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REAR OF 14-18 THE CALLS

LEEDS

WEST YORKSHIRE

ARCHAEOLOGICAL STRIP AND RECORD EXCAVATION REPORT

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COMMERCIAL DEVELOPMENT PROJECTS LTD

Rear of 14-18 The Calls, Leeds, West Yorkshire

Archaeological Strip, Map and Sample Excavation Report

PREPARED BY:	EDITED BY:	APPROVED BY:
Kevin Mounsey	Frank Giocco	Richard Newman
		
Supervisor	Technical Director	Associate Director

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DESK BASED ASSESSMENTS
ARCHAEOLOGICAL EVALUATION
ARCHAEOLOGICAL EXCAVATION
GEOPHYSICAL SURVEY
TOPOGRAPHIC AND LANDSCAPE SURVEY
HISTORIC BUILDING RECORDING
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SUMMARY

Wardell Armstrong LLP (WA) was commissioned by Emma Cordingley, Development Director, Commercial Development Projects Ltd (CDP), to undertake an archaeological strip and record on land at the rear of 14-18 the Calls, Leeds, West Yorkshire. (centred on NGR: SE 20214 45421). The archaeological fieldwork was required to discharge the planning conditions relating to the demolition of existing buildings and construction of 77 apartments, and bar/restaurant and office development with 2 level basement parking and laying out of public open space (Ref: 13/02034/FU).

The development site lies in central Leeds and comprises both the street front buildings, No's 14, 16 and 18 The Calls and an area of ground to their rear and north of the River Aire. The development area of c.835m² is in the historic township of Leeds.

In 2003 and 2008 limited archaeological evaluations were carried out to the rear of the properties fronting The Calls (Nos. 2-28). These established that archaeological remains in the area dated to the 18th century or later. On the back of these results West Yorkshire Archaeology Advisory Service (WYAS) recommended that a post determination archaeological excavation in the form of an archaeological strip and record be carried out within the footprint of the new development. The archaeological work was undertaken over twenty days between the 20th November and the 15th December 2017, and comprised the excavation of an open area measuring 231m². The site was immediately to the south of the tail leat of the medieval goit which contained an active modern sewer.

The excavation revealed traces of a late medieval ditch and the remains of buildings and structures relating to the industrial and commercial activity on the site dating from the late 18th century to the early 19th century. These were represented mainly by brick built structures. The structures were believed to represent some form of industrial process, possibly the dying of cloth, but this remains somewhat uncertain. The sandstone walls of a crescent shaped terrace of residential buildings known to have existed by 1831, were also uncovered. Associated with this terrace, and constructed of similar stonework, were several drainage culverts cutting through the earlier features.

In places the surviving archaeology was just below the black asphalt and concrete surfaces. Elsewhere it was up to 1.00m deep, under the surface and covered by demolition rubble. The material culture recovered was from deposits that had been well-mixed suggesting that a great deal of redepositing had taken place. It was mainly of 18th to 19th century date. However, the northern most deposit on site contained substantial amounts of late 17th

century, early 18th century pottery which may suggest that the area, closest to the former medieval goit was occupied, at an earlier date.

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Wardell Armstrong LLP (WA) thank Emma Cordingly of Commercial Development Projects Ltd for commissioning the project, and for all their assistance throughout the work. WA also thank David Hunter, West Yorkshire Archaeology Advisory Service for his assistance throughout the project.

The evaluation was undertaken by Kevin Mounsey, Sue Thompson, Holly-Ann Karl, Laura Caygill-Lowrey and Ellen Barnicle. The report was written by Kevin Mounsey and the figures produced by Helen Phillips. The finds were assessed by Sue Thompson. The environmental samples were reported on by Lynne Gardiner who was supported by Freddie Sisson and Holly Ann Carl. The zooarchaeological assessment undertaken by Megan Stoakley. The project was managed by Frank Giecco, Technical Director WA and the report was edited by Frank Giecco, Technical Director.

1 INTRODUCTION

1.1 Project Circumstances and Planning Background

1.1.1 In November/December 2017, Wardell Armstrong (WA) undertook an archaeological strip, map and record excavation on land to the rear of 14-18 the Calls, Leeds (Figure 2). (centred on NGR SE 20214 45421). The work was commissioned by Emma Cordingly, Development Director, Commercial Development Projects Ltd to discharge the planning conditions relating to the archaeology on the site (Ref: 13/02034/FU).

1.1.2 Archaeological work was required as the proposed development will impact upon sub-surface archaeological remains associated with the 18th century and later. These had been recorded to a limited extent in archaeological evaluations carried out in 2003 and 2008. It was found that overburden at least 1.00m deep in places sealed structures that reflected the industrial nature and development of the Calls.

1.2 Project Documentation

1.2.1 The excavation was undertaken in accordance with a specification for an archaeological strip and record excavation and watching brief developed by David Hunter, West Yorkshire Archaeology Advisory Service (WYAAS) This is in line with government advice as set out in Section 12 of the National Planning Policy Framework (NPPF 2012).

1.2.2 This report outlines the work undertaken on site, the subsequent programme of post-fieldwork analysis, and the results of this scheme of archaeological excavation.

2 METHODOLOGY

2.1 Standards and guidance

2.1.1 The archaeological excavation was undertaken following the Chartered Institute for Archaeologists *Standard and Guidance for archaeological field excavation* (2014a), and in accordance with the WA fieldwork manual (2017).

2.1.2 The fieldwork programme was followed by an assessment of the data as set out in the *Standard and Guidance for archaeological field excavation* (CIfA 2014a) and the *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014b).

2.2 The Strip, Map and Sample Excavation

2.2.1 The strip, map and sample comprised the excavation of a single open area, located to the rear of numbers 14-18 the Calls, Leeds and immediately north of the River Aire. (Figure 2) It avoided the tale leat of the medieval goit (mill race) which contained a modern sewer. The excavation area measured c.16.60m east-west and c.14.00m north-south, an area of c. 234 m².

2.2.2 The general aims of these investigations were:

- to investigate and record the c.234m² excavated area between the rear of 14-18 the Calls and the River Aire. This was to be done in an archaeologically controlled manner and stratigraphically to meet the aims and objectives of the project;
- to establish the extent, nature, and state of preservation of the archaeological remains and to record these where they were observed;
- to establish the character of those features in terms of cuts, soil matrices and interfaces;
- to recover artefactual material, especially that useful for dating purposes and aim to broadly date the main phases of activity on the site;
- to recover palaeoenvironmental material where it survives in order to understand site and landscape formation processes;
- to inform on the levels of survival of archaeological remains below ground which could feed into the future development of the site.

2.2.3 The excavated area was cleared of modern overburden, rubble and backfill deposits by mechanical excavator with a toothless ditching bucket, under close

archaeological supervision. The investigation areas were subsequently cleaned by hand and investigated and recorded fully according to the WA standard procedure as set out in the Excavation Manual (WA 2017).

- 2.2.4 Finds of potential archaeological interest were retained on site and returned to the Carlisle office where they were identified, quantified and dated to period. On completion of this project, the finds will be cleaned and packaged according to standard guidelines (*Ibid*).
- 2.2.5 On completion of the fieldwork, the excavated area was backfilled with the excavated material and levelled as much as possible.
- 2.2.6 A full professional archive has been compiled in accordance with the specification, and according to the Archaeological Archives Forum recommendations (Brown 2011). The archive will be retained at the WA LLP Carlisle office until a suitable repository becomes available. Copies of the report will be sent to the West Yorkshire Archaeological Advisory Service (HER), available upon request. The archive can be accessed under the unique project identifier **WAA17, TCL/A, CL12060/17, LEEDM.D. 2018.1**
- 2.2.7 Wardell Armstrong supports the **Online AccesS** to the Index of Archaeological InvestigationS (OASIS) project. This project aims to provide an on-line index and access to the extensive and expanding body of grey literature, created as a result of developer-funded archaeological work. As a result, details of the results of this project will be made available by WAA as a part of this national project. The OASIS reference for the project is: **wardella2-311737**.

3 BACKGROUND

3.1 Location and Geological Context

3.1.1 The area of excavation is situated on the north bank of the River Aire and to the rear of properties 14-18 the Calls, Leeds. The site is situated in the centre of Leeds in an area that has seen major regeneration in recent years. Many of the riverside 19th warehouses have been converted into residential units and offices along with cafes bars and restaurants.

3.1.2 The geology of the area consists of alluvium overlying Pennine Lower Coal Measures formation - Mudstone, Siltstone and Sandstone. Sedimentary bedrock formed approximately 318-319 million years ago during the Carboniferous period (BGS 2018 online).

3.2 Historical and Archaeological Background

3.2.1 This historical background is only intended as a summary of events within the immediate vicinity of the study area. The background largely comprises excerpts from a previous archaeological evaluation report produced by Field Archaeologists Ltd (FAS) in 2003.

3.2.2 **Roman:** Leeds has been linked to the Roman settlement of *Campodunam*, “the fort on the river bend,” possibly situated at Quarry Hill, Leeds. Part of a ford across the River Aire, close to Leeds Bridge, was discovered during the construction of the Aire and Calder Warehouse in 1819. It was thought to be Roman. A ‘concreted pavement,’ also believed to be Roman was recorded 250m to the north-west of the development site, but has never been substantiated (*ibid.*).

3.2.3 **Medieval:** The church of St. Peter’s on Kirkgate is believed to have been the focus of development of early medieval Leeds. The discovery of a furnished grave close to The Calls in the 19th century may indicate a cemetery associated with this area (*ibid.*).

3.2.4 The later medieval town of Leeds was created in 1207 by the Lord of the Manor, Maurice Paynel. This new borough was concentrated around modern Briggate to the west of the site. In 1258, Leeds acquired a market, providing a stimulus for economic growth. River traffic is likely to have increased by this time and enabled the growth of the cloth industry from the medieval period onwards. The River Aire provided soft water for the production and dyeing of cloth an industry that shaped the area in the following centuries. Growth of the area was further expanded with

the grant of a licence to hold a fair in 1322. The Goit, the tail leat of the town's medieval corn mill runs immediately behind the buildings fronting The Calls (*ibid.*).

- 3.2.5 The River Aire was a defining feature in the development of Leeds during the medieval period, a source of power for mills and river transport. Cloth manufacturing and dyeing industries were present within Leeds from the 13th century onwards. The River Aire was used to power fulling mills for the pounding of cloth and tenting frames were set up along the river banks for the stretching and drying of cloth (*ibid.*).
- 3.2.6 **Post-medieval:** In the 16th century Leeds was still a quiet rural settlement having four streets Briggate, Kirkgate, Swinegate and Boar Lane. By 1560 Leeds Bridge had been erected across the River Aire. The growth of Leeds into a centre of sizable population did not take place until the 17th century. It was not until the 18th century that Leeds overtook Hull and York to become the largest town in Yorkshire. In 1626, Charles I granted a charter of incorporation into the Borough of Leeds, giving the town the power of self-governance (*ibid.*).
- 3.2.7 The earliest references to Call Lane occur in 1572 and 1576, as 'Callayn' and 'Calbank' respectively. The Calls itself is documented from the later 17th century, first occurring in 1688. The origin of the name may be derived from caul, or cauld, referring to a weir on a river used to divert water to a mill stream, or from callis, meaning a beaten path (*ibid.*).
- 3.2.8 The Aire and Calder Act of 1699 was of great importance to Leeds and particularly the riverside area. The development of the Aire and Calder Navigation and the Leeds and Liverpool Canal provided a link between the North and Irish seas. Leeds became the hub of navigable canal routes resulting in the sevenfold increase in river transport. Large loads of wool, coal and corn necessitated the expansion of warehousing along the river frontage (*ibid.*).
- 3.2.9 The cloth trade was central to the economy of Leeds. White cloth markets were held at the Briggait and dyed cloth was sold in City Square. The first White Cloth Hall was built in 1711 on Kirkgate enabling the weekly cloth market for manufacturers and merchants to be held under cover. In 1755 a second White Cloth Hall was constructed on Meadow Lane to the south of the river. This was followed by a third in 1776, at Crown Street on the site of the former Tenter's Garth.

3.2.10 'A new and exact plan of Leeds', surveyed by J. Cossins in 1725 (Figure 3) shows a field immediately north of the development area with tenter racks on. These would have been used for the hanging out of cloth to stretch and dry. The area is later shown on Jeffrey's map of 1770 as 'Tenter Garth' (Figure 4.) (see above) and later still in 1776 it became the site of the third 'White Cloth Hall' (Figure 7). The 1725 map also shows an area just to the east of the development site as 'Dyers Garth' (Figure 3). By the 1770's the network of streets in The Calls area had expanded becoming ever more complex (*ibid.*).

3.2.11 In the period between c.1790 and 1840 much of the rural character of Leeds was lost. One of the first towns to be transformed by the industrial revolution, initiated by the wool trade, diversification followed. Between 1797 and 1842 the number of firms increased sevenfold with the coming of the railways helping to facilitate this. There was an associated huge increase in housing. By 1821 the area to the east of The Calls was the site of commercial buildings on the river front. In the 1830's most of the employment in Leeds was to be found in the finishing and marketing of woollen cloth. By the 1860's, Leeds role as a centre of production of woollen and wested cloth had been overtaken by Bradford. Industries in Leeds centred instead on the dyeing and finishing of cloth. With the decline of the textile industries, in contrast, the engineering industries along the River Aire grew right into the 20th century (*ibid.*).

3.2.12 **Modern:** By the early 20th century Leeds had become an important city with a population of over 420,000 (*ibid.*). The 20th century saw the protracted decline of the traditional industries within Leeds and by the 1980's the Calls district became the focus of considerable regeneration with several of the former wharfs being converted into residential units and tourist attractions along with bars, cafes and restaurants. This is a process which is continuing to this day.

3.3 Previous Archaeological Work

3.3.1 An archaeological desk based assessment, 'Proposed retail and residential development; land south of Cloth Hall Street, Leeds' was carried out by Lindsey Archaeological Associates in 1999.

3.3.2 A limited archaeological evaluation/watching brief was carried out in 2001 by Field Archaeology Specialists Ltd. A single trench was excavated revealing the remains of a large sandstone wall running east-west. Other sandstone walls as well as brick walls were uncovered. The remains dated to 1700 or later. Two small test pits,

excavated as part of a watching brief and located against the outer walls of No's 16 and 28 The Calls, investigated the form of the buildings foundations. They revealed that the buildings sat on the northern wall of the Goit (Field Archaeology Specialists Ltd 2001).

