# BROMBOROUGH COURTHOUSE:

# Interim Excavation Report 2016

Spring 2016

Compiled by Dr J. Kirton ACIfA
Big Heritage C.I.C.
Riverside Innovation Centre
Castle Drive
Chester
CH1 1SL

info@bigheritage.co.uk

# Summary

**Project Name:** Bromborough Courthouse 2016

**Location:** Bromborough Pool, Wirral

**NGR:** SJ 34496 84189

**Type:** Evaluation

**Date:** March 2016

**Location of Archive:** Big Heritage Office

**Accession Number:** N/A

**Site Code:** BCH16

| | |
|---|---|
| Title: | Bromborough Courthouse: excavation report 2016 |
| Authors: | Joanne Kirton, Project Manager<br>joanne.kirton@bigheritage.co.uk |
| Derivation: | n/a |
| Origination Date: | 12.08.2016 |
| Reviser(s): | Dean Paton<br>Karen Gavin |
| Date of last revision: | 27.09.2016 |
| Version: | 1 |
| Status: | Completed |
| Circulation: | Public |
| Required actions: | Make Public |
| Filename and location | Bromborough Courthouse Excavation Report 2016.doc |
| Approval: | Approved |

# CONTENTS


1. INTRODUCTION ..... 5
2. SITE DESCRIPTON ..... 5
   2.1. Overview ..... 5
   2.2. Location ..... 6
   2.3. Geology ..... 6
3. BACKGROUND ..... 6
   3.1. Overview of the Documentary Evidence ..... 6
   3.2. Overview of Previous Archaeological Investigation ..... 7
   3.2.1. 2014 Resistivity Survey Summary ..... 8
   3.2.2. Topographic and LiDAR Assessment ..... 8
   3.2.3. 2014 Archaeological Evaluation Summary ..... 9
   3.2.4. 2016 Resistivity and Magnetometery Survey Summary ..... 10
4. ARCHAEOLOGICAL OBJECTIVES ..... 11
5. METHODOLOGY ..... 11
   5.1. Excavation Methods ..... 11
   5.2. Recording ..... 11
   5.3. On-site Finds Identification and Retention ..... 12
   5.4. Dissemination and Archival Strategy ..... 12
   5.5. Project Team ..... 12
6. RESULTS ..... 14
   6.1. Trenches 6-9 ..... 14
   *6.1.1. Trench 6 (Figures 13-16)* ..... 14
   *6.1.2. Trench 7 (Figures 13-16)* ..... 15
   *6.1.3. Trench 8 (Figures 18-19)* ..... 15
   *6.1.4. Trench 9 (Figures 21-25)* ..... 16
   6.1. Finds Overview ..... 18
   Pottery ..... 18
   Ceramic Roof Tile ..... 18
7. DISCUSSION ..... 19
8. CONCLUSION ..... 21
9. REFERENCES ..... 22
10. FIGURES ..... 22

APPENDICES ..... 40

11. APPENDIX A: context descriptions ..... 40
12. Appendix B: small finds catalogue ..... 42

13. APPENDIX C: finds reports ..... 43
14. APPENDIX D: trench location information ..... 50

# BROMBOROUGH COURTHOUSE EXCAVATION REPORT

## 1. INTRODUCTION

1.1. In March 2016 Big Heritage C.I.C. and community volunteers undertook four evaluation trenches within the interior of the site known as Bromborough Courthouse Moated Site and Fishponds, Wirral (centred on NGR: SJ 34496 84189). These trenches were sited in an area previously archaeologically unexplored by Big Heritage or previous schemes of investigation. The site is a scheduled monument (SMR 13428). Permission was granted by the land owners, the Land Trust, and Historic England to undertake excavation. Dr Joanne Kirton, on behalf of Big Heritage C.I.C., was granted Scheduled Monument Consent (Ref: S00131391). The excavation was monitored by Andrew Davison of Historic England.

1.2. This work was undertaken in partnership with the Land Trust to assess the potential for survival of archaeological remains in areas of the site not previously investigated and to determine the nature and date of any features or finds recovered. This information will be used to inform future management strategies for the site and potential archaeological research projects.

## 2. SITE DESCRIPTON

### 2.1. Overview

The site is primarily comprised of bank and ditch earthworks interpreted as part of a moated manor site (LEN: 1012503; UID: 13428). The bank and exterior ditches survive fully on the western side, partially to the north and south and are completely lost to the east. In addition there is also an interior and exterior pond network. The interior of the site is some 6000m² and runs approximately 94m E-W and 116m N-S (See Fig. 1). The site is currently heavily overgrown with access limited to those areas that have been cleared for work. The site is currently on the *Heritage at Risk Register* due to vandalism. However, since the commencement of this project the trend has changed from *declining* to *stable.*

## 2.2. Location

Bromborough Courthouse is situated on Wirral in the county of Merseyside. It is located 2km north of Bromborough Village and 1 km west of the Mersey Estuary. The area is flat and low-lying with access to the estuary to the north of the site. The surrounding area is now largely comprised of industrial buildings and hotels, a process that began in the nineteenth century. To the west of the site the A41, the main road on Wirral, runs north to south. The site of Bromborough Courthouse is adjacent to Bromborough Pool Conservation Area (www.wirral.gov.uk).

## 2.3. Geology

The underlying solid geology is Triassic Wilmslow Sandstone Formation and the overlying geology is Devensian Till, which is clayey with sand, gravel and pebbles (British Geological Society, Sheet E096, 1:50,000).

# 3. BACKGROUND

## 3.1. Overview of the Documentary Evidence

The site of Bromborough Courthouse was occupied from at least the seventeenth century when records demonstrate that a building was erected on the site, which stood until 1969 (Bromborough Society 2000, 47). The architectural features suggest it was constructed *c.*1680 in the Dutch style (Chitty *et al.* 1985, 8). In plan, the building was a long straight section with forward projecting wings at each end. It had three floors (Bromborough Society 2000, 48). First-hand accounts of the house's exterior and interior survive, detailing its layout, contents and decoration (Connah 1952, 10; Edwards 1995). The house and its grounds first appear on an Estate Map in *c.*1755. The original map has subsequently been lost but a photograph of the map still survives in the Cheshire Record Office and a tracing survives in the Merseyside Historic Environment Record (MHER) (See Fig. 2).

However, it has long been assumed that the site was the location for previous courthouses, noted in texts referring to Bromborough. Reference has commonly been made to King Edward I staying at Bromborough Courthouse in August 1277 (Bromborough Society 2000, 44). Whilst the Close Roll, Fine Roll and Patent Roll survive for that year, and note

Bromborough on the itinerary for the 12th and 13th of August, no reference to the courthouse or its surrounding land are made. The first specific reference to the courthouse is made seven years later in the *Annales Cestriensis,* which states how the building burnt down in 1284. 'Also the manor house of Bromborough in Wirral was accidentally burned down on May 5' (Chitty *et al.* 1985, 8; Bromborough Society 2000, 44). Unfortunately, no information is supplied about the location of this structure or its surrounding area. A second courthouse was reputedly built on the same site, which stood until the seventeenth century when it was demolished (Chitty *et al.* 1985, 8).

The lack of any description regarding the location of either the first or second structures, or a physical description of their appearance, means that there is no way of linking the area under investigation to the courthouse noted in these texts. That a courthouse existed prior to the structure built in the seventeenth century is not disputed, particularly as several references are made to the building throughout the medieval period in the Bromborough Parish Registers, Dean and Chapters Rentals and Hearth Tax Rolls. The problem lies in physically linking the earlier structures to the site currently called 'Bromborough Courthouse'.

## 3.2. Overview of Previous Archaeological Investigation

Limited archaeological investigation has been undertaken on the site prior to the scheme of investigation currently underway by Big Heritage (Connah 1955-6; Freke 1979; David and Mills 1981; Chitty 1985 and Bromborough Society 2000). No archaeological features were unearthed and no finds pre-dating the seventeenth century were recovered.

- Excavation in 1978 demonstrated that the moats ditch had either been cut or re-cut in the seventeenth century (Freke 1979, 47).
- The only anthropogenic activity to be noted within the interior was a burning horizon. However, no dating evidence was recovered from the context and its extent was not sought (Connah 1955-6).
- Topographic survey suggested that there was an elevated area within the interior but it was not possible to determine if this was natural or anthropogenic (Chitty 1985, 7-9).

- Resistivity survey was also undertaken as part of the same project. The technology was in its infancy but did suggest a concentration of weak low resistance anomalies within the interior towards the western ditch (David *et al.* 1981). Again, it was not possible to determine if this was natural or anthropogenic.

Based on the evidence set out above, Big Heritage C.I.C. determined to re-investigate the interior of the site using modern non-invasive techniques and small evaluation trenches.

### 3.2.1. 2014 Resistivity Survey Summary

In June 2014 Big Heritage C.I.C. were given access to the interior of the site when the heavy undergrowth had been partially cleared by the land owners. Resistivity survey was undertaken in two cleared areas (referred to as A and B) (See Fig. 3). For a full description of the methodology please refer to the resistivity report (Kirton 2014).

The resistivity survey within the interior of the moated site of Bromborough Courthouse demonstrated that the technique can be successfully used on this terrain. It proved the presence of both high and low resistance linear features in Area A, which provided clear targets for further work. Area B was harder to interpret due to the quantity of strong high and low resistance anomalies, but the uniformity of a group of these features suggested they are anthropogenic and would form a further target for future investigation. Significantly, the results from this area supported the suggestion of anthropogenic activity indicated in the 1979 report and implied that the disturbance was genuine and not the result of the methodology and/or the conditions of the survey. Without invasive investigation it was clear that it would be difficult to determine what the anomalies in Area B are, i.e. anthropogenic or geological, and it would be impossible to date the features across the site.

### 3.2.2. Topographic and LiDAR Assessment

Topographic and LiDAR analysis was also undertaken to negate the effect of the heavy overgrowth on the site and limited accessibility. The data analysis conducted largely corroborated the findings of the 1977-78 topographical survey (Chitty *et al.* 1985) and confirms the extant nature of features evident on 1st revision OS mapping, but undiscernible in the field. It did not provide substantive new information, but facilitated a rapid comparative

study with other known sites of a similar morphology and confirmation of the previous survey's conclusions (for the full discussion please see Duckers 2014).

### 3.2.3. 2014 Archaeological Evaluation Summary

In 2014 Big Heritage excavated five evaluation trenches based on the results of the resistivity survey undertaken in June 2014 (see above) (Fig. 4). It was established that resistivity survey had been successful in identifying anthropogenic activity within the interior of the site and that archaeology survived *in situ*. However, the presence of a perched-water table noted in trenches 2, 3, 4, and 5 at c. 50cm below ground-level has significantly affected the preservation of archaeological deposits. Trench 1 was not affected by the perched-water table, consequently archaeological deposits survive well (Fig. 5). This suggested that the level of preservation across the site must differ.

The five evaluation trenches indicated that activity on the site began in earnest during the seventeenth century based on the presence of substantial material culture, including pottery, glass and clay tobacco pipe. This is not unexpected as records demonstrate that the structure demolished in 1969, east of the current area of excavation, was constructed in the mid- to late-seventeenth century. The material culture assemblage is also comparable to material recovered from earlier archaeological investigations (e.g. Freke 1979). The range of material dating from the seventeenth to twenty-first centuries was all retrieved from the topsoil, subsoil or disturbed contexts and cannot be linked to specific features in the trenches.

A small number of earlier objects were located in comparable contexts. A few sherds of possible Roman material were identified but their level of preservation was so poor that a firm identification could not be made. One fragment of medieval pottery was also identified, however the presence of this material is limited and cannot be used to suggest Roman or medieval activity. However, the presence of three sherds of Ewloe-type Ware and two sherds of Cistercian-type Ware dating to the fifteenth – sixteenth centuries is indicative of potential activity on the site during this period. This small assemblage is the first evidence, albeit on a small-scale, for potential occupation at the site prior to the seventeenth century.

Whilst archaeological features and deposits survive in the study area, none were able to be dated prior to the seventeenth century. This may, in part, be due to the destructive nature of the perched-water table. Features excavated in Trenches 1 and 2 were dated to the eighteenth to twenty-first centuries (see Kirton 2015 for full discussion). In the remaining trenches, 3, 4 and 5, positive (sandstone linears) and negative features (possible ditches and pits/post-holes) were identified (Figs. 6-9 The lack of associated artefacts and the nature of the features (see Kirton 2015 for full discussion) indicate activity prior to the seventeenth century. However, the character and function of these features remains unclear, in-part, due to the size of the evaluation trenches and lack of associated material culture.

### 3.2.4. 2016 Resistivity and Magnetometery Survey Summary

In 2016 Magnitude Surveys was commissioned by Big Heritage C.I.C. to assess the archaeological landscape of a c. 1 ha area of land at Bromborough Courthouse. This area covered and exceeded the survey grids from the 2014 resistivity survey undertaken by Big Heritage in 2014.

A full coverage combined cart-based fluxgate gradiometer (Fig. 10) and earth resistance survey (Fig. 11) was successfully completed. Anomalies first identified in the Big Heritage survey of 2014 have been mapped and further defined. Magnitude Surveys' survey results have expanded on the previous geophysical work, contributing a number of new high and low resistance anomalies (Attwood 2016). Due to the limited extent and context of the survey area, a confident classification of anomaly origin is difficult without further supportive evidence. However, some of these anomalies are likely to be archaeological in origin (see Attwood 2016 for further details) but will require further archaeological excavation to determine their character, function and date.

# 4. ARCHAEOLOGICAL OBJECTIVES

Based on the results of resistivity survey, LiDAR analysis and previous archaeological investigation undertaken within the interior of the moated site at Bromborough Courthouse, Big Heritage proposed to excavate four 1x1m² evaluation trenches to a potential depth of 1.2m. These trenches were located in an area that had received no previous investigation, to explore the potential for survival of archaeological remains and to determine the nature and date of any features or finds recovered.

# 5. METHODOLOGY

The fieldwork comprised the excavation of four trenches all 1x1m², in the locations shown (see Fig. 12). Each trench was located within the agreed area designated by Scheduled Monument Consent parameters. The land owners also stipulated that we were to avoid any patches of bluebells and wild garlic.

