	34	4	Body & rim sherds; 1 blue slip-banded	1805+
1106	0	Black-glazed redware	1	13	1	Handle	C18+
1106	0	English stoneware	1	9	1	?Notts-type, body sherd	C18+
1106	0	Refined whiteware	1	4	1	Body sherd	1805+
1110	0	Black-glazed redware	1	57	1	Body sherd	C18+
1110	0	Refined whiteware	2	11	2	Plate rim; body sherd	1805+
1110	0	Buff/Yellow ware	1	15	1	Body sherd, kitchen bowl	1800+
EXCAVATION							
3006	0~~Made ground~~	Black-glazed Redware	1	2	1	body sherd, glazed inside & out	C18+
3006		Creamware	1	12	1	plate rim plain	1740-1880
3008		Black-glazed Redware	1	135	1	heavy clubbed flanged bowl rim	C18+
3008		Buff/yellow ware	1	10	1	upright rim, white banding	1800+
3008		Developed Creamware	2	18	2	flatware rims	1775-1880

3008		Developed Creamware	1	6	1	body sherd	1775-1880
3008		English Stoneware	1	121	1	Notts-type, heavy footring base	C18+
3008		English Stoneware	1	41	1	Notts-type, base sherd	C18+
3008		Pearlware	1	6	1	body sherd	1770-1840
3008		Pearlware	1	1	1	transfer-printed, tiny rim	1770-1840
3008		Redware	1	1	1	tiny body sherd, brown-glazed	C18+
3010		Creamware	1	39	1	base (jug?)	1740-1880
3014		Creamware	1	3	1	body sherd	1740-1880
3014		Porcelain	1	4	1	Chinese porcelain, body sherd with blue dec	C18+
3018		Developed Creamware	1	4	1	body sherd	1775-1880
3018		Redware	1	21	1	body sherd, brown-glazed int	C18+
3019		Black-glazed Redware	1	12	1	thin-walled rim sherd, glazed int & ext (jug?)	C18+
3022		Developed Creamware	1	2	1	plate/dish rim, plain	1775-1880
3025		Black-glazed Redware	1	1	1	tiny rim	C18+
3025		Black-glazed Redware	2	25	2	body sherds, glazed int & ext	C18+
3025		Pearlware	1	1	1	tiny rim, transfer-printed (probably cup)	1770-1840
3025		Pearlware	1	1	1	body sherd, plain	1770-1840
3025		Pearlware	1	4	1	body sherd, transfer-printed	1770-1840
3025		Pearlware	1	5	1	base sherd, plain	1770-1840
3025		Pearlware	2	4	1	conjoining sherds from flatware rim, scalloped edge, blue feathering on rim; discoloured	1770-1840
3025		Pearlware	1	47	1	base sherd, transfer-printed int & ext (bowl)	1770-1840
3026		Black-glazed Redware	1	7	1	body sherd, glazed int & ext	C18+
3026		Creamware	3	6	3	misc. rim & body flatware sherds	1740-1880
3026		English Stoneware	2	21	1	Notts-type, conjoining body sherds, rouletted dec	C18+
3026		Pearlware	4	14	1	cup base, transfer-printed int & ext	1770-1840
3027		Pearlware	1	11	1	base sherd, probably flatware	1770-1840
3031		Black-glazed Redware	1	36	1	small base, glazed ext	C18+

3031		English Stoneware	1	9	1	Notts-type, jar rim	C18+
3031		English Stoneware	1	10	1	Notts-type, body sherd	C18+
3031		Pearlware	1	7	1	body sherd, hand painted	1770-1840
3031		Pearlware	1	4	1	base sherd	1770-1840
3032		Black-glazed Redware	1	11	1	body sherd, glazed int	C18+
3032		Black-glazed Redware	2	12	2	body sherds, glazed int & ext	C18+
3032		Developed Creamware	1	5	1	body sherd	1775-1880
3032		Developed Creamware	1	20	1	jug handle	1775-1880
3032		English Stoneware	1	32	1	base sherd	C18+
3032		English Stoneware	1	9	1	bowl rim, beaded profile	C18+
3032		English Stoneware	1	12	1	body sherd, int feldspathic glaze	C18+
3036		Developed Creamware	1	4	1	flanged (flatware) rim, plain	1775-1880
3036		Developed Creamware	1	1	1	body sherd	1775-1880
3039		Redware	1	13	1	body sherd with handle stump, brown-glazed	C18+
3041		Creamware	1	3	1	body sherd, discoloured	1740-1880
3041		Pearlware	1	18	1	flatware base sherd	1770-1840
3041		Pearlware	1	1	1	body sherd, transfer-printed	1770-1840
3041		Pearlware	1	3	1	probable cup rim, transfer-printed	1770-1840
3041		Refined Whiteware	1	4	1	cup rim, hand-painted	1805+
3042		English Stoneware	1	4	1	Notts-type, body sherd (closed form)	C18+
3043		Black-glazed Redware	1	1	1	body sherd, glazed int & ext	C18+
3043		Buff/yellow ware	1	4	1	flatware flanged rim; thin red banding on flange	1800+
3043		Creamware	1	1	1	tiny body sherd	1740-1880
3043		Refined Whiteware	1	6	1	small dish/bowl rim	1805+
3044		Black-glazed Redware	2	49	2	body sherds, glazed int & ext	C18+
3044		Refined Whiteware	1	13	1	rim sherd (poss. jug), crazed and discoloured	1805+
3044		Refined Whiteware	1	8	1	base sherd, crazed and slightly discoloured	1805+
3045		Creamware	1	3	1	plate/dish rim flange, plain	1740-1880
3045		Creamware	1	44	1	plate profile, plain rim	1740-1880

3045		Creamware	1	18	1	plate/dish flanged rim, plain	1740-1880
3045		English Stoneware	1	34	1	body sherd	C18+
3047		Black-glazed Redware	1	44	1	rim sherd, side-handled jar, glazed int & ext	C18+
3047		Black-glazed Redware	2	41	2	body sherds, 1 thick-walled, glazed int	C18+
3047		English Stoneware	2	40	2	Notts-type, body & base sherds	C18+
3047		Pearlware	1	1	1	tiny rim sherd	1770-1840
3048		Black-glazed Redware	1	6	1	body sherd, glazed int	C18+
3048		Creamware	1	44	1	corner from rectangular footring base (serving dish?)	1740-1880
3048		Creamware	1	33	1	footring base (bowl / chamber pot)	1740-1880
3048		Developed Creamware	9	47	8	misc. body & base sherds (2 conjoining)	1775-1880
3048		Developed Creamware	3	15	3	misc. flatware rims, all plain	1775-1880
3048		English Stoneware	1	18	1	Notts-type, flanged rim from flared bowl, rouletted	C18+
3048		English Stoneware	6	209	6	Notts-type, misc. body & base sherds	C18+
3048		Pearlware	1	49	1	base sherd; encrusted decoration coloured black and yellow	1770-1840
3048		Pearlware	1	1	1	body sherd	1770-1840
3048		Pearlware	1	52	1	flatware base, transfer-printed (Willow?)	1770-1840
3048		Redware	1	36	1	unglazed flowerpot dish (profile)	C18+
4065		Black-glazed Redware	1	47	1	heavy squared (flared) bowl rim	C18+
4065		Black-glazed Redware	1	7	1	rim from small flared bowl, glazed int & ext	C18+
4065		Black-glazed Redware	7	959	6	misc. bases (2 conjoining), glazed int (at least two probable jar, narrower bases)	C18+
4065		Creamware	1	24	1	plate profile, 'feather edge' rim (scrolled)	1740-1880
4065		Developed Creamware	1	27	1	plate profile, plain rim	1775-1880
4065		English Stoneware	3	19	1	Notts-type, misc. jar rims, plain	C18+
4065		English Stoneware	1	19	1	Notts-type, jar rim, rouletted	C18+
4065		Pearlware	1	15	1	plate profile, feathered blue edge	1770-1840
4065		Pearlware	1	15	1	flatware base	1770-1840

4065		Redware	1	45	1	unglazed flowerpot rim	C18+
4065		Redware	1	120	1	base, brown-glazed int & part ext, prob jar	C18+
4156		Buff/yellow ware	1	77	1	flared bowl rim, beaded along top of rim	1800+
4156		English Stoneware	3	54	1	conjoining sherds from jar rim, rouletted and tooled dec	C18+
4156		Pearlware	1	4	1	saucer rim, hand-painted	1770-1840
4197		Pearlware	1	8	1	body sherd, 'flow blue' transfer-printed	1770-1840
4197		Porcelain	1	8	1	green-glazed cuboid 'knuckle-bone'	C19
4197		Refined Whiteware	2	23	1	conjoining base sherds, burnt & crazed	1805+
4327		English Stoneware	1	83	1	Notts-type, body sherd, rouletted	C18+

Phases: 0 = early made ground; 1 = late-18th-/early-19th-century; 2 and 3 = late-19th/early-20th century; 4 uncertain; 5 = 20th century

Appendix 3: Miscellaneous finds catalogue (including evaluation)

Context	Phase	Material	No.	Wt. (g)	Description
3018	0	CBM	1	26	post-med roof tile fragment
4156	4	CBM	1	107	rim from chimney pot, blackened int
4202	5	CBM	1	1775	slagged refractory brick
5028	5	CBM	1	359	slagged refractory brick
5029	6	CBM	1	348	slagged refractory brick
1011	0	COMPOSITE	6	588	4 light switches (1 attached to wooden backing); mixed materials
715	0	COPPER ALLOY	1	3	livery button: hollow two-piece with rear loop attachment; illegible motif
4123	1	FIBRE	1	48	cloth, woven, brown colour; crumpled and torn
4197	5	FIBRE	1	89	coarse mesh cloth & twisted cloth strands
5026	5	FIBRE	1	15	Brush, fibres bound into metal handle (twisted wire)
4123	1	LEATHER	3	238	3 strips of differing widths: 20mm (with stitched edges); 30mm (total length 260 mm); 60mm (2 perforations at surviving end
715	0	SHELL	1	1	mussel
3008	5	SHELL	2	6	button-making waste (offcuts)
3032	0	SHELL	1	6	oyster (small right valve, complete)
3045	5	SHELL	4	16	button-making waste (offcuts)
4197	5	SHELL	1	41	Oyster (L valve, complete)
703	5	STONE	1	4	slate pencil
4080	1	STONE	1	194	small grindstone, worn; diameter 65mm; thickness 22mm
4198	5	STONE	5	341	Sample 4004; roofing slate
4327	5	STONE	1	227	Slate
4345	5	STONE	1	371	slablike piece, function unknown
5003	6	STONE	1	1	grindstone, not weighed
5072	5	STONE	12	20600	Complete grindstone plus fragments
703	5	WALL PLASTER	1	94	painted yellow, but over several other layers, including blue
4044	4	WALL PLASTER	12	313	

Phases: 0 = early made ground; 1 = late-18th-/early-19th-century; 2 and 3 = late-19th/early-20th century; 4 uncertain; 5 = 20th century

Appendix 4: Environmental data

Context	Sample	Vol (l)	Flot (ml)	Sub-sample	Bioturbation proxies	Grain	Chaff	Cereal Notes	Charred Other	Charred Other Notes	Charcoal >2mm (ml)	Charcoal	Other
4044	4001	7	13	-	40%, I, C	-	-	-	-	-	<1	Mature	-
4058	4002	20	180	-	1%, I, E, C	-	-	-	-	-	4	Mature	Coal (A), slag (A), hammerscale (B), uncharred wood (A*)
4126	4003	9	28	-	F	-	-	-	-	-	<1	Mature	Hammerscale (C), coal (A), slag (A)
4198	4004	39	2280	25%	1%	-	-	-	-	-	28	Mature	Coal (A**), uncharred wood (B)

Key: Scale of abundance: A** = 100+, A* = 30-99, A = 30-10, B = 9-5, C = <5; Bioturbation proxies: Roots (%), Uncharred seeds (scale of abundance), F = mycorrhizal fungi sclerotia, E = earthworm eggs, I = insects.

