

Ditherington Flax Mill, Shrewsbury, Shropshire

Archaeological Watching Brief



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## SUMMARY

Feilden Clegg Bradley Studios, acting on behalf of English Heritage, is developing proposals for a scheme of regeneration and development of the Ditherington Flax Mill in the Ditherington area of Shrewsbury (centred on NGR SJ 4989 1385). The former flax mill complex is of immense archaeological and historical significance, which is reflected in the designation of several components as Grade I, Grade II\* and Grade II listed buildings. However, the site has been in vacant possession since 1987, and has fallen into a state of dangerous neglect and decay; it is considered by English Heritage to be one of the most important buildings at risk of neglect and decay in the country.

As part of the regeneration and development process, Oxford Archaeology North (OA North) has been contracted to carry out numerous pieces of archaeological investigation required to inform the evolving design proposals. In January 2016, Oxford Archaeology North (OA North) were commissioned by Feilden Clegg Bradley Studios to monitor the excavation of thirteen geo-technical pits across the site. The bulk of the pits were located at the northern end of the site, with additional pits to the west within the railway triangle and a single pit towards the south-eastern corner of the site.

The pits revealed a picture of variable land use across the site with evidence for significant landscaping activity consistent with an industrial site with over 200 years of activity. Sub-surface structural evidence was confined to Test Pit 121, where the foundations of three brick walls can probably be identified as a part of the cow house or shed depicted on the plan of the site in 1855. Two trenches to the east identified the base of the canal, establishing its depth at between 1.4 and 1.7m, while the canal's western edging stones were identified adjacent to Pit 101. Natural subsoil was not obtained in the pits within the railway triangle but there was evidence for nineteenth and twentieth century dumping to significant depths.

Oxford Archaeology North (OA North) would like to thank Tim Greensmith, of Feilden Clegg Bradley Studios LLP, for commissioning and supporting the project on behalf of English Heritage. Thanks are also due to ESI Geotechnical for their co-operation during the fieldwork.

The excavation of the test pits was monitored by Andy Phelps, who also compiled the report. The illustrations were prepared by Mark Tidmarsh, and the report was edited by Alan Lupton, who was also responsible for project management.

## 1. INTRODUCTION

### 1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 Feilden Clegg Bradley Studios, acting on behalf of English Heritage, is developing proposals for a scheme of regeneration and development of a former industrial site in the Ditherington area of Shrewsbury, which was occupied from 1797 by the Ditherington Flax Mill. The flax mill complex is of immense archaeological and historical significance, which is reflected in the designation of several components as Grade I, Grade II\* and Grade II listed buildings. However, the site has been in vacant possession since 1987, and has fallen into a state of dangerous neglect and decay; it is considered by English Heritage to be one of the most important buildings at risk of neglect and decay in the country (English Heritage 2009, 39).
- 1.1.2 In March 2005, the site was purchased by English Heritage, using a grant provided by Advantage West Midland, with the intention of arresting the gradual decline of the buildings and securing the long-term future of this immensely important site. English Heritage has since appointed architects Feilden Clegg Bradley Studios to design a scheme for appropriate development and regeneration of the site, which is likely to include a mix of residential, business, community and heritage uses. As part of this process, Oxford Archaeology North (OA North) has been commissioned to carry out numerous pieces of archaeological investigation required to inform the evolving design proposals.
- 1.1.3 In January 2016, OA North monitored the mechanical excavation of thirteen geo-technical pits across the site. Whilst the principal rationale for the test pits was to furnish geo-technical data, all buried remains exposed in the test pits were subject to full archaeological recording. The majority of the pits were located to the north of the mill complex, with three pits sited within the former line of the canal and four more within the railway triangle to the west.

### **1.2** LOCATION AND GEOLOGY

- 1.2.1 The study area (centred on NGR SJ 4989 1385) is situated in Ditherington, in the northern part of Shrewsbury (Fig 1). The main site occupies a broadly level plot of land, lying at a height of approximately 60m above Ordnance Datum (aOD) and is bounded to the west by the railway line from Shrewsbury to Crewe, to the east by the A5191 (here named Spring Gardens), and to the north and south by areas of twentieth-century residential housing.
- 1.2.2 The solid geology of the area consists of Permian Rocks, sandstone and conglomerate. Overlying the solid geology, the drift geology is essentially glacial till, and comprises clay in the immediate vicinity of the former mill (BGS 2007).