## 5.1. Excavation Methods

- Trenches were sited based on the availability of space within the woodland undergrowth within the research area. Each trench was recorded using a Leica 406 Total Station, which was georeferenced with the OS National Grid (NGR).
- The trenches were excavated by hand under the supervision of archaeological staff and followed the CIFA Standard Guidance for Archaeological Excavation 3.3 (2014).
- Changes in contexts were recorded as they presented in the trench. This process was undertaken to a maximum depth of 1.2m.
- Deposits were assessed for their paleoenvironmental potential. No deposits were identified as requiring environmental sampling.

## 5.2. Recording

- Each context was recorded using pro-forma sheets (deposit/cut/masonry/group). The context sheets were supplemented by level recording, photographs, plans and section drawings.

## 5.3. On-site Finds Identification and Retention

All soil was screened for artefacts using sieves with a standard 6mm mesh, with the exception of very heavy clay soils, and all artefacts were retained during the excavation process.

- Any finds that were believed to be of particular importance were recorded individually with a unique 'small find' number and record.
- All artefacts excluding metal, slag, fabric and any other material deemed too delicate, were washed and dried in preparation for analysis.
- Artefacts were sorted into their material type i.e. ceramic, lithic, metal, plastic, glass etc. and grouped by context.
- Each material from each context was then counted, weighed and bagged with relevant information noted on the bag and a Tyvek label, which was inserted into the bag. This was repeated for each context from each trench.
- Artefacts were then recorded by material and context using Access Database.
- Each material type was then dispatched for specialist analysis where appropriate.

## 5.4. Dissemination and Archival Strategy

The archaeological records and finds have been retained by Big Heritage for analysis, reporting and archiving. Upon completion, the project will be signposted on the OASIS (Online Access to the Index of archaeological investigations) website, http://ads.ahds.ac.uk/project/oasis, the report submitted to the Merseyside Historic Environment Record [MHER] and digitally disseminated though the Archaeology Data Service [ADS]. A copy of this report will also be available through the Big Heritage website.

The archive was compiled following guidelines supplied by National Museums Liverpool (2014) and will be retained by Big Heritage on behalf of the Land Trust. The paper and physical archive will be deposited with National Museums Liverpool within five years of the project completion date.

## 5.5. Project Team

The fieldwork and post excavation processing was led by Big Heritage Project Manager, Joanne Kirton, supported by Karen Gavin. The report was written by Joanne Kirton and illustrations prepared by Joanne Kirton and Bryony Fisher. The finds reports have been written

by Paul Blinkhorn and Rose Broadley. The archive has been prepared by Joanne Kirton, Karen Gavin, Bryony Fisher and Sacha O'Conner.

# 6. RESULTS

This section provides an overview of the evaluation results with detailed summaries of the recorded contexts and finds.

## 6.1. Trenches 6-9

### *6.1.1. Trench 6 (Figures 13-16)*

Trench 6 measured 1x1m². It was sited in an area with a mixture of mature and young trees, with building debris, CBM and slate roof tile strewn across the surface, close to the sites perimeter fence (Fig. 12).

The natural light greyey-orange clay (604) was reached at a depth of 0.57m. This context was disturbed by linear cut [606], which ran on a NE-SW orientation through the trench at a depth of 0.12m. Its width and length are unknown as it was truncated by the south and west facing trench sections (Fig. 13). The fill (605) of the cut was comprised of irregular rounded sandstone fragments ranging in size (5-20cm), surrounded by a loose dark reddy-brown silty-sand matrix. On top of this a larger squared block covered the irregular shaped sandstone fragments (Figs. 13 and 14). The linear nature of the cut, plus the construction of the fill suggest that this feature is structural, possibly a foundation base for a wall.

Deposit (603) sat above both (604) and (605). It was largely comprised of fragments of slate roof tile and rounded stones with a friable light reddy-brown, sandy-silt matrix, measuring 0.14-0.16m in depth (Fig. 15). Mixed with this material were 18 sherds of glazed ceramic roof-tile, SF 603. This roof tile has been dated to the thirteenth to fifteenth centuries (Fig. 16). Blinkhorn (see below) has suggested that they belonged to a high status medieval building. Supporting evidence was also recovered from Trench 9 (see below). Context (603) would appear to be a spread of demolished or collapsed building material pertaining to a probable medieval building, indicating that it likely stood within close proximity of the trench.

Context (603) was sealed by (602), which was a loose, browny-grey, sandy-silt with sandstone fragments ranging from 1-10cm in size. This context also produced a smaller assemblage of medieval roof tile, SF 602. Context (602) appears to be the interface between

the demolition or collapsed layer of building material (603) and the subsequent soil accumulation that constitutes the woods current floor surface (601). A probable Cu coin of unknown date was also recovered from this context, SF 601. Context (602) was sealed by topsoil (601), which is a loose, black silt covered by decaying organic material typical of a wooded area. A limited material assemblage was recovered from (601) and (602), dating to the nineteenth to twenty-first centuries.

### *6.1.2. Trench 7 (Figures 13-16)*

Trench 7 measured 1x1m². It was sited in an area containing a mixture of mature and young trees, and an opening in the tree coverage overgrown with bramble and nettles (Fig. 12). The trench reached a final depth of 1.01m in the northern half. The trench was half-sectioned at 0.82m.

Context (703) was a sterile firm, mid greyey-orange clay, which appeared to be the natural, encountered at 0.63m. This was comparable to context (604) (Fig. 17). No features were encountered in this trench. The subsoil was a friable, light orangey-brown, silty-sand with small pebbles (0-12cm in size) with a depth of 0.46m, which sat directly on top of the natural. The topsoil was a friable, mid orangey-brown, sandy-silt mixed with small pebbles (0-12cm in size), which sealed the subsoil (702). At its deepest the context reached 0.22m depth. A limited material assemblage was recovered from (701) and (702), dating to the nineteenth to twenty-first centuries.

### *6.1.3. Trench 8 (Figures 18-19)*

Trench 8 measured 1x1m². It was sited in an area with a mixture of mature and young trees and an opening in the tree coverage overgrown with bramble, nettles and wild raspberry (Fig. 12). The trench reached a final depth of 1.2m.

The natural (804) was a firm, light greyey-orange clay, encountered at 0.7m depth. However, this dropped off sharply towards the eastern side of the trench and was not revealed before the maximum trench depth (1.2m) was reached. Based on the evidence from the rest of the site (Trenches 1-5 in 2014 and Trenches 6, 7 and 9 in 2016), the natural clay

ground surface is level. This suggests that the clay has been cut away in this area of the Trench 8 (Figs. 18 and 19). However, no clear cut was evident.

Context (803) sat above (804) and may be the primary fill of any potential cut into (804). It was a friable, light orangey-brown, silty-clay. At its deepest it reached 0.5m and at its shallowest it was only 0.1m. This difference in depth created a flat surface and indicates that this deposit was used to fill and then level the area. Context (802) was a friable, dark greyey-brown loamy soil, 0.22m – 0.35m in depth. Both (802) and (803) contained large amounts of CBM, lime mortar, plaster, slate, window glass and nails, all of which suggests that these two deposits relate to the demolition of a building. The material has been dated to the nineteenth century, suggesting a date for the buildings construction.

The topsoil was a soft, browny-black, clayey-silt mixed with pebbles of varying size (0-15cm), 0.38m in depth. The topsoil was covered by decaying organic material typical of a wooded area.

### *6.1.4. Trench 9 (Figures 21-25)*

Trench 9 measured 1x1m². It was sited in an area with a mixture of mature and young trees, close to the sites perimeter fence (Fig. 12). The trench reached a final depth of 1.08m.

The natural firm, light greyey-orange clay (906) was reached at a depth of 0.77m. This context was disturbed by two linear cuts. Cut [909] was exposed in the north west corner, mostly visible in the south facing section. It measured 0.48m (E-W) by 0.08m (N-S) in profile. However, the full extent was not exposed, as the cut was truncated by the south and east facing section sides (Fig. 20). Cut [909] was filled by (904). The fill was largely unexcavated, as most was only visible in the sections sides. A small 0.48(w)x0.08(l)x0.08(d)m was excavated and consisted of degraded browny-red sandstone fragments, similar to those unearthed in Trenches 3, 4 and 5 in 2014. The matrix was indistinguishable from (603) (see below). Further excavation is required to understand the character, function and date of this feature.

Cut [907] was far more distinct than cut [909]. It was not fully exposed as it was truncated by the east, west and north facing sections. It appeared linear in profile, running the full length of the trench (E-W) and was 0.31 to 0.37m in width, but was not fully exposed (Fig. 21). The

cut had a steep profile on its northern edge, reaching a depth of 0.35m. Excavation did not reach the full depth of the cut, as it continued into the north facing section. The uniformity of the cut, its shape and depth suggest that this feature was likely a ditch cut into the natural clay. Its purpose and date remains unclear, as its full extent is not visible and no associated material culture was recovered. Cut [907] was filled by (905). The fill comprised of clumps of firm, light yellowy-grey clay mixed with loose, mid orangey-red silt (Fig. 22). Notably the clay was a different hue and colour to the natural clay noted across the site. The shape of the clay deposit was very uneven and may suggest that material had been robbed from its surface. The fill contained 2 fragments of slate roof tile, which indicate a medieval date or later, based on the dating evidence from Trench 6 and 8. Further excavation is required to understand the character, function and date of this feature.

The natural clay (906), cuts [909] and [907] and their respective fills are covered by subsoil (903). This was a weakly cemented, mid greyey-brown, clayey-silt, whose plasticity increased as the depth increased. Inclusions consisted of small rounded stones (1-10cm in size) and occasional (less than 5%) irregular sandstone fragments (1-8cm in size). The subsoil is comparable to that noted in Trench 6 (603) and Trench 7 (702). Context (903) had a number of interesting finds including one sherd of Midlands Purple ware (fifteenth-seventeenth century) and SF 901, which is a post-medieval bale-tag (Fig. 23). One sherd of medieval roof-tile (thirteenth-fifteenth century) was also recovered from this context, SF 904. It is similar in date to the examples found in Trench 6 and likely belonged to the same high status roof. However, the material and glaze is a different colour and the profile is curved, indicating that this fragment is a ridge-tile that topped the roof (Fig. 24) (see Pottery Report for more information). Notably, a fragment of rendered surface, SF 902, possibly from a daub structure, was recovered from this context (Fig. 25). It is not intrinsically dateable, as structural clay and fired clay was used from the Neolithic through to the medieval period (Cynthia Poole pers. comm. 2016).

Context (902) was a loose, orangey-brown degraded ceramic material that looked like dumping (approx. 0.82x0.57m and 0.11x0.4m). The topsoil (901) sat above both (902) and (903). It was a loose, dark browny-black, loamy silt with charcoal (less than 5%) and angular stone (0-5cm) inclusions. The topsoil was covered by decaying organic material typical of a wooded area. Three sherds of medieval (thirteenth-fifteenth century) roof-tile were

recovered from this context, SF 903. These were comparable to the examples found in Trench 6. The close proximity of Trenches 6 and 9 suggests that both trenches are in the vicinity of the medieval building.

## 6.1. Finds Overview

In this section a brief summary of the information gained from specialist analysis of the sites material culture will be outlined. For the full reports please see Appendix C.

### 6.1.2. *Glass*

A total of 232 fragments of glass were found, weighing a total of 625 grams. 205 sherds were window glass. The remaining 27 sherds were vessel glass. The assemblage is entirely Post-Medieval, with the earliest glass probably dating to the mid-nineteenth century. The majority of the vessel glass comes from bottles of various kinds, although one sherd appears to be from a plate or dish.

There are no further recommendations for the assemblage.

### 6.1.3. *Pottery and Ceramic Roof Tile*

#### Pottery

The assemblage consists of 157 sherds weighing 1259 g. All the pottery from the trenches are post-medieval, with the bulk of it being modern. There is thus very little evidence for activity before the 19$^{th}$ century.

#### Ceramic Roof Tile

Test pits 6 and 9 produced a number of fragments of glazed roof tile which appear to be of medieval date. Context 602 produced eight fragments weighing 134g, context 603 produced 17 fragments weighing 510g, and context 901 produced three fragments weighing 49g. Most of the fragments have traces of very worn green glaze on the upper surface, but where it survives in good condition, it is a rich green colour with evidence of added copper. One sherd of a curved ridge-tile is a hard, reddish-orange sandy fabric with splashes of a worn orange-

brown glaze. The tiles date to the thirteenth to fifteenth centuries. This strongly that there was a medieval building in the immediate vicinity of these excavations, and that it was of higher than normal status. Certainly, if the pattern seen in the tile which occurred in these excavations is a reflection of the original roof, the bright green flat-tiles, capped off with brownish-red ridge tiles would have been extremely impressive.

## 7. DISCUSSION

The four evaluation trenches, located to the north of the demolished seventeenth courthouse, were sited to explore an area of the scheduled monument that has seen very little archaeological investigation. The most consistent factor across all four trenches was the lack of the perched water table noted in the 2014 trenches, which has impacted the preservation of the archaeological remains. Furthermore, the natural clay layer, subsoil and topsoil were consistent across all four trenches and married with that recorded in the 2014 trenches.

Trenches 7 and 8 provided no evidence for activity prior to the seventeenth century, based on the material culture assemblage. Trench 8 had clear disturbance of the natural but this appeared to be due to the construction of a nineteenth century building, which was later demolished. Both Trench 7 and 8, plus the topsoil and subsoil of trenches 6 and 9, contained material culture, including pottery, glass and CBM dating to the seventeenth century or later. This is not unexpected as records demonstrate that the courthouse structure demolished in 1969, south of the current area of excavation, was constructed in the mid- to late-seventeenth century. The material culture assemblage is also comparable to material recovered from earlier archaeological investigations (Freke 1979; Kirton 2015).

Trenches 6 and 9 provided new significant dating evidence for the site in the form of multiple fragments of thirteenth-fifteenth century flat and curved ceramic roof-tile. In Trench 6 this material was associated with a deposit consisting of probable rubble and slate roof-tile, indicating that the building must have stood in close proximity to the trench. In addition, both Trench 6 and Trench 9 had clear anthropogenic features. Trench 6 had a probable wall foundation running east to west and Trench 9 had a large, clearly defined cut, probably a

ditch, running east to west. Both features were cut into the natural clay but neither were associated with dating material. However, in Trench 6 the cut lay directly beneath the medieval roof deposit, indicating that a relationship between the two is possible.

