University of Salford MANCHESTER

# Community Archaeological Excavation

Halton Castle,
Runcorn

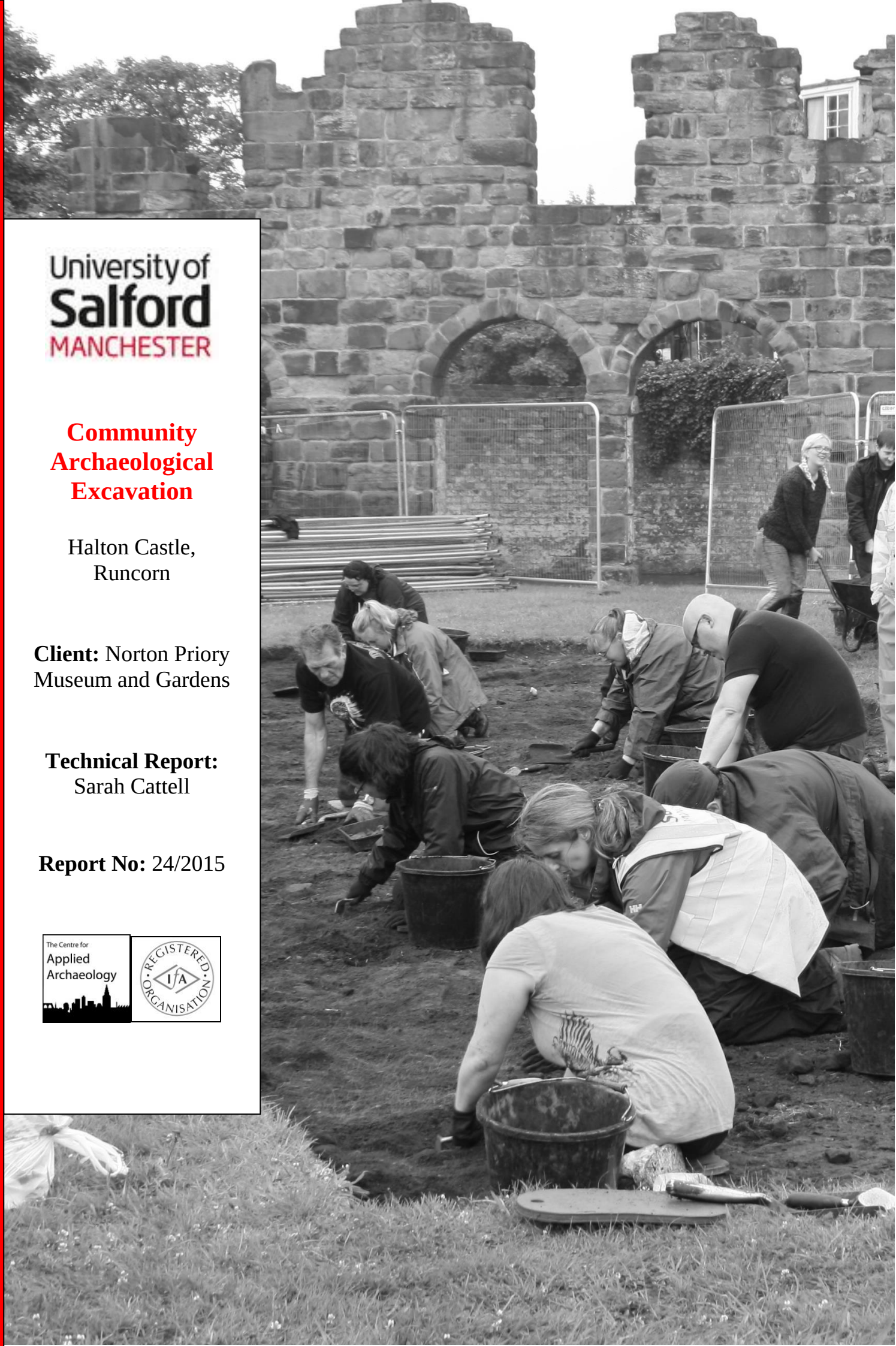
**Client:** Norton Priory Museum and Gardens

**Technical Report:**
Sarah Cattell

**Report No:** 24/2015

The Centre for Applied Archaeology

REGISTERED ORGANISATION IfA



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# Summary

Salford Archaeology (SA) was commissioned by Norton Priory Museum and Gardens to undertake a community archaeological excavation on the site of Halton Castle (centred at SJ 53756 820350). The site is both a Scheduled Monument and the standing remains are also a Grade I listed building. This work formed part of the Heritage Lottery Funded Halton Castle Project to further assess the archaeological potential for remains associated with the occupation of the outer bailey of the castle not identified within previous excavations conducted by Robina McNeil in 1985/6. The findings from the excavation will inform the future treatment of the Scheduled Area and enhance the presentation of the site to the wider public.

The work was carried out by local volunteers and school children under the supervision of SA staff. In total over 250 children, 90 adult volunteers and 150 visitors worked on the site or visited during the open day.

Halton Castle was thought to have been established in 1071 by Nigel, 1st Baron of Halton at the height of Norman power. Originally it was believed that the first castle was of timber motte and bailey construction, but to date no evidence of this has been found. Throughout the subsequent centuries the castle was rebuilt in stone in a piecemeal fashion with a consistent programme of maintenance and alterations. As part of this a large stone gatehouse was constructed in the 1450s along with the construction of towers and internal buildings. By the late 16th century the castle structures had fallen into disrepair, with the exception of the courthouse. The castle was besieged during the Civil War and eventually fell to the Parliamentarians in 1644 by which time it was in a ruinous state and ordered to be slighted.

Excavation areas were located to investigate the nature and extent of the remains associated with structures in the outer bailey of the castle. Trenches were opened to investigate anomalies seen on the preceding geophysical survey and further investigate features identified during the 1980s excavations.

The excavation of Trench 1 was intended to locate remains associated with a building observed on the Randall Holmes sketch plan which may have been a stable block. Although a number of pottery sherds were found throughout the trench dating from the medieval period onwards, no features were identified other than a large deposit of sandstone rubble which was found to lie in excess of 1.70m below the current ground level.

Trench 2 was also sited to investigate features identified on both the Randall Holmes sketch plan and the geophysical survey. This trench was able to uncover features and

artefacts from the medieval period onwards, including part of a tower first identified during the 1980s. In addition, two burials were found within the trench dating to the 15th and 16th/17th century. The discovery of burials within a castle is very rare and will require further investigation to fully understand. Many of the features in this trench were cut directly into the bedrock and may indicate earlier occupation phases predating the construction of the castle.

# 1. Introduction

## 1.1 Background

Salford Archaeology (SA) was commissioned by Norton Priory Museum and Gardens to run a community archaeological excavation on the site of Halton Castle, Runcorn. The excavation formed part of the HLF funded Halton Castle Project designed to further investigate the archaeological potential of the site and engage the local community. The purpose of the excavation was to further investigate the archaeological remains associated with the medieval and post-medieval activity on the site. The current work was informed by a previous excavation conducted by Robina McNeil in 1985/6. The findings from this excavation will inform the future treatment of the Scheduled Area and enhance the presentation of the site to the wider public.

## 1.2 Location, Topography & Current Land Use

The site of Halton Castle (centred SJ 53756 82035) is located at Runcorn approximately 24.0km south-east of Liverpool and approximately 24.0km north-east of Chester. The extant castle is a complex of seven identifiable standing structures, plus the land enclosed by its outer wall, located at the east end of Castle Road at the heart of Halton Village (Insall Associates Ltd, 2006, Vol 1).

The underlying geology of the area of Halton Castle is chiefly comprised of Helsby Sandstone with little to no drift geology. The formation of the sandstone is pebbly (gravelly) from the Anision age and underlies a minimal Rendzina soil type. The bedrock protrudes on the top of the promontory where Halton Castle is located to a height of 1.5m and the Castle is constructed directly on top of this bedrock.

## 1.3 Personnel

The project was conducted by professional archaeologists from Salford Archaeology. On-site excavations were carried out by local volunteers under the supervision of Sarah Cattell, Kirsty Whittall, Rachael Reader and Stuart Harris. The report was compiled, written and illustrated by Sarah Cattell, Mike Nevell and Andrew Radford. The project was managed by Vicky Nash.

## 1.4 Monitoring

The archaeological works were subject to Historic England Scheduled Monument consent granted by Andrew Davison and monitored throughout the project by Frank Hargrave and Lynn Smith from Norton Priory and by Mark Leah, Development Control Archaeologist for Cheshire West and Chester Council.

# 2. Historical Background

## 2.1 Historical Background

This section of the report is taken from previous historical research undertaken for the Halton Castle Conservation Management Plan (June 2006), which was carried out by Donald Insall Associates Ltd with assistance from Gifford Consulting and Graham Barrow Research & Consulting Ltd.

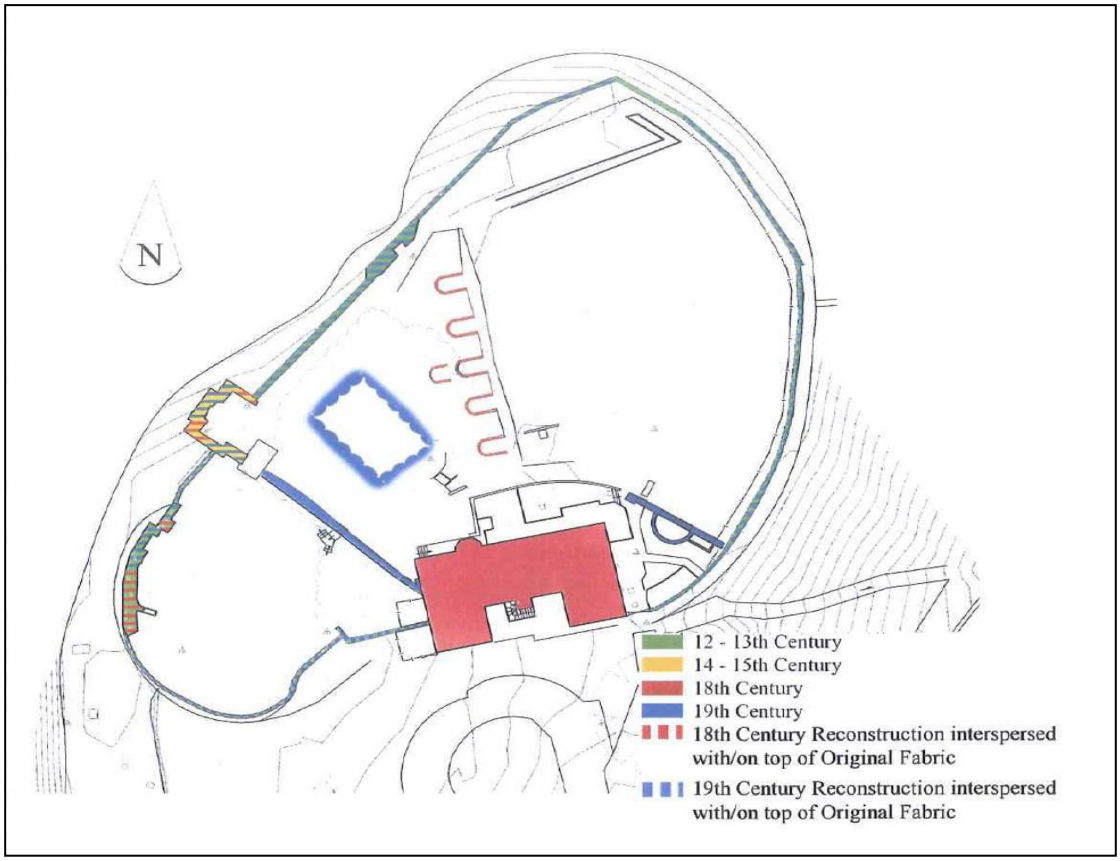


**Figure 1:** Plan showing the phasing of the remaining fabric at Halton Castle (Insall Associates Ltd, 2006: Vol 1 Pg. 26).

## 2.2 Prehistoric and Roman

Archaeological evidence dating to the prehistoric and Roman periods is scant in the area of the castle and its environs. Later prehistoric (700BC-AD43) finds have been made in the surrounding areas including Clifton, Weston Point, Frodsham and Norton Village. The only find dating from this period was an Iron Age coin found at the castle itself, suggesting the possibility of some form of settlement on the site. It is noteworthy however that the site of Halton Castle sits slightly to the north of the Iron Age hillforts along the mid-Cheshire Sandstone Ridge, indicating the importance of promontory sites in this area during the Iron Age. Along with this, the defensive position of Halton Castle overlooking the Mersey would make Iron Age settlement highly likely.

Roman settlements are well known at Chester, Wilderspool, Northwich, Nantwich and Middlewich although it is unclear if there was also a presence in Halton Village. A single ditched enclosure was found at Halton Brow in 1936 which later investigation suggested to be a farming settlement. There is also evidence of a Roman road at Big Pool in Runcorn leading to Weston and the Romans may have established the Runcorn gap as a crossing point on the Mersey. No finds of Roman date have been identified within the castle or hilltop.

## 2.3 Norman Period

It has been considered that the site may have had prehistoric origins; possibly as a small Iron Age camp (McNeill 1987, 21). In addition a Iron Age coin is reported as having been found at the castle (HER 27611). The castle has been designated a Grade I Listed Building (ref.5/28) and is also a Scheduled Monument (SM27611). The surviving archaeological evidence however, can only be stretched back to the 12th century at the earliest.

Halton Castle is one of several strongholds dating to the Norman period and may have been first constructed under the patronage of Nigel, first Baron of Halton in *c*.AD 1071. It is generally assumed the permission to build a castle at Halton/Runcorn was granted by another Norman, Hugh Lupus the Earl of Chester, who was the most powerful man in the region. The castle stands on a strategic prominent rocky outcrop to the NE of Halton Village and the barony replaced a powerful and wealthy Saxon landholding held by Orn at the Conquest, who controlled the Mersey crossing at Runcorn. From the north and the western sides of the castle there are extensive views of the River Mersey and Runcorn.

## 2.4 Medieval

Roger the 7th Baron took the de Lacy name in 1196 when he married into this powerful family (Lords of Pontefract) and thereafter Halton became a secondary residence. On the death of Henry de Lacy in 1310 the castle transferred to Thomas of Lancaster and has remained part of the Duchy ever since. According to documentary evidence, the castle appears to have undergone a substantial rebuilding programme during the 13th and mid-15th centuries, which would have included the enlargement of the castle area. A new gatehouse (located where the courthouse now stands) was constructed around 1450-7 at a cost of around £347.

The work was supervised by the King's Master Mason in Lancashire, and was subsequently repaired in 1532 due to subsidence of the kitchen tower. According to the Buck brothers engraving, made in 1727, the gatehouse comprised two turrets that

supported a first floor gantry of rooms. According to further documentary evidence, buildings within the castle were surveyed in 1476 and included the great chamber, withdrawing room, chapel, hall, auditor's chamber, kitchen (and larder) and storehouse. A prison is also mentioned as being constructed below the 'Hurle's Chamber' in building records from 1423 as part of an extensive programme of repair and building works.

## 2.5 Post Medieval

Based on the archaeological and documentary evidence the castle remained in use into the early post-medieval period (AD 1540 – 1600). However, in 1562, Sir Ambrose Cave when reviewing the estate that belonged to the Duchy of Lancaster, omits the castle from the Duchy's list suggesting that it had fallen into a ruinous state and therefore was of little value, a conclusion confirmed by a survey of royal castles in 1609.

During the English Civil War the castle was initially in Royalist hands, under Earl Rivers and Captain Primrose, but was besieged and captured by Sir William Brereton in 1643. Following its capture, Cromwell ordered through the Council of War that the castle (along with Beeston Castle) should be dismantled, causing extensive damage (1644). A sketch plan was made at this time by Randal Holmes. However, in *c.*1650, a parliamentary report notes that the castle has….."one great hall, with two ranges of buildings over it consisting of nine rooms unfurnished and a prison for the Honour of Halton". The reference to the parts of the castle being unfurnished may refer to the castle being abandoned.

The extent of this damage can be seen in the engraving made by the Buck brothers of 1727 (**Fig. 36**). According to their representation most of the curtain wall and buildings abutting it along the western side within both the inner and outer bailey areas were surviving at this time. Also standing (but later demolished to make way for the courthouse in 1737) was the gatehouse. This image, however, does not accord well with schematic representations of earlier periods, or with later watercolours.

## 2.6 19th & 20th Centuries

Much of the original height of the walling has been greatly reduced and in places breached. The castle is in a ruinous state and the interior had been levelled after it was in filled during the late 18th or early 19th century to create bowling greens and gardens. Based on the difference between the exterior and interior of the outer bailey, the depth of this infilling appears to be 3.5m, below the present interior ground level. In common with many other castles, Halton appears to have been a subject of the *Romantics.* Not only was the castle and the surrounding landscape subject for painters and engravers such as T.K. Glazebrook & J.Bailey *c.*1800, William Finden and Peter de Wint (c.1818) and an impression by John Strutt (*c.*1838), but also in *c.*1800 follies

were constructed in the SE section of the outer bailey and the NW of the inner bailey. These follies comprised reused castle stone and were constructed in a style difference to the surviving medieval building sections, probably as part of a more general landscaping for the Brook family at Norton Manor.

Based on the recent cartographic and documentary evidence, the internal areas of the castle have been much altered. The construction of the courthouse saw the demolition of the gatehouse and sections of the curtain wall, on either side of the gatehouse. During the early 19th century a sunken garden and a curious series of semi-circular stone recesses – known as the lock ups – were constructed within the western section of the outer bailey. The lock-ups may have been associated with the courthouse and used to house prisoners. Immediately east of the gardens and the lock-ups and occupying the eastern section of the outer bailey are remnants of a bowling green. Incorporated into the NW section of this lawn area and based on two mid – 20th century aerial photographs are two rectangular concrete platforms which would have supported two make-shift buildings. Limited modifications were made to the inner and outer bailey during World War II when it was used as an observation site (CEI 1988).

## 2.7 Archaeological Background

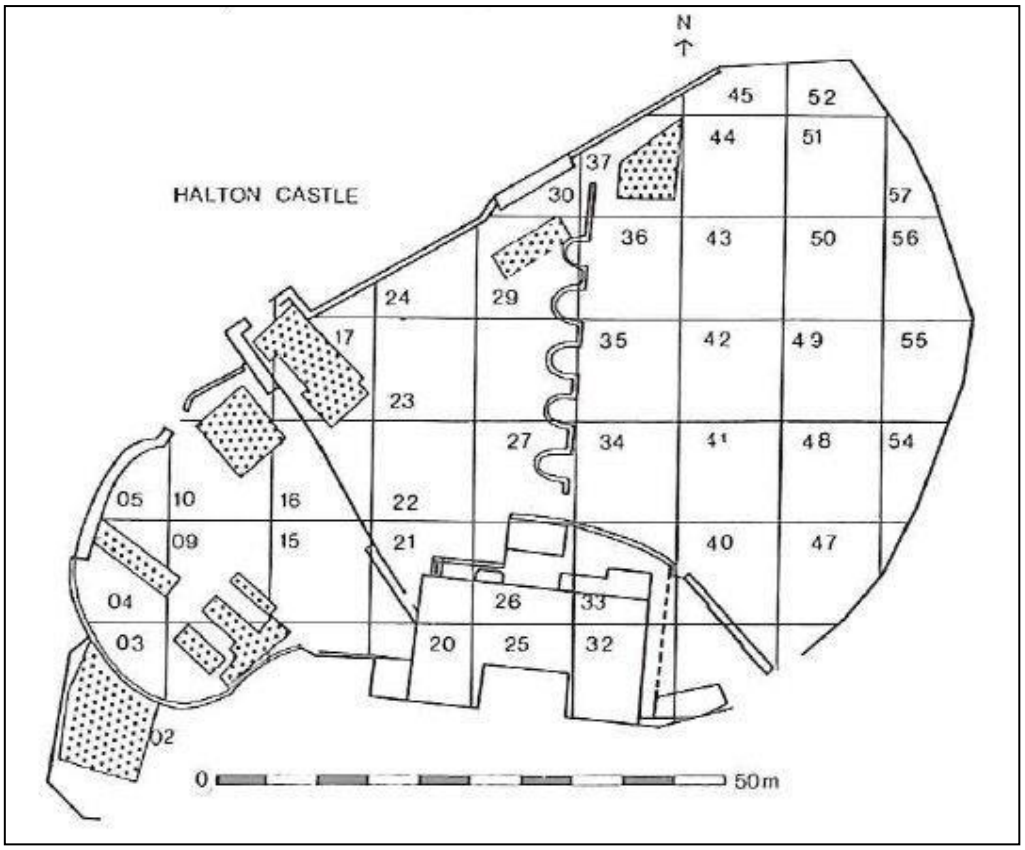


**Figure. 2:** Location Plan of trenches (stippled areas) excavated during 1986 & 87.

Between 1986 and 1987, an excavation programme was conducted within and to the west of the castle by Robina McNeil of the North West Archaeological Trust. Much of the following is taken from her 1987 excavation report.

This strategically sited stronghold, located on a high exposed promontory, has extensive views to the north and west. The shape of the hill appears to lend itself to the blueprint of a Norman castle in design, i.e. inner and outer bailey: the inner bailey forming a "Keep" and being at the highest point within the castle. As a result, the inner bailey at Halton is sited on the highest point of the hill.

The 1986-7 excavation programme aimed to assess the survival and condition of sub-surface archaeology, in particular the survival and location of possible motte, palisade and Norman keep. Prior to excavation, the inner and outer bailey was surveyed and a 10m square grid (numbered 01-57) imposed. Nine trenches were placed strategically using this grid, located in grids 03, 04, 09, 10, 17, 29 and 37, which investigated about 5% of the interior (**Fig. 2**). A further trench was excavated outside, south of the castle.

According to McNeil, the site suffered extensive vandalism and as a result trenches were backfilled before being fully excavated or reduced in size and this limited the conclusions that could be made.

Excavation outside the castle on the southern side failed to identify a ditch which would seem an important feature in repelling attacks from the more gradual slopes to the south. However, the softer sandstone has been cut to extend the height of the curtain wall in this area. The shape of both the wall and the cut bedrock suggests that the castle was defended on all sides, thus making better efficiency of man power. The complex engineering processes involved initially suggest a Civil War date, but McNeil (1987, 22-3) preferred a much earlier date, probably 12th century. This supports her interpretation for a shell keep castle.

Excavation within the castle included trenching along the northern and western sides, within both the inner and outer bailey. Trenches 10 and 17 located within the north east corner of the inner bailey and south west corner of the outer bailey revealed a section of the rock cut ditch which originally divided the inner and outer bailey. At some point the ditch was deliberately backfilled with sandstone debris and on top of this deposit a rectangular stone building was constructed, probably a tower dating to the 13th century. This square defensive tower, partially constructed onto bedrock, shows probable architectural influences from castles in Wales. Associated with the construction of the tower was a small assemblage of medieval pottery dating to between AD1200 and 1350.

Uncovered from the trenching in quadrant 37 were the foundations of a D-shaped or round tower which probably dated to the 13th century, contemporary with surviving masonry located along the north-western side of the curtain wall and including the

kitchen, *garderobe* and a *salley porte*. The tower, with an external diameter of 13m extends beyond the curtain wall. Excavation revealed that the tower was externally constructed of dressed stones, while the inner foundation was comprised of rubble core; the structure survived to a height of 1.8m.