3.3.3 An archaeological evaluation was carried out at the rear of No's 2-28 The Calls in 2003 by Field Archaeology Specialists Ltd. The evaluation established the industrial nature of the site and its development. At least 1.00m of archaeological strata was preserved below the ground surface with preservation variable across the site. Extensive remains of 19th and early 20th century industrial structures were uncovered beneath the black asphalt surface. Several drainage channels were observed in one trench encircling a brick built structure, possibly the remains of a pump (*ibid.*).

3.3.4 An archaeological trial trench was excavated to the rear of 18, The Calls Leeds in 2008.

4 ARCHAEOLOGICAL STRIP, MAP AND SAMPLE RESULTS

4.1 Introduction

4.1.1 The archaeological investigation was undertaken over twenty days between the 20th November and the 15th December 2017. The excavation comprised the excavation of a single open area, located to the rear of numbers 14-18 the Calls, Leeds. and immediately north of the River Aire (Figure 2). It avoided the tale leat of the medieval Goit which contained a modern sewer and a number of other modern services. The excavation area measured c.16.60m east-west and c.14.00m north-south, an area of c. 234 m².

4.1.2 Overburden and homogenous rubble deposits were removed by mechanical excavator with a toothless ditching bucket, under close archaeological supervision. The excavated area was subsequently cleaned by hand, investigated and recorded fully.

4.2 Results

4.2.1 In the north-east corner of the site was an area measuring 5.50m by 3.50. This was defined to the south by a substantial sandstone wall **(108)** and the west by sandstone wall **(111)**. The area was mechanically excavated down to a depth of 1.76m below ground level (24.00m aOD) where riverine sandy/silt deposits **(101)** and **(143)** were encountered. Due to the lack of archaeological features within this area it was effectively excavated as a sondage. Made ground/rubble deposits **(103)**, **(217)**, **(218)**, **(219)** and **(220)**, measuring 1.12m in depth, sealed the light brown, river sand **(101)** (Figure 10; Plate 2). These in turn were sealed by modern stone **(214)**, sub-base **(213)**, concrete **(102)** and black asphalt **(100)** (25.76m aOD) (Plate 2).

4.2.2 Excavation and cleaning of the sites archaeological features suggested there was four main phases of occupation. All red bricks mentioned in the text below can be taken to be handmade and of slim form measuring on average 240mm x 120mm x 60mm. These are believed to be of late 18th century or early 19th century in date. Any red bricks of differing sizes are described at the appropriate place within the text.

4.2.3 **Phase 1:** In the central northern area defined by the sandstone walls **{108}**, **{110}** and **{111}** was an east-west ditch **[140]**, **(141)** (Figures 8 and 9; Plates 5 and 6) which appeared to terminate just to the west of wall **(111)**. The upper surface of

the fill was recorded at a depth of 24.15m aOD. The fill measured c.4.30m in excavated length and had a maximum depth of 0.35m. The southern side of the ditch ran on the same alignment as sandstone wall **{108}** with part of the ditch clearly and under it. The fill consisted of a mid, brown, silty/clay. The pottery retrieved from this feature suggest a medieval date. The ditch cut through the river sand **(143)** and to the west of the area ran under the north-south wall **{119}** which had slumped into it (Figure 9; Plate 5). Here the ditch **[140]** contained a secondary fill **(142)** of red brick and stone rubble. This was probably inserted to form a firm base to construct the red brick wall **{119}** and red brick surface **(135)** on, and prevent slumping. Evidently it had failed as both the red brick wall **{119}** and the brick surface **(135)** were observed to have both slumped into the ditch **[140]** (Figure 9; Plate 5).

4.2.4 **Phase 2:** the red brick structure (Group Number **{232}**) effectively sealed the east-west ditch **[140]**, **(141)**, **(142)**. Running east-west was what appeared to be an ash pit/stoke hole **{137}**, **{138}** and **{233}** (Figure 8; Plate 4). In appearance, it looked very similar to five other features **{156}**, **{166}**, **{174}**, **{176}** and **{193}** on site belonging to a later phase. The base of the pit **{233}** (23.85m aOD) consisted of irregular sandstone pieces and measured 0.40m in width. The pit measured 0.51m in depth and c.2.00m in length. It contained a single fill **(127)** of broken red brick and stone rubble. The northern wall **(137)** of the ash pit was constructed of broken red brick fragments and lime mortar whereas the southern wall **(138)** was formed by pieces of lime mortared, yellow sandstone. Immediately to the south of the ash pit was a broken red brick surface **(135)** (24.50m aOD) (Figure 8) which appeared to have been heated and had the remains of coal dust on it. The ash pit **{137}**, **{138}** and **{233}** and the brick surface **(135)** were contained within the east-west red brick wall **{134}** and the north-south red brick wall **{119}**. The wall **{134}** continued to the eastern edge of the area as red brick wall **{107}** where it was cut by the Phase Four wall **{111}**. On its western edge structure **{232}** appeared to be cut by the Phase Four wall **{110}** (Figure 8).

4.2.5 The walls **{137}**, **{138}** and fill **(127)** along with the red brick surface **(135)** were all sealed by a layer of thin, yellow sandstone pieces **(121)** (24.57m aOD) contained within the red brick walls **{134}** and **{119}**. These fragments of stone may have formed a bedding layer for a slabbed sandstone surface of which the slabs **(112)** (24.65m aOD) were the only remains. The red brick walls **{107}**, **{119}** and **{134}** were all one brick length (240-250mm) wide and constructed on the river sand

(143). The bricks were handmade, and often badly fired. A large deposit of mixed silt, ash and fine rubble **(105)** was located adjacent to the north wall **(134)**. This contained copious amounts of mainly 18th century pottery and clay tobacco pipe, but also sherds of 16th-17th pottery.

4.2.6 To the east of the red brick wall **{119}** and south of wall **{107}** were more broken red brick surfaces **(122)**. The sandstone slabs **(112)** also encroached into this area. This perhaps suggests that there were once other structures within this area. Jeffrey's 1770 map of Leeds (Figure 3) shows structures in the Calls area along the southern edge of the Goit. The Phase Two archaeology perhaps represents these structures.

4.2.7 **Phase 3:** the red brick structures of this phase covered the majority of the southern two thirds of the site. These could be divided into three distinctive structural zones (Group Nos. **{144}**, **{147}** and **{184}**) each of which contained the nucleus of a structure (Figure 8). These probably represent an industrial process or processes of some kind, being carried out on the site. As well as these three areas, there were parts of the site that had the remains of interior and exterior floor/yard surfaces in the form of sandstone flags and stone setts **(114)**, **(128)**, **(146)**, **(148)**, **(152)**, **(153)**, **(154)**. Red brick walls **{131}**, **{132}**, **{133}**, **{155}** divided up, and to some extent, compartmentalised the Phase 3 structures (Figure 8). These walls may represent the divisions in exterior sheds, or lean too buildings in which industrial processes were being carried out. Again, many of the bricks appeared to have been badly fired. The Phase Three area of the site was cut by the Phase Four sandstone and red brick culverts **{129}**, **{130}** and **{186}**, running south from the wall **{108}** toward the River Aire.

4.2.8 In the south-west corner of the site was the remains of a floor surface measuring c.4.80m in length and c.2.60m in width (25.02m aOD) (Figure 8). This relatively small area consisted of four different floor types. The eastern most surface **(151)** was very haphazard consisting of a mixture of broken sandstone pieces, red bricks and stone setts. Floor surface **(152)** consisted of sub-rectangular, yellow sandstone pieces measuring 0.40m by 0.24m in size. West of these and adjacent to them was an area of elongated, yellow sandstone setts **(153)**. These measured 0.25m by 0.08m in size. To the immediate west of these was an area of eroded, red bricks on edge **(154)**. These measured 0.24m by 0.06m in size. These floor surfaces butted up to the east-west red brick wall **{155}** (25.02m aOD). The different floor surfaces are

likely to represent an internal industrialised area where whatever random materials available were used to create a rough surface.

4.2.9 The eastern area of the Phase Three structures was dominated by an area of squared stone setts **{128}** (25.27m aOD) (Figure 8; Plate 9). It measured c.7.30m in length and c.4.00m in width at the widest point and was cut by the Phase 4, culverts **{129}** and **{130}**. The setts butted up to the red brick walls **{131}**, **{132}** and **{133}** and probably represent an external area.

4.2.10 The structure **{147}** was on the central western edge of the site (25.10m aOD) (Figure 8; Plate 11). It measured 4.20m in length and 1.70m in width and consisted of red bricks bonded with lime mortar **{241}**. The southern edge butted up to the red brick east-west wall **{155}** and the western edge butted up to the red brick north-south wall **{150}**. Along the northern edge of the structure **{241}** running north-south were two ash pit/stoke holes **{156}** and **{166}**. The western ash pit **{166}** measured 1.30m in length, 0.30m in width and 0.60m in depth. It contained a single fill **(164)** of grey/black cindery material measuring 0.38m in depth. The southern end had been blocked up with handmade bricks **(165)** of the later, deeper type (70mm) and incorporated in the overall structure of **{147}** (Plate 11). The entrance to the ash pit had distinctive curving red brick walls on either side of it (Plate 11).

4.2.11 The eastern ash pit/stoke hole **{156}** measured c.1.85m in length, 0.57m in width and had a depth measuring 0.57m. It was constructed of the later, deep red bricks, the average size of which measured 230mm x 120mm x 70mm. It contained two fills. A primary fill **(117)** of dark brown, slag/industrial waste measuring 0.17m in depth and a secondary fill **(116)** of dark grey cindery material measuring 0.40m in depth. The entrance to it, which was 1.30m further to the north than that of ash pit **{166}** and was splayed with a large yellow sandstone block on its eastern edge (Plate 11). The western edge of this structure displayed a curving red brick wall similar to those at ash pit **{166}**. Ash pit **{156}** and the brick infill **(165)** of ash pit **{166}** were the only features of the Phase Three structures on site to be constructed of the later, deeper type (70mm), handmade red bricks. The fact that ash pit **{166}** had been blocked up, the later brick style of ash pit **{156}** and its larger size all suggest that it represents a later, remodelled ash pit. Abutting the ash pit **{166}** on its northern edge were sandstone blocks **{148}** and slabs **(146)** (24.82m aOD). These measured 3.20m north-south and 1.60m east-west. The blocks **{148}**

had recesses in them possibly for bedding machinery in, unless they represented reused stonework. The sandstone slabs **(146)** were cut to shape around the ash pit **{166}** (Figure 8; Plate 10). The sandstone slabs **(114)** (24.85m aOD) (Figure 8; Plate 8) probably represent the same surface as slabs **(146)** and blocks **(148)** but were cut through on their southern side by the Phase 4 crescent wall **{108}**. Running east-west under the sandstone blocks **{148}** and sandstone slabs **(146)** was a sandstone capped culvert **{149}** (24.44m aOD) with an access point at its eastern end.

4.2.12 The structure **{144}** was in the centre of the site and measured 7.00m east-west and 5.00m north-south (Figure 8; Plates 12 and 13). It was delineated by the Phase Four culverts **{129}** to the east and **{186}** to the west. The culvert **{186}** cut through the western edge of the of structure **{144}**. Most of the structure consisted of red bricks bonded with lime mortar but also contained elements of yellow sandstone. Running north-south through the centre of structure **{144}** was a wall **{171}** and **{172}**. The northern part **{171}** measured 1.85m in length and 0.51m in width and consisted of mortared pieces of yellow sandstone (25.10m aOD). The southern part measured 1.91m in length and 0.26m in width and was constructed of red bricks and mortar (25.11m aOD). How high these walls were originally remains uncertain and therefore to what extent they divided the western and eastern halves of structure **{144}** must also remain uncertain.

4.2.13 The south-western part of the structure **{144}** consisted of two east-west ash pits/stoke holes **{174}** and **{176}** (Plate 13). The southern ash pit **{174}** measured 1.31m in length, 0.38m in width and had a depth of 0.31m. It contained a single fill **(175)** of dark brown/black fine rubble measuring 0.07m in depth. The northern ash pit **(176)** measured 1.93m in length, 0.40m in width and had a depth of 0.39m. It contained a single fill **(159)** of dark grey/black cindery material measuring 0.12m in depth. The remains of a small, pewter tankard were recovered from this fill. North of the ash pits **{174}** and **{176}** was an area of red bricks bonded with lime mortar **{180}** (24.44m aOD). This measured 3.40m in length and 3.38 m in width and had a depth measuring 0.51m. It gave the impression of structural strength, perhaps forming a base that needed to withstand the weight of something heavy on it, possibly heated. This structure partially lay over an east-west line of yellow sandstone slabs **(170)** (24.49m aOD) immediately to the north (Plate 13). This slabbed surface could potentially have been cut through by the Phase 4 crescent wall **{108}**.

- 4.2.14 Immediately to the east of the north-south walls **{171}** and **{172}** was an area of red bricks and mortar where the bricks had been placed on edge **{178}**, **{179}** and **{183}** (25.07m aOD) (Plate 12). The northern edge of the red bricks **{179}** curved to the south and the southern edge of the red bricks **{183}** curved to the north. This gave the impression that something circular may have once stood on the bricks. These two areas of red bricks encompassed a large east-west drain or sluice **{169}** (24.89m aOD) constructed of large sandstone slabs (Figure 8; Plate 12). It measured 2.11m in length and 0.93m in width. Within the southern upright edge was a small cast iron drain grill. The eastern edge of the sandstone slabs **{169}** butted up to a curving culvert **{167}** (24.59m aOD) (Plate 12). This had an internal diameter of 3.00m and levels taken showed that it had a fall from north to south. The relationship between the drain/ sluice **{169}** and the culvert **{167}** is unclear.
- 4.2.15 Situated in the centre of the site on the southern side was structure **{184}** (Figure 8: Plates 14 and 15). This measured 7.50m in length, east-west and 5.00m in width, north-south. The measurements seemed to correspond to those of structure **{144}** and in some ways both structures were quite similar. Apart from again being mainly constructed from red bricks and lime mortar the southern structure **{184}** had a north-south dividing wall **{195}**, an ash pit/stoke hole **{193}**, a possible large receptacle structure **{162}** and a drainage/ sluice area **{204}**, **{205}** and **{208}**. All these features or something very similar were present in structure **{144}**.
- 4.2.16 The north-south wall **{195}** measured 2.50m in length and had an average width of 0.25m. It was constructed mainly of red brick and lime mortar with sandstone foundation pieces in places. As with structure **{144}**, how much this wall effectively divided the structure into two halves is unknown. To the east of wall **{195}** were the remains of two east-west parallel walls **{210}**, **{211}** and **{212}**. The wall **{210}** was cut by a modern concrete pile **{194}**. The area in between the two parallel walls was not fully excavated. However, the two walls were on the same line as the ash pit/stoke hole **{193}** and appeared to form a similar type of structure. It is possible that two ash pit/stoke holes were intentionally constructed in line with one another. The red brick and mortar area **{162}** measured 2.60m in length and 1.50m in width and effectively enclosed the stoke hole base slabs **{193}**. The slabs **{193}** were sealed by a single fill **{163}** which measured 0.41m in depth and consisted of black, cindery material. The red brick structure may have acted as a base for a receptacle, perhaps a dye copper, enabling it to be heated. A second receptacle possibly, once rested on top of the walls **{210}** and **{211}**, **{212}**.