In the south facing section of Trench 9 another probable cut [909] was identified. This was difficult to explore, as it was largely present in the section. The fill (904) was notable, as it appeared comparable to the fill evident in Trenches 3-5 in the 2014 excavations, which consisted of a degraded sandstone fill. This suggests that the features identified in 2014, dug into the natural clay surface, and filled with sandstone fragments and silt, may be of a comparable date and function to those excavated in 2016.

The small medieval ceramic assemblage, consisting of building material, possibly associated with negative and positive features, is the first structural evidence for occupation at the site during the thirteenth to fifteenth centuries. The quality of the material (see pottery report below) suggests that this building would have been high status. This would not be unexpected on the site, as it may be associated with, or be part of, the second medieval courthouse recorded in earlier texts (see above), but as yet not located. The discovery of this material is highly significant, as it indicates that the site was occupied from at least the fifteenth century, prior to the construction of the recorded seventeenth century courthouse.

# 8. CONCLUSION

The medieval material recovered from Trenches 6 and 9 strongly suggest the presence of a significant medieval structure on the site. The features recorded in both trenches may be associated with this period of the sites occupation. Whilst the date and function of the medieval roof-tiles and the associated deposit is clear, the date, function and character of the features stills remains a mystery.

To characterise these features and better understand the relationship between these and the seventeenth century courthouse, the features excavated in 2014, and the upstanding bank and ditch earthworks; further evaluation trenching is required across the study area. These should be sited based on the 2016 geophysical survey results and an appropriate sampling strategy, where geophysical survey cannot be undertaken. Trenches 6 and 9, plus Trenches 3 and 4 from the 2014 evaluation, should be extended in order to better understand their morphology, identify new phases and potentially recover associated dating material that will allow for a fuller interpretation of the site during the period of their construction and use.

# 9. REFERENCES


- Attwood, G. 2016. *Bromborough Courthouse, Merseyside: Geophysical Survey Report MSSJ22*, Bradford: Magnitude Survey
- British Geological Survey (accessed 07/07/2014) http://mapapps.bgs.ac.uk/geologyofbritain/home.html
- Bromborough Society. 2000. *Bromborough in Times Past, Millennium Edition*, Bromborough.
- Bromborough Court House Moated Site and Fishponds, List Entry Number: 1012503, (accessed 06/08/2014) www.heritagegateway.org.uk
- Chartered Institute for Archaeologists. 2014. *Standard and Guidance for Archaeological Excavation* (accessed 07/08/2015) http://www.archaeologists.net/sites/default/files/node-files/CIfAS&GExcavation_1.pdf
- Chitty, G. 1985. Report 2: Bromborough Court House: A survey of the Evidence. *Merseyside Archaeological Society*, Liverpool
- Connah, G. E. 1955-56. *Annual Report of the Bromborough Society*, Bromborough.
- David, A. and Mills, P. 1981. *Ancient Monuments Laboratory Report. Report on Resistivity Series*, Series Geophysics G 4/79 Bromborough
- Duckers, G. 2014. Topographical and LiDAR analysis of Bromborough Court House Wirral, unpublished
- Edwards, H. 1995. *Bromborough Court House: a personal recollection of the historic site and house, which stood in Pool Lane, Bromborough Pool*, Unpublished.
- Freke, D. 1979. Bromborough Court House Moated Site Excavations 1979. *Journal of Merseyside Archaeology Vol 2,* 47-52
- Kirton, J. 2014. Bromborough Courthouse: report on a resistivity survey (accessed 01/09/2016) OASIS ID: bigherit1-186802
- Kirton, J. 2015. Bromborough Courthouse: excavation report (accessed 01/09/2016) OASIS ID: bigherit1-218073
- Wirral Council website (accessed 07/07/2014) https://www.wirral.gov.uk/my-services/environment-and-planning/built-conservation/conservation-areas/bromborough-pool