The castle's construction falls into three broad phases beginning in 1071 with the laying out of the timber structure by Nigel, 1st Baron of Halton. Between this date and the mid-13th century the castle underwent successive episodes of construction in stone replacing the earlier wooden fortifications. The second phase of development was between AD 1250 and 1737 and included the erection of a round tower, courtyard buildings, a gatehouse and the backfilling of the rock-cut ditch. These structures had been largely demolished by 1727. The final years of occupation between 1600 and 1737 reveal very little archaeological evidence, even for the period of the English Civil War. Excavation revealed a limited assemblage of pottery and clay pipes (Russel & Savage 1987, 29): Blackmore & Lewis 1987, 47) McNeil regards this time as a period of stagnation and abandonment, which is supported by the documentary evidence (1987, 26). The third stage of development was 1737-1987 and included the construction of the courthouse, follies, and use of the baileys as bowling greens and gardens.

Further investigation was undertaken ten years later in 1995 by the Gwynedd Archaeological Trust who conducted a watching brief on the south-eastern side of the outer bailey during consolidation and reconstruction works on the curtain wall (Gwynedd Archaeological Trust. 1995). The works involved the taking down of original sections of walling which were then consolidated and reconstructed. Land drains were also laid during these works at an internal depth close to 2m. As a result of the work considerable amounts of material were disturbed in the outer bailey to a significant depth although no other archaeological features were identified. Following the works the open areas were backfilled and the area landscaped.

A second watching brief was carried out in 2006 during the replacing of the fencing on the western side of the outer bailey. This work was carried out under the supervision of staff from Cheshire County Council and Norton Priory Museums Trust. The work involved the hand digging of postholes for the new ironwork fencing on this side of the castle. The majority of the postholes produced no features or finds as they were excavated through the 1990s backfilling deposits. Two postholes, however, did produce evidence of archaeological deposits. Posthole 28 on the north-western side of the castle revealed a section of the mortared rubble core of the curtain wall which sat directly on top of the bedrock of the hill. On the southern section of the fence, posthole 43 uncovered the foundations of the 19th century folly wall to the east of the current gate into the monument. No other features or artefacts were found during these works.

# 3. Methodology


**Figure 3:** Trench location map based on current OS mapping (reproduced with the permission of the Controller of HMSO).

### 3.1 Aims and Objectives

The aim of the 2015 archaeological excavation was to engage the local community with their local heritage through their investigation of Halton Castle. The excavation also aimed to progress an understanding of the origins and character of the buried remains associated with the interior of the castle.

The aim of the trenches was to focus on areas of archaeological interest which had not been investigated previously. These areas had been chosen based on the results of the recent geophysical survey carried out (Whittall. 2015, Appendix 3) in combination with the results of the 1986/87 excavations conducted by Robina McNeil.

Previous archaeological investigations have highlighted the potential for the survival of structural remains within both the inner and outer bailey areas, along with potential foundation remains of courtyard structures and floor surfaces throughout the castle area.

All activities adhered to the methodology set out in the Scheduled Monument consent application approved and granted by Historic England reference no. S00113154.

### 3.2 Trench 1

This was a 15.00m x 5.00m trench located within the eastern half of the outer bailey area. The trench was aligned north-south and targeted several linear anomalies identified during the geophysical survey possibly connected to the courtyard buildings, stables and round tower.

### 3.3 Trench 2

This was a 15.00m x 5.00mm trench located within the north-east quadrant of the outer bailey to the north of Trench 1. The trench was aligned east -west and targeted an area of archaeological interest adjacent to one of the 1980s trenches and directly north of the bowling green along with a high resistance anomaly to the north west of the outer bailey area.

Two further trenches were initially proposed to investigate the possibility of internal buildings along the northern section of the curtain wall within the outer bailey and assess the survival of structures in the inner bailey. However, due to the volume of overburden in these areas, it was thought prudent to prioritise the excavation of Trenches 1 & 2.

### 3.4 Excavation Methodology

Removal of modern overburden (topsoil and subsoil) was conducted by hand with turves and topsoil stored separately for reinstatement. Removed overburden was stored on two mounded spoil heaps located at an appropriate distance away from the main open areas of excavation within the fenced edges of the excavation compound.

Following the turf and topsoil strip, all areas were cleaned using appropriate hand tools and potential archaeological features recorded by photography and scaled plan. This work was carried out by local volunteers under the supervision of Salford Archaeology staff.

All excavation of selected features (stratigraphical layers, cuts, fills, structures) was carried out by hand and recorded in plan at 1:20 using standard single-context recording methods with photographs taken as appropriate.

### 3.5 Recording Methodology

A unique text-number site code was created prior to the commencement of the programme of works.

Separate contexts were recorded individually on *pro-forma* context sheets. Plans and sections were recorded on drawing sheets at an appropriate scale of 1:10, 1:20, or 1:50, depending on the complexity of the data and features encountered. All drawings were identified individually- and cross referenced, contexts enumerated and principal layers and features annotated with OD level information.

A 'site location plan' indicating the site north and based on the current Ordnance Survey map was prepared (**Fig. 3**). This was supplemented by a trench plan which shows the location of the areas excavated in relation to the investigation area and National Grid Reference.

The OD height of all principal strata and features was calculated and indicated on the appropriate plans and sections.

Photography of all relevant phases and features was undertaken with digital formats. General working photographs were taken during the duration of the archaeological works, to provide illustrative material covering the wider aspects of the archaeological work undertaken. A copy of the digital photographs will be made available to the curatorial body along with photographs generated by a range of aerial photographs.

All finds were recorded by context. Significant "small finds" were located within three dimensions to the nearest 10mm and bagged and labelled separately, numbered and a simple description made so that they can be identified within the assemblage.

# 4. Archaeological Descriptions

## 4.1 Trench 1 (Fig. 41)

**Figure 4:** General view of Trench 1 showing Slot 1 in the foreground. Looking north.

The excavation of this trench was informed by the results of the geophysical survey (Whittall 2015) which highlighted two anomalies in this area, one rectangular and one curvilinear feature. It also aimed to investigate the possibility of remains associated with a structure identified on the 1645 Randal Holmes sketch plan (**Fig. 29**).

The trench measuring 15.00 x 5.00m was located in the south-eastern corner of the castle and was aligned north-south. Following the removal of the turf a loose dark grey-brown loamy overburden (001) was encountered, which contained frequent small (<0.10m) stone fragments, 19th- and 20th- century pottery and several sherds of medieval ceramics.

Directly below this layer was a secondary overburden deposit consisting of a more compacted light grey-brown sandy loam (002) with frequent inclusions of sandstone fragments ranging in size from *c.*0.05m up to *c.*0.45m blocks. This layer covered the entire excavated area of Trench 1 and was revealed to be between 0.55m-0.60m thick. This layer also contained pottery, metal and glass from the 19th and 20th centuries as well as bone, plaster, tile fragments, musket balls and clay pipe bowls and stems. In the south-western corner of the trench a lens of darker material (004) was identified lying within (002), which was far more compact and contained fewer small stone fragments. This lens contained a similar assemblage to that found in (002) including several decorative clay pipe bowls as well as occasional flecks of a light yellowish mortar and medieval, 18th- and 19th- century pottery. Slot 1 was 2.00m wide and was excavated across this deposit which ran the full width of the trench to assess the

nature and extent of (004) and further investigate (002). The western side of this slot was excavated to a depth of 0.90m, whereupon a layer of sandstone blocks (006) was found to lie directly below (004). This deposit comprised tumbled red sandstone blocks ranging in size from 0.15m-0.50m, some of which were dressed and some rough cut. This scatter of stone appeared to continue beyond the trench edges to the west and south as well as northwards below (002), but appeared to stop approximately 1.20m from the eastern trench edge **(Fig. 5)**. The remaining area within the slot was excavated to a depth of *c.*0.50m and was filled by (002).

**Figure 5**: Slot 1 showing stone tumble deposit (006) below (004) with (002) in the foreground. Looking west.

A second slot was excavated in the north-western corner of Trench 1 with the aim of assessing the extent of the stone tumble layer (006) and investigating a slight change in the consistency of (002) **(Fig. 6)**. Slot 2 revealed that deposit (002) lay 0.60m thick in this area of the trench and again directly overlay (006). Several finds were made from this layer which were again items of 19th- and 20th- century pottery and glass, in addition to this a large roll of 1980s plastic-coated chain link fencing was found within the layer running across the slot. Below (002) layer (006) was found to be far more densely packed than the area seen in Slot 1. Layer (006) was partially excavated for a depth of 0.70, at this point with the total depth of Slot 2 exceeding 1.20m excavation ceased. Very few 19th - century finds were made from this deposit.

A third slot on the eastern side of the trench was begun, however time pressures did not allow this slot to be excavated beyond a depth of approximately 0.50m. Despite this, Slot 3 was able to further confirm the mixed nature of layer (002) with stone

fragments of varying sizes and shapes present throughout the deposit along with areas where the material had been compacted.
Due to the extensive coverage and depth of layer (002) no other features were identified or recorded from Trench 1.

**Figure 6:** Slot 2 showing the continuation of (006). Looking north.

## 4.2 Trench 2 (Figs. 7, 42 & 43)

This trench was sited on the northern side of the outer bailey and was located to investigate a rectangular anomaly identified during the geophysical survey, to assess the continuation of features identified in the 1986/7 excavation and also confirm the presence and location of structures in the outer bailey. An earthwork ridge was found to cross the outer bailey from the northern end of the 19th- century 'lock ups' eastwards to the eastern extent of the castle which was also explored during the excavation of Trench 2.

The trench measuring 17.00m x 5.50m was orientated east-west and lay in the far north-eastern corner of the outer bailey. Again the turf and topsoil were removed to reveal a grey-brown sandy loam (003), which had frequent inclusions of sandstone fragments ranging in size from <0.05m-<0.90m and which sealed all other deposits in the trench. This layer produced a number of finds dating to the 19th and 20th century including pottery, glass and metal objects, fragments of a white lime mortar as well as

**Figure 7**: General view of Trench 2. Looking east.

a large dump of mortar and asbestos cement tiles. These tiles had a low concentration of asbestos and were therefore able to be stored safely on site. Two large dressed stones were also found to lie in this deposit in the centre of the trench *c*.3.00m apart with a darker deposit lying between. This deposit was (028), a dark grey-brown compact sandy loam with frequent stone fragments which yielded several sherds of medieval green and brown glaze pottery. This material was nearly indistinguishable from (007) which lay across the western half of the trench, overlying all features identified in this part of the trench.

**Figure 8:** Posthole [025] as seen in plan showing the natural faulting in the bedrock with wall (024) to the east. Looking south.

Layer (007) lay below (003) and directly overlaid the bedrock (008) and the features which cut into it **(Fig. 7)**. Although numbered separately, these fills may have been

the same deposit as (007) with marginal differences between them caused by differing levels of drainage or animal activity. Layer (007) was compacted and contained infrequent inclusions of small sandstone fragments along with a mix of finds including sherds of medieval, 17th-, 18th- and 19th- century pottery, bone, clay pipe, glass, two silver coins dating to the reign of William III (1689-1702), musket and arquebus balls. The bedrock lay roughly level at a depth of *c*.0.45m at the western extent of the trench and continued for 3.00m before sloping away to the east. In the far north-western corner of the trench a fault line in the rock caused a sheer drop with the lower level to the north *c*.0.20m deeper. Into this lower level a large circular posthole [025] had been cut which measured 0.80m x 0.80m x 0.50m deep with steeply sloping sides and a flat base **(Fig. 8)**. Tooling marks were identified on both the sides and the base of the posthole which took the form of short diagonal cuts *c*.0.02m-0.05m apart on the sides and pitted indentations on the base. The posthole was filled by (026) which was very similar in nature to (007) but was darker, more densely compacted towards the base and contained small fragments of stone and animal bone.

**Figure 9:** Posthole [018]. Looking west.

**Figure 10:** Posthole [016]. Looking north.

The higher level of bedrock to the south was also revealed to have several features cut into it, some of which continued down the eastern slope. The first of these features was another circular posthole [018] which lay 2.00m southeast of [025] and measured 0.98m x 0.90m x 0.20m deep **(Fig. 9)**. Like [025], this posthole possessed clear tooling marks in the straight sides and flat base and appeared, with the exception of the depth, to be very similar in nature to [025]. The posthole was filled by (019), a dark brown sandy loam, similar to (007) but with a higher proportion of humic material. A sub-rectangular posthole [016] was then revealed *c*.2.00m to the east of [018] cutting into the slope. This measured 0.80m x 0.90m x 0.35m deep with straight sides and a flat base **(Fig. 10)**. This feature was roughly aligned northeast-southwest and had comparable tooling marks to [018] and [025], although these were not so clearly visible. The posthole was filled by (017) which appeared to be almost identical to (007) and may have been part of the same deposit.

**Figure 11**: Wall (024) showing the rubble core laid directly onto the natural bedrock. Looking north.

**Figure 12:** Western face of Wall (024), showing masonry coursing used to compensate for differences in the natural bedrock level. Looking east.

Wall (024) was revealed to be crossing the western end of Trench 2 in a northwest-southeast alignment between the four large postholes and measured 1.45m x 4.80m with a depth of 0.15m to the south and 0.40m to the north **(Figs. 11 & 12)**. The majority of the length of this wall was visible as patches of a pinkish-yellow mortared rubble deposit on the northern side of the trench which was contained by four courses of dressed sandstone blocks on either side to the south. The blocks measured 0.30-0.40m x 0.25-0.30m x *c*.0.30m thick and were laid with the same pinkish-yellow mortar as the rubble. It was clear that the rubble represented the core of the wall which had been constructed directly onto the bedrock where possible with coursed stonework added to compensate for the height differences in the bedrock.

**Figure 13:** Northern section of linear feature [020] showing partial filling by (024). Looking southeast.

A curving linear feature [020] was identified between postholes [018] and [016] which ran northeast-southwest **(Figs. 13 & 14)**. This followed the slope of the bedrock before running out *c*.6.40m from the western trench edge and measured 0.30m in width, 0.20m deep and 3.00m long. For the most part [020] was filled by (023), a material almost identical to (007) but with a higher moisture content, although a short section crossed by wall (024) contained the rubble core from this feature.

The remains of a possible fourth posthole [027] to the north of [020] was identified approximately 0.40m from the northern trench edge. Only the western half remained due to its position on the slope of the bedrock with the eastern side truncated by later

activity. The remaining curved cut suggests that it was of a similar shape and size to [018] and was found to be c.0.40m deep.

Linear feature [020] was found to be cutting a second, deeper linear [021] which extended 4.00m eastwards from the south-western corner of the trench and was filled by (023) **(Fig. 15)**. This was cut directly into the bedrock and appeared to be the cause of the earthwork ridge on this side of the outer bailey. The southern side of the feature was outside the excavation area, but as no corresponding ridge was identified. This, like [027], may have been vulnerable to and truncated by later activities. The feature had a moderately sloping irregular northern side as it was cut through the plated bedrock and flat base with a possible second, straight cut in the middle of the base, although this may be a fault line within the bedrock. Tooling marks of a similar nature to those identified on the postholes were observed on both the side and base. The base of linear [021] was cut at its eastern end by a small square posthole [022] measuring 0.30m x 0.20m x 0.15m deep which again was missing a southern side. The posthole had straight sides and a flat base, but showed no evidence of tooling marks and was filled by (023). The hilltop naturally slopes towards the southeast and the lack of southern edges to features [021] and [022] may be due to the accumulation, and later removal, of soil deposits overlying the slope into which they may have been cut.

**Figure 14:** Southern section of linear feature [020] with posthole [022] to the west. Also showing [021] and rubble core (024) Looking north.

**Figure 15:** Linear feature [021] showing the possible straight cut in the base. Looking east.

**Figure 16**: General view of the south-western corner of Trench 2 showing the relationship between the rock cut features. Looking east.

The bedrock (008) formed a 4.00m wide plateau at the far western side of the trench which then sloped eastwards for a further 3.50m producing a drop in height of 0.90m. where it appeared to level off. Onto this level section at the base of the slope two burials were identified and the bodies, SK001 to the north **(Figs. 17-20)** and SK002 to the south **(Figs. 21-23)**, were laid directly onto the bare rock. In the western end of the trench, (001) lay directly above layer (003) but in this central area was found to overlie (028) a patch of dark brown sandy loam with frequent inclusions of stone fragments and sherds of medieval pottery lying between two large dressed stones *c*.2.00m apart. This deposit lay against (003) and overlay a 0.05m thick black lens of clinker and burnt material (013). This layer had an excavated area of approximately 4.00m x 3.50m but at least in part continued eastwards below (003). The layer had frequent inclusions of coal and clinker and contained fragments of 19$^{th}$ century brick, tile and pottery. The graves appeared to have been cut from below this layer into (007) although cut [014] identified to the north of SK001 was the only visible grave cut for either burial and was ephemeral at best **(Fig. 17)**. The material overlying the burials, (015), was also a dark brown sandy loam and nearly indistinguishable from the surrounding deposit (007). Deposit (015) also contained fragments of human bone not related to the skeletons found below, leading to the possibility that a third grave may have been disturbed as a result of the burial of the two complete individuals, although again no cut was identified for this. A number of medieval green-glazed pot sherds dating to the 14$^{th}$-15$^{th}$ century were also found in this deposit as well as a farthing dated to the reign of James I, *c.*1601.


**Figure 17**: SK001 in situ showing ephemeral grave cut [014] marked.

**Figure 18**: Burial SK002. Looking west.

**Figure 19**: Detail of SK001 torso showing the arrangement of the hands. Looking east.

**Figure 20**: Detail of SK001 legs showing breaks to both . Looking east.

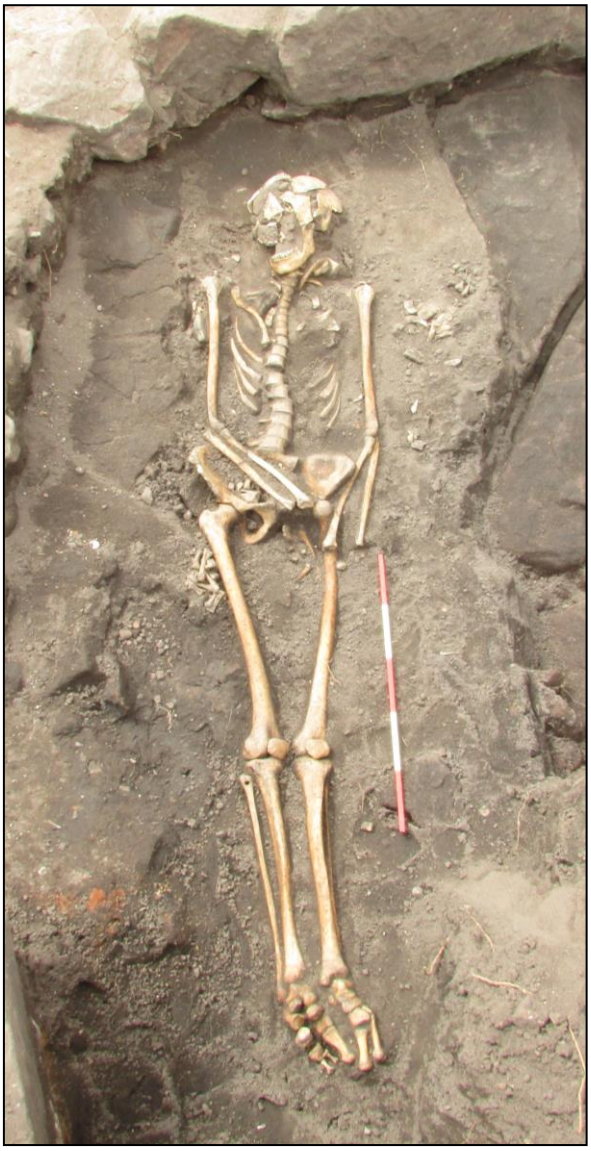

**Figure 21**: Burial SK002. Looking West.

**Figure 22**: Detail of SK002 torso showing the awkward position of the arms. Finger bones to the south were displaced during excavation. Looking west.

**Figure 23**: Detail of SK002 legs. Looking north.

**Figure 24**: General view of western end of Trench 2 showing the position of the burials in relation to the other features identified in the trench. Looking west.

The unexpected discovery of human remains meant that there was not sufficient time to fully excavate the entire eastern end of the trench. To maximise the time that was available, Slot 4 was excavated at the far eastern end of the trench to investigate the level of the bedrock and the possibility of any features in this area **(Fig. 25)**. The slot was 2.50m wide across the eastern end of the trench and was excavated to a depth of 1.00m below ground level at which point excavation ceased as a number of in situ deposits were observed. During the removal of (003) large dressed stone block was identified in the far south-eastern corner of the trench measuring *c.*0.70m x 0.30m x 0.30m which had a number of roughly carved letters in the upper surface, some of which were illegible. Although the block was found within (003) it protruded through the topsoil and was partially visible before the excavation began. This was not found to be associated with any structure or feature. Following the removal of layer (003), layer (007) was again encountered lying at a depth of 0.30m and measuring 0.40m thick. Cutting this layer, at the northern end of the east-facing section of the slot, a cut [029] was identified in section only measuring 0.50m wide and 0.40m deep **(Fig. 26)**. The feature had slightly curved sides and a flat base and appeared to be cut from below (003) so was not clearly identified in plan. The feature was filled by (030) a dark black-brown silty loam with occasional inclusions of red sandstone fragments <0.05m and other smaller stones <0.02m, but containing no finds. Directly below (007), three deposits were revealed at the base of the slot. To the south lay (009), a dark black-brown silty loam with frequent inclusions of charcoal and burnt material including several large lumps in the southwest corner of the slot. A mix of medieval

to 20th- century pottery sherds, animal bone and clay pipe was discovered within this deposit. This deposit lay against (010), a fan-shaped area of bright pinkish-yellow clay with a large lens of yellow clay running west beyond the edge of the slot. To the east of this lens lay the damaged remains of a single burnt timber extending approximately 0.80m into Slot 4 in a south-easterly alignment which was 0.15m thick and also continued westwards below (007). No other objects or inclusions were discovered in this deposit. The remaining area to the north of the slot was taken up by (011), a dark brown compacted silty loam with small lenses of pinkish-yellow clay and occasional fragments of red sandstone throughout. This layer produced a sherd of green-glazed 13th century medieval pottery and a brass jetton coin/token.

**Figure 25**: Slot 4 showing the clay lens and burnt timber against the western section. Looking north.

**Figure 26.** East-facing section of Slot 4, showing cut [029]. Looking west.

# 5. Archaeological Results

## 5.1 Trench 1

The excavation of Trench 1 was designed to shed light on the possibility of surviving archaeology relating to stables as marked on the Randall Holmes sketch plan of 1645, in the eastern part of the outer bailey, as well as to investigate anomalies identified by the geophysical survey (Appendix 3).

The excavation revealed that successive episodes of construction and landscaping in the 18th and 19th centuries followed by remedial work in the 20th and 21st centuries have raised the ground level by at least 1.00m. This, in conjunction with the drop in height of the natural bedrock on the eastern side of the hill, meant that within the time and resources available it was not possible to excavate Trench 1 deeply enough to reveal any features associated with the occupation of the castle.

Despite this, the presence of pottery dating to the 14th to 16th centuries in all layers within this trench suggests the potential for more deeply buried features relating to the castles medieval and post medieval occupation. In addition, the layer of stone rubble observed in Slots 1 and 2 may have been laid down as a result of episodes of demolition during either the Civil War period or later and may well be sealing potential earlier features relating to the medieval occupation of the castle.

Should any future work be carried out on this area of the outer bailey it would be prudent to consider alternative excavation strategies to deal with the 1.00m plus modern deposits. Perhaps a longer time frame for hand digging or the use of a small mechanical excavator could be employed to maximise the potential for the discovery of archaeological features.

