

# **SALTWORKS LANE WESTON, STAFFORDSHIRE**



## **Archaeological Evaluation**



**Oxford Archaeology North**

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### **Waterman CPM**

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## SUMMARY

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In 2005 George Wimpey Midland Ltd submitted a planning application (planning reference 05/05368/OUT) for a domestic development of a c 3.2 ha brownfield site at Salt Works Lane, Weston, Stafford (NGR SJ 97640 26548). Development of the site, which is divided into eastern and western areas by an arm of the Trent and Mersey Canal and a contiguous access route, will involve the demolition of the existing modern structures on the site, together with considerable disturbance of subsoil deposits during, and in advance of, construction. A desk-based assessment (Waterman CPM 2005) identified that the site lies within an area of some archaeological potential, encompassing the location of an historically important post-medieval salt works and manure works and, accordingly, the Staffordshire County Council Archaeologist (SCCA) issued a brief for a programme of archaeological trial trench evaluation investigating 2.5% of the proposed development area. Following provision of a costed project design to meet the requirements of the SCCA brief, Waterman CPM, on behalf of George Wimpey Midland Ltd, commissioned Oxford Archaeology North (OA North) to undertake the programme of archaeological evaluation.

The evaluation was undertaken in May 2007 and comprised the excavation of ten 2m wide trenches of varying lengths. Three trenches were located on the western parcel of land which, until the twentieth century, had been in use for agriculture and was, therefore, of unknown archaeological potential. No archaeological deposits were revealed by the evaluation, although a layer of alluvium alluded to episodes of localised flooding.

The seven trenches within the eastern parcel of land were located in order to target, where the existing standing buildings allowed, the varying elements of the salt and manure works, including their ancillary transport features, recognisable from the 1890 first edition 1:10560 Ordnance Survey map. Evaluation proved the presence of well-preserved structural remains relating to these former industries, together with an associated infilled section of the canal, immediately below the modern reinforced concrete slab and its associated preparation layers, at a depth of 0.35m below present ground level. In several instances, identified structural remains appeared to relate to more than one phase of construction, which would certainly fit in with the known history of the site and, although there were finds relating to the twentieth-century alabaster bowl factory that replaced the salt and manure works, no finds or features could be specifically related to salt and manure working. The presence of hydrocarbon and heavy metal contamination (particularly at the northern and southern ends of the site, respectively), likely to be associated with both recent and much older industrial usage of the site, precluded manual examination, and it is possible that a greater depth of stratigraphy may have been preserved than was possible to investigate.

It would appear that the potential for archaeological remains within the western parcel of land is fairly low, but it is certain that groundworks to the east will encounter numerous and widespread archaeological deposits in the form of brick walls and floors associated with the post-medieval salt works, manure works and alabaster bowl factory, almost immediately beneath the existing concrete slab.



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Oxford Archaeology North would like to thank George Wimpey Midland Ltd for commissioning the work and Christine Cox and Ian Travers of Waterman CPM for their assistance during the project and for providing written instruction. OA North would also like to thank Steven Dean, the Staffordshire Country Council Archaeologist for his advice during his site visits.

The evaluation was undertaken by Richard Lee assisted by Joanne Hawkins. Richard wrote the report, which was illustrated by Anne Stewardson and Marie Rowland, whilst Chris Howard Davies assessed the finds. The project was managed by Stephen Rowland, who also edited the report.

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## 1 INTRODUCTION

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### 1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 In 2005 George Wimpey Midland Ltd (GWM Ltd) submitted a planning application (planning reference 05/05368/OUT) for a domestic development of a c 3.2 ha brownfield site at Salt Works Lane, Weston, Stafford (NGR SJ 97640 26548). Development of the site will involve the demolition of the existing modern structures on the site, together with considerable disturbance of subsoil deposits during, and in advance of, construction. A desk-based assessment (Waterman CPM 2005) identified that the site lies within an area of some archaeological potential, encompassing the location of a historically important post-medieval salt works and manure works and, accordingly, the Staffordshire County Council Archaeologist (SCCA) issued a brief for a programme of archaeological trial trench evaluation investigating 2.5% of the proposed development area (*Appendix 1*). Following provision of a costed project design (*Appendix 2*) to meet the requirements of the SCCA brief, Waterman CPM, on behalf of GWM Ltd, commissioned Oxford Archaeology North (OA North) to undertake the programme of archaeological evaluation. The following report sets out the results of the evaluation, which was undertaken over a period of ten working days in May 2007.

### 1.2 SITE LOCATION, TOPOGRAPHY AND GEOLOGY

- 1.2.1 The roughly triangular development site is located on the southern edge of Weston, in the Trent Valley. It is defined to the north by the twentieth-century urban expansion of Weston, to the west by the Trent and Mersey canal conservation area, and to the east by agricultural land that follows the former route of a branch railway, that once linked the site to the Stafford to Uttoxeter railway, to the north (Fig 1). The presence of a north/south aligned arm of the canal, together with a similarly aligned access between the canal to the south and Salt Works Lane to the north, effectively divides the site into two distinct parcels of land.
- 1.2.2 The site occupies an area of relatively flat land in the broad valley of the River Trent, at an absolute height of approximately 75m OD. To the north-east, the ground upon which the settlement of Weston is located rises gently. To the south-west, beyond the Trent and Mersey Canal and the River Trent, the land rises more steeply towards Ingestre Park. Both parts of the development area have, until very recently, been in use as depots for scaffolding and plant; offices, outbuildings, sheds and reinforced concrete storage yards were still in place at the time of the evaluation. Ground testing at the site has recorded high levels of contamination, from hydrocarbons and other high toxicants, particularly in the south-east corner of the development area.
- 1.2.3 The underlying geology of the area consists of deposits of gravely glaciofluvial or river terrace drift, overlain by soils of the Wick 1 association. These are deep, well-drained, coarse loamy and sandy soils (SSE 1983).

### 1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 1.3.1 **Introduction:** the following section is intended only as a brief overview of the archaeological remains known from the locale and is based largely upon the Waterman CPM (2005) desk-based assessment of the site.
- 1.3.2 **Pre-medieval:** there is only limited evidence for human activity within and immediately around the development area prior to the medieval period. During fieldwalking along the route of the Audley to Alrewas Gas Pipeline, some 500m to the west of the site, a diffuse scatter of Late Mesolithic and Neolithic/Bronze Age worked flint was found over a distance of around 1km (SHER 05063) (Waterman CPM 2005). Cropmarks of a probable Late Bronze Age pit alignment (SHER 04609) are located a similar distance to the east (*ibid*).
- 1.3.3 **Medieval:** Weston (SHER 02594) is recorded in the Domesday Survey of 1086 as one of Pirehill Hundred's smaller settlements, supporting a single plough and three acres of meadow (Williams and Martin (eds) 2002). The village's Grade II\*-listed St Andrew's Church (SHER 08178) dates from the twelfth century, although a thirteenth-century tower and a fourteenth-century spire are the oldest extant elements, and perhaps relate to the aggrandisement of the structure when it became the church for the newly-formed parish of Weston in the thirteenth century (Cockin 2000). Other surviving structures of medieval date within the village and lying close to the proposed development site comprise a fifteenth- or sixteenth-century cruck-framed building (SHER 05810) and the Grade II-listed 'Manor House' (SHER 08179) (Waterman CPM 2005). Medieval, or possibly later, agriculture and water meadow management is indicated by the presence of ridge and furrow earthworks along the Trent Valley in the vicinity of the site (SHER 20404), of which the closest (SHER 20405) lies some 400m from the south-western site boundary. A deer park at Ingestre Hall (SHER 02022), south-west of the River Trent, is known from documentary sources (*ibid*).
- 1.3.4 **Post-medieval:** Weston's post-medieval occupation is evidenced by several historic buildings, including a (sadly now-demolished) seventeenth-century timber-framed cottage with an eighteenth-century extension (SHER 04927) and the Grade II-listed vicarage, designed by Sir George Gilbert Scott in 1858 (SHER 50246) (Waterman CPM 2005). Significant transport links around the development area demonstrate increased industrialisation and include the Trent and Mersey Canal (now a conservation area) (SHER 05229), a late eighteenth-century road bridge (SHER 02862), together with an associated canal lock and bridge (SHER 02863). Built by the engineers James Brindley and Hugh Henshall between 1766 and 1771, the canal defines the south-west fringe of the development site, which is subdivided by a northward canal spur. The former course of the Stafford to Uttoxeter Railway (SHER 50735) runs in an arc less than 100m north of the proposed development site; constructed in around 1867, the line had closed to passengers by the 1930s, with the last freight running in 1951 (*ibid*).
- 1.3.5 **The Weston Salt Works and former usage of the eastern development area:** the earliest known activity on the eastern plot of the present development site dates to 1821 when Lord Talbot built The Weston Salt Works (SHER 50732) (Waterman CPM 2005). The Weston Salt Works were founded to provide competition to Staffordshire's earliest (and, at that date, only) salt works, Shirleywich, which was

founded in the late seventeenth century 1.5km to the south of Weston and owned by the Lords Ferrers. The expansion of the salt industry into Staffordshire, albeit on a lesser scale, was a direct result of the seventeenth-century decline of the long-standing industries in neighbouring Cheshire and Worcestershire, known since the Late Iron Age and Roman periods (Greenslade and Jenkins 1967; Morris 1985; Woodiwiss 1992). These centres tapped brine springs that ran through rock salt-bearing strata, which in England chiefly comprise Keuper Marls of Upper Triassic age.

- 1.3.6 James Trubshaw's plan of Lord Talbot's Weston salt works, dated 1820, shows that the original works was located at the southern end of the eastern land parcel and contained eight pans for evaporating brine. This brine derived from a borehole located on the south-western side of the River Trent, around 200m to the south, and thus had to be pumped under both the river and the canal, before being stored in the brine pit located at the northern end of the complex (*ibid*). This Open Pan Salt Production (Barford *et al* 1998, 31), relying on evaporation, seems fairly typical of Staffordshire salt works.
- 1.3.7 Within three years, production at the Weston Salt Works matched that of the long-established Shirleywich Works and, in 1827, a second set of eight pans was constructed on the northern part of the site (Greenslade and Jenkins 1967). A steam engine, to accelerate the pace of brine pumping, was added during the 1830s (Waterman CPM 2005). The 1847 Weston tithe map indicates the extent of the works, which were then tenanted by Vernon Poole and Company. On the accompanying tithe award, the works are described as "...Weston Salt Works with stables, offices, other buildings, yards and road from Weston Green to these works". The map depicts the salt works complex as comprising two large south-east/north-west-aligned rectangular buildings separated by a rectangular pond or tank (the brine pit), itself flanked by small structures; two further small buildings are shown within the north-western corner, close to the track to Weston Green.
- 1.3.8 The salt works were closely integrated into the local transport network and the previously landlocked Weston owed its industrial expansion to the inception of the Trent and Mersey canal in 1777. The 1847 tithe map indicates the presence of a long arm of the Trent and Mersey Canal flanking the western edge of the principal salt works structures, together with a shorter east/west aligned spur running to the south of the buildings. By the time of the survey for the 1890 first edition Ordnance Survey (OS) 1:10,560 map, this latter spur had been infilled, but the main canal arm seems to have either terminated at, or perhaps fed directly into, a building at the north-west corner of the site. This structure seems to have been demolished by 1901, since it is not shown on the second edition OS 1:10,560 map of that year. By 1890 the salt works were linked to the Stafford to Uttoxeter Railway via a branch line (SHER 50734) that by 1901 ran along the eastern side of the site (OS 1890; 1901). Accommodation for the salt workers is likely to be represented by structures shown on the 1847 tithe map as located on the western side of the canal arm and linked to the works by a footbridge. These include a terrace of somewhat variably-sized buildings (outside of the present development area) and a detached building now known as 'The Birches' (within the development area).

- 1.3.9 By 1854 the supply of brine from the existing borehole had dried up and a new borehole was sunk in the middle of the site. Unfortunately, this made little difference and the Weston Salt Works went into decline (Greenslade and Jenkins 1967), the original southern site being sold in 1872 whilst that to the north was retained (Waterman CPM 2005). In 1888, the northern remnant was acquired by the newly-formed Salt Union, a consortium of Cheshire-based salt manufacturers. Deterioration of the brine source and competition from the more modern salt works at Stafford Common, which was built in 1893 and tapped a brine well discovered in 1877 (Watkin 1980), meant that the Weston Salt Works ceased to operate regularly after 1893. Weston eventually closed in 1901 at the same time as the Shirleywich works, whilst Stafford Common, the last of the Staffordshire salt works, continued to operate until 1971 (Waterman CPM 2005). The Weston works were demolished some time before 1924, since they are not shown on the OS 1:2500 map of that date. The only structure shown within this northern part of the site is a rectangular building adjoining the eastern site boundary, the construction of which is likely to post-date the demolition of the salt works.
- 1.3.10 ***The Manure Works:*** the southern part of the former salt works site was taken over by the Shrewsbury Estates Manure Company in 1872 (Greenslade and Jenkins 1967) and their works (SHER 50733) are clearly depicted on the 1890 OS map. By the time the manure works are depicted on the second edition Ordnance Survey 1:10,560 map of 1901, the single structure is shown as occupying a much reduced area and, although the shape of the southern wall remains consistent with that the previous salt works, the remainder of the building is shown as 'L'-shaped and much shorter. These works were not particularly long-lived and by the time the site is shown on the 1924 third edition OS 1:10,560 map, the manure works have been replaced by an alabaster bowl works. The change in function is associated with further modification to the structures on site through what is likely to have been a westward extension of the existing manure works building to produce a much squarer structure retaining the southern and eastern walls of the manure works. The alabaster works was demolished by 1964, by which time the buildings occupied, until recently, by Select Plant Limited were constructed (Waterman CPM 2005).
- 1.3.11 ***Former usage of the Western development area:*** the 1847 tithe map and award record the undeveloped western land parcel as incorporating elements of two separate pasture fields, both owned by Earl Ferrers, and one being described as 'Bastards Flat and Croft (lying together)'. By 1890, development within this parcel of land was restricted to a small rectangular structure, immediately inside the site boundary on the eastern side. The purpose of this structure is unclear, but it is very similar to another structure on the south-west side of the canal, which is believed to have housed a borehole for obtaining brine (Waterman CPM 2005). This interpretation is supported by the 1901 OS map which records a 'Brine well' in this area; however, the label in question could equally refer to a circular feature likely to fall just outside of the proposed development area. By 1901, the second edition OS map shows a series of four small allotments at the north-eastern end of the field. There is little evidence for any significant development of this area until the construction of the recently-vacated scaffold yard and associated buildings in the 1970s.