# 10. FIGURES

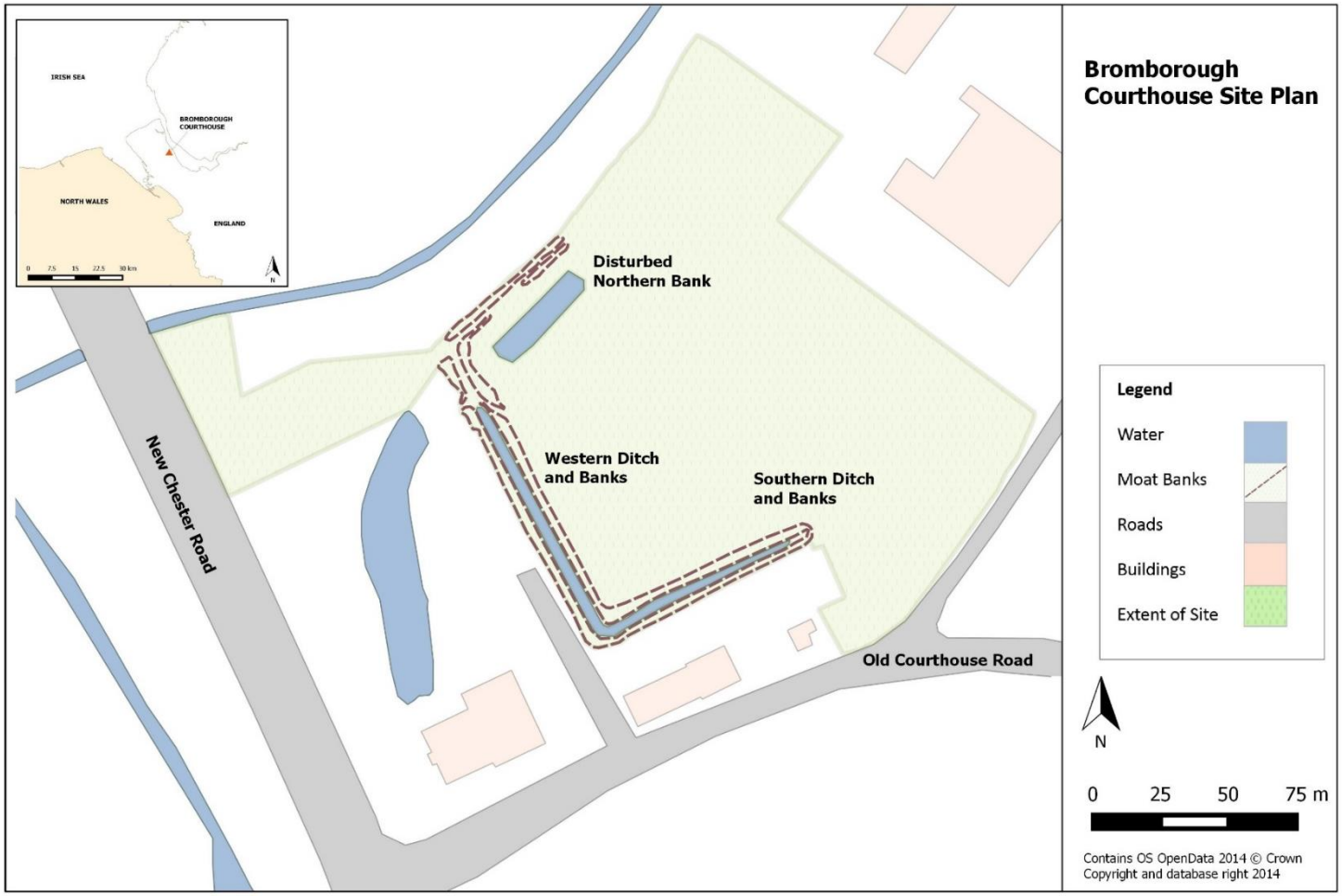



*Figure 1: Bromborough Courthouse Site Location*

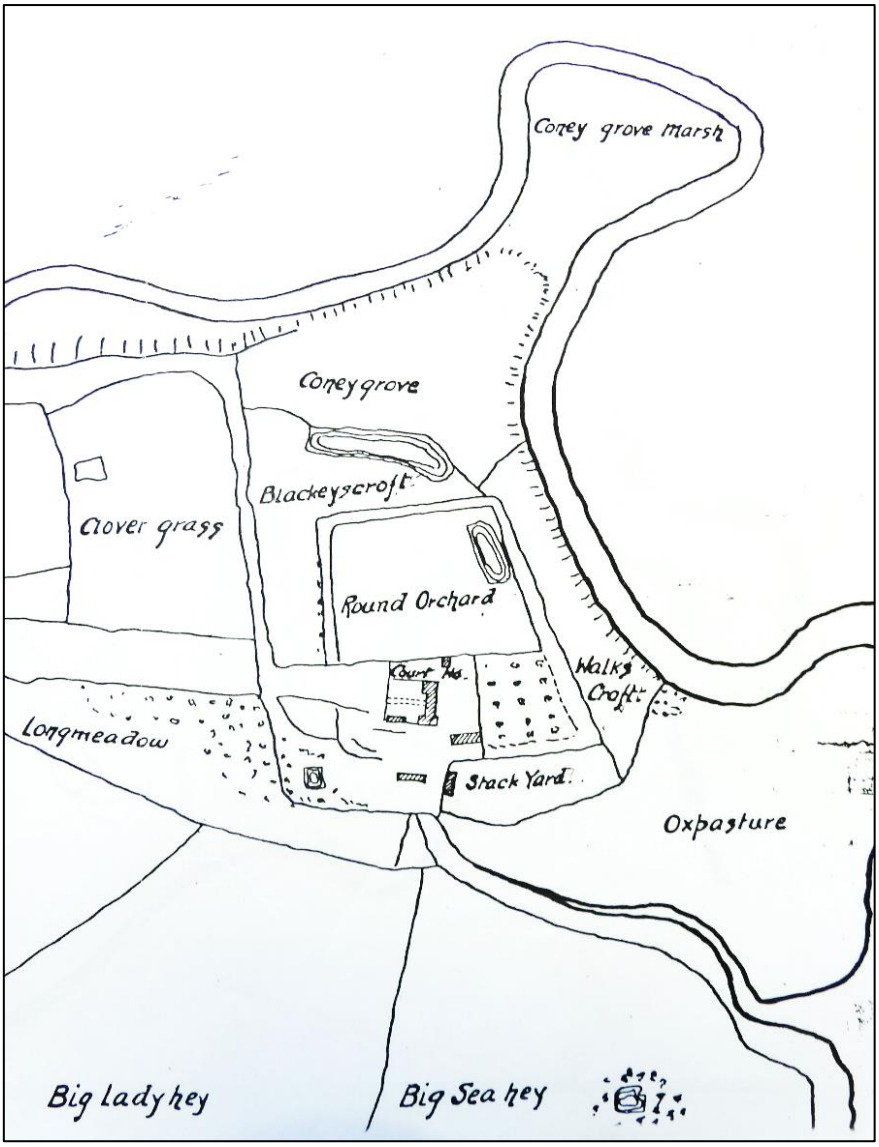



*Figure 2: Tracing of the c. 1755 Estate Map (MHER)*

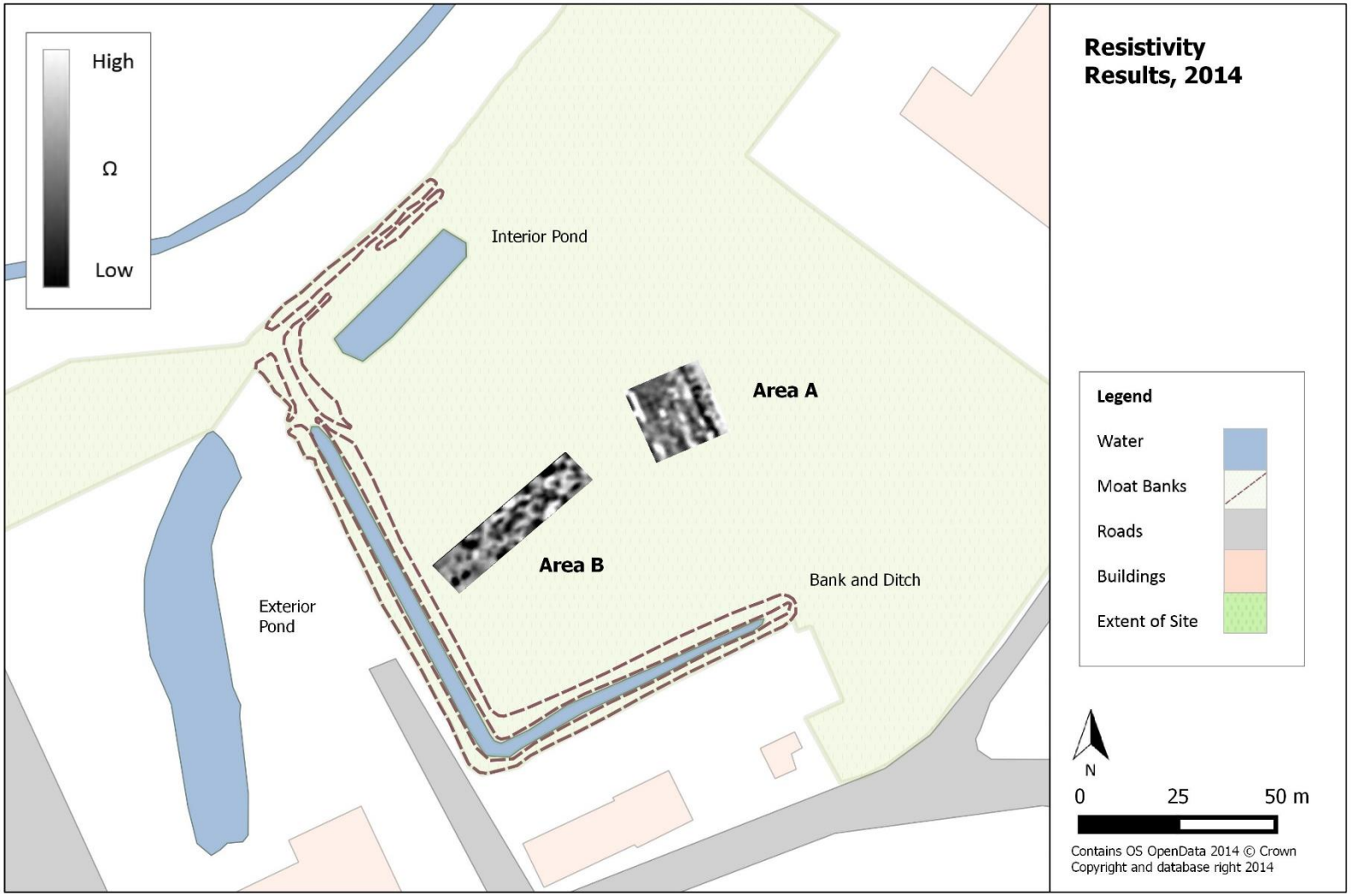



*Figure 3: 2014 Resistivity Results*

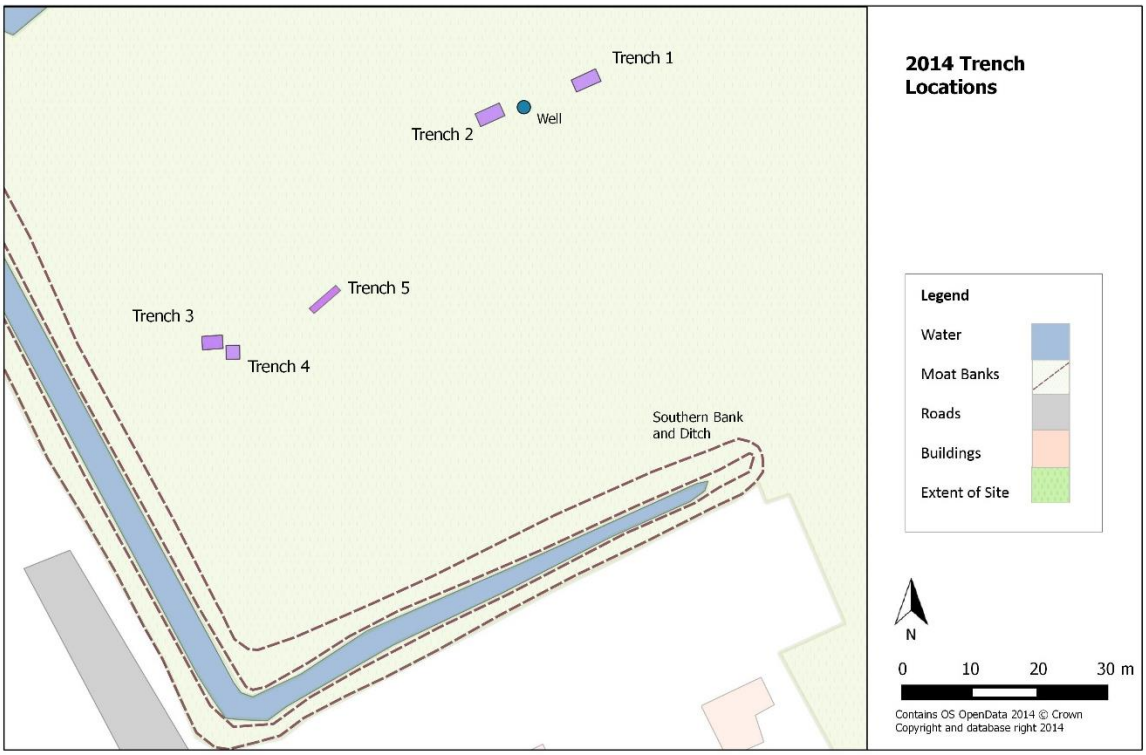



*Figure 4: 2014 Trench Locations*

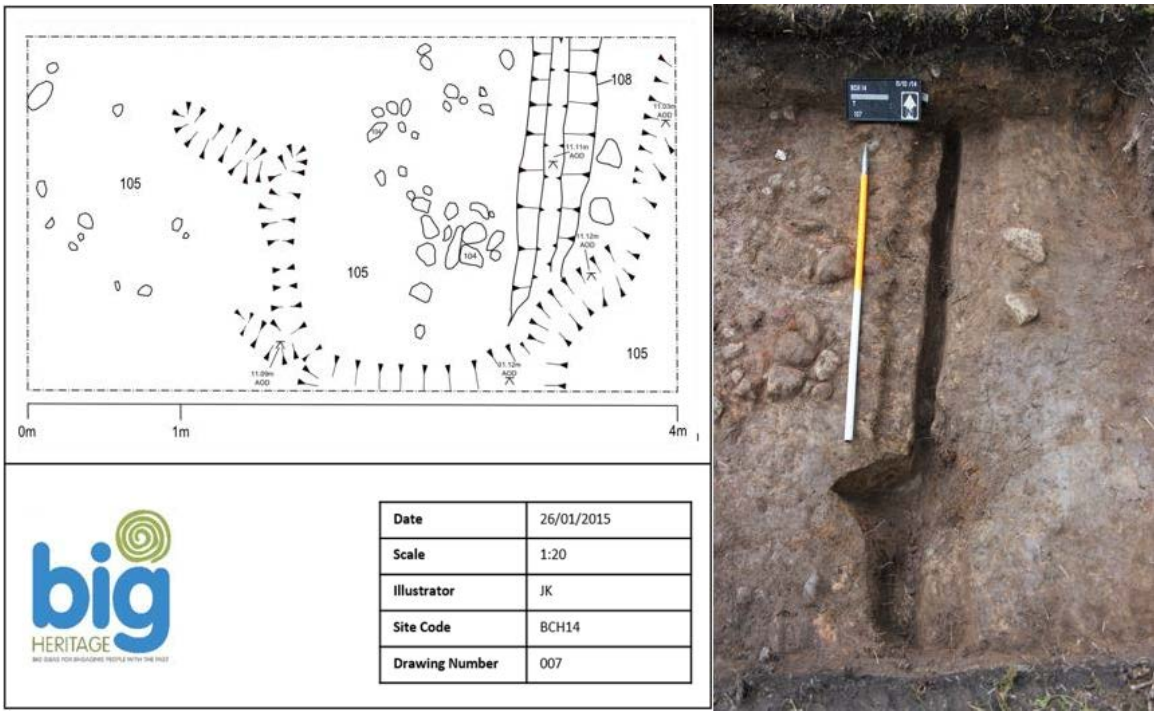



*Figure 5: Plan of Trench 1 (L) and Cut (108) for fence line and post hole running north to south in Trench 1 (R). Note the good preservation of archaeological features.*