## 5.2 Trench 2

The excavation of Trench 2 was intended to explore the possibility of remains associated with internal structures on the northern side of the castle as illustrated in the Randall Holmes sketch plan of 1645 and possibly related to those found during the 1980s excavation. Geophysical anomalies were also identified in this area which were thought to have reasonable archaeological potential.

Unlike Trench 1, this trench revealed a number of features representing several phases of activity on the site dating from the medieval period to the 20th century. Again the stratigraphy in this trench was affected by 19th- and 20th- century landscaping and levelling, although the corresponding modern deposit (003) was not as extensive as that observed in Trench 1. This may in part be due to the possibility that the level of the underlying bedrock in this area may be higher than the southern part of the outer

bailey. In contrast to Trench 1, no extensive deposits of sandstone demolition debris were found, rather smaller fragments distributed throughout the overlying soils or occasional larger blocks towards the upper layers of the trench. The sloping of the bedrock to the east may mean that these larger blocks have accumulated towards the lower area around the edge of the outer bailey, or have been lost down the steep side of this part of the hill. No evidence of demolition debris was seen in Slot 4 nevertheless, this slot did reveal evidence of medieval occupation in the form of a fragment of coarse medieval pottery with a green glaze and a jetton token from deposit (011), but these were not part of a larger assemblage within this deposit.

It is likely that the three deposits identified in the base of Slot 4 represent a levelling layer brought onto the site during one of the many construction/remodelling episodes of the castle's construction to compensate for the sloping bedrock below. McNeil suggests that buildings in the inner bailey had cellars cut into the bedrock with the resulting material used for the construction of the walls, however the sloping bedrock in the outer bailey would not make this method possible (McNeil 1987). Rather, this area would require levelling material to be used to form a flat area on which to build. The compacted nature of the material in Slot 4 may suggest it may have been used as a crude flooring surface either during this levelling work or construction or in one of the service buildings that may have occupied this part of the outer bailey. The junction between these deposits and the sloping bedrock is likely to be situated below the unexcavated area in the centre of the trench. The only feature which did appear to occupy this area was [029] in the east-facing section of Slot 4, which did not contain any finds or structures.

The western end of the trench had by far the greatest concentration of occupation evidence and was able to reveal structural remains dating back to the medieval period and possibly earlier. The features identified were largely cut directly into the bedrock or followed its natural faults and fissures. This in itself indicates that each new construction returned to the bedrock for its foundation, sweeping away the remains of previous structures, occupation/floor layers and silting deposits. This is also supported by the similarities between the fills of the rock-cut features and the homogenised silting layer (007). In most cases it possible to detect a difference between these fills and (007), however this was so slight as to suggest they were caused by localised variations in drainage, silting, animal or root activity associated with changes in the depth at which the features were cut. This would suggest that this material including (007), was laid down over a long period of decline following the castles abandonment.

There appears to be three potential phases into which the rock-cut features in Trench 2 can be placed based on their stratagraphical relationships. However, the absence of dateable material from discreet fills makes this difficult to confirm. These broadly fall into two categories; linear features [020] and [021] which are likely to represent drainage gullies or construction slots and circular features [016], [018], [022], [025] and [027] which appear to be postholes.

*Phase 1*

The earliest feature seems to be the partially exposed linear feature [021] running east from the western trench edge. Although the southern part of this feature was not excavated, the straight recess in the flat base would suggest it may have been used as a beam slot which seems to have been widened at some point. The alignment of this feature makes it unlikely to be part of the same structures as those associated with the postholes and linear feature identified to the north, but may represent the northern extent of an internal building in the early layout of the castle, or possibly predating the Norman period altogether.

*Phase 2*

The second phase of occupation was seen in the curvilinear feature which cut through [021] and continued northeast. Again, the position of this feature did not seem to respect any of the others in this part of the trench with the possible exception of the small square posthole which also cut [021]. The overall shape of the feature could not be seen due to its fading out at the base of the bedrock slope but if it did continue eastwards at the same level it must have been cut into one of the (now absent) levelling deposits overlying the bedrock, possibly similar to (011). Alternatively, there is a step in the bedrock below SK001 which may indicate that the feature turned north although no tooling marks were observed which may mean it is another natural fault in the rock. The shape and orientation of the feature are consistent with a possible drainage gully taking water away down the lower side of the hilltop, although whether this is related to a structure, possibly supported by a post in posthole [022] or simply land drainage is unclear.

*Phase 3*

The third occupation phase is the most likely to relate to the internal buildings of the medieval castle. The most obvious of these features is wall (024) which is comparable with other sections of medieval walling found in the castle, especially during the 1986/7 excavation (McNeil 1987). Indeed, it is almost identical to the example identified in McNeil's Area 37 trench located immediately west of the current Trench 2 and appears to line up with her projection for the unexcavated portion of the D-shaped tower found in that trench **(Fig. 27)**. Wall (024) follows the same construction technique as noted by McNeil of building directly on top of the bedrock with portions of coursed dressed foundation blocks inserted to compensate for differences in the natural rock levels (McNeil 1987). The additional similarities in the nature of the rubble core and associated finds suggests that this wall is almost certainly part of the D shaped tower believed to have been standing in the 15$^{th}$ or 16$^{th}$ century (McNeil 1987).

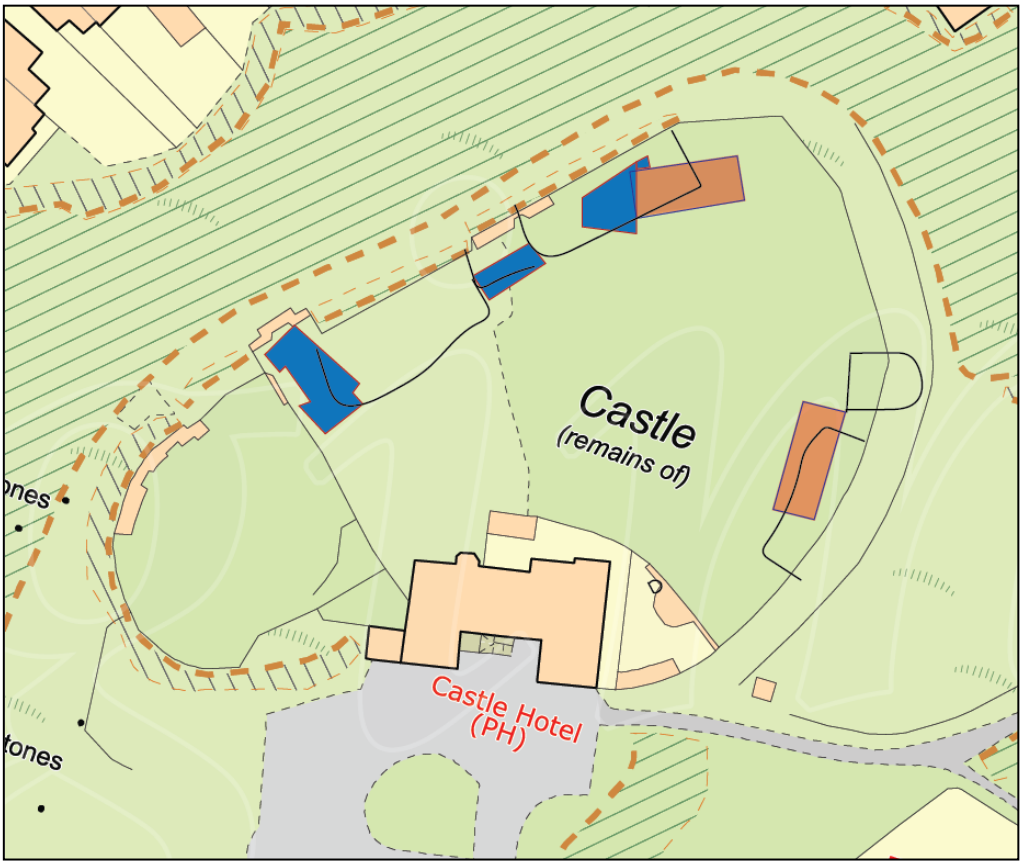


**Figure 27**: Composite plan of current trenches (red), McNeil's trenches of the 1980s (blue) and structures appearing on the Randall Holmes sketch plan. Based on current OS Mapping.

The large sub-circular features which are most likely postholes are, however, more challenging to interpret and have two possible explanations for their position and alignment. The first is that they may have been excavated to house timber supports/scaffolding used during the construction or demolition of the tower, similar to the rectangular pits found in the 1980s (McNeil 1987). This purpose can certainly be applied to the postholes to the west of the wall which both lie very close to its edge and could accommodate large timbers with packing material, although no evidence of this was found.

Alternatively the postholes may relate to a building occupying this part of the outer bailey either during the castle's early timber construction dating to the 11th century, which would predate the rubble core wall by several centuries or following the demolition of the 13th century D-shaped tower sometime in the 15th century. The Randall Holmes sketch plan of 1645 illustrates a large structure in this part of the castle which may be evidence of a post-D shaped tower structure that may have utilised the postholes. However, the size and spacing of the postholes has similarities with the medieval aisled hall discovered on the Iron Age hillfort at Mellor, Stockport. This structure consisted of four rows of five post pits all evenly spaced approximately 1.70-2.00m apart supporting a building *c*.10 x 11m in size. Like those at Halton these

pits also had steep, near vertical sides and a flat base but were slightly larger, measuring up to 1.60m wide and *c*.0.67m deep (Noble & Thompson, 2007). Nearly all of the Mellor pits had a number of packing and silting fills as well as evidence of post pipes caused by the rotting remains of the posts that occupied them. In terms of finds, a number of 12th- to 14th- century pottery sherds were recovered, along with an unusual pheon arrowhead also dating to the same period giving an occupation period for the hall between the early 13th- and late 14th- centuries. Given the similarities between these features and the Halton postholes it is possible that the findings at Mellor may give an insight into the type of structure, albeit slightly smaller, that may have occupied the northern part of the outer bailey at Halton Castle.

The most unexpected discoveries to be made in Trench 2 were the two burials, one male and one female, uncovered in the central area of the trench. Due to the unpredicted nature of these finds the excavation proceeded under Home Office Licence. Both burials appeared to be cut into the general silting deposit from below the 19th- century levelling layer suggesting an earlier date for burial. This is supported by the few green-glazed pot sherds and coin recovered from the grave fill (015), all of which pre-dated this period. Due to the lack of visible grave cuts for either burial it was difficult to ascertain a stratigraphical relationship between them. Three factors led to the original supposition that the burials were interred within a reasonably short interval; these were the lack of grave cuts, their close proximity and alignment and the homogenised deposit (015) which was identified overlying them.

The radiocarbon dating results for the burials have now indicated that this is unlikely to be the case and that the individuals died at least 50-100 years apart (Appendix 5). The male skeleton was dated to AD1425-1470 and the female to AD1525-1595 and AD1625-1665. The discrepancy in dating between the radiocarbon results and the 1601 farthing found in deposit (015) can be explained in one of two ways; either the female was interred during the 16th century and later disturbance (landscaping, building collapse etc.) caused the intrusion of later artefacts into and mixing of deposit (015), or disturbance of this deposit occurred prior to the burial of the female along with the farthing in the 17th century. Either way it is clear that due to the shallow nature of the deposits overlying the bedrock and the continual activity on the site during this period both grave fills had been extensively disturbed before the 18th century making the stratigraphical relationship of the features in this part of the trench almost impossible to discern.

Initially, the cause of death for the male was thought to have been hanging, based on the disturbance of the vertebrae in the neck, but following the results of the osteological report no further evidence has been found to support this. Similarly, there was no skeletal evidence to suggest a cause of death for the female discovered 0.50m to the south. Both individuals were found to have a reasonably poor level of health with the male suffering breaks to both legs resulting in osteomyelitis along with poor dental health and osteoarthritis in the legs and spine. The female appeared to have

suffered a broken rib and may have had Marfan's Syndrome, which may explain her height of 5 feet 7½ inches and elongated limbs. The full report on both skeletons is contained within Appendix 4.

The presence of a possible third, disrupted burial is challenging as no dateable evidence was found with the remains. The fact that bone fragments were scattered throughout the overlying fill would indicate that this individual had been buried long enough for the soft tissue to have fully decomposed prior to its disturbance leaving only skeletal remains, a process taking at least 10-15 years. This in turn suggests that this individual was buried considerably earlier than SK001 and 002.

It is unclear if these burials represent an isolated episode, or if this area of the outer bailey was at some point designated as a burial place. Further work in this area would be required to ascertain the presence of any other burials to answer this question. The close proximity of the graves to the rock-cut postholes may even suggest that they were originally within a building which in turn gives weight to the possibility that the castle chapel may have occupied this area at some point and was still thought of as consecrated ground. The fact that the male burial was dated to between AD1425-1470, a time when the castle was still occupied and functioning as a district centre, further supports this idea.

The final phase of activity observed in Trench 2 was represented by the overlying layers of landscaping and levelling material which accumulated over the post-Civil War period ending in the major works documented in the 19th century. The earlier of these layers, (007) was found across the trench in or overlying the majority of the features identified and contained a mix of finds dating from the 17th century onwards. Taken together along with the silty nature of this deposit it would seem that (007) was laid down following the castle's abandonment after its fall during the Civil War and continued to build up throughout the 18th- century when documentary evidence suggest that the only activity on the site was associated with the courts. The other overlying layers can almost certainly be attributed to the 19th- century landscaping of the castle when the folly walls, bowling greens and sunken garden were constructed.

### 5.3 Community Involvement (Figs. 28-32)

One of the main aims of the excavation was to engage the local community with the investigation of Halton Castle and in doing so encourage a greater awareness of the monument. Over the course of the three week excavation the site was worked on by over 250 school children from Runcorn and Widnes primary schools and 90 adult volunteers with a wide range of experience and abilities. For some this was the first excavation they had worked on but proved to be a stepping stone to either further interest in excavation or research into to the history of the area. A public open day was able to welcome a further 150 visitors with guided tours, crafts and displays. The excavation was widely covered in the local print media and has sparked interest from

across the region. Feedback from both the adult and school volunteers suggests that their experiences have been very positive and inspired them to continue to take a more in-depth interest in their local heritage. It is hoped that as a result of the excavation many more local people will be able to access and take part in the ongoing life of Halton Castle through research, conservation and monitoring.

**Figures: 28-32**. Community volunteers working on the excavation. Local people were involved in all aspects of the dig from excavating to finds processing and recording.

# 6. Discussion

## 6.1 Halton Castle and the Exploration of North West Castles

The term 'castle' covers a wide variety of medieval fortifications and typically refers to a building that is "the fortified residence of a lord", according to Allen Brown (Brown 2004). The first castles in England were built by Normans in the service of Edward the Confessor during the 1050s: four in Herefordshire and one in Essex. With the Norman Conquest the number of castles increased dramatically and they became a lasting feature of the English landscape (Liddiard 2005; Creighton 2002; Goodall 2011). However, the first castle to be built in North West England was not until 1070, when an artificial earthen mound known as a motte, with a wooden tower on the top, was erected at Chester by King William.

Although 21st- century North West England encompasses two historic borders (those with north-eastern Wales and south-western Scotland) the 83 castles definitely known within the region account for less than ten percent of the total number of castles recorded in England; a percentage not significantly increased by the identification of a number of undocumented earthwork sites in recent years (Higham 1991). This number is based primarily on Cathcart King's index, with amendments where necessary. The study of castle sites in the region can, perhaps, be traced to Speed's maps of Cheshire and Lancashire surveyed in the early-17th century. The survival of a mid-17th century sketch plan of Halton Castle is thus very rare. These included the earliest plans of any of the castle sites from the region. Antiquarian interest in the 18th century focused upon the dramatic setting of the ruined castles, with the Buck Brothers sketching many of the stone castles of North West England in the late-1720s and 1730s, including Halton Castle. During the late-18th and early-19th centuries castle sites were also the subject of several paintings by landscape artists including John Constable and Joseph Turner as well as local artists such as Moses Griffith (Grimsditch, Nevell & Nevell 2012, 116, note 5).

The earliest archaeological excavations on a North West castle took place in the 19th century with the investigation of the earthworks at Penwortham, near Preston, and Mote Hill to the north of Warrington. Results from these were not very revealing and in some cases have been lost entirely; as with the early investigations at Hornby in the Lune valley (Renn 1973; Brennand with Chitty & Nevell 2006).

The 20th century saw an upsurge in interest in the castles of the region with an increasing number of archaeological and historical studies, and a growing list of protected sites. This work included several landscape studies. Cathcart King's monumental survey of the castles of England and Wales, published in 1983 (King 1983), included entries for 78 castles and 86 tower houses in the region with bibliographies for each, although no plans nor elevations were included.

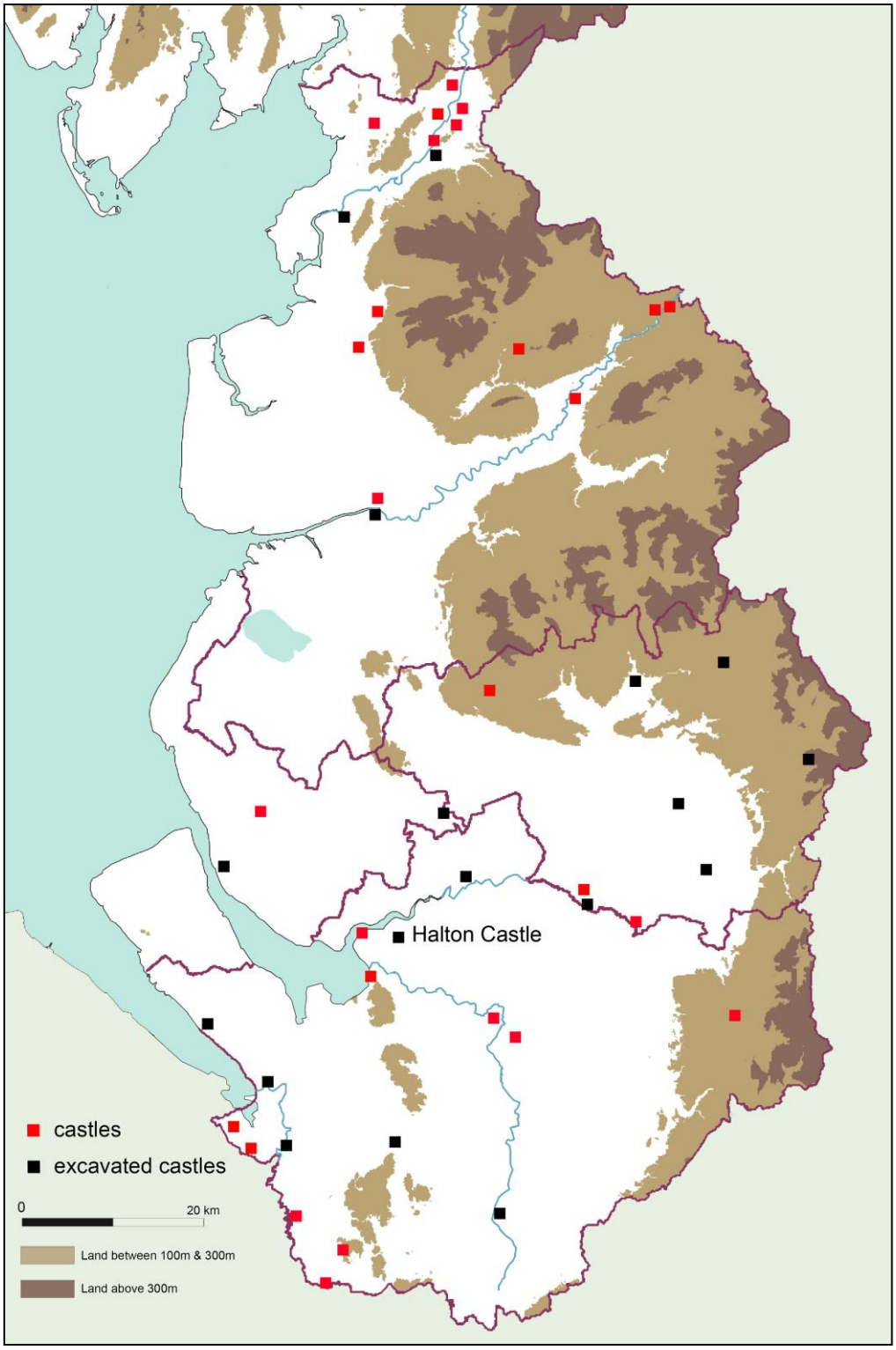


**Figure 33**: The distribution of castles in Lancashire and Cheshire

As befits their more numerous nature, the castles and tower houses of Cumbria saw three major studies in this century (Curwen 1913, Hugill 1977, Perriam & Robinson 1998). The less numerous castles of the truncated post-1974 county of Lancashire had three significant studies during this century (Higham 1991, Salter 2001, Wood 1996). The late 20th- century metropolitan areas of Liverpool and Manchester have none and one respectively (Grimsditch, Nevell & Nevell 2012), and more surprisingly Cheshire also lacks a detailed landscape overview of its castles. Although the latter county has

been covered in a gazetteer published in 2001, that work mirrors the studies of Cathcart King by overlooking Watch Hill near Altrincham and locating Buckton Castle in Lancashire rather than in Cheshire (Salter 2001).

Despite the unevenness of the historical studies of North West castles during the 20th century, excavation and survey work during this period encompassed 27 sites. This work ranged from fabric surveys and test pitting to area excavations, with a large bias towards the investigation of stone castles. Archaeological work on earthwork and timber castles often focused on those that developed into important later castles. In Cheshire these were the castles at Aldford and Nantwich. In Greater Manchester small-scale investigations were undertaken on early sites at Watch Hill in 1976, Rochdale in 2001 and at Manchester Castle, in the grounds of Chetham College, in the early 1980s, the latter exposing a possible inner defensive ditch (Brown & Johnson 1985, Battersby 2001). West Derby (Droop 1928, Droop & Larkin 1928) was the only earthwork to see significant investigation in the Merseyside area during this period. In Lancashire no mottes were investigated during the 20th century and little archaeological work has been undertaken on Cumbria's northern earth and timber castles. The exception was the major excavations by Davison during the 1960s at Aldingham (Perriam & Robinson 1998).

The most extensively investigated stone castle in the region is Beeston in Cheshire. This was the subject of excavations between 1968 and 1985 (Ellis 1993), which showed the outer curtain wall for the early-13th century stone castle was built on the remains of a late-Bronze Age and early-Iron Age hillfort. The work at Buckton Castle between 1999 and 2010, in Greater Manchester, represents one of the most extensive programmes of castle excavation in the North West, in terms of the percentage of the defences and interior investigated, since the work at Beeston (Grimsditch, Nevell & Nevell).

Elsewhere in the region the stone castles at three of the county towns have been studied. The fabric of Carlisle Castle, and its associated town walls, has been extensively recorded though only parts of the defensive ditch system have been investigated (Lloyd Evans Prichard 2001, McCarthy *et al* 1990, Perriam 1976, Zant 2009). The stone castles at two other medieval county towns in the region, Chester and Lancaster, have seen only very limited excavation work. Elsewhere in the region the stone castle at Liverpool (Davey & McNeil 1980) has seen only small-scale investigation. Halton on the southern side of the Mersey estuary has seen more investigation though this was confined to a series of trenches in the 1980s within the inner bailey (McNeil 1987). Yet such a limited approach can provide extremely useful results; the location of the late medieval castle at Lathom in south-west Lancashire, which was rebuilt on a palatial scale during the 15th century, has recently been confirmed by just such evaluation work (Lewis 1999, Salter 2001, Wood 1996). In Cumbria the stone castles at Brougham, Brough, and Piel (Newman 1987 & 1996, Summerson 1999, Summerson, Trueman & Harrison 1998, Williams 1992) have all seen small-scale excavation combined with standing building work. Investigations at

the stone castle at Kendal have helped to confirm the rather sporadic historical record, although its origins as an earth and timber castle remain uncertain. Other stone castles in Cumbria to receive archaeological attention in the late 20th century include Pendragon, where recording has been undertaken of the upstanding elevations as well as partial clearance of collapsed masonry. Limited recording and excavation work has also taken place at Egremont (Guy 2014, LUAU 1995, 1997 & 1998, Turnbull & Walsh 1994).

