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1 INTRODUCTION

HBG are undertaking a residential development on the former Monk Bridge Forge site. ARCUS have been commissioned by RPS, HBGs agents, to undertake a programme of archaeological evaluation and excavation. Prior to undertaking the excavations an archaeological desk-based assessment and a programme of archaeological building recording had been undertaken. The archaeological evaluation and excavation is targeted at specific archaeological features identified during previous desk-based assessment and building recording work.

Due to time constraints 5 trenches were opened and cleaned prior to the agreement of a Written Scheme of Investigation. These trenches were hand cleaned, planned and contexted. This report outlines the results of this process and is designed to provide information to allow WYAAS to determine what further archaeological work is required. The descriptions in this report should be viewed as provisional and subject to clarification following further excavation.

2. SITE LOCATION & DESCRIPTION

The site is located approximately 1km to the south-west of Leeds city centre at NGR SE 2903 3307. The area of Holbeck is situated is a formerly heavily industrialised part of Leeds and the site itself is only approximately half of the original extent of the works, with the remainder being situated on the opposite side of Whitehall Road. The site is bounded to the south-east by Whitehall Road (formerly the Leeds to Halifax turnpike), to the south-west by the embankment of the former Leeds and Bradford railway; to the north-east by the River Aire and the Leeds and Liverpool Canal and to the north-west by the Grade ii listed River Aire viaduct.

The former buildings on the site had been demolished prior to the excavations starting.

3 ARCHAEOLOGICAL AND HISTORIC BACKGROUND

(after Kinchin-Smith 2004, 6-11)

Against the background of a thriving local engine-building industry, The Monk Bridge Forge was founded in June 1851 by Stephen Witham, producing the highest-

quality wrought iron ("Best Yorkshire Iron" , or "Monk Bridge best Yorkshire" grade), which was necessary to withstand the twisting forces encountered in steam locomotive crank axles, coupling and piston rods.

The works appears to have been an immediate success and was purchased by James Kitson in September 1854 for his two sons. In addition, he was able to safeguard their supply of quality iron (and later steel) for locomotive engineering purposes, which included an important export market to South America, Africa, East Indies and former UK colonies.

Under the Kitsons, steel-making was introduced, initially for the early manufacture of tyres for locomotives. The growth in demand for quality steel prompted the Kitsons to purchase further land to the south of the Whitehall Road in August 1864 for the construction of a purpose-built steelworks (not examined in detail within this survey). Two huge buildings were constructed on the newly-purchased site to house the steel works and steel billet and tyre mill, first depicted in 1866 .

In 1886 the Monk Bridge Iron & Steel Company was converted into a private limited company under the directorship of Sir James Kitson (the younger James), Frederick Kitson his nephew and Albert Kitson his son (Leeds contemporary sketches 1900, 26). It then employed three rolling mill beam-engines of 1,300 hp, two engines of 150 hp and thirty smaller engines varying between 4 to 30hp, thirty boilers generating nearly 1000 hp and fourteen steam hammers varying in weight from 6cwts to 15 tons, with twenty Siemens gas-producers generating fuel for the site' s furnaces (Fortunes in Business c.1990, 343). By 1900 there were four mill engines, three of 1,000 hp, a further mill engine of 60 hp, thirty other engines of 4-30hp, thirty boilers generating nearly 1500 hp and 14 steam hammers varying between 6 cwt and 15 tons (The Imperial Review 1936, 27).

With the introduction of the Siemens Martin Open Hearth Acid method of steel making, Monk Bridge quickly realised its value for railway work owing to its adaptability to meet the increasingly stringent requirements of railway and other engineers. Thus further Siemens-Martin open-hearth furnaces of increasing capacity were installed to supply the steel tyre and billet mill and by 1885-90 the plant was also producing cast-steel wheel centres (Leeds – Cont. Sketches c.1900, 28). An hydraulic forging press of 1200 tons capacity added in 1890.

On the death of Sir James Kitson in 1911 the company was reconstituted as a public limited liability company. The reputation of the plant, the high quality of its products and its capacity for producing the largest forgings meant that it was taken under Government control at the outbreak of the First War and it supplied large quantities of material to the War Office and Admiralty.

In 1936 the works was again described in print. The casting shop not only produced ingots of various sizes but also other parts both large and small for use on locomotives and rolling stock. Presses for working billets were installed of progressively larger sizes, from small forging hammers to a 2,000 ton hydraulic press and capable of dealing with very large ingots. The plant also included a heat treatment department with furnaces capable of heat treating large items such as axles, tyres and rings. The machine shop was capable of slicing ingots for the manufacture of tyres for locomotives, together with extensive machining and turning facilities for producing locomotive axles.

The Monk Bridge works survived the depressions and closures of the 20's and 30's that affected many of Leeds heavy industries, although iron making was phased out completely. It was taken under Government control again during the Second War, but once peace returned it was clear that steam locomotive manufacture was slowing down and that the Leeds producers were failing to develop fast enough to remain in the vanguard of diesel and electric locomotive manufacture to retain markets at home or abroad. As a result the company was finally wound up in 1949.

In 1951 the derelict Monk Bridge Iron and Steel Works was purchased by the Sheffield forging company Daniel Doncasters. Doncasters had grown during the 1940s into a leading supplier of forged steel tools & valves to the automotive industry and today it remains one of the longest continuously operating industrial manufacturing companies in the world.

Whilst initial orders were for the die and valve forging business, Doncasters had been involved with the production of the Whittle jet engine and were quick to understand the potential of the invention and the associated demand for forged turbine blades manufactured to the most exacting standards and tolerances. At the time of the take-over a jet-powered civilian air-liner was under test at De Havilland (the Comet) and military jet engines were urgently needed for the war in Korea. Doncasters' Sheffield plant was already busy with the manufacture of jet blades and it was decided that the Leeds site should be given over, at least in part, to the manufacture

of these difficult precision components. Significant investment followed and by 1953 Monk Bridge was rivalling its parent company in size, making virtually nothing but turbine blades. Ever larger presses were installed on the northern (former iron works) part of the site and in the period 1956-65 a number of new buildings were constructed, or existing ones reconfigured.

Further investment followed in the late 1960s and early 1970s, following on the decision to manufacture the turbine blades for the Rolls Royce Olympus engine at Monk Bridge.

By the end of the twentieth century the southern (former steel works) half of the site had become redundant and the buildings were demolished. By 2005, the remaining northern operations had been relocated to Sheffield and Wales and the land sold for redevelopment.

4 AIMS AND METHODOLOGY

The aims of the evaluation work was to gather sufficient information to establish the extent, condition, character and date (as far as circumstances permit) of any archaeological features and deposits within the areas identified as containing potentially significant archaeological features.