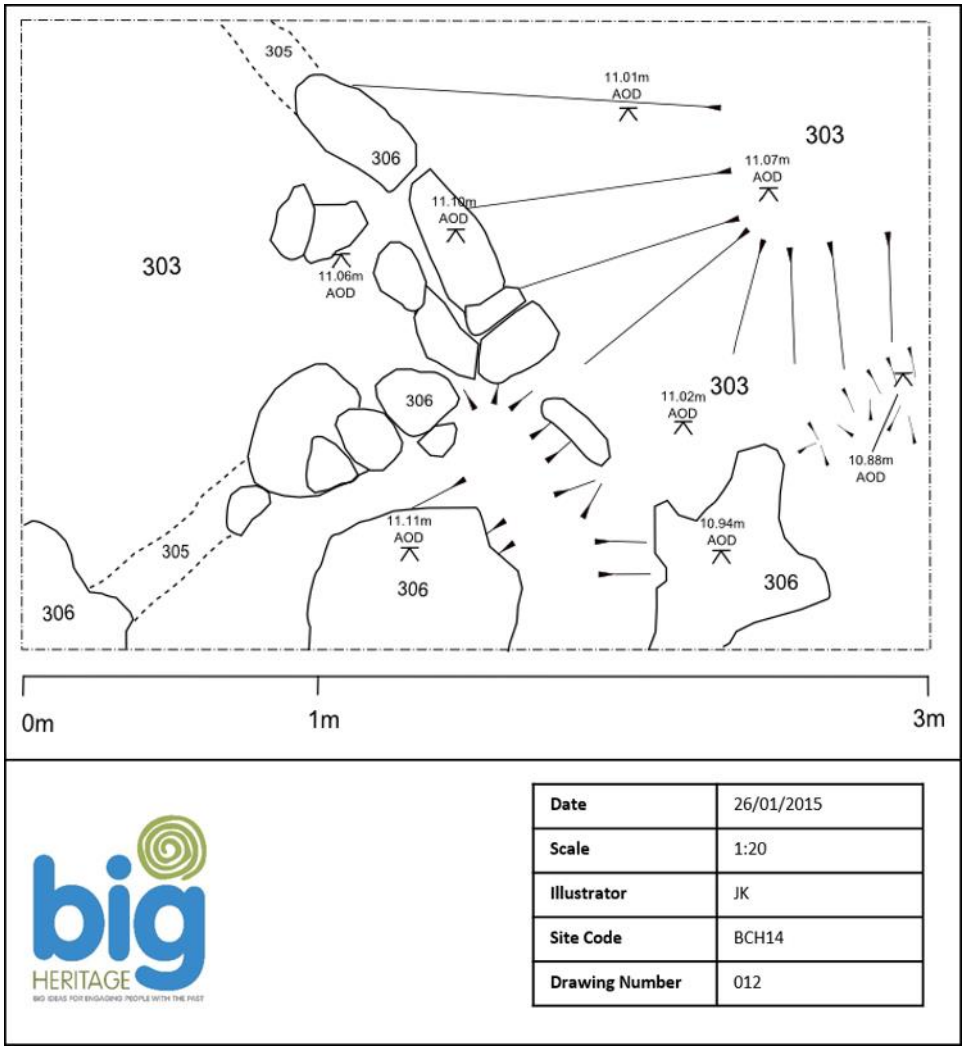



*Figure 6: Plan of Trench 3*


*Figure 7: Context 306. Note the sandstone linears*

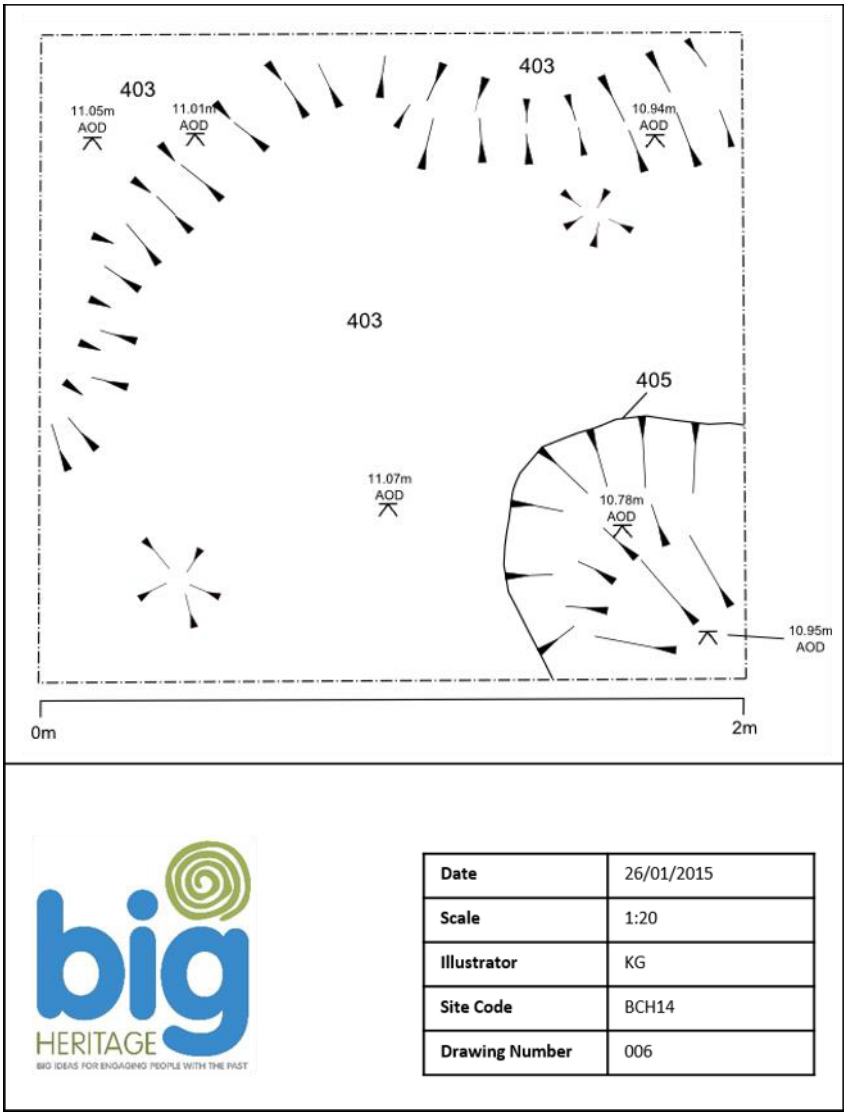



*Figure 8: Plan of Trench 4*

*Figure 9: Trench 4 (403/404). Note the cut in the top left corner.*

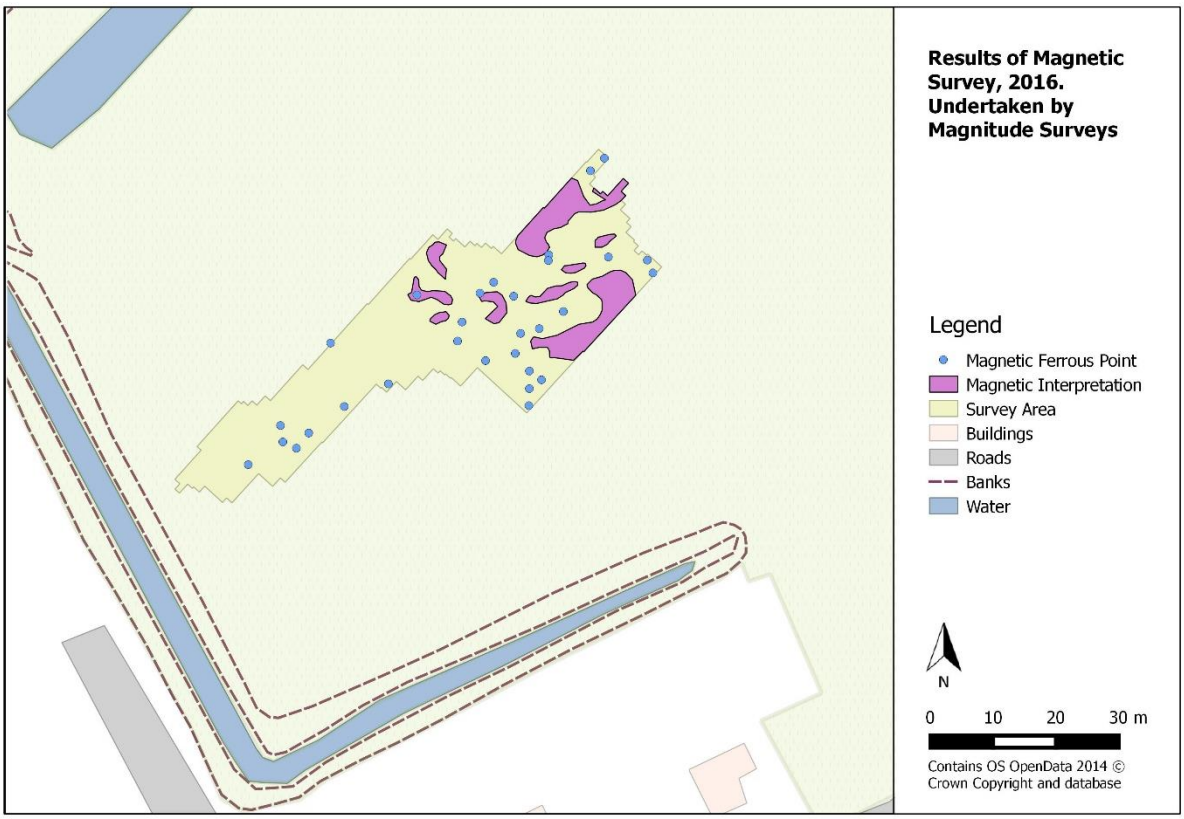



*Figure 10: 2016 Magnetic Survey Results*

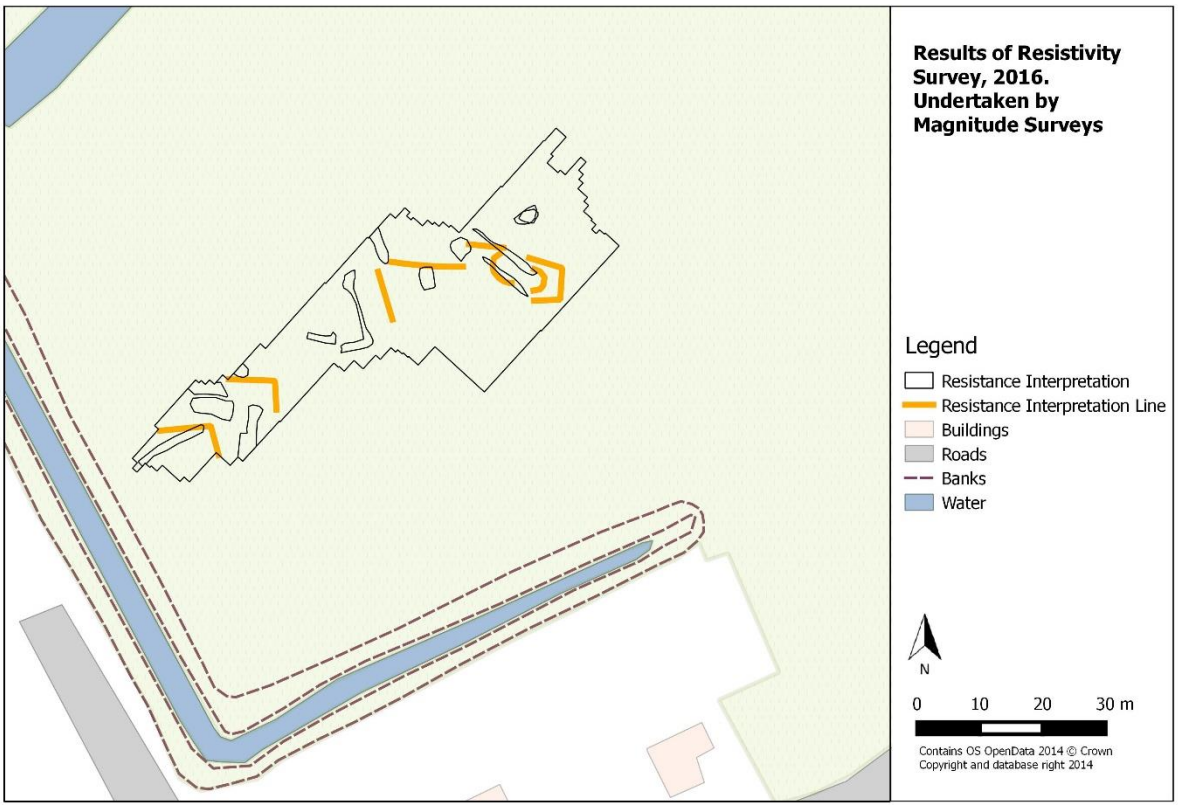



*Figure 11: 2016 Resistivity Survey Results*

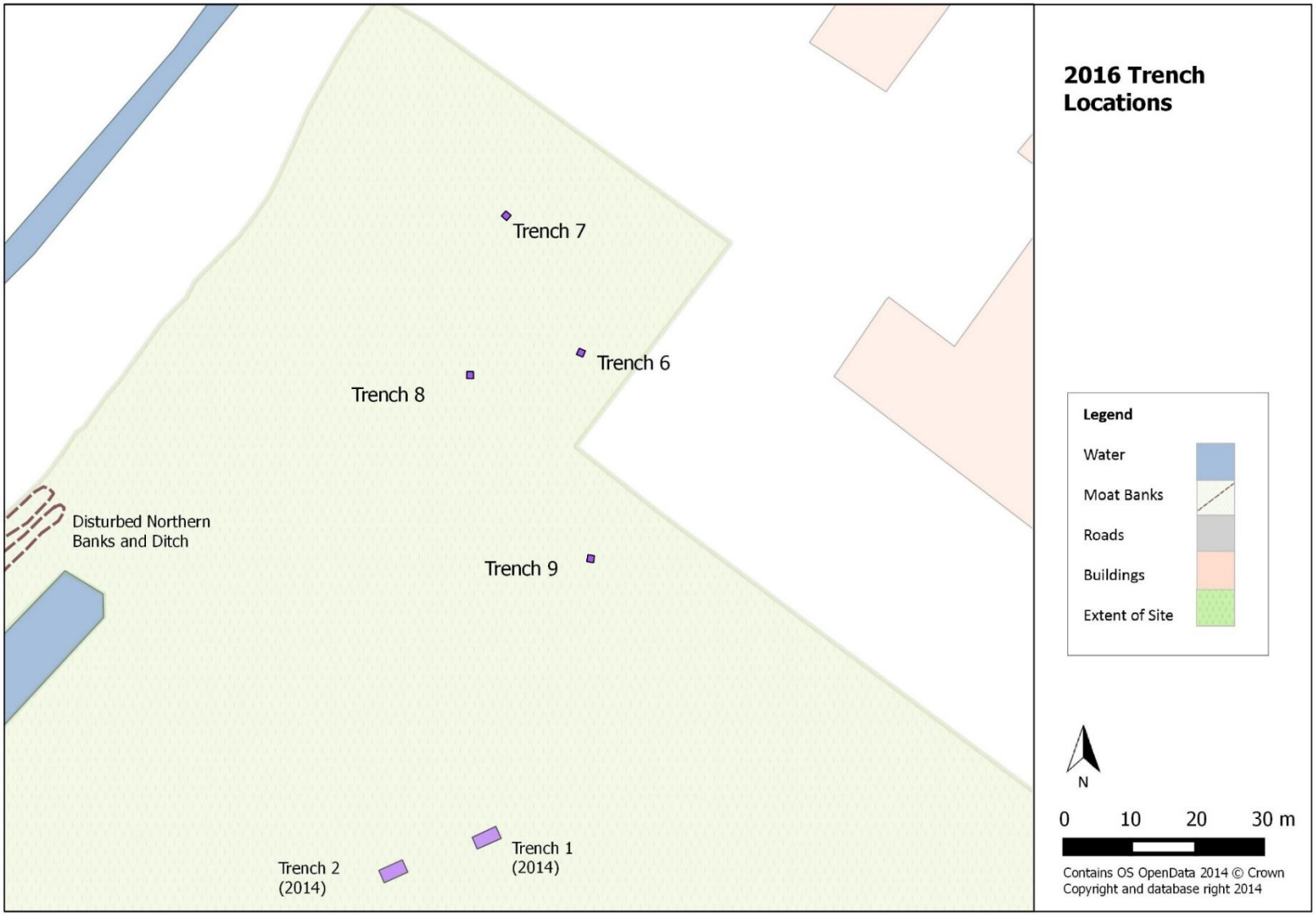



*Figure 12: 2016 Trench Location*

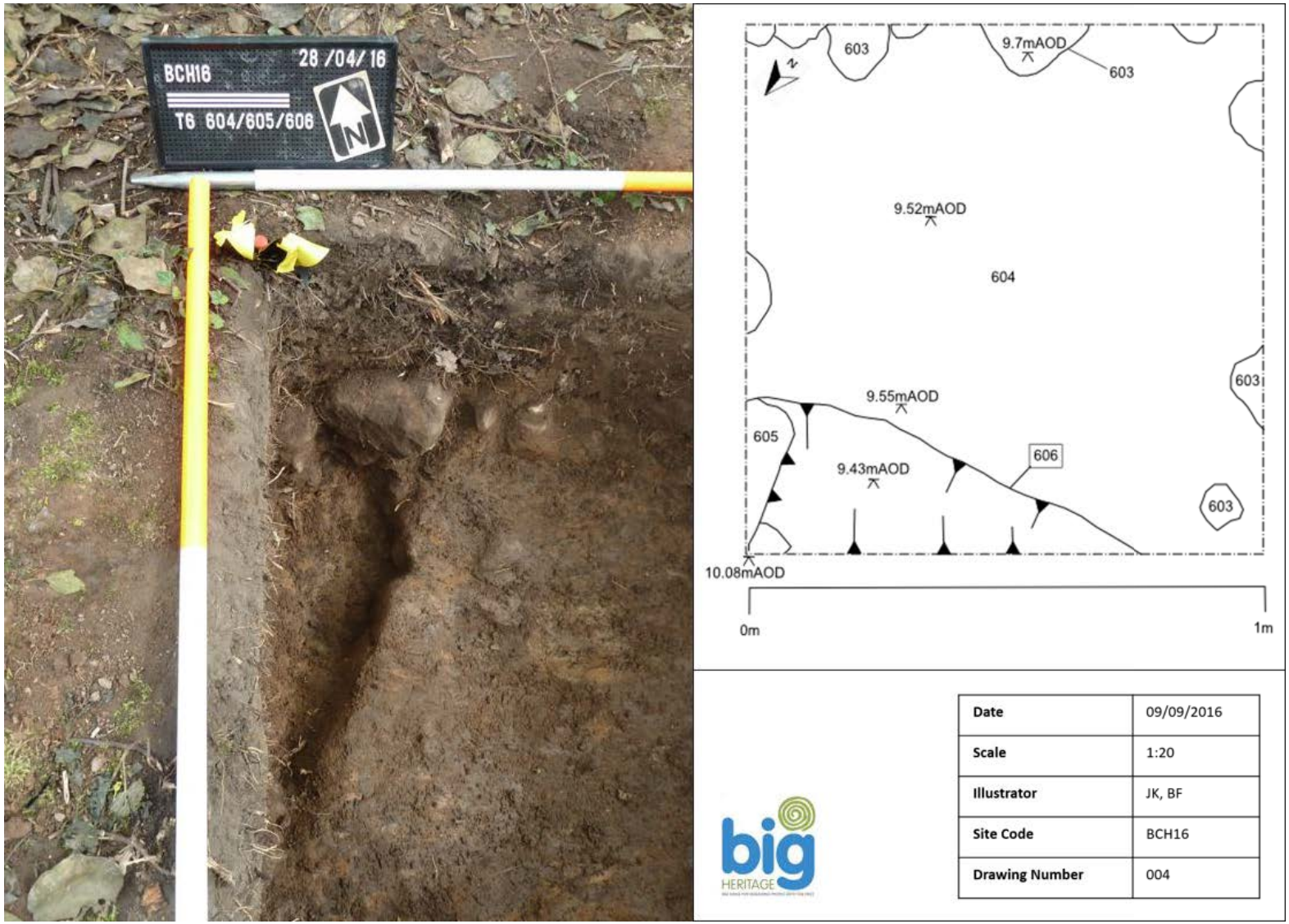
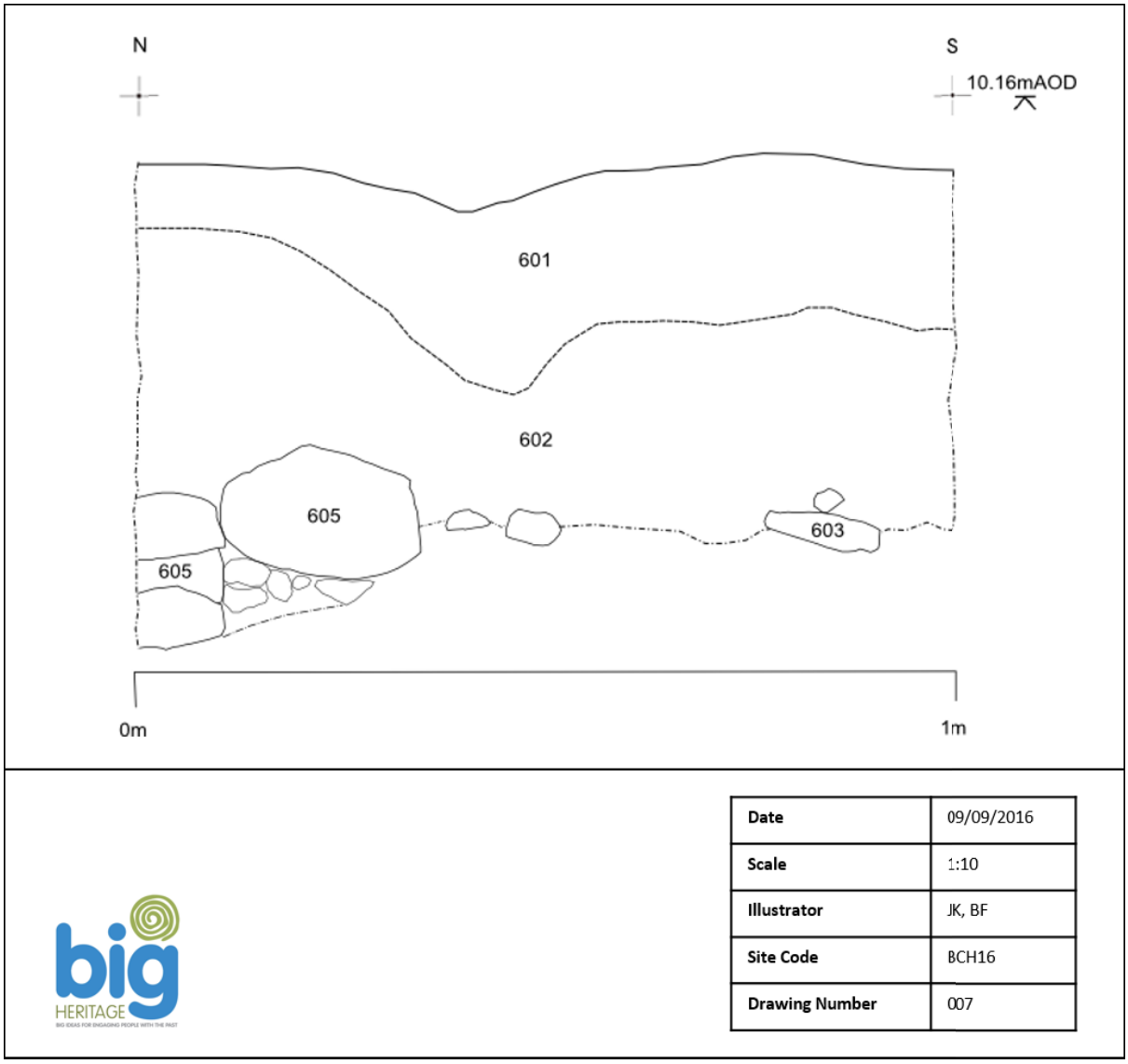