## 6.2 Halton Castle in Context

The recent excavation of Halton Castle, whilst now making it one of the most extensively investigated castles in the region has proved that the site still poses new questions despite the considerable amount of excavation and research already carried out. The aims of the excavation were to investigate areas of the castle not previously excavated during the 1980s and to assess the potential for surviving structures in the outer bailey based on the results of the geophysical survey. Very little was known about this area of the castle and documentary sources tend to give a general description of the castle as a whole or focus on the higher status areas such as the inner bailey and court house. The other challenge facing the investigation of this area was the topography of the hill itself with much of the structural remains thought to relate to the underlying bedrock which dropped up to 5m from west to east (McNeil, 1987).

The castle sits at the northern end of the Cheshire sandstone ridge overlooking the river Mersey with views across to Wales and Yorkshire. No clear evidence of prehistoric or Roman activity has been found on the site although the Cheshire ridge has at least five Iron Age occupation sites and Roman activity has been documented in the area immediately around Halton indicating the likelihood of some form of early settlement in the area. The castle's natural topography also lends itself to the location of a promontory settlement due to its location overlooking the River Mersey in a well defended, raised location, albeit on a smaller scale to those at Eddisbury or Beeston. Therefore the possibility of some form of Iron Age or earlier settlement on the site is reasonably high, though the methods of construction of the later structures have made the survival of any artefacts from this period impossible. Despite this the site's shallow bedrock may be the key to identifying possible pre-medieval occupation in the form of cut features such as gullies or postholes. The rock-cut features found during the excavation may well be examples of this. In particular both the linear and curvilinear channels identified in Trench 2 appeared to have no relationship with the medieval structures identified. Whilst no dateable evidence came from these features, the stratagraphical sequence indicates both predated the D shaped tower and their alignment is at odds with structures seen on the later plans of the castle. The devotion of time to create such rock-cut gullies would seem to suggest that whatever structure these features were related to was intended to have a degree of permanence whether as part of the earliest Norman phase of the castle layout or an earlier settlement.

There is scant evidence for the original Norman timber castle but its laying out is generally attributed to Nigel the 1st Baron of Halton in the 11th century. This was initially believed to be a motte and bailey construction as was common for this early phase of castle building, although no definite evidence of this was found in either excavation. Nigel's choice of location for his castle may have meant that this form of construction was not necessary as the hill had a natural motte in the form of a knoll on its eastern side which appears to have been maximised by an early ditch found in the 1980s. In addition the hill was in an excellent position from which to see and be seen, two important qualities in a high status defensive structure.

Despite the importance of the Barons of Halton, the castle was the main baronial seat of only the first seven barons. Following his inheritance of the wealthy De Lacy estates in 1193, Roger the seventh baron removed his household to the family's grand estate in Yorkshire. Following further advantageous marriages resulting in the castle's incorporation into the Duchy of Lancaster and eventually Crown estates the barons never returned and the castle remained a local administrative centre. Both the excavations and the documentary evidence however, have proven that this did not mean that the castle went into decline, indeed building and alteration programs continued throughout the 13th to 16th centuries (Jamieson, 1987).

These works included the building of a prison below the 'Earls' chamber in 1423 (Jamieson, 1987), the construction of the twin polygonal gate towers in the 1450s, the construction and demolition of the D shaped tower in the outer bailey and various maintenance and repair work. Such activity can be viewed as part of a more widespread episode of rebuilding in castles across the North West (Grimsditch, Nevell & Nevell, 2012). In part this may have been due to the replacing of timber structures with stone, as was almost certainly the case, but it is also possible that some of this remodelling was not purely for defensive purposes. Like Halton most castles were built on areas of raised ground, both natural and manmade, which alongside their observational qualities were a clear symbol of authority over the local area, the local Lords most efficient statement of power. It must have, therefore, been important at Halton, with the Baron absent, that those administering in his stead were able to illustrate his authority in other ways. Differing Barons will also have had differing views on the treatment of the larger buildings in their estate with some choosing to use them to assert their influence and others leaving them in the hands of their stewards and constables.

The recent excavation, like that of the 1980s, does indicate that episodes of demolition and construction involved the thorough clearing of earlier structures in order to build foundations directly onto the bedrock resulting in the removal of many earlier features. This is supported by the artefactual assemblage which contains no material dating to before the 13th century, suggesting either that no structures were present in this area before then or that all traces and debris from earlier occupation phases were swept away to make way for a new structure. The scale of clearance would imply that this

was done to accommodate a large building, most likely the D shaped tower represented by sections of dressed rubble core walling found in both the current and 1980s excavations. A 13th century date for the construction of this tower would therefore seem to be the most likely and echoes the findings of McNeil's work. McNeil also postulated that the date for the demolition of the tower may have coincided with the construction work documented in the 1400s which included the building of the polygonal gate towers (McNeil, 1987). Again the artefactual assemblage found in the recent excavation may confirm this date. The majority of the finds can be dated to three distinct peaks, the earliest of which is the mid-15th century, indicating an increase in activity at this time, a likely possibility given the numbers of people that would be needed on site during the building works. The nature of the finds from this period was predominantly reasonable quality functional wares, consistent with those used in domestic settings.

Documentary evidence shows that following this period of construction the castle was maintained in a good state of repair until the later 16th/early 17th century when it began to deteriorate. During the period 1274-1908, as part of its role as the centre of local government, the castle was used as the local court and prison. The court's main purpose was to hear cases of civil dispute and less serious petty crimes, with more serious cases sent to the Assize courts at Chester. The first documented mention of a prison at the castle comes from the building records of 1423 when one was constructed below the 'Earls' tower. Later in the 1580s the castle was also designated as a prison for Catholic recusants, although it is unclear if it was ever used as such (Jamieson & Jones, 1987). Both the court and prison continued to be housed at the castle, even after its decline following the Civil War, right up until the early 20th century when the purpose built 1727 court house was converted to a public house. During the medieval period the Duchy of Lancaster regularly surveyed the condition of the castle and a report of 1564 makes it clear that an important reason for the monitoring and maintenance of the site was its use as a court and prison showing the importance of these functions to the local area and as evidence of the authority of both the baron and the crown.

The decline in the upkeep of the castle seems to have begun in the late 16th century and by 1609 when James I ordered a survey to be taken of his castles, Halton was found to be in a state of disrepair. Despite his predecessor, Elizabeth's belief that almost all the castles of the Duchy were worth preserving, the role of castles across the country was changing and moving away from the need for overtly defensive structures (Eales, 2006). By the 13th century many castles were already beginning to take on a more domestic, almost manorial character with equal or sometimes less emphasis on their military function. In some cases the decline in military importance forced a change in character with many becoming either local administrative centres, like Halton or fortified manor houses of the nobility like those at Dunstanburgh Castle in Northumberland and Brough in Cumbria (Nevell, Nevell & Grimsditch, 2012). Others however were unable to weather the storm and were rendered obsolete, as was

the case at the Duchy owned castles at Beeston in Cheshire and Peveril in Derbyshire, both of which were in ruins by the mid 16th century. As one of many of the Duchy's aging castles Halton could have easily suffered a similar fate however its function as the local administrative centre was well established and emphasis placed on its judicial role made it an important site to maintain, at least in part.

The second peak in activity seen in the artefactual assemblage recovered from the excavation is dated to the 17th century and coincides with the castle's likely refortification during the Civil War. By this time Halton was part of the crown estates and as such was targeted by the Parliamentarian forces under Sir William Brereton, as a bastion of support for the king. The castle was besieged twice, in 1643 and then a year later in 1644 when it finally fell. An order was given for its slighting, although there is no evidence if this was carried out or not. Beeston castle in Cheshire was also subject to sieges during these years, at first by the Royalists whose victory was quashed a year later by the Parliamentarians, again under Sir William Brereton. Excavation and documentary sources from the site indicate that despite years of abandonment, work was carried out on Brereton's orders to repair and strengthen the defences at Beeston following their initial capture of the site (Ellis, 1993). Although no evidence of this was found, either in the written or archaeological record for such work at Halton it is possible that Brereton may have employed a similar strategy following the first siege of 1643. The intensification of occupation at this time and the possible subsequent slighting works would certainly have increased the numbers of people around the castle for sustained lengths of time and may explain the increase in objects from this period. Civil War activity and its immediate after-effects is also a consideration when examining the rare occurrence of the burials uncovered, although this is covered in more detail below.

The abandonment of the site following the Civil War can be seen in the decline in the numbers of finds and occupation evidence dating to this time, as well as the large deposit of sandstone rubble, although without dating or documentary evidence it is impossible to ascertain whether this deposit was the product of deliberate slighting or decay in the 17th, 18th and 19th centuries. This rubble deposit, although unexcavated, was also identified in the watching brief carried out in the 1990s indicating a wide spread in this area of the southern part of the outer bailey (Gwynedd Archaeological Trust, 1995). Although a building was shown on the Randal Holmes plan it is unclear if this was a stone structure or a timber lean-to against the curtain wall. Much of the stone was large undressed blocks, with occasional dressed pieces and was likely to have originated in the curtain wall rather than a smaller building. Despite the castle's conversion to a visitor attraction in the 19th century the final peak in the artefactual assemblage predominantly dates to the 20th century. This, however is most probably the result of landscaping and reinstatement work on the fabric of the castle.

## 6.3 The Halton Castle Burials in Context

Unexpectedly, the Halton Castle excavations uncovered the remains of two bodies. The presence of these burials within a chapel or church area could not be confirmed, and the archaeological evidence suggested that they belonged to the medieval/early post-medieval period. Of the 83 castles known within North West England, only Halton has produced any burials through excavation. Nationally, burials within castles are extremely rare, outside of the dynastic residences of the Tower of London and Windsor Castle (Goodall 2011, 440-1). The Scottish royal fortress of Stirling Castle has several late medieval burials in the royal chapel, some of whom, when excavated in 2011, appeared to have been members of the garrison.

Seven burials were excavated in 2009 on the top of Castle Mound in Norwich (http://archaeologydataservice.ac.uk/archives/view/castlemall_eh_2009/overview.cfm?text=cem&cems=5&CFID=43411&CFTOKEN=719C703E-E40C-47AC-B76A007645DE2A11; accessed 13/01/2016). These proved to be 17th century prison burials with evidence for traumatic pathology and provided some insights into the treatment of prisoners. At Durham Castle excavations in 2013 revealed the remains of 28 men in a mass grave by the Palace Green Library. These were possibly associated with Scottish prisoners kept at the castle after the battle of Dunbar in 1650. Burials found during excavation work at Lincoln castle in 2013 proved to be from a late Saxon church pre-dating the construction of the castle. Likewise, 105 graves excavated in 1972-75 at Barnstaple Castle, Devon, and 53 graves from Newark Castle in 1998 also proved to be from pre-Norman cemeteries (Current Archaeology 1998, 'Newark: Excavating a medieval castle', CA no 156).

It is apparent from this brief review of burials within castles that two aspects of this evidence find an echo at Halton: British Civil War activity in the 17th century and post-medieval re-use as a jail. 62 castles in England and Wales are documented as being used as prisons between 1071 and 1813 (Nevell 2014, 219-20). In North West England there are six sites that functioned as a jail and these are (with the first recorded jail use): Carlisle (1194); Lancaster (1196); Chester (1241); Halton (1423); Stockport (1537) and Dalton Tower (1545). Some like Lincoln and Oxford were even rebuilt as prisons in the late 18th and early 19th centuries; in our region Lancaster is one such example.

Elsewhere in North West England, Brough had a court room in use briefly between 1714 and 1739 (Salter1998, 21-23), whilst Clitheroe and Halton both had sessions court buildings built in their outer baileys during the 18th century (Slater 2001). Egremont in western Cumbria also had a functioning courthouse until 1786 (Slater 1998, 50-51). At Chester and Lancaster the session courts became crown courts in the 20th century.

There are also a number of castles with purpose-built chapels in the region, although the burials at Halton cannot definitely be placed within a chapel structure. However, a

chapel is recorded at Halton in 1476 with possible restoration work carried out by the Brooke family immediately after the Civil War (Conservation Management Plan, 2006). Lancaster's chapel seems to have been added as part of the late 18th century prison rebuild. At Chester a 14th century chapel occupies the first floor of the Agricola Tower whilst in Cumbria a chapel was added to Brougham Castle in the 1380s.

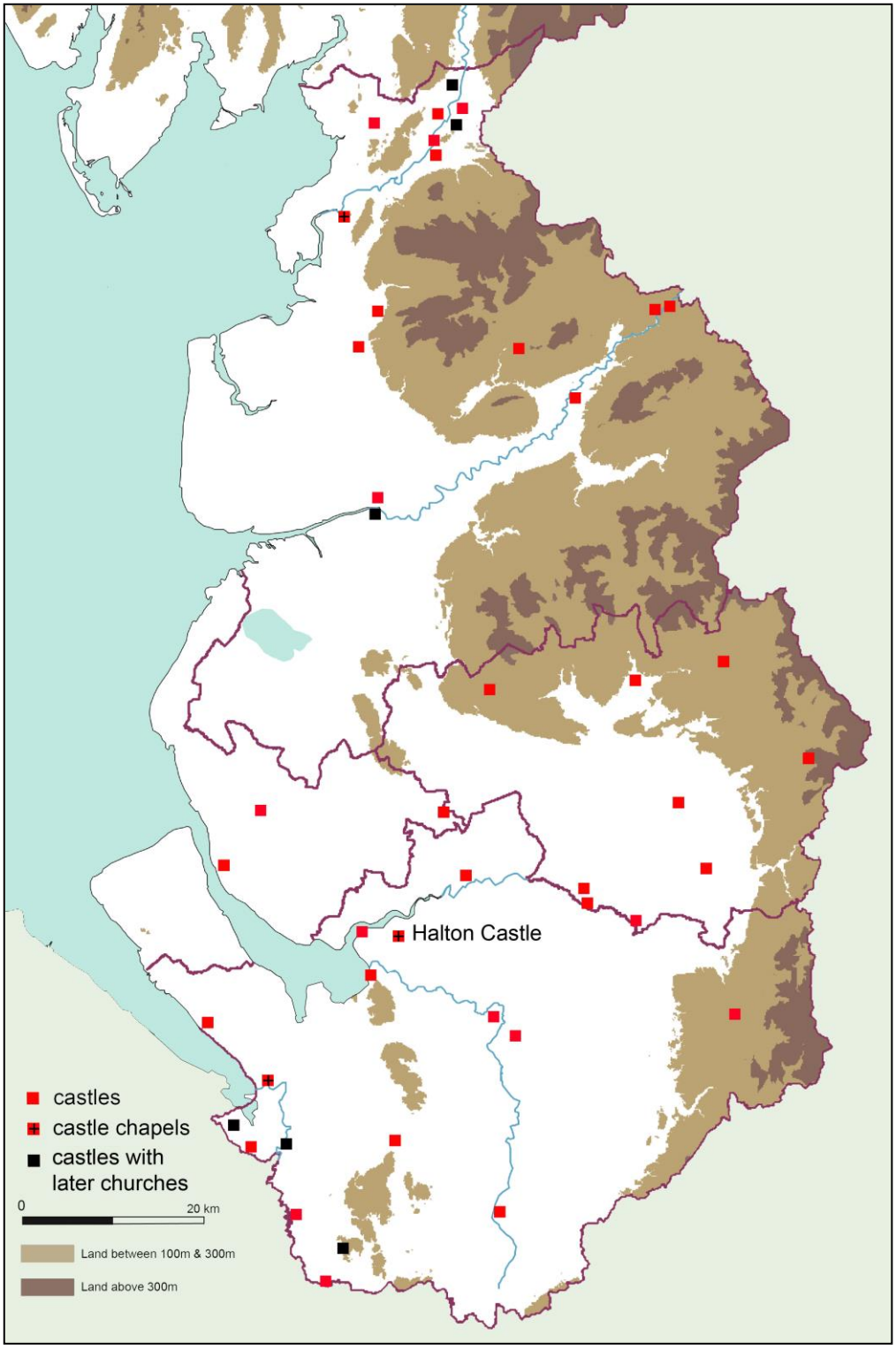


**Figure 34:** The distribution of castles with chapels in Lancashire and Cheshire.

Carlisle had a late medieval oratory in the keep. There may have been more chapels in the early timber castles of the region, though evidence for this does not, on most sites, survive or has yet to be found. However, some of these timber castles have later churches in their outer baileys which might suggest some form of continuity from an earlier medieval chapel. In Cheshire these are: Alford, Dodleston and Malpas. In modern Lancashire such an arrangement can be found at Melling, Penwortham and Whittington (Salter 2001, 36, 40) and on Merseyside Stanley Tower had a chapel (Slater 2001, 35).

It is clear that the burials are a highly unusual occurrence, regionally and nationally, and that this evidence has the potential to greatly enhance our understanding of the use of post-medieval Halton. Should further works be undertaken on the site the potential for this area to contain additional burials must not be overlooked and mitigation in the form of further trenching on this side of the castle would be recommended.

## 6.4 Conclusions

It is clear that the 2015 excavation of Halton Castle has been able to reveal new information on the layout of the outer bailey and the structures contained within. It gives a changing picture of the appearance and function of the castle throughout its occupation right up to the present day. The results have proven that there is still considerable potential for the survival of remains relating to the medieval occupation of the castle which may contribute to the production of a plan of the castle during its main period of activity. In addition the excavation uncovered features which may hint at earlier phases of use of the site, though whether that is in relation to the castle structure or pertains to an earlier occupation cannot be ascertained without further investigation. Even without this, however the findings of the recent work illustrate that castles, short of being ‘set in stone’, are structures which are continually changing and evolving to meet the needs of those working there or their function in the wider landscape.

The excavation raised as many questions as it answered, not least, resulting from the discovery of burials on the site. How these individuals came to be interred within the castle walls and whether they lay within a dedicated burial area will require further research and analysis. The dates of the two skeletons in turn raises questions regarding the use of the castle in the post-medieval period. Sketches and documentary evidence from the later part of this period indicate that the main castle structure was a ruin, although the maintenance of a functioning court on the site must have continued to be a focal point for the local community.

As one of the most extensively excavated castles in the region the findings from Halton have the potential to shed light on the form and role of smaller scale castles during the Norman and medieval periods. Perhaps more importantly, however, further investigation at Halton may be able to uncover information on the formation of the castle itself and ascertain whether it was a completely new development or if it simply made use of a previously significant site.

# 7. Archive

The archive comprises archaeological photographs, drawings and archaeological research notes. This archive is currently held by Salford Archaeology and a copy of this report will be forwarded to the client following the publication of the site report. All finds including the human remains will be deposited with Norton Priory Museums and Gardens.

# 8. Acknowledgements

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British Geological Survey: http://www.bgs.ac.uk/

***Mapping.***

1845 Tithe Map
1874 1st edition, County Series OS map
1899 2nd edition, County Series OS map
1939 1st edition, County Series OS map

**OS licence No:** 100050261.

# Appendix 1: Figures

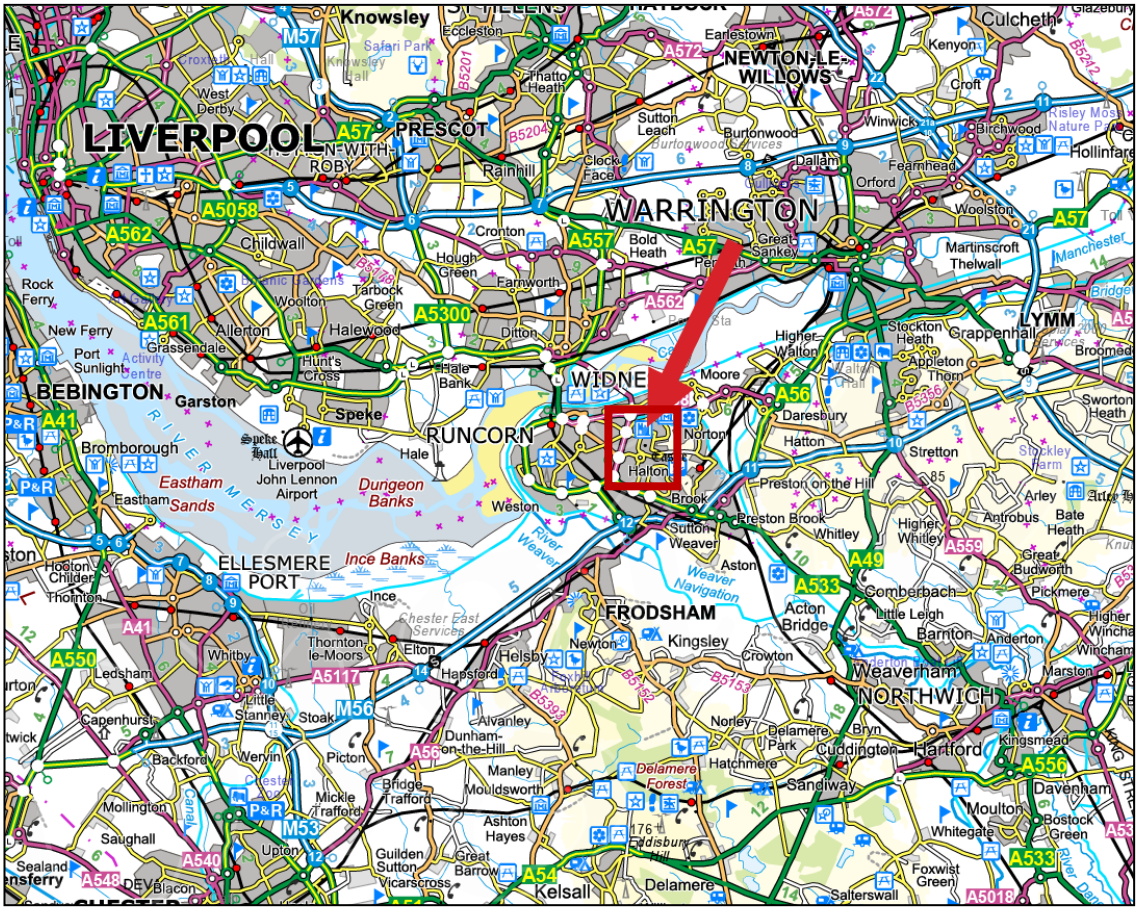
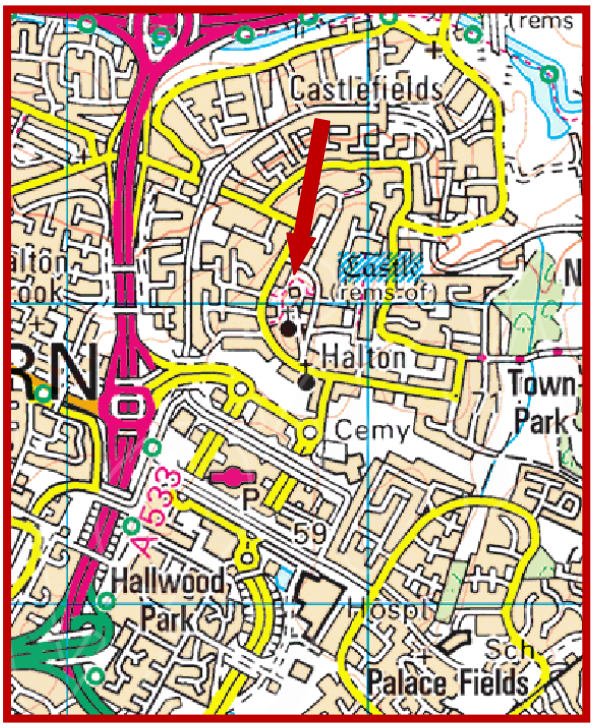