Preliminary evaluation has involved machine opening and overburden stripping down to the first archaeological horizon in the five trenches (**illustration 1**). This was followed by hand cleaning, preliminary planning, and initial recording of all exposed features. The size and placement of trenches was determined by the location of known or potential archaeology based on a review of historical maps and plans of the works site, relying particularly on the 1923 site plan of the Monk Bridge Iron Works.

5 RESULTS

5.1 TRENCH A

Trench A measured twelve by six metres and was located within the footprint of a large rectangular three aisled shed (building E1 – the foundation of which dates back to the mid 19th century) (**illustration 2**). This trench was located to investigate the

potential remains of a crucible complex tentatively identified from the 1923 site plan of the Monk Bridge Iron Works. During the initial appraisal, two main structures were uncovered which roughly matched the layout and location of the U-shaped structure seen on the 1923 site plan of the Monk Bridge Iron Works. Three provisional phases have been identified within these structures.

Phase 1

The earliest phase was represented by a square structure in the eastern half of the trench comprised of four brick walls [1030, 1032, 1028, 1020] that formed the north, east, west and south limits (respectively). The space within was separated into four rectangular slots by a series of three east-west aligned internal dividing walls [1025, 1024, 1023] that were keyed into the west and east bounding walls, with the exception of the east end of wall [1024] that abutted the west face of wall [1032]. All bounding walls and the north and south internal dividing walls were similarly constructed from handmade red brick laid stretcher on bed and bonded with a white lime mortar. The central dividing wall [1024] comprised the same constituent and matrix, but laid header on bed. The internal divisions produced a sequence of rectangular east-west aligned areas each measuring approximately three metres long by 0.45-.06 metres wide. The function or use of these areas remains unclear at this stage of evaluation

Phase 2

The second phase identified comprised two red brick walls [1027, 1029] bonded with ash mortar built directly on top of earlier walls [1028] and [1030] respectively.

Phase 3

The third phase identified within Trench A included:

1. a later phase of walls [1002, 1005, 1026] built atop and south of the walls bounding the square structure ascribed to the earliest phase;
2. a honeycomb of square cells [1006–1015] immediately south of the square structure ascribed to the earliest phase;
3. a large sandstone machine base [1001] located along the eastern edge of the trench;
4. a free standing red brick structure [1034, 1035, 1037, 1038, 1039, 1043, 1045] in the west half of the trench.

Constructed from machine made frogged red bricks bonded with building cement, wall [1002] was built directly atop earlier wall [1032]. Red brick wall [1026] was keyed into the south end of earlier wall [1027] and carried the north-south line of this wall to where it abutted the west end of wall [1005]. Constructed similarly to wall [1002], wall [1005] ran east-west between the southern ends of walls [1002] and [1026]. Together with the second phase of wall building [1027, 1029], these later walls respected and extend the earlier square structure by nearly two metres to the south and incorporated a honeycomb of square cells [1006–1015].

Two rows of five square cells [1006–1015] measuring approximately 0.5-0.55 metres by 0.5-0.55 metres were built immediately south of the rectangular areas described in the earliest phase. This complex was bounded on the north by an east-west wall [1052] mortared to the south face of earlier wall [1020], on the east by the southern half of wall [1002], on the south by wall [1005], and on the west by wall [1026]. Cells [1006] to [1015] were formed by a series of north-south internal dividing walls [1053-1056] that were keyed into walls [1005] and [1052], and three short east-west dividing walls [1057-1059] that lay between them. The function or use of these holes remains unclear at this stage of evaluation.

Along the eastern extent of the trench was a large sandstone machine base [1001], this measured almost three metres across and was bonded to the east face of wall [1002]. It was bounded on the north and south by east-west aligned retaining walls [1003, 1004] constructed from machine made unfrogged red bricks bonded with an ash mortar. Approximately 0.8 metres east of and parallel to the west edge of the block, two holes (approximately one metre apart) with iron bars embedded within them had been cut through the sandstone. Slightly offset to the west of each hole, small depressions were also cut into the block.

The western half of the trench contained a large free standing L-shaped structure measuring approximately seven metres along its' longer north-south axis and six metres along the shorter east-west axis. The limits of the structure were defined by a sequence of machine made red brick walls bonded with an ash mortar [1034, 1035, 1037, 1038, 1039, 1043, 1045] that were keyed into each other at each return. The function or use of this structure remains unclear at present.

In addition to the features already allocated within the provisional phases outlined above, were further unphased elements including a lime mortared brick surface [1033] that lay between the east and western structures; a sandstone base later

converted into a drain [1036] also situated between the east and west structures and joined to the ceramic pipe that ran under wall [1037]. It is possible that the brick surface was related to the earliest phase of activity identified within the trench and the sandstone block later reused as a drain was associated with a crane shown on the 1923 site plan of the Monk Bridge Iron Works.

5.2 TRENCH B1

Trench B1 measured ten by four metres and lay approximately fifty metres northeast of Trench A. Also within the footprint of building E1, it was positioned along the east wall of the former shed in order to investigate Engine Housing No. 3 identified on the 1923 site plan of the Monk Bridge Iron Works (**illustration 3**). Three areas of interest were revealed during the initial cleaning and recording:

1. a firebrick structure (possibly an open hearth furnace) located in the western half of the trench;
2. two large sandstone walls [2011, 2015];
3. a series of large sandstone blocks [2017].

These have been consigned to two provisional phases of building and activity.

Phase 1

The earliest identified phase included the firebrick open hearth structure and the sandstone walls. Surviving elements of the open hearth in the northwest corner of the trench included the east wall [2004]; a segment of the north wall [2001] that ran into the west edge of the trench; a small segment of what would have been the south wall [2005]; a two and a half metre length of vaulting [2002] that ran between walls [2001] and [2005]; and a smaller segment of vaulting [2003] that sprang off of wall [2001] along the western edge of the trench. All of these structural elements were constructed from handmade firebrick bonded with lime mortar. A sequence of red brick walls [2007, 2008, 2010] that continued the line of wall [2004], and formed an east return [2012], lay to the south and were possibly related to ancillary structures surrounding the open hearth.

Also present during the earliest identified phase was a large north-south sandstone wall [2011] built against the east face of the walls defining the eastern limits of the open hearth and associated structures [2004, 2008, 2010]. Another similarly built wall, [2015], was keyed into the east face of wall [2011] near its exposed, northern limit

and this ran east to the edge of the trench. It is possible that these also related to ancillary structures associated with the open hearth.