Appendix 5: OASIS form

OASIS ID: wessexar1-381925

Project details

Project name	Grunwergs 2, Land off Rockingham Street, Sheffield, South Yorkshire
Short description of the project	Fragments of early structures survived across areas 1 and 2. Two lime mortared walls (4351 and 4352) seen under watching brief conditions do not correlate with historic maps and may be the oldest surviving structures on the site (early-19th century or perhaps older). The remaining lime mortared structures correlate with historic maps, suggesting a date of construction of 1771-1853. Among these were elements of cellars of worker's housing. The south wall of crucible furnace cellar significantly contained many lime-mortared structures including a curving staircase identifiable on historic maps. The majority of surviving structures at the Bailey Lane iron, steel and file works were constructed in the late-19th century prior to the map of 1890. Recorded structures from this phase comprised: two crucible furnaces, an engine pit with power transmission, an exhaust flue system with chimney and an implied heat exchanger situated outside the area of excavation, a weighbridge, cellars, stairs, ground-floor buildings, yards and drainage. Two further crucible furnaces were recorded in area 4 in the south-east of the site. Map evidence suggests that these furnaces were early 20th century in date. The construction of these furnaces probably represents an expansion of the Bailey Lane Works into an area previously used for worker's housing. Both sets of furnaces were partially bricked up during the 20th century to modify their cellars into storerooms or perhaps air-raid shelters as was seen nearby at Hoyle Street (Powell 2014).
Project dates	Start: 06-01-2020 End: 21-02-2020
Previous/future work	Yes / No
Any associated project reference codes	226162 - Sitecode
Type of project	Research project
Site status	None
Current Land use	Industry and Commerce 4 - Storage and warehousing
Monument type	CHIMNEY Post Medieval
Monument type	WEIGHBRIDGE Post Medieval
Monument type	CRUCIBLE FURNACE Post Medieval
Monument type	RESIDENTIAL HOUSES Post Medieval
Monument type	STEELWORKS Post Medieval
Monument type	FILE WORKS Post Medieval
Significant Finds	NONE None
Investigation type	""Full excavation""
Prompt	Planning application

Project location

Country	England
Site location	SOUTH YORKSHIRE SHEFFIELD SHEFFIELD Grunwergs 2

Postcode	S1 4EG
Study area	0.4 Hectares
Site coordinates	SK 34947 87397 53.382000320758 -1.474559168403 53 22 55 N 001 28 28 W Point
Height OD / Depth	Min: 81.5m Max: 82.5m

Project creators

Name of Organisation	Wardell Armstrong
Project brief originator	Wardell Armstrong
Project design originator	Wessex Archaeology
Project director/manager	Milica Rajic
Project supervisor	Ashley Tuck
Project supervisor	Emily Eastwood
Project supervisor	Emma Carter
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Watkin Jones

Project archives

Physical Archive recipient	Museums Sheffield
Physical Contents	"Ceramics","Industrial","Metal"
Digital Archive recipient	Museums Sheffield
Digital Contents	"none"
Digital Media available	"Images raster / digital photography","Survey"
Paper Archive recipient	Museums Sheffield
Paper Contents	"none"
Paper Media available	"Context sheet","Diary","Drawing","Map","Notebook - Excavation',' Research',' General Notes","Plan","Report","Section"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)

Title	Grunwergs 2, Land off Rockingham Street, Sheffield, South Yorkshire: Post-excavation Assessment and Updated Project Design
Author(s)/Editor(s)	Tuck, A.
Other bibliographic details	226162.02
Date	2020
Issuer or publisher	Wessex Archaeology
Place of issue or publication	Sheffield
Description	A4 comb bound laser printed report
Entered by	Ashley Tuck (a.tuck@wessexarch.co.uk)
Entered on	17 July 2020

Appendix 6: Selection Strategy

GRUNWERGS 2, LAND OFF ROCKINGHAM STREET, SHEFFIELD

SELECTION STRATEGY

V.2, JULY 2020

Project Manager:	Milica Rajic	
Archaeological Archive Manager:	Lorraine Mepham	
Organization:	Wessex Archaeology	
STAKEHOLDERS		**Date Contacted**
Collecting Institution(s):	Museums Sheffield (contact Martha Lawrence) Kelham Island Museum (Hawley Collection) Archaeological Data Service (contact Ray Moore)	09/12/19
Project Lead / **Project Assurance:**	Project Assurance: Milica Rajic Project Lead: Ashley Tuck	
Landowner/Developer:	Watkin Jones Group	
Other:	Planning Curator: Dinah Saich (SYAS) Project Finds/Archives Officer (in house): Jess Irwin In house finds specialists: Lorraine Mepham, Lorrain Higbee External specialist: Rod Mackenzie	
RESOURCES REQUIRED	Wessex Archaeology Material Finds Specialists Wessex Archaeology Finds/Archives Officer External specialist	
Context		

This selection strategy relates to Grunwergs 2, Rockingham Street, Sheffield, comprising two stages of fieldwork (evaluation commencing in November 2019; excavation January and February 2020), and has been updated from the version prepared for the evaluation stage (Wessex Archaeology 2020a). For full details of the project's aims and objectives, methodology and work programme please refer to the WSI. Only the aims and objectives relevant to this selection strategy are listed here:

General aims

- to examine the archaeological resource within a given area or site within a framework of defined research objectives;
- to seek a better understanding of the resource;

Site-specific objectives

Following consideration of the archaeological potential of the site, Dinah Saich (SYAS) identified the following site-specific objectives:

- to establish the historic development sequence from natural;
- to establish and understand the layout and uses of the buildings within the site and to record their changes over time;
- to enhance understanding of the development of the site and its associated buildings;
- to establish presence of crucible furnace and its technology;
- to establish relationship between industry and domestic activity on site; and,
- to establish presence of Sheffield metal trade industry, specifically file industry.

In addition, the rational for Area 3 was given as to test for 'the existence of… deep deposits seen during the evaluation of the site in trenches 9, 11 and 13' (Wessex Archaeology 2020c, 1).

Relevant standards, policies

Museums Sheffield have been consulted on collection and deposition guidelines, with specific reference to their collecting and selection policies.

Details of this selection strategy will be incorporated in the Mid-Project Review submitted to Museums Sheffield on the completion of the post-excavation assessment report (PXA).

General guidelines have been followed including

- *Selection, Retention and Dispersal of Archaeological Collections* (Society of Museum Archaeologists, 1993)
- *Archaeological archives: a guide to best practice in creation, compilation, transfer and curation* (Brown, revised edition 2011, section 4)
- *Standard Guidance for the collection, documentation, conservation & research of archaeological materials (CIFA, 2014b)*

1. DIGITAL DATA	
STAKEHOLDERS	Wessex Archaeology (Archive Manager, Project Manager), Museums Sheffield, SYAS Digital repository: Archaeology Data Service
SELECTION	
Location of Data Management Plan (DMP):	Appendix 7

Details of Wessex Archaeology procedures for data collection/creation, data processing, documentation, selection, preservation and data sharing can be found in the project **Data Management Plan**, together with details of quality management, ethics and legal compliance.

Selection strategy review has been undertaken as part of the post-excavation assessment (with no change) and may be reviewed again prior to archive completion following any comments from stakeholders. It is not currently anticipated that decisions will be made that differ from the standards and guidance cited above.

Digital data type	**Selection strategy**
Site records	All will be selected
Finds data	All will be selected
Survey data	All will be selected
Site photos	Will be subject to selection, to eliminate duplicated and poor quality shots, and any not considered relevant to the archaeology of the site.
Site plans	Final versions selected
Reports	Final versions of all WSIs and site reports

DE-SELECTED DIGITAL DATA

De-selected data is stored on secured servers and within offsite storage locations. The Wessex Archaeology IT department has a backup strategy and policies that involve daily, weekly, monthly and annual backups of data as stated in the Wessex Archaeology Data Management Policy/Plan (forthcoming).

This strategy is non-migratory, and original files will be held at Wessex Archaeology under their unique project identifier, as long as they remain useful and usable in their final version format.

This data may be used for teaching or reference collections by the museum, or by Wessex Archaeology unless otherwise required by contractual or copyright obligations.

AMENDMENTS

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders Involved

2. DOCUMENTS AND ANALOGUE DATA	
STAKEHOLDERS	Wessex Archaeology (Archive Manager, Project Manager), Museums Sheffield, SYAS

SELECTION

Analogue data will be selected for inclusion in the preserved archive by the Project Manager and Project Archives Officer based on national guidance, Wessex Archaeology Archives internal guidance and QMS procedures outlined in the WSI.

Selection strategy review has been undertaken as part of the post-excavation assessment (with no change) and may be reviewed again prior to archive completion following any comments from stakeholders. It is not currently anticipated that decisions will be made that differ from the standards and guidance cited above.

Analogue data type	**Selection strategy**
Site pro-forma registers, including site daybook	All will be selected
Site permatrace drawings	All will be selected
Paper copies of finalized finds quantifications and assessment data	All will be selected
Notes made during stratigraphic analysis; secondary sources; annotated plans	Unlikely to be selected, with the exception of any matrices, land-use diagrams etc not used in any of the site reports
Paper copies of site reporting including Written Scheme of Investigation (WSI) and Client reports	All final versions will be selected, subject to redaction of any sensitive information under GDPR compliance
Copies of any other data requested by the Museum, eg, print-outs of digital data	All will be selected
Hard copy administrative paperwork (eg, invoices, receipts, lists of contacts)	None will be selected

DE-SELECTED DOCUMENTS

De-selected sensitive analogue data will be destroyed (shredded) subject to final checking by the Project Archives Officer, with the remainder recycled. Possible exceptions include images, records

retained for business purposes, including promotional material, teaching and internal Wessex Archaeology library copies of reports.
AMENDMENTS
Detail any amendments to the above selection strategy here.

Date	**Amendment**	**Rationale**	**Stakeholders Involved**

3. MATERIALS			
Material Type:	Bulk and registered finds	**Page**	3.1
STAKEHOLDERS	Wessex Archaeology (Archive Manager, Project Manager, Finds/Archives Officer, finds specialists), External specialists, Museums Sheffield, SYAS, Kelham Island Museum (Hawley Collection)		

SELECTION STRATEGY

During archive compilation all material types selected for retention will be prepared for deposition in line with the Museum's standards and relevant guidelines.

Selection strategy review has been undertaken as part of the post-excavation assessment, and relevant categories updated. It may be reviewed again prior to archive completion following any comments from stakeholders. It is not currently anticipated that decisions will be made that differ from the standards and guidance cited above.

Finds type	**Selection strategy**
Metalwork and industrial residues	The Hawley Collection (Kelham Island Museum) will be contacted to find out whether they would be interested in archiving any of the tools, particularly those with branded names. Other metal items, fragments of crucibles and slag-like material have very limited research potential. Retain items requested by Hawley Collection only.
Pottery, Post-medieval and modern	This small assemblage will be submitted for formal analysis by an appropriate specialist on post-medieval pottery in Sheffield. It is anticipated this analysis will recommend retention of the pottery assemblage commensurate with its significance and as a component of a depositional process that is not fully understood.
CBM & Plaster	Very small assemblage (refractory bricks, roof tile, chimney pot, plaster); no further research potential. Retain none.
Clay Tobacco Pipe	Very small assemblage; replicates larger and better preserved assemblages elsewhere; three datable bowls (two decorated) comprise items of intrinsic interest. Majority has no further research potential; retain bowls only.
Glass (vessel, window, objects)	Small assemblage; replicates larger and better preserved assemblages elsewhere; no items of intrinsic interest. No further research potential. Retain none.
Stone	Small assemblage (grindstones, roofing slate & slate pencil) Complete grindstones will be offered to the Hawley Collection but otherwise the

	assemblage has limited research potential and is not recommended for retention.
Worked bone	Very small assemblage (four items of bone-working waste, probably from cutlery manufacture); replicates larger and better preserved assemblages elsewhere. No further research potential. Retain none
Leather and textile	Very few objects, in potentially unstable condition. None of the fragments apparently come from garments or footwear (leather strips, small bundles of torn cloth). No further research potential. Retain none.
Synthetics	A few objects of very recent origin; no further research potential. Retain none.
Animal bone	Very small assemblage, though generally well preserved; no further research potential. Retain none.
Marine Shell	Very small assemblage; consumption waste (mussel, oyster) as well as button-making offcuts. Little further research potential, but button-making waste possibly of intrinsic interest as Sheffield button industry not well documented. Retain button-making waste only.

DE-SELECTED MATERIAL

Consideration will include whether suitable to be used for handling or teaching collections by the museums or Wessex Archaeology or whether they are of particular interest to the local community. De-selected material will either be returned to the landowner or responsibly disposed of.

AMENDMENTS

Detail any amendments to the above selection strategy.

Date	**Amendment**	**Rationale**	**Stakeholders Involved**
04/07/20	Update to existing categories and addition of new categories	Addition of excavation assemblage	As above

3. MATERIALS			
Material Type:	Environmental material	**Page**	3.2
Stakeholders	Wessex Archaeology (Archive Manager, Project Manager, Environmental Manager), Museums Sheffield, SYAS		

SELECTION STRATEGY

On-site sampling strategy:
All environmental sampling has been undertaken following Wessex Archaeology's in-house guidance, which adheres to the principles outlined in Historic England's guidance (Campbell *et al.* 2011 and Historic England 2015a) and as stated in the relevant WSIs (Wessex Archaeology 2020b; 2020c; 2020d).

Post-excavation assessment:
Environmental samples have been processed and assessed. Recommendations for analysis have been made in the Updated Project Design above and are not repeated here.

Post-excavation selection strategy:
Selection strategy reviews will be undertaken at a project review point prior to archive deposition and in consultation with stakeholders as laid out above. It is not currently anticipated that decisions will be made that differ from the standards and guidance cited here.

Relevant standards, policies;

- *Environmental Archaeology: A Guide to the Theory, Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011)
- *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record* (Historic England 2015a)
- *Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains* (English Heritage 2008)

Environmental material type	Selection strategy
Unprocessed samples	All samples were processed for assessment.
Unsorted residues	Residues from samples not proposed for further analysis will not be retained.
Assessed flots	Samples have been assessed and are not recommended for further analysis as having little potential. Flots will not be retained.