**Figure 35:** Site location map based on current OS mapping.



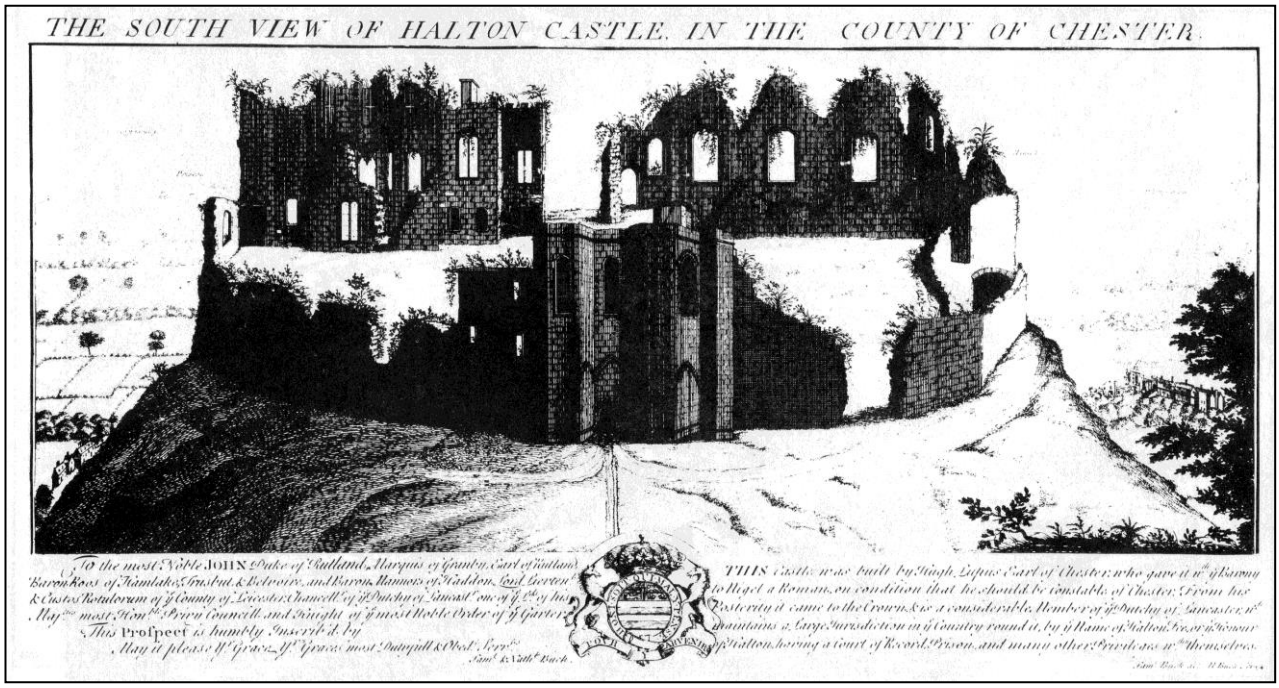



**Figure: 36:** Engraving of Halton Castle by the Buck Brothers 1727

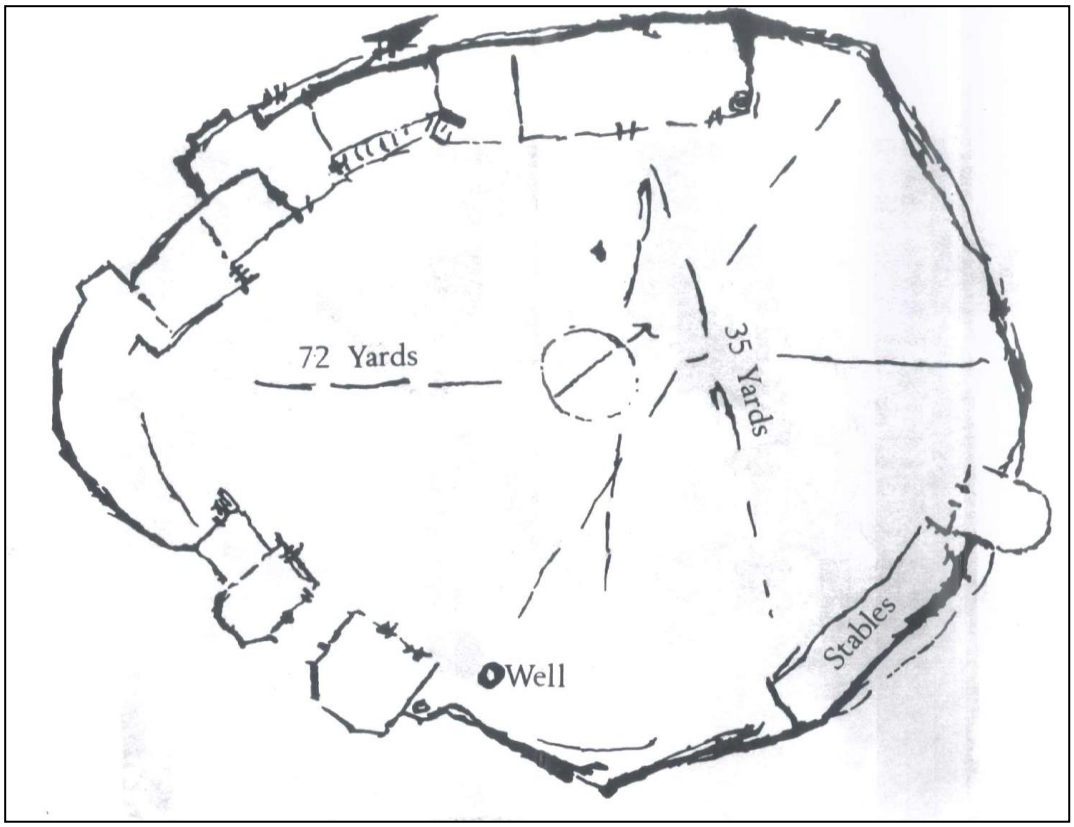



**Figure: 37:** Randal Holmes sketch plan *c.*1645

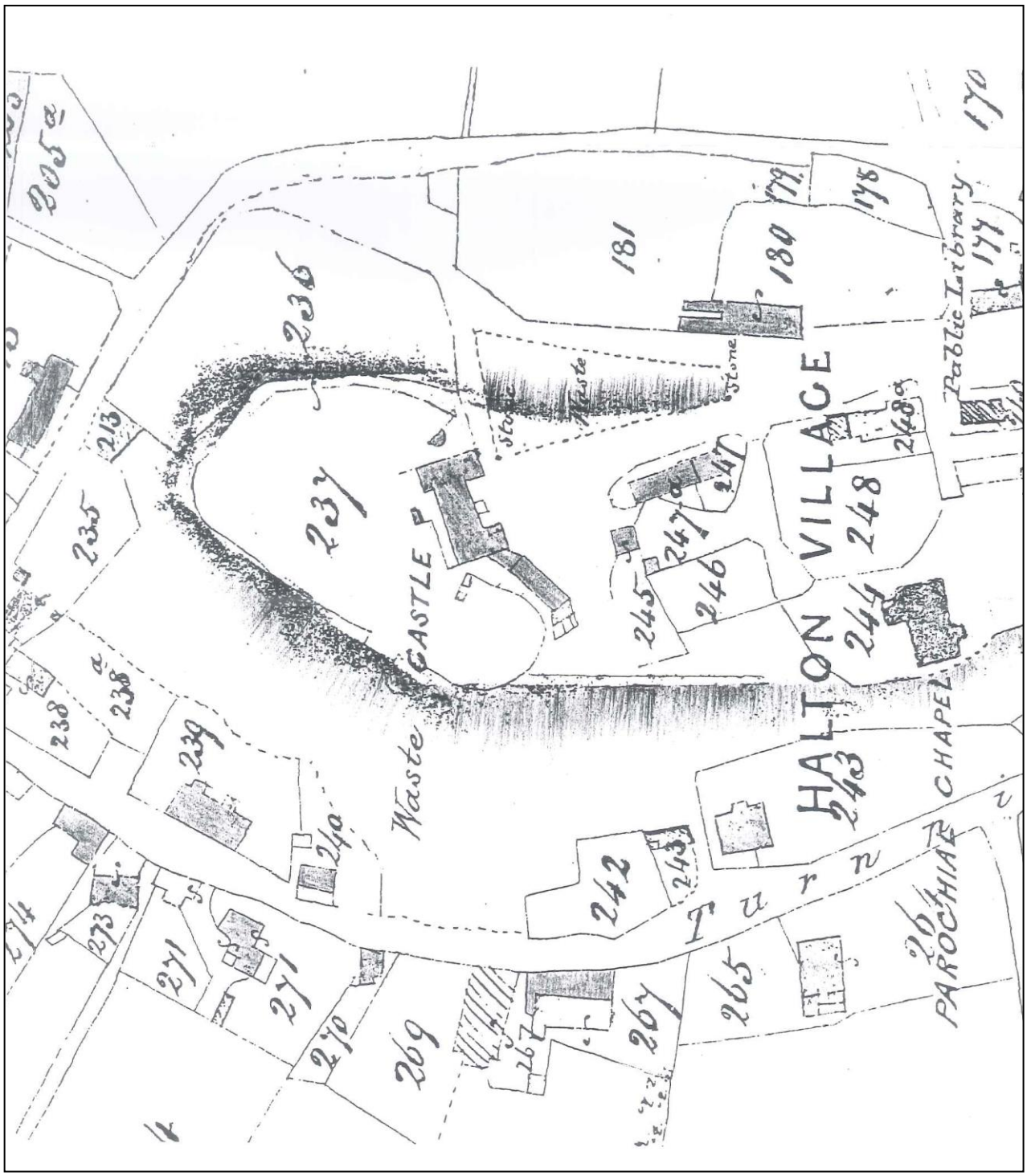



**Figure: 38*:*** Detail of Tithe map 1845.

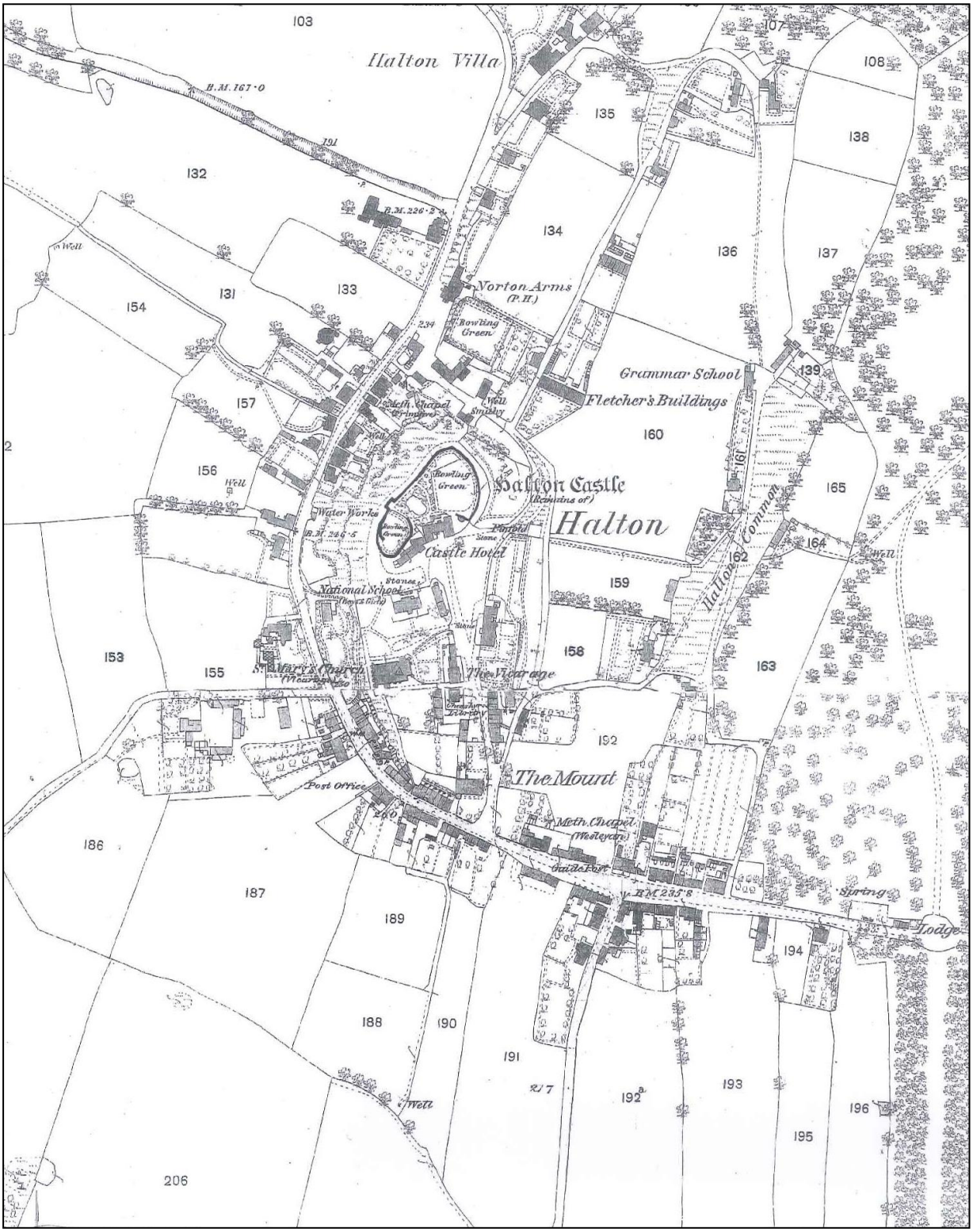



**Figure: 39:** Detail of OS map. Surveyed 1874.

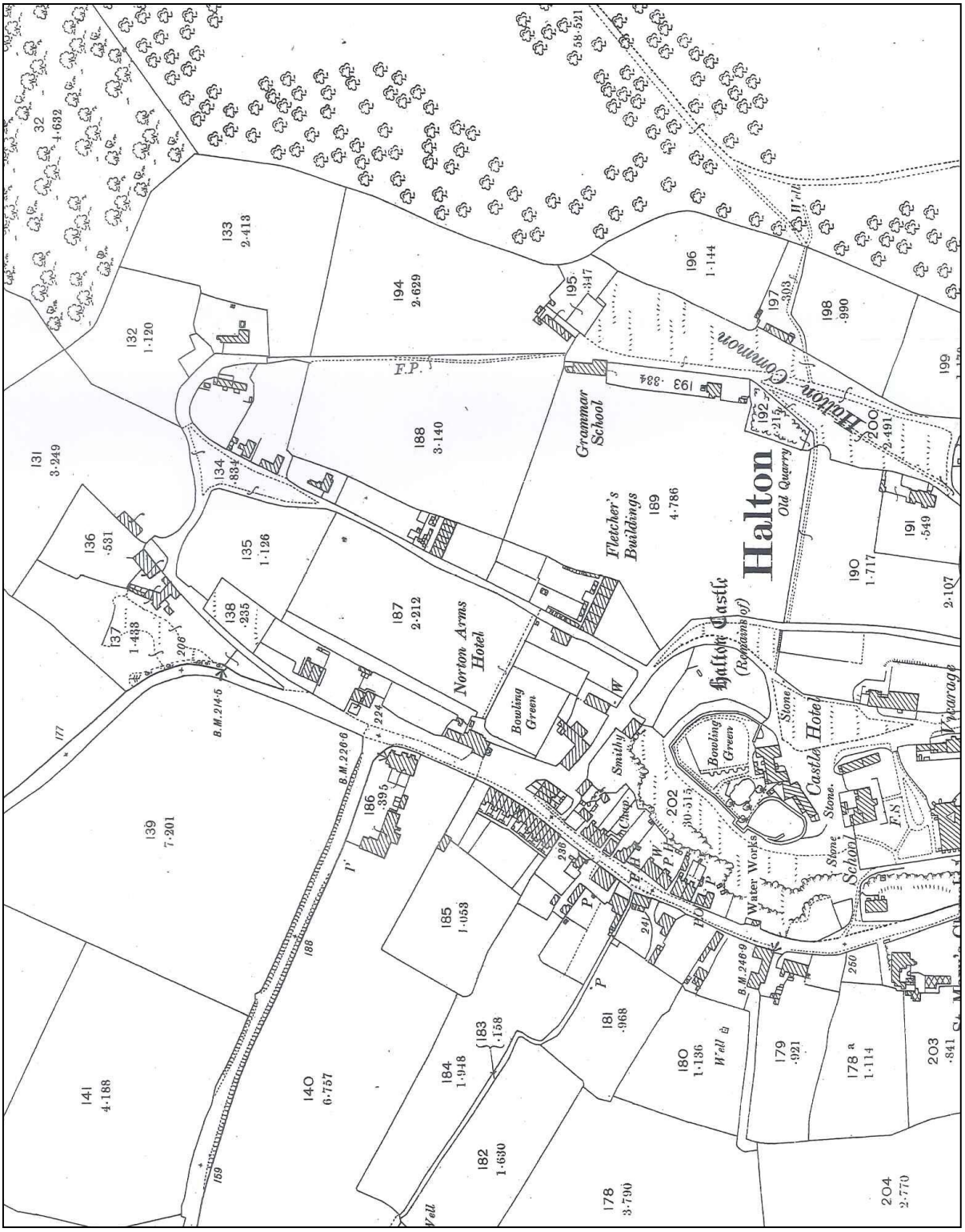



**Figure: 40:** Detail of OS map. Surveyed 1899

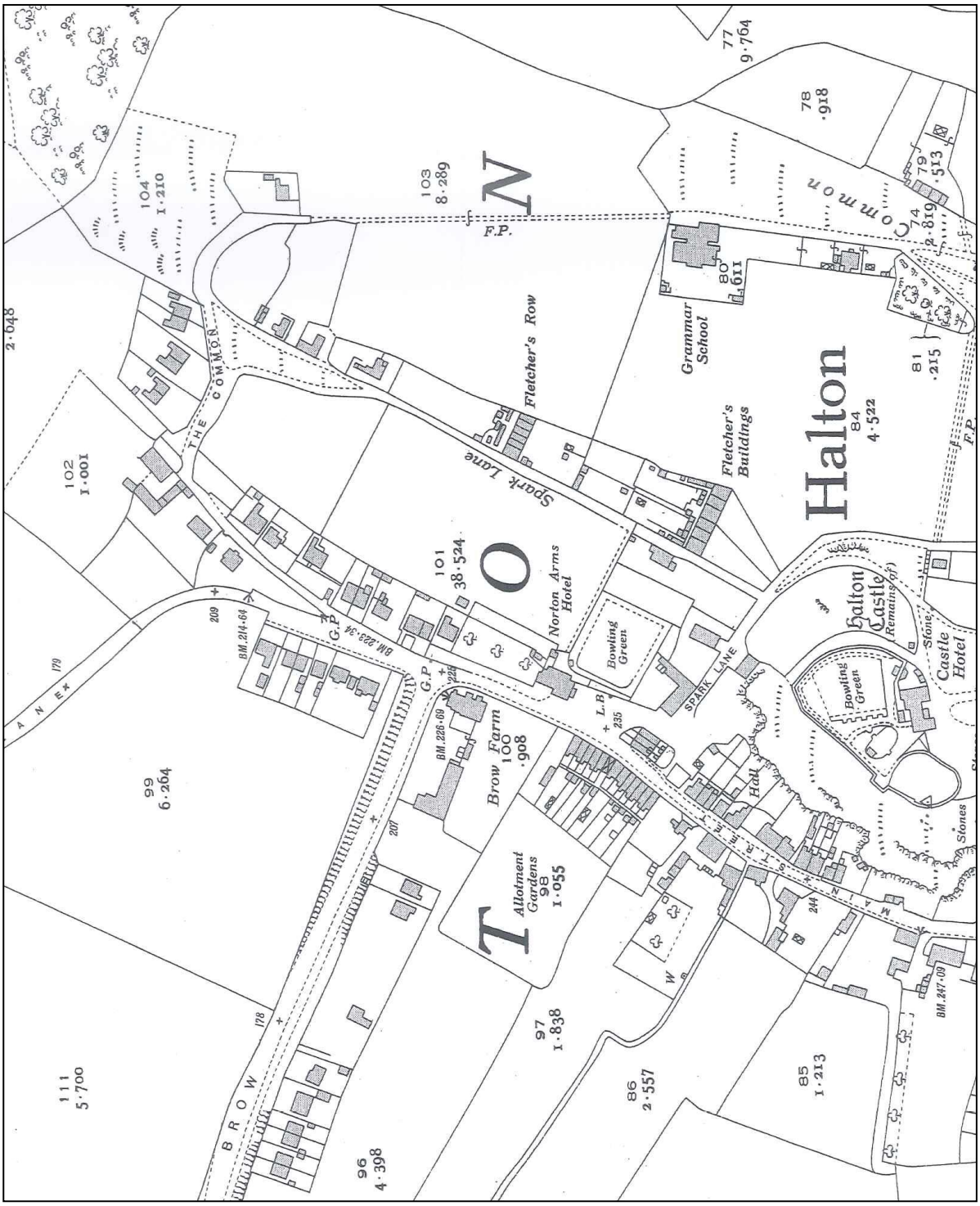



**Figure: 41:** Detail of OS map. Surveyed 1939

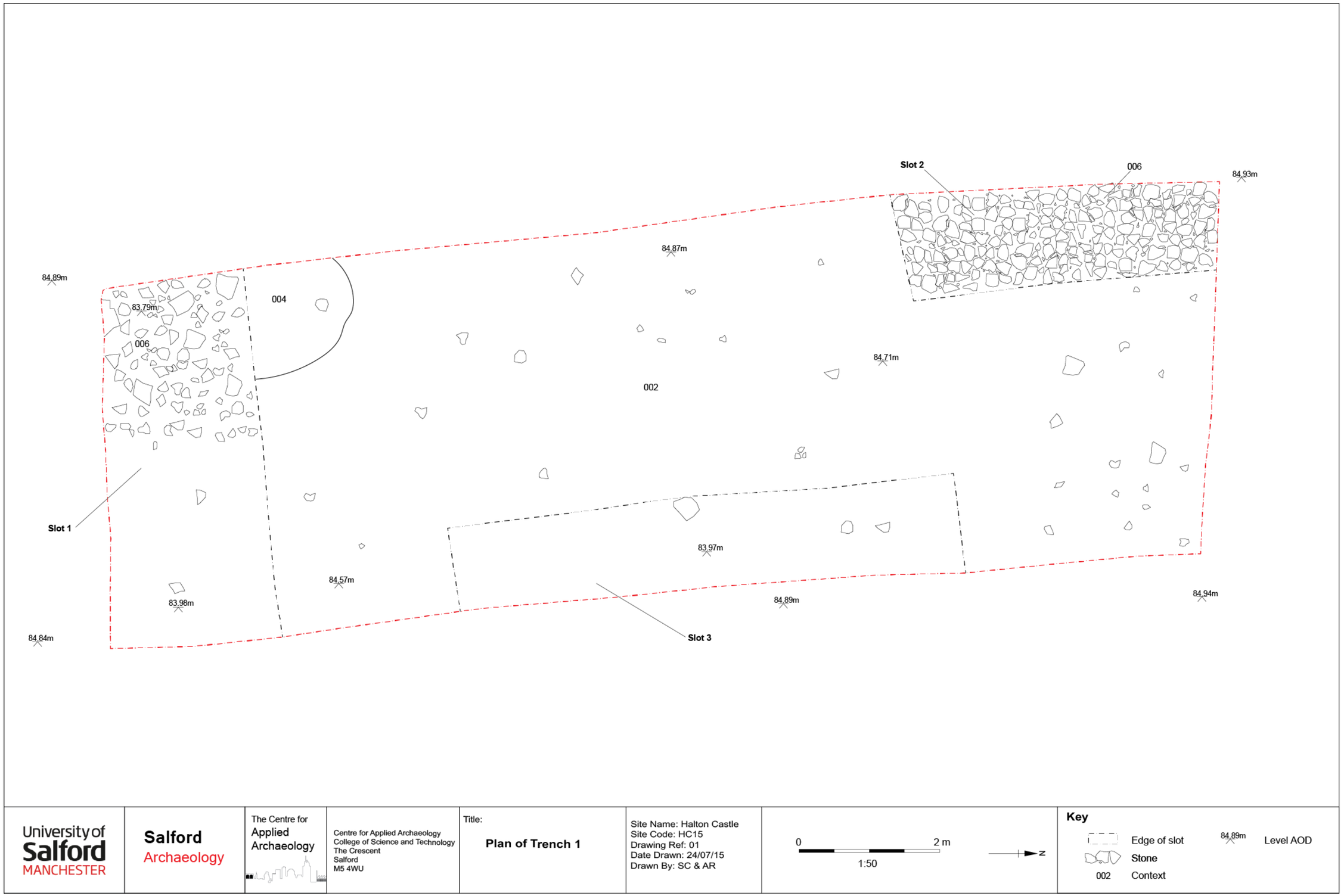



**Figure: 42:** Plan of Trench 1

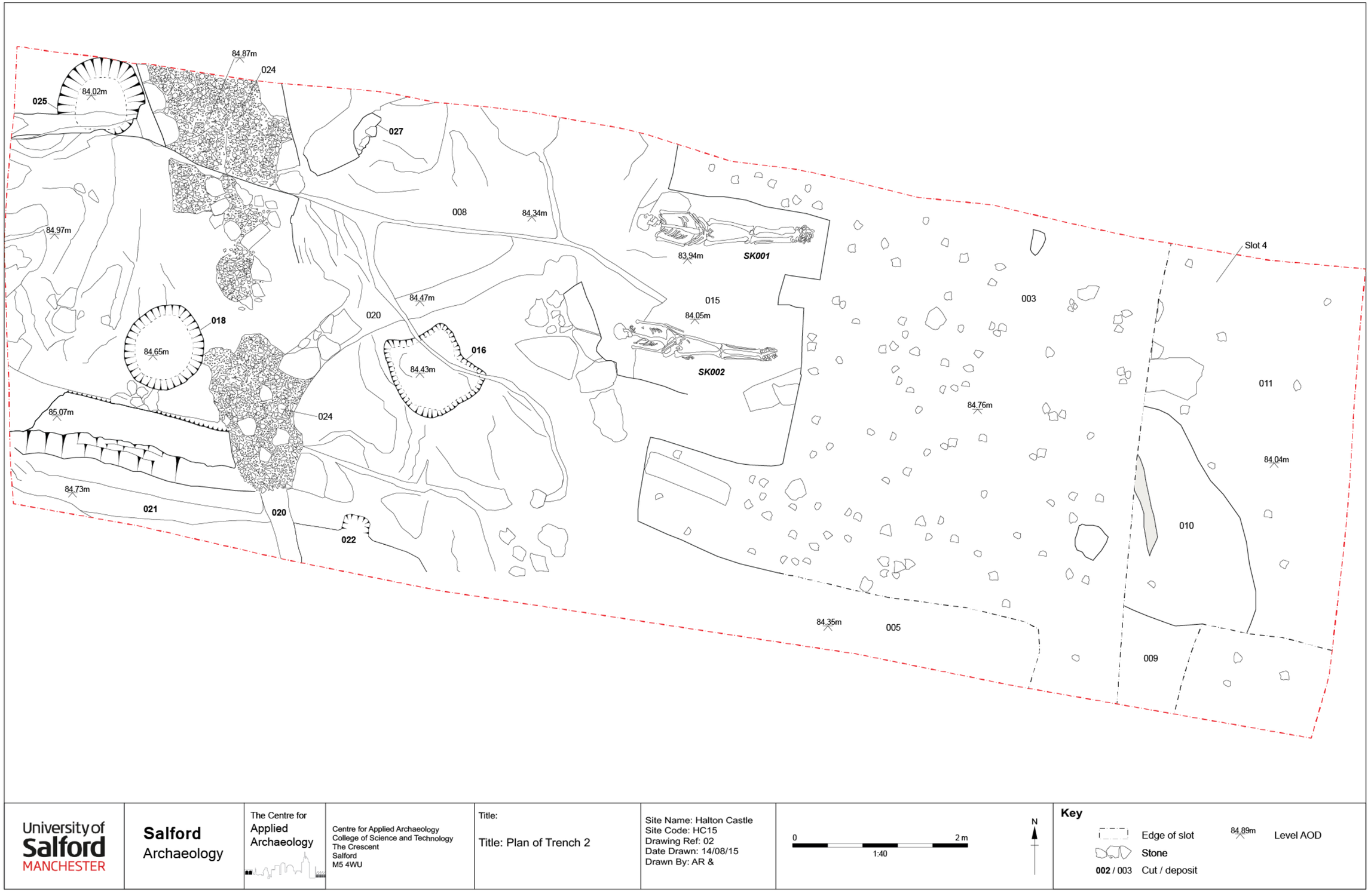



**Figure: 43:** Plan of Trench 2

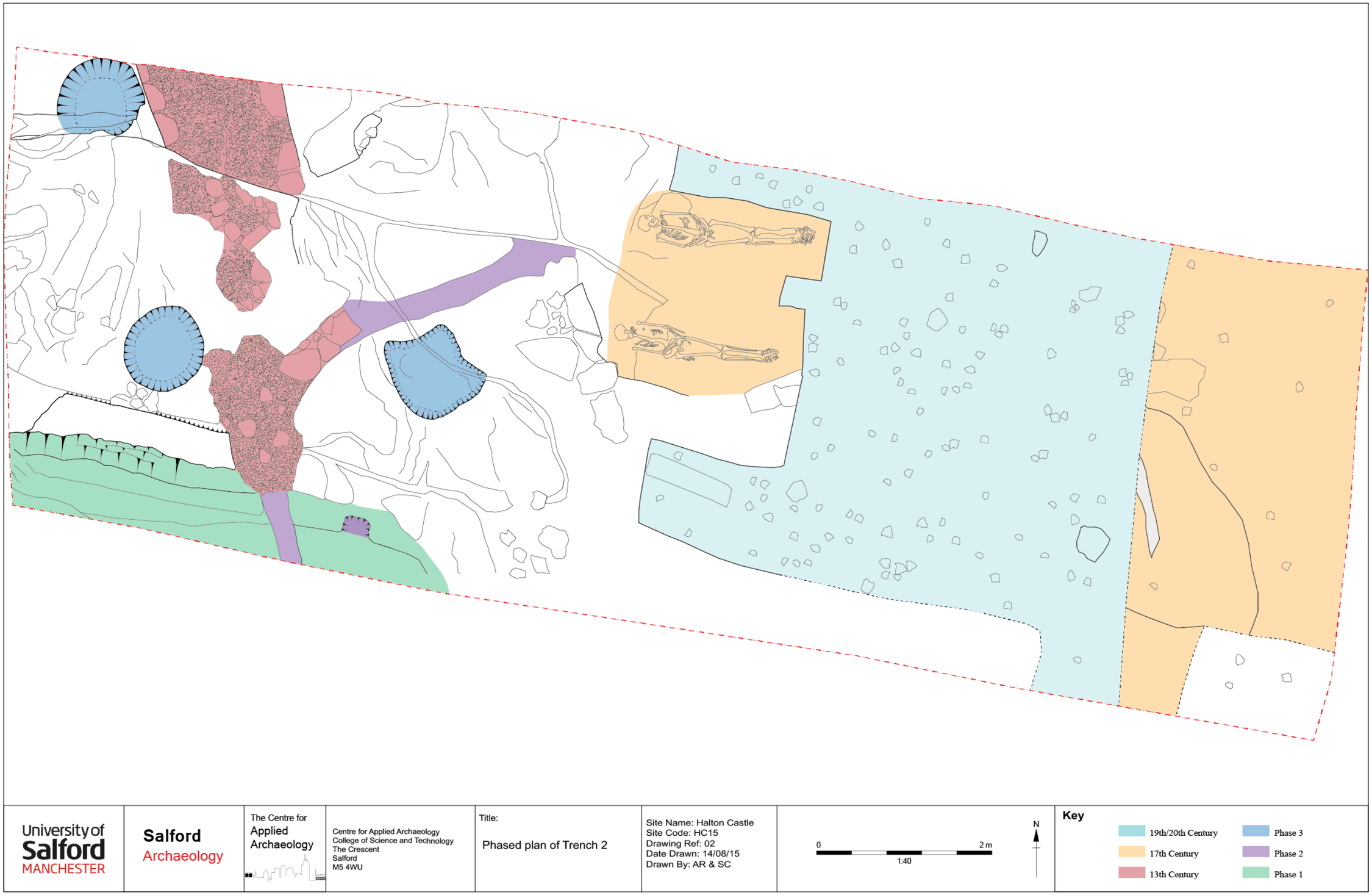



**Figure: 44:** Phased plan of Trench 2.

# Appendix 2: Context List

| Context No. | Trench | Description |
|---|---|---|
| (001) | T1 & T2 | Loose grey brown sandy loam. General overburden below turf. |
| (002) | T1 | Mixed stone layer below (001). |
| (003) | T2 | Stone layer below (001) with possible features within. |
| (004) | T1 | Compact dark brown sandy loam at the south end of the trench and to the east of (002). |
| (005) | T2 | Linear fill extending south from the south section of the trench. Marked by what may be cobbles. |
| (006) | T1 | Large sandstone tumble layer below (004) at the south end of the trench. Lots of post med finds – pottery and bone. Also visible at the north end of the trench. |
| (007) | T2 | Compact layer of dark brown sandy loam lying against (003) to the west. Few stones and oyster shells. |
| (008) | T2 | Bedrock with possible rock cut features at the east end. |
| (009) | T2 | Dark brown silty loam at southern end of slot 4. Lies against (010). |
| (010) | T2 | Area of yellow/orange clay on the west side of slot 4. Charred wooden beam embedded in it. |
| (011) | T2 | Dark brown silty loam at base of slot 4. Moderate inclusions of stone fragments (<0.15m - <0.30m). |
| (012) | T2 | Grey brown silty loam directly below (003) with frequent inclusions of small stones (<0.05m). Only seen in section. |
| (013) | T2 | Thin layer of gritty black deposit below (003) on north-western section of trench. Contains brick fragments and 19$^{th}$ century pottery. |
| [014] | T2 | Cut for SK001. Only visible on north side & cut from below (003). |
| (015) | T2 | Fill of graves/overlying skeletons. Nearly indistinguishable from (007). |
| [016] | T2 | Cut of sub-angular posthole cut into bedrock with fault running through. Straight sides, flat base. Roughly aligned NW-SE. 0.80m x 0.90m |
| (017) | T2 | Fill of [016], almost identical to (007) but slightly darker and less compacted. |
| [018] | T2 | Cut of large round posthole on western side of trench. Measures 0.90m x 0.98m with straight sides and flat base. Clear tooling marks all round and cut into bedrock. |
| (019) | T2 | Dark brown sandy loam fill of [018] almost the same as (007) but slightly more humic although possibly a result of poor drainage. |

| | | |
|---|---|---|
| [020] | T2 | Cut of curvilinear feature. Runs from south trench edge round to the northeast towards burials. Measures 0.30m wide with sloping sides and rounded base. Partially filled by (024) at curve. Follows the natural slope but tails off towards burials and not seen beneath them. Filled by (023) and cuts [021]. |
| [021] | T2 | Cut of channel/beam slot parallel to southern trench edge. Measures 3.90m x 0.90m and continues west beyond trench edge. Sloping northern side with flat base and evidence of tooling marks. Cut by [020]. A straight line is visible in the base of the feature, unclear if cut for beam or natural faulting. |
| [022] | T2 | Cut of small posthole which cuts northern side of [021] at eastern end. Sub-angular measuring 0.30m x 0.30m with southern half missing. Steeply sloping sides with a shallow flat base. Filled by (023). |
| (023) | T2 | Fill of [020], [021] and [022] almost identical to (007) with slightly higher moisture content. |
| (024) | T2 | Dressed ashlar and rubble core wall. Runs N-S across (008) at western end of trench . built directly onto bedrock with 4 courses visible against fault line. Rubble core laid with light yellowish mortar and varied sizes of sandstone blocks <0.05m - <0.30m. patches of rubble core seen across (008) to south. Facing courses made from dressed sandstone blocks 0.30-0.40m x 0.25-0.30m thick. |
| [025] | T2 | Cut of round posthole immediately west of (024). Cut into bedrock lying c.0.20m lower on northern side of fault line. Measures 0.80m x 0.80m x 0.50m deep with steeply sloping sides and flat base with fault line running through. Doesn't appear to be cutting or cut by (024). |
| (026) | T2 | Fill of [025] similar to (007) but more heavily compacted towards base. Frequent inclusions of small stone and occasional animal bone. |
| [027] | T2 | Possible cut of posthole to east of (024). Western side cut into bedrock, eastern side missing as bedrock dives away sharply. |
| (028) | T2 | Slightly darker stony, sandy loam lying between large stones in centre of trench surrounded by (003) and overlying (015). Frequent sherds of medieval pottery. |
| [029] | T2 | Cut identified in east facing section of slot 4. Measures 0.50m wide and cut from below (003). Slightly rounded edges and flat base. |
| (030) | T2 | Fill of [029]. Dark black-brown silty loam with occasional fragments of red sandstone<0.05m and other small stones <0.02m. similar consistency to (007). |

# Appendix 3: Geophysics report

Interim Geophysical Survey Report

Halton Castle, Runcorn, Cheshire

(SJ 53756 82035)

(UID: 27611)

A geophysical survey of a specified area of Halton Castle, was carried out to aid and inform future archaeological works at the site. The geophysical survey took place in warm, dry weather. The survey was conducted by archaeological staff from the Centre for Applied Archaeology at the University of Salford, alongside volunteers.