- 4.2.17 To the south of the red brick structure **{162}** were two parallel red brick and mortar walls **{191}** and **{192}**. Both measured 2.25m in length and both had a width measuring 0.25m. To the immediate south of these was a well formed, narrow cobbled area **(187)** consisting of river rounded stones. This measured 1.40m in length and 0.40m in width. At the western end of the cobbles **(187)** was a recessed stone post-pad **{190}** and the possible remains of a second one at the eastern end **{189}**. The southern edge of the cobbled floor surface **(187)** partially butted up to a possible red brick floor surface **{188}**.
- 4.2.18 The 1815 plan of the town of Leeds and its environs suggests that the structures to the south of the Goit, shown on Jeffrey's map of 1770, on the site of the development, had gone. Replacing these, in the development area, was a new building which may have housed the Phase Three structures. This building was still there in 1821 and is shown on Fowler's map of that date. Fowler's map of 1831 shows the building to be no longer there and the Phase Four crescent of buildings to have been constructed.
- 4.2.19 **Phase 4:** the final phase of occupation on site was dominated by substantial yellow, sandstone walls and culverts. Running east-west across the site in a shallow arc was a yellow sandstone and mortar wall **{108}** (25.40m aOD) (Figure 8; Plate 1). It had an excavated length of c.18.00m and measured 0.60m in width. At the eastern end the remaining wall, measured 1.20m in depth, down to its base. The remains of two yellow sandstone and mortar walls **{110}** (25.29m aOD) and **{111}** (25.47m aOD) ran perpendicular to wall **{108}** on its northern side. These measured 0.50m in width and were of the same construction style as wall **{108}**. They were keyed into wall **{108}** at their southern ends. The red brick wall **{109}** ran parallel to the sandstone wall **{110}**. It butted up to the curving wall **{108}** at its southern end suggesting that it was an internal dividing wall, possibly representing a later subdivision within this building.
- 4.2.20 Fowler's 1831 map of Leeds shows a crescent shaped range of buildings on the south side of the Goit. Wall **{108}** appears to have formed the southern edge of this range with the walls **{110}** and **{111}** effectively dividing it up. This long, narrow range is recorded in photographs held by Leeds City Library (CLIQA AIRE 48). These show it to have been a two-story range stretching along the Goit. Doorways and windows were regularly placed along the range and the windows were of the six-over-six pane, hung sash, type (FAS Ltd, 2003).

4.2.21 Cutting the Phase 3 structures to the south of east-west wall {108} were three distinct culverts {186}, {129} and {130}. These were constructed of yellow sandstone slabs on the bases and tops with handmade red bricks forming the side walls. These bricks were of the deeper type measuring 80mm in depth. The culverts {129} and {186} butted up to the east-west wall {108} at their northern ends suggesting that they originally drained away rain water from downpipes. It is likely that the culvert {130} carried out the same function. As expected all culverts had a slight fall toward the River Aire.

4.2.22 **Site Reduction:** on the eastern edge of the site a trench measuring 2.50m wide at the north end and 4.50m wide at the south end was excavated across the site (Plate 16). The western edge of the trench was defined by the Phase 4 culvert {129}. The Phase Three features were excavated out and the ground reduced to 24.11m aOD, 1.60m below ground level. The grey/ brown, river sand (143) was exposed at the base of excavation. Although there was some light scattering of fine rubble no significant earlier archaeological features were observed.

5 FINDS

5.1 Introduction

5.1.1 A total of 2,238 artefacts, weighing a total of 104,534g, were recovered from both stratified and unstratified deposits as bulk and small finds during an excavation undertaken at The Calls, Leeds, West Yorkshire (Tables 5.1 and 5.2). The pottery was assessed with regard to MPRG guidelines (2016). Further artefacts were recovered from environmental samples; these have been included within the environmental assessment tables.

5.1.2 All artefactual and zooarchaeological material was dealt with according to the recommendations made by Watkinson & Neal (1998), the Chartered Institute for Archaeologists (CIfA) Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (CIfA 2014b), and A Standard for Pottery Studies in Archaeology (PCRG, SGRP MPRG 2016). All archaeological material has been boxed according to material type and context, which conforms to deposition guidelines recommended by Brown (2011), EAC (2014), Leeds Museum and Art Gallery and guidelines published by the Society of Museum Archaeologists (Edwards 2012). The unique accession number for the archive comprises LEEDM.D.2018.1.

5.1.3 The artefactual assessment was carried out by Sue Thompson, The zooarchaeological assemblage was assessed by Megan Stoakley and is included within the environmental report.

5.1.4 The quantification of bulk material by type and context is visible in Table 5.1, and the quantification of Small Finds is shown in Table 5.2.

Context	Material	Date	Qty	Wgt(g)	Comments
103	CBM	PM	47	6560	Brick and roof tile fragments
103	CBM	PM-Modern	1	2040	Glazed wall tile on concrete
103	CBM	PM	3	1620	Roof tile
105	CBM	PM	15	2320	Brick and roof tile fragments
107	CBM	PM	3	4800	Brick - red fabric 110mm x 53mm x 235mm; 120 x 55 x 24mm
115	CBM	PM	1	893	Brick fragment, red fabric 105mm x 60mm, handmade, lime mortar
116	CBM	PM	1	3260	Brick - white fabric, 118mm x 65mm x 240mm
121	CBM	PM	1	100	Roof tile fragment
123	CBM	PM	1	81	Roof tile fragment

Context	Material	Date	Qty	Wgt(g)	Comments
U/S	CBM	Modern	1	3650	Brick - red fabric 110mm x 75mm x 230mm Shallow frog HOLBECK BRICK COMPANY LEEDS
U/S	CBM	Modern	1	4550	Brick - red fabric 112mm x 77mm x 235mm Shallow frog MIDDLETON
U/S	CBM	PM	3	8040	Brick - red fabric, handmade 118mm x 53mm x 235mm, one has distinct curve 115mm x 6mm x 240mm
U/S	CBM	PM-Modern	8	3530	Roof tile and glazed wall and drain tile fragments
103	Clay Pipe	PM	73	256	Stem and bowl fragments
103	Clay Pipe	PM	2	15	Stem and bowl fragments, with stamps
104	Clay Pipe	PM	1	3	Stem fragment
105	Clay Pipe	PM	2	9	Bowl and stem fragments
105	Clay Pipe	PM	31	310	Bowls, complete and fragments. Mostly plain with small spur, occasional rilling
105	Clay Pipe	PM	121	404	Stem fragments
105	Clay Pipe	PM	6	30	Stem fragments with small heart stamp
123	Clay Pipe	PM	2	2	Stem fragments
U/S	Clay Pipe	PM	14	56	Stem and bowl fragments
103	Copper Alloy	PM	4	11	Lock escutcheon, 3 nails/tacks
207	Copper Alloy	PM	1	9	Coin - corroded - no details visible - Georgian Half penny?
103	Glass	PM	13	176	Bottle glass, clear
103	Glass	PM	47	2260	Bottle glass, green hand blown, heavily patinated
103	Glass	PM	3	39	Vessel glass, clear, 2 bottle tops, one complete phial
103	Glass	PM	79	370	Window glass
105	Glass	PM	35	1050	Bottle glass, green hand blown, heavily patinated
105	Glass	PM	2	40	Bottle glass, hand blown
127	Glass	PM	1	8	Bottle glass, green hand - modern?
207	Glass	PM	3	36	Bottle glass, green hand blown, heavily patinated
U/S	Glass	PM	6	290	Bottle glass, green hand blown, heavily patinated
103	Iron	PM	2	7440	Corroded, misc fragment and cog? elliptical
103	Iron	PM	39	2893	Highly corroded, nails, fragments
115	Iron	PM	1	46	Highly corroded, narrow tube
116	Iron	PM	1	4900	Iron bar - large grate? Evidence of burning
127	Iron	PM	3	1362	Highly corroded, fragments
121	Lead	PM	1	219	Rolled fragment
207	Lead	PM	1	54	Square sheet with nailed holes in corners

Context	Material	Date	Qty	Wgt(g)	Comments
164	Metal	PM-Modern	2	22	Wire
103	Pottery	Med?	4	166	Buff and reduced fabrics
103	Pottery	PM	47	506	Buff earthenware, yellow and manganese glaze
103	Pottery	PM	35	261	Delftware, plain, blue and white, and polychrome
103	Pottery	PM	101	2673	Red and buff earthenware, orange and yellow glaze
103	Pottery	PM	293	6460	Red earthenware, black glaze
103	Pottery	PM	59	501	Refined earthenware, plain and blue and white, Porcelain
103	Pottery	PM	1	6	Refined earthenware, yellow banded
103	Pottery	PM	120	3640	Stoneware, brown
103	Pottery	PM	2	4	Stoneware, Westerwald
103	Pottery	PM	27	293	White salt-glazed stoneware
104	Pottery	PM	1	4	Delftware, blue and white
104	Pottery	PM	4	229	Red earthenware, black glaze
105	Pottery	PM	76	714	Buff earthenware, yellow and manganese glaze
105	Pottery	PM	29	160	Delftware, plain, blue and white, and polychrome
105	Pottery	PM	4	15	Porcelain
105	Pottery	Med?	16	679	Red and buff fabrics, reduced grey, Orange and green glaze
105	Pottery	PM	350	8480	Red earthenware, black glaze
105	Pottery	PM	179	5570	Red earthenware, clear and orange glaze
105	Pottery	PM	88	2617	Slipware
105	Pottery	PM	51	601	Stoneware, brown - one stamp, white salt-glazed, Westerwald.
115	Pottery	PM	1	6	Buff earthenware, manganese glaze
115	Pottery	PM	1	26	Slipware
115	Pottery	PM	2	6	Stoneware
121	Pottery	PM	2	48	Red earthenware, orange and black glaze
121	Pottery	PM	1	27	Slipware
123	Pottery	PM	2	48	Red earthenware, clear and orange glaze
127	Pottery	PM	1	3	Delftware, blue and white
127	Pottery	PM	1	15	Slipware
127	Pottery	PM	2	22	Stoneware
137	Pottery	PM	5	60	Red earthenware, yellow and black glaze
143	Pottery	Med?	1	91	Red sandy fabric, internal and external splashy green glaze
164	Pottery	PM	2	46	Refined earthenware
207	Pottery	PM	2	39	Red earthenware, black glaze

Context	Material	Date	Qty	Wgt(g)	Comments
207	Pottery	PM	1	3	Transfer printed ware
U/S	Pottery	PM	6	59	Delftware, plain, blue and white, and polychrome
U/S	Pottery	PM	81	2620	Red and buff earthenware, orange and yellow glaze,
U/S	Pottery	Med?	4	148	Red sandy fabric, internal and external patch green glaze, 1 reduced grey fabric, olive glaze
U/S	Pottery	PM	7	65	Refined earthenware, plain and blue and white, Porcelain
U/S	Pottery	PM	12	255	Slipware
U/S	Pottery	PM	10	251	Stoneware, brown and white saltglazed - occasional blue band
103	Slag?	PM	5	363	Slag/ clinker?
103	Slag?	PM	8	2460	Slag/ clinker?
103	Stone	PM	1	157	Roof tile fragment - yellow sandstone
Total			2227	104151	

Table 5.1: Quantification of bulk artefacts by material type and context

Context	Material	Date	Qty	Wgt(g)	Comments
103	Clay Pipe	PM	1	9	Complete bowl with flat heel SF 1
105	Copper Alloy	PM	1	4	Complete thimble - very small, corroded SF 2
105	Copper Alloy	PM	1	3	Buckle SF 3
103	Glass	PM	1	1	Glass droplet/waste SF 4
105	Copper Alloy	PM	1	27	Furniture handle? Pressed metal decorative disc with Fe fitting on reverse SF 5
105	Copper Alloy	PM	1	3	Buckle Type V SF 6
159	Pewter	PM	1	274	Tankard - highly corroded. SF7
103	Copper Alloy	PM	1	1	Pin SF 8
U/S	Copper Alloy	PM	1	2	Buckle SF 9
U/S	Copper Alloy	PM	1	11	Stud? Concave, suggestion on lettering on upper surface SF10
105	Bone	PM	1	48	Knife handle SF 11
Total			11	383	

Table 5.2: Quantification of Small Finds

5.2 Ceramics

5.2.1 A significant pottery assemblage of 1,631 sherds of pottery weighing 37,417g were recovered from both stratified and unstratified deposits (Table 5.1). The sherds are in moderate to good condition with little post depositional damage or abrasion, although the glaze is patchy on some fabrics.

- 5.2.2 The earliest pottery recovered is potentially medieval in date, and a range of fabrics was noted, including sandy red fabric and reduced grey ware. Glaze ranges from orange to green. Some of these sherds are abraded, and it is likely that some are residual. However, it is also likely that some of that the sherds date to the post-medieval transitional period of 17th century (post-Reformation, 1538 AD – 1600s). Three sherds of an unabraded hard reduced grey fabric were recovered from sample context **(141) <2>** with splashes of external glaze, which are likely medieval in date.
- 5.2.3 The largest percentage of the pottery assemblage comprises red earthenware with black glaze (Buckley-type coarse red earthenware). There is also a significant quantity of a softer red earthenware with a clear or orange glaze. As a rule, the black-glazed vessels are hollow wares, comprising jars, mugs and jugs, with frequent handles present; both internal and external glaze was noted. The orange-glazed vessels tend to comprise flat wares such as wide-mouthed dishes and bowls, and are generally glazed internally. Occasional external sooting was noted. There are a small quantity of earthenware vessels with a buff fabric, both with a yellow and a manganese glaze. Both hollow and flat wares were recovered.
- 5.2.4 One of the most significant aspects of the pottery assemblage is a large quantity of slipware sherds. A range of techniques is present, and include yellow-slip on an orange background, along with combed and jewelled patterns. Many of the slipware sherds comprise a soft orange fabric and are likely to be local. Both wheel-thrown and moulded vessels are present. The Wrenthorpe potteries near Wakefield were producing slipware plates, bowls and jugs in the 17th century (Barker 2010; Moorhouse and Slowikowski 1992), and there were also several potteries in Leeds itself from the 18th century onwards (Lawrence 1974). A small quantity of a harder buff fabric are likely to be Staffordshire slipware, including several sherds of a highly decorated mug with applied decoration. While the Staffordshire slipwares date mainly to 17th to 18th century, in other areas of the country the slipware traditions continued for a longer period (Barker and Crompton 2007).
- 5.2.5 Other pottery types include stoneware, delftware, porcelain and transfer printed ware; the majority of stoneware appears to be English stoneware, with white salt-glazed plates and tankards, and Nottingham type wares, decorated with rouletting and scrafitto. There are also a small number of Rhinish sherds, including

Westerwald. The majority of the stonewares are likely to be 18th century (Hildyard 2005; Lewis 1969). English factories were producing porcelain by the end of the 18th century, and the porcelain sherds within the assemblage are typical of this. The delftware sherds include both hollow and flat wares, and include plain white vessels and blue and white vessels plus polychrome decoration. One tile fragment was also noted.