*Figure 13: Plan of Trench 6 with cut [606] (L) and image of cut [606] with large sandstone block, part of fill (605), still in situ (R)*




| | |
|---|---|
| **Date** | 09/09/2016 |
| **Scale** | 1:10 |
| **Illustrator** | JK, BF |
| **Site Code** | BCH16 |
| **Drawing Number** | 007 |

*Figure 14: Section 003, west facing. Note the fill (605) of cut [606].*

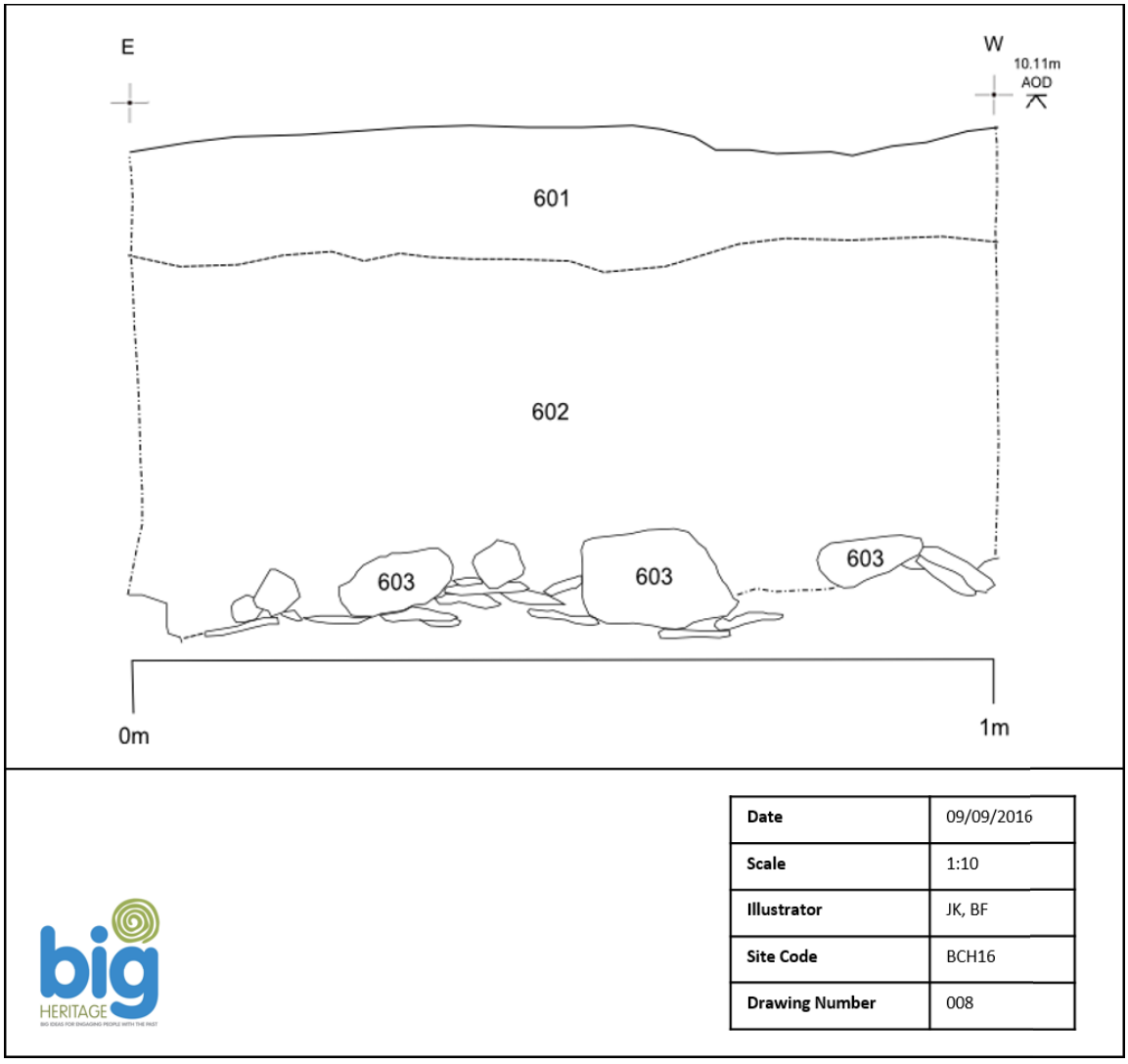



*Figure 15: Section 004, north facing. Context (603) is the probable SBM and CBM spread.*