## 2 METHODOLOGY

### 2.1 PROJECT DESIGN

- 2.1.1 Except where detailed below, the fieldwork was conducted in adherence with the SCC-approved OA North project design (*Appendix 2*). All works were consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

### 2.2 EVALUATION TRENCHING

- 2.2.1 The SCC Specification (*Appendix 1*) required the investigation of a total area of 800m<sup>2</sup> investigated through linear trial trenching and it was initially proposed that this should be achieved through the excavation of nine trial trenches each 2m in width. A total station was used to set out the trenches in reference to the Ordnance Survey (OS) grid and in accordance with the approved trench location plan. Trenches 1 and 2, 50m in length, were located within the north-western part of the development site, where sub-surface archaeological deposits were unknown. Trenches 3-7 and 9 were located across the south-eastern parcel of the site, in order to investigate the locations of the former salt works and manure works. With sub-surface ground conditions confirming high levels of contamination in this south-eastern portion of the site, the original location of Trench 8, at the southern end of the site, was abandoned in favour of a third trench, 30m in length, in the north-western land parcel. At the request of the SCC Archaeologist and Waterman CPM, an additional intervention, Trench 10 (Fig 2), was excavated perpendicular to Trench 9, effectively creating an interrupted L-shape. Trench 10 was 18m by 2m, this length reflecting a desire to avoid the highly contaminated area that would have been encountered had the trench been extended further to the east. The final trench conformation is detailed in Table 1.
- 2.2.2 The reinforced concrete slab covering most of the site was broken-out using a 20-ton 360° mechanical excavator fitted with a breaker. Underlying made-ground, topsoil and disturbed subsoil horizons were subject to archaeologically-supervised careful mechanical excavation (with a toothless ditching bucket) down to the depth of the first significant archaeological deposit or natural subsoils, depending on which was encountered first. The uppermost archaeological or natural deposit horizon was cleaned using hoes, shovel scraping or trowels, as appropriate.
- 2.2.3 **Contamination:** on the advice of Waterman CPM, no ground deposits were disturbed by hand, due to sub-surface contamination in many parts of the site; full investigation and recording was not, therefore, possible in a number of instances. Elevated levels of hydrocarbon contamination were observed in Trench 3 and, although no scale plans were produced for this trench, basic measurements and descriptions were recorded.

Trench	Site Area	Location	Length	Orientation	Target
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1	North -west	SJ 97532 26681 - 97582 26675	50m	East/west	Any unsuspected pre-twentieth-century remains
2	North -west	SJ 97583 26653 - 97568 26606	50m	North-north-east/south-south-west	Any unsuspected pre-twentieth-century remains
3	South -east	SJ 97671 26746 - 97699 26634	30m	West-north-west/east-south-east	Two out-buildings and northern part of salt works complex
4	South -east	SJ 97684 26631 - 97717 26618	30m	North-east/south-west	Transect across main salt works complex and railway line at north-eastern end
5	South -east	SJ 97635 26575 - 97663 26565	30m	West-north-west/east-south-east	Transect across canal and out buildings at southern end of salt works complex
6	South -east	SJ 97639 26550 - 97673 26528	50m	West-north-west/east-south-east	Transect across out-buildings and brine pit
7	South -east	SJ 97631 26492 - 97613 26468	30m	North-east/south-west	Transect through manure works
8	North -west		30m	North-west/south-east	Any unsuspected pre-twentieth-century remains
9	South -east	SJ 97627 26513 - 97611 26487	30m	North-east/south-west	Transect across possible canal loading area
10	South -east		18m	North-west/south-east	Transect through manure works

Table 1: Evaluation Trench Configuration (all trenches 2m wide)

## 2.3 FINDS

2.3.1 Finds and artefacts of all material classes encountered during the excavation of stratified deposits were systematically collected and retained for processing and assessment. All finds were exposed, lifted, and bagged in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition). Due to the presence of contamination, finds recovered from the site were not washed, as this would run the risk of introducing contaminants into the drainage system. During rapid assessment, latex gloves were worn, and the finds tipped onto several layers of dry newspaper. Both were discarded after the examination.

## 2.4 ARCHIVE

- 2.4.1 A full professional archive has been compiled in accordance with the project design (*Appendix 2*), and in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The archive will be deposited in the Potteries Museum, Stoke on Trent, and a copy of the report will be sent to the Staffordshire Historic Environment Record, also in Stoke on Trent, on completion of the project.



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## 3 RESULTS

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### 3.1 INTRODUCTION

- 3.1.1 The following section provides a brief description of the archaeological remains recorded within each of the evaluation trenches. Trench dimensions and orientations are presented in Table 1, whilst full context descriptions can be found in *Appendix 3*.

### 3.2 NORTH-WESTERN AREA

- 3.2.1 **Trench 1:** below the concrete slab (0.24m depth) was a 0.23m deep layer of crushed brick and rubble made ground, **158**; this deposit can be found across the whole of the proposed development area. Below was 0.16m deep sterile dark brown soil layer **159**, which in turn overlay a deposit of black alluvium, **160**, 0.17m thick and overlying the natural drift geology, an orange gravel with a high sand content. This alluvium may be fairly late in date, since, prior to the construction of buildings on this site in the 1960s, this area was notorious for winter flooding, perhaps due to its elevation which is lower than the adjacent canal. Once the alluvium was exposed, ground water began to seep across the base of the trench. Six ceramic drains ran in an approximate north-west/south-east alignment across the trench at a depth of c 0.7m below present ground level (78.49m OD). No features of archaeological significance were observed.
- 3.2.2 **Trench 2:** the stratigraphy in Trench 2 (Plate 1) was the same as Trench 1, with natural deposits reached at a depth of 0.84m below present ground level (79.3m OD). Three ceramic and concrete drains ran east/west across the trench, but no features of archaeological significance were observed.
- 3.2.3 **Trench 8:** the stratigraphy in Trench 3 (Plate 2) was similar to that within Trenches 1 and 2, with the natural geology reached at 79.03m OD. No archaeological deposits were observed.

### 3.3 SOUTH-EASTERN AREA

- 3.3.1 **Trench 3:** the concrete surface within this trench, as with most of those within the south-eastern part of the development area, was sub-divided by wooden railway sleepers (2.75m long, 0.23m wide and 0.13m depth). Removal of this surface and the associated rubble make-up layer revealed archaeological deposits at a depth of c 0.5m below present ground level (78.99m OD), at which depth ground water began seeping into the trench and the presence of hydrocarbon contamination became apparent. The rapidly-recorded archaeological remains consisted of two visible courses of cream mortar-bonded red brick walls, aligned both north/south and east/west. The placement of the walls suggested the interior of a building that extended north and south beyond the excavation limits. At the west end of the trench, a clay deposit, at the same elevation as the walls, may represent a floor surface. Small quantities of gypsum and salt were found together with fragments of clay pipe, pottery and glass.

- 3.3.2 **Trench 4:** the stratigraphy within Trench 4 was similar to that of Trench 3, with archaeological deposits occurring at 0.34m below present ground level (78.77m OD; Fig 3). A number of linear red brick wall footings were visible in the trench; the more westerly pair, **107** and **108**, were similarly-constructed and ran beyond the limits of excavation on a north-west/south-east alignment. A third brick wall, **109**, ran perpendicular and comprised two visible courses of brick in an English Cross style. A fourth, poorly-preserved, wall, **110**, was constructed of sandstone on a north-west/south-east alignment and would have shared a stratigraphic relationship with wall **109**, just beyond the northern limit of excavation. No surviving surfaces were associated with these walls, and the intervening deposits comprised entirely natural orange sandy gravel **106**.
- 3.3.3 **Trench 5:** removal of the concrete surface and rubble make-up and excavation of a 9m wide sondage within the western part of Trench 5 revealed evidence of the backfilled canal arm 0.54m below present ground level (77.61m OD; Fig 4) continuing from its known position to the south-west. A quantity of brick rubble, **122**, filled the void of the canal, which was also truncated by a modern concrete drain, **124**. However, it was not possible to gauge the exact limits and dimensions of the canal due to the presence of a sludgy grey deposit of what appeared to be industrial waste within the western portion; the eastern part of the channel appeared to be defined by an alluvial fill (**121**), into which the large capstones of the canal wall, **123**, had been pushed.
- 3.3.4 The remains of several structural features were identified within the eastern half of Trench 5, all of which were aligned north-east/south-west. The most westerly was a substantial brick wall, **120**, which was 0.6m wide and comprised three skins of grey bricks, two of stretchers and one of headers, set in a pink-grey mortar. To the east was a hollow rectangular structure, **117**, comprising four visible courses of two rows of red bricks, stretcher bonded with a crumbly yellowish-white mortar (Plate 4). The feature measured 1.7m by 1.25m, with a height of 0.28m, and extended beyond the south-west limit of the trench. The central void was filled with rubble and a black organic material, **118**, with inclusions of wood, broken glass and a small quantity of calcite.
- 3.3.5 Further structural evidence included brick wall **115**, of which two rows of stretchers and one of headers were visible for two courses (0.12m high) and were bonded to a concrete surface or floor, **116**, to the immediate east. At the east end of the trench was a linear red brick feature, **113**, enclosing a contemporary drain, **114**, both of which appeared to terminate within the trench. The bricks were set directly into the natural and are bonded by a loose, dark brown mortar.
- 3.3.6 **Trench 6:** beneath the removed concrete surface, the layer of crushed rubble made ground within Trench 6 had noticeably larger fragments of brick in its lower levels, which may be indicative of demolition within the immediate vicinity. However, the trench was devoid of any archaeological features, with excavation revealing natural orange gravel at a depth of 0.66m below the present ground level (78.54m OD).
- 3.3.7 **Trench 7:** the upper stratigraphy within Trench 7 was similar to that of previous trenches in the south-eastern part of the site, although in places the lower parts of the rubble make-up had a high soil content and were recorded as deposits **134** and **137** at the western end of the trench. Elevated levels of hydrocarbon contamination were encountered at the north-western end of this trench. At a

depth of 0.68m below present ground levels (79.05m OD), Trench 7 revealed the most dense concentration of archaeological features encountered during the investigation (Fig 5). Almost all were red brick structural remains on a north-west/south-east alignment, and more than the single visible course of bricks was likely to have been preserved in most cases.

- 3.3.8 The western part of the trench was occupied by discontinuous sections of seven closely-built red brick walls, **131-140** (Plate 5), most of which extended beyond the confines of the trench. The best preserved and most solidly constructed, with a row each of yellow mortar-bonded headers and stretchers, was wall **140**, which may originally have divided those features to either side. West of wall **140**, wall **139** was 1.2m long, 0.2m wide and composed of red and grey bricks bonded with a cream-coloured mortar. Wall **139** was truncated by concrete layer **138**, which extended 1.4m westward to create a surface partly overlying feature (possible wall) **133**. Wall **136**, 1.7m long, 0.13m wide, comprised a single line of yellow brick stretchers bonded by a cream coloured mortar. The three most westerly walls, **131**, **132** and **135** were less well-preserved but appeared to have once been quite substantially built of three rows of stretchers in red, orange and grey brick, and up to 0.6m wide.
- 3.3.9 Towards the centre of the trench, fragmentary wall **145** was built on a footing of cream-coloured mortar with considerable inclusions of gravel, stone and grit. Extending for 13m north-east from wall **145** was a distinct row of five regularly-spaced rectangular brick-built features, **146** and **148-151**. Each feature, probably a post pad, was identically constructed of four bricks set in a 0.35m square, with a small fragment of brick placed in the centre. There was room for a sixth pad between pads **146** and **148** within the area occupied by feature **147**, which appears to the disturbed remains of a red brick wall and a floor. These pads terminated before reaching well-constructed floor surface **152** (Plate 6) located at the north-eastern end of the trench. The visible surface, which continued beyond the north-western limit of excavation, was 2.4m wide north-west/south-east and comprised bricks of mixed colour laid either on their sides or bases. There appeared to be a central channel of north-east/south-west aligned stretchers, and a possible perpendicular wall defining the south-western limit of the surface.
- 3.3.10 Three features within the central area of Trench 7 were distinct from all other features encountered in the trench, not least because they lay on a different alignment. Hardened yellowish mortar and broken brick conglomerate feature **144** (Plate 7) measured 1.2m east/west by 0.8m north/south and appeared to be the foundation for a possible wall corner, or a post pad. Feature **142** (Plate 7), 0.82m east/west by 0.92m north/south, was similar but better preserved, and may have a 0.2m square void or well at its centre. Opposite feature **142** and similarly aligned, was a single block of weathered green/grey sandstone, **141**, measuring 0.4m north/south by 0.9m east/west, which may have again been used as a post pad.
- 3.3.11 **Trench 9:** Trench 9 was aligned parallel to the canal arm (Fig 2) and excavated to a maximum depth of 0.95m (78.93m OD). Elevated levels of hydrocarbon contamination were present at the northern end of the trench. Beneath the concrete and rubble make-up, two distinct deposits were encountered throughout this trench. The uppermost, **126**, which occurred across and beyond the limits of the trench, covering the visible structural remains as it did so, is best described as a mineralogical deposit. This white deposit, with some ferrous discolouration, was

heavily compacted and 0.15m - 0.35m deep (Plate 8). It had the appearance, if not the chemistry, of a dense concentration of mortar and its content included both gypsum and quartz, including a number of worked quartz artefacts. Below **126** was another deposit, **165**, wholly black in colour, less compact and, in some places, intermingling with **126**. Deposit **165** consisted of what appeared to be burnt ashy gravel, with a high percentage of stones and extended below the limit of excavation.