UNCOLLECTED MATERIAL
All contexts suitable for environmental sampling were targeted. Unsampled material was either left *in situ* or excavated and returned to the site as backfill according to the excavation methodology outlined in the WSIs and agreed with stakeholders during excavation.
DE-SELECTED MATERIAL
At the end of the archive compilation stage, de-selected material and finds from samples will be responsibly disposed of after processing and post-ex recording.
AMENDMENTS
Detail any amendments to the above selection strategy.

Date	**Amendment**	**Rationale**	**Stakeholders Involved**
09/07/20	Added to existing selection strategy	Addition of excavation assemblage	As above

Appendix 7: Data management plan

1. Administrative Data	
Project and or Site Code	226161; 226162
Project Name	Grunwergs 2, Rockingham Street, Sheffield
Project Description	Evaluation and subsequent excavation on former industrial site in Sheffield city centre.
Project Supervisor	Milica Rajic, Ashley Tuck
Project Data Contact(s)	Milica Rajic, Ashley Tuck
Date of First Version	07/07/2020
Date of Last Update	
Related Policies	**Wessex Archaeology procedures:** Pro-forma recording, Fieldwork/Survey manuals, Context/Finds database guidance, Quality Management Protocols, Archive procedure manual. Data management guidelines Data protection and security policy. **Related Policies**: Formal standards for data management: HE Guidance, ADS guidance: ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice. Brown, D H 2011 *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (revised edition). Archaeological Archives Forum Chartered Institute for Archaeologists [CIfA] 2014a–c *Standard and Guidance, Codes of Conduct and Regulations.* CIfA, Reading Historic England 2015b *Digital Image Capture and File Storage*. Historic England, Swindon
2. Data Collection	
Data creation	**Scope of Digital Data Collection** Digital data creation includes site plans in a CAD and/or GIS programme, site stakeout data (CSV/.dxf), scans of drawings, databases, Excel tables and Word/PDF reports. Where relevant graphics may also be produced digitally in a graphics programme. **Wessex Archaeology Procedures:** JPEG, Shapefiles, CAD, EXCEL, ACCESS, WORD, PDF - Convertible to Open source/Archival formats for deposition. Document management system (DMS), Standardized file naming conventions and Project folder structure.

	Versioning and version control are automatically handled by the DMS. **Guidance**: Chartered Institute for Archaeologists [CIfA] 2014a–e *Standard and Guidance, Codes of Conduct and Regulations.* CIfA, Reading Historic England 2015c *Metric Survey Specifications for Cultural Heritage*. Historic England 2015b *Digital Image Capture and File Storage*. Wessex Archaeology Survey, Graphics, Research and Geophysics procedures **General Notes**: Data volumes are dependent on the size and number of sites. All data types are industry standard and can be accessed by most data specific software. If this is not the case, data can be converted to other common formats.
Data collection	**Scope of Digital Data Collection** Digital data collected has and will be used, in conjunction with other data, in interpretation and reporting of the scheme. Digital data collection included: • Archaeological site survey has been used as the primary method of recording the 3D spatial location of the archaeological works and archaeological remains. It may also be used to geo-reference other data types, such as photogrammetry and drawn plans. This data has been used in the production of report figures. • Site survey has been conducted with an RTK GNSS, set to a 3D coordinate quality of at least 50 mm. All data has been collected within Ordnance Survey National Grid with heights calculated as distance above Ordnance Datum (Newlyn), as defined by OSGM15 and OSTN15. • Data has either been sent via File Transfer Protocol to the office or has been manually downloaded for processing and back up at the end of each day; this facilitates data security, quality management and faster access to the data for the field and post-excavation teams. • Photography has primarily been used as a visual record of archaeological remains. It has also been used for general site views, photographs suitable for display or reporting, recording the state of sites prior to Wessex Archaeology access, recording reinstatement and other general shots as necessary. • Photography has been conducted with DSLRs, in line with Historic England standards. Photographs have been regularly backed up onto company servers to ensure data security. **Wessex Archaeology procedures:**

	Standardized Survey, Photographic, Photogrammetric and Archaeological recording procedures, post-ex data recording, Digital Archiving. QMS policy and procedures. **Guidance:** ADS 2013, *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice Chartered Institute for Archaeologists [CIfA] 2014a–e *Standard and Guidance, Codes of Conduct and Regulations.* CIfA, Reading Historic England 2015c *Metric Survey Specifications for Cultural Heritage*. Historic England, Swindon Historic England 2015d *Digital Image Capture and File Storage*. Historic England, Swindon **General Notes**: Data volumes are dependent on the size of site and specific equipment used. All data types are industry standard and can be accessed by most data specific software. If this is not the case, data can be converted to other common formats. Quality assurance for the digital data is provided by Wessex Archaeology Quality Management System, including data quality monitoring and logging during survey, and quality control assessments during processing and interpretation. This is conducted by the project supervisory and post-excavation teams, and the Geomatics department.
Data Processing	**Scope of Digital Data Processing** • Archaeological site survey- Raw GNSS/TST data as tab delimited text files. These will be processed through a survey data processing programme in order to create database files and CAD files. CAD data may be edited to correct errors in in the survey data collection, such as missed points, incorrect coding or bow ties. A final combined database file, with an accompanying metadata file, and a .dwg CAD file will be produced for each mitigation site. • Photography - Captured as RAW and/or JPEG files, site photographs are unlikely to undergo processing, except, where necessary, format conversion. **Wessex Archaeology procedures:** Standardized Survey, Photographic, Photogrammetric and Archaeological recording procedures, Stratigraphic data entry/creation, post-ex data recording, Digital Archiving. QMS policy and procedures

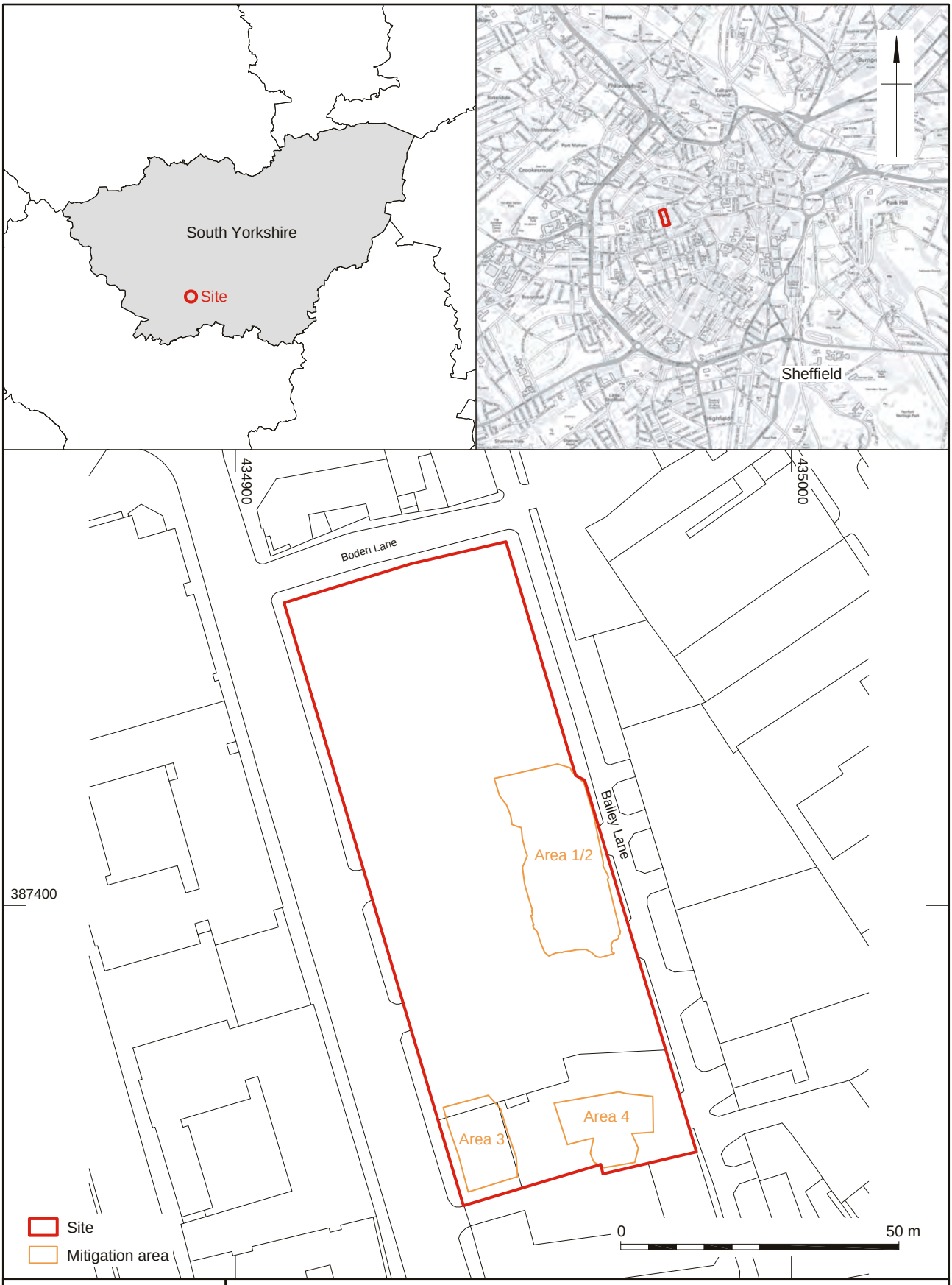
	Guidance: ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice Chartered Institute for Archaeologists [CIfA] 2014a–e *Standard and Guidance, Codes of Conduct and Regulations.* CIfA, Reading Historic England 2015c *Metric Survey Specifications for Cultural Heritage*. Historic England, Swindon Historic England 2015d *Digital Image Capture and File Storage*. Historic England, Swindon
Quality Management	**Wessex Archaeology Procedures**: Use of naming conventions, version control and folder structures. Consistency and quality of data collection has been or will be controlled and documented via on site supervision/QA, Post site QA, Post-ex/reporting QA, Digital Archiving/QA. This may include processes such as calibration, repeat samples or measurements, standardized data capture or recording, data entry validation, peer review of data or representation with controlled vocabularies. **Guidance**: Wessex Archaeology QMS equipment procedures, departmental procedures: Wessex Archaeology is registered as an archaeological organization with the Chartered Institute for Archaeologists (CIfA) and fully endorses its Code of Conduct (CIfA 2014d) and Regulations for Professional Conduct (CIfA 2014e). Wessex Archaeology is an ISO 9001 accredited organization (certificate number FS 606559) independently audited by the British Standard Institution (BSI), confirming the operation of a Quality Management System which complies with the requirements of ISO 9001:2008 - covering professional archaeological and heritage advice and services.
3. Documentation and Metadata	
Documentation and metadata accompanying data	**Wessex Archaeology Procedures:** Metadata files will be created by file type with unique project identifiers (Project number and name) and date of creation. These will describe data, layer names, labels and abbreviations/ vocabularies used, and processing gone through. Along with collection level project metadata these will form the basis of the metadata archive accompanying deposited data. Metadata will be automatically generated on data creation (eg photograph EXIF data) and/or manually created on PC during the process of data creation, departmental QA and archiving.

	Data documentation will follow the requirements outlined in the Written Schemes of Investigation, their required methodology and requisite stakeholder guidelines. Project reports will reference methodological processes and interpretive results. **Guidance:** ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice. Brown, D H 2011 *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation (revised edition*). Archaeological Archives Forum.
4. Ethics and Legal Compliance	
Managing ethical issues	**Wessex Archaeology Procedures:** Consent for data preservation and sharing will gained prior to release. The protection of the identity of participants, if required, will be via anonymization. Sensitive data is to be handled according to Wessex Archaeology data policy to ensure it is stored and transferred securely. **Guidance:** Duty for data to be publicly available and stored in perpetuity, if appropriate. Security or confidentiality concerns may prevent sharing, or even require deletion upon project completion, but guidance will be sought from relevant stakeholders on compliance issues. Wessex Archaeology Privacy Policy as stated online underpins our GDPR compliant management of personal data; https://www.wessexarch.co.uk/our-privacy-policy This policy is regularly reviewed and will be updated online as necessary.
Managing copyright and Intellectual Property Rights (IPR) issues	**Wessex Archaeology Procedures:** The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the Copyright, Designs and Patents Act 1988 with all rights reserved. Additionally, a detailed copyright statement as stated in the project Written Scheme of Investigation, including Third party data copyright, also applies. **Guidance:** The data produced during the project will be a mixture of Wessex Archaeology, Crown and third-party copyright. For multi-partner projects, IPR ownership may be worth covering in a consortium agreement. Permissions to reuse third-party data will be granted in perpetuity unless restrictions are required on data sharing. All third-party data will be used under licence and removed from

	deliverables/ archives as necessary.
5. Storage and Backup	
Storage and back up during research	**Wessex Archaeology Procedures**: Wessex Archaeology's IT department has a backup strategy and policies that involve daily, weekly, monthly and annual backups of data. Data will be stored on secured servers and also within offsite storage locations.
Managing access and data security	**Wessex Archaeology Procedures**: Risks to data security will be managed in accordance with Wessex Archaeology's data security policy and procedures. Access will be controlled by secure user accounts and also with the implementation of document and folder level security. Collaboration will be enabled via data access and sharing protocols that do not jeopardise data security. When creating the primary archive or collecting data in the field data will be backed up daily onto Wessex Archaeology's main secured systems.
6. Selection and Preservation	
Data retention, sharing, and preservation	**Wessex Archaeology Procedures:** All data will be retained forming the digital element of the overall working project archive. Digital data will be securely stored by Wessex Archaeology, with consideration of client confidentiality, GDPR restrictions and technological developments. Data will be stored in a logical, manageable way using Wessex Archaeology's methodology and storage systems. This will allow easy access throughout the duration of the project and for archive collation and consolidation once the project has ended. For long-term storage preservation and accessibility, files will be converted to an open source format, eg CSV and DXF, where necessary. Data for all sites investigated as part of the project should be retained for as long as it is deemed to have potential for archaeological reuse. At a minimum, project reports that do not contain confidential information should be made available. It is recommended that data supporting these reports be made publicly accessible. **All Data**: All data will be subject to a selection and retention process as agreed with all project stakeholders during the course of the project as laid out in the Selection Strategy (**Appendix 6** of this document). This process will follow the agreed research aims outlined in the Written Schemes of Investigation, and relevant regional and national research frameworks stated therein and specialist advice.