*Figure 16: examples of glazed roof tile from (603), SF 603.*

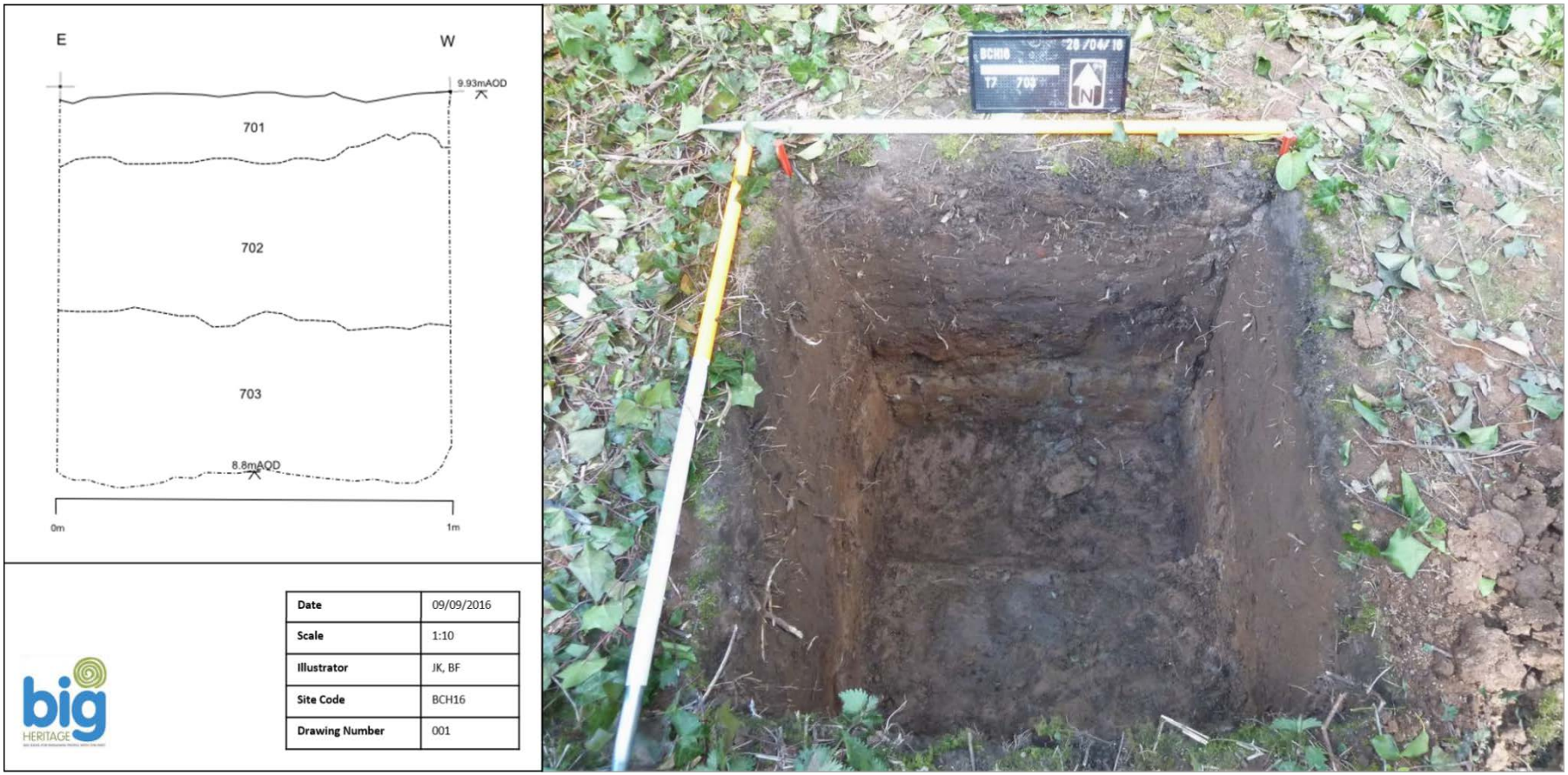



*Figure 17: Section 001, south facing (L) and completed trench (R).*

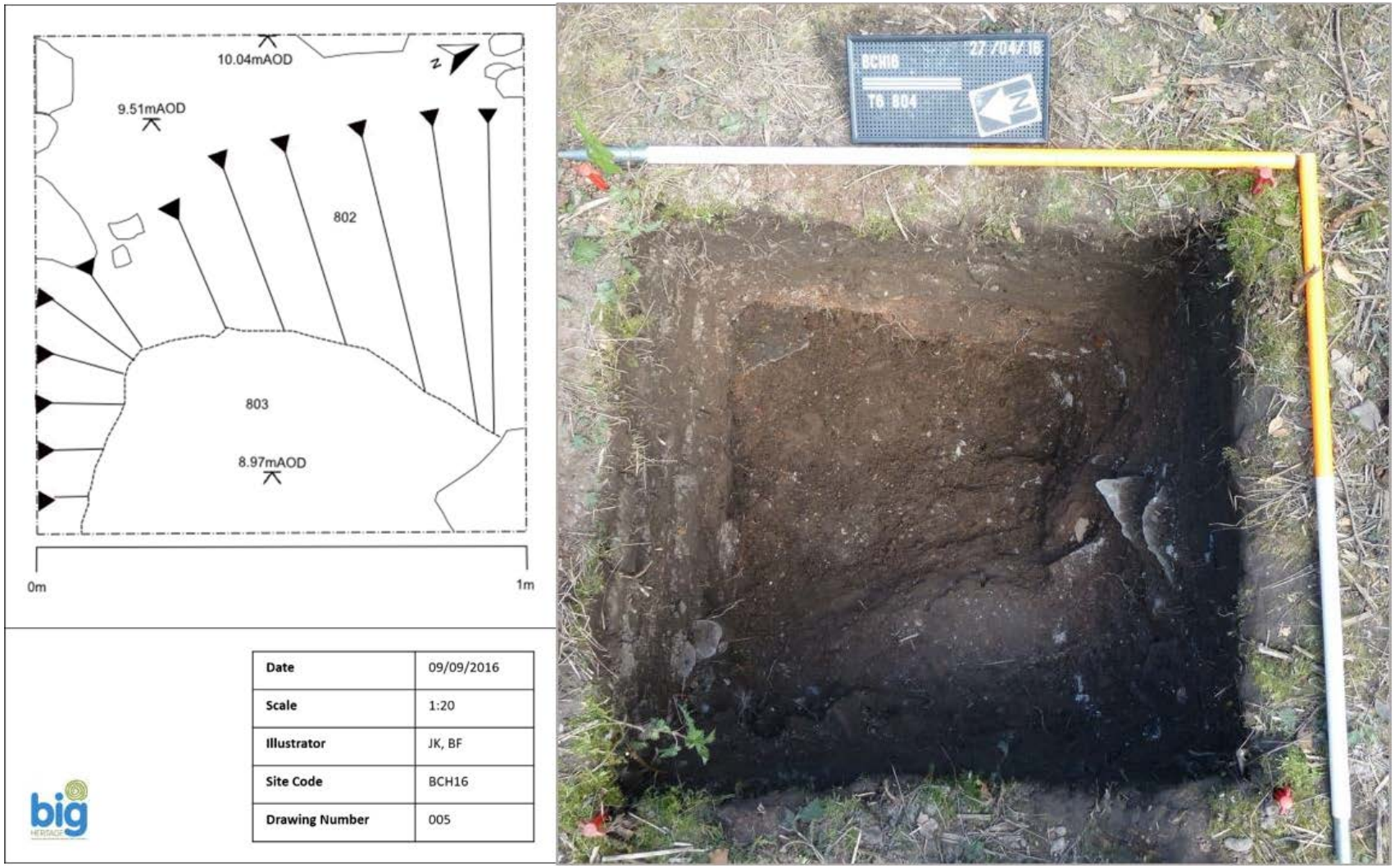



*Figure 18: Plan 004 (L) and completed trench (R)*

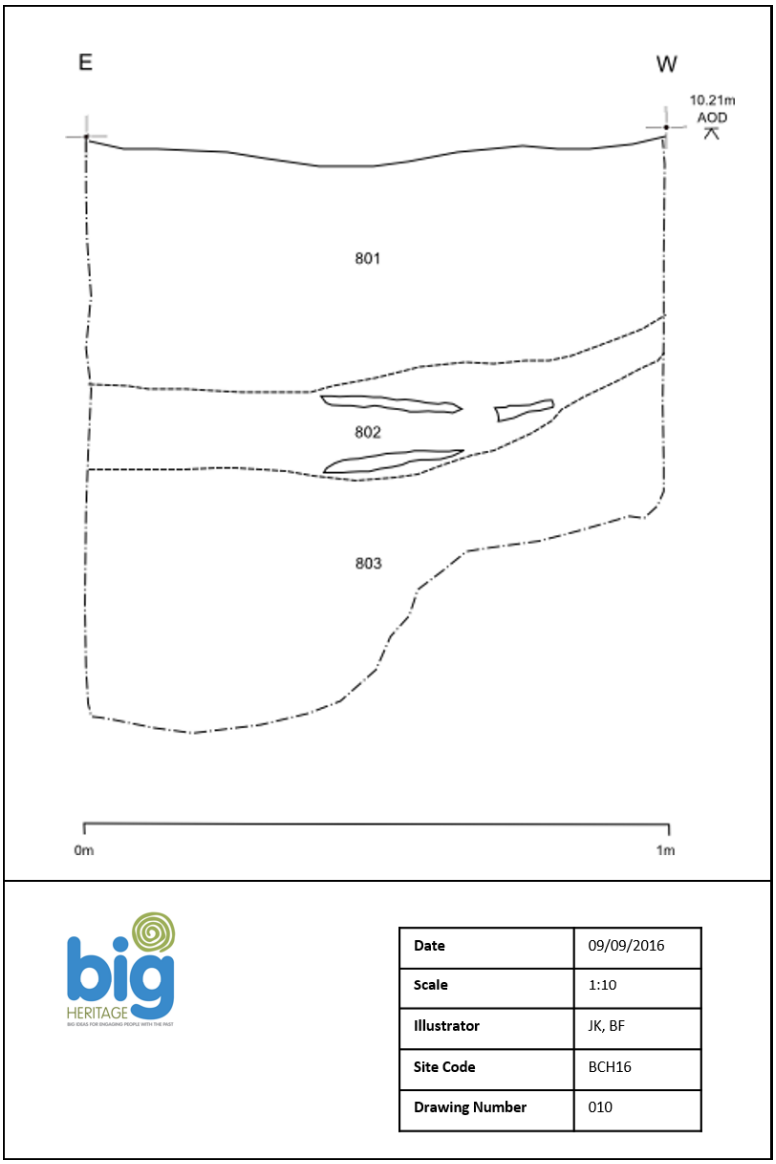



*Figure 19: Section 006, north facing*

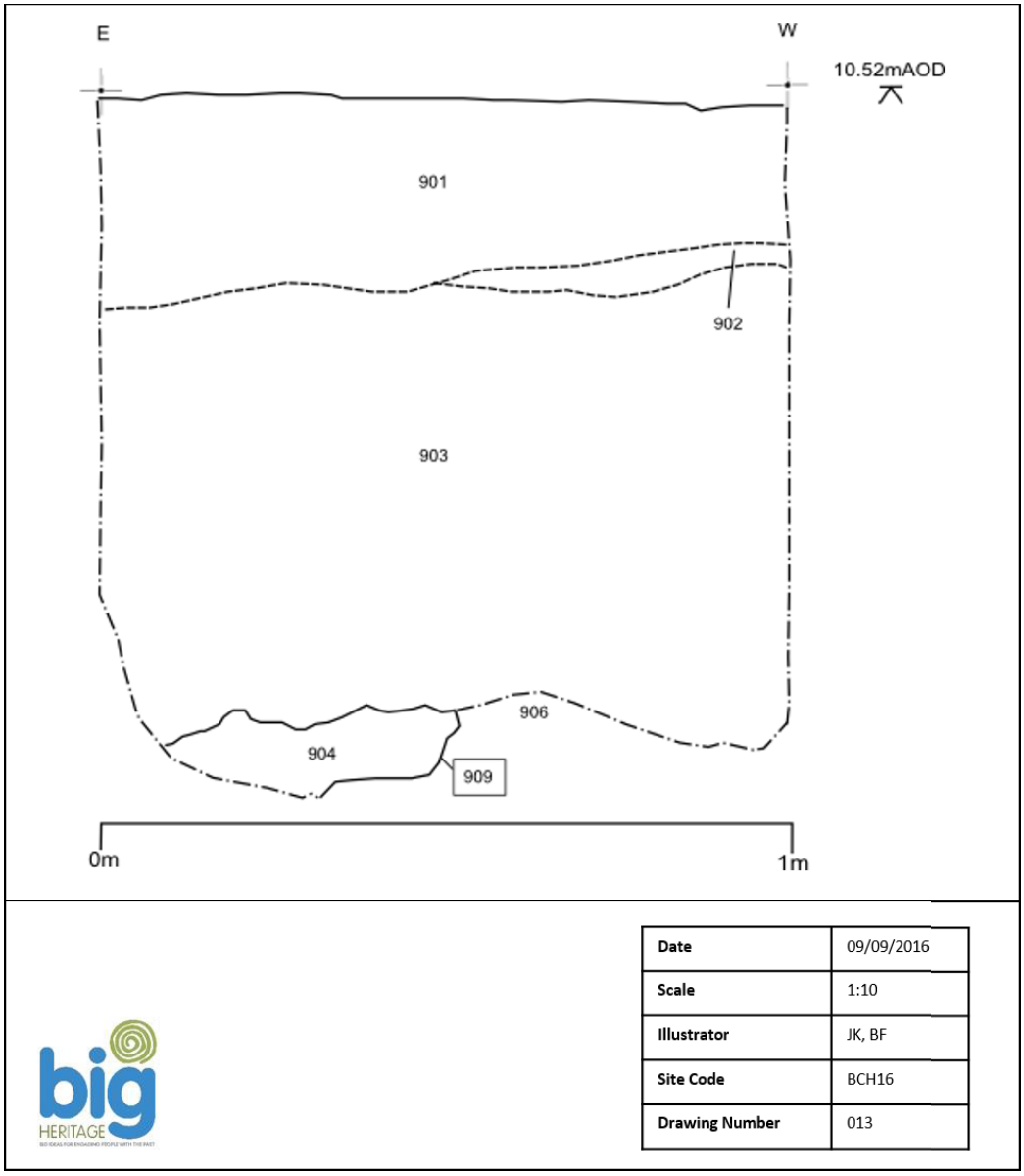



*Figure 20: Section 009, south facing*

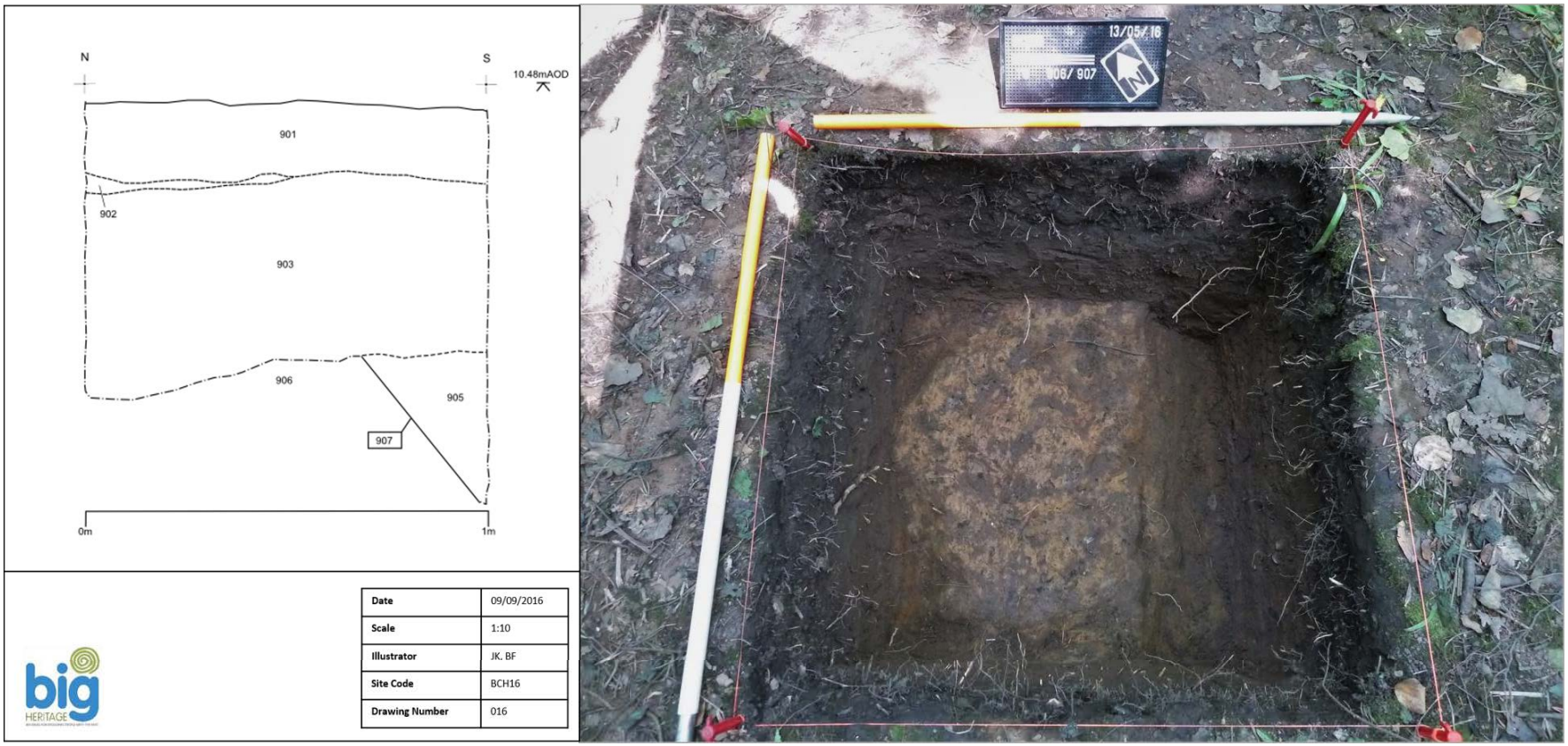



*Figure 21: Section 012, west facing (L) and photograph illustrating cut [907] to the right of the image (R)*