- 3.3.12 Two concentrations of brick and brick rubble were sealed by mineral deposit **126**, **127** at the south-west end of the trench and **129** to the north-east. Although their presence may suggest demolition of a nearby building or structure of some kind, the bricks were unbonded and were not precisely placed. Sealed by deposit **126**, wall **125** ran 6m south-west from the north-eastern limit of excavation. The four visible courses of orange-yellow bricks appeared to be hand-made and stretcher-bonded with a creamy white friable mortar. The central section of the wall had a group of perpendicular bricks, suggesting that there may have been a wall extension to either the west or east. A concrete service pipe truncates this wall to the north-west.
- 3.3.13 **Trench 10:** beneath the concrete and rubble layers, archaeological remains in this trench occurred at 0.5m below present ground level (78.98m OD). Features encountered at the south-west end of the trench (Fig 7; Plate 9) appeared to be a continuation of those observed in Trench 7. At the south-west end of the trench, structure **153**, which could have been a north-east/south-west-aligned wall or a floor, consisted of two courses of predominantly grey bricks in three rows of stretchers bonded with creamy-pink mortar. Bonded to the north-east side of feature **153** was a poorly-defined structure, **154**, that may have been the remains of a worn floor. Pad **155** was found at the west end of Trench 10, and its close resemblance suggests it was a continuation of group **148-151** found in Trench 7. Brick cluster **156**, of a marginally slimmer size than usual, appeared not to relate to any other features visible in the trench, and may be residual demolition debris. The remains of north-east/south-west aligned wall **157** were recorded at the north-eastern end of the trench. Four courses of red bricks were bonded with a chalky white mortar.

### 3.4 FINDS ASSESSMENT

- 3.4.1 **Introduction:** a small group of finds were examined unwashed, having been recovered from possibly contaminated, and potentially harmful, contexts during excavations at this site. They were rapidly identified to provide evidence for dating and activity on site, and are summarised in *Appendix 3*.
- 3.4.2 **Ceramic:** fifteen fragments of pottery vessels were recovered, of which two, both abraded, were of Romano-British date, including a second-century rim fragment of

a ring-necked flagon in soft orange oxidised fabric, probably from Wilderspool. The remainder was dated to the late nineteenth century at the earliest, as was a stem fragment from a clay pipe.

- 3.4.3 **Ferrous material:** five iron objects recovered from the site comprised three nails, a ferrous concretion with adhering fuel ash, and a single large iron screw
- 3.4.4 **Glass:** the two fragments of glass were late in date, and comprised window glass and a piece of a twentieth -century bottle.
- 3.4.5 **Organic material:** six fragments of a single laced shoe or ankle boot. The method of construction, and stylistic points such as metal-lined lace holes indicated that it was of recent date.
- 3.4.6 **Stone:** there were approximately 12 pieces of worked alabaster, mostly lathe-turned cores from bowls.
- 3.4.2 **Conclusions:** the finds from the site add little to the greater understanding of the salt works and manure works. It is recommended that these finds should be discarded, as soon as possible, in an appropriate manner, as recommended by the OA North Health and Safety Officer or other appropriately qualified person.

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## 4 DISCUSSION

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### 4.1 CONCLUSIONS

- 4.1.1 The evaluation successfully demonstrated the presence of well-preserved archaeological features lying at a shallow depth within the south-eastern parcel of the development site. At the northern end of this plot, structural remains were found at depth of *c* 0.3m below the concrete slab, increasing to a maximum depth of 0.8m towards the southern end. The concrete slab did not extend to the very southern end of the site, but it is likely that archaeological remains within this contaminated area will again lie at a fairly shallow depth. The depth of these features is uncertain, since contamination precluded extensive hand excavation, but the foundations for many of the structures could be quite shallow. The impact of the development upon the archaeological resource within the north-western development parcel is harder to assess, given that no stratified archaeological remains were found within this area. Ostensibly, the present evidence would suggest that this part of the site was unfavourable to any human activity other than agriculture, and that the impact would, therefore, be minimal.
- 4.1.2 The earliest artefacts recovered during the evaluation were the two sherds of Roman pottery from Trench 4. Given the paucity of Roman remains within the vicinity, even in their abraded state these sherds are of interest, since they suggest the presence of contemporary settlement in the locality. As such, their association with wall **110** is perhaps more fortuitous than real. Although no easily datable finds were found in direct association with these structural remains, many can be related to the outlines of buildings depicted on the 1890 OS map. Furthermore, there is a suggestion that certain of these remains relate to different phases of structural activity on the site. The following section is an attempt to relate the evaluated remains with the known developmental history of the site, from the inception of the first salt works in 1821 within the southern part of the development site, their northward expansion in 1827, and the subsequent conversion of the southern salt works structures to a manure works and then an alabaster bowl works in 1872 and *c* 1924, respectively.

### 4.2 THE SALT WORKS

- 4.2.1 According to the 1890 OS map, the northern part of the salt works, constructed in 1827, consists of three principle ranges of structures. The largest, adjoining the south-east boundary, was approximately 75m long and 30m wide, and was composed of a series of nine thin rectangular 'rooms' running the width of the building. A smaller range of four 'rooms' stood adjacent to this main block, whilst to its north-west, a long thin building straddled the canal arm and was accompanied by a separate smaller structure. It is probable that the series of walls found within Trench 3 relate to the most northerly salt works structures as indicated on the 1890 OS map. The small quantities of salt and gypsum found in Trench 3 would suggest that materials within this area were in an already processed state, and the possibility that the long thin building into which the canal



arm appears to flow was used for storing the finished product and for loading barges cannot be discounted.

- 4.2.2 It is also probable that walls **107** and **108** within Trench 4 are elements of the main block of the 1827 salt works structure. Although the excavated walls were relatively thin, and seem unlikely candidates for load-bearing fixtures, their correspondence with those on the 1890 OS map is remarkable; it is possible, then, that the north-west/south-east walls illustrated on the OS map are non-structural internal divisions (although there is the possibility of finding roof support fixtures on the same alignment). The size and shape of these nine rooms within the main salt works blocks suggests that they may have housed the eight pans for evaporating brine, although no evidence for any internal features related to such activity were found during the course of the evaluation. Given its position, greater width and perpendicular alignment, wall **109** may be the east wall of the salt works. If this is the case, vestigial sandstone wall **110**, located towards the centre of Trench 4, would lie outside of the salt works building. Despite its identical alignment, the sandstone make-up of wall **110** is unlike any of the other salt works structures, and is too close to wall **108** to represent another of the internal walls shown on the 1890 OS map. As such, it is possible that it represents a later addition, or a footing for a fixture not represented cartographically. Alternatively, it could represent a structure pre-dating the salt works, and its association with the two sherds of Roman pottery is of some interest within this context.
- 4.2.3 The most southerly structures of the 1827 salt works building, along with a number of internal building features, were picked up by Trench 5 as walls **113** and **120**, feature **117** and floor **116**. The function of feature **117** is uncertain and, whilst it may have been the base for an internal feature, further investigation may reveal it to have been a brick-lined shaft, perhaps a man hole, or well associated with the brine pit just to the south.
- 4.2.4 Elements of the 1821 salt works at the southern end of the site are harder to define, since by the time the 1890 OS map was published this area had already become the manure works. However, it would seem that this latter industry retained much, if not all, of the 1821 salt works building, demolishing, rather than rebuilding structures some time between 1890 and 1901. Despite this, one or two elements of the salt works which should otherwise be readily identifiable were not found. For example, Trench 6 revealed no evidence of the expected brine pit, which occupied an area *c* 30 x 20m, with a possible depth of up to 9m, or of the building to its immediate west. Even decommissioned and backfilled, the limits of the brine pit would be easily distinguished from the unadulterated natural geology. Furthermore, given the size of the feature and the fact that other trenches had been able to target features very closely elsewhere on site, it seems hard to believe that Trench 6 had missed this structure altogether. Combining this absence of subterranean features and the unusually high concentration of brick fragments at the base of the made ground in this area, possibly suggestive of former structures in the immediate vicinity, it is possible that the brine pit, albeit contrary to its descriptive nomenclature, was more of a raised pond.

### 4.3 TRANSPORT ELEMENTS

- 4.3.1 **Trent and Mersey Canal Spur:** the evaluation of Trench 5 proved that the spur of the Trent and Mersey canal, as suggested by regression of the old maps, continues as a backfilled and partly demolished feature further north than the sections that presently survives. As far as could be determined, the width of the canal spur, c 9m, continues on the same trajectory, south-west/north-east, parallel to the former salt works buildings, as no terminus to the feature was found within the evaluated area. The build of the canal appears to be the same as can be seen in the currently extant canal spur; brick walls with a stone capping.
- 4.3.2 **Former Railway Line:** despite the fact that Trench 4 investigated right up to the extreme east boundary of the development area, there was no *in situ* evidence of the railway line shown on the 1890 OS map running to the immediate east of the salt works and linking with the main Stafford-Uttoxeter line. Whilst the railway line itself could not be found, a large quantity of what appeared to be wooden railway sleepers, measuring 2.75m by 0.23m by 0.13m, were found in use across the site. Some of them had been drilled, probably for bolt attachments, although whether they had already been in use couldn't be determined. These had been used as components of the modern concrete slabs, assisting in delineating the concrete into c 5mx 8m sections.

#### 4.4 THE FORMER MANURE WORKS

- 4.4.1 In the south-west part of the development site a considerable number of walls and surfaces attest to the preservation of structural remains, which can be related to elements of the manure works as shown on the 1890 OS map. These are most clearly illustrated by the remains from Trench 7, which indicated the presence of a large building on the same north-west/south-east alignment as that shown cartographically. The 1890 OS map suggests that the use of space within the eastern and western halves of this building was different, with two main rooms to the east, and a series of nine smaller, cellular rooms to the west. As such, Trench 7 straddles this division, which is largely demarcated by the series of post pads **146 - 150** (continuing northward into the area of Trench 10), and one can imagine that the internal layout of the manure works, and perhaps of the 1821 salt works, if it shared the same premises, was rather open plan. The internal walls for the cells within the western half of the building are likely to be represented by walls **131 - 140** within Trench 7, although the close proximity of these features suggests that the majority are likely to have supported internal fixtures rather than being structural in character. Furthermore, the differences in brick colour and bonding material would suggest that these features ranged in date and, just as likely, in phase, with some relating to the use of this area for the 1821 salt works and some for the manure works. Wall **125**, identified within Trench 9, is also likely to relate to the 1821 salt works/manure works, since it lies very close to the slightly projecting similarly-aligned north-west wall of this longer structure, which was not retained during the reduction of the manure works between 1890 and 1901.

#### 4.5 THE ALABASTER BOWL WORKS

- 4.5.1 Map regression suggests that the southern part of the manure works corresponded very closely with that of the alabaster bowl works and, given that they are likely to



have been formed from the same structures, their exact differentiation is impossible. However, the presence of structural elements **144** and **142** towards the centre of Trench 7, so different in character and alignment from the redbrick structures in that trench, may relate to the reconfiguration of this part of the building in the 1920s. The fact that these features included re-used bricks of a very similar style to those seen in the foundations of the salt works elsewhere on site, strongly suggests that they derived from the demolition of unwanted walls during the further reduction of industrial space.

- 4.5.2 Artefactual evidence for the alabaster works, including worked stone rough-outs and cores, were found in considerable quantities within Trench 9 from white layer **126** and black layer **165**. The composition of the former is hard to attest without chemical analysis, but appeared to contain calcite, gypsum and quartz, with a possible admixture of crushed bone (there are a number of bone mills within the vicinity, including that at Shirleywich). Layer **165** seems to be a dump of redeposited fuel ash. As such, it seems as if the deposition of each layer was contemporary with the alabaster bowl works and, given their clear separation and the compaction of layer **126**, related to the construction of surface along the canal, rather than a general waste deposit.