5.2.6 The range of 17th to 18th century pottery is of local and regional significance, and could potentially be linked to national developments in pottery productions.

5.3 Clay Pipe

5.3.1 A total of 252 fragments of clay tobacco pipe, weighing 1,085g, were recovered during the excavation, and are in moderate to good condition with little evidence of post depositional damage (Table 5.1).

5.3.2 The pipe fragments comprise both stem fragments and complete bowls. With the exception of occasional rilling, the pipes are undecorated. However, on a small number of stem fragments, a small heart-shaped maker's mark was noted.

5.3.3 The majority of the clay tobacco pipe bowls date to the late 17th to early 18th century, although the assemblage does also contain a mid - 17th pipe bowl recovered from context **(105)**, and a complete 17th bowl from context **(103)** SF 1 (Davey 1992).

5.4 Post-medieval Ceramic Building Material (CBM)

5.4.1 A total of 86 artefacts comprised post-medieval ceramic building material (CBM), weighing 41,444g and were recovered from both stratified and unstratified deposits (Table 5.1). The artefacts are in good condition and displays little evidence of post-depositional damage.

5.4.2 The artefacts are likely of 18th to 19th century date and comprise handmade brick and roof tile fragments in both a red and a buff fabric with large irregular poorly sorted stone inclusions. One complete but unstratified brick is curved and likely of a 19th -20th century date.

5.4.3 Two later bricks with manufacturers' stamps were recovered but were unstratified; HOLBECK BRICK COMPANY LEEDS, and MIDDLETON. Both of these stamped examples were manufactured in Leeds during the early 20th century (www.penforma.com).

5.5 Post-medieval to Modern Glass

- 5.5.1 A total of 189 fragments of post-medieval to modern green and clear bottle glass, and clear window glass, weighing 4,269g, was recovered (Table 5.1). The artefacts are in moderate to good condition and display little evidence of post-depositional damage.
- 5.5.2 The glass bottles are largely hand-blown, and display post-depositional patination, and include large wine bottles and also very fine potential perfume bottles. Window glass varies from very thin to occasional modern safety glass (unstratified). The glass is largely 18th to 19th century in date with occasional modern glass dating to the 20th century.
- 5.5.3 The glass shards are of little archaeological significance on a local, regional and national level.

5.6 Metal

- 5.6.1 A total of 46 iron artefacts, weighing 16,641g, were recovered (Table 5.1). The artefacts are in poor condition and display heavy rust corrosion.
- 5.6.2 The iron artefacts comprise nails and fragments of larger items. A large bar recovered from context **(116)** displays signs of burning and is likely to be part of a fire grate. An elliptical cog was recovered from context **(103)**.
- 5.6.3 Two cast lead alloy artefacts, weighing 273g were also recovered and are in moderate to good condition (Table 5.1). The lead comprises one small square sheet with nail holes in each corner was recovered from context **(207)**, and a rolled fragment from context **(121)**. Both pieces are likely late post-medieval in date. A tulip-shaped pewter tankard in poor condition was recovered from context **(159)** SF 7. The tankard likely to date to the 18th century (www.pewtersociety).
- 5.6.4 Five copper alloy bulk artefacts were recovered, weighing 20g, and are in poor to good condition. The finds comprise an oval lock escutcheon, small nails, and a possible Georgian half-penny. No details can be seen on the coin due to corrosion. A further seven copper alloy artefacts were collected as small finds (Table 5.2) including a small machine-made thimble SF 2, three late 17th – early 18th century buckles (SF 3, SF 6 and SF 9) (Whitehead 2016), a possible furniture handle (SF 5), a pin (SF 8), and a convex stud head (SF 10).

5.6.5 Two miscellaneous metal wire fragments, weighing 22g, were recovered from context **(164)**. The fragments are in good condition, and likely to be fairly modern in date.

5.6.6 Some of the ironwork relates to the industrial processes carried out on the site and is therefore of archaeological significance on a local level, however it is in poor condition and fragmented. The lead and copper alloy artefacts are of little archaeological significance.

5.7 Miscellaneous

5.7.1 A sandstone roof tile fragment was recovered from context **(103)**. The slab is yellow sandstone with part of the fitting nail-hole. The tile is post-medieval in date. A small glass droplet was collected as SF 3. It may be evidence of glass waste, however, it may be merely melted glass. A bone knife handle was recovered from context **(105)** SF 11. The remains of an iron knife are retained within the handle, and it is likely to be 18th century date. Thirteen fragments of unidentified slag/clinker were recovered from context **(103)**.

5.8 Statement of Potential

5.8.1 There is a clear distinction between the material recovered from context **(105)** with a late 17th to 18th century date, and context **(103)** which also contains 19th century material. Although the majority of finds were recovered from deposits rather than fills, the pottery and clay tobacco pipe assemblage are of particular note.

5.8.2 The material will be retained with the archive.

6 ENVIRONMENTAL ANALYSES

6.1 Introduction

6.1.1 Eight bulk environmental samples were taken during the archaeological strip, map and sample on land rear of 14-18 the Calls, Leeds, West Yorkshire; centred on NGR SE 20214 45421. Table 6.1 provides a list of sampled contexts.

<>	C	Description	Group number
1	116	Secondary fill of ash pit [156]	{147}
2	141	Fill of Ditch [140]	{232}
3	158	Black silty fill of {129}	
4	159	Fill of ash Pit/Stoke hole (176)	{144}
5	163	Fill of ash Pit/ Stoke hole {166}	{147}
6	117	Primary fill of ash Pit [156]	{147}
7	168	Fill of curving Culvert [167]	{144}
8	143	Grey/brown river sand	

Key: <>= sample number, C= context

Table 6.1: sampled contexts

6.1.2 A total of 630 animal bones, which weighed 10,522g, were hand-collected from eight stratified and un-stratified deposits were also presented for assessment.

6.1.3 This report presents the results of the assessment of the environmental samples and the palaeoenvironmental remains in accordance with Campbell et al. (2011) and English Heritage (2008) and Historic England (2014).

6.1.4 The environmental assessment was undertaken by Lynne F. Gardiner with the zooarchaeological work by Megan Stoakley and the zooarchaeological discussion by Lynne F. Gardiner.

6.2 Methodology

6.2.1 The bulk environmental samples were processed by Wardell Armstrong Ltd (WA). The colour, lithology, weight and volume of each sample was recorded using standard WA pro forma recording sheets, cf. Table 6.2. The samples were processed using 500- micron retention and flotation meshes employing the Siraf method of flotation (Williams 1973). Once dried, the retent residues were sieved to 4mm and the artefacts and ecofacts (specifically animal bone) removed from the larger fraction and forwarded to the finds department. The smaller fraction was scanned with a magnet for microslags such as hammerscales. This fraction was then examined for smaller artefacts such as beads. Table 6.3 presents the finds from samples.

C	<>	TQ	NP	pH	CP	TP	MP	PW	PV	CS	Components (sorting)	A	SA	SW	SV
116	1	4	all	8.03	very dark brown	friable	sandy silt	39	35	dark grey	industrial mix >1cm 70%: industrial mix <1cm 10%: sand 20%	yes	-	22162	27700
141	2	4	all	8.06	very dark greyish brown	sticky	silty clay	41	32	dark grey	industrial mix >1cm 30%: industrial mix <1cm 30%: sand 40%	-	yes	10771	7900
158	3	4	all	7.21	dark brownish grey	loose	clayey silt	33	32	dark grey	industrial mix >1cm 30%: industrial mix <1cm 30%: sand 40%	-	yes	3998	3200
159	4	4	all	7.72	very dark blackish brown	soft	silty clay	35	34	dark grey	industrial mix >1cm 40%: industrial mix <1cm 20%: sand 40%	-	yes	13485	13800
163	5	4	all	6.53	dark brownish black	friable	sandy silt	33	35	dark grey	industrial mix >1cm 30%: industrial mix <1cm 40%: sand 30%	-	yes	13858	26400
117	6	3	all	7.71	very dark reddish brown	soft	sandy clay	24	24	dark grey	industrial mix >1cm 50%: industrial mix <1cm 20%: sand 30%	-	yes	9680	18100
168	7	4	all	7.81	very dark brown	loose	sandy silt	37	29	pale yellowish grey	industrial mix >1cm 20%: industrial mix <1cm 30%: sand 50%	-	yes	12696	12600
143	8	4	all	5.49	dark brown	soft	silty sand	48	32	dark grey	industrial mix >1cm 20%: industrial mix <1cm 30%: sand 50%	-	yes	5407	4300

Key: **C**=context number, **<>**= sample number, **TQ**= quantity of tubs in sample, **NP**= number of tubs processed, **CP**= colour of pre-processed sediment, **TP**= texture of pre-processed sediment, **MP**= matrix of pre-processed sediment, **PW**= weight (kg) of pre-processed sediment, **PV**= volume (l) of pre-processed sediment, **CS**= colour of dried retent, angularity of stone/retent mix= *either* **A**= angular, **SA**=sub-angular, **SW**= weight (g) of dried retent, **SV**=weight (ml) of dried retent, *NB industrial mix was a mixture of industrial waste, coal, cinder and clinker*

Table 6.2: sample data

C	<>	Material	Desc.	Qty	Qty 1-10	Qty 11-50	Qty 51-150	Qty 151-250	Qty >250	Weight (g)	Weight <1g	Comments	>4mm	<4mm
116	1	Coal			-	yes	-	-	-	532	-	representative	yes	-
116	1	Ind waste			-	yes	-	-	-	494	-	representative	yes	-
116	1	Clinker			-	yes	-	-	-	60	-	representative	yes	-
116	1	Glass		1	-	-	-	-	-	3	-		yes	-
116	1	Mortar			-	yes	-	-	-	385	-		yes	-
116	1	Magnetic matter			-	-	-	-	yes	142	-		-	yes
141	2	Pottery		3	-	-	-	-	-	21	-		yes	-
141	2	Coal			-	-	-	yes	-	102	-		yes	-
141	2	Ind waste			-	yes	-	-	-	4403	-		yes	-
141	2	Magnetic matter			-	-	-	-	yes	71	-		-	yes
158	3	Pottery		1	-	-	-	-	-		yes		yes	-
158	3	Mortar			-	yes	-	-	-	72	-		yes	-
158	3	CBM			-	yes	-	-	-	167	-		yes	-
158	3	Magnetic matter			-	yes	-	-	-	11	-		-	yes
159	4	Pottery		1	-	-	-	-	-		yes		yes	-
159	4	Ind waste			-	yes	-	-	-	73	-		yes	-
159	4	CBM			-	yes	-	-	-	711	-		yes	-
159	4	Coal			-	yes	-	-	-	415	-		yes	-
159	4	Animal bone			yes	-	-	-	-	157	-		yes	-
159	4	Clay pipe		3	-	-	-	-	-	3	-		yes	-
159	4	Glass		27	-	-	-	-	-	61	-		yes	-
159	4	Fe iron		12	-	-	-	-	-	115	-		yes	-
159	4	Clinker			yes	-	-	-	-	14	-		yes	-
159	4	Shell			yes	-	-	-	-		yes		yes	-
159	4	Pb lead		2	-	-	-	-	-	6	-		yes	-
159	4	Magnetic matter			-	-	-	-	yes	91	-		-	yes
163	5	Coal			-	-	yes	-	-	517	-		yes	-
163	5	Clinker			yes	-	-	-	-	35	-		yes	-
163	5	Mortar			yes	-	-	-	-	68	-		yes	-
163	5	Cinder			-	-	yes	-	-	207	-		yes	-
163	5	Ind waste			-	-	yes	-	-	1141	-		yes	-

C	<>	Material	Desc.	Qty	Qty 1-10	Qty 11-50	Qty 51-150	Qty 151-250	Qty >250	Weight (g)	Weight <1g	Comments	>4mm	<4mm
117	6	Magnetic matter			-	-	-	-	yes	127	-		-	yes
117	6	Coal			-	yes	-	-	-	353	-	representative	yes	-
117	6	Cinder			-	yes	-	-	-	149	-	representative	yes	-
117	6	Ind waste			-	yes	-	-	-	100	-	representative	yes	-
168	7	Magnetic matter			-	-	yes	-	-	35	-		-	yes
168	7	Pb lead		1	-	-	-	-	-	3	-		yes	-
168	7	metal	?stud	1	-	-	-	-	-		yes		yes	-
168	7	Glass		4	-	-	-	-	-	13	-		yes	-
168	7	Pottery		6	-	-	-	-	-	31	-		yes	-
168	7	Clay pipe		1	-	-	-	-	-	2	-		yes	-
168	7	Animal bone			yes	-	-	-	-	3	-		yes	-
168	7	CBM			-	yes	-	-	-	66	-		yes	-
168	7	Coal			-	yes	-	-	-	61	-		yes	-
168	7	Cinder			-	yes	-	-	-	66	-		yes	-
168	7	Ind waste			yes	-	-	-	-	75	-		yes	-
143	8	Clinker			-	yes	-	-	-	58	-	representative	yes	-
143	8	Coal			-	-	yes	-	-	107	-	representative	yes	-
143	8	Animal bone			yes	-	-	-	-	15	-		yes	-
143	8	Bone	calcined		yes	-	-	-	-		yes		yes	-
143	8	Glass		1	-	-	-	-	-		yes		yes	-
143	8	Shell			yes	-	-	-	-		yes		yes	-

Key: C= context, <>= sample number, Desc.= description

Table 6.3: finds from samples

- 6.2.2 The flot plant macrofossils and charcoal were retained and scanned using a stereo microscope (up to x45 magnification). Any non-palaeobotanical finds were noted on the flot pro forma, cf. Table 6.4.
- 6.2.3 The plant remains and charcoal were identified to species as far as possible, using Cappers et al (2012), Cappers and Bekker (2013), Cappers and Neef (2012), Hather (2000), Jacomet (2006), Schoch et al. (2004), Schweingruber (1982) and the author's reference collection. Nomenclature for plant taxa followed Stace (2010) and cereals followed Cappers and Neef (2012). Identification of molluscs was aided by Cameron (2008); as was the nomenclature.
- 6.2.4 The animal bone assemblage was subjected to a rapid scan in order to identify species present and the minimum number of individuals (MNI). References and guidelines used include 'Animal Bones & Archaeology: Guidelines for Best Practice' (Historic England 2014) plus reference material from Schmid (1972), Serjeantson (1996) (2009) and Hillson (1992). The author's in-house skeletal reference collection was also used to aid identification of species.