	Relevance of data considered for the archaeological archive, will also be dependent upon and defined by the nature and significance of archaeological deposits, methods of recording, outputs created and potential for re-use. This process will be reviewed with project stakeholder agreement and documented at project review and archival stages and updated as necessary. Such documentation will be included in the deposited archaeological archive. Data will be kept in line with obligations to retain certain data, the potential reuse value, what is economically viable to keep, and any additional effort required to prepare the data for data sharing and preservation. Data will be reused to validate research findings, conduct new studies, and for teaching. File formats will be stable cross-industry standard formats. **Guidance:** Brown, D H 2011 *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (revised edition). Archaeological Archives Forum. ADS 2013 *Guidance on the Selection of Material for Deposit and Archive - Online guidance* https://archaeologydataservice.ac.uk/advice/selectionGuidance.xhtml (Accessed January 2020) ADS Guidance adapted from Whyte, A and Wilson, A 2010 *How to Appraise & Select Research Data for Curation*. Digital Curation Centre. http://www.dcc.ac.uk/resources/how-guides/appraise-select-research-data (Accessed January 2020)
Long-term preservation plans for datasets	In agreement with project stakeholders, digital archaeological archives will be deposited with a Core Trust Seal trusted repository at a level commensurate with the potential for archaeological reuse, value for future research and public benefit. This will follow national guidelines and CIfA standards, as outlined in this DMP.
7. Data Sharing	
How will data be shared?	**Wessex Archaeology procedures:** Data will be shared via a range of accessible media and portals. Data will be shared as broadly as possible and via a Core Seal trusted repository, as stated in Section 6, in accordance with project stakeholder requirements and any restrictions, if imposed. An OASIS form will be completed for each phase of archaeological work associated with the projects.

	A final version of the project report will be supplied to the Historic Environment Record via OASIS, and any data which they request can also be provided directly if they are manageable and sustainable. Data will be made available as soon after collection as possible, provided it is in accordance with stakeholder agreed requirements an any restrictions, if imposed. Data archived with the ADS will have a DOI persistent identifier after deposition. **Guidance:** Data for deposition will be shared digitally, via downloads, accessible by the general public via the specific repository's data sharing guidelines and deposition licence with acknowledged long-term value. The methods used to share data will be dependent on a number of factors such as the type, size, complexity and sensitivity of data.
Data sharing restrictions	**Wessex Archaeology procedures**: Wessex Archaeology will attempt to minimize data restrictions as far as practicable. Exclusive use of the data may be required for limited periods where client approval is required, or longer term where sensitivities exist in discussion with project stakeholders. A data sharing agreement (or equivalent) will be adhered to via the deposition licence. Open source and standard formats will form the basis of files comprising the archaeological archive to best enable future data sharing and ease of re-use.
8. Responsibilities and Resources	
Responsibilities for data management	**Wessex Archaeology Procedures**: The project manager, field team, and the Archives, Geomatics and Graphics departments will be responsible for implementing the DMP, and ensuring it is reviewed and revised. Individual responsibility may be assigned to key staff for each data management activity where applicable eg: Creators (Creation and QA), Supervisors/PO (QA and reporting), IT (Storage and backup), Geomatics (data processing), Archivists (Archive collation, selection, QA and deposition).
Resources required to deliver DMP	**Wessex Archaeology Procedures:** Sufficient expertise for this DMP exists within the organization and no additional expertise is expected to be required. No hardware or software which is additional or exceptional to existing institutional provision is expected to be required. Charges applied by data repositories will be covered by the project budget.



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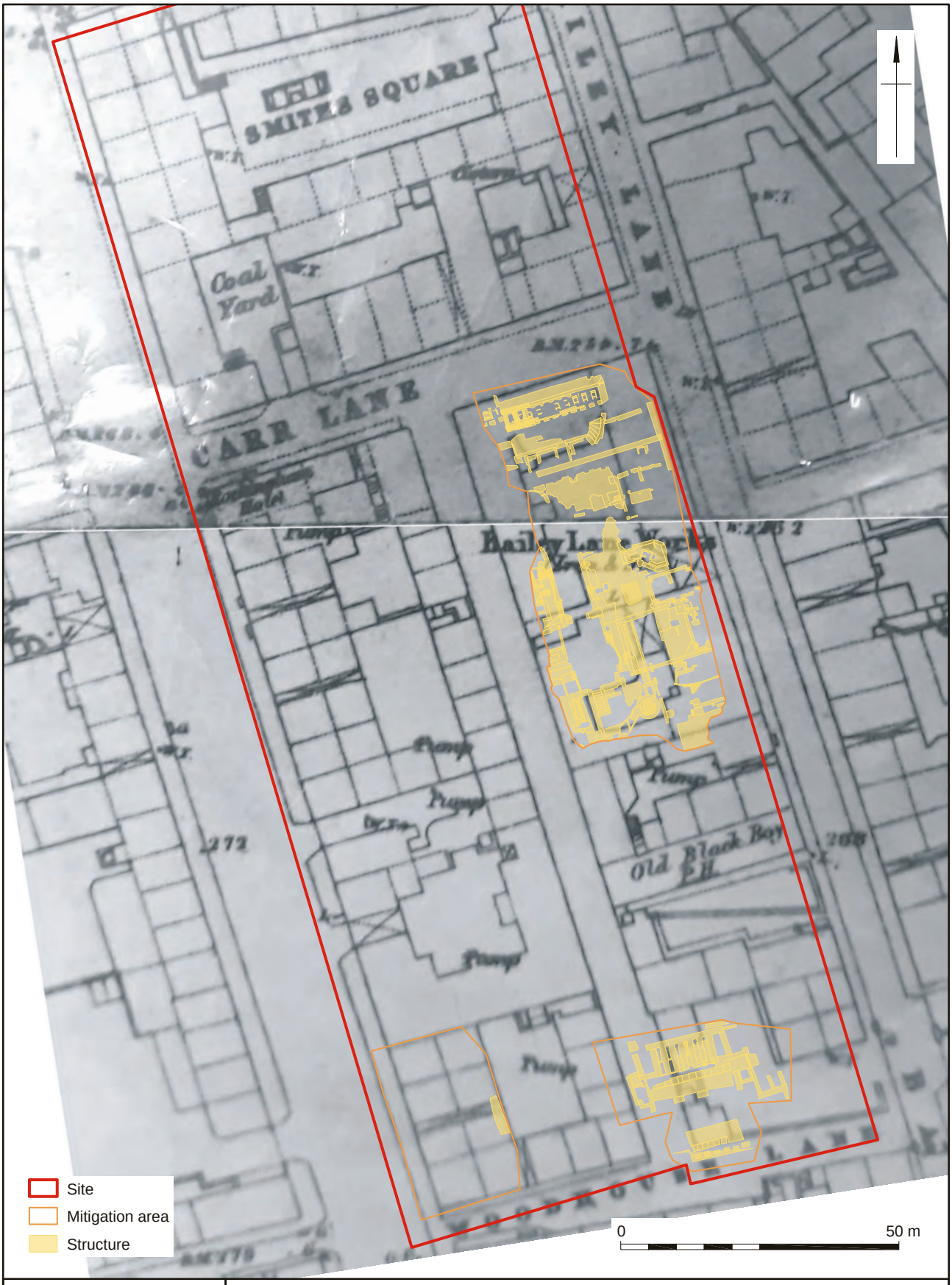
Path:	S:\PROJECTS\226162\Graphics_Office\Rep figs\PXA\2020_06_23		

Site location

Figure 1



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Scale:	1:500 at A4	Illustrator:	IA
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Mitigation areas overlaying the 1853 Ordnance Survey mapping

Figure 2

Date:	17/07/2020	Revision Number:	0
Scale:	1:500 at A4	Illustrator:	IA
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Mitigation areas overlying the 1890 Ordnance Survey mapping

Figure 3

Date:	17/07/2020	Revision Number:	0
Scale:	1:500 at A4	Illustrator:	IA
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Mitigation areas overlying the 1905 Ordnance Survey mapping

Figure 4

Date:	17/07/2020	Revision Number:	0
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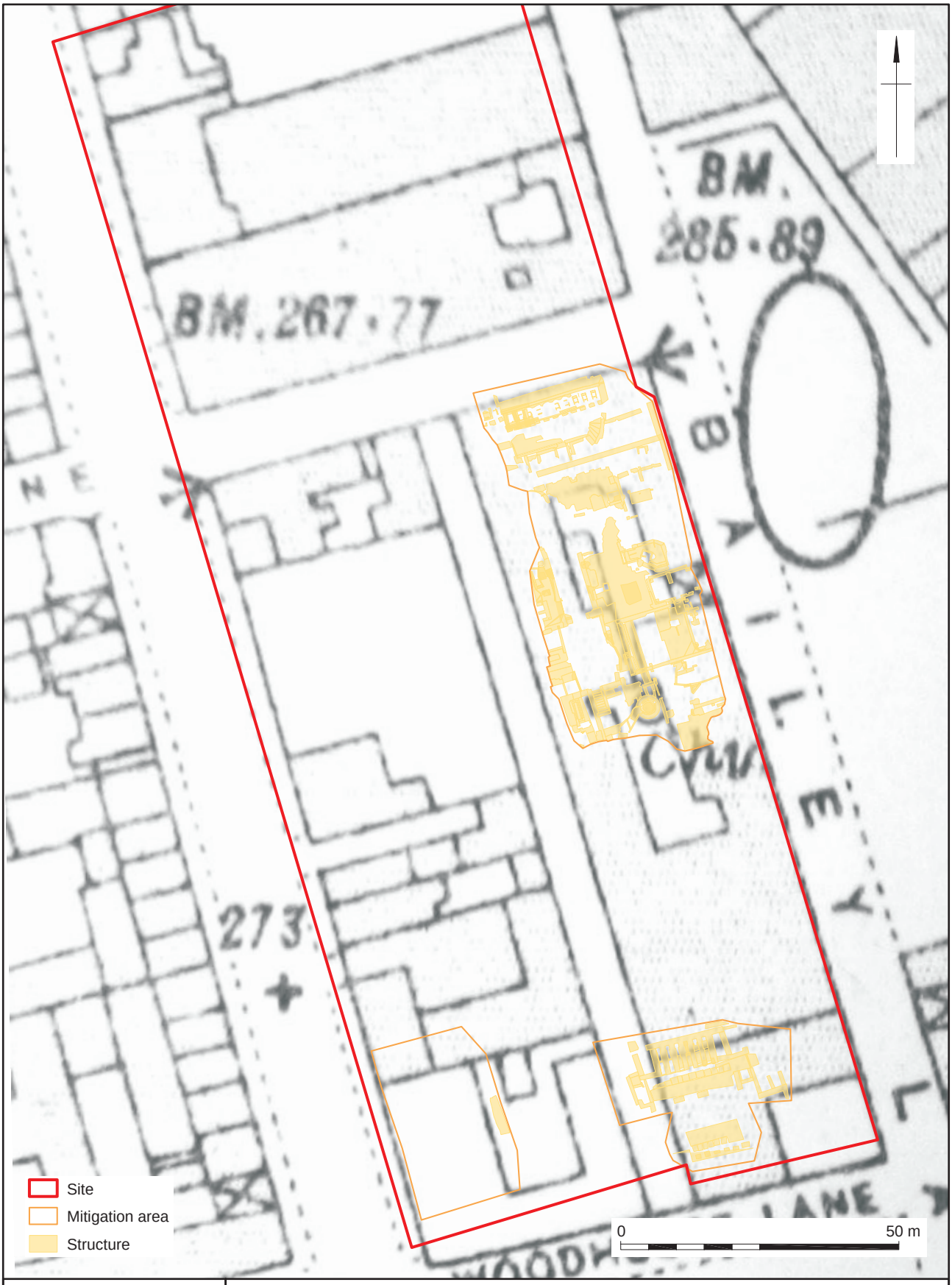
Mitigation areas overlying the 1923 Ordnance Survey mapping