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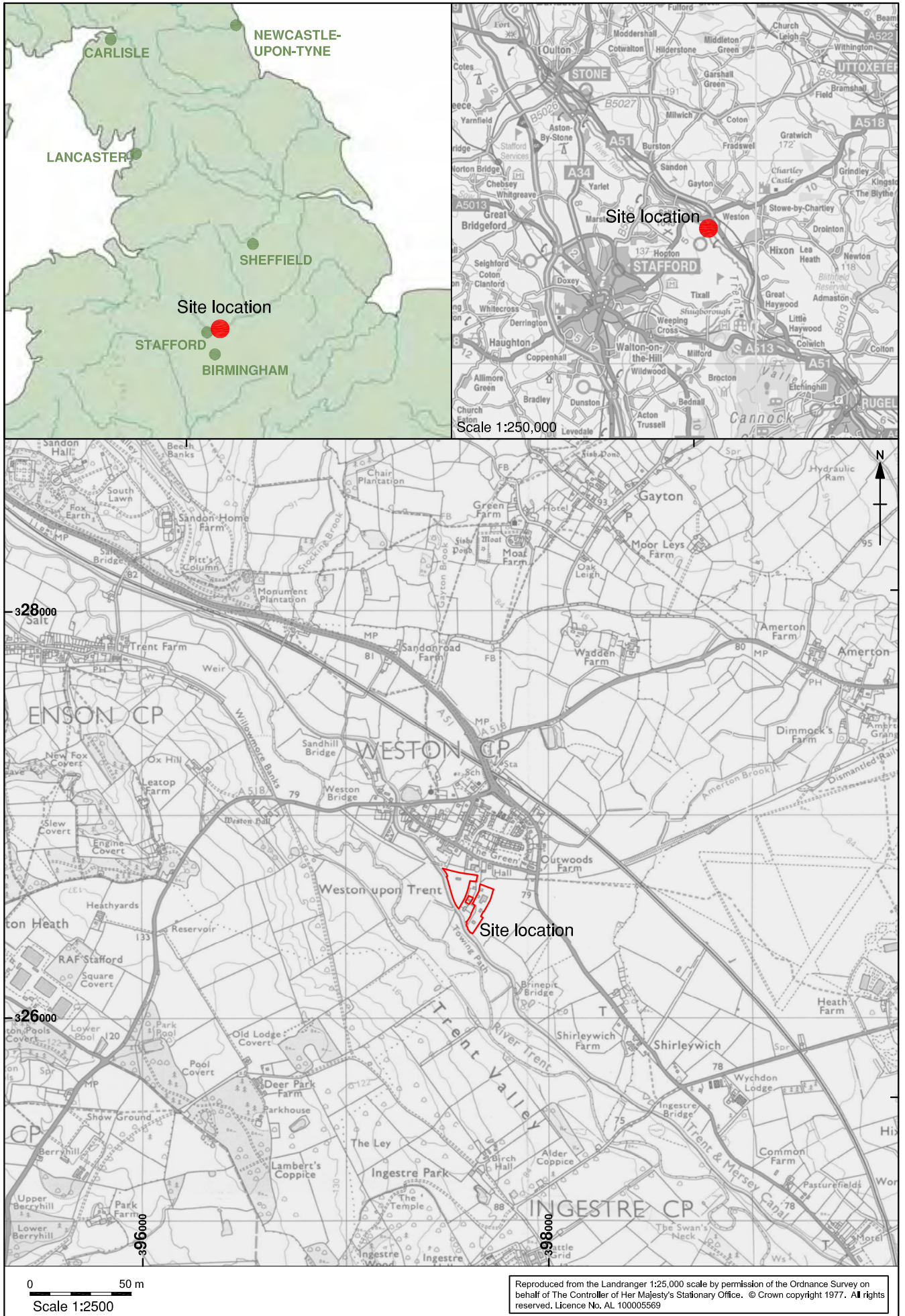


Figure 1: Site location



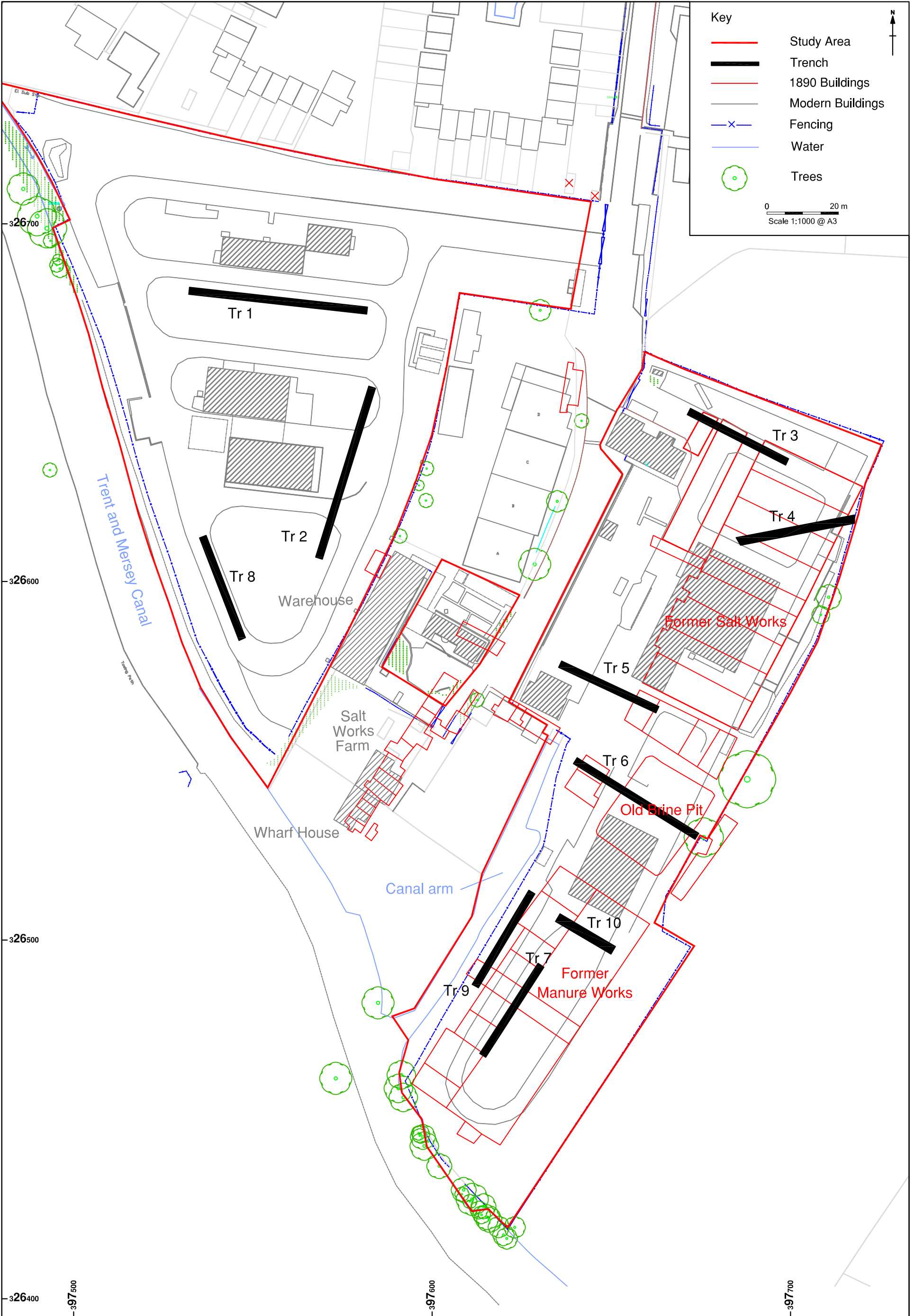


Figure 2: Trench location plan, showing buildings from the 1890 Ordnance Survey First Edition, 1:10560 map, superimposed onto modern data