C	<>	Wt flot (g)	V flot (ml)	Mesh	IPR	AMS?	Charcoal (g)	Components	EWC	Comments	FD?
116	1	272.4	750	4mm, 2mm	-	no	0.45	sand 10%: industrial waste 45%: cinder 45%	-	mortar 0.4g, cbm 0.13g, industrial waste 51.8g, cinder 101.8g	no
141	2	30.8	70	-	-	no	0.04	sand 5%: industrial waste 25%: coal chips 70%	-	sh c.20	yes
158	3	63.4	170	-	-	no	0.33	sand 5%: coal chips 15%: industrial waste 15%: cinder 65%	-	shell (n=4), industrial waste 0.26g	no
159	4	107.9	235	2mm	-	no	-	sand 5%: coal chips 25%: industrial waste 15%: cinder 55%	-	cinder/clinker/industrial waste from >2mm, shell (n=5)	yes
163	5	417.5	1300	2mm	-	no	-	sand 5%: coal chips 10%: cinder/clinker/industrial waste 85%	-	cinder/clinker/industrial waste 321.9g	yes
117	6	144.2	420	2mm	-	no	-	sand 5%: cinder/clinker 50%: industrial waste 45%	-	some sh present	no
168	7	159.4	350	2mm	-	no	0.08	sand 10%: plant detritus (rhizome parts) 30%: industrial waste 60%	-	shell (n=12), silvery industrial waste 0.13g, industrial waste 59.8g	no
143	8	39.3	80	-	14	no	0.42	sand 5%: comminuted charcoal 5%: coal chips 90%	-	inc. single charred grain	yes

Key: **C**= context, **<>**= sample number, **Wt flot (g)**= weight (g) of flot, **V flot (ml)**= volume (ml) of flot, **IPR**= individual plant remains, **AMS?**= any material suitable for radiocarbon AMS?, **EWC**= earthworm capsules, **FD?**= was the flot discarded after sorting?, sh= spherical hammerscale, cbm= ceramic building material

Table 6.4: flot data

6.3 Results

Samples from Group number {147}:

6.3.1 <6> (117): primary fill of ash Pit [156] and <1> (116): secondary fill of ash Pit [156]: Sample <6>, from the earliest fill (117) of the ash Pit [156], weighed 24kg (24l) contained less of the industrial matrix than that from the upper fill (116), sample <1>. The pH number was also slightly lower. The flot from the sample of the lower fill also contained spherical hammerscale and, upon examination, the magnetised matter contained a very small quantity of plate hammerscale too. Plate hammerscale was absent from the magnetised matter from the sample of the upper fill. No plant remains were observed in either of the samples and charcoal, which was conifer, was visible in only the upper fill.

6.3.2 <5> (163): fill of ash Pit/Stoke hole {166}: The 33kg (35l) sample comprised mostly of industrial waste (coal/cinder/clinker/slaggy material). The flot did not contain any ecofactual material but spherical hammerscale and microslag fragments were observed; both in the flot and the magnetised matter.

Sample from Group number {232}:

6.3.3 <2> (141): fill of Ditch [140]: The 41kg (32l) sample consisted mostly of industrial waste as outlined previously. The flot yielded a very small amount (0.4g) of charcoal, oak (*Quercus* sp.) with no plant remains observed. Microslags were present in the magnetised matter; mostly spherical hammerscale, although some plate hammerscale was also observed along with fragments of slaggy material.

Samples from Group number {144}:

6.3.4 <4> (159): fill of ash Pit/Stoke hole (176): Once again, the dominant matrix component was the industrial mix outlined previously. The flot from the 35kg (34l) sample did not yield any charcoal or plant remains, but five examples of terrestrial mollusc *Aegopinella nitidula* were observed. The magnetised matter contained spherical hammerscale and microslag fragments.

6.3.5 <7> (168): fill of curving Culvert [167]: The 37kg (29l) sample comprised of the industrial mix as previous. The flot yielded no charred plant material however un-charred rhizome fragments were observed. No charcoal was present and the only ecofactual material from the flot was three examples of *Aegopinella nitidula* and nine examples of Succineidae (freshwater molluscs). A very small indeterminate

charcoal fragments were present. Spherical hammerscale and fragments of slaggy material were observed within the magnetised matter.

Samples from areas without a Group number:

6.3.6 <3> (158): black silty fill of {129}: The sample had a similar matrix from the other samples from this site. No plant remains were present in the flot and the charcoal present was oak. Four examples of terrestrial mollusc, *Aegopinella nitidula*, were collected from the flot. Occasional spherical hammerscale and microslag fragments were observed within the magnetised matter.

6.3.7 <8> (143): grey/brown river sand: The matrix of this 48kg (32l) sample still contained the industrial mix although it had a greater sand component. This flot was the only one that contained any charred plant material (n=14). A single, possible wheat (cf. *Triticum aestivum*) grain was present along with cabbage-type (*Brassica* sp.) and fat hen (*Chenopodium album*). The charcoal was identified as oak. Occasional plate hammerscale and fragmented micro slags were observed in the magnetised matter.

6.4 Animal bone

6.4.1 The animal bone was generally in a good condition, although, some depositional damage was evident on a small percentage of the assemblage.

6.4.2 The quantification of animal bone by context is presented in Table 6.5, and the MNI count by context is Table 6.6.

Context	Material	Qty	Wgt(g)	Period
103	Animal Bone	240	3060	Post-medieval
104	Animal Bone	2	138	Post-medieval
105	Animal Bone	350	5060	Post-medieval
121	Animal Bone	1	129	Post-medieval
127	Animal Bone	4	186	Post-medieval
143	Animal Bone	4	566	Post-medieval
144	Animal Bone	1	200	Post-medieval
163	Animal Bone	1	116	Post-medieval
U/S	Animal Bone	27	1067	Post-medieval
Total		630	10522	

Table 6.5: quantification of animal bone per context

Context	Species	MNI Adult	MNI sub-adult	Butchery	Comments
103	<i>Bos taurus/Equus caballus</i>	2	1	Y	
105	<i>Bos taurus/Equus caballus</i>	1	1	Y	Copper staining
127	<i>Bos taurus/Equus caballus</i>	1	-	-	
143	<i>Bos taurus/Equus caballus</i>	1	-	Y	
164	<i>Bos taurus/Equus caballus</i>	1	-	-	
u/s	<i>Bos taurus/Equus caballus</i>	1	-	-	Copper staining
103	<i>Felis catus</i>	1	-	-	
105	<i>Gallus sp.</i>	1	-	-	
103	<i>Lepus/Oryctolagus sp?</i>	1	-	-	
103	<i>Ovis aries/Capra aegagrus hircus</i>	2	-	Y	
104	<i>Ovis aries/Capra aegagrus hircus</i>	1	-	-	
105	<i>Ovis aries/Capra aegagrus hircus</i>	5	1	Y	
121	<i>Ovis aries/Capra aegagrus hircus</i>	1	-	-	
u/s	<i>Ovis aries/Capra aegagrus hircus</i>	1	1	-	
103	Rodentia	1	-	-	
103	<i>Sus sp.</i>	1	-	-	
127	<i>Sus sp.?</i>	1	-	-	
103	Turdidae	1	-	-	
TOTAL		24	4		

Table 6.6: MNI (minimum number of individuals) by context

- 6.4.3 A minimum number of 28 individuals were presented in the assemblage, including herbivores, carnivores and avian species; both wild and domestic (Table 6.6). Adult animals dominated the assemblage (n = 24) while only four sub-adult animals were represented. It should be noted that this figure may change with further analysis.
- 6.4.4 Medium-sized domestic ungulates dominate the assemblage such as sheep/goat (*Ovis aries/Capra aegagrus hircus.*) (n = 10) followed by large domestic ungulates, such as cattle/horse (*Bos taurus/Equus caballus*) (n = 7), pigs (*Sus sp.*) (n = 2) and juvenile cattle/horse (n = 2). Only one of the following animals is represented: chicken (*Gallus sp.*), rabbit/hare (*Oryctolagus/Lepus sp.*) and rodents (Rodentia). A complete femur of a small wild garden bird such as a thrush (Turdidae) was recovered from deposit **(103)**.
- 6.4.5 Canid/rodent gnawing was not observed and unusual pathologies were not observed. Butchery marks (chop and knife marks) were observed on several cattle/horse bones and sheep/goat bones.
- 6.4.6 All anatomical elements are represented in the assemblage, with limb bones dominating. Cranial elements were not well-represented, although there was a large quantity of mandibles and dentition. Several sheep/goat mandibles were present in deposit **(105)**; copper staining was evident on cattle/horse bones from deposit **(105)** and un-stratified.

6.4.7 The faunal assemblage was recovered with finds of largely 17th to 18th century date and it is probable that the faunal assemblage is of a contemporary date.

6.5 Discussion

6.5.1 The paucity of charcoal and plant remains prohibited further discussion.

6.5.2 All the samples, with the exception of <8> (143), have a similar matrix of industrial waste. All the magnetised matter contained spherical hammerscales and small fragments of slaggy material. This suggested that the material was spread over the site, perhaps as a levelling layer. The slight differences in pH and artefactual material indicated that the deposition of such material was chance. The scant molluscan material, especially the freshwater Succineidae and the un-charred rhizomes from <7> (168) show that this was a wetter area than the remainder of the features, however, as this feature is thought to be a rainwater culvert these remains were of no surprise and only reaffirm the initial interpretation.

6.5.3 The zooarchaeological assemblage contains a selection of elements that, along with their cut/chop marks, suggested they were the remnants of butchery waste. Cattle, pig, sheep/goat, chicken and rabbit/hare were all consumed during the post-medieval period. The presence of non-domesticated species such as the bird femur and the rodent were likely to be coincidental rather than deliberately deposited.

6.5.4 The incorporation of the animal bone butchery waste with the industrial waste suggest that the site was overlain by middening waste.

6.6 Statement of potential and recommendations

6.6.1 No material was present that would be suitable for radiocarbon dating.

6.6.2 No further work is required on the charred plant remains, charcoal or molluscs and these may be discarded.

7 CONCLUSIONS

7.1 Interpretation

- 7.1.1 The archaeological investigation was undertaken over twenty days between the 20th November and the 15th December 2017. The excavation comprised of a single open area measuring c.234m². The excavated area was sealed by a layer of very mixed demolition rubble **(103)** which measured up to 1.00m deep in depth. It contained material culture mainly dating to the 19th century. Any made ground deposits below this were very mixed containing mainly, both 18th and 19th century pottery along with discarded animal bone some of which showed signs of butchering. This suggested a great deal redepositing had taken place
- 7.1.2 The structures identified during the strip map and record excavation at The Calls site reflect an initial industrial phase of the site and a later move toward more residential structures.
- 7.1.3 The tentative earliest phase on the site, the possible ditch **[140]** produced material culture of a medieval date along with industrial type waste. This may reflect some kind of early industrial activity on the site, reliant on a good water supply, either from the goit or River Aire.
- 7.1.4 The Phase two and Phase Three structures dominated the majority of the site and reflect industrial activity in the late 18th to early 19th centuries. Jeffrey's plan of Leeds, 1770 (Figure 4), shows buildings on the south side of the goit in the excavation area. It may be that structure **{232}** represents the interior workings of one of these buildings. Notably context **{105}** adjacent to and north of this feature contained large amounts of 18th century pottery and clay tobacco pipe fragments supporting a possible 18th century date for this feature.
- 7.1.5 The town plan of Leeds and its environs 1815 (Figure 5) suggests that by this date the structural layout of the area had changed. It shows a building located directly in the centre of the excavation site. The brick walls **{131}** and **{133}** correspond with the eastern edge of the structure shown on the map. The structures in this building **{144}**, **{147}** and **{184}** all contained features resembling ash pits or stoke holes and were similar to the one in the Phase Two feature **{232}**. As to what exactly was taking place in and on these structures still remains somewhat elusive. The ash pits suggest that some kind of heating process was taking place. One possibility is that the brick structures represent the remains of a cloth dyeing works. There were

some ephemeral signs of heating on the brick structures where dye coppers may have once stood, enabling them to be heated. The culverts {149}, {167} and {207} provided a means for liquids to be egressed, probably into the River Aire. Cossin's map of 1725 (Figure 3) shows Dyers Garth immediately to the east of The Calls area and tenter racks to the north. Jeffrey's plan of Leeds 1770 names the area to the north of the Calls as Tenter Garth. This adds more potential evidence to the excavation site being the location of a dye works.

7.1.6 The cloth trade was central to the economy of Leeds and by the late 18th century the town was losing its rural character. Associated with the production of cloth came the associated trade of cloth dyeing as Leeds became ever more industrialised. Cloth dyeing required large volumes of water. The river Aire and the medieval goit would have, initially, before pollution, been ideal water supplies of 'soft' water suitable for this process. A second reason for the northern bank of the River Aire being an ideal location for a dyeworks was the access to a transport system. The development of the Aire and Calder Navigation and the Leeds, Liverpool canal meant facilitated this.

7.1.7 The fourth Phase on site relates to a crescent shaped terrace of residential terraces constructed of yellow sandstone and mortar. These are known to have existed by 1831, shown on Fowler's plan of this date. By this date the Phase Three structures appeared to have been demolished.

7.2 Significance

7.2.1 The excavation at The Calls has revealed a possible late 18th, early 19th century dyeworks which is of local and regional importance. As part of Leeds industrial past, it provides evidence of the small scale industry associated with one of the finishing stages in the manufacturing of saleable cloth before this work became centralised in the large purpose built mills of Leeds. The site reflecting this little studied period when Leeds, on the cusp of the industrial revolution was moving from a rural small town into a fully industrialised city.