Figure 5



Date:	07/02/2020	Revision Number:	0
Scale:	1:500 at A4	Illustrator:	IA
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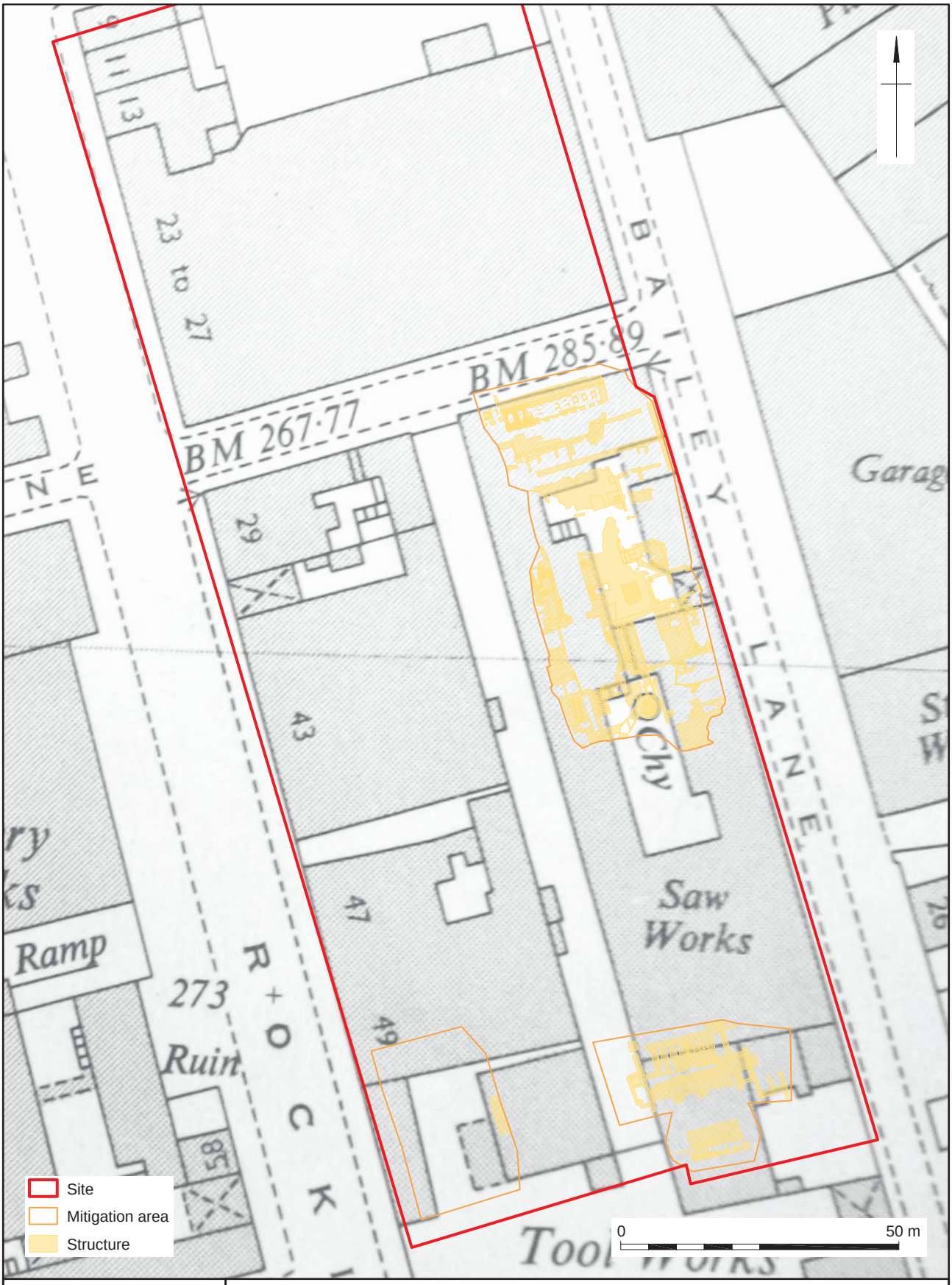
Mitigation areas overlying the 1935 Ordnance Survey mapping

Figure 6



Date:	07/02/2020	Revision Number:	0
Scale:	1:500 at A4	Illustrator:	IA
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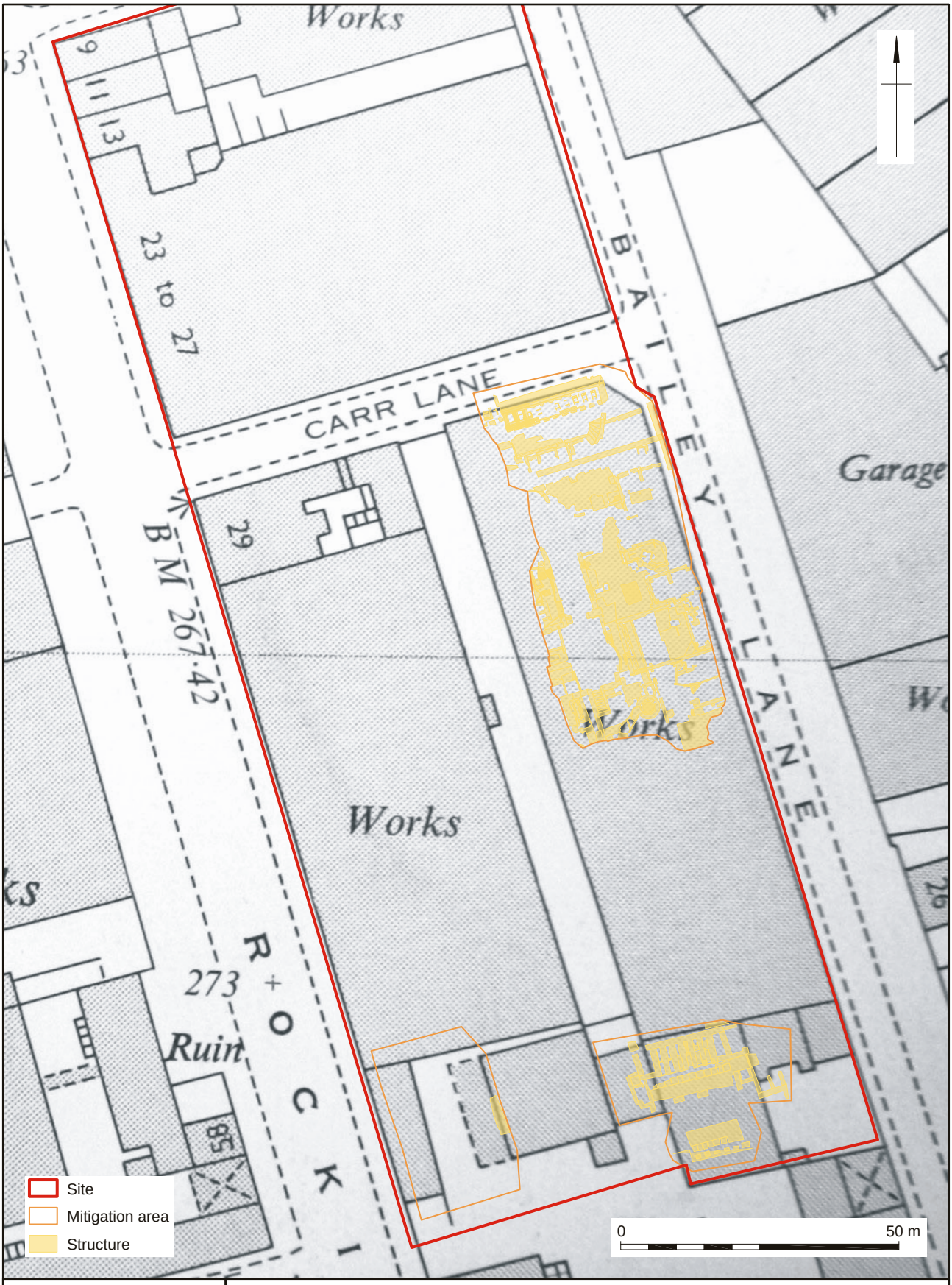
Mitigation areas overlying the 1954 Ordnance Survey mapping

Figure 7



Date:	17/07/2020	Revision Number:	0
Scale:	1:500 at A4	Illustrator:	IA
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Mitigation areas overlying the 1964 Ordnance Survey mapping

Figure 8

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Scale:	1:500 at A4	Illustrator:	IA
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Mitigation areas overlying the 1977 Ordnance Survey mapping

Figure 9

434950

387400

Section 1
Section 2
Section 3
Section 4
Section 5
Section 6
Section 7
Section 8
Section 9
Section 10

4200 (crucible furnace)
4224 (fire bars)
4230 (iron ties)
4267 (crucible furnace)
4226 (furnace linings)
4227 (furnaces)
4229 (iron ties)
4240=4276
1021=4050
1017=4048
1018=4049
1009
1010
1003
1004
1002
1001
4067=4069
4104=4188

GRP 4320
GRP 4300
GRP 4242
GRP 4269
GRP 4011
GRP 4210
GRP 4140
GRP 4150
GRP 4100

Edge of excavation

0 5 m

Date:	03/07/2020	Revision Number:	0
Scale:	1:100 at A3	Illustrator:	IA
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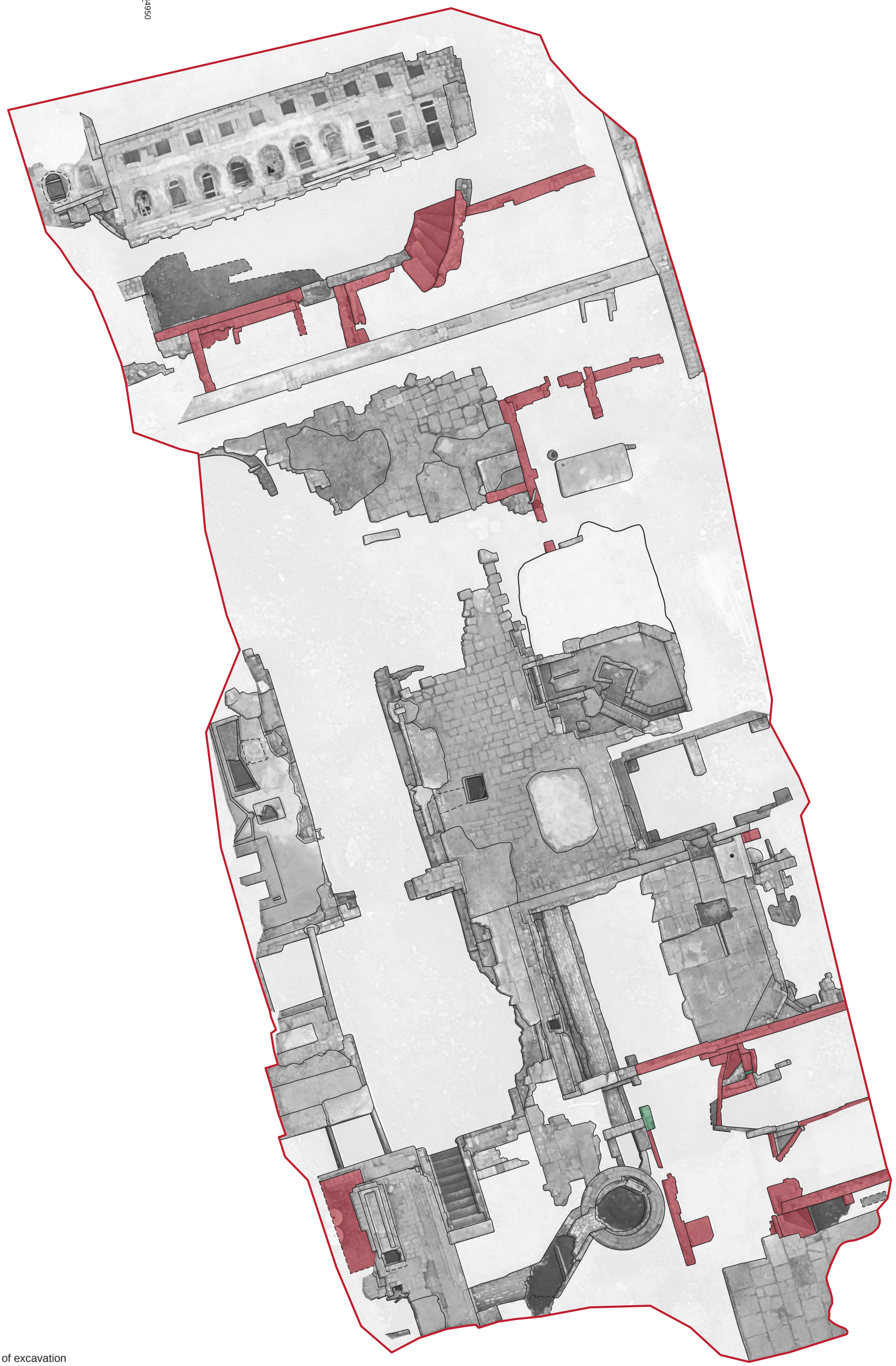
Area 1 and 2 plan

Figure 10

434950



387400

Edge of excavation

Phase 1 – late-18th-/early-19th century

0 5 m

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Scale:	1:100 at A3	Illustrator:	IA
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Area 1 and 2 – phase 1