The area of survey focussed on the Eastern boundary of the site, in an area known as the outer bailey, directly East of the bowling green area. The significance of this area was due to reasonably level ground with little to no visible inclusions i.e.. Stakes/poles/rubbish.

The earth resistance survey was carried out with a Geoscan RM15-D earth resistance meter, with twin probe configuration. Samples were taken at 0.5m intervals with 1m transect. During the survey the mobile probes where configured at 0.5m width with the remote probes located a minimum of 15m away from the mobile probes in accordance with the Geoscan instructions.

A series of 10m x 10m grids were laid out in a North South orientation spanning the entire Eastern boundary, and samples were taken by walking the transects in a zig-zag pattern. The samples were taken automatically by the earth resistance logger with additional manual recording of the Ohm values.

The data from the RM15-D earth resistance was downloaded into the Geoplot V3 software via a RS323 cable to be processed. Once the data had been downloaded into the Geoplot software, the raw data from each data sets were saved independently before each grid was formed into a master grid for processing.

The earth resistance data was treated with a high pass filter, despite and finally interpolation and compression within the Geoplot software to create a readable master grid of the earth resistance data

The results of the geophysical survey show a positive result for potential archaeology within the area of the outer bailey, and are discussed in depth below.

Results

Grid One:

Grid one was located to the South East of the outer bailey area, measuring 10m x 10m with 1 meter transects and was surveyed in a zig-zag as stated by the methodology. Grid one was located directly north of the South Eastern folly and the folly acted as a base line for all the grids recorded.

Grid one was identified for positive potential archaeological anomalies which are detailed below.

01 – Linear anomaly running E-W, appearing to relate to 02 within Grid One

07 – A small sub circular area of low level resistance to the South of grid 1, anomaly appears independent with no visible relationships.

Grid Two:

Grid two was located directly north of Grid one, and triangulated from the South Eastern folly wall baseline. Grid two was identified as having potential archaeological anomalies, as outlined below.

02 – Curvilinear anomaly running NE/SW within Grid one, two and the SE corner of Grid three. 02 appears to have a potential relationship with 01.

Grid Three:

Grid three was located directly North of grid two and triangulated from the South Eastern folly wall baseline, Grid three has potential archaeological anomalies as listed below.

03 – Large rectangular anomaly spanning Grids two, three and four, with two areas of low resistance located at the SE divided by a high resistance linear; possibly relating to 02 at the Southern end but with no visual relationship to 05.

Grid Four:

Grid four was located directly north of Grid three, and triangulated from the South Eastern folly wall baseline. Grid four was identified as having potential archaeological anomalies, as outlined below.

04 – A sub rectangular area of low resistance located within Grid four with a single spike of high resistance located central to the anomaly bounded on all sides by high resistance readings, and no visible relationships.
05 – A curvilinear anomaly located in Grids four and five, with 2 areas of low resistance directly to the East and West at the southern point. The anomaly is orientated N/S and splitting to the east and west at its southern end, potentially holding a relationship to 04.

Grid Five:

Grid five was located directly North of grid four and triangulated from the South Eastern folly wall baseline, Grid five has potential archaeological anomalies as listed below
06 – A small area of high resistance located to the Ne of Grid five, adjacent to the anomaly 05 and orientated N/S. O6 holds no visible relationships.

Discussion

The geophysical survey at Halton Castle returned some potential anomalies which may relate to archaeological features within the outer bailey area. The results reflect that despite the high level of overburden soils, potential remains could be identified through the process of excavation. The anomalies which highlight the most potential are those of 02, 03 and 04; this is due to the scale of these anomalies and their high levels of resistance.

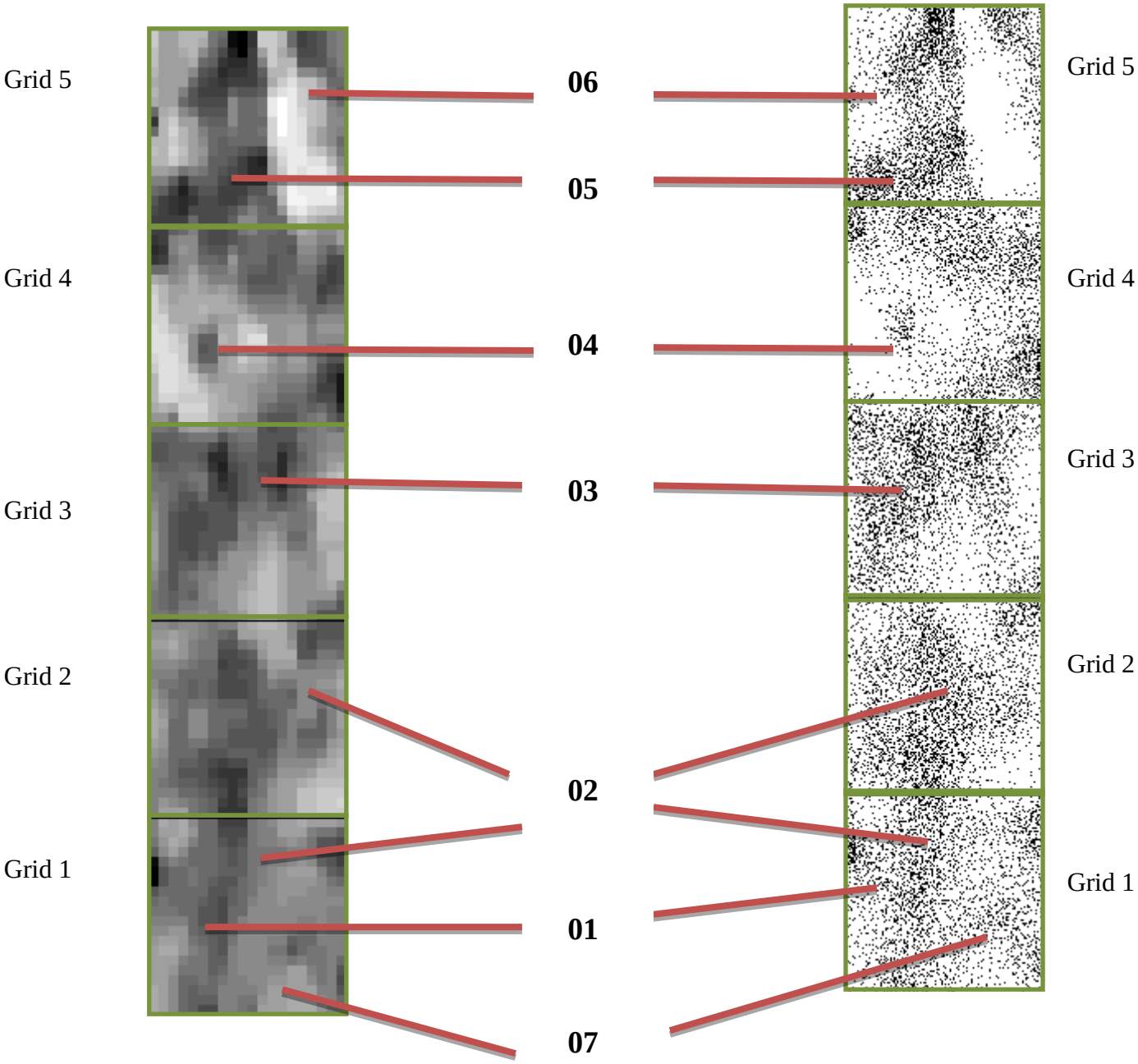
Excavation would be the recommended programme of further works for the identification of these anomalies and a suggested trench location plan has been included within the figures of this report. The recommendation is for four trenches to be excavated at strategic locations for the identification of anomalies and the confirmation of archaeological remains.

Trench one which could be located to the East of the outer bailey area, would be located over anomalies 02 and 03, with the aim to identify these anomalies and ascertain the levels of archaeological remains within this area.
Trench two which could be located to the North of the outer bailey area, would be located over anomaly 04, while also investigating an area of the outer bailey which appears unaltered on map regression. The aim of this trench would be the identification of anomaly 04.

Trench three which could be located to the North West of the outer bailey area, along the curtain wall would be positioned with an aim to investigate an area of the outer bailey which could not be surveyed due to modern inclusions (fencing and gating) but which never the less, may hold potential archaeological remains.

Trench four, which could be located within the North of the inner bailey, close to the curtain wall, would also be positioned to investigate an area which was no viable for geophysical prospection.

In conclusion, based on the positive results of this survey it is highly recommended that further investigation by excavation is conducted with the aim of identifying of the anomalies recorded.