Phase 2

A provisional second phase appeared to have involved the re-use of walls [2011] and [2015] after the open hearth fell into disuse. During this phase two metal pipes [2035, 2037] were cut through the western end and laid along the south face of wall [2015]. Subsequently, the area south and east of walls [2015] and [2011] appeared to have been backfilled and levelled to accommodate the laying of concrete [2016] and sandstone blocks [2017]. While difficult to definitively assert at this phase, it is possible that these alterations related to the engine housing identified on the 1923 site plan.

In addition to the provisionally phased elements outlined above, two clusters of undiagnostic wall fragments [2019-2022 and 2013, 2023-2026] have been exposed against the south face of wall [2015], immediately east of the intersection of walls [2011] and [2015]. The first group may prove to be part of the second identified phase and the second may represent a later, yet to be defined phase.

5.3 TRENCH B2

The proposed location of Trench B2 had already been excavated by HBG before ARCUS were on site. This was undertaken to remove a large modern concrete block/base that had been constructed at the location. Removing the block showed that there were no remains of the engine base surviving but that a round structure, possibly a well, was located in the base of the hole. As the hole was now approximately 3m deep and without shoring it was not possible to enter the hole to clean and record the possible well at this stage. However, it may be possible to examine this at a later stage by battering or stepping the existing hole.

5.4 TRENCH B3

Trench B3 measured approximately ten by eleven metres and lay approximately 125 metres north of Trench A (**illustration 4**). This was also within the footprint of building E1, it has been located along the west wall of the former shed in order to investigate another Engine Housing identified on the 1911 and 1923 site plans of the Monk Bridge Iron Works. During initial evaluation, three distinct areas of activity and five provisional phases were identified.

Phase 1

The earliest phase of activity comprised the truncated remains of a single east-west aligned sandstone wall [2531]. Lying in the middle of the trench, the north and south 'ends' of this wall had been truncated making it difficult to securely relate this structure to any other structures within the trench.

Phase 2

The second phase of activity within trench B3 included a row of four north-south aligned vaulted open hearth structures covering the southern third of the trench. A sequence of abutting firebrick walls [2501, 2508, 2521, 2595] that ran east-west along the south edge of the trench formed a shared continuous back wall for these structures. Midway along this line of walls, a length of the lowest two courses of red brick vaulting [2512] arched south toward the edge of excavation. Abutting the north face of the shared back wall four north-south aligned firebrick walls [2507, 2511, 2516, 2518] partitioned the overall area into four distinct open hearths. These walls also provided the foundations for the truncated firebrick vaulting [2503, 2505, 2506, 2509, 2510, 2515, 2517, 2519] that had covered each hearth. The north end of these walls and vaulting abutted a reasonably continuous line of abutting firebrick walls [2502, 2593, 2520]. This end of the open hearths was obscured by the later insertion of a ceramic pipe [2579] and concrete structure [2514]. Immediately east of the eastern most open hearth a brick surface [2524], probably associated with the hearths continued beyond the south and east limits of the excavation.

Phase 3

The third phase of activity identified in trench B3 was a sandstone surface truncated by the later insertion of a ceramic pipe [2564]. West of pipe [2564] a relatively level sandstone surface, composed of varying sized blocks [2567, 2568, 2569, 2571, 2574], covered approximately three by three metres. This may have been the engine housing identified on the 1911 and 1923 site plans. Set approximately one metre apart, two holes with iron rods embedded in them straddled a 0.75m wide slot (possibly the wheel pit) that had been filled with a modern concrete aggregate [2575]. The southern and northern edges of the sandstone surface were obscured by later concrete intrusions [2570, 2572, 2576].

Phase 4

Phase four within trench B3 was primarily modern concrete surfaces and associated red brick structures. East of pipe [2564] a modern concrete surface [2561], 2589] surrounded a series of red brick walls [2552, 2553, 2554] and two associated quarry tile lined voids [2542, 2543-47, 2549-51, 2553 and 2557-59]. An 0.08m deep by 0.2m wide channel in the concrete separated the tile lined voids and fed into a modern brick manhole [2534, 2535, 2539, 2540].

Phase 5

The final phase of activity identified within trench B3 involved the insertion of a number of ceramic pipes [2579, 2564, 2538] that truncated the earlier vaulted open hearths, sandstone surface, and modern manhole. Two brick manholes [2513, 2526] associated with pipe [2579] have also truncated the north (front) wall associated with the open hearth furnaces.

5.5 TRENCH C

Trench C measured eight by six metres and lay approximately 165 metres east of Trench B1. It was situated in the northwest corner of the footprint of building G1 at the location of the No. 1 Engine House shown on the 1911 and 1923 site plans (**illustration 5**). Two distinct areas representing two phases of activity were revealed during the initial cleaning and recording:

Phase 1

The first phase identified in Trench C included a series of sandstone blocks [3001, 3007], fragmented sandstone structures [3008, 3012], and segments of brick walls/structures [3002, 3006, 3009-3015], all located in the west half of the trench. These appeared to be broadly contemporary, and were probably components of the engine house shown on the 1911 and 1923 site plans. The remaining surface was made of sandstone blocks [3001] and [3007] which had four iron rods embedded within them arranged to form a 1.3 metre by 1.3 metre square. The iron rods were likely engine anchor points. Along the east edge of the surface was a void [3025] between the surface and bounding walls, this measured 0.8m across and was probably the location of the flywheel for the engine. The exposed limits of the surface and flywheel housing were bounded by red brick [3006, 3009] and sandstone [3007, 3008] structures to the north; red brick [3013, 3014, 3015] and sandstone [3012] structures to the east; and a red brick wall [3002] to the south.

Phase 2

The second phase of building within Trench C appeared to be twentieth century in date. Located within the east half of the trench, was a north-south wall [3016] constructed with machine-made, frogged red bricks bonded by a cement mortar. This continued beyond both the north and south limits of excavation. Parallel and lying approximately one metre east was a similarly constructed red brick wall [3019] that also continued beyond the north and south limits of excavation. Near the southern extent of the trench, another modern brick wall [3023] abutted the east face of wall [3019], this ran east along the edge of the trench and continued beyond the east limits of excavation. In the northeast corner of the trench, walls [3020, 3021, 3022] formed a two metre wide U-shaped structure that opened to the north. Immediately east and aligned parallel to wall [3019], the north-south walls [3020, 3022] of the structure carried on beyond the northern limit of the excavation. All three walls outlining this structure were constructed of modern frogged bricks stamped 'Armitage' and bonded with a yellow-grey cement mortar. It is possible that all the modern structures in the eastern half of the trench were associated with the nearby electricity substation.