Figure 11

434950

387400

Edge of excavation

Phase 2 – late-19th-/early-20th-century

0 5 m

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Scale:	1:100 at A3	Illustrator:	IA
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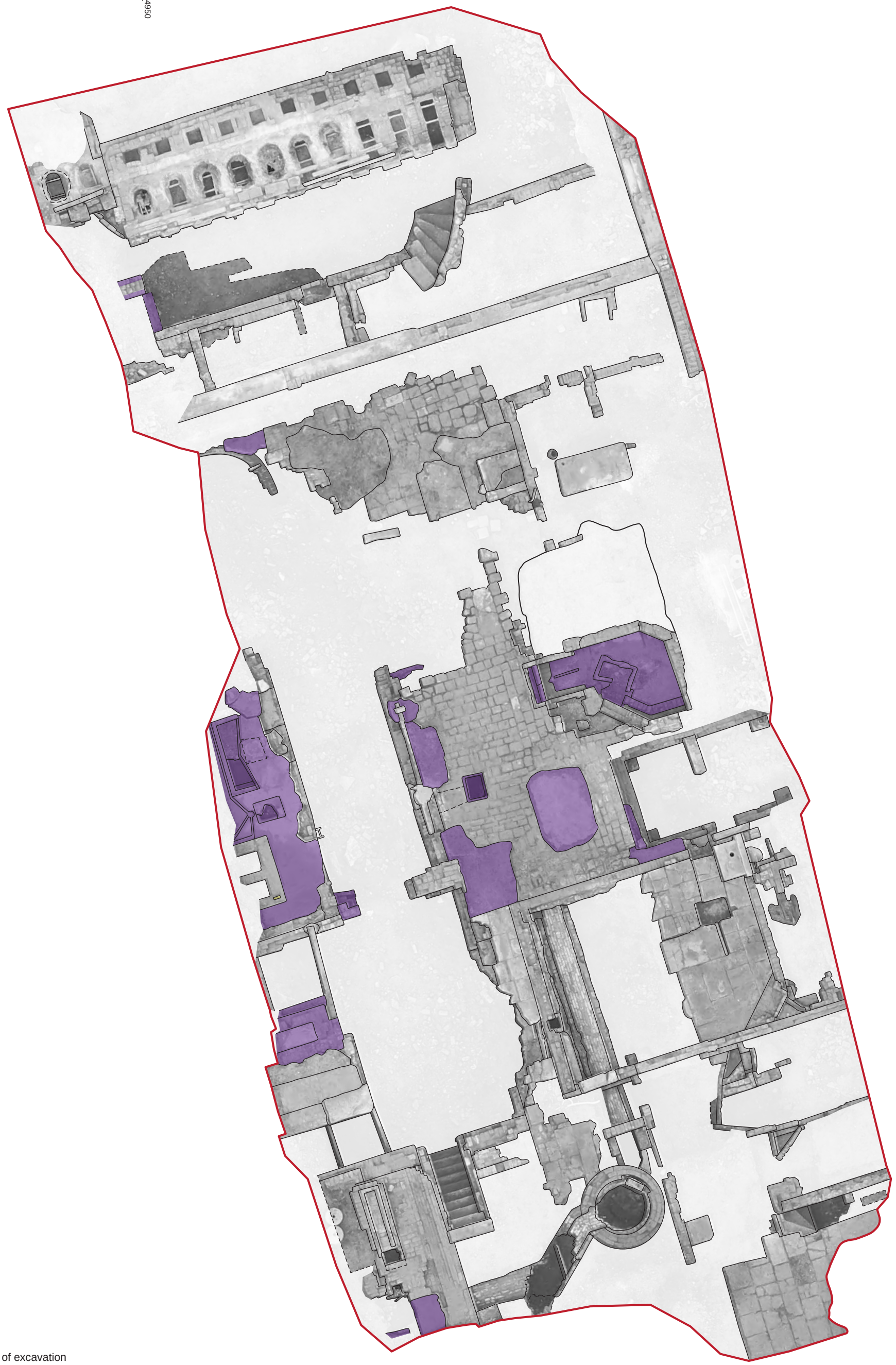
Area 1 and 2 – phase 2

Figure 12

434950



387400

Edge of excavation

Phase 3 – late-19th-/early-20th-century

0 5 m

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Scale:	1:100 at A3	Illustrator:	IA
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Area 1 and 2 – phase 3

Figure 13

434950

387400

Edge of excavation

Phase 4 – Undated demolition of cellars and construction of sett surface 4149

0 5 m

		Date:	03/07/2020	Revision Number: 0
		Scale:	1:100 at A3	Illustrator: IA
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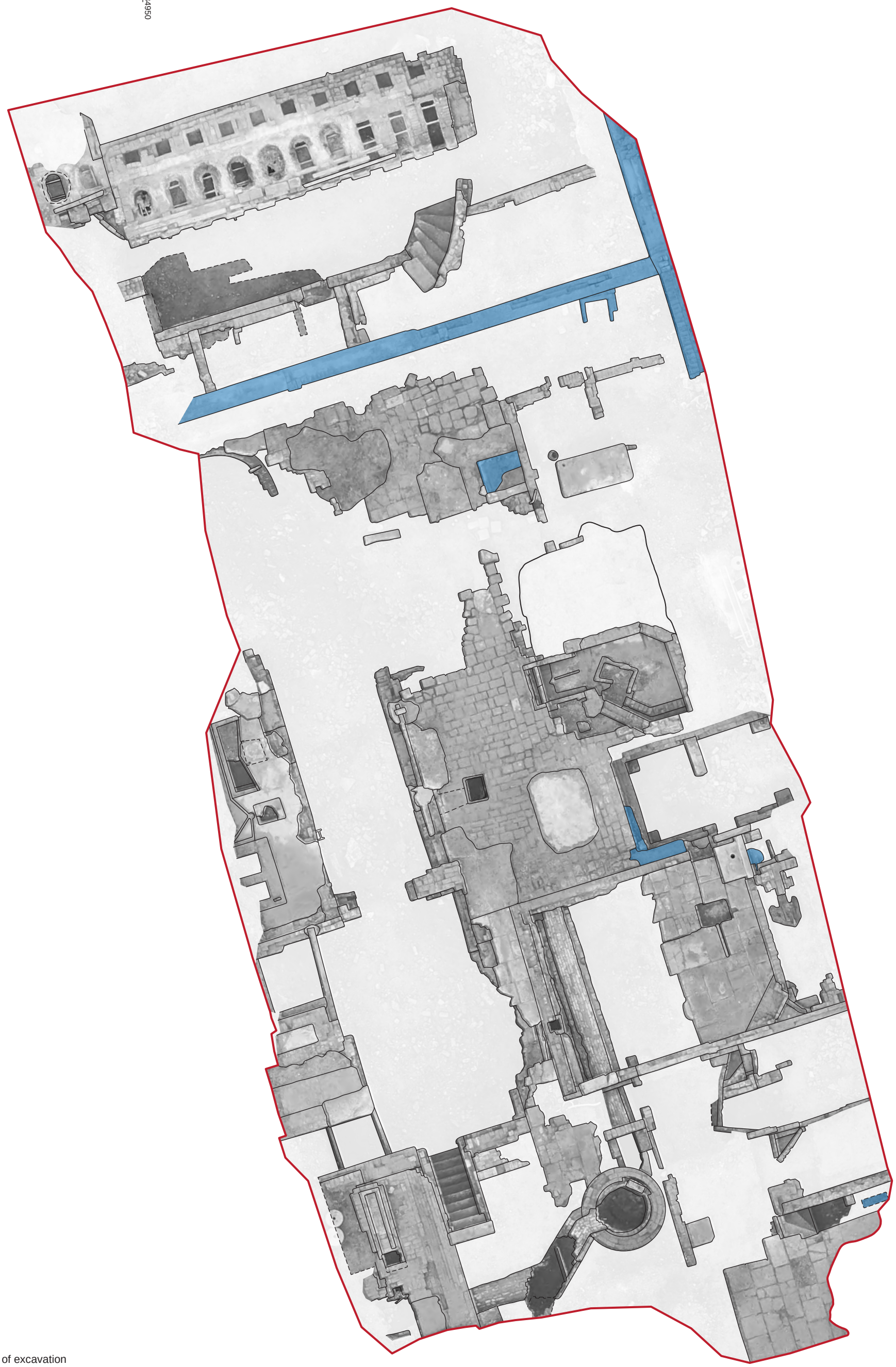
Area 1 and 2 – phase 4

Figure 14

434950



387400

Edge of excavation

Phase 5 – 20th century

0 5 m

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Scale:	1:100 at A3	Illustrator:	IA
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Area 1 and 2 – phase 5

Figure 15

434950

387400

Edge of excavation
Phase 1 – late-18th-/early-19th century
Phase 2 – late-19th-/early-20th-century
Phase 3 – late-19th-/early-20th-century
Phase 4 – Undated demolition of cellars and construction of sett surface 4149
Phase 5 – 20th century

0 5 m

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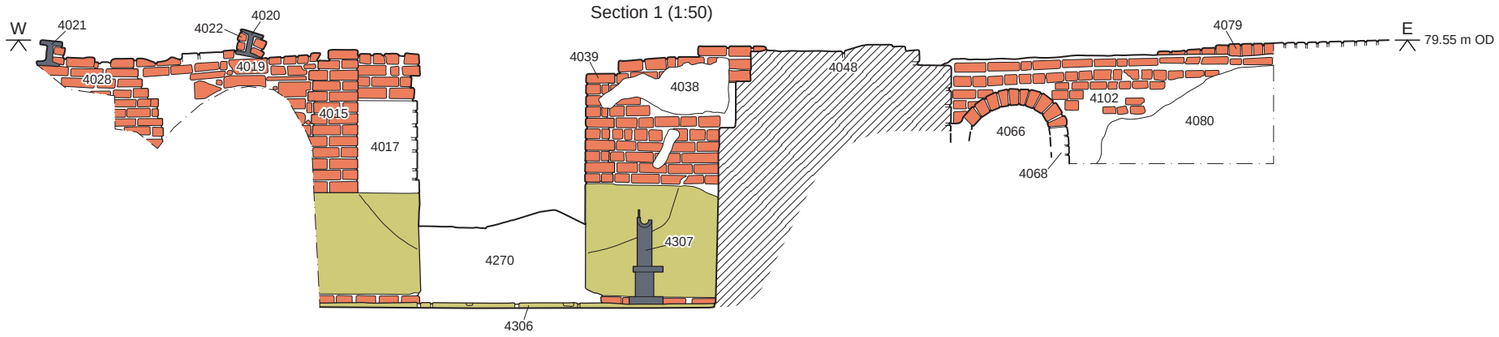
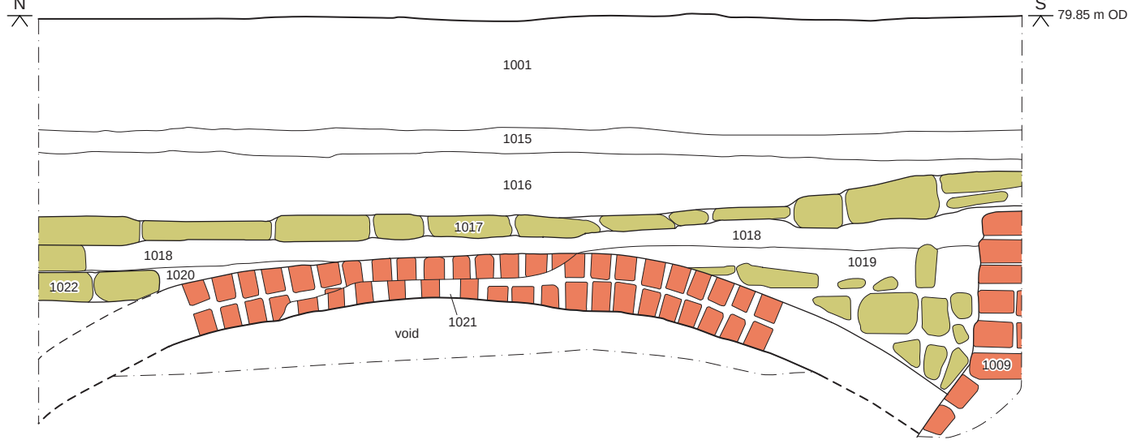
Area 1 and 2 – all phases

Figure 16

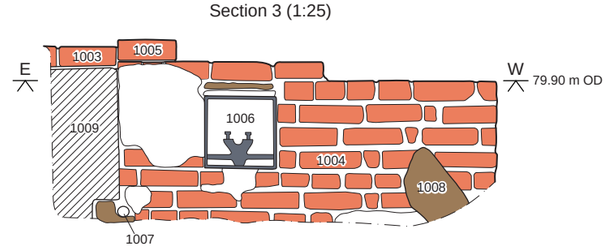
Section 1 (1:50)



Section 2 (1:25)



Section 3 (1:25)



Brick
Stone
Wood
Metal

0 1 m (1:25)
0 2 m (1:50)