## 2. HISTORICAL BACKGROUND

#### 2.1 INTRODUCTION

2.1.1 The following section presents a summary of the historical background of the site from its origins as the Ditherington Flax Mill and is intended as an overview only. For a fuller account the reader is directed to the recently published book by Giles and William (2015) or the conservation plan produced by Feilden Clegg Bradley (2004).

### 2.2 DITHERINGTON FLAX MILL

- 2.2.1 Production of linen in Britain took place on a small, subsistence-level, scale from the second half of the seventeenth century through to the last decade of the eighteenth century. Industrial-scale linen production then began, following the lead of the cotton-spinning industry, which had proved that large-scale production could be highly lucrative. Shrewsbury had traditionally been a finishing and commercial centre for the woollen cloth trade of mid-Wales until the late eighteenth century, when this trade was coming to a close. At this point textile manufacturing was becoming established in Shrewsbury, but it was not until the partnership of John Marshall and Thomas and Benjamin Benyon that the area became known for flax manufacture (MacLeod *et al* 1988, 1-4).
- 2.2.2 Initially, Marshall and the Benyons had a mill in Leeds, but it burnt down in 1796. Although the mill was rebuilt, the partners decided to build another mill in Shrewsbury and brought in Charles Bage to design it in 1797. Bage's design made Ditherington Mill the first wholly iron-framed building, and consequently the first of 'fireproof' construction. William Strutt of Belper (1756-1830), a friend of Bage's, had previously used iron columns in textile mill buildings. However, Bage advanced this by using iron cross beams, so that brick arches could be sprung from them, and hence removed the need for any structural timber (*op cit*, 5).
- 2.2.3 When it was first constructed, the mill was powered by a 20hp beam engine, supplied by Boulton and Watt (*op cit*, 10). Although all the processes involved in the production of flax were carried out initially in the main mill building, within 15 years other buildings had been added to the complex. By 1800, a second beam engine had been installed at the north end of the main mill building. This engine was a 40hp model and, in 1811, a 60hp was installed as a replacement for the original engine. The Cross Building, for hackling or flax dressing, was completed by 1803, and the flax warehouse by 1805. The first dye house was in operation by 1804, with the stove added to it by 1811. The warehouse, later known as the packing shop had been constructed by 1805.
- 2.2.4 In addition to the mill buildings, various housing for the workers was also constructed. A group of cluster houses was built between the Shrewsbury Canal and the turnpike road in the winter of 1796-7, and another group was

constructed subsequently (*op cit*, 11). By 1811, the Apprentice House had been constructed, with the objective of housing children recruited by various parishes to work in the mill and learn the trade. This Apprentice House appears to have replaced an earlier building, constructed near the mill by the architect John Simpson by 1800. A house for the factory clerk was also designed by Simpson and constructed at this time. The 1988 desk-based assessment of Ditherington Mill suggested that nos 56-59 St Michael's Street, to the south of the former mill, was the original Apprentice House, and no 55 the clerk's house (MacLeod *et al* 1988, 11).