5.6 TRENCH D

Trench D was aligned east-west and measured approximately twenty-one meters long by ten meters wide with a four meter by six meter extension running south from the east end. This trench lay approximately twenty-five meters east of Trench C and was positioned along a line of chimneys that appeared on all relevant plans between 1882 and 1923. This location was chosen to investigate the former puddling furnaces. During initial cleaning and recording, six broad phases of construction and use were identified with the majority of structures exposed relating to two parallel lines of bottleneck flues and the associated surfaces and structures between them.

Phase 1

The earliest phase identified in trench D included a number of heavily truncated features.

In the north-west area of the trench a rectangular hand made, red brick surface [4150] measuring 1.7m x 0.9m was uncovered. The bricks and bonding style varied greatly and a great deal of heat damage was identified, mainly to the west of the existing structure. The feature was heavily truncated to the north, south, east and west.

Within the north-east area of the trench another hand made, red brick structure [4065 – 4074] was uncovered. Measuring some 3m x 1.7m, the south-east and north-east corners of the rectangular two tier brick structure [4072/3] were supported on two sandstone blocks [4067/8]. Abutting the east edge of the structure was a sloping red brick surface [4071] which may form the upper edge of an entrance to the body of the structure. Bonded to the north and south end of this sloping wall were two truncated “arm” walls [4069/70] which extended to the east for some 0.6m where they were truncated by later activity (see Phase 6). Between these “arms” was a fill of pinkish grey silty sand. Positioned centrally, within the upper tier of bricks a series of three possible voids [4074] were identified. It is probable that the two “arms” form an entrance to the structure with the voids representing in/out-let flues to a hollow structure.

A number of fragmentary truncated walls were identified throughout the trench.

In the south-west corner of the trench a sandstone foundation [4017] and wall [4018] were identified as a north-west corner of a building which had been heavily truncated to the east and south. At the south west corner of the trench a handmade, unfrogged red brick wall [4058], aligned east-west was uncovered, which was truncated by the structures connected to the puddling flue system. Some 3.6m to the north of this wall, two abutting east-west aligned walls [4079-81] and [4082] were also truncated by the puddling flue system structures. Partial remains of an east-west aligned sandstone foundation [4102] measuring 2.7m x 0.6m was also identified.

Phase 2

Phase 2 was primarily composed of four east-west aligned bottleneck flues and associated structures (presumed at this stage to relate to the puddling furnaces). In plan, each complete flue complex resembled two bottles laid neck to neck connected by a brick structure. For the purpose of description and discussion, these flue complexes will be referred to as Flues A, B, C and D. The most complete example exposed during initial excavation and recording was Flue B. Situated in the south-east quadrant of the trench, the footprint of Flue B survived almost completely intact. Lying approximately 1m apart, two parallel brick walls [4054], [4055] formed the sides of the eastern ‘bottle’, tapering into a bottleneck at their western end. Constructed from handmade bricks, these walls were approximately 0.5m wide and between 3m - 3.5m long, but they were truncated by later activity at their east end and may have been longer originally. At the west end the walls tapered together and where keyed into a brick surface [4063] – the first in a series of brick surfaces [4063,

4035, 4034] laid east to west. Together these formed a 1m wide by 4m long continuous surface. Evidence of voids beneath these surfaces suggested they overlie or were components of the underlying flue system. The western most surface [4034] was subsequently keyed into two brick walls [4030, 4031] that formed a western mirror image of the eastern 'bottle' . Constructed similar to their eastern counterparts, walls [4030] and [4031] were approximately 0.5m wide and 4m long. The western end of walls [4030] and [4031] were joined by a narrow north-south aligned brick wall [4032] that closed the bottles bottom end. Extrapolating the (now truncated) location of the closed bottom end of the east bottle from the dimensions of its western mirror, the overall dimensions of this flue structure should originally have been approximately 11.5m long by almost 2m wide.

Approximately 1.5m west of the closed bottom end of the west 'bottle' from Flue B, the remains of Flue A continued on the same alignment. The parallel brick sidewalls [4005-4008] that formed the east bottle of Flue A survive in patches under later concrete and were tapered similarly to those from Flue B. As with Flue B, these are keyed into a brick surface [4012], the line of which is carried further west by another brick surface [4011] which disappears into the western edge of the excavation. Enough of Flue A survived to reasonably extrapolate and apply the overall structural design and size from Flue B and presume there was a chain of repeated flue architecture running along this line from east to west.

Approximately 5m north of Flue B, a small section of Flue C was exposed along the north edge of the trench. Only the southern tapered wall [4083] of the eastern bottle and fragments of the central surface [4084], [4085] and [4086] of this flue structure were exposed. The rest of Flue C lay outside the limits of the trench to the north and under overburden [4092] and [4001] to the west. Lying along the same line as Flue C and approximately five meters north of Flue A, fragments of Flue D were also exposed along the north edge of the trench. Only a section of the southern wall [4104] of the east bottle and possibly the east terminal north-south wall [4103] that would have joined it to its parallel counterpart were exposed. The rest of Flue D lay outside the limits of the trench to the north or truncated by later concrete intrusions [4112], [4114] and [4116] to the west.

In addition to the four flue structures outlined above, a number of associated structures were also identified as part of the overall puddling furnace flue complex. Parallel Flues B and C were tied to each other by a large square brick walled structure. The limits of this structure was defined by six surviving sections of brick walls that were aligned north-south between Flues B and C [4037], [4057] and [4087]

or followed the lines of the central connecting surface and tapered walls [4038], [4088] and [4093]. This structure tied the adjoined bottleneck ends of Flues B and C together – the purpose of this structure has yet to be determined. The west wall [4037] of this square structure was bonded to the east edge of a sandstone foundation [4041] that provided the foundation of a square brick built chimney [4095] – [4099] that measured approximately 2.15m by 1.8m and was situated almost centrally between the western ‘bottles’ of Flues B and C.

Situated 0.5m south of bottle flue B, at the SE corner of the trench, was a 1.8m x 1.4m rectangular brick structure [4061]. This contained two small rectangular flue in/out-let vents which sloped N towards the B Bottle flue. The flue vents were centrally located within the structure and extreme heat damage to the S (outside?) of the structure was noted. The flue vents themselves contained a vitrified residue on the fire brick surfaces. This residue was sampled for later analysis. It is likely that this flue structure was associated with the bottle flue system (B) and other evidence of fire brick structures [4002] suggested that each bottle flue component may have an associated in/out-let flue vent.

Further heavily truncated brick surfaces [4120 to 4127] and [4126 to 4133] and an in/out-let flue vent [4135] were also uncovered in the Trench D extension at the south-east corner of the trench. These features may also be associated with the puddling flue sub-surface flue/heat system.