Date:	08/07/2020	Revision Number:	0
Scale:	1:50 and 1:25 at A3	Illustrator:	IA
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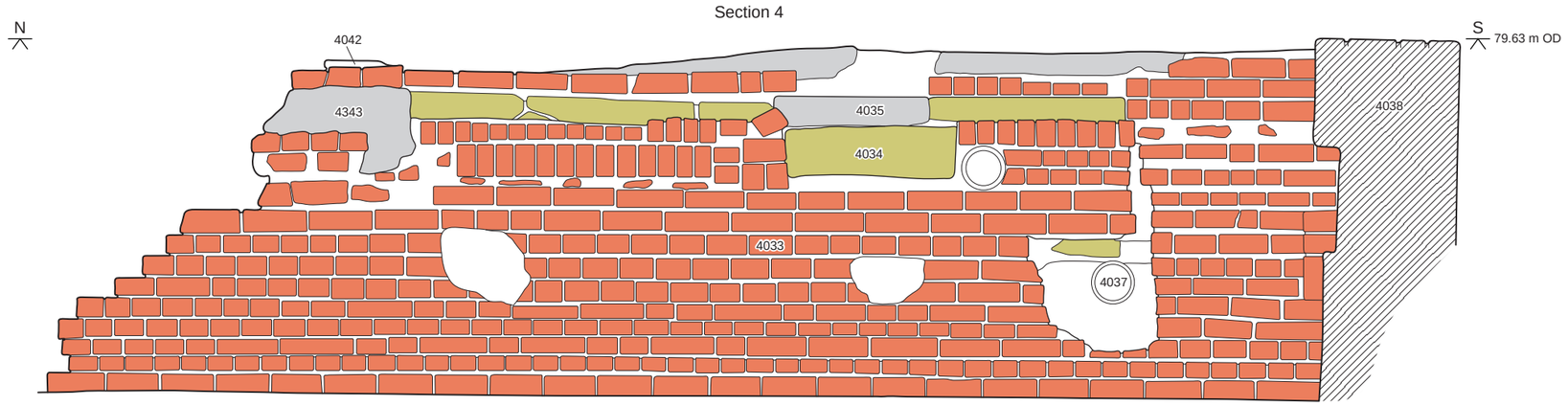
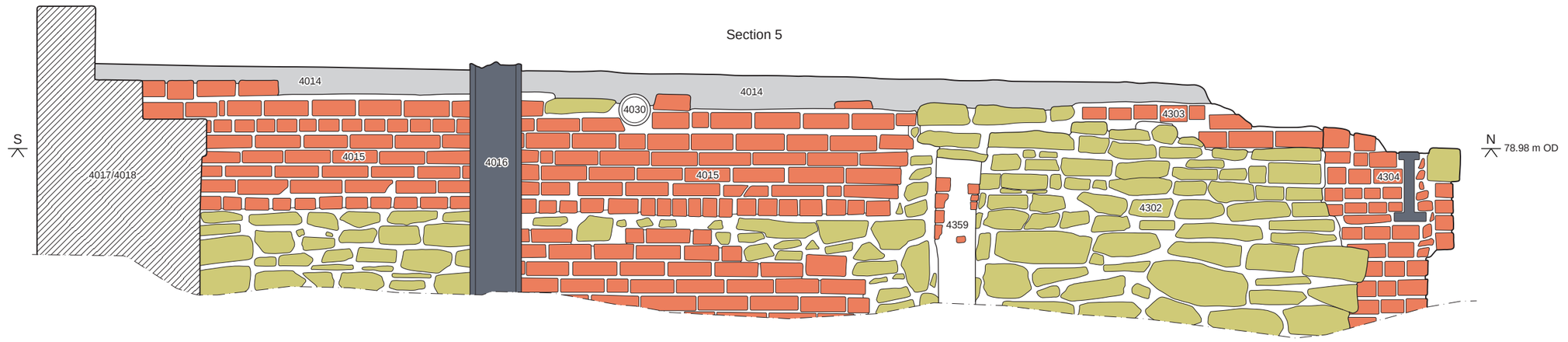
Area 1 – sections 1-3

Figure 17

Section 4



Section 5



Brick
Stone
Concrete
Metal

0 1 m

Date:	08/07/2020	Revision Number:	0
Scale:	1:25 at A3	Illustrator:	IA
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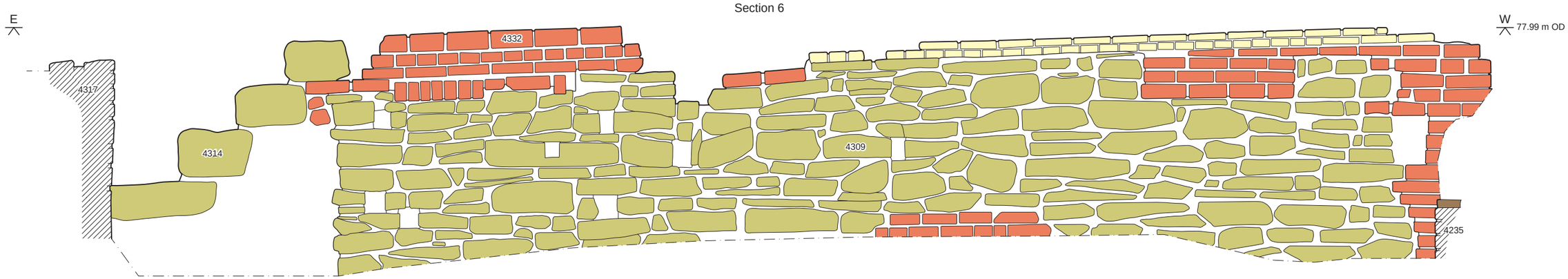
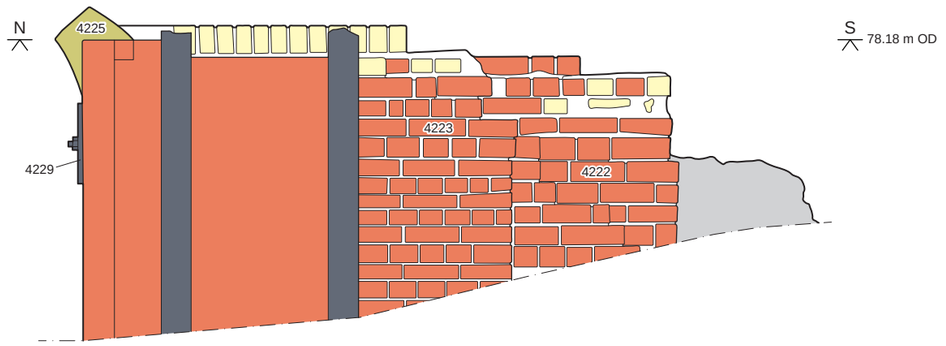
Area 1 – sections 4 and 5

Figure 18

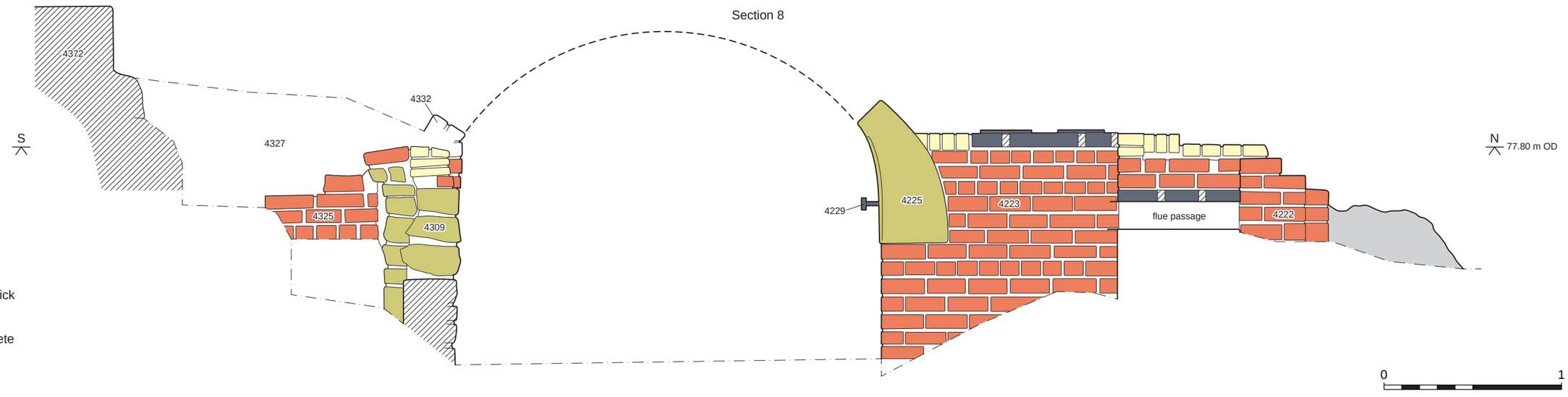
Section 6



Section 7



Section 8



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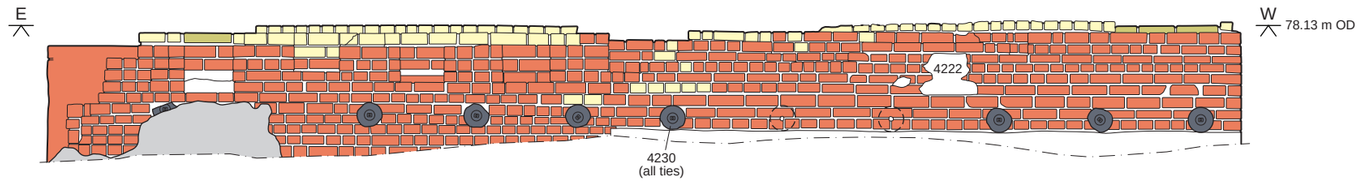
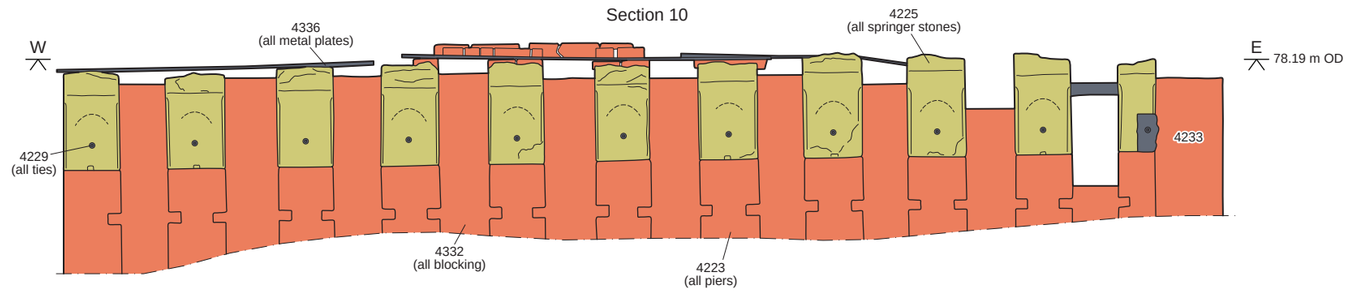
Area 2 – sections 6-8

Figure 19

Section 9



Section 10



Brick
Fire brick
Stone
Concrete
Metal

0 2 m

Date:	08/07/2020	Revision Number:	0
Scale:	1:50 at A3	Illustrator:	IA
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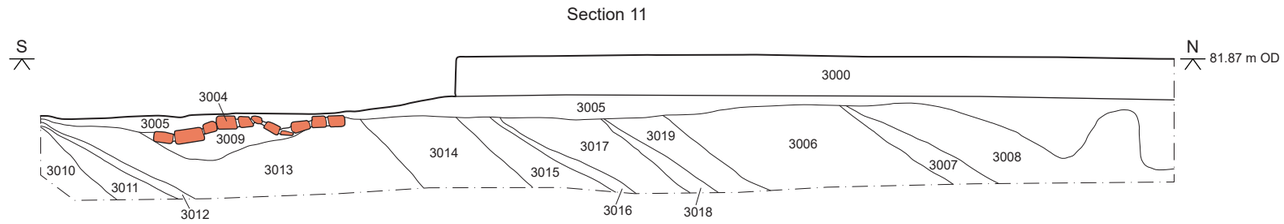
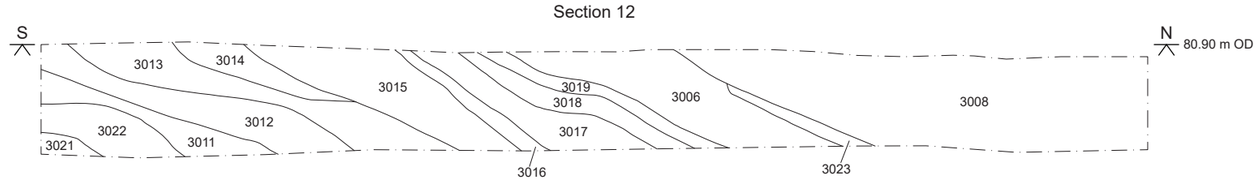
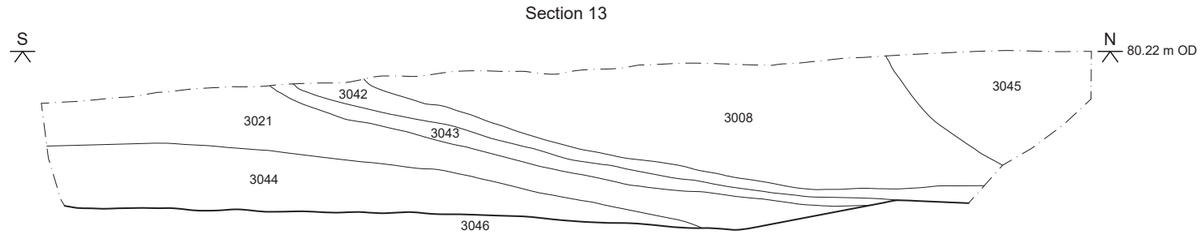
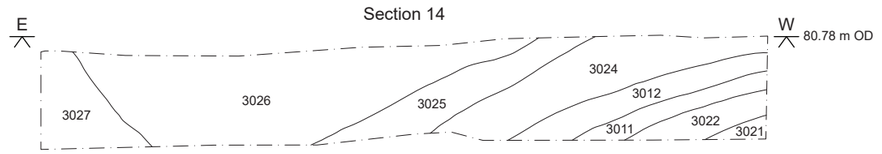
Area 2 – sections 9 and 10