- 2.2.5 On October 24th 1811, a devastating fire in the Cross Building caused the roof to collapse, although a fireproof staircase prevented the fire from spreading into the main mill (*op cit*, 11-3). A recently installed gas lighting system by Boulton and Watt was wrongly blamed for the fire. Unlike the main mill, the Cross Building was not of fireproof construction. A suspension bridge, which linked this building to the flax warehouse allowed some people to escape the burning building, although others died.
- 2.2.6 In 1819-20 a 56hp engine replaced the 40hp engine at the north end of the main mill, possibly in anticipation of the wet-spinning process, which was introduced to the mill during the 1820s. In 1837, a pumping machine for a well had been provided by Hick of Bolton, and new boilers and a chimney were added to the east of the main mill in 1840 and 1852-53. A new gas lighting system, with a retort house on the northern boundary of the site and a round gas holder was established in 1842. In the 1850s, the dye house was enlarged and, in 1875, both engines were replaced by a pair of Corliss engines by Hick of Bolton (*op cit*, 12-14).
- The mill produced various types of thread and yarn during the first half of the 2.2.7 nineteenth century, and employed some weavers to manufacture canvas, although this activity appears to have ceased in the 1820s. Ancillary to flax spinning, the mill complex housed an engineering shop for manufacturing fluted rollers and other machine parts by 1824, and a printing department, for producing the labels for the thread, was set up in the 1860s (op cit, 1 and 13). After his death in 1845, the descendants of John Marshall continued to run the mill successfully until the last quarter of the century, when the business began to decline. The 1870s saw the reduction of the range of processes carried out at Ditherington, and the size of the workforce declined as a result. Increasingly, flax was spun at the Leeds mill, and was then transported by rail to Ditherington to be processed into thread and finished by polishing and other processes. At its peak in the 1840s the mill employed around 800 people, but by the 1880s this figure had dropped to around 300 (op cit, 13-7). In 1885 the intended closure of the mill, still considered to be the largest firm of flax spinners in the country, was announced, and operations finally wound up in October 1886. It is thought that the mill then stood empty for a decade (op cit, 16).
- 2.2.8 After being vacant for ten years, the mill was purchased in 1896 by William Jones, who re-named it The Shropshire Maltings. Jones had established a malting business in Shrewsbury in 1869, and acquired several malting premises in the following years, earning himself a reputation for reorganising

malting for industrial-scale production. In 1897-8 the Ditherington Mill complex was adapted for malting, which included the addition of the malt kiln at the northern end of the main mill. The boilers at the eastern end of the site were removed at this time, and replaced with a single-storey lean-to, thus extending the surface area available for floor malting (*op cit*, 18).

2.2.9 Jones was declared bankrupt in 1933-4, at which point the site was taken over by the Allied Insurance Company. During the Second World War the buildings were used as barracks. Following this, new barley sweating, cleaning and storage machinery was installed at the maltings. New silos and stores were also constructed. In 1948 the maltings was taken over by the Birmingham Brewer Ansells, and in 1963 it became part of Allied Breweries Ltd. Minor alterations to the premises continued to be made into the 1970s, which included the demolition of the stables at the north end of the site and the packing shop at the south end. Finally, in 1979 the maltings at Ditherington were part of Albrew Malsters Ltd, which ran until 1987, when the Shrewsbury plant was closed (*ibid*).

## 3. METHODOLOGY

#### 3.1 INTRODUCTION

- 3.1.1 The watching brief was undertaken in January 2016, and comprised a programme of field observations that monitored the excavation of thirteen geo-technical pits across the site of the former Ditherington Mill. The pits were excavated between the 7th 8th of January, and used a JCB wheeled excavator, with each pit typically measuring 3m long, 0.6m wide and with a depth of between 0.95m to 3m. The location, extent, and character of all surviving archaeological features and deposits was recorded and, where practicable, exposed features were hand cleaned. The position of all trenches was determined by ESI Geotechnical, although where archaeological deposits were identified provision was made for their investigation within the confines of the trench.
- 3.1.2 All trench locations and ground level heights were recorded using hand-held GPS to an accuracy of between 3m and 5m, although where possible their positions were tied into existing structures. All information was recorded stratigraphically with accompanying documentation (plans, sections and both colour slide and black and white print photographs, both of individual contexts and overall site shots from standard view points). Photography was undertaken with a digital camera and where appropriate employed a scale bar. Photographic records were also maintained on special photographic *pro-forma* sheets.

### 3.2 FINDS

3.2.1 It was intended that finds' recovery and sampling programmes would be carried out in accordance with best practice (following current Institute for Archaeologist' guidelines), and subject to expert advice in order to minimise deterioration. However, no artefacts were recovered during the fieldwork.