On the completion of the building of these structures, a deposit of reddish pea-grit [4000] was laid over the entire site. This material would facilitate easy access to the sub-surface features for purposes of repair and replacement. A number of brick lined pipes [4003] and [4047] were cut into this deposit along the S edge of the flue systems A and B.

Phase 3

Phase 3 within trench D is represented by a variably thick layer of industrial clinker waste (4001) which may have been deposited during the puddling furnace activity or as a post-use levelling layer for the concrete slab overlying the trench.

Phase 4

Overlying the layer of clinker [4001] a cobbled sandstone surface [4019] measuring 3.2m x 1.2m was uncovered. The upper surface of the cobbles showed considerable heat discolouration and stress fracturing.

Phase 5

A number of later concrete raft foundations were uncovered within the trench. Surface [4025] aligned north-south, was located in the south-west quadrant of the trench and truncated puddling flue system A. Attached to this surface was a levelling layer [4013] and a flat metalled surface [4014] which provided a flat flooring surface. This was in turn overlain by concrete slab [4027]. Raft [4158 – 4150], aligned north-south, some 7.6m east of [4025], truncated puddling flue system B. A substantial concrete raft [4075, 4076], with associated wall [4077], ran along most of the north half of the trench and was associated with the later building at the west limit of excavation. This building consisted of a number of concrete surfaces and footings [4021], [4110], [4112], [4113] and [4114], with brick wall divisions [4022], [4107], [4108], [4111], and [4115] and a sloping concrete ramp [4106] and housing [4105]. Within the trench extension, at the southern limit of excavation, a red frogged brick building was uncovered within construction cut [4135]. The building consisted of probable external walling to the north [4137] and east [4140] with internal north-south divisions created by walls [4138] and [4139]. The subsequent voids were filled by red pea grits [4141].

Phase 6

The entire E edge of the site and the structures located there had been truncated by a cut [4117]. This was filled by a layer of industrial clinker [4064] used as a bed for two wooden rail sleepers [4062] and [4119]. This was overlain by a layer of demolition debris [4146].

A number of later features were also uncovered along the southern limit of excavation. These were a concrete pad with recess [4020] and a drain [4028].

5.7 WATCHING BRIEF ON SUBSTATION EXCAVATION

A watching brief was undertaken at the location of a new electricity sub-station. This revealed a north-south wall along the western limit of excavation which aligned with a wall located on the historical maps of the factory. To the east of this was a 0.6m thick layer of industrial waste and a deposit of brick rubble. Later drainage features were also revealed.

6 CONCLUSIONS

The strip clean and record exercise that has been undertaken so far has identified archaeological remains in all of the trenches that have been opened. In most of the

trenches this has exposed the features targeted, although in one trench, Trench A, the feature targeted proved not to be the type of feature expected. Trench A had been targeted at a feature identified as a crucible furnace, from the old plans, but on excavation this was shown not to be a crucible furnace. However, the function of the structures in Trench A has yet to be identified. Trenches B1 and B3 contained the probable remains of the engine bases targeted as well as structures probably related to hearths. Trench C also contained the remains of a large base from the engine shown on the old maps. Trench D contained the most interesting remains on the site, the remains of flues and chimneys associated with puddling furnaces.

Few finds were recovered from the work undertaken so far but this should not be surprising as the excavation have not extended down into archaeological deposits but have stopped at the top of the archaeology. However, a few sherds of pottery and pieces of clay pipe both probably nineteenth and twentieth century in date have been recovered as have a number of metal objects.

APPENDIX 1 – CONTEXT LIST

Site sub-division	Context number	Context type	Description
A	1000	Dep	rubble / made ground overburden
A	1001	Str	sandstone machine / engine base E of trench
A	1002	Str	N-S RB wall butts W side of [1001]
A	1003	Str	E-W RB wall butts N side of [1001]
A	1004	Str	E-W RB wall butts S side of [1001]
A	1005	Str	E-W RB wall runs W from [1004]
A	1006	Str	SE square RB holw
A	1007	Str	NE square RB hole
A	1008	Str	square RB hole W of [1006]
A	1009	Str	square RB hole W of [1007]
A	1010	Str	square RB hole W of [1008]
A	1011	Str	square RB hole W of [1009]
A	1012	Str	square RB hole W of [1010]
A	1013	Str	square RB hole W of [1011]
A	1014	Str	square RB hole W of [1012]
A	1015	Str	square RB hole W of [1013]
A	1016	Dep	upper slag rich fill of [1009]
A	1017	Dep	lower (primary) fill of [1009]
A	1018	Dep	upper sandy / rubble fill of [1008]
A	1019	Dep	lower (primary) fill of [1008]
A	1020	Str	E-W lime mortared wall N of RB holes
A	1021	Dep	upper slag rich fill of [1020]
A	1022	Dep	middle fill of [1020]
A	1023	Str	E-W lime mortared wall N of [1020]
A	1024	Str	E-W lime mortared wall N of [1023]
A	1025	Str	E-W lime mortared wall N of [1024]
A	1026	Str	N-S wall immediately W of RB holes
A	1027	Str	N-S wall runs N from [1026]
A	1028	Str	lime mortared wall under [1027]
A	1029	Str	E-W wall butted by [1027] at W side
A	1030	Str	lime mortared wall under [1029]
A	1031	Str	lower fill of [1020]
A	1032	Str	lime mortared wall under [1002]
A	1033	Str	lime mortared brick surface
A	1034	Str	N-S wall W of [1033]
A	1035	Str	E-W return of [1034]
A	1036	Str	sandstone drain? / base?
A	1037	Str	N-S wall W of [1036]
A	1038	Str	E-W return of [1037]
A	1039	Str	RB wall SW of trench
A	1040	Str	lime mortared wall keyed into [1039]
A	1041	Str	E-W lime mortared wall W of sandstone block [1036]
A	1042	Str	E-W lime mortared wall N of [1041]
A	1043	Str	N-S RB wall W end of trench
A	1044	VOID	VOID