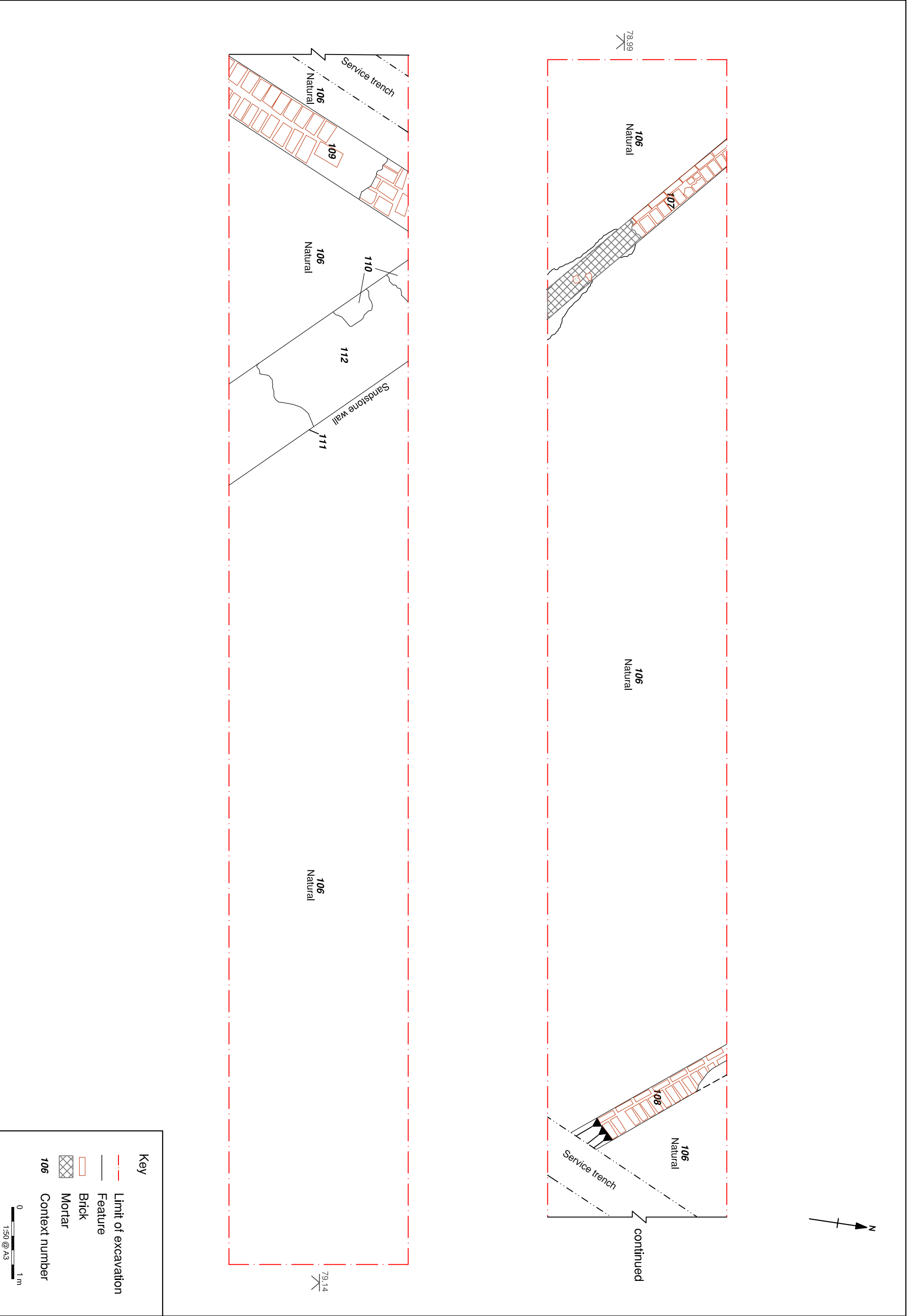


Figure 3: Trench 4 plan

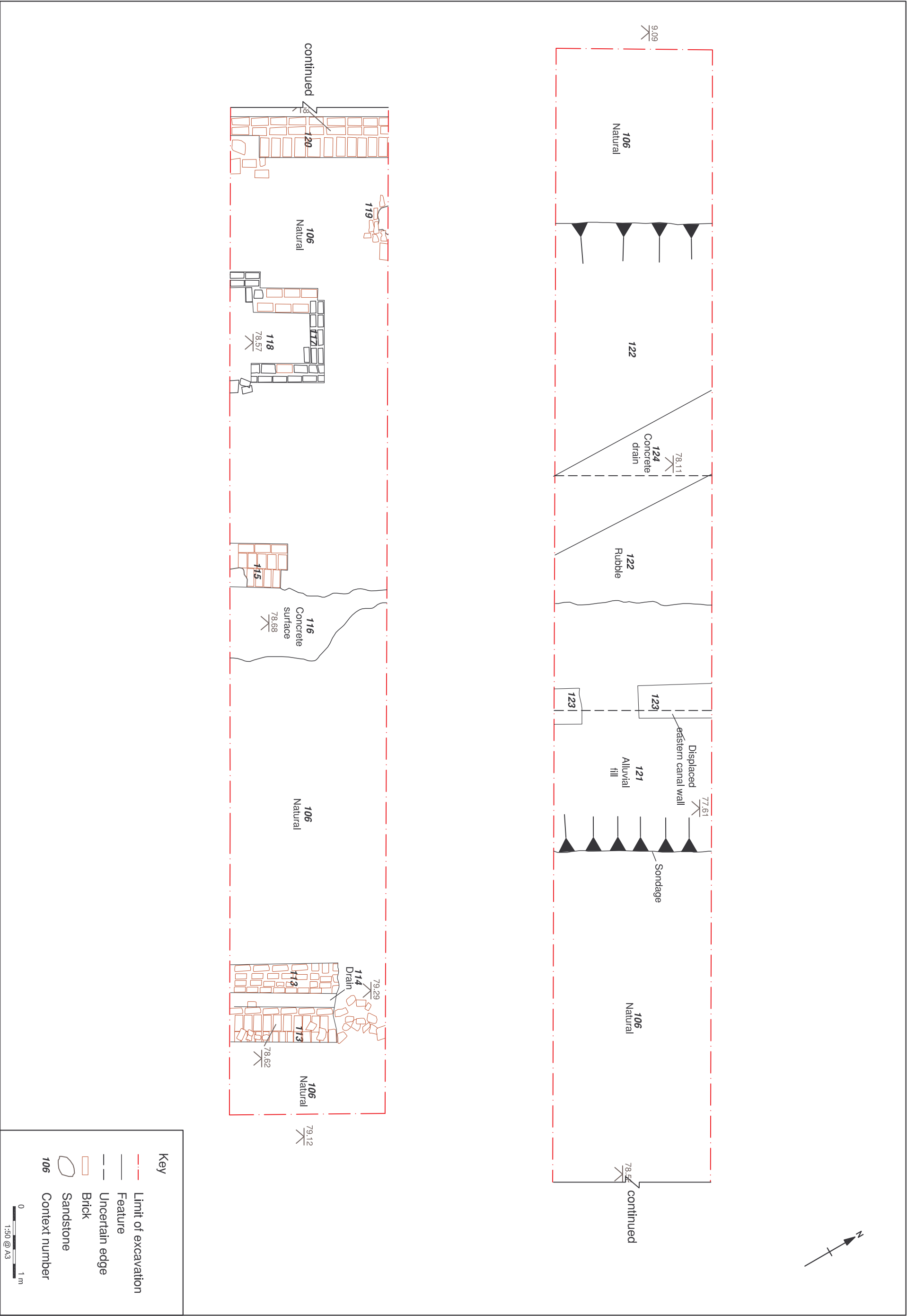


Figure 4: Trench 5 plan

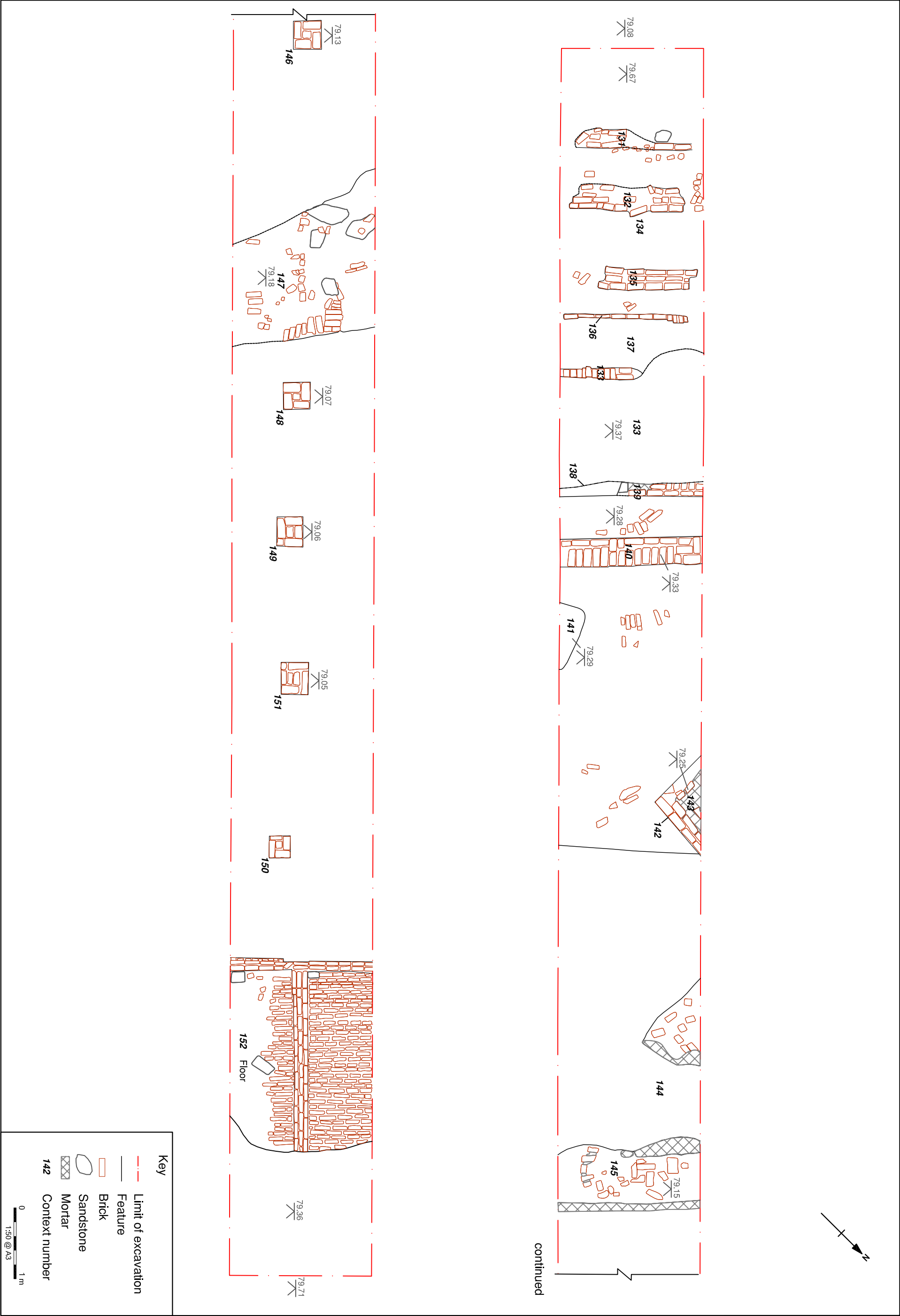


Figure 5: Trench 7 plan





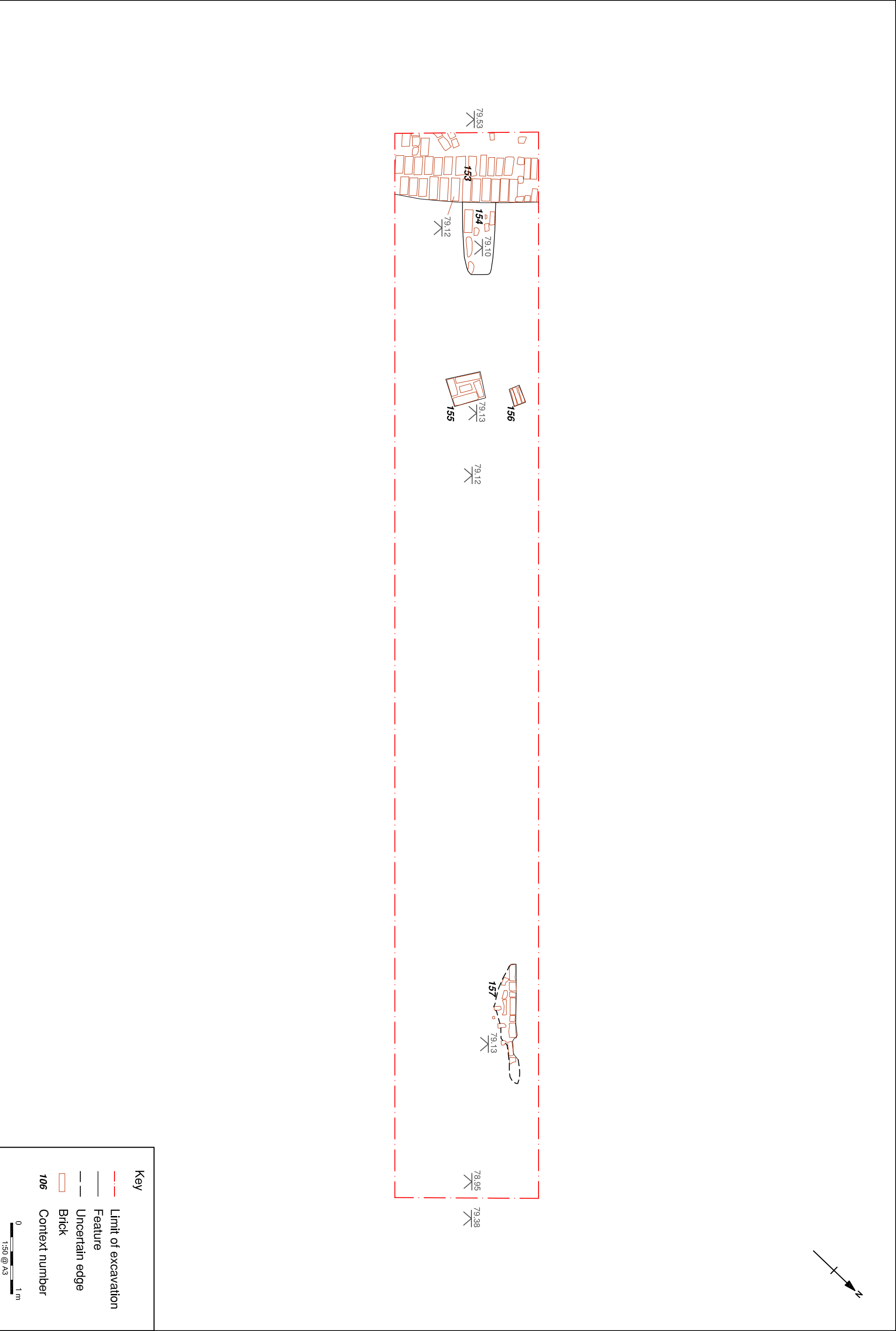


Figure 7: Trench 10 plan



Plate 1: General view of western parcel of development area, looking north, Trench 8 and 2 (right).



Plate 2: Trench 8 looking north





Plate 3: General view of eastern land parcel, looking north from the canal



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## APPENDIX 1: PROJECT BRIEF

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**BRIEF FOR A  
ARCHAEOLOGICAL TRIAL TRENCHING**

**SALT WORKS LANE, WESTON ON TRENT, STAFFORD BOROUGH**

**March 2007**

**Staffordshire**  
County Council



## **2.0 BRIEF FOR AN ARCHAEOLOGICAL FIELD EVALUATION (TRIAL TRENCHING)**

Planning Policy Guidance 16 (Archaeology and Planning) states that local planning authorities can expect developers to provide the results of archaeological desk-based assessments and field evaluations as part of their planning applications for sites where there is good reason to believe there are remains of archaeological importance. Whilst a desk-based assessment will sometimes provide sufficient archaeological information to determine an application it will more often lead on to a recommendation for field evaluation from the County Archaeological Service. Field evaluation can involve a wide range of survey and investigative techniques, including fieldwalking, geophysical survey and trial trenching.

This brief sets out the requirements for trial trenching which will form part of the field evaluation being conducted at this site. Trial trenching is considered necessary as the second element of the evaluative process in order to ground truth the results of the initial geophysical survey.

### **Procedure and Professional Standards**

Trial trenching should be undertaken in accordance with the "Standard and Guidance for Archaeological Field Evaluations" published by the Institute of Field Archaeologists (2001). Each project must be governed by a project design which has been agreed in writing by the County Archaeologist. The project design should be based on a thorough study of all relevant background information (especially any existing assessment or evaluation reports or, in their absence, data held or referenced in the Historic Environment Record). It should conform to the guidelines set out in paragraph 3.2.19 of the IFA guidelines and should in particular specify:

- The project's objectives.
- The location of trial trenches and any constraints (to be shown on a plan).
- Procedures for project management (to follow the principles set out in Management of Archaeological Projects (MAP) (English Heritage, 1991).
- The expertise of the project team. The project manager should be a named Member of the Institute of Field Archaeologists (MIFA) or be of equivalent experience. The composition and experience of the project team should be described. Specialists should be identified where required (e.g. for finds and environmental work). CVs should be supplied outlining the relevant qualifications and experience of key personnel - where relevant this should include specific reference to knowledge of particular periods and local/ regional traditions.
- Reporting and Archiving arrangements.
- An outline of the proposed timetable and staff resources - this must be non-binding and presented "for information only"
- Contingency arrangements.

### **Objectives**

Trial trenching should aim to gather sufficient information to generate a reliable predictive model of the extent, character, date, state of preservation and depth of burial of important archaeological remains within the area of study. In this case the following specific objectives have been identified:

- To determine the presence/absence of later post-medieval industrial structures and recover evidence to suggest an establishment date for the complex and the potential for further evidence to be present elsewhere.
- To prepare recommendations, where warranted, for further archaeological investigations in advance of ground reduction.

## Fieldwork Methodology

### Surveying

Accurate and precise surveying is essential. At the commencement of each fieldwork project a site grid should be carefully laid out by an experienced surveyor and related to the national grid (the accuracy of any previously surveyed grids should also be checked). All subsequent fieldwork should use the site grid. The grid should be established using semi-permanent survey stations or by relating the survey to equivalent fixed points. Trial trench locations should be plotted to within  $\pm 1\text{m}$  relative to the national grid. Within an excavation or survey area internal grid points should be located to within an error of no more than  $\pm 0.1\text{m}$  relative to the site grid. On most sites the use of an EDM or theodolite will be essential to set out site grids. All levels should be recorded relative to an Ordnance Survey datum level.

### Machine stripping

Trial trenches are normally a minimum of c 1.6m wide, although wider trenches or "boxes" are sometimes more appropriate. Machinery may be used to remove topsoil and overburden to reveal the significant archaeological deposits. Such excavation should be undertaken in level spits using an appropriate machine using a toothless bucket and working under archaeological supervision. **Archaeological deposits should not be removed by machine except where such a procedure has been sanctioned by the Principal Archaeologist.** Particular care should be taken when controlling machining in situations where vertical stratigraphy is to be expected or where it is considered that significant archaeological deposits may be vulnerable to damage - in such circumstances machining should be controlled by experienced senior staff. Potentially significant deposits should not be removed by machine before their character is reasonably understood.

Subject to site constraints, trial trenches should be excavated as follows:

- A 2.5% sample coverage of the area should be laid out by the archaeological field contractor to test for the survival of the post-medieval industrial complex. Where appropriate trenches can be combined to form larger boxes although care should be taken to evaluate potential connections between the Salt and Manure works and the survival of the transport route and links to the north (via the Stafford and Uttoxeter Railway) and to the south (via the Trent and Mersey Canal). The trench layout should be agreed with the County Archaeologist prior to commencing any archaeological works on site.
- A contingency for an additional 50m of machine trenching should also be allowed. This should only be used where further testing of features is required to answer specific questions concerning the site. The use of the contingency trenching will only take place following discussion with the Principal Archaeologist or their representative.

### Cleaning and Recording in plan-form

Each trench should be cleaned by hand sufficiently to allow the identification and planning of archaeological features and scanned with a metal-detector. Where archaeological features appear to be absent sufficient work should be done to demonstrate this. Each trench should be planned at an appropriate scale (normally 1:20 where complex deposits are present or 1:50 or 1:100 in areas of lesser complexity). Spot levels should be taken as appropriate.

Where archaeological features are thought to be present, a sufficient quantity of said features shall be investigated by hand to allow their date, nature and degree of survival to be ascribed. All features thus investigated will be recorded in plan and section and all finds recovered shall be retained for analysis.

The stratigraphy of all trenches shall be recorded even where no archaeological deposits are identified. Plans and sections of all features shall be recorded. The site archive will include plans and sections at an appropriate scale, a photographic record, and full stratigraphic records on recording forms/context sheets or their electronic equivalent.