### 3.3 ARCHIVE

- 3.3.1 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 Research Projects in the Historic Environment*, 2015). The archive will be deposited with the Shropshire Record Office on completion of the project. In addition, a copy of the report will be forwarded to the National Monuments Record (NMR).
- 3.3.2 The Arts and Humanities Data Service (AHDS) online database *Online Access* to index of Archaeological Investigations (OASIS) will be completed as part of the archiving phase of the project.

#### 4.1 INTRODUCTION

4.1.1 The objective of the watching brief was to identify, investigate and record any archaeological remains encountered during the excavation of geotechnical test pits across the area, and the following is a summary of the findings. In total 21 test pits were excavated across the site; however, in consultation with Historic England it was deemed unnecessary to monitor those eight trenches located to the east of the former line of the canal. The location of the remaining 13 test pits is shown on Figure 2.

#### 4.2 **RESULTS**

- 4.2.1 **Test Pit 101:** was located towards the southern end of the site, immediately to the west of a modern steel clad industrial building and to the east of the remains of the lean-to structure associated with the Main Flax Mill. It was aligned north/south, at a height of approximately 55m AOD. Its excavation revealed a homogenous deposit of loose modern graded sub-base stone, from the surface to a depth of 1.5m (Plate 1). The water table was encountered at 1.2m making further investigation unsafe due to collapsing sides.
- 4.2.2 Undisturbed natural geology was not encountered and no archaeological deposits were revealed.



Plate 1: West-facing section of Test Pit 101, 0.5m scale

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- 4.2.3 *Test Pit 102:* was positioned within an area of vegetation to the west of the concrete platform marking the former location of the demolished single-storey shed. It was aligned east/west, at a height of approximately 58m AOD. The pit was excavated to a depth of 2.3m, revealing a 2.10m thick mixture of dark black brown clay silt and ceramic demolition rubble to the base (Plate 2). A modern concrete slab was encountered at the eastern end 0.80m below the present ground level, although it was not possible to determine if it was *in situ* or part of the demolition deposit. The clay silt was sealed by a dark black brown organic topsoil 0.20m thick.
- 4.2.4 Undisturbed natural geology was not encountered and no archaeological deposits were revealed.



Plate 2: Southern-facing section of Test Pit 102, 0.5m scale

- 4.2.5 *Test Pit 104*: was located within an area of vegetation at the northern end of the site, to the north of the concrete slab marking the former location of the demolished single-storey shed. It was aligned north/south and lay at a height of approximately 58m AOD. It was excavated to a maximum depth of 1.60m revealing a deposit of mid yellow brown natural clay till 1.30m thick (Plate 3). This deposit was sealed by a layer of dark black brown organic topsoil 0.30m thick and identical to that noted within Test Pit 102.
- 4.2.6 No archaeological deposits were revealed.



Plate 3: East-facing section of Test Pit 104, 0.5m scale

4.2.7 **Test Pit 110:** was positioned within the centre of the former line of the canal, some 23m to the east of the Apprentice House. It was aligned north/south at a height of approximately 56m AOD and extended to a maximum depth of 2.30m. At the base of the pit a layer of clean yellow brown clay was recorded in excess of 0.90m thick and consistent with the local natural till (Plate 4). Above this deposit sat a layer of mixed organic black and grey fine clay silt 0.60m thick, which itself was sealed by 0.75m of compacted modern sub-base that formed the base of the present roadway above.



Plate 4: West-facing section of Test Pit 110, 0.5m scale

4.2.8 **Test Pit 111:** lay to the north of Test Pit 110 and was also located within the former line of the canal. It was aligned north/south at a height of 56m AOD and was excavated to a depth of 2.30m, revealing a clean mid yellow brown clay in excess of 0.50m thick consistent with the appearance of undisturbed natural till in the area (Plate 5). Overlying this deposit lay a dark black organic silt 0.40m thick, possibly forming as the result of organic material sitting within an anaerobic environment. This layer was sealed by a similar silt layer 0.70m thick but this material was mid grey in colour. The upper portions of the pit comprised 0.45m of dark brown clay silt with common inclusions of ceramic demolition rubble, beneath 0.15m of graded sub-base.