*Figure 22: Fill (905) partially excavated and northern edge of cut [907]*

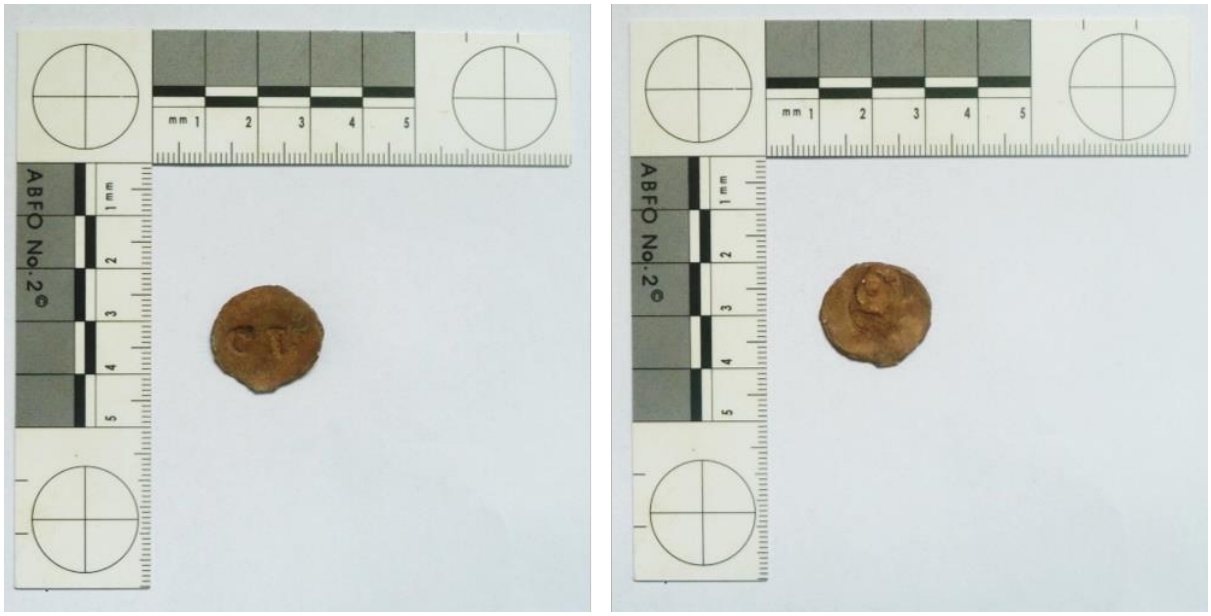



*Fig. 23: Post medieval bale-tag, SF 901*


*Fig. 24: Medieval ridge-tile, SF 904*


*Fig. 25: Rendered surface, possibly from daub structure, SF 902*

# APPENDICES

## 11. APPENDIX A: context descriptions

| Trench No. | Context No. | Type | Fill of | Context interpretation | Description | L(m) | W(m) | Depth/ thickness |
|---|---|---|---|---|---|---|---|---|
| 6 | 601 | Layer | | Topsoil | Black loose friable silt. 5% stones 10mm or less diameter | 1.00 | 1.00 | 0.18 |
| 6 | 602 | Layer | | Subsoil | Loosely compact browny grey sandy silt. Sandstone inclusions up to 10cm diameter | 1.00 | 1.00 | Min 23cm Max 30cm |
| 6 | 603 | Layer | | Stone spread | Sandstone and limestone spread within a light reddy brown sandy silt matrix | 1.00 | 1.00 | Min 14cm Max 16cm |
| 6 | 604 | Layer | | Natural clay | Firm light greyey orange clay with small round pebble inclusions 1-2 cm. | 1.00 | 1.00 | Unknown as unexcavated. Likely natural |
| 6 | 605 | Fill | 606 | Fill of cut 606 | Loose dark reddy brown silty sand. Sandstone inclusions of varying size (5-8cm and 10-20 cm) mixed with slate fragments 1-6 cm. Inclusions totalling 5% | 0.77 | Min 0.01 Max 0.33 | 0.12 |
| 6 | 606 | Cut | | Linear cut into 604 | Cut into greyey orange natural clay | 0.77 | Min 0.01 Max 0.33 | 0.12 |
| 7 | 701 | Layer | | Topsoil | Friable orange/brown sandy silt. Small pebble inclusions up to 12 mm | 1.00 | 1.00 | 0.22 |
| 7 | 702 | Layer | | Subsoil | Friable orange/brown silty sand. Pebble inclusions 1-10cm diameter. | 1.00 | 1.00 | 0.48 |
| 7 | 703 | Layer | | Clay | Natural clay with river pebble inclusions. | 1.00 | 1.00 | 0.43, not bottomed as interpreted as natural clay. |
| 8 | 801 | Layer | | Topsoil | Soft brown/black clay/silt. Pebble inclusions up to 15 cm diameter. | 1.00 | 1.00 | 0.38 |
| 8 | 802 | Layer | | Layer of rubble | Friable dark grey/brown loamy | 1.00 | 1.00 | 0.22 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | dumping event | soil. Pebble inclusions up to 15mm. Rubble consisting of CBM, mortar and slate, probable building debris. | | | |
| 8 | 803 | Layer | | Layer of rubble dumping event | Friable light orange/brown clay/silt. 8% small stone inclusions. Rubble deposit similar to 802, soil composition different. | 1.00 | 1.00 | 0.34 |
| 8 | 804 | Layer | | Clay | Light orange/brown natural clay. Unexcavated as recognised as natural. | 1.00 | 1.00 | N/A |
| 9 | 901 | Layer | | Topsoil | Dark brown/black loamy silt | 1.00 | 1.00 | Min 0.19 Max 0.25 |
| 9 | 902 | Layer | | Layer of degraded ceramic building material. Probable dumping event | Orange/brown degraded ceramic building material | 0.89 | 0.60 | 0.03 |
| 9 | 903 | Layer | | Subsoil | Mid grey/brown clayey silt. 10% small stones up to 10cm. Also sandstone fragments 1-8cm | 1.00 | 1.00 | 0.52 |
| 9 | 904 | Layer | | Degraded sandstone | Unexcavated material around 903. Brown/red probable sandstone. | 0.43 visible | 0.08 visible | N/A |
| 9 | 905 | Fill | 907 | Fill of cut 907 | Mid orange clay and light yellow/grey silt | 1.00 | 0.35 | 0.37 |
| 9 | 906 | Layer | | Natural clay | Natural clay as encountered in all trenches. | 1.00 | 1.00 | N/A |
| 9 | 907 | Cut | | Cut | Cut on east/west orientation across test pit. Full extent unknown. | 1.00 | 0.31 | 0.37 |
| 9 | 908 | Void | | Void | Context void | N/A | N/A | N/A |
| 9 | 909 | Cut | | Cut | Possible cut with degraded sandstone fill. Very little evident in test pit. | 0.48 | 0.08 | 0.08 |

## 12. Appendix B: small finds catalogue

| Trench | Context | Material | Description | Total | Weight (g) | Period | Comments | Find Number |
|---|---|---|---|---|---|---|---|---|
| 9 | 903 | Pb | Bale tag, probably for cloth | 1 | 5 | 14th-19th century | Probably post-medieval | 901 |
| 9 | 903 | Daub (?) | Rendered surface | 1 | 7 | Unknown | Possibly from daub structure | 902 |
| 9 | 901 | Ceramic | Roof Tile - Flat | 3 | 49 | 13th-15th century | Green glaze | 903 |
| 9 | 903 | Ceramic | Ridge Top Roof Tile - Curved | 1 | 44 | 13th-15th century | Orange-brown glaze | 904 |
| 6 | 602 | Cu | Probable Coin | 1 | 6 | Georgian (?) | Date based on size, weight and material | 601 |
| 6 | 602 | Ceramic | Roof Tile - Flat | 8 | 138 | 13th-15th century | Green glaze | 602 |
| 6 | 603 | Ceramic | Roof Tile - Flat | 18 | 512 | 13th-15th century | Green glaze | 603 |

# 13. APPENDIX C: finds reports

## 13.1. *Glass by Rose Broadley*

### Overview

A total of 232 fragments of glass were found, weighing a total of 625 grams. 205 sherds were window glass. The remaining 27 sherds were vessel glass. The assemblage is entirely Post-Medieval, with the earliest glass probably dating to the mid-nineteenth century. The majority of the vessel glass comes from bottles of various kinds, although one sherd appears to be from a plate or dish.

### Aim

The aim was to assess the potential and significance of the material and to advise Big Heritage accordingly.

### Discussion

The most distinctive sherd (from C801) is a small fragment of pressed colourless glass, probably from a bowl or dish form. A curved ridge may be part of a base ring. On one side of the ridge is a tight curl, like the tip of a fern frond, and on the other a swirled design that may be the lower half of a leaf. All of the decoration is on the same side of the sherd. The date of this sherd is likely to be around the mid-to-late nineteenth century. Pressed glass was produced on a much larger scale than cut class from c. 1840 onwards and hugely expanded access to glass vessels. The designs were intended to imitate hand-blown vessels with cut decoration found in the homes of the rich in the eighteenth and nineteenth centuries. From the same context group is an undecorated sherd of opaque white 'opal' glass, which could be from a vessel dating to the late eighteenth or nineteenth century, although the form is not identifiable and the sherd could even be from a bottle form of c. 1890 onwards.

The other vessel fragments all appear to be from bottles of the late nineteenth or early twentieth centuries. A variety of colours (olive green, brown, colourless, pale blue) and types

are present, although most are small body fragments that are not closely dateable. There are several thick olive green or brown body sherds from utility bottles, and three colourless sherds from C602 that are from a much smaller colourless bottle. Also from C602 is the most distinctive bottle sherd – a pale blue sherd from a moulded square or rectangular bottle with the bottom of a letter R or K surviving. Both would have contained a smaller quantity of liquid than utility bottles, perhaps toiletries, medicine or a soft drink. C801 also contained a fragment from a similar pale blue square or rectangular bottle.

The window glass is all flat and colourless. There are no distinctive features to merit detailed description or enable close dating. It is probable that the dating of the window glass broadly matches the dating of the vessel glass (approximately the second half of the nineteenth century and the first half of the twentieth century).

## Recommendations

The potential of the assemblage for further research is considered to be very limited, and no further work is recommended.

## 13.2. *Pottery and Ceramic Roof Tile by Paul Blinkhorn*

### Pottery

The following pottery types occurred:

BEW: Buckley-type Earthenware, 17th – 19th century (Crossley 1994, 252). Hard red earthenware, usually with a black or dark purple glaze.

GRE: Glazed Red Earthenware, 16th – 19th century. Fine sandy earthenware, usually with a brown or green glaze, occurring in a range of utilitarian forms. Such 'country pottery' was first made in the 16th century, and in some areas continued in use until the 19th century (Brears 1969).

MB: Midland Blackwares, AD 1580-1700. (ibid.). Hard. Brick-red fabric with sparse to moderate quartz up to 0.5 mm. Glossy black glaze, usually on both surfaces. Distributed throughout the midlands of England. Manufactured in a range of utilitarian forms, particularly mugs and tygs.

MOD: Modern, 19th century +**.** A wide range of different types of pottery, including stoneware, porcelain and earthenwares, particularly the white earthenware, cups, plates and bowls with transfer-printed blue decoration.

MP: Midland Purple ware, 15th – mid 17th century. Hard-purplish grey ware, purple to black glaze (McCarthy and Brooks 1988, 427).

The range of fabric types is fairly typical of sites in the region. The pottery occurrence per test-pit is shown in Appendix 1.

## Appendix 1: Pottery Results

### Test Pit 6

| | | GRE | | BEW | | MOD | | |
|---|---|---|---|---|---|---|---|---|
| TP | Cntxt | No | Wt | No | Wt | No | Wt | Date Range |
| 6 | 601 | | | | | 1 | 3 | 1800-1900 |
| 6 | 602 | | | 5 | 97 | 18 | 177 | 1600-1900 |
| 6 | 603 | 1 | 2 | | | 2 | 5 | 1550-1900 |

All the pottery from this test-pit is post-medieval, with the bulk of it being modern. There is thus very little evidence for activity before the 19th century.

### Test Pit 7

| | | MB | | BEW | | MOD | | |
|---|---|---|---|---|---|---|---|---|
| TP | Cntxt | No | Wt | No | Wt | No | Wt | Date Range |
| 7 | 701 | | | 1 | 2 | 8 | 8 | 1600-1900 |
| 7 | 702 | 1 | 3 | | | 2 | 3 | 1580-1900 |

All the pottery from this test-pit is post-medieval, with the bulk of it being modern. There is thus very little evidence for activity before the 19th century.

### Test Pit 8

| | | BEW | | MOD | | |
|---|---|---|---|---|---|---|
| TP | Cntxt | No | Wt | No | Wt | Date Range |
| 8 | 801 | 7 | 217 | 95 | 666 | 1600-1900 |
| 8 | 802 | | | 12 | 98 | 1800-1900 |
| 8 | 803 | | | 1 | 7 | 1800-1900 |

All the pottery from this test-pit is post-medieval, with the bulk of it being modern. There is thus very little evidence for activity before the 19th century.

### Test Pit 9

| | | MP | | BEW | | MOD | | |
|---|---|---|---|---|---|---|---|---|
| TP | Cntxt | No | Wt | No | Wt | No | Wt | Date Range |
| 9 | 901 | 1 | 2 | | | 1 | 2 | 1400-1900 |
| 9 | 902 | | | | | 7 | 179 | 1800-1900 |
| 9 | 903 | 1 | 19 | 6 | 69 | 9 | 104 | 1400-1900 |

Most of the pottery from this test-pit is post-medieval, with the bulk of it being modern. The sherd of Midland Purple Ware could be late medieval, but this material was also common in the 16th and 17th centuries.

## Roof Tile

Test-pits 6 and 9 produced a number of fragments of glazed roof tile which appear to be of medieval date. Context 602 produced eight fragments weighing 134g, context 603 produced 17 fragments weighing 510g, and context 901 produced three fragments weighing 49g. All the fragments are very similar, and are in a white fabric with a pinkish-buff lower surface. The only inclusions appear to be sub-rounded quartz up to 1mm. Most of the fragments have traces of very worn green glaze on the upper surface, but were it survives in good condition, it is a rich green with evidence of added copper. The fragments are all around 10mm thick.

The fabric is very similar to the pottery known as Coal Measures Ware, which occurs on a number of sites in North Wales and Cheshire, as well as Shropshire and Staffordshire (Courtney and Jones 1988, 10), and is usually of 13th – 14th century date. Roof tiles in Coal Measures fabrics are very rare, if not unknown, in Wales (Papazian and Campbell 1992, 79), although ridge tiles in this fabric are fairly common in Chester, such as at 25 Bridge St, where they did not occur in contexts dating to before the late medieval period, although the length of time between manufacture and deposition is unknown (Edwards 2008, 158).

Context 903 produced a fragment of curved ridge-tile with a scar on the upper surface, which suggests it was originally of "coxcomb" type. It is in a hard, reddish-orange sandy fabric with splashes of a worn orange-brown glaze, and has a hard, harsh sandy fabric which is very similar that of Ewloe pottery, which is of late 13th – 15th century date (Papazian and Campbell 1992, 59). Ridge-tiles are known from the Ewloe kilns (Davey 1977, figs 83-5). This all suggests very strongly that there was a medieval building in the immediate vicinity of these excavations, and that it was of higher than normal status. Certainly, if the pattern seen in the tile which occurred in these excavations is a reflection of the original roof, the bright green flat-tiles, capped off with brownish-red ridge tiles would have been extremely impressive, if not spectacular.

## Bibliography


Brears, P. C. D. 1969. *The English Country Pottery: its history and techniques,* Newton Abbot: David and Charles

Crossley, D. 1994. *Post-Medieval Archaeology in Britain,* Liverpool: Liverpool University Press

Courtney, P. and Jones, N. W. 1988.The Clwyd-Powys medieval pottery fabric series, *Medieval and Later Pottery in Wales,* **10**, 9-32

Davey, P. 1977. *Medieval Pottery from Excavations in the North-West, Liverpool:* Institute of Extension Studies

Edwards, J. E. C. 2008. Post-Roman Pottery, in D. Garner (ed), *Excavations at Chester 25 Bridge Street 2001 two thousand years of urban life in microcosm,* 187-242, Chester: Chester City Council

McCarthy, M. R. and Brooks, C. M. 1988. *Medieval Pottery in Britain AD 900-1600,* Leicester: Leicester University Press

Papazian, C. and Campbell, E. 1992. Medieval pottery and roof tile in Wales AD 1100-1600, *Medieval and Later Pottery in Wales*, **13**, 1-107

Webster, P. 1992. The coarse pottery, in J. Hinchliffe, Williams, J. H. and F. Williams, *Roman Warrington: excavations at Wilderspool 1966-9 and 1976*. Brigantia Monograph Series **2**, 42-43, Manchester: University of Manchester

## 13.3. *Comment on Render by Cynthia Poole*

Small Find 902 from context 903
1 fragment 7g

Small flat piece, 10mm thick, with flat unfeatured surface both sides; one may be deliberately smoothed, the other possibly a bonding surface. It is made in a yellowish brown clay fabric mixed with frequent coarse sand, mainly quartz. It is not pottery and does not appear to be fired or heated. It is possibly a fragment of rendered surface from a daub structure. It is not intrinsically dateable (structural clay and fired clay was used from the Neolithic through to the medieval period).

# 14. APPENDIX D: trench location information

### Trench 6

| | NE Corner | NW Corner | SE Corner | SW Corner |
|---|---|---|---|---|
| Easting | 334526.326 | 334525.373 | 334525.923 | 334524.967 |
| Northing | 384246.089 | 384246.489 | 384245.158 | 384245.556 |

### Trench 7

| | N Corner | W Corner | S Corner | E Corner |
|---|---|---|---|---|
| Easting | 334514.254 | 334513.69 | 334513.563 | 334515.061 |
| Northing | 384267.322 | 384266.562 | 384266.567 | 384266.64 |

### Trench 8

| | NE Corner | NW Corner | SE Corner | SW Corner |
|---|---|---|---|---|
| Easting | 334509.328 | 334508.345 | 334509.356 | 334508.322 |
| Northing | 384242.956 | 384242.987 | 384241.888 | 384241.915 |

### Trench 9

| | NE Corner | NW Corner | SE Corner | SW Corner |
|---|---|---|---|---|
| Easting | 334527.701 | 334526.694 | N/A | 334526.527 |
| Northing | 384215.035 | 384215.204 | N/A | 384214.163 |

### TBM

| | |
|---|---|
| Easting | 334518.054 |
| Northing | 384247.357 |