A	1045	Str	E-W wall between [1039] and [1034]
A	1046	Dep	clinker type present across trench
A	1047	Cut	cut surrounding [1041] and [1042]
A	1048	Dep	clay fill of [1047]
A	1049	Dep	post demolition backfill between [1023] and [1024]
A	1050	Dep	post demolition backfill between [1024] and [1025]
A	1051	Dep	post demolition backfill between [1025] and [1030]
A	1052	Str	E-W RB wall mortared to S face of [1020]
A	1053	Str	N-S RB dividing wall keyed into [1005] and [1052]
A	1054	Str	N-S RB dividing wall keyed into [1005] and [1052]
A	1055	Str	N-S RB dividing wall (fragmentary) keyed into [1005]
A	1056	Str	N-S RB dividing wall keyed into [1005]
A	1057	Str	E-W Rb dividing wall between [1002] and [1053]
A	1058	Str	E-W Rb dividing wall between [1053] and [1054]
A	1059	Str	E-W Rb dividing wall between [1055] and [1026]
A	1060	Dep	post demolition backfill in [1006]
A	1061	Dep	post demolition backfill in [1007]
A	1062	Dep	post demolition backfill in [1010], [1011], [1013], [1015]
A	1063	Dep	post demolition backfill in [1012]
A	1064	Dep	post demolition backfill in [1014]
A	1065	Str	RB base underlying [1006 - 1015]
B1	2000	Dep	rubble overburden
B1	2001	Str	E-W firebrick wall at NW limit of trench
B1	2002	Str	N-S remains of FB vaulting butts E side of [2001]
B1	2003	Str	N-S remains of FB vaulting butts W side of [2001]
B1	2004	Str	N-S FB wall butts E side of [2002]
B1	2005	Str	FB square structure at S end of [2002]
B1	2006	Str	RB structure at S end of [2004]
B1	2007	Str	RB wall butts S side of [2005]
B1	2008	Str	lime mortared RB wall butts S of [2006] and E of [2007]
B1	2009	VOID	VOID
B1	2010	Str	RB wall over [2008] butts W side of [2011]
B1	2011	Str	N-S lime mortared sandstone wall
B1	2012	Str	RB wall (E-W) S of [2007]
B1	2013	Str	small row of bricks W of [2012]
B1	2014	Str	remains of FB structure W of [2005]
B1	2015	Str	E-W lime mortared sandstone wall
B1	2016	Str	brick and concrete rectangle S of [2015]
B1	2017	Str	large sandstone blocks S of [2016]
B1	2018	Str	concrete spread over parts of [2017]
B1	2019	Str	FB built structure S oe E end of [2015]
B1	2020	Str	lime mortared Rb butts W side of [2019]
B1	2021	Str	RB structure S side of [2020]
B1	2022	Str	small sandstone block S of [2019]
B1	2023	Str	E-W modern RB wall NE of trench
B1	2024	Str	E-W RB wall (small) butts N end of [2011]
B1	2025	Str	E-W RB wall same line as [2024]
B1	2026	Str	N-S return of [2025]
B1	2027	Str	E-W lime mortared wall between [2015] and [2023]
B1	2028	Str	concrete N of [2024, 2025, 2027]
B1	2029	VOID	VOID

B1	2030	Dep	clinker rich between [2027] and [2015]
B1	2031	Dep	red sandy deposit surrounding [2004] and [2001]
B1	2032	Dep	pinkish gritty sand surrounding [2017]
B1	2033	Dep	sooty clinker S of [2015]
B1	2034	Dep	sandy / clay within FB structure
B1	2035	Str	iron and concrete pipe insertion E of [2011]
B1	2036	Str	Fe metal girder
B1	2037	Str	E-W Fe pipe
B3	2500	Dep	Rubble overburden
B3	2501	Str	E-W FB wall SW corner of trench B3
B3	2502	Str	E-W FB Wall N of [2503]
B3	2503	Str	FB vaulting between [2501 + [2502]
B3	2504	Str	Concrete slab E of [2501]
B3	2505	Str	FB vaulting between [2504 + [2502]
B3	2506	Str	FB vaulting E of [2505] and between [2504] + [2502]
B3	2507	Str	FB wall between [2505] + [2506]
B3	2508	Str	E-W FB wall E of [2504]
B3	2509	Str	FB vaulting runs N from [2508]
B3	2510	Str	FB vaulting E of [2509]
B3	2511	Str	FB wall between [2509] + [2510]
B3	2512	Str	RB vaulting? S of [2508]
B3	2513	Str	Modern Rb manhole N of [2511]
B3	2514	Str	E-W concrete capped drain E of [2513]
B3	2515	Str	Fragmentary remains of FB vaulting S of [2514]
B3	2516	Str	Fb wall E of [2515]
B3	2517	Str	FB vaulting E of [2516]
B3	2518	Str	N-S FB wall - E limit of furnaces
B3	2519	Str	FB vaulting W of [2518]
B3	2520	Str	Fragmentary FB wall between [2517] + [2519]
B3	2521	Str	Area of disturbed FB S of [2519]
B3	2522	Str	N-S running header coursed RB E of [2518]
B3	2523	Str	N-S running stretcher coursed RB E of [2522]
B3	2524	Str	Frogged RB surface E of [2523]
B3	2525	Str	Modern RB wall E of [2524]
B3	2526	Str	Modern manhole N of [2524]
B3	2527	Str	N-S lime mortared RB wall N of [2522]
B3	2528	Str	E-W return of [2527]
B3	2529	Str	Sandstone foundation/wall under [2527]
B3	2530	Str	Sandstone foundation/wall under [2528]
B3	2531	Str	E-W lime mortared s/stone wall
B3	2532	Str	N-S return of [2531]
B3	2533	Str	Area of concrete N of [2528]
B3	2534	Str	N-S modern RB wall W of [2533]
B3	2535	Str	E-W return of [2534]
B3	2536	Cut	Cut for [2536]
B3	2537	Dep	Fill of cut [2536]
B3	2538	Str	Ceramic Pipe
B3	2539	Str	E-W wall - continuation of [2535]
B3	2540	Str	N-S return of [2539]
B3	2541		NO CONTEXT
B3	2542	Str	E-W brick "border" N of [2534]