Plate 5: West-facing section of Test Pit 111, 0.5m scale

4.2.9 **Test Pit 114:** was located at the southern end of the railway triangle to the west of the mill complex. It was aligned east/west, sat at a height of approximately 51m AOD and was excavated to a maximum depth of 2.50m. An homogenous dump of dark black brown loam, at least 2.10m thick, extended to the base of the pit and included common ceramic and other waste material dating from between the late nineteenth to the late twentieth centuries (Plate 6). The water table was encountered 2.30m below the present ground surface, and the depth of undisturbed natural was not identified. A loose dark brown loamy topsoil 0.20m thick sealed the dump material.



Plate 6: North-facing section of Test Pit 114, 0.5m scale

4.2.10 *Test Pit 115:* was located near the centre of the railway triangle and was aligned north/south. It lay at a height of approximately 51m AOD and was excavated to a maximum depth of 1.6m. The water table was encountered just 1.30m beneath the present ground surface, preventing further excavation but the lower 0.85m of the pit comprised a loose dark brown loam with demolition rubble throughout consistent with that described within pit 114 (Plate 7). Above this deposit sat a layer of mid yellow brown clay 0.60m thick, which from its character was probably re-deposited natural till that had been mixed with demolition rubble. This layer was sealed by a deposit of mid grey brown loamy topsoil 0.15m thick.



Plate 7: West-facing section of Test Pit 115, 0.5m scale

- 4.2.11 *Test Pit 116:* sat within the railway triangle, between pits 114 and 115 and just to the north of the sewage pumping station at a height of approximately 51m AOD. The pit was excavated to a maximum depth of 2.50m below the present ground surface on an east/west alignment, with ground water encountered at 1.80m. The base of the pit comprised an homogenous dump of dark black brown loam, which extended to a depth of least 2.30m and included common ceramic and other waste material dating from between the late nineteenth to the late twentieth centuries (Plate 8). This deposit was sealed by a loose dark brown loamy topsoil 0.20m thick.
- 4.2.12 Undisturbed natural deposits were not encountered, although the last bucket excavated did include a small amount of water logged coarse mid brown sand, probably derived from an alluvial deposit.



Plate 8: North-facing section of Test Pit 116, 0.5m scale

- 4.2.13 *Test Pit 117:* was located at the northern end of the railway triangle at a height of approximately 51m AOD and was aligned north/south. The pit was excavated to a maximum depth of 1.50m with ground water encountered 1.20m below the present ground surface. The lower 1.35m of the pit was composed of loose dark brown loam, with fragments of demolition rubble throughout, consistent with that described with in pits 114-116 (Plate 9). This deposit was sealed by a deposit of mid grey brown loamy topsoil 0.15m thick.
- 4.2.14 Undisturbed natural deposits were not encountered and no archaeologically significant material was identified.



Plate 9: East-facing section of Test Pit 117, 0.5m scale

- 4.2.15 *Test Pit 118:* lay at the northern end of the site, just to the west of the concrete slab associated with the former single-storey shed building and in the area once occupied by the circular gas holder. It was aligned east/west, lay at a height of approximately 58m AOD and was excavated to a maximum depth of 3m. Ground water was encountered at a depth of 2m below the ground surface preventing further excavation; however, the lowest deposits comprised a mixture of dark brown clay silt, mid yellow brown clay and demolition rubble 2.30m thick (Plate 10). This deposit was sealed by a similar layer of mixed dark brown clay silt and demolition rubble 0.50m thick, which in turn lay beneath 0.20m of loose dark black brown organic clay silt topsoil.
- 4.2.16 Undisturbed natural deposits were not encountered and no archaeologically significant material was identified.



Plate 10: Test Pit 118, facing south-east, 0.5m scale

- 4.2.17 *Test Pit 119:* was located in the area to the east of the Apprentice House and west of the former line of the canal. It was aligned east/west, sat at a height of 57m AOD and was excavated to a maximum depth of 0.95m. At the base of the pit undisturbed natural clay till was recorded to a depth of in excess of 0.15m and was sealed by a layer of dark yellow brown clay silt 0.30m thick, which appeared to be a buried topsoil (Plate 11). Overlying this deposit lay 0.50m of loose fine blackish brown silt mixed with fragments of residual slag.
- 4.2.18 No significant archaeological deposits were encountered.