7.3 Recommendations

7.3.1 Further site development work is to be monitored in the form of an archaeological watching brief.

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APPENDIX 1: TRENCH DESCRIPTIONS

Context No.	Context Type	Description	Metres above Ordnance Datum
100	Deposit	Black Asphalt	25.70
101	VOID		
102	Deposit	Modern Concrete	25.59
103	Deposit	Mixed Demolition Rubble	25.23
104	VOID		
105	Deposit	Fine Rubble Deposit (Made Ground)	24.81
106	Fill	Cream Clay (Borehole Fill)	24.64
107	Structure	East-West Brick Wall (GF {232})	24.71
108	Structure	East-West Curving Sandstone Wall	25.40
109	Structure	North-South Red Brick Wall	25.67
110	Structure	North-South Sandstone Wall	25.29
111	Structure	North-South Sandstone Wall	25.47
112	Structure	Sandstone Floor Slabs (GF {232})	24.65
113	Structure	East-West Line of Sandstone Blocks (GF {232})	24.73
114	Structure	Sandstone Floor Slabs	24.85
115	Deposit	Bedding Layer for Slabs (114)	24.35
116	Fill	Secondary Fill of Ash Pit {156} (GF {147})	24.99
117	Fill	Primary Fill of Ash Pit {156} (GF {147})	24.62
118	Deposit	Modern, Compact Floor Surface	25.79
119	Structure	North-South Red brick Wall (GF {232})	24.61
120	Structure	Red Brick Structure (GF {232})	24.81
121	Deposit	Bedding Layer of Broken Sandstone (GF {232})	24.57
122	Structure	Broken Red Brick Floor Surface (GF {232})	24.66
123	Deposit	River Sand containing some Rubble	24.48
124	Structure	Small Red Brick Structure (GF 232)	24.58
125	Cut	For Walls {108} and {111}	24.45
126	Fill	Of [125]	24.45
127	Deposit	Rubble Back fill between (137), (138) (GF {232})	24.36
128	Deposit	Stone Setts	25.27
129	Structure	North-South Culvert	25.34
130	Structure	North-East/South-West Culvert	25.36
131	Structure	North-South/East-West Brick Wall	25.25
132	Structure	East-West Brick Wall	25.24
133	Structure	North-South Brick Wall	25.18
134	Structure	East-West Red Brick Wall (GF {232})	24.74
135	Deposit	Red Brick Surface (GF {232})	24.43
136	Deposit	Black Silt (Coal Fragments) GF {232})	-
137	Structure	East-West Red Brick Wall (GF 232)	24.36
138	Structure	East-West Sandstone Wall (GF 232)	24.36
139	Structure	North-South Sandstone Wall (GF	-

Context No.	Context Type	Description	Metres above Ordnance Datum
		{232}}	
140	Cut	Ditch (GF 232)	24.20
141	Fill	Of [140] (GF 232}}	24.20
142	Fill	Secondary of [140] (GF {232}}	24.20
143	Deposit	Grey/ Brown River Sand	-
144	Group Number	Brick and Stone Central Structure	-
145	Deposit	Bedding Layer for (135) (GF {232}}	-
146	Structure	Sandstone Slabbed Floor (GF {147}}	24.82
147	Group Number	Western Brick and Mortar Structure	-
148	Structure	North-South Line, Sandstone Blocks	24.82
149	Structure	North-East, South-West Culvert	24.44
150	Structure	North-South Brick Wall (GF {147}}	25.07
151	Structure	Floor Surface Remnant	24.92
152	Structure	Sandstone Blocks, Floor Surface	25.09
153	Structure	Sandstone Setts, Floor Surface	25.02
154	Structure	Red Brick, Floor Surface	24.99
155	Structure	East-West Red Brick Wall	25.00
156	Structure	Ash Pit/Stoke Hole (GF {147}}	24.49
157	Structure	North-South Brick Structure (GF {147}}	24.52
158	Fill	Black Silty Fill of {129}	24.82
159	Fill	Of Ash Pit/Stoke Hole (176) (GF {144}}	24.64
160	Structure	Northern Wall of Ash Pit/ Stoke Hole (176) (GF {144}}	24.79
161	Structure	Southern Wall of Ash Pit/ Stoke Hole, (176) (GF {144}}	24.81
162	Structure	Ash Pit/Stoke Hole (GF {184}}	
163	Fill	Of Ash Pit/Stoke Hole {162}}	
164	Fill	Primary Fill of Stoke Hole/Ash Pit {166} (GF {147}}	24.77
165	Fill	Secondary Fill of Ash Pit/ Stoke Hole {166} (GF {147}}	25.04
166	Structure	Western Stoke Hole (GF {147}}	24.39
167	Structure	Curving Culvert (GF {144}}	25.11
168	Fill	Of {167}}	24.75
169	Structure	Wide Slabbed Drain (GF {144}}	24.89
170	Structure	Single Large Sandstone Slab (GF {144}}	24.49
171	Structure	North-South Sandstone Wall (GF {144}}	25.10
172	Structure	North-South Brick and Slab Wall (GF {144}}	25.11
173	Structure	Southern Brick Wall of Ash Pit/ Stoke Hole {174} (GF {144}}	24.84
174	Structure	Southern Ash Pit/Stoke Hole (GF {144}}	24.50
175	Fill	Of Ash Pit {174} (GF {144}}	24.55
176	Structure	Northern Ash Pit/ Stoke Hole (GF {144}}	24.53

Context No.	Context Type	Description	Metres above Ordnance Datum
177	Deposit	Area of Broken Bricks (GF {144})	24.44
178	Structure	Area of Red Bricks on Edge (GF {144})	25.10
179	Structure	Area of Bricks and Mortar (GF {144})	25.0625
180	Structure	Area of Bricks and Mortar (GF {144})	25.02
181	Cut	For curving Sandstone Wall (108)	-
182	Fill	Of [181]	-
183	Structure	Area of Red Bricks on Edge (GF {144})	25.07
184	Group Number	Southern Brick and Mortar Structure	
185	Structure	Single Large Sandstone Slab (GF {144})	25.01
186	Structure	Curving Culvert	25.06
187	Structure	Cobbled Surface (River Rounded Cobbles)	
188	Structure	Single Line of Red Bricks	
189	Structure	Rectangular Clay Area	
190	Structure	Rectangular Stone Recess for Upright	
191	Structure	WSW-ENE Brick and Mortar Wall (South)	
192	Structure	WSW-ENE Brick and Mortar Wall (North)	
193	Structure	Sandstone Base Slabs of Stoke Hole	
194	Structure	Modern Concrete Pile	
195	Structure	North-South dividing Wall	
196	Structure	Remains of Possible Floor Surface	
197	Deposit	Black Cindery Material	
198	Structure	WSW-ENE Brick and Mortar Wall	
199	VOID		
200	Structure	WSW-ENE Line of 3 Sandstone Blocks	
201	Structure	Curving Brick N Wing of {184}	
202	Structure	Curving Brick S Wing of {184}	
203	Structure	Short Brick E-W Wall	
204	Structure	Red Bricks on Edge (Upper Layer)	
205	Structure	Red Bricks on Edge (Lower Layer)	
206	Deposit	Random Sandstone Pieces	
207	Structure	Brick N-S Walls of Culvert	
208	Structure	Top Slabs of N_S Culvert	
209	Structure	Red Brick Scatter	
210	Structure	E-W Wall of Red bricks and Sandstone	
211	Structure	Foundation Slabs for Brick Wall {212}	
212	Structure	E-W Wall of Red Bricks and Mortar	
213	Deposit	Modern Yellow Sub-Base	25.51
214	Deposit	Bedding Layer for concrete (102)	25.43
215	Deposit	Cobbled Surface	25.23
216	Structure	Red Brick Wall	25.13
217	Deposit	Light Brown Fine Rubble	25.13
218	Deposit	Black Cindery Material	24.97
219	Deposit	Rubble (Mortar and Tile)	24.99
220	Deposit	Brown Silt Matrix; Small Amount of	24.69

Context No.	Context Type	Description	Metres above Ordnance Datum
		Rubble	
221	Deposit	Mixed Rubble Deposit	25.13
222	Structure	River Rounded Cobbles; Surface	24.93
223	Cut	Possible Service Run	25.21
224	Cut	For Cast Iron Service Pipe	25.27
225	Fill	Of [224]	25.27
226	Fill	Of [223]	25.21
227	Deposit	Mortar/Rubble Deposit	25.41
228	Cut	For Culvert {130}	25.43
229	Fill	Of [228]	25.43
230	Deposit	Brick and Mortar Rubble	24.43
231	Cut	For (230)	24.43
232	Group Number	Northern Ash Pit/Stoke Hole	-
233	Structure	Flagged base of stoke hole/ ash pit	23.85
234	Structure	Flag foundation course	24.96

APPENDIX 2: PLATES



Plate 1; phase 4 sandstone walls (108) (curving), (110), (111) and red brick wall (109); facing east



Plate 2; west facing section showing excavated depth to river sands (101) and (143); facing east



Plate 3; phase 2 structure (232) after initial cleaning; facing west



Plate 4; phase 2 possible early stoke hole/ash pit (137), (138), (233) and red brick surface (135); facing east



Plate 5; slump in Phase 1 wall (119) over Phase 1 ditch [140] cut into river sand (123); facing east



Plate 6; phase 2 wall (119) (foreground) and river sand (123) cut by remains of Phase 1 ditch [140], (141) (background); facing east



Plate 7; phase 4 sandstone wall (110), brick wall (109) and compacted floor surface (118); facing south-west



Plate 8; red brick wall (109) with slabbed foundation (234) and remains of slabbed floor surface (114); facing south



Plate 9; brick wall (131) (background) with stone sets and culverts (129) and (130) (foreground); facing north



Plate 10; sandstone blocks (148) and sandstone slabs (146); facing north-west



Plate 11; structure (147). Blocked, redundant stoke hole/ash pit (166,) (right) and later stokehole/ash pit (156) (left); facing south



Plate 12; structure (144). Culvert (167) and drain (169) in foreground; facing south-west



Plate 13; structure (144). Culvert (167) in foreground; facing south-east



Plate 14; structure (184). Stoke hole/ ash pit k(193) evident; facing north-west



Plate 15; structure (184); facing east



Plate 16: river sand (143) and west facing section

APPENDIX 3: FIGURES




Wardell Armstrong
2018

PROJECT: Rear of 14-18 The Calls, Leeds,
West Yorkshire

CLIENT: Commercial Development Projects Ltd

SCALE: 1:25,000 at A4


DRAWN BY: HP


CHECKED BY: AB

DATE: March 2018

REPORT No: CL12060

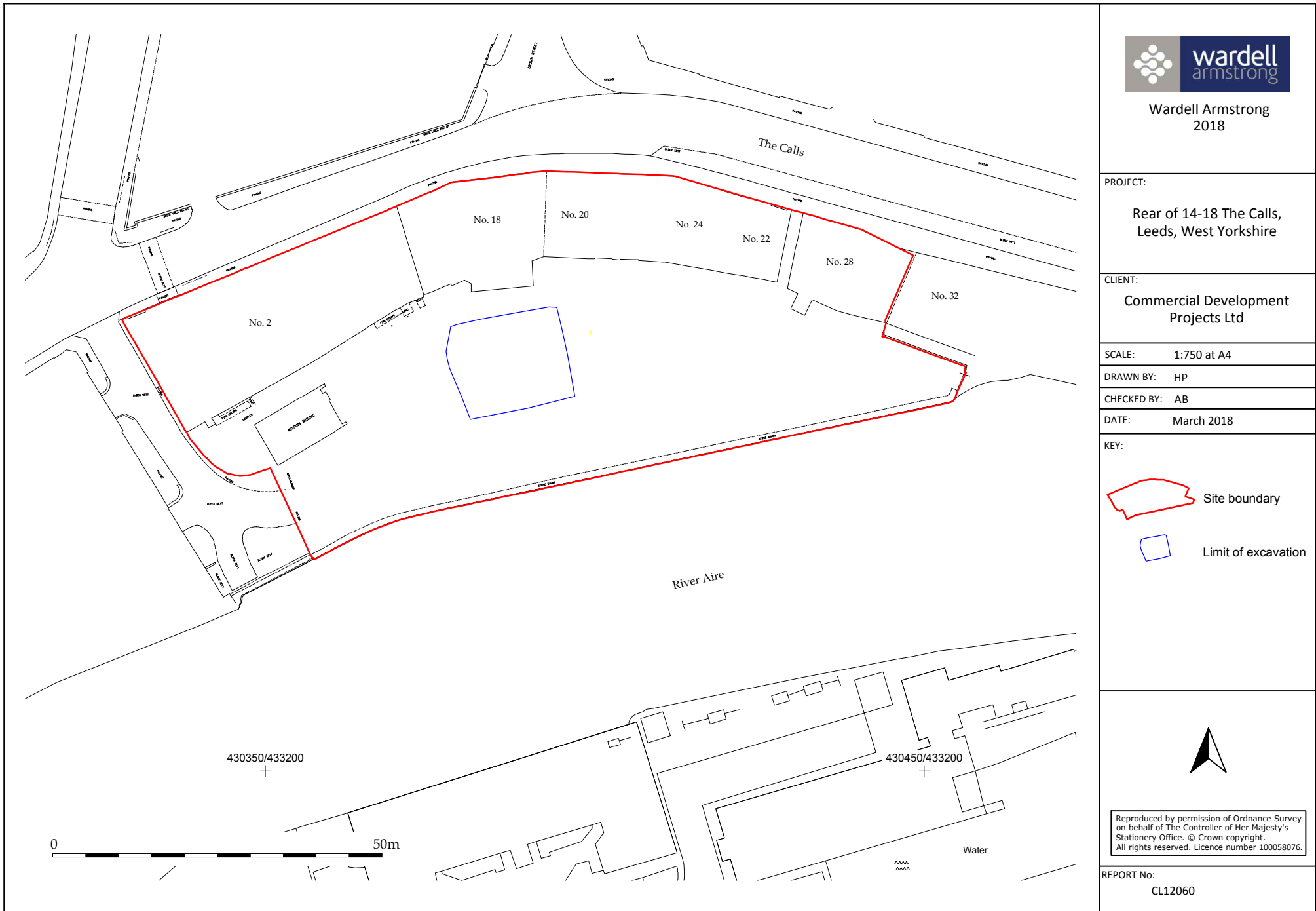
KEY:

 Site location



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Stationary Office. © Crown copyright.
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Figure 1: Site location.



Wardell Armstrong
2018

PROJECT:
Rear of 14-18 The Calls,
Leeds, West Yorkshire



CLIENT:
Commercial Development
Projects Ltd

SCALE: 1:750 at A4

DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

KEY:
 Site boundary
 Limit of excavation



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REPORT No:
CL12060

Figure 2: Detailed site location.