The record of the extent and vulnerability of features will be sufficiently detailed to facilitate discussions regarding the need for preservation beneath any future potential development, or any other mitigation measures including further excavation or recording.



## Sampling

Sufficient features should be sampled by hand excavation to achieve the project objectives. For discrete features such as pits and postholes this will normally involve half-sectioning a representative sample. Linear features should be sectioned. Individual complex features such as kilns or burials should be cleaned and recorded but, subject to the agreement of the County Archaeological Service, it will normally be preferable to leave them in-situ (if necessary with specific protection against disturbance during backfilling). If deeply stratified deposits are encountered it may be appropriate to excavate sample boxes and/or examine the stratigraphy revealed in the section of excavated cut features.

## Context recording

Each context should be recorded on pro-forma records which should include the following minimum details: character; contextual relationships; detailed description (dimensions and shape; soil components, colour, texture and consistency); associated finds; interpretation and phasing as well as cross-references to the drawn, photographic and finds registers. Normally each context should be recorded on an individual record. Sections should be drawn through all significant cut features and levelled to ordnance datum. Trench sides should also be drawn in section where they contain significant information.

A black and white photographic record should be maintained including photos of all significant features and overall photos of each area or trench. Selected colour transparencies should also be taken.

## Artefact and Ecofact collection and recording

All stratified finds should be collected by context or, where appropriate, individually recorded in 3 dimensions. Unstratified finds should only be collected where they contribute significantly to the project objectives or are of particular intrinsic interest. Provision should be made for on-site conservation advice for the lifting and treatment of fragile objects. Finds of "treasure" must be reported to the Coroner in accordance with the Treasure Act procedures.

Collection policies for structural remains and industrial residues have been set out by the Society of Museum Archaeologists (SMA, 1993). The presence of such materials within a context should always be recorded and, where they are considered to be of importance, the evaluation strategy should aim to quantify their occurrence, even where comprehensive retention is not considered appropriate.

Waterlogged wood should be treated accordance with English Heritage guidelines (English Heritage, 1996) and left in-situ where this is practical and its long-term preservation is achievable.

Human remains should be left in-situ, covered and protected. Where excavation is necessary it can only take place under appropriate Home Office and environmental health regulations and, if appropriate, in compliance with the Disused Burial Grounds (Amendments) Act 1981. The only exception is where excavations are being undertaken in a churchyard under a faculty issued by the Chancellor of Oxford Diocese (in such cases the faculty requirements should be followed). In certain situations special arrangements may be required for the recovery of samples for DNA analysis.

An initial assessment of the site's palaeo-environmental potential should be made by the project manager in consultation with the County Archaeologist. Where a site may have significant potential it may be necessary to obtain specialist advice and undertake sampling in accordance with a programme agreed with English Heritage's Adviser in Archaeological Science. A contingency should be allowed for this.

## Reinstatement

Reinstatement of all trial trenches excavated during the archaeological evaluation should be carried out to the specifications required by the land owner or their representative.

## Post-Excavation Methodology

A report will be required for every field evaluation and should always contain the following elements:

- A non-technical summary
- The objectives of the project
- The circumstances and date at which it was undertaken
- The identity of the organisation and individuals carrying out the work (in particular the names of the project director, site supervisor and any specialists)
- A summary written account of the evaluation strategy and the results of the project with appropriate supporting illustrations.
- A site location plan at 1:2500 or 1:10000 as appropriate.
- A gazetteer, referenced summary, and location plan (at 1:2500 or 1:10 000) of all previously known and newly discovered sites within or adjacent to the evaluation site.
- A 1:2500 or 1:10,000 scale plan indicating areas surveyed by each method; present landuse; geology and topography.
- A conclusion, including a confidence rating and recommendations for further work
- An index to and the proposed location of the archive
- References
- A copy of the Activity and Source Submission Form (Appendix I) will be completed for each site investigated.

Reports on evaluations which identified significant archaeological remains should also include:

- Detailed description and plans (at appropriate scales) of any surveys or trial trenches which provided significant archaeological information.
- Finds quantification and assessment
- Environmental archaeology assessment
- A summary of the extent, depth and state of preservation of archaeological deposits across the site.
- Where more than one technique has been used, the report should integrate the results of the trenching with the previous survey work.

In addition:

- All plans should be clearly related to the national grid.
- All levels should be quoted relative to ordnance datum.
- *If a report includes assessments of archaeological importance or recommendations for further work these will be noted but will not be binding on the County Archaeologist.*

## Submission of the report

- **Two** copies of the final report should be supplied to the Staffordshire Historic Environment Record. A



digital copy of all text should also be supplied, preferably in Word format. A copy of any specialist papers relating to the project should also be supplied to the County Archaeologist.

- One copy of the report should also be supplied to the local planning authority.
- Reports submitted in support of planning applications are automatically considered to be public documents and will be made available for public consultation through the Historic Environment Record. Other reports will also be treated as a public document unless specifically identified as being confidential.

### Publication

The written report will become publicly accessible, as part of the Staffordshire Historic Environment Record, within six months of completion. The AFC shall also submit a short summary report for inclusion in the next edition of the journal *West Midlands Archaeology* within 6 months of the completion of the fieldwork. A publication grant should be provided to the publishers in accordance with their requirements.

### Archiving

The archaeological contractor should endeavour to ensure that the site archive (including any artefacts recovered) are deposited in an acceptable condition with museum which is registered with the Museums and Galleries Commission and approved for the storage of archaeological archives. The preferred archive for Staffordshire is the Potteries Museum, Stoke on Trent. The procedures and requirements which must be followed for the deposit of archaeological archives with the Potteries Museum and Art Gallery, Hanley, Stoke on Trent are available from the Museum. A storage grant should be provided to the museum in accordance with their requirements.

The archaeological contractor should arrange for the archive to be copied on microfiche to the standard required by the National Monuments Record. One copy should be deposited with the NMR and a second copy with the County Historic Environment Record.

### Monitoring

Monitoring is carried out by the County Archaeologist or their representative, normally acting on behalf of the local planning authority, to ensure that projects are being carried out in accordance with the brief and approved project design, to enable the need for modifications to the project to be independently considered and validated and to control and validate the use of available contingencies.

A programme of monitoring should be agreed with the County Archaeologist or their representative in advance of fieldwork. The archaeological contractor should keep the County Archaeologist or their representative regularly informed of the project's progress and facilitate the monitoring of the project at each stage, including post-excavation. In particular, there should be no substantial modification of the approved brief and project design without the prior consent of the County Archaeologist and no fieldwork should be carried out without the service's knowledge and approval - the service should always be afforded the opportunity to observe archaeological excavations.

All monitoring visits will be documented by the County Archaeologist or their representative and the archaeological contractor will be informed of any perceived deficiencies.

The County Archaeologist or their representative should be informed at the earliest opportunity of any unexpected discoveries, especially where there may be a need to vary the project design. The archaeological contractor should carry out such reasonable contingency works as requested by the County Archaeologist within the resources defined in the project design.

### Health and Safety

**Health and Safety must take priority over archaeological requirements.** It is essential that all projects are carried out in accordance with safe working practices and under a defined Health and Safety Policy. **Risk Assessments must be carried out for every field project.** If the risk assessment indicates it is necessary, the requirements of the brief can be varied in the interests of health and safety (the County Archaeologist must be consulted and the proposed changes agreed in such cases).



Appendix 1.  
Staffordshire County Council Sites and Monuments Record  
*Activity and Source Submission Form.*

Submission date -

**Site Activity or Event**

Name of **event** (eg. Watching Brief at The Blue Boar, Ipstones.)

Location of **event** (eg. The Blue Boar P.H. Overton Lane, Ipstones.)

NGR

Civil Parish

Brief Description of **event** (eg. Watching brief during cellar alterations and renovation, prior to conversion to residential use.)

"Activity Type(s)" (highlight as appropriate) *Air Photography / Evaluation-trial excavation / Field Walking / Measured survey-drawing / Geophysical survey / Archaeological excavation-full / Archaeological excavation-part / Field survey / Photogrammetric survey / Rectified photo survey / Photographic record / AP interpretation / Salvage-rescue excavation / Watching brief / Environmental sampling / Post-excavation analysis / Documentary research*  
Commencement date (eg. 01-May-1978)

Completion date (eg. 02-Sept-1983)

**Organisation or contractor details** (organisation name, address, telephone, e-mail etc.)

**Report Details**

Date

Type of document (highlight as appropriate) *Written / Photographic / Cartographic / Drawn*  
Title

Author(s)

Brief summary of contents

Brief description of document (eg. Written text with illustrations, bibliography and references. Appendices dealing with environmental sampling. 32 pages. *etc.*)

Cross references to Staffordshire SMR (if applicable please list Primary record numbers)

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## APPENDIX 2: PROJECT DESIGN

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# SALT WORKS LANE, WESTON, STAFFORDSHIRE

## Archaeological Evaluation Project Design



**Oxford Archaeology North**

**May 2007**

**WATERMAN CPM**

OA North ref: L9859

NGR: SJ 97640 26548

Planning Ref: 05/05368/OUT

## 1 INTRODUCTION

### 1.1 PROJECT BACKGROUND

- 1.1.1 Waterman CPM (hereafter the 'client') has requested that Oxford Archaeology North (OA North) submit proposals for an archaeological evaluation to be undertaken on land at Salt Works Lane, Weston, Stafford, (NGR SJ 97640 26548). The proposed redevelopment (planning reference 05/05368/OUT) would involve the demolition of the existing structures on the *c* 1.32 ha brownfield site, together with considerable disturbance of subsoil deposits during and in advance of construction. A desk-based assessment (Waterman CPM 2005) identified that the site lies within an area of some archaeological potential and, accordingly, the Staffordshire Council Archaeologist issued a brief, to which this project design adheres, for a programme of trial trenching investigating 2.5% of the proposed development area.
- 1.1.2 The roughly triangular proposed development site lies in the Trent Valley and is defined to the north by the twentieth-century urban expansion of Weston, to the west by the Trent and Mersey canal conservation area, and to the east by agricultural land. The presence of a north/south aligned arm of the canal, together with a similarly aligned access between the canal to the south and Salt Works Lane to the north, effectively divides the site into two distinct parcels. That to the north-west, until recently the site of a scaffolding works, appears to have been agricultural land until developed in the twentieth century. The parcel to the south-east is known to have been occupied by a nineteenth-century salt works, the southern part of which had been redeveloped as a manure works by the time of the survey for the 1890 Ordnance Survey map. A section of railway, linking the works to the Stafford to Uttoxeter railway that ran to the north of the site, is shown on the same map as defining the eastern boundary of the site.

## 2 OXFORD ARCHAEOLOGY

### 2.1 SUMMARY OF COMPANY HISTORY

2.1.1 Oxford Archaeology was constituted in July 1973 as the Oxfordshire Archaeological Unit, becoming Oxford Archaeological Unit (OAU) as an independent commercial contractor in March 1980 when Oxfordshire County Council withdrew its financial services and support. In November 2001 OAU merged with one of the largest and most highly respected archaeological businesses in the North of England, Lancaster University Archaeological Unit. This had been formed in 1979 as the Cumbria and Lancashire Archaeological Unit, to provide an archaeological service for these counties. In 1988 it changed its name to the Lancaster University Archaeological Unit, to reflect the widening scope of many of the rescue units, and became a regional leader in archaeological practice of all kinds, though with a growing specialism in buildings and industrial archaeology, as well as landscape survey, to complement its traditional excavation skills.

2.1.2 With two main regional offices, Oxford Archaeology (OA), as the business was renamed following the merger, is now the largest archaeological contractor in Britain employing over 250 staff, and provides a comprehensive professional archaeological service to anyone requiring assistance and advice in the study of the past and heritage resource management in both Britain and overseas.

### 2.2 SUMMARY OF RELEVANT COMPANY EXPERIENCE

2.2.1 The following represents a brief summary of the types of archaeological, conservation and heritage-related projects undertaken by OA. It is by no means exhaustive and further details of any of the services can be provided if necessary.

2.2.2 **Archaeological Field Evaluation:** OA has had long experience of dealing with large-scale developments such as major housing and commercial developments, large-scale infrastructure projects, and mineral extraction schemes, both within EA procedures and as planning proposals. OA has been among the pioneers of the recent trend towards assessments and evaluations of archaeological remains to assist more rational decisions to be taken about preservation, building design and excavation.

2.2.3 OA has carried out assessments, surveys and excavations in most counties across England, and are familiar with many museums and County Sites and Monuments records. OA provides a service of ensuring that project designs meet the requirements of the relevant County Archaeological Officer prior to work being carried out, and will make suitable arrangements, subject to landowners agreement, to deposit the archive and finds with the relevant museum at the earliest opportunity.

2.2.4 OA's field evaluations include surface collection, geophysical and earthwork surveys using computerised plotting of results from integrated databases. Excavation trenching is carried out efficiently with careful recording of all key information. OA's field evaluations are often integrated into Environmental Assessments or Planning Applications, and cover developments of all types and sizes, from small building extensions in sensitive areas to major extensive developments, especially mineral extraction schemes, in some cases covering tens, and in some cases over a hundred hectares, or for pipelines roads and railways, many kilometres long.

2.2.5 **Excavations and Research:** OA has wide experience of excavations and monitoring of a wide variety of infrastructure and development proposals. These include major road schemes such as 40 sites and a watching brief on the Swindon to Gloucester A417/A419 DBFO road scheme, and major pipelines for Thames Water.