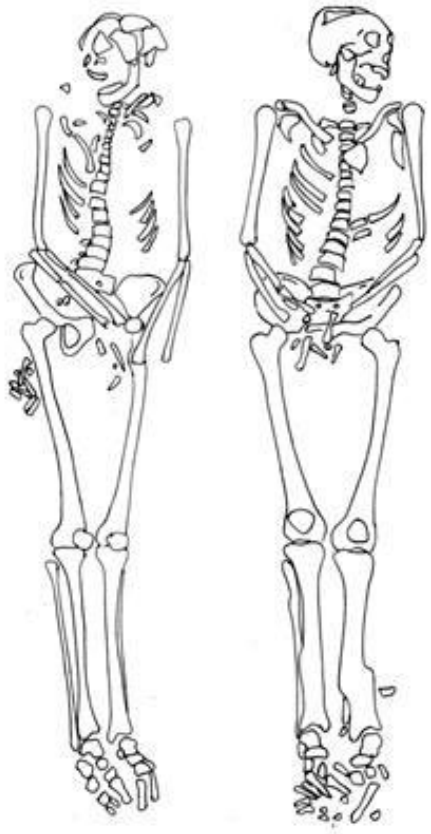

*The image above shows the Grid squares used during the geophysical survey of Halton Castle, along with the areas of potential archaeological anomalies as outlined in the above report. The image shows the earth resistance results as both a shade graph and a dot density plot, with each anomaly highlight on both graphs.*


*The above image is the suggested locations for the recommended trenching, if excavation was to be conducted at Halton Castle, based on the results of the geophysical survey.*

# Appendix 4: Skeletal Analysis

# Norton Priory Museum & Gardens

## Post-Excavation Analysis of the Human Skeletal Remains Recovered from Halton Castle: July 2015



By

**Carla L. Burrell and Eleanor R. Dove**

December 2015

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## Acknowledgments

The authors would like to take this opportunity to thank the Salford Archaeology (SA) for their professional handling of the excavation at Halton Castle and in particular the care they took with the human remains analysed in this report. Our sincere thanks to Lynn Smith, Frank Hargrave, and the Trust of Norton Priory Museum and Gardens for their ongoing support and enthusiasm throughout. Without them, this report would not have been possible. Recognition must be given to Professor Silvia Gonzalez at Liverpool John Moores University, whose assistance regarding the radiocarbon and isotope analysis for the next stage of this report is gratefully acknowledged. Any thanks to Sarah Canty, Samuel Rennie and Satu Valoriani for their attributed specialisms included in this report. And finally, a special thanks to Ben Goodburn, an enthusiastic volunteer who assisted during the excavation and post- excavation analyses of the skeletons detailed in this report.

## Introduction

The human skeletal remains of two individuals (HCSK001 and HCSK002) were excavated at Halton Castle during the summer of 2015 by Salford Archaeology (SA). The ruins of Halton castle, situated in Runcorn on a hill facing the river Mersey estuary, date back to the 12th century. The site was in use over a time period spanning from the Norman period to the 20th century, but it was not expected that human remains would be uncovered during the castle excavations. The remains of both individuals were uncovered in Trench 2 and were consequently brought to Norton Priory Museum and Gardens where they were subjected to full osteological analysis.

Both individuals were dry cleaned; reviewed for mould, re-bagged and re-boxed. They are now stored in appropriate conditions, ensuring an optimum environment needed to preserve these remains for future purposes. Each bag is clearly labelled with: the skeleton number, the site of excavation and the skeletal elements present in the bag. The bones have been separated by side, e.g. left hand, left arm, left ribs, etc. Each individual is now stored in good quality, strong cardboard boxes with lids (27 x 47 x 19 cm). The skeletons have been packaged into two boxes each (4 in total) to protect the more delicate elements and the pathology present. The boxes have been packaged to provide the maximum protection: long bones placed at the bottom of the box; the os coxae, cranium, and vertebrae placed on top; and the smaller

elements such as the hand and feet bones are packed last and are placed on top. The box in which the skeleton is stored is also clearly labelled with these details. The individuals are now in the care of Lynn Smith, Senior Keeper at Norton Priory Museum and Gardens. Lynn already curates and cares for 130 articulated skeletal remains as part of the Norton Trust. The integrity of these two individuals will be maintained to a very high standard.

A subsequent report will be released in the New Year presenting the findings from the radiographic and, under supervision of Professor Silvia Gonzalez, radiocarbon and isotope analyses. Here, presented for the first time are preliminary results and summary reports of HCSK001 and HCSK002.

## Summary Report of HCSK001

HCSK001 is a reasonably complete (>75%) skeleton. Some elements of the hands and feet are missing but overall the individual is in a good state of preservation. Some post-mortem damage has been sustained to the crania, right scapula, proximal humerus, distal radius, and right pelvis, but all fragments are present. The ribs and fibula from both sides have also sustained some post-mortem damage.

The remains of HCSK001 are that of an adult male, with an estimated age of 45 to 49 years, standing at a height of 172.3cm +/- 3.2cm (5ft 7.7in). The cranium was reconstructed and ancestry was assessed to be 19$^{th}$ Century White European using the Howell's crania database, part of the Fordisc program.

This individual does display interesting pathological examples, as well as various nonmetric traits. Most strikingly, this individual has evidence of a healed fracture to both tibia and fibula which has led to secondary osteoarthritis affecting the ankle joints. The left tibia has developed osteomyelitis, an infection likely sustained during the traumatic event. There is also evidence of pronounced periostitis to the femurs, tibia and fibula, with slight enlargement to the posterior distal portion of the left femur. Additionally, there is evidence of various dental pathologies such as dental caries, periodontal disease, and ante-mortem tooth loss. Osteoarthritis is evident throughout the skeleton, particularly affecting the vertebral column and pectoral girdles.

Full details of the analysis are reported on pages 8 to 22.

# Summary Report of HCSK002

Like HCSK001, HCSK002 is a reasonably complete (>75%) skeleton with only some elements of the hands and feet missing. The preservation of this individual is not of as high a standard as that of HCSK001. Post-mortem damage has been sustained to almost all elements except for: the clavicles, tibiae, the right femur and fibula, and the left humerus. Where post-mortem damage has occurred, the elements are reasonably complete but fragile.

The remains of HCSK002 are that of an adult female, with an estimated age of 30 to 34 years, standing at a height of 171.6cm +/- 3.5cm (5ft 7.5in). The cranium was reconstructed and ancestry has been preliminary assessed to be 19$^{th}$ Century White Norse using the Howell's crania database, part of the Fordisc program. Unfortunately, due to the fragmentary nature of the cranium, even after reconstruction, these results are inconclusive and require further analysis.

This individual does display some pathological examples as well as various nonmetric traits. There is evidence of various dental pathologies such as dental caries, dental calculous, and ante-mortem tooth loss. There is evidence of periostitis to both tibiae, and healed fractures to the left ribs. The long bones are unusually slender and elongated also, the bodies of the thoracic and lumbar vertebrae are an unusual shape, this could potentially be evidence of Marfan's syndrome.

Full details of the analysis are reported on pages 23 to 36.

# Osteological Analysis of HCSK001

**Figure 1: HCSK001 in situ at Halton Castle (Image courtesy of Ben Goodburn).**

## Archaeothanotology

The burial of HCSK001 (Figure 1) is in a typical position for a Christian burial with an east to west orientation (Daniell, 1998). It is surmised that the body was wrapped in shroud that was loose but not so loose to allow that much movement of the remains during decomposition (Harris and Tayles, 2012). The clavicles are slightly rotated upwards and this is indicative of a shroud burial, further evidence can also be seen in the lack of movement of the os coxae and patella. During decomposition, the bones move slightly in the soil as the space around the remains increases. Movement of the mandible, the hands, cervical and lumbar vertebrae and the sternal body are typical of this occurrence.

The excavation records of HCSK001 (see Appendix 1) suggest that the hands and neck originally looked bound. This is a normal part of the decomposition process. Burials wrapped in a shroud have their hands clasped together. As the skin, ligaments, muscles, and fat surrounding the hands and pelvis decomposes the hand bones will move into the newly vacated area and this can lead to an appearance of binding. However, no ligature or rope was found in the burial. Similarly, the bones in the neck can move with the weight of the decomposing skull and this can lead to the disorganisation seen in Figure 1. This is not indicative of hanging or trauma. The hyoid bone and the second cervical vertebra were found intact and neither have signs of ante-mortem trauma. There is evidence of roots in the grave cut however, the roots have not moved or passed through the burial and have not caused any damage to the remains. There is no taphonomic evidence that suggests the remains were disturbed by human or animal activity before the excavation. The only damage that has occurred to the remains took place during their unexpected discovery during the excavation.

## Condition & Preservation

Skeletal preservation depends on a number of factors, including age, sex, and robusticity of an individual. The burial environment, disturbance of burials, and the post- excavation treatment can also have an impact of the condition of the bones (Brickley, 2004). The preservation of the remains is assessed subjectively and based upon the severity of bone surface erosion and post-mortem breaks, as well as completeness. Preservation is important as it can impact the quantity and quality of the information that could be obtained from the human skeletal remains.

HCSK001 is completely skeletonised: the bones are dry, lightweight, and smooth in texture. The skeleton is in a fairly good state of preservation: whilst there is some post-mortem damage and erosion from excavation, the individual is reasonably complete with only

some of the hand and foot elements missing (see Appendix 2 and 3 for further details). Nonmetric traits, pathological conditions, and trauma are noted later in the report.

### Minimum Number of Individuals

To determine the minimum numbers of individuals (MNI) present in this assemblage of skeletal remains it is necessary to account for each bone, separating them according to type and side. The remains can then be counted and corresponded with the opposite side to determine the number of individuals present. Any duplicates, or bones of different age or sex, suggest that more than one individual is present amongst the assemblage of remains (Adams and Konigsberg, 2004 and White and Folkens, 2005). HCSK001 showed no duplications of any bones, therefore MNI for HCSK001 indicates one individual.

### Inventory

HCSK001 was assembled in anatomical position (Figure 2). Each bone, whether complete or fragmented was recorded from the cranium to the feet (see Appendix 2 and 3). The entire skeleton was examined macroscopically and any unusual features were photographed and recorded thoroughly for further examination.

HCSK001 is a reasonably complete skeleton with some fragmented elements. The crania showed evidence of post-mortem damage caused by a mattock. Unfortunately, during the excavations at Halton Castle, human skeletal remains were not anticipated; this led to the damage seen in the cranium. On the other hand, all fragments were fortunately successfully collected so it would be possible for a full reconstruction of the skull to take place.

**Figure 2: HCSK001 in anatomical position at Liverpool John Moores University.**

The left ramus of the mandible has a post mortem break but the two pieces fit together and the mandible is complete. The splanchnocranium is reasonably complete; the right nasal however has sustained some damage and is incomplete. Both clavicles and left scapula are complete and well preserved. The right scapula has sustained quite extensive damage but is

reasonably complete. The right proximal humerus and left proximal ulna have both sustained a single break across the neck, but are otherwise complete. The distal portion of the right radius is quite fragmented and incomplete. The other paired elements are complete. There are no carpals present for the right hand, only the 1st and 2nd metacarpal remain; with 3 proximal phalanx and only 1 intermediate phalanx remaining. The left hand is a little more complete: only the hamate, capitate, 1st, 4th and 5th metacarpal are missing. Additionally two proximal phalanx and 1 distal phalanx are missing. There are no hand sesamoids present.

All 7 cervical, 12 thoracic and 5 lumbar vertebrae are present and complete only the 8th thoracic arch has sustained post-mortem damage. The sacrum is complete although the coccyx is missing. Most ribs have sustained a single break; this is typical for most archaeological specimens as the rib is one of the most delicate elements. The manubrium and sternal body are present and complete.

The pelvis (both left and right os coxae) is complete; however a post-mortem break has occurred across the acetabulum of the right os coxae. The right femur is complete and undamaged; but whilst the left femur is complete, there is a post-mortem break across the greater trochanter and it is consequently quite fragile. Both tibiae are complete and there is evidence of healed ante-mortem trauma for both elements. The proximal portion of the right fibula has a post-mortem break but it is complete. However, the left fibula is quite fragmentary. There is damage to both the distal and proximal portions of the bone; one is along an ante-mortem fracture. Both patellas are present and complete. The right foot is almost complete: only 2 intermediate phalanxes and the entire distal phalanx are missing. The left is missing the 3rd, 4th and 5th metatarsal and all the phalanx elements. All foot sesamoids are present.

Analysis was hindered by the fragmentary condition of HCSK001. To further understand this individual, the cranium was reconstructed using B72 Paraloid 60% mixed with acetone to join the fragments together, essentially reconstructing the skull (see Figure 3). This was completed by Satu Valoriani, an experienced PhD student from Liverpool John Moores University.


**Figure 3: HCSK001 reconstruction: A, Satu Valorini working on the reconstruction. B, HCSK001 after reconstruction.**

### Age at Death Estimation

Age related changes in the skeleton reflect three different phases of lifespan: growth and development, equilibrium and senescence. The first phase is represented by children and young adults who undergo changes that proceed at a uniform and predictable rate in a well-documented pattern. However once growth has ceased the changes in the adult skeleton vary greatly and this is due to individual factors such as genetics, lifestyle, and occupation.

HCSK001 is an adult skeleton. For adults as many standards and methods as possible should be used when determining age at death because of the degenerative changes that occur across the skeleton. Brothwell (1981) reviewed dental attrition of the three permanent molars in British skeletons from the Neolithic to the medieval and produced a table which shows the dental wear patterns with corresponding specific age categories. Analysis of the degeneration of the pubic symphysis surface is considered to be one of the most reliable methods of estimating adult age at death when present (Buikstra et al., 1994). The Suchey-Brooks scoring system (Brooks et al., 1990) is used to identify the degenerate changes that alter the pubic symphysis surface. This method is broken down into 6 phases with an age range of 19 to 87 years of age.

The auricular surface on the iliac crest is another area of degeneration used for ageing. Lovejoy et al., (1985) derived a chart dividing the assessment into 8 phases which describe the changes to the auricular surface that corresponds with an age range of 20 to 60+ years.

The dentition of HCSK001 has completed eruption and attrition to the mandibular molars has occurred, unfortunately the maxillary molars have been lost ante-mortem. Dental attrition was scored as 45+ years of age based on Brothwell's (1981) method. The os coxae of HCSK001 are complete so both auricular surfaces and pubic symphysis were also used to estimate age at death.

**Table 1: Results of age at death estimations**

| Os Coxae | Left Side | Age Estimation | Right Side | Age Estimation |
|---|---|---|---|---|
| Auricular Surface | Phase 6 | 45-49 years | Phase 6 | 45-49 years |
| Pubic Symphysis | Phase 5 | 45.6 years | Phase 5 | 45.6 years |

Table 1 shows the results for estimation of age for HCSK001. The auricular surfaces were assessed as a phase 6, giving an age at death of 45 to 49 years. The pubic symphyseal surfaces were assessed as phase 5, giving a likely age at death of 45.6 years. Combined with the dental attrition, an overall estimation of age for HCSK001 is 45 to 49 years (see Appendix 4).

**Sex Estimation**

Estimation of sex within a human skeleton is mainly made using the sexual dimorphic traits of the skull and the pelvis. Sex can also be determined by the diameter of the femoral and humeral head, additionally the radial head can also be used when material is available. An accuracy of 98% can be achieved from both the skull and the pelvis (Krogman, 1962). In any population male and female skeletons differ in size and shape, however there are also individuals that do not have defined skeletal characteristics, and therefore do not fall into a definite male or female group. Each attribute is scored on a 1 to 5 basis: 1 being mostly female and 5 being mostly male. Scores made at 3 are classed as ambiguous. The features on the skull and pelvis are quite sexually dimorphic in comparison to other sex estimation methods. The development of these attributes begins in puberty and continues through growth and age.

There are several indicators of sex on the pelvis, but these are only reliable when determining sex as an overall view of the pelvis rather than as individual markers. Idiosyncratic variation is very common amongst human skeletons. Sex estimation indicators include: the greater sciatic notch, the sub-pubic angle, the ventral arc, the sub pubic concavity and the

ischiopubic ramus ridge. Table 2 shows the results of sex estimation for HCSK001. Sex determination of the skull is sometimes difficult to interpret due to idiosyncratic variation. Males normally have a larger and more robust skull, whereas females tend to have smoother and more delicate skulls. However this varies within modern human populations. There are five key features that usually survive archaeological and forensic contexts: the nuchal crest, the mastoid process, the mental eminence, the supra-orbital margin, and the supra-orbital ridge. Table 3 shows the results of sex estimation for HCSK001.

**Table 2: Results of sex estimation using the os coxae**

| Os Coxae | Traits | Left Side | Right Side | Sex Estimation |
|---|---|---|---|---|
| Ilium | Greater Sciatic Notch | 5 | 5 | Male |
| Ilium | Pre-auricular sulcus | 5 | 5 | Male |
| Pubis | Sub-pubic angle | 5 | 5 | Male |
| Pubis | Sub-pubic concavity | 5 | 5 | Male |
| Pubis | Ventral arc | 5 | 5 | Male |
| Pubis | Ischiopubic ramus ridge | 5 | 5 | Male |

**Table 3: Results of sex estimation using the skull**

| Trait | Left Side | Medial | Right Side | Sex Estimation |
|---|---|---|---|---|
| Nuchal crest | | 4 | | Poss. Male |
| Mastoid processes | 5 | | 5 | Male |
| Mental eminence | | 5 | | Male |
| Supra-orbital margin | 5 | | 5 | Male |
| Supra-orbital ridge/Glabella | | 5 | | Male |

**Table 4: Results of sex estimation using humeral and femoral head diameter**

| Maximum Diameter | Left Side | Right Side | Sex Estimation |
|---|---|---|---|
| Humerus | 44mm | n/a | Male |
| Femur | 49mm | 48mm | Male |

Sex determination using metrics of the femoral and humeral head diameters are not as sexual dimorphic as the pelvis and skull, but are reasonable methods in the determination of sex when the skull and pelvis are not available or to corroborate estimations. Table 4 shows the results produced when examining these traits. Combining the results presented here it is clear that HCSK001 is very likely that of a male (see Appendix 4).

**Ancestry**

To further assess ancestry with as many methods as possible it was necessary to reconstruct the skulls. This work was undertaken by Satu Valoriani, an experienced PhD student at Liverpool John Moores University (see Figure 3). The cranium of HSK001 is almost complete with only post-mortem damage from the excavation remaining visible. The cranium was reconstructed using B72 Paraloid 60% mixed with acetone to join the fragments together

and a pigmented wax (beeswax, pine resin and paraffin) used to fill in the missing fragments. Figure 4 shows before and after process of using wax in the reconstruction.

**Figure 4: A, the reconstruction of HCSK001 cranium. B, HCSK001 after the missing areas have been filled with pigmented wax.**

A non-metric evaluation was completed using various traits visible on the cranium to estimate ancestry. Table 5 displays a review of the traits observed, results suggest this individual is White European.

**Table 5: Results of nonmetric traits in ancestry estimation**

| Element | Estimation | Element | Estimation |
|---|---|---|---|
| Incisors | n/a | Nasals | White |
| Zygomatics | White | Dentition | White |
| Prognathism | White/Black | Nasal Sill | White |
| Palate | White | Nasion | White |
| Cranial Sutures | White | Cranial Vault | White |
| Nasal Spine | White | Mandible | White |
| Chin | White | Inion Hook | White |
| Ascending Ramus | White | Wormian Bones | White |
| Palatine Suture | White | Sagittal Arch | White |
| Nasal Profile | White | Incisor Rotation | White |

Metric analysis was then undertaken by PhD Samuel Rennie, who has vast experience working with numerous collections of difference ancestral origin and using the Fordisc program. The results (Figure 5) shows that HCSK001 was placed almost central within the 19th Century White males group as indicated by the cross. The recorded metrics were

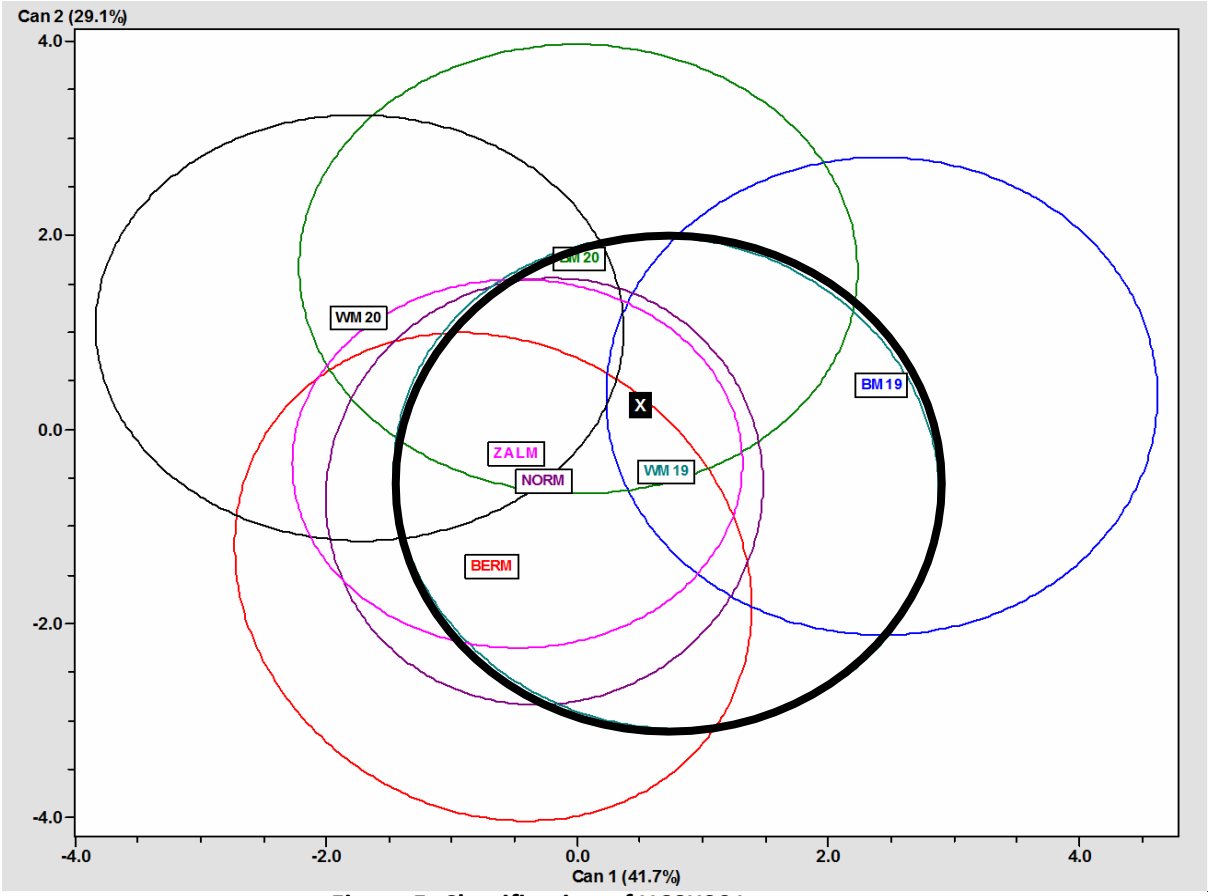


**Figure 5: Classification of HCSK001.**

cross validated across 7 population groups generating a 70.6% accuracy level. Statistically the posterior probability is 0.858, the type chi is 0.254, and the type f is 0.383. This means that HCSK001 is most likely a white male as this is the group it is most similar to within the Howell's database.

### Stature Estimation

Before an estimation of stature can be made the sex of the skeleton must be known. Although in most populations females are normally considered smaller than males there are individuals that fall outside these boundaries. To determine an accurate estimation of stature the maximum number of complete long bones possible must be measured. All bones are measured in cm to the nearest mm using an osteometric board. Bones with post-mortem fractures can be re-

assembled and measured, provided that the breaks are clean, and only long bones with a maximum of three fractures can be measured. The measurements of the: humerus, ulna, radius, femur, and fibula, are all rather simple to obtain as the maximum length is needed. The measuring technique of the tibia is slightly more complex as the intercondylar eminence must be excluded.