Plate 11: Test Pit 119, facing south, 0.5m scale

- 4.2.19 *Test Pit 120:* was located at the northern end of the site, to the west of the former line of the canal and near the boundary shared with the gardens of the housing estate to the north. It was aligned north/south, sat at a height of approximately 57m AOD and was excavated to a depth of 1.45m below the present ground surface. Natural clay till was recorded at 0.85m below ground level and was sealed by a dark blackish brown clay silt mixed with lenses of darker material indicative of dumping and levelling activity (Plate 12).
- 4.2.20 No archaeologically significant deposits were encountered.



Plate 12: Test Pit 120, facing south-east, 0.5m scale

- 4.2.21 *Test Pit 121:* was located near the northern boundary of the site, north-west of the Apprentice House and east of the concrete bulk storage platform associated with the demolished single-storey shed. It was aligned north/south, sat at a height of approximately 57m AOD and was excavated to a depth of 1.35m below the present ground surface. Undisturbed natural clay till was encountered 0.80m below the surface and was overlain by a mid-brown clay mixed with demolition rubble 0.50m thick.
- 4.2.22 A thin deposit of compacted rubble 0.10m thick, sealed this layer of demolition rubble and formed the foundation of a north/south aligned red brick wall of which only the lower two courses survived (Plate 13, Fig 3). The wall extended across the full length of the stripped area for a length of in excess of 3m, was two courses wide and constructed in un-frogged soft red brick 230mm long, 105mm wide and 73mm thick.
- 4.2.23 A second slightly wider but parallel brick wall foundation ran along the western edge of the stripped area, divided from the first by an area of dark brown silt and rubble. The two walls were connected by a single course of brickwork, which spanned the space between them at right angles towards the northern end of the stripped area. A third brick wall on an east/west alignment was exposed in the southern section, extending to a depth of 1m beneath the present ground surface (Plate 14). The eastern half of the stripped area, to the north of this wall had been finished with a firm lime or weak concrete floor surface. The walls and flooring had been covered with a thin deposit of mid brown silt and then partly overlain by a modern spoil heap to the north.



Plate 13: Test Pit 121, after cleaning of overlying surface deposit, 0.5m scale



Plate 14: Test Pit 121, after excavation, facing south-west, 0.5m scale

## 5. DISCUSSION

- 5.1 The Test Pits have revealed a picture of variable land use across the site with evidence for significant landscaping activity consistent with an industrial site with over 200 years of activity. Accordingly, the height at which undisturbed natural clay was encountered varied considerably but where identified it appears to have originally lay at between 56m and 57.7m AOD. Its height was not established within the railway triangle where considerable landscaping appears to have taken place in the later twentieth century.
- 5.2 The only sub surface structural evidence revealed were the three brick walls at the northern end of the site revealed in Test Pit 121 and these can probably be identified as a part of the cow house or shed depicted on the plan of the site in 1855. The presence of demolition material beneath these walls suggests that brick structures existed within this area of the site, which predate this map.
- 5.3 Test pit 101 failed to identify the base of the canal due to the height of the water table but the quantity of modern graded sub-base suggests this part of the canal may have been left open until the late twentieth century. The organic silt material identified within Test Pits 110 and 111 probably accumulated at the base of the canal after it had fallen out of use with the natural clay apparently proving suitable as an impermeable base. If this was the case, then we can establish a depth for the canal of between 1.40 and 1.70m. Notably, the coping stones of the western edge of the canal can still be seen above ground to the west of Test Pit 101 (Plate 15).
- 5.4 Pits 114-117 revealed significant quantities of dumped material dating from between the late nineteenth and late twentieth centuries. This land appears to be largely undeveloped on cartographic sources but an early twentieth century aerial photograph reveals what appear to be a series of linear trenches for which there is no obvious explanation. The character of these elongated trenches is consistent with that of retting pits, used in the production of flax, but their appearance at least 25 years after the flax works was converted to a Maltings makes this explanation unlikely. An alternative explanation might be some form of military training use involving the excavation of trenches.