PROJECT:
Rear of 14-18 The Calls,
Leeds, West Yorkshire

CLIENT:
Commercial Development
Projects Ltd

SCALE: 1:5,000 at A4

DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

KEY:
 Approximate site location



REPORT No:
CL12060

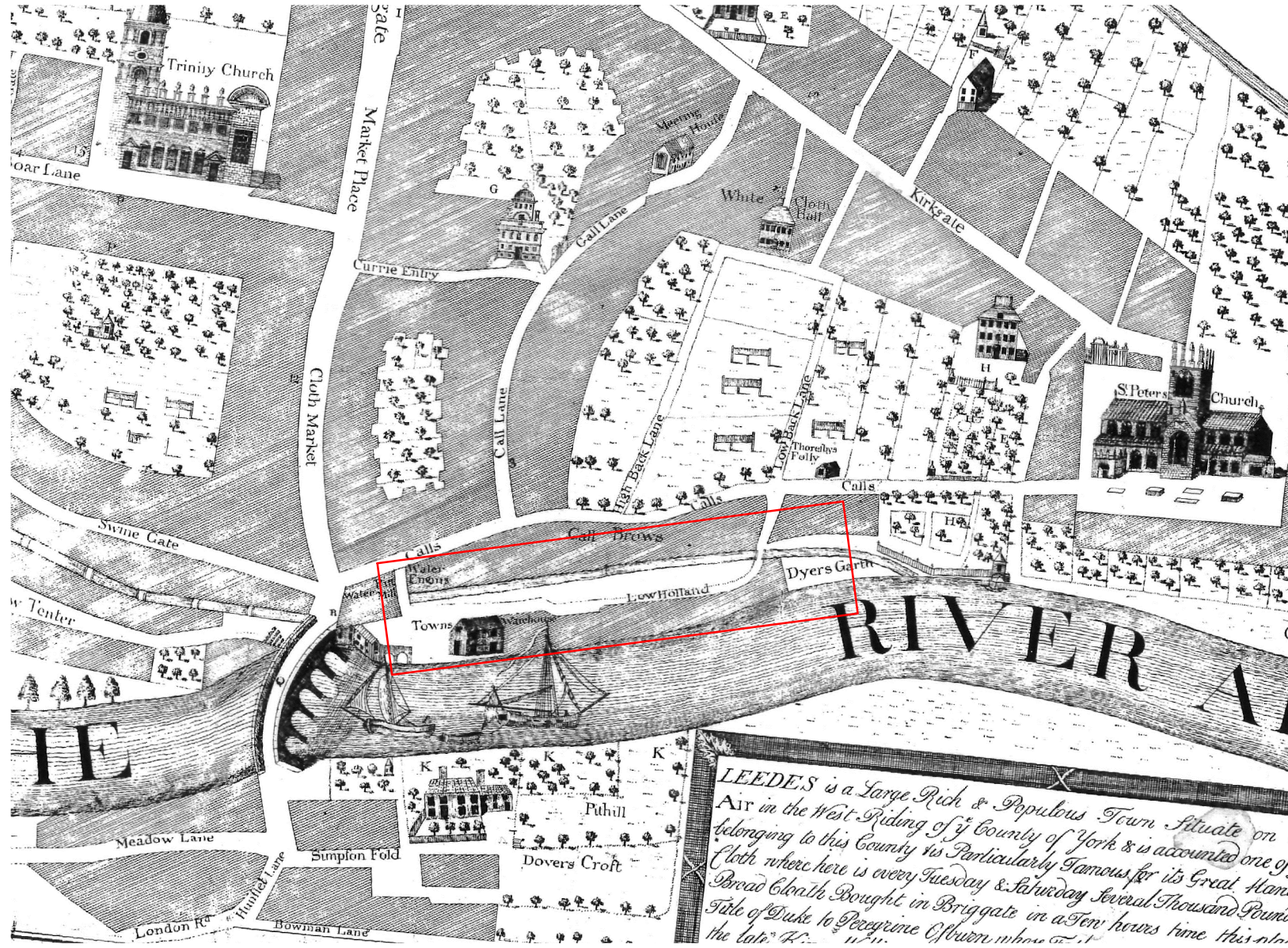


Figure 3: 'A new and exact plan of Leeds', 1725 (surveyed by J Cossins).



Wardell Armstrong
2018

PROJECT:
Rear of 14-18 The Calls,
Leeds, West Yorkshire

CLIENT:
Commercial Development
Projects Ltd



SCALE: 1:5,000 at A4

DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

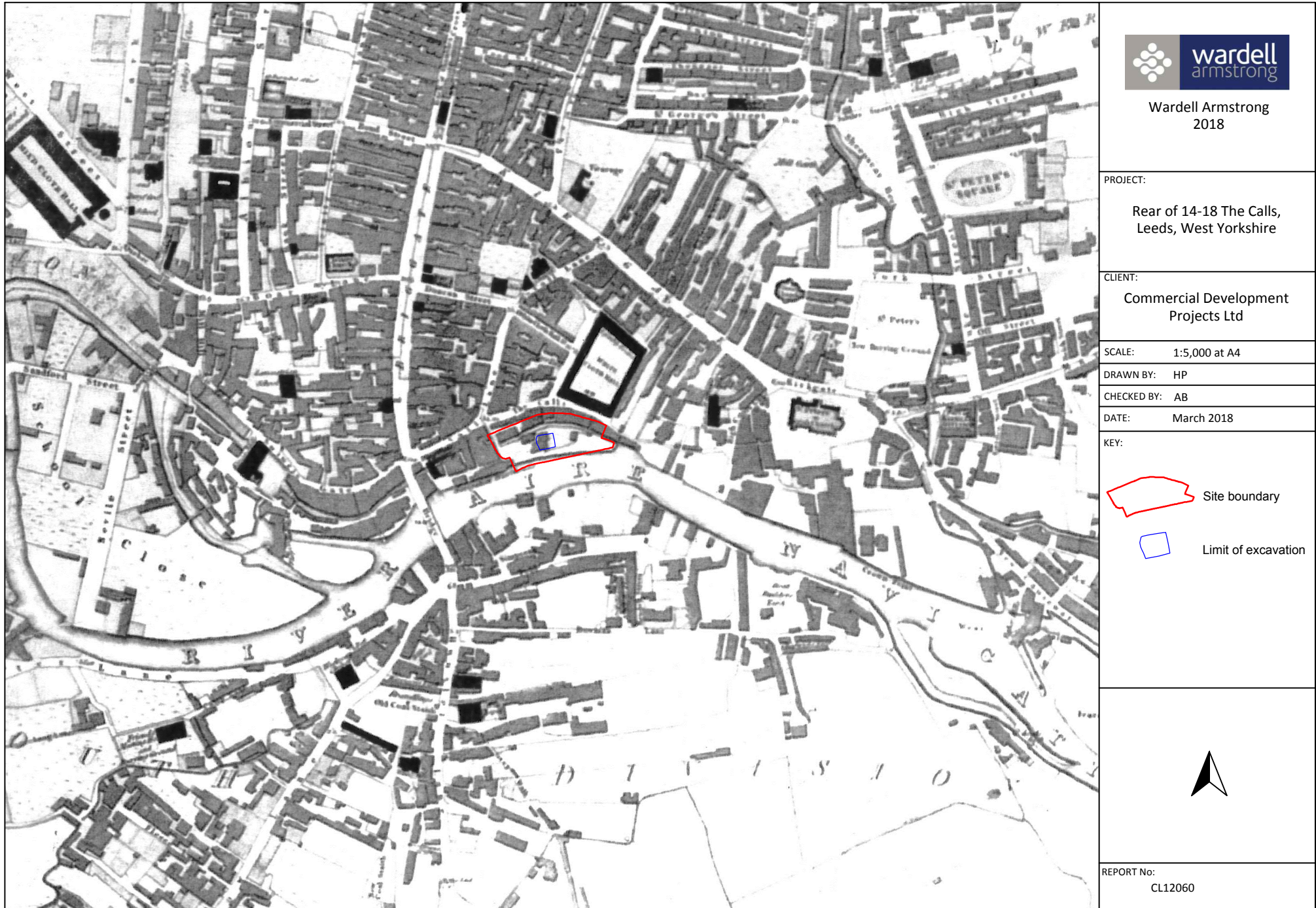
KEY:

-  Site boundary
-  Limit of excavation



REPORT No:
CL12060

Figure 4: Jefferys' plan of Leeds, 1770.



Wardell Armstrong
2018

PROJECT:
Rear of 14-18 The Calls,
Leeds, West Yorkshire

CLIENT:
Commercial Development
Projects Ltd


SCALE: 1:5,000 at A4


DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

KEY:

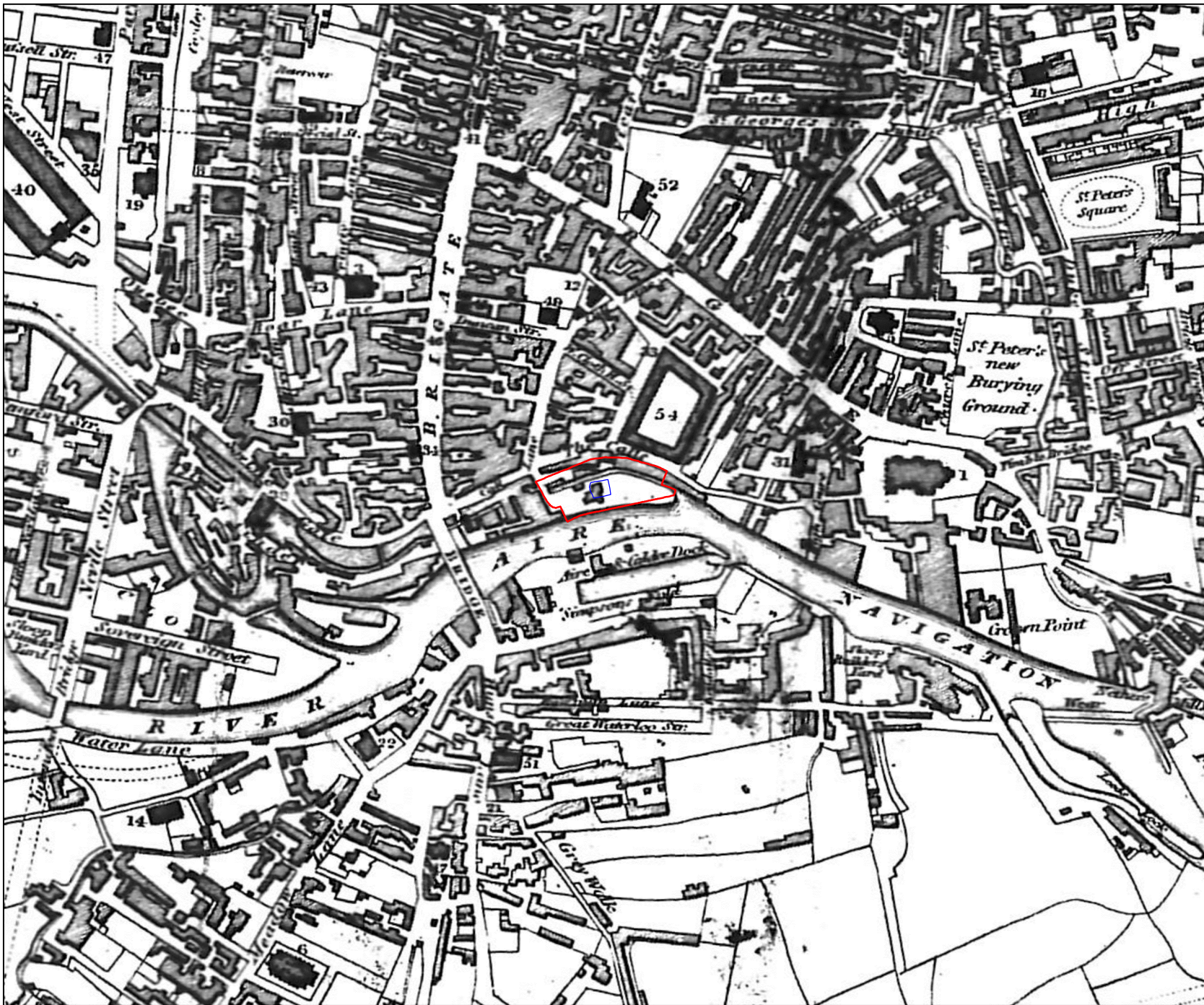
 Site boundary

 Limit of excavation



REPORT No:
CL12060

Figure 5: Plan of the town of Leeds and its environs, 1815.



Wardell Armstrong
2018

PROJECT:
Rear of 14-18 The Calls,
Leeds, West Yorkshire

CLIENT:
Commercial Development
Projects Ltd


SCALE: 1:5,000 at A4


DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

KEY:

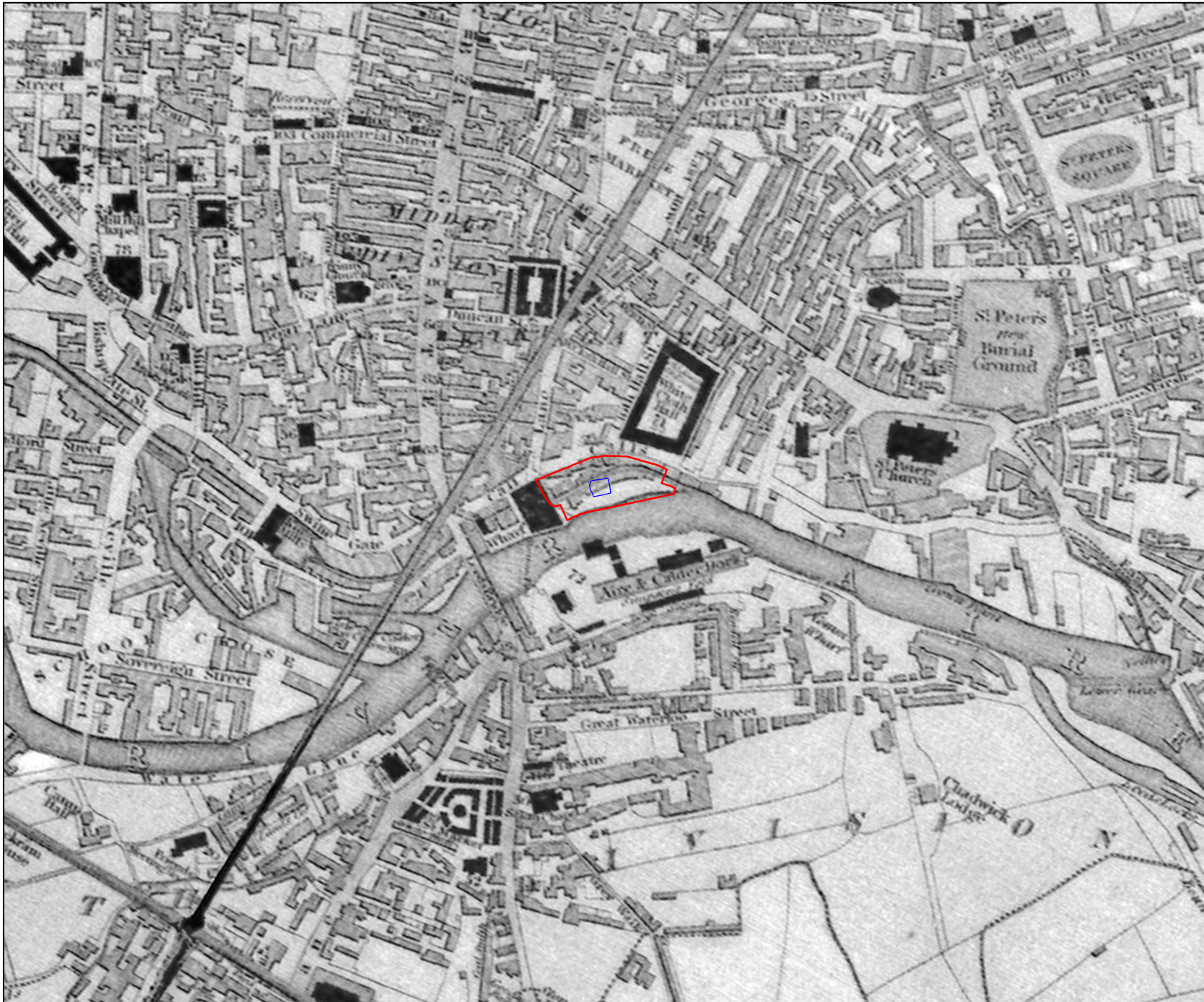
 Site boundary

 Limit of excavation



REPORT No:
CL12060

Figure 6: Fowler's plan of Leeds and its environs, 1821.