B3	2543	Str	N-S brick "border"
B3	2544	Str	E-W return of [2543]
B3	2545	Str	Single brick butts [2544]
B3	2546	Str	E-W "border" butts N of [2545]
B3	2547	Str	N-S brick "border" runs N from [2546]
B3	2548	Str	Concrete N of [2542]
B3	2549	Str	E-W brick "border" N of [2548]
B3	2550	Str	Single brick butts E end of [2549]
B3	2551	Str	E-W brick "border" butts N of [2550]
B3	2552	Str	Frogged RB structure between [2549] + [2551]
B3	2553	Str	Frogged RB structure between [2544] + [2546]
B3	2554	Str	N-S return of [2553]
B3	2555	Str	N-S fibreglass coated drainage channel
B3	2556	Dep	Deposit between [2548] + [2547]
B3	2557	Str	E-W brick "border" W of [2555]
B3	2558	Str	N-S brick "border" runs N from [2557]
B3	2559	Str	E-W brick "border" runs E from [2558]
B3	2560	Dep	Deposit between [2557], [2558] + [2559]
B3	2561	Str	Concrete S + W of [2555]
B3	2562	Cut	Cut for drain within [2562]
B3	2563	Dep	Fill of [2562]
B3	2564	Str	Concrete/ceramic drain within [2562]
B3	2565	Str	Single s/stone block W of [2546]
B3	2566	Str	Single s/stone block with Fe pin W of [2566]
B3	2567	Str	Dressed s/stone block W of [2565]
B3	2568	Str	3 x stone blocks S of [2567]
B3	2569	Str	2 x large block W of [2568]
B3	2570	Str	Concrete pad S of [2569]
B3	2571	Str	S/Stone block with hole S of [2568]
B3	2572	Str	Concrete S of [2571]
B3	2573	Str	Fe pipe SE corner of [2572]
B3	2574	Str	Dressed stone block N of [2567]
B3	2575	Str	Concrete within "wheel pit"
B3	2576	Str	Concrete N of [2574]
B3	2577	Cut	Cut for drain NW of hearth
B3	2578	Dep	Fill of [2572]
B3	2579	Str	Ceramic pipe within [2577]
B3	2580	Str	Concrete W of [2534]
B3	2581	Str	Southernmost flue/void cut through [2506] + [2507]
B3	2582	Str	Central flue/void cut through [2506] + [2507]
B3	2583	Str	Northern flue/void cut through [2506] + [2507]
B3	2584	Dep	Backfill between [2503] + [2505]
B3	2585	Dep	Backfill between [2506] + [2509]
B3	2586	Dep	Backfill between [2510] + [2515]
B3	2587	Dep	Backfill between [2517] + [2519]
B3	2588	Dep	Clinker/sand/rubble between [2502] + [2531]
B3	2589	Dep	Backfill N of [2531]
B3	2590	Dep	Rubble fill between [2540] + [2580]
B3	2591	Dep	Rubble fill of [2513]
B3	2592	Dep	Rubble fill of [2526]
B3	2593	Str	FB wall runs S from [2502]
B3	2594	Str	RB wall to S [2528]

B3	2595	Str	FB wall - on face S of [2508]
B3	2596	Str	2 x RB E of [2527]
B3	2597	Str	Brick str N of [2569], W of [2576]
C	3000	Str	concrete slabbing present across site
C	3001	Str	large sandstone machine base
C	3002	Str	RB wall S of [3001]
C	3003	Dep	yellow gravelly deposit W of [3001]
C	3004	Str	concrete intrusion E of [3001]
C	3005	Str	concrete spread W of and partially over [3001]
C	3006	Str	E-W brick structure N of [3001]
C	3007	Str	sandstone block N of [3001]
C	3008	Str	small sandstone area between [3006] and [3007]
C	3009	Str	E-W RB structure E of [3007]
C	3010	Str	small RB structure runs S from [3009]
C	3011	Str	N-S RB structure runs S from [3009]
C	3012	Str	lime mortared sandstone runs S from [3011]
C	3013	Str	N-S RB wall E of [3001]
C	3014	Str	N-S RB wall E of [3013]
C	3015	Str	lime mortared area between [3013] and [3014]
C	3016	Str	N-S modern wall - middle of trench
C	3017	Str	square brick abuttment W of [3016]
C	3018	Str	row of brick and slate W of [3016]
C	3019	Str	N-S modern wall E of [3016]
C	3020	Str	N-S brick wall butted by [3021]
C	3021	Str	E-W brick wall butts [3020]
C	3022	Str	N-S brick wall keyed into [3021]
C	3023	Str	E-W 3 skin brick wall
C	3024	Dep	clinker / rubble backfill - present across trench
C	3025	Dep	fill of 'wheel pit'
D	4000	Dep	red pea-grit levelling
D	4001	Dep	black clinker layer
D	4002	Str	N-S brick and concrete support SW corner of tr
D	4003	Str	NE-SW brick lined pipe SW corner of TR
D	4004	Str	E-W probable flue connected to [4005] - Flue A
D	4005	Str	E-W S wall of possible flue - Flue A
D	4006	Str	E-W N wall of possible flue - Flue A
D	4007	Str	E-W S wall of possible flue - Flue A; cont. of [4005] beyond [4009]
D	4008	Str	E-W N wall of possible flue - Flue A; cont. of [4005] beyond [4027]
D	4009	Str	concrete floor surface btwn [4004] + [4009]
D	4010	Dep	black clinker infill within flue A around [4011]
D	4011	Str	flat brick surface - Flue A W of [4012]
D	4012	Str	flat brick surface - Flue A W of [4005]
D	4013	Dep	silt and rubble fill within flue A
D	4014	Str	concrete and metal flat surface N of [4005]
D	4015	Cut	pit (brick filled)
D	4016	Fill	brick/ganister fill of pit E of [4025]
D	4017	Str	sandstone wall foundation below + N of [4018]
D	4018	Str	brick wall above [4017]
D	4019	Str	cobble surface (heat damaged) centre/W of Tr
D	4020	Str	FE pipe W of [4017]