Plate 15: Looking north along the length of the former location of the canal. Note the presence of the canal's original edging stones beside the western retaining wall

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#### FIGURES

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- Plate 14: Test Pit 121, after excavation, facing south-west, 0.5m scale
- Plate 15: Looking north along the length of the former location of the canal. Note the presence of the canal's original edging stones beside the western retaining wall

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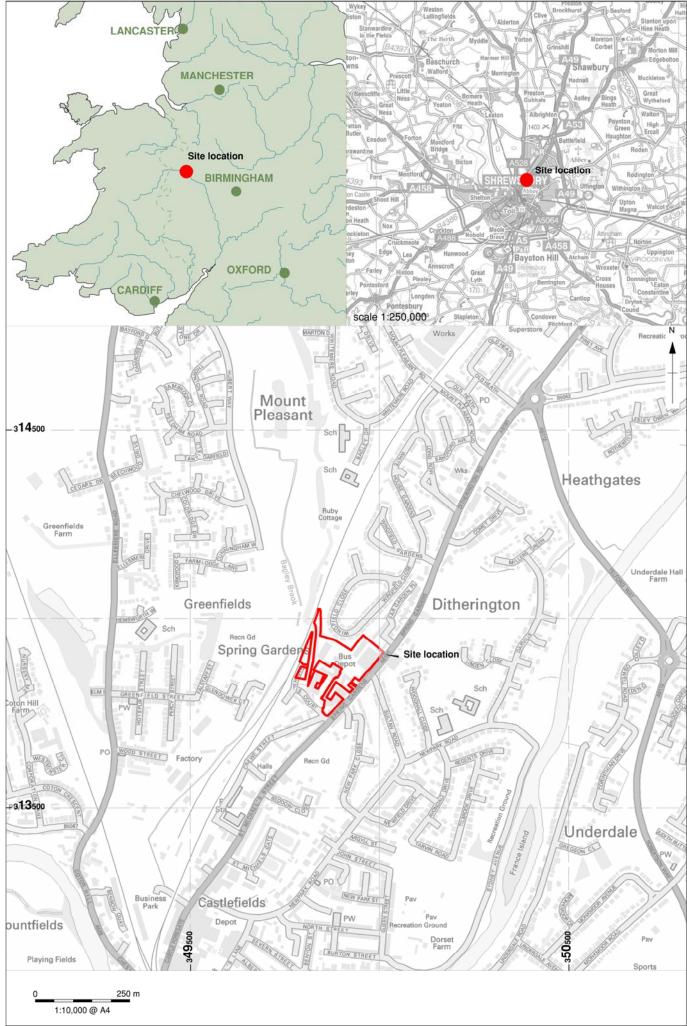
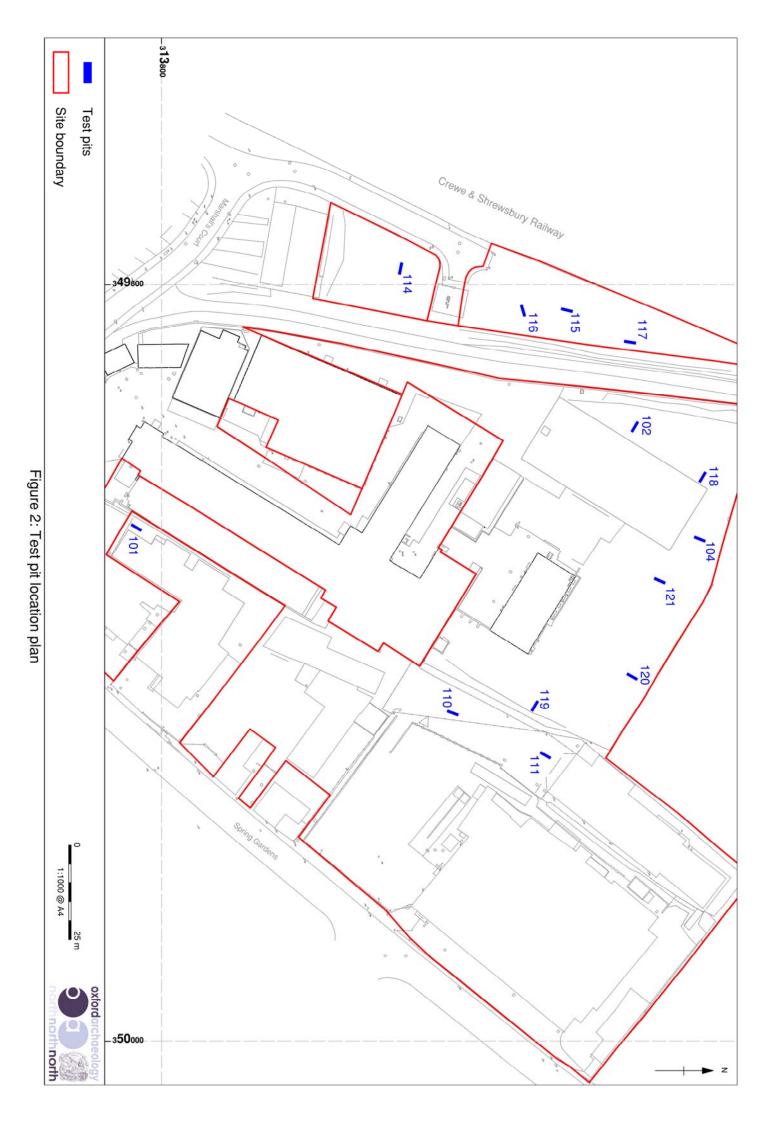