Wardell Armstrong
2018




PROJECT:	Rear of 14-18 The Calls, Leeds, West Yorkshire
CLIENT:	Commercial Development Projects Ltd
SCALE:	1:5,000 at A4
DRAWN BY:	HP
CHECKED BY:	AB
DATE:	March 2018
KEY:	 Site boundary  Limit of excavation
	
REPORT No:	CL12060

Figure 7: Fowler's plan of Leeds and its environs, 1831.

PROJECT:

Rear of 14-18 The Calls,
Leeds, West Yorkshire

CLIENT:

Commercial Development
Projects Ltd

SCALE: 1:75 at A3

DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

KEY:

- (101) Context number
- Section location
- Limit of excavation



REPORT No:
CL12060

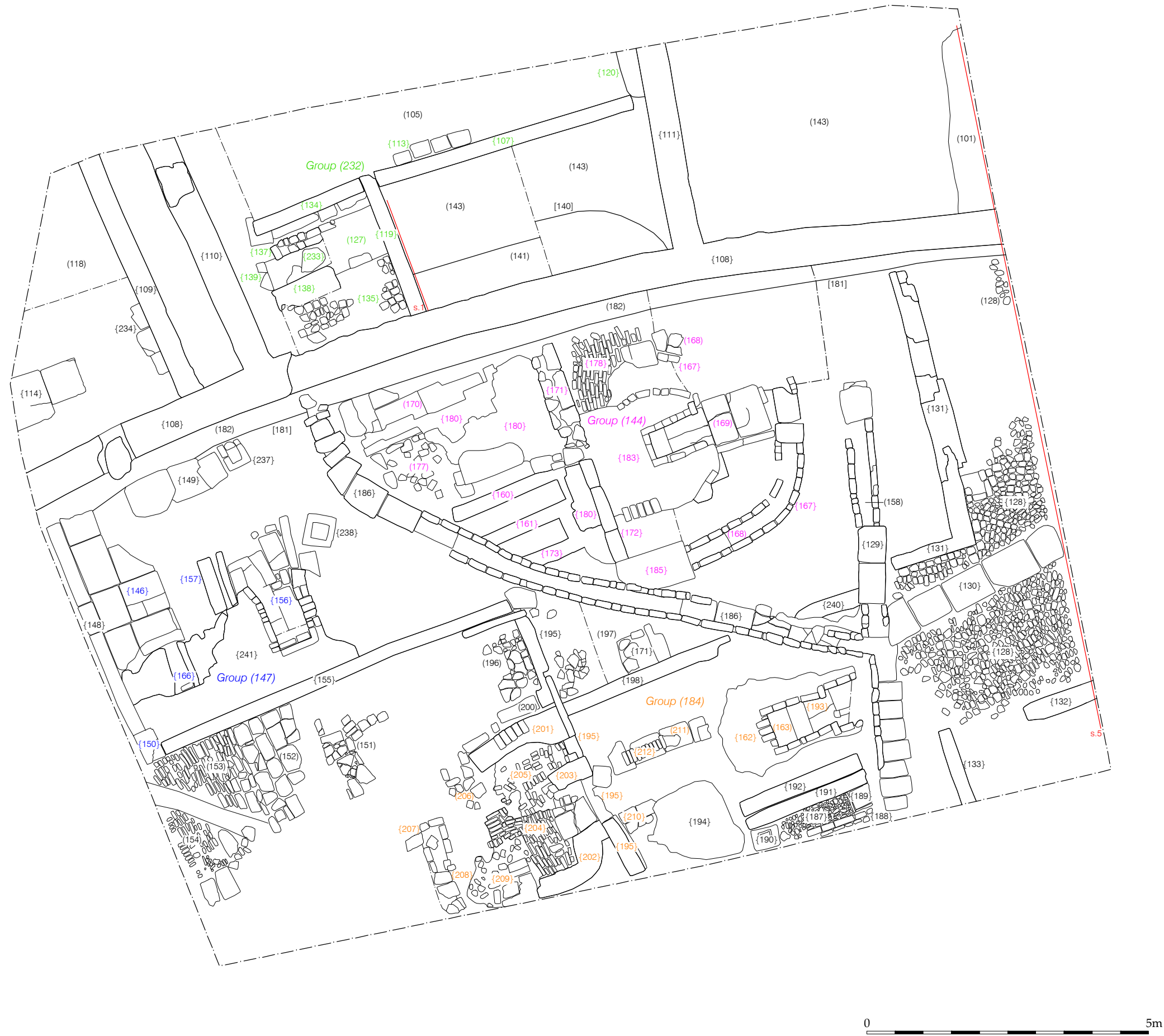


Figure 8: Plan of excavation area.



Wardell Armstrong
2018

PROJECT:

Rear of 14-18 The Calls, Leeds,
West Yorkshire

CLIENT:

Commercial Development
Projects Ltd

SCALE: 1:25 at A4

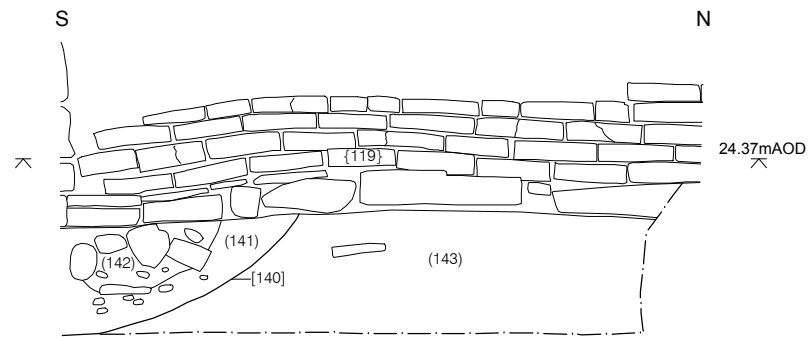
DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

KEY:

- Context number
- Height mAOD
- Limit of excavation



Section 1. East facing elevation of wall {119}, showing ditch [140].



REPORT No:

CL12060

Figure 9: Elevation of wall {119}.

PROJECT:

Rear of 14-18 The Calls,
Leeds, West Yorkshire

CLIENT:

Commercial Development
Projects Ltd

SCALE: 1:25 at A3

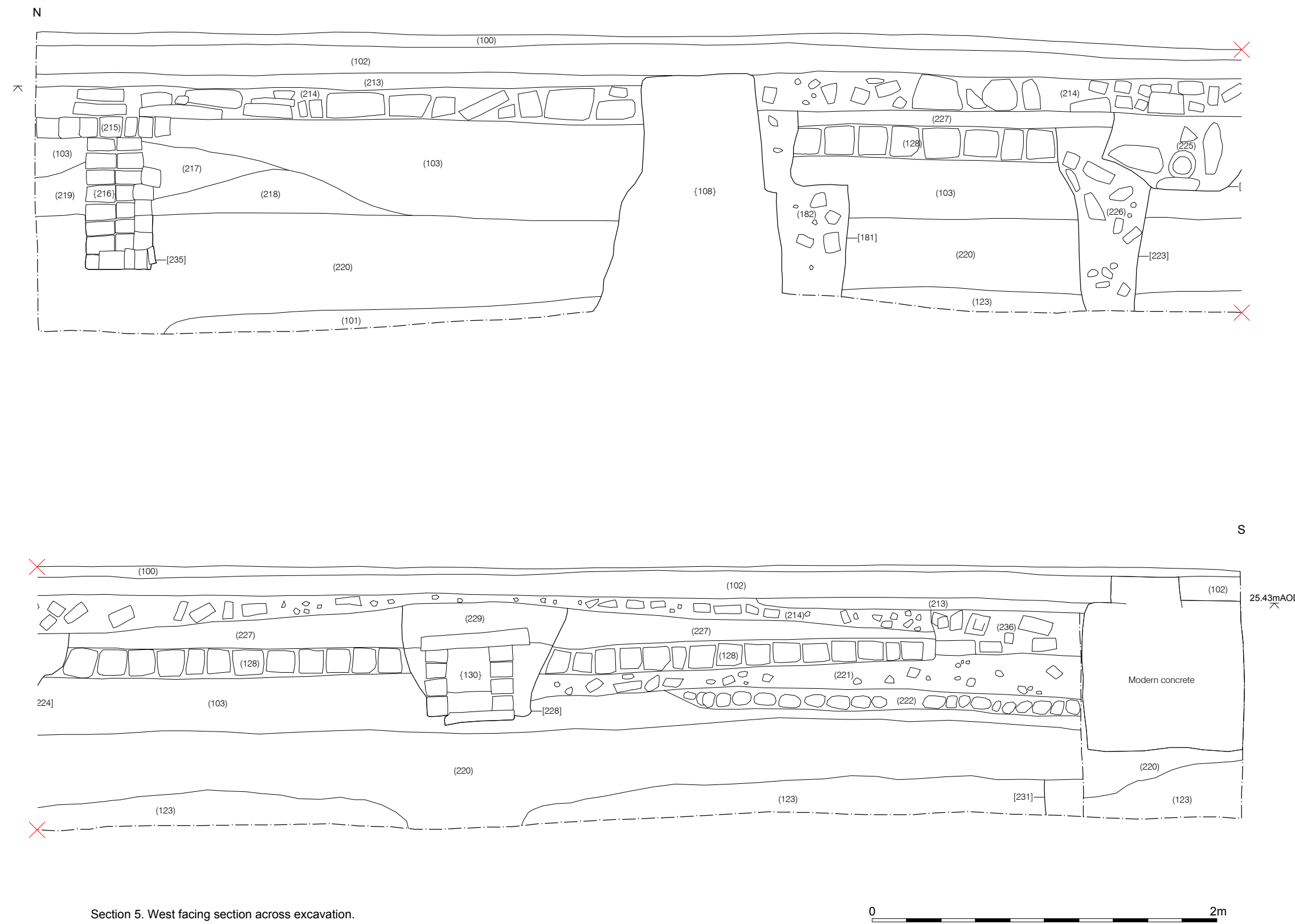
DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

KEY:

- (101) Context number
- ^ Height mAOD
- Limit of excavation



Section 5. West facing section across excavation.

0 2m



REPORT No:

CL12060

Figure 10: Section of excavation area.

PROJECT:

Rear of 14-18 The Calls,
Leeds, West Yorkshire

CLIENT:

Commercial Development
Projects Ltd

SCALE: 1:75 at A3

DRAWN BY: HP

CHECKED BY: AB

DATE: March 2018

KEY:

- (101) Context number
- Limit of excavation
- Phase 1
- Phase 2
- Phase 3
- Phase 4



REPORT No:
CL12060

Figure 11: Phasing plan of excavation area.

STOKE-ON-TRENT
Sir Henry Doulton House
Forge Lane
Etruria
Stoke-on-Trent
ST1 5BD
Tel: +44 (0)178 227 6700

BIRMINGHAM
Two Devon Way
Longbridge Technology Park
Longbridge
Birmingham
B31 2TS
Tel: +44 (0)121 580 0909

CARDIFF
22 Windsor Place
Cardiff
CF10 3BY
Tel: +44 (0)292 072 9191

CUMBRIA
Marconi Road
Burgh Road Industrial Estate
Carlisle
Cumbria
CA2 7NA
Tel: +44 (0)122 856 4820

EDINBURGH
Great Michael House
14 Links Place
Edinburgh
EH6 7EZ
Tel: +44 (0)131 555 3311

GLASGOW
2 West Regent Street
Glasgow
G2 1RW
Tel: +44 (0)141 433 7210

LONDON
46 Chancery Lane
London
WC2A 1JE
Tel: +44 (0)207 242 3243

MANCHESTER (City Centre)
76 King Street
Manchester
M2 4NH
Tel: +44 (0)161 817 5038

MANCHESTER (Greater)
2 The Avenue
Leigh
Greater Manchester
WN7 1ES
Tel: +44 (0)194 226 0101

NEWCASTLE UPON TYNE
City Quadrant
11 Waterloo Square
Newcastle Upon Tyne
NE1 4DP
Tel: +44 (0)191 232 0943

SHEFFIELD
Unit 5
Newton Business Centre
Newton Chambers Road
Thornccliffe Park
Chapelton
Sheffield
S35 2PH
Tel: +44 (0)114 245 6244

TRURO
Baldhu House
Wheal Jane Earth Science Park
Baldhu
Truro
TR3 6EH
Tel: +44 (0)187 256 0738

International offices:
ALMATY
29/6 Satpaev Avenue
Regency Hotel Office Tower
Almaty Kazakhstan
050040
Tel: +7(727) 334 1310

MOSCOW
21/5 Kuznetskiy Most St.
Moscow
Russia
Tel: +7(495) 626 07 67