D	4021	Str	concrete foundation / surround S + W of [4023]
D	4022	Str	square brick structure btwn [4021] + [4023]
D	4023	Str	red ashlar surface W central of Tr
D	4024	Str	E-W aligned wall S of [4021]
D	4025	Str	brick and concrete foundation runs S from [4027]
D	4026	Str	square concrete block with slot at S of Tr, E of [4025]
D	4027	Str	remnant of concrete flooring N of [4025]
D	4028	Str	drain and pipe E of [4025]
D	4029	Grp	4004, 4005, 4006, 4007, 4008
D	4030	Str	E-W brick flue sidewall - S of Flue B
D	4031	Str	E-W brick flue sidewall - N of Flue B
D	4032	Str	N-S brick flue endwall - W end of Flue B
D	4033	Dep	clinker and slag fill between [4030], [4031], [4032]
D	4034	Str	flat brick surface - Flue B E of [4030], [4031]
D	4035	Str	flat brick surface - Flue B, E of [3034]
D	4036	Str	flue remnant N of [4034]
D	4037	Str	N-S brick wall runs N from [4036]
D	4038	Str	E-W brick wall N of [4034] + [4035]
D	4039	Dep	red pea grit N of [4038]
D	4040	Str	flat concrete surface
D	4041	Str	E-W sandstone slab/step runs W from [4037]
D	4042	Str	Small N-S brick wall parallel to W of [4037]
D	4043	Str	mortar covered brick floor W of [4042]
D	4044	Str	metal/slag/fittings S of [4043]
D	4045	Dep	brick and rubble fill N of [4043]
D	4046	Str	brick platform W of [4043]
D	4047	Str	NW-SE brick structure E of [4050]
D	4048	Cut	construction cut
D	4049	Fill	red pea grit fill W of [4050]
D	4050	Str	concrete slab runs S to L of Ex from [4034]
D	4051	Str	Small E-W brick wall, runs W from [4050]
D	4052	Str	metal anchorage supports E of [4050]
D	4053	Str	fire brick wall tagged to S of flue structure [4063]
D	4054	Str	S wall of probable outlet flue - Flue B
D	4055	Str	N wall of probable outlet flue - Flue B
D	4056	Fill	fill between flue walls [4054] + [4055]
D	4057	Str	N-S E wall of large square structure, runs N from [4055]
D	4058	Str	E-W wall remnant N of [4059]
D	4059	Fill	fill between walls [4058] + [4055]
D	4060	Str	N-S brick wall to west of [4061]
D	4061	Str	heat flue system S of [4054]
D	4062	Str	rail sleeper W of [4055]
D	4063	Str	flat brick surface - upper flue surface (?) - Flue B between [4054]/[4055] + [4035]
D	4064	Dep	black clinker rail sleeper bedding W of Tr.
D	4065	Cut	construction cut for heat / flue system [4067-4074] N of [4059]
D	4066	Fill	backfill of cut [4065]
D	4067	Str	sandstone foundation for heat / flue system S of [4071]
D	4068	Str	sandstone foundation of heat / flue system N of [4071]
D	4069	Str	N arm of probable heat flue in/out-let W of [4071]
D	4070	Str	S arm of probable heat flue in/out-let W of [4071]
D	4071	Str	N-S part of heat flue structure, W of [4072]

D	4072	Str	N-S part of heat flue structure, W of [4073]
D	4073	Str	upper heat flue brick surface between flues B + C
D	4074	Cut	structural voids of heat flues in [4073]
D	4075	Cut	construction cut
D	4076	Str	E-W flat concrete foundation N of [4073], [4099], [4150] etc.
D	4077	Str	E-W brick wall over [4076]
D	4078	Str	sandstone wall foundation E of [4079]
D	4079	Str	E-W brick wall E of [4080]
D	4080	Cut	disturbance in wall [4079/4081]
D	4081	Str	E-W brick wall W of [4080]
D	4082	Str	E-W brick wall N of [4079], [4080], [4081]
D	4083	Str	S wall of probable flue outlet - Flue C N of [4082]
D	4084	Str	W end of upper flue structure - Flue C, N of W end of [4083]
D	4085	Str	upper brick surface of flue - Flue C, W of [4083]
D	4086	Str	compact mortar surface - on flue - Flue C, W of [4083]
D	4087	Str	E wall of large square brick structure, W of [4081]
D	4088	Str	N wall of large square brick structure, NW of [4087]
D	4089	Str	square brick feature - wall support, W of [4039]
D	4090	Fill	fill between flue walls [4083/4084]
D	4091	Dep	gritty grey rubble, N of [4077]
D	4092	Dep	overburden, N of [4091]
D	4093	Str	flat brick surface, N of [4091]
D	4094	Str	mortar foundation of brick wall; cont. of [4077] beyond [4076]
D	4095	Str	brick lining S of [4099], N of [4041]
D	4096	Str	brick lining W of [4099]
D	4097	Str	flat brick surface N of [4099]
D	4098	Str	brick wall E of [4099]
D	4099	Str	flat brick surface in centre of trench
D	4100	Str	N-S brick wall N of [4094]
D	4101	Str	E-W brick walling SW of [4100]
D	4102	Str	foundation for [4103] and [4104], W of [4101]
D	4103	Str	N-S brick walling - Flue D, N of E end of [4104]
D	4104	Str	brick flooring / walling - Flue D, N of [4102]
D	4105	Str	concrete ramp surround / end stop around [4106]
D	4106	Str	concrete sloping ramp W of [4019]
D	4107	Str	internal brick walling S of [4106]
D	4108	Str	internal brick walling N of [4108]
D	4109	Str	flooring - ashlar N of 4108
D	4110	Str	concrete foundation / surround N of [4022]/[4109]
D	4111	Str	E-W brick walling N of [4110]
D	4112	Str	concrete slab N of E end of [4111]
D	4113	Str	concrete surface N of [4111]
D	4114	Str	pink concrete surface N of [4115]
D	4115	Str	E-W brick walling between [4114] + [4116]
D	4116	Str	concrete slab / surface S of [4115]
D	4117	Cut	major modern truncation at E edge of trench
D	4118	Fill	fill within Flue B [4030], [4031], [4032], [4034], under [4033]
D	4119	Str	rail sleeper N of [4052]
D	4120	Str	N-S brick wall, middle of N of str in S extension of trench
D	4121	Str	brick floor surface E of [4120]
D	4122	Str	N-S wall E of [4121]
D	4123	Str	E-W wall S of [4120]

D	4124	Str	remnant of brick surface / walling S of [4123]
D	4125	Str	concrete in-fill of structural voids S of [4125]
D	4126	Str	N-S brick wall W of [4132]
D	4127	Str	E-W brick wall, middle of [4126]
D	4128	Dep	industrial clinker layer, W of [4132]
D	4129	Dep	compact layer of metallised clinker S of [4128]
D	4130	Str	brick surface / walling E of [4129]
D	4131	Str	brick walling / surface E of [4130]
D	4132	Str	upper surface of flue system E of [4126]
D	4133	Str	fire brick beneath [4132]
D	4134	Str	heat flue in/out-let N of [4132]
D	4135	Cut	construction cut for modern building S of [4132] &c.
D	4136	Fill	construction cut backfill of [4135]
D	4137	Str	N wall of modern building E-W across extension of trench
D	4138	Str	Westernmost N-S internal wall of modern building, S of [4137]
D	4139	Str	Easternmost N-S internal wall of modern building, S of [4137]
D	4140	Str	N-S E wall of modern building, abuts [4137]
D	4141	Dep	pea grit and rubble in-fill at S of extension of trench
D	4142	Dep	layer of clinker and rubble N of [4137]
D	4143	Dep	post-demolition layer N of [4132]
D	4144	Dep	fill of cut [4148]
D	4145	Str	void within [4132] - possible flue in/out-let
D	4146	Dep	backfill of modern truncation [4117]
D	4147	Str	remnant of wall in modern truncation in E of extension of trench
D	4148	Cut	cut for drainage structures, W of [4120]
D	4149	Dep	red ganister within voids, N of [4123], S of [4121]
D	4150	Str	burnt brick surface