2.2.6 Since its foundation OA has undertaken investigations and urban studies in many cities and towns in Britain and Ireland including projects in London, Birmingham, Belfast, Kilkenny, Cirencester, Dover, Exeter, Leicester, Reading, Southampton, Maidstone, Stafford, Swansea, Towcester, Worcester, Wolverhampton, Gloucester, Kings Lynn and Newport (Isle of Wight). In 2000 we undertook a review of urban archaeology for the Irish government, and followed this up with a revised strategy for evaluation techniques in urban settings. The acquisition of Oxford Archaeology North has further added to our urban experience, with our northern office having undertaken projects in *inter alia* Berwick, Blackburn, Carlisle, Chester, Cockermouth, Gateshead,



Kendal, Lancaster, Leeds, Liverpool, Manchester, Middlesbrough, Newcastle, Ormskirk, Penrith and Preston.

- 2.2.7 OA has a policy of ensuring that all its major projects reflect national and local research priorities. It has been in the forefront of some research including analysis of prehistoric, Roman and Saxon society, settlement pattern and economy, and of the archaeology of river floodplains and on early prehistoric ceremonial complexes. Current and recent major excavation and post-excavation projects include the Paradise Street Development Area centred on the Old Dock in Liverpool and Saxon and a large-scale excavation of Saxon and medieval deposits within the core urban centre of Winchester.
- 2.2.8 **Industrial Archaeology:** OA has also been heavily involved in developing policies for the conservation, reuse and interpretation of industrial landscapes of national importance at, for instance, the former iron works at Tonddu near Aberdare, and also the Newland, Backbarrow, and Maryport iron works all in Cumbria. It has also played an important role in the regeneration of the Woolwich Arsenal site in London, entailing the detailed excavation of the site and leading to imaginative interpretation schemes.
- 2.2.9 Following the merger with the former Lancaster University Archaeological Unit in 2001, OA has established itself as one of the country's leading practitioners in the field of industrial archaeology. It has wide-ranging experience of former industrial sites, most notably major conservation-led projects, funded by English Heritage, undertaken at the Pilkington's Sheet Glass Works in St Helens and the Derwentcote Steel Furnace in County Durham. OA North has a proven track record in the investigation of large and complex industrial sites and structures within the north of England, such as the on-going Murray's Mills Major Repairs Project in Manchester, Macintosh Mill, also in Manchester, and Calprina print and dye works in Stalybridge. The southern office has also undertaken work at a series of significant industrial sites, including Combe Down mines in Bath and the Historic Dockyard at Chatham
- 2.2.10 Building assessment and recording has always formed a substantial part of OA/OA North's work and industrial buildings have constituted a major part of the work carried out in this field. OA has extensive experience in the recording of industrial buildings by means of instrument survey techniques and, most recently, laser scanning, and also the recording of landscapes by means of aerial photography and GPS survey.

### 2.3 QUALITY ASSURANCE

- 2.3.1 OA is a Registered Archaeological Organisation with the **Institute of Field Archaeologists (no 17)**. OA is not at present ISO certified but operates an internal QA system governed by standards and guidelines outlined by English Heritage and the Institute of Field Archaeologists.
- 2.3.2 **Standards:** it is OA's stated policy to adhere to current professional standards set by IFA, English Heritage, Association of Local Government Archaeological Officers, Museums Organisations. OA helps the profession to develop and establish standards by serving on national working parties (eg recently on archives), and conforms with current legislation and national and local policy standards for archaeology health and safety and other relevant matters.
- 2.3.3 OA has established technical manuals, procedures and policies which control its work covering field recording, finds retention and discard, finds storage and handling, environmental sampling and processing, archiving and post-excavation. These have been developed to conform with best professional practice.
- 2.3.4 **Staff:** OA ensures that its staff are fairly recruited, fairly employed, and properly qualified for their work whether by formal qualification or by established and verifiable experience. OA have established terms and conditions of employment and a system of staff representation to ensure regular consultation on employment matters.
- 2.3.5 OA ensures that staff remain committed and enhance their abilities using annual staff appraisals, supporting formal and informal training and educational courses.
- 2.3.6 **Procurement of services and materials:** OA procures subcontracted work on the basis of value for money, considering quality, track record and service, as well as cost. OA regularly reviews quality of subcontracted work and uses tendering procedures for major sub-contracts.
- 2.3.7 Procurement of materials is on the basis of quality and availability, as well as cost, especially in respect of long-term storage of archives (OA adheres to archive quality photographic materials and processes, archive quality boxes etc).

- 2.3.8 **Working Practices:** management procedures ensure that all work conducted within the Company and all end product reports to clients are monitored and evaluated whilst they are in progress, during compilation, and after completion.
- 2.3.9 **Data Acquisition and Security:** for fieldwork projects OA always removes records and finds from site every day, and ensures equipment is secured.
- 2.3.10 **Experience:** OA North has considerable experience of sites of all periods, having undertaken a great number of small and large scale projects throughout Northern England during the past 27 years. Evaluations, assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

## 2.4 KEY STAGES IN QA PROCEDURES

2.4.1 The following procedures cover technical aspects of OA's work:

- critical review of previous work;
- analysis of how archaeological issues are dealt with in the brief, including consideration of uncertainty and risk, and consideration of whether different approach would be more cost-effective;
- development of method statements (Project Designs/Written Schemes of Investigations);
- detailed consideration and documentation of logistical aspects, including H + S procedures, plant logistics, staff logistics;
- compilation of Briefing Document for site director/supervisor to include all relevant background data and information, procedures, technical specifications and logistics;
- execution of field work guided by technical Manual, incorporating unique site codes and numbering systems;
- recording systems on *pro formas* cross-referenced and identified to individuals dealing with descriptions, finds, samples, drawings, photographs;
- finds system designed to track where objects are, and to establish museum destination and legal ownership of finds;
- PX Assessment procedures to establish exactly how much work needs to be done to achieve academic objectives within budget;
- no automatic writing of interminable PX reports: tasks and methods focussed on aims and objectives;
- constant review and monitoring to ensure objectives are being met, with the flexibility to reassign priorities in light of important discoveries;
- monitoring of progress of PX projects by members of staff not directly involved, as well as project manager.

## 2. OBJECTIVES

- 2.1 The following programme has been designed to identify and evaluate the nature, survival and extent of any archaeological deposits or features to be affected or impacted by the proposed flood alleviation scheme. More specifically, to determine the stratigraphic sequence and dating of deposits or features identified, and establish any ecofactual or environmental potential. The resultant information will enable an appropriate mitigation strategy to be proposed in line with the assessment of the impact of the proposed scheme. The information will be finally disseminated through the deposition of the archive at a local museum, and report at the Staffordshire Historic Environment Record (SHER), and possibly at publication level. The work will be carried out in line with current IFA guidelines and in line with the IFA Code of Conduct.
- 2.2 **Archaeological Trial Trenching:** a series of trenches should determine the quality, extent, nature, survival and significance of any archaeological deposits.
- 2.3 **Report:** the results of the fieldwork and any post-excavation assessment will culminate in a report to be submitted to the Client, firstly as a draft then, following incorporation of any corrections, as a final report submitted, as required, to the Client, County Archaeologist and Local Planning Authority.
- 2.4 **Archive:** a site archive will be produced to English Heritage guidelines (MAP 2 (1991)).

### 3 METHOD STATEMENT

#### 3.1 HEALTH AND SAFETY

- 3.1.1 **Risk assessment:** OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). OA North will liaise with the client to ensure all health and safety regulations are met. The outline risk assessment will be updated in advance of any on-site works, with continuous monitoring during the fieldwork.
- 3.1.2 **Services:** full regard will, of course, be given to all constraints (services etc) during the evaluation trenching as well as to all Health and Safety considerations. As a matter of course the Unit uses a Cable Avoidance Tool (CAT) prior to any excavation to test for services. However, this is not infallible and **it is assumed that the client will provide any available information held regarding services within the defined area** prior to the work commencing on site.
- 3.1.3 **Contamination:** any contamination issues must also be made known to OA North in order that adequate PPE can be supplied prior to commencement. Should any presently unknown contamination be discovered during excavation, it may be necessary to halt the works and reassess the risk assessment. Any areas of contamination found during the fieldwork programme will be marked on a plan for future reference, but would be avoided for the purposes of further investigation or recording. It may be necessary to backfill areas of high contamination. Any specialist safety requirements may be costed as a variation.
- 3.1.4 **Fencing requirements:** it is assumed that the fieldwork will take place within a secure compound free from the risk of public ingress and with adequate and appropriate signage. It would be preferable that, unless significant archaeological deposits are uncovered, the trenches could be backfilled as soon as they have been archaeologically recorded for reasons of public health and safety.

#### 3.2 TRIAL TRENCHING

- 3.2.1 **Introduction:** the programme of archaeological evaluation will involve trial trenching to determine the presence or absence of any previously unsuspected archaeological deposits and, if established, will then aim to mitigate the impact of the proposed scheme. The proposed trench configuration (all trenches 2m wide) is as follows (Fig 1):

Trench	Site Area	Location	Length	Orientation	Target
1	North-west	SJ 97532 26681 - 97582 26675	50m	East/west	Any unsuspected pre-twentieth-century remains
2	North-west	SJ 97583 26653 - 97568 26606	50m	North-north-east/south-south-west	Any unsuspected pre-twentieth-century remains
3	South-east	SJ 97671 26746 - 97699 26634	30m	West-north-west/east-south-east	Two out buildings and northern part of salt works complex
4	South-east	SJ 97684 26631 - 97717 26618	30m	North-east/south-west	Transect across main saltworks complex and railway line at north-eastern end
5	South-east	SJ 97635 26575 - 97663 26565	30m	West-north-west/east-south-east	Transect across canal and out buildings at southern end of salt works complex
6	South-east	SJ 97639 26550 - 97673 26528	50m	West-north-west/east-south-east	Transect across out buildings and brine pit

7	South-east	SJ 97631 26492 - 97613 26468	30m	North-east/south-west	Transect through manure works
8	South-east	SJ 97599 26464 - 97623 26446	30m	North-west/south-east	Transect across southern part of manure works
9	South-east	SJ 97627 26513 - 97611 26487	30m	North-east/south-west	Transect across possible canal loading area

- 3.2.2 **Methodology:** all concrete will be broken-out using a 20-ton 360° mechanical excavator fitted with a pecker. Underlying made-ground, topsoil and disturbed subsoil horizons will be subject to careful mechanical excavation (with a toothless ditching bucket) down to the depth of the first significant archaeological deposits or natural subsoils, depending on whichever is encountered first. This will be carried out under constant archaeological supervision, by an member of OA North staff experienced in such work.
- 3.2.3 The uppermost archaeological/natural deposit/horizon will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions, and inspected for archaeological features. Thereafter, all excavation would proceed by hand in a stratigraphic manner.
- 3.2.4 The trenches will be excavated to a depth sufficient to achieve the objectives of the evaluation, but the maximum depth of unsupported trenches will be 1.2m (observing health and safety constraints). Any requirement from the Client or the County Archaeologist for excavation beyond this depth would need to establish whether trench sides were to be stepped, battered or supported, so that any specific methodological and risk issues can be addressed, and would need to be agreed as a costed variation.
- 3.2.5 **Trench location:** trenches will be located by use of either GPS equipment which is accurate to +/- 0.25m, or by total station to within an accuracy of 0.5m, and tied into the Ordnance Survey (OS) grid. Altitude information will be established with respect to OS Datum. The trench locations are based on site plans provided by the client containing OS information, allowing for existing buildings and for services shown on accompanying plans. However, since service location plans cannot always be completely accurate, some alteration to the shape and location of trenches might be required; no variation in their location will be made without prior approval of the client. Should any other obstacles on site prevent the exact trench positioning, the nearest available and suitable position will be adopted in consultation with the client.
- 3.2.6 **Feature/deposit excavation:** any investigation of intact archaeological deposits will be exclusively manual. Selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal. It is hoped that in terms of the vertical stratigraphy, maximum information retrieval will be achieved through the examination of sections of cut features. All excavation, whether by machine or by hand, will be undertaken with a view to avoiding damage to any archaeological features, which appear worthy of preservation *in situ*.
- 3.2.7 **Recording:** all information identified in the course of the site works will be recorded stratigraphically, using a system, adapted from that used by Centre for Archaeology Service of English Heritage.
- 3.2.8 A sufficient pictorial record will be undertaken (plans, sections and both monochrome photographs (prints and negatives) and colour transparencies) to identify and illustrate individual features, as well as maintaining a record of general working shots/progress using a digital camera. Photographs will include a scale and header board showing site code and context/feature number.
- 3.2.9 The stratigraphy of each trench will be recorded, regardless of the presence of any archaeological features or deposits. Primary records will be available for inspection at all times. Results of all

field investigations will be recorded on *pro-forma* context sheets. The site archive will include both a photographic record and accurate large scale plans and sections at an appropriate scale (1:50, 1:20 and 1:10). A complete post-excavation plan for each trench will be prepared, and will include co-ordinate data and spot heights.

- 3.2.10 All artefacts and ecofacts will be recorded using the same system, and finds and features will be located in 3D within the trenches. The location of any samples will be recorded as appropriate.
- 3.2.11 Levels will be recorded and reduced to their OD heights, with all benchmark and TBMs to be shown.
- 3.2.12 **Reinstatement:** it is understood that there will be no requirement for reinstatement of the ground beyond backfilling. As a health and safety precaution, all trenches will be backfilled immediately on completion of excavation and recording, unless there are significant deposits.
- 3.2.13 The excavated material will be stored alongside each trench, with topsoil and subsoil stored separately in order to avoid contamination for the purposes of backfilling. Any spoil from the excavation of features will be stored on the subsoil. The ground will be backfilled so that the topsoil is laid on the top, and the ground will be roughly graded with the machine. To facilitate their removal, concrete arisings will be stockpiled next to the backfilled trench, unless otherwise requested by the client. Should there be a requirement by the client other than that stated this will involve recosting or a variation.
- 3.2.14 **Contingency plan:** a contingency costing may also be employed for unseen delays caused by prolonged periods of bad weather, vandalism, discovery of unforeseen complex deposits and/or artefacts which require specialist removal, use of shoring to excavate important features close to the excavation sections etc. This would be in agreement with the client.
- 3.2.15 The evaluation will provide a predictive model of surviving archaeological remains detailing zones of relative importance against known development proposals. In this way, any mitigation requirements can be proposed, and a strategy provided.