Figure 1: Site location



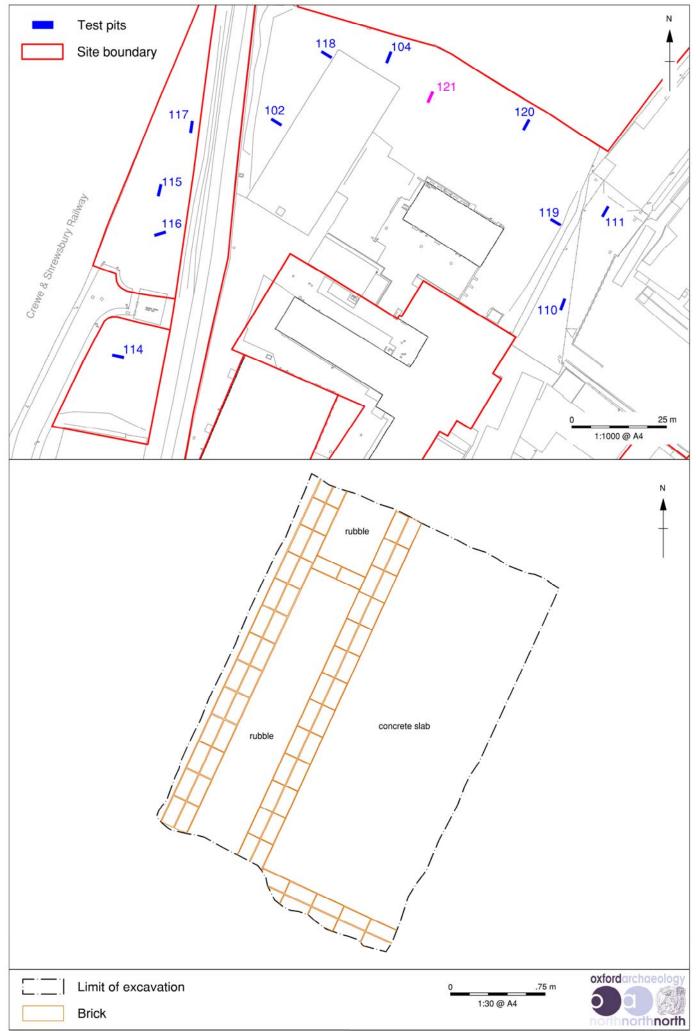


Figure 3: Plan of Test Pit 121



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