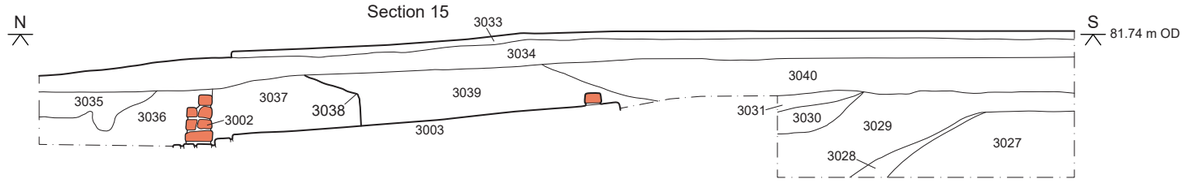
Figure 20

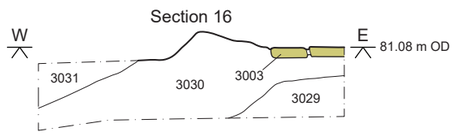












0 2 m

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Area 3 – plan and sections

Figure 21

434960

434970

387360

5058
5057
5031
5060
5010
(crucible furnace)
5040
5041
5019
5039
5036
5035
5018
Section 17
5042
5038
5033
5034
5049
5048
5011
5037
5032
5051
5055
5050
5054
5053
5044
5043
5023
5006
5003
5004
5059
5061
5071
5005
5015
5017
5013
5016
5024
5022
5072
5073
5056
5014
5062
5072
5020
5021
5063
5090
5080
(crucible furnace)
5087
5089
5081
5082
5079
(brick piers)
5083
5084
5085
5088
5086

Brick
Stone
Metal

0 2 m

Date:	17/07/2020	Revision Number:	0
Scale:	1:50 at A3	Illustrator:	IA
Path:	S:\PROJECTS\226162\Graphics_Office\Rep figs\PXA\2020_06_23		

Section 17

W

E

81.29 m OD

5032

5033

5034

5035

5048

5049

5050

5018

5053

5054

5055

5052

5043

5044

5045

5046

5047

5031
(all piers)

Brick

Stone

Metal

0 1 m

Date:	17/07/2020	Revision Number:	0
Scale:	1:25 at A3	Illustrator:	IA
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Area 4 front (south-facing) elevation of crucible furnace 5010

Figure 23

Plate 1: Phase 1 cellar between walls 4075 and 4138 including apsidal keeping hole 4216 from west

Plate 2: Phase 1 cellar south of wall 4157 and later surface 4149 from west

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Scale:	Not to scale	Illustrator:	IA
Path:	S:\PROJECTS\226162\Graphics_Office\Rep figs\PXA\2020_06_23		

Plate 3: Detail of phase 1 cellar between wall 4138 and 4157 from east

Plate 4: Rebuild 4143 from north

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Scale:	Not to scale	Illustrator:	IA
Path:	S:\PROJECTS\226162\Graphics_Office\Rep figs\PXA\2020_06_23		

Plate 5: Chimney 4100 and environs from east

Plate 6: Wall 4351 with engine pit in background from east

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Scale:	Not to scale	Illustrator:	IA
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Plate 7: Location of unknown hot process in the south-west of area 1 from north

Plate 8: South side of weighbridge 4269 and building to south from north-east

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Scale:	Not to scale	Illustrator:	IA
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Plate 9: Building 4300 and later machine base 4275 from west

Plate 10: Wall 4318 from north

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Path:	S:\PROJECTS\226162\Graphics_Office\Rep figs\PXA\2020_06_23		

Plate 11: Stairs 4314 from north

Plate 12: Crucible cellar including wall 4309 and surface 4234 from north-east

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Scale:	Not to scale	Illustrator:	IA
Path:	S:\PROJECTS\226162\Graphics_Office\Rep figs\PXA\2020_06_23		

Plate 13: Teeming pit 4320 and environs from south-east

Plate 14: Interior of chimney 4100 from south

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Scale:	Not to scale	Illustrator:	IA
Path:	S:\PROJECTS\226162\Graphics_Office\Rep figs\PXA\2020_06_23		

Plate 15: North flue 4168/4169 detail from east

Plate 16: North flue 4175/4176 and 4066 and environs from east

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Scale:	Not to scale	Illustrator:	IA
Path:	S:\PROJECTS\226162\Graphics_Office\Rep figs\PXA\2020_06_23		

Plate 17: Milica Rajic monitors the demolition of structures in area 1, revealing westwards turn of flue 4066. From south-east

Plate 18: Entrance of north-west end of flue 4066 into engine pit. From west

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Scale:	Not to scale	Illustrator:	IA
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Plate 19: West flue 4104 entering chimney 4100 from south-west

Plate 20: Flue 4104 splits. From east

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Plate 21: General view of area 1 from south-east showing flue door 4130

Plate 22: Communication between trough and flue: shaft 4128 and small flue 4129. From north

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Plate 23: Hand-dug intervention in north of ‘trench 10 cellar’ showing surface 4306 and line shaft bush 4307 from south

Plate 24: Stairs 4334 from north

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Plate 25: Surface 4048 and environs at east edge of ‘trench 10 cellar’ from north

Plate 26: Brick arch 1021 and environs from west

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Plate 27: North-east corner of ‘trench 10 cellar’ from south-west

Plate 28: Small chimney 4070 under arch 1021 from west

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Plate 29: Top of small chimney 4070 from north-east

Plate 30: Wall 4019 with apsidal recess and environs from south-east

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Plate 31: Wall 4019 and environs from north

Plate 32: Girders 1010 and 4120 support sandstone surface 4117–4119 from south

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Plate 33: Engine pit from west showing wall 4033 etc.

Plate 34: Engine pit from north-east showing wall 4015 etc.

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Plate 35: Possible staircase 4299 from south

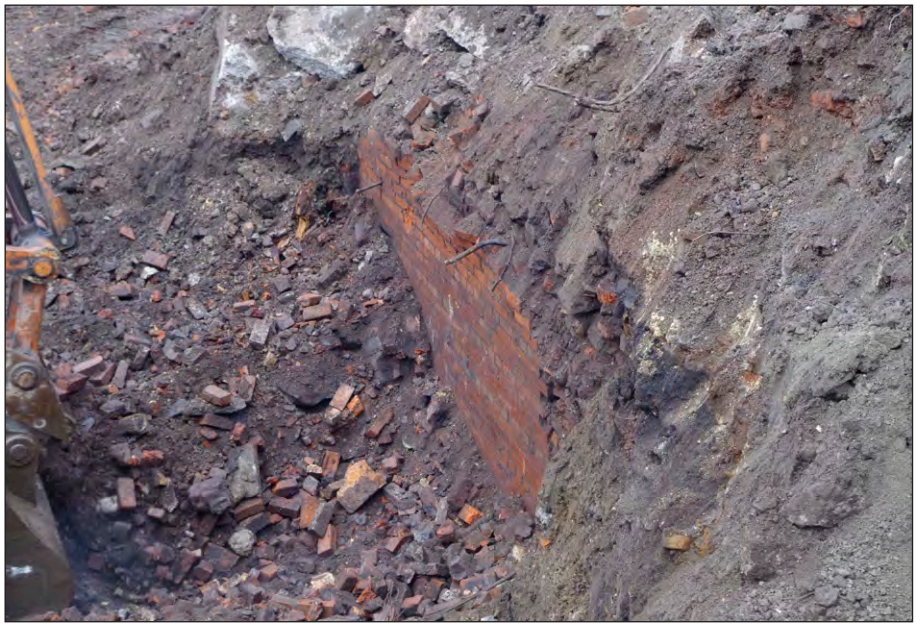

Plate 36: Structure 4357 seen under watching brief conditions from north-east

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Plate 37: Structure 4354 seen under watching brief conditions from north-east

Plate 38: Area west of engine pit floored by concrete 4006 from north

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Plate 39: Central yard surface 4041 and environs from north

Plate 40: Vaulting 4305 from north-west

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Plate 41: Weighbridge 4269 from east

Plate 42: Perforated sandstone 4089 from west

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Plate 43: South side of weighbridge 4269 from north

Plate 44: Building south of weighbridge 4269 from south-east

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Plate 45: Fireplace 4184 from north-west

Plate 46: Flag surface 4193, possible brick surface 4189 and environs from north-west

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Plate 47: Building north of weighbridge 4269 from east

Plate 48: Yard surface 4292 and environs from west

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Plate 49: Wall 4236 and later additions including 4235 from north-east

Plate 50: Wall 4236 and later additions including 4235 from north

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Plate 51: North-facing elevation of crucible furnace 4200

Plate 52: Example of air vent in north of crucible furnace 4200

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Plate 53: Crucible furnace 4200 from south-west

Plate 54: Crucible furnace 4200 from south

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Plate 55: Crucible furnace 4200 from south-east

Plate 56: Example of melting hole in crucible furnace 4200 from north

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Plate 57: Example of melting hole bars in crucible furnace 4200 from east

Plate 58: Join between crucible furnaces 4200 (bottom) and 4267 (top right) from east

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Plate 59: Inserted stanchion base 4042/4343 from east

Plate 60: Example of area 3 stratigraphy from east

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Plate 61: Structure 3003, 3004 etc. from north-west

Plate 62: Overview of area 4 from east

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Plate 63: Brick piers 5020 etc. from north

Plate 64: Crucible furnace 5010 from south-east

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Plate 65: Crucible furnace 5010 from south showing ash pits and air ducts

Plate 66: Crucible furnace 5010 from south-west

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Plate 67: East end of crucible furnace 5010 from south

Plate 68: Crucible furnace 5080

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Plate 69: Bay 5004–5009 from north-east

Plate 70: ‘E’-shaped storage area with in-situ iron objects 5017

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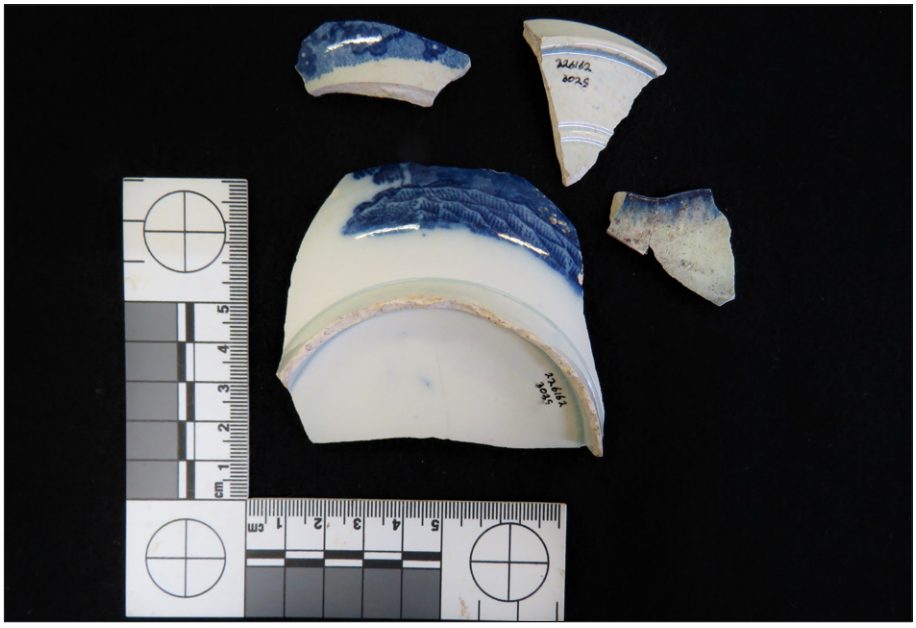

Plate 71: Example of pottery recovered from early made ground 3025

Plate 72: Example of pottery recovered from early made ground 3047

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Plate 73: Example of pottery recovered from early made ground 3048

Plate 74: Heavy engineer's file recovered from early made ground 4346

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Wessex Archaeology Ltd registered office Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB
Tel: 01722 326867 Fax: 01722 337562 info@wessexarch.co.uk www. wessexarch.co.uk

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