### 3.3 GENERAL PROCEDURES

- 3.3.1 **Environmental Sampling:** environmental samples (bulk samples of 30 litres volume, to be sub-sampled at a later stage) will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches). Monolith samples will be collected from freshly exposed sections through all buried soils/old ground surfaces by trained staff. These will be returned to OA North's offices regularly for processing. Deposits of particular interest may incur additional sampling, on advice from the appropriate specialist. The location of all samples will be recorded on drawings and sections with heights OD etc.
- 3.3.2 Between 50%-100% of bulk samples shall be selected for processing, based on the advice from OA North's in-house environmental manager. However, the basis of the advice will be agreed with the client prior to processing commences, which will be included in the final report. An assessment of the environmental potential would include soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features. In addition, the samples would be assessed for plant macrofossils, insect, molluscs and pollen from waterlogged deposits.
- 3.3.3 In order to achieve the aims of the evaluation, it may be required to obtain dating evidence through radiocarbon dating, dendrochronological or other such techniques.
- 3.3.4 **Faunal remains:** if there is found to be the potential for discovery of bones of fish and small mammals a sieving programme will be carried out. These will be assessed as appropriate by OA North's specialist in faunal remains, and subject to the results, there may be a requirement for more detailed analysis.
- 3.3.5 **Human Remains:** any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. The client, curator and the local Coroner will be informed immediately. If removal is essential the exhumation of any funerary remains will require the provision of a Department of Constitutional Affairs (DCA) license, under section 25 of the Burial Act of 1857. An application will be made by OA North for the study area on discovery of any such remains and the removal



will be carried out with due care and sensitivity under the environmental health regulations. Any delays caused by unforeseen and complex excavation of inhumations may be subject to a variation to the cost of the contract and will be agreed with the client.

- 3.3.6 **Finds:** all finds recovered during the evaluation investigation (metal detecting and trial trenching) will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines.
- 3.3.7 Finds recovery and sampling programmes will be in accordance with best practice (current IFA guidelines) and subject to expert advice. OA has close contact with Ancient Monuments Laboratory staff at the Universities of Durham and York and, in addition, employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham, or else through an external specialist Alison Walster of Aardvark Conservation Services.
- 3.3.8 Neither unstratified artefacts nor ecofacts will be collected systematically during the mechanical excavation of the topsoil unless significant deposits, for example clay pipe waster dumps, are encountered. In such an eventuality, material will be sampled in such a manner as to provide data to enhance present knowledge of the production and dating of such artefacts, although any ensuing studies will not be regarded as a major element in any post-excavation analysis of the site. Other finds recovered during the removal of overburden will be retained only if of significance to the dating and/or interpretation of the site. It is not anticipated that ecofacts (eg unmodified animal bone) will be collected during this procedure.
- 3.3.9 Otherwise, artefacts and ecofacts will be collected and handled as per specification. All material will be collected and identified by stratigraphic unit during the evaluation trenching process. Hand collection by stratigraphic unit will be the principal method of collection, but targeted on-site sieving could serve as a check on recovery levels. Objects deemed to be of potential significance to the understanding, interpretation and dating of individual features, or of the site as a whole, will be recorded as individual items, and their location plotted in 3-D. This may include, for instance, material recovered from datable medieval pit groups.
- 3.3.10 Finds will be processed and administered at regular intervals (on a daily basis) and removed from the site. All finds will be treated in accordance with OA standard practice, which is cognisant of IFA and UKIC Guidelines. In general this will mean that (where appropriate or safe to do so) finds are washed, dried, marked, bagged and packed in stable conditions; no attempt at conservation will be made unless special circumstances require prompt action. In such case guidance will be sought from OA North's consultant conservator.
- 3.3.11 All waterlogged finds will be treated as appropriate. In the case of large deposits of waterlogged environmental material (eg unmodified wood), advice will be sought with the OA North consultant with regard to an appropriate sampling strategy.
- 3.3.12 Where possible, spot dates will be obtained on pottery and other finds recovered from the site. Artefacts will be examined and commented upon by OA North in-house specialists. Initial artefact dating shall be integrated into the site matrix.
- 3.3.13 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

#### 3.4 REPORT

- 3.4.1 **Final Report:** following the completion of the fieldwork a draft report will be submitted as soon as possible to the client for approval; an interim statement of the results and their significance can be issued within a week of the completion of the fieldwork. A copy of the draft report should be returned to OA North with comments, and any amendments will be rectified within five days. The finalised report will include six bound copies, one unbound copy, and a digital copy.

- 3.4.2 **Confidentiality:** all internal reports to the client are designed as documents for the specific use of the Client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.
- 3.5 **ARCHIVE**
- 3.5.1 **Museum contact:** before commencement of the fieldwork, the relevant museum will be contacted to inform them of the intended work and obtain agreement for the acceptance of the archive. This will also allow for the identification of the museum's policies and requirements.
- 3.5.2 **Content:** the results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, Appendix 3, 2nd edition, 1991). The archive will contain site matrices, and summary reports of the artefact record, context records, and any other records or materials recovered.
- 3.5.3 All primary field records need to be copied in digital, fiche or microfiche to create security copies.
- 3.5.4 This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the SHER (the index to the archive and a copy of the report). OA North will deposit the original record archive of projects (paper, magnetic and plastic media), and a full copy of the record archive (microform or microfiche), together with the material archive (artefacts, ecofacts, and samples) with the appropriate museum.
- 3.5.5 **Publication:** the results may warrant publication of a summary report in an appropriate academic journal. Such a proposal will be included in the evaluation report but will not be completed until instruction from the client.

#### 4 OTHER MATTERS

- 4.1 **Project Monitoring:** whilst the work is undertaken for the client, monitoring will also be undertaken by the County Curator. Although notification is required two weeks prior to commence of the fieldwork, the client requests that site work begins within seven days of commission. Therefore, as much notice as possible will be provided to the curator.
- 4.2 Monitoring visits will be allowed to the client or representatives, including the curator, who will be afforded access to the on site records.
- 4.3 **Access:** site access for all elements of the fieldwork will be arranged by the client for OA North. However, following receipt of information from the client, the relevant landowners will be contacted the day before OA North enters their land. It is understood that there will be access for both pedestrian and plant traffic to the site via the approved access routes. This will allow any arrangements to be made regarding access routes, should an approved route not be in place.
- 4.4 **Site Welfare Facilities:** health and safety regulations require access to adequate handwashing facilities to be provided for the duration of the fieldwork, and it is understood that these will be provided by the Client.

## 5 WORK TIMETABLE

- 5.1 **Archaeological Trial Trenching:** this element is expected to take approximately ten days.
- 5.2 **Report:** the draft client report will be completed within approximately four weeks following completion of the fieldwork, subject to any outstanding specialist reports.
- 5.3 **Archive:** the archive will be deposited within six months.

## 6 STAFFING

### 6.1 THE PROJECT TEAM

- 6.1.1 The project will be under the direct management of Stephen Rowland (OA North Senior Project Manager) to whom all correspondence should be addressed. He will provide strategic project management, financial and resource management, with the aid of OA North's Operations Manager Alan Lupton, and will co-ordinate the provision of specialist input, liaising externally with sub-contractors and internally with OA staff and managers.
- 6.1.2 It will be the SPM's responsibility to manage the project from design and delivery of the fieldwork component through to report production. The OA North Director, Rachel Newman, will provide an academic overview.
- 6.1.3 Day to day fieldwork will be managed on-site by a Senior Project Officer, Richard Lee. He will be responsible for all aspects of staff and resource logistics, ensuring the smooth running of the project programme. He will liaise with the Client with regard to progress on individual sites and will maintain relationships with other contractors, etc. In addition, he will act as the nominated Site Safety Representative during the course of the fieldwork.
- 6.1.4 The site teams will be supported by specialist staff based both on site and at offices in Oxford and Lancaster. Finds management will be undertaken by Christine Howard-Davis who will also provide specialist input on certain finds categories. The Finds team includes specialists from OA (both Oxford and Lancaster based) and externals (see below). A supervisor will co-ordinate on-site and off-site finds processing, finds data entry and data feedback to the site teams. Any necessary advice on finds conservation will be sought from Alison Walster.
- 6.1.5 Environmental management will be undertaken by Elizabeth Huckerby, who will also provide specialist input on charred remains and pollen. Elizabeth will advise on site sampling procedures and co-ordinate the processing of samples and organise internal and external specialist input as required.
- 6.1.6 IT support will be supplied by OA North's IT co-ordinator Jo Cook. Once the site archive has been prepared by the relevant field staff, any further requirement for long term storage and/or deposition will be undertaken by OA North's in house archives co-ordinator, Joanne Levey.

## BIBLIOGRAPHY

English Heritage, 1991 *The Management of Archaeological Projects*, 2nd edn, London

Institute of Field Archaeologists (IFA), 1992 *Guidelines for data collection and compilation*

SCAUM (Standing Conference of Archaeological Unit Managers), 1997 *Health and Safety Manual*, Poole

United Kingdom Institute for Conservation (UKIC), 1990 *Guidelines for the preparation of archives for long-term storage*

United Kingdom Institute for Conservation (UKIC), 1998 *First Aid for Finds* London

## APPENDIX 3: CONTEXT REGISTER

Context No	Trench No.	Description	Depth
101	4	Concrete	0.24m
102	4	Gravel surface	0.23m
103	4	Top soil	
104	4	Made ground (red)	
105	4	Made ground (black)	
106	4	Sandy layer	
107	4	Western wall	
108	4	Central brick wall	
109	4	Eastern wall	
110	4	Sandstone	
111	4	Cut for 110	
112	5	Fill of 111	
113	5	North/south wall with drainage pipe	
114	5	Fill of drainage pipe 113	0.10m
115	5	Central brick wall	0.12m
116	5	Concrete surface	
117	5	Rectangular brick wall	
118	5	Fill of 117	0.24m
119	5	East/west brick wall	
120	5	Western wall	0.40m
121	5	Alluvial deposit/canal fill	
122	5	Canal fill	
123	5	East wall of canal	Width: 0.50m

124	5	Modern Drain	
125	9	North south wall	
126	9	Mineralogical deposit	0.15 - 0.35m
127	9	Made ground	
128	9	Rubble	
129	9	Rubble	
130	7	Red brick floor	
131	7	Grey brick wall	
132	7	East west grey brick wall	
133	7	East west red brick wall	
134	7	Made ground	0.40-0.60m
135	7	Concrete surface	
136	7	Yellow brick wall	
137	7	Layer of soil	
138	7	Concrete surface	
139	7	Grey brick wall	
140	7	East west wall	
141	7	Sandstone block	
142	7	Concrete conglomerate	
143	0	Void	
144	7	Concrete conglomerate	
145	7	Red brick concentration	
146	7	Rectangular brick feature	
147	7	Grey brick conglomerate	
148	7	Rectangular brick feature	
149	7	Rectangular brick feature	
150	7	Rectangular brick feature	
151	7	Rectangular brick feature	

152	7	East west brick wall	
153	10	North south brick wall	
154	10	Made ground	0.40-0.60m
155	10	Rectangular brick feature	
156	10	North south brick wall	
157	10	East west brick wall	
158	1	Made ground	0.23m
159	1	Dark brown soil	0.16m
160	1	Alluvium	0.17m
161	2	Made ground	0.23m
162	2	Natural	0.36m
163	7	Made ground A	0.16m
164	7	Made ground B	0.32m
165	9	Black deposit	0.19m



## APPENDIX 4: FINDS CATALOGUE

Context	Material	Category	No frags	Description	Date
102	Ceramic	Vessel	1	Teacup. Blue and white under-glaze transfer-printed white earthenware.	Late nineteenth century or later
102	Glass	Window	1	Small fragment of colourless sheet.	Late nineteenth century or later
105	Ceramic	Building Material	9	Small and unabraded fragments.	Modern
105	Ceramic	Vessel	1	Very small abraded fragment.	Romano-British?
105	Ceramic	Vessel	1	Small fragment white-glazed earthenware	Late nineteenth century or later
107	Ceramic	Tobacco pipe	1	Small stem fragment.	Late nineteenth century or later
107	Glass	Vessel	1	Colourless machine-blown bottle.	Twentieth century
107	Ceramic	Vessel	2	Small fragments white-glazed earthenware	Late nineteenth century or later
110	Iron	Nail	1	Nail	Not closely dateable.
110	Iron	Object	1	Unidentifiable object in concretion including modern fuel-ash.	Not closely dateable.
110	Ceramic	Vessel	1	Pink and white under-glaze transfer-printed white earthenware.	Late nineteenth century or later
110	Ceramic	Vessel	1	Green and white under-glaze transfer-printed white earthenware.	Late nineteenth century or later
110	Ceramic	Vessel	1	Small fragment white-glazed earthenware	Late nineteenth century or later
110	Ceramic	Vessel	2	Unglazed terracotta garden ware	Late nineteenth century or later
110	Ceramic	Vessel	1	Small fragment late grey stoneware.	Late nineteenth century or later
110	Ceramic	Vessel	1	Abraded rim fragment. Ring-necked flagon in soft orange oxidised fabric. Probably Wilderspool.	Second century
113	Iron	Nail?	2	Small joining fragments of nail or wire	Not closely dateable.
113	Ceramic	Vessel	1	Blue and white under-glaze transfer-printed white earthenware.	Late nineteenth century or later
113	Ceramic	Vessel	1	Plate. Small fragment white-glazed earthenware	Late nineteenth century or later