Many researchers have produced different regression equations to estimate stature from limb bone length using different long bones and for different reference populations. The formula used here was for White males (Trotter, 1952 and 1958) given that HCSK001 cranium observations estimated his ancestral origin to be that of a White European. The results for HCSK001 suggest a height of 172.3cm +/- 3.2cm approximately 5ft 7.7in (see Appendix 4).

**Nonmetric Traits**

Nonmetric, discontinuous or discrete traits are anomalies found within the range of normal anatomy of the human skeleton. They can include additional sutures, facets, bony processes or foramina that occur in a minority of skeletons. They are not measurable and are simply recorded as present or absent. Most, at least, have a genic basis, so they likely reflect possible relatedness between and within populations (Saunders, 1989). Nonmetric traits can be unilateral, bilateral, paired or single and can also be asymptomatic or pathological (Saunders and Rainey, 2008). It has been noted that some are produced by factors from occupational stress.

Recording the traits presented by Berry and Berry (1967) and Finnegan (1978), HCSK001 displays various cranial and postcranial traits. Cranial traits present include a partial metopic suture, bilateral supra-orbital, zygomatic, maxillary and mastoid foramina, bilateral auditory torus, an extra ossicle at the lambda junction, slight occipital bunning, bilateral single occipital condylar facets, and huschke foramina. Postcranial, traits include accessory sacral facet to the right ilium, bilateral ilium foramina and plaque formation to the femurs, hypotrochanteric fossa on the left femur, the right exhibits a third trochanter, and bilateral double facets to the talus and calcaneus articulates surfaces and peroneal tubercles. Lumbarisation of the first sacral body is evident.

**Pathological Conditions**

HCSK001 was macroscopically and microscopically examined for any pathology or trauma on each bone and fragment. The most obvious and striking pathology found was the ante mortem fractures sustained to both tibiae and fibulas that were further complicated by

infections during healing. The left tibia and fibula exhibit an oblique fracture whereas the right displays a spiral fracture. Unfortunately the left tibia has evidence of osteomyelitis (Figure 6), a bone infection characterised by swelling and cloacae where the build-up of pus and necrotic liquid is able to leave the bone matrix. There is a considerable amount of mal-union in the left tibia and fibula (see Figure 6). Even though both lower limbs have sustained trauma, there is a 10mm difference in length between the two with distinct angulation to the left tibia.

The right tibia, fibula, and femur have been affected by periostitis, which is exhibited on dry bone by slight swelling and uneven surface of the periosteal bone. It is caused by infection and inflammation of the periosteal layer of bone which is an understandable response to the use of the right leg. The tibia is also at high risk of periostitis due to the thin layer of skin and fat that covers the anterior portion of the bone (the shin area).

The compression fractures seen in the T11 and T12 vertebrae are caused by the bone collapsing due to a weakening of the vertebral body. This is a very common fracture seen in skeletal collections affecting the lower thoracic and first lumbar vertebrae most frequently. They can often be caused by lifestyle and occupation as the vertebrae are no longer able to withstand normal bending, lifting, or even sneezing; however genetics and age can have an effect.


**Figure 6: A, Spiral fracture to left tibia and fibula. B, Oblique fracture to the left tibia and fibula, mal-union and osteomyelitis is also evident.**

Osteoarthritis is the most common pathology recorded in archaeological literature and is still remarkably common in modern populations. HCSK001 has signs of moderate to mild osteoarthritis. There are Schmorls nodes on several of the vertebrae: these depressions are caused when a protrusion of cartilage goes into the vertebral body and are frequently associated with osteoarthritis. There is additional osteophytic growth on the borders of the vertebral bodies that also indicate mild osteoarthritis. The vertebral column, whilst showing evidence of osteoarthritis, is expected in individuals of this age. The left and right acromioclavicular joints display signs of osteoarthritis and is more pronounced to the right hand side. There is also evidence of osteoarthritis to both ankle joints, likely related to the sustained trauma and altered gait

The posterior aspect of the manubrium and sternum has extensive porosity and pitting which reflects in some of the ribs. There is a distinct swell to the distal posterior portion of the left femur (Figure 7), likely osteomyelitis or a cist related to the trauma sustained to both tibia and fibulas.

**Figure 7: Slight swell to the distal portion of the left femur of HCSK001.**

In regards to dental pathology, there is evidence of chronic periodontal disease on the mandible and maxilla. This disease is a common occurrence in both medieval and modern populations and is caused by a combination of poor dental hygiene, genetics, and diet. Periodontal disease can lease to ante-mortem tooth loss when the infection moves from gums and into the alveolar bone of the mandible and maxilla. Prolonged infection leads to a loss of the alveolar bone and consequently the tooth becomes loose and prone to fall out.

HCSK001 has lost first and second maxillary molars on both sides ante-mortem (see Appendix 3). As the alveolar bone has completely remodelled in these areas we know this occurred at least 6 months or more before this individual passed away. The high frequency of tooth loss is likely due to a combination of periodontal disease and caries, as the maxillary 4$^{th}$ premolars on the right side and the maxillary left 3$^{rd}$ premolar show evidence of active caries and abscess (Figure 8). The lower (mandible) right 1$^{st}$ molar has evidence of a severe cavity and an abscess on the roots. The 3$^{rd}$ premolar on the right side is also missing its cusp due to a combination of infection and caries.

There is significant attrition to all the teeth present and in particular there is interesting slanted attrition to the central upper incisors. This is most likely due to a combination of diet and altered eating habits due to the infection affecting the molars.

**Figure 8: A, Lateral aspect of HCSK001 cranium taking from the right side, abscess is highlighted. B, Close up of the abscess.**

**Future Ambitions**

This preliminary report shows the diverse amount of information that has been accumulated from HCSK001. There are however many more avenues to consider. Firstly we would like to do some radiographic analysis on this individual, particularly to explore the trauma sustained to the lower limbs. The left 2nd mandibular molar has been extracted and replicas have been made. This tooth has been sent for radiocarbon and isotope analysis with results expected before the end of the year. These results will not only provide us an approximate date but also an interpretation about HCSK001's diet and whether this individual is local to the North West area or from elsewhere in the United Kingdom. A consideration into aDNA analysis is also being sought. Alongside this, we are chasing the possibility of a facial reconstruction.

Finally, animal remains were found amongst the assemblage. Further review will be considered to identify what these remains are and their significance in relation to HCSK001.

**Figure 9: HCSK002 in situ at Halton Castle (Image courtesy of Tom Fildes).**

### Archaeothanotology

The burial of HCSK002 (Figure 9) is in a typical position for a Christian burial with an east to west orientation (Daniell, 1998). It is surmised that the body was wrapped in shroud that was looser than HCSK001 (Harris and Tayles, 2012). The skeleton has moved slightly during decomposition evidenced by the slight tilt of the left side of the body, affecting the positioning of the arm, pelvis, and femur. This is likely due to the decline of the natural bedrock situated below the burial. Unfortunately, the hands have been disturbed during the excavation. They have been removed and placed alongside the lateral side of the right femur. This did not occur at the time of burial as the phalanges would still be in articulation, unlike what is seen here were no articulation remains.

Like HCSK001, there is evidence of roots within the grave cut however, the roots have not moved or disturbed the burial and have not caused any damage to the remains. There is no taphonomic evidence that suggests the remains were disturbed by human or animal activity before the excavation. The only damage recorded occurred from soil compression, mostly affecting the cranium and from excavation.

### Condition and Preservation

Skeletal preservation depends on a number of factors, including age, sex and robusticity of an individual. The burial environment, disturbance of burials, and the treatment post-excavation can also have an impact of the condition of the bones (Brickley, 2004). The preservation of the remains is assessed subjectively depending on the severity of bone surface erosion and post-mortem breaks, as well as completeness. Preservation is important as it can impact the quantity and quality of the information that could be obtained from the human skeletal remains.

HCSK002 is completely skeletonised: the bones are dry, lightweight, and smooth in texture. The skeleton is in a fairly good state of preservation however, there is a considerable amount of post-mortem damage (see Appendix 6 and 7 for further details). Nonmetric traits, pathological conditions, and trauma are noted later in the report.

### Minimum Number of Individuals

To determine the minimum numbers of individuals (MNI) present in this assemblage of skeletal remains, it is necessary to account for each bone, separating them according to type and

side. The remains can then be counted and corresponded with the opposite side to determine the number of individuals present. Any duplicates, or bones of different age or sex suggest that more than one individual is present amongst the assemblage of remains. HCSK002 showed no duplications of any bones therefore, MNI for HCSK002 indicates one individual.

**Inventory**

HCSK002 was assembled in anatomical position (Figure 10). Each bone, whether complete or fragmented was recorded from the cranium to the feet (see Appendix 6 and 7). The entire skeleton was examined macroscopically. Any unusual features were photographed and recorded thoroughly for further examination.

**Figure 10: HCSK002 in anatomical position at Liverpool John Moores University.**

HCSK002 is more fragmentary than HCSK001 but is reasonably complete. The cranium is very fragmented and most of the splanchnocranium is missing however, a reconstruction on the remaining fragments was attempted. Both clavicles and scapula are present although significant post-mortem damage has occurred to both scapulae, likely due to the fragile nature of the bone. The left proximal humerus has sustained a post-mortem break across the neck, the left ulna and radius have sustained a clean break to the proximal portion of the shafts, and the distal portion of the right ulna has fragmented. Otherwise, the elements of both arms are complete. Both hands are almost complete but missing the scaphoid, pisiform, triquetral, and 5$^{th}$ metacarpal. The left hand is missing g the trapezoid and the right missing the lunate and hamate. Some proximal phalanges are present but majority or all of the intermediate and distal phalanges are missing. There are no hand sesamoids present.

The manubrium is complete but the sternal body is broken medially and is missing the distal portion. All the vertebrae are present and complete (7 cervical, 12 thoracic and 5 lumbar). Only the 4$^{th}$ thoracic vertebra has sustained some post-mortem damage to the neural arch. The sacrum is complete with coccyx although damage has been sustained to the 2rd, 3$^{rd}$ and 4$^{th}$ segment. Most of the ribs have sustained a single break but are complete; this amount of

damage is typical for such fragile elements. There are signs of a possible healed fracture to the left ribs.

The pelvis (both left and right os coxae) is complete however; the left side has suffered post mortem damage to the ischium and pubic bone. The right femur, tibia, and fibula are complete, only the proximal portion of the fibula has sustained some damage, likely from excavation. Both patellae are present and complete. The left femurs, tibia, and fibula are complete although there is a post-mortem break to the medial portion of the femoral shaft and to the distal portion of the fibula. The left foot is almost complete only some of the intermediate and all of the distal phalanges are missing. The right foot is missing the 2nd, 3rd, 4th and 5th metatarsal and all of the phalanges. The foot sesamoids are present.

Like HCSK001, the analysis was hindered by the fragmentary condition of HCSK002's cranium and reconstruction was sought. To further understand this individual, the cranium was reconstructed using B72 Paraloid 60% with acetone to join the fragments together, essentially reconstructing the skull (see Figure 11). This was completed by Satu Valoriani, an experienced PhD student from Liverpool John Moores University.


**Figure 11: HCSK002 reconstruction: A, HCSK002 after reconstruction. B, Satu Valorini working on the reconstruction.**

**Age at Death Estimation**

Age related changes in the skeleton reflect three different phases of lifespan; growth and development, equilibrium and senescence. The first phase is represented by children and young adults who undergo changes that proceed at a reasonable and predictable rate in a well-documented pattern. Once growth has ceased, the changes in the adult skeleton vary greatly and are more individual and population specific.

HCSK002 is a skeleton of an adult skeleton. For adults as many standards and methods as possible should be used when determining age at death, due to degenerative changes that occur across the skeleton and dentition. Brothwell (1981) reviewed dental attrition of the three permanent molars in British skeletons from the Neolithic to the medieval and produced a table which shows the dental wear patterns with corresponding specific age categories. Analysis of the degeneration of the pubic symphysis surface is considered to be one of the most reliable methods of estimating adult age at death when present (Buikstra et al., 1994). The Suchey-Brooks scoring system (Brooks et al., 1990) is used to identify the degenerate changes that alter the pubic symphysis surface. This method is broken down into 6 phases with an age range of 19-87 years of age. The auricular surface on the iliac crest is another area of degeneration used for ageing. Lovejoy et al., (1985) derived a chart dividing the assessment into 8 phases which describe the changes to the auricular surface that corresponds with an age range of 20 to 60+ years.

The dentition of HCSK002 has completed eruption and attrition to the molars has occurred. Dental attrition has been scored as 35-45 years of age based on Brothwell's (1981) method. The os coxae of HCSK002 are complete so both auricular surfaces and pubic symphysis can be used to estimate age at death.

**Table 6: Results of age at death estimations**

| Os Coxae | Left Side | Age Estimation | Right Side | Age Estimation |
|---|---|---|---|---|
| Auricular Surface | 3 | 30-34 | 3 | 30-34 |
| Pubic Symphysis | 3 | 30.7 | 3 | 30.7 |

Table 6 shows the use of Meindl's method (1985), the auricular surfaces were assessed as a phase 3, giving an age at death of 30 to 34 years. The pubic symphyseal surfaces were assessed as phase 3, giving a likely age at death of 30.7 years. Combined with the dental attrition, an overall estimation of age for HCSK002 is 30-34 years (see Appendix 8).

**Sex Estimation**

Estimation of sex within a human skeleton is mainly made using the sexual dimorphic traits of the skull and the pelvis. An accuracy of 98% can be achieved from both the skull and the pelvis. In any population, male and female skeletons differ in size and shape but, there are individuals who do not have defined characteristics and therefore do not fall into a definite male or female group. Each attribute is scored on a 1 to 5 basis; 1 being mostly female and 5 being mostly male. Scores made at 3 are classed as ambiguous. The features on the skull and pelvis are quite sexually dimorphic in comparison to other sex estimation methods. The development of these attributes begins in puberty and continues through growth and age. Sex can also be determined by the diameter of the femoral and humeral head the radial head can also be used when material is available.

There are several indications of sex on the pelvis but these are only reliable when determining sex as an overall view of the pelvis than as individual markers, as idiosyncratic variation is very common amongst human skeletons. Such sexual markers include the greater sciatic notch, the sub-pubic angle, the ventral arc, the sub pubic concavity and the ischiopubic ramus ridge. Table 7 shows the results of sex estimation for HCSK002. Sex determination of the skull is sometimes difficult to interpret due to idiosyncratic variation. Males normally have a larger and more robust skull in comparison to females who tend to be more smooth and delicate but, this varies with the human population today. There are five key attributes that would survive archaeological and forensic contexts, the nuchal crests, the mastoid process, the mental eminence, the supra- orbital margin and the supra-orbital ridge. Table 8 shows the results of sex estimation for HCSK002.

**Table 7: Results of sex estimation using the os coxae**

| Os Coxae | Traits | Left Side | Right Side | Sex Estimation |
|---|---|---|---|---|
| Illium | Greater Sciatic Notch | 1 | 1 | Female |
| Illum | Pre-auricular sulcus | 2 | 2 | Female |
| Pubis | Sub-pubic angle | 1 | 1 | Female |
| Pubis | Sub-pubic concavity | 1 | 1 | Female |
| Pubis | Ventral arc | 1 | 1 | Female |
| Pubis | Ischiopubic ramus ridge | 1 | 1 | Female |

**Table 8: Results of sex estimation using the skull**

| Trait | Left Side | Medial | Right Side | Sex Estimation |
|---|---|---|---|---|
| Nuchal crest | | 1 | | Female |
| Mastoid processes | 1 | | 1 | Female |
| Mental eminence | | 1 | | Female |
| Supra-orbital margin | 1 | | 1 | Female |
| Supra-orbital ridge/Glabella | | 1 | | Female |

**Table 9: Results of sex estimation using humeral and femoral head diameter**

| Maximum Diameter | Left Side | Right Side | Sex Estimation |
|---|---|---|---|
| Humerus | 41 | n/a | Female |
| Femur | 44 | 44 | Indeterminate |

Sex determination using metrics of the femoral and humeral head diameters are not as sexual dimorphic as the pelvis and skull but, are reasonable methods in the determination of sex when little material is available. Table 9 shows the results produced when examining these traits. Combining the results presented here, it is clear that HCSK002 is likely that of a female (see Appendix 8).

### Parturition

Further work was undertaken by Sarah Canty, a PhD student from Liverpool John Moores University whose research focuses solely on the parturition scaring seen on the os coxae. It has been long suggested that pregnancy and the act of giving birth leaves a lasting mark on the skeleton that can be observed after death (Ubelaker and De La Paz, 2012). However, this has not been proven and no clear method has been established. Currently, it is not possible to state whether an individual has even been pregnant or given birth from their skeletal remains. Research is being conducted into this area, one of which is the study of a trait on the pelvic bones called the preauricular sulcus. A grading system (Canty, 2014) has been created to assess this trait and is in the process of being tested and proven. HCSK002 has a Grade 2 and a Grade 3 sulcus. Grade 3 sulcus is thought to be linked to pregnancy and parturition however, until this method has been developed and established, it cannot be stated for certain.

### Ancestry

To further assess ancestry with as many methods as possible it was necessary to reconstruct the skulls. This work was undertaken by Satu Valoriani, an experienced PhD student at Liverpool John Moores University. The cranium of HSK002 is almost complete with only some of the splanchnocranium is missing. The cranium was reconstructed using B72 Paraloid 60% with acetone to join the fragments together and a pigmented wax (beeswax, pine resin and paraffin) used to fill in the missing fragments. Figure 12 shows before and after process of using wax in the reconstruction.


**Figure 12: A, the reconstruction of HCSK002 cranium. B, HCSK002 after the missing areas have been filled with pigmented wax.**

A non-metric evaluation was completed using various traits visible on the cranium to estimate ancestry. Table 10 displays a review of the traits observed, results suggest this individual is White European.

**Table 10: Results of nonmetric traits in ancestry estimation**

| Element | Estimation | Element | Estimation |
|---|---|---|---|
| Incisors | White | Nasals | White/Asian |
| Zygomatics | White | Dentition | White |
| Prognathism | White | Nasal Sill | White |
| Palate | White | Nasion | n/a |
| Cranial Sutures | White | High | Asian |
| Nasal Spine | White | Mandible | White |
| Chin | White | Inion Hook | White |
| Ascending Ramus | White | Wormian Bones | White |
| Palatine Suture | White | Sagittal Arch | White |
| Nasal Profile | White | Incisor Rotation | White |

Metric analysis was then undertaken by PhD student Samuel Rennie, who has vast experience working with numerous collections of difference ancestral origin and using the Fordisc program. The results (Figure 13) show that HCSK002, as indicated by the cross, does not fit into any population group within the database. The group that was closest was Norse females, with a posterior probability of 0.785, a type chi of 0.001, and a type r of 0.018. However, this does not mean that HCSK002 is a Norse female. Further analysis is required as some of the metrics were not possible to take.

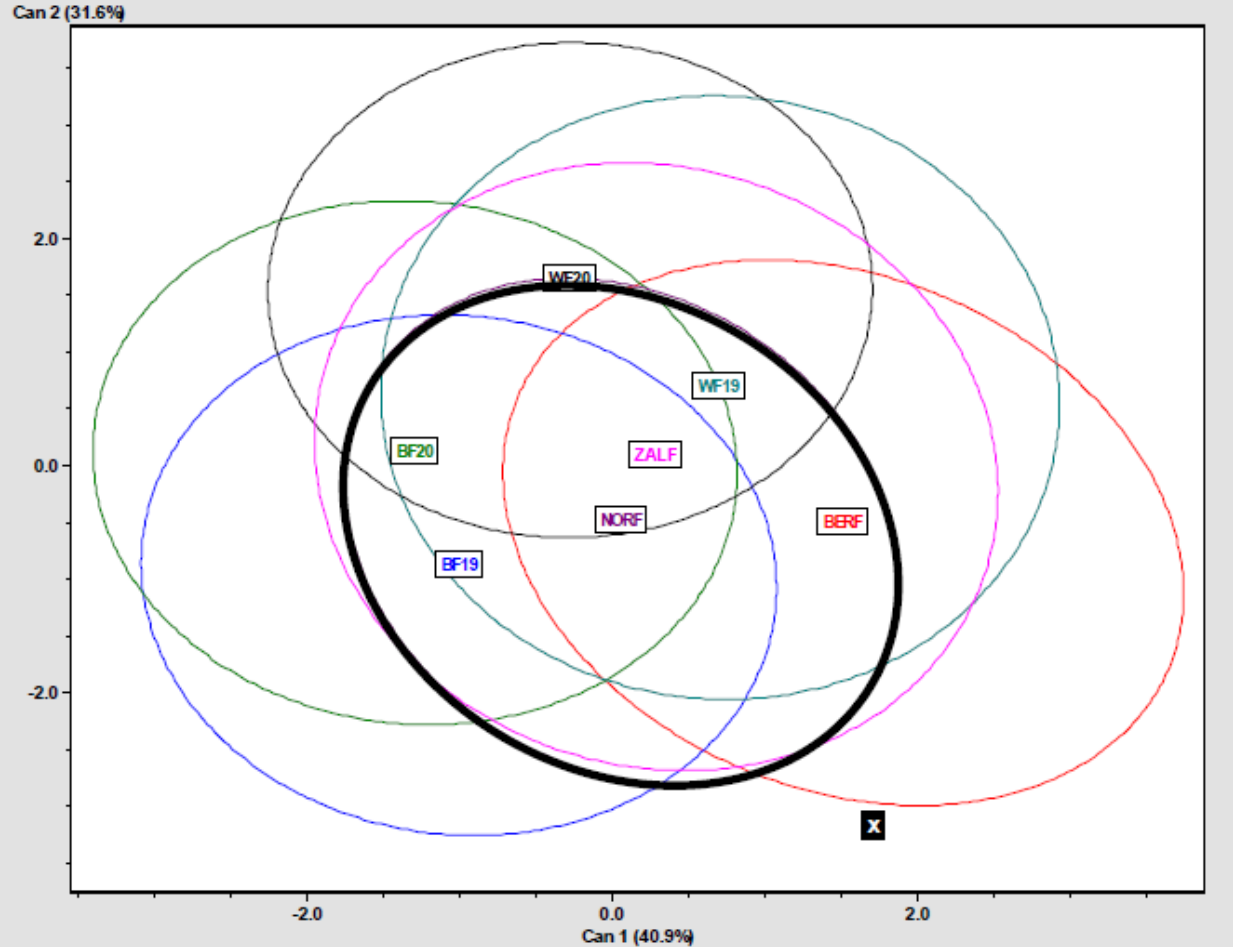


**Figure 13: Classification of HCSK002.**

### Stature Estimation

Before an estimation of stature can be made, the sex of the skeleton must be known. In most populations females are normally considered smaller than males but, there are individuals that fall outside these boundaries. To determine an accurate estimation of stature as many of the long bones as possible must be measured. All bones are measured in cm to the nearest mm using an osteometric board. Bones with post- mortem fractures can be re-assembled and measured, provided that the breaks are clean, only long bones with a maximum of three fractures can be measured. The measurements of the humerus, ulna, radius, femur and fibula are all rather simple the maximum length of these bones should be obtained. The measuring technique of the tibia is slightly more complex. The tibia is measured at its full length excluding the intercondylar eminence.

Many researchers have produced different regression equations to estimate stature from limb bone length using different long bones and for different reference populations. The formula used here was for White females (Trotter, 1952 and 1958) given that the HCSK002 cranium

observations estimate her ancestral origin to bone that of a White European. The results for HCSK002 suggest a height of 171.6cm +/- 3.5cm approximately 5ft 7.5in (see Appendix 8).

### Nonmetric Traits

As mentioned earlier, nonmetric traits are anomalies found within the range of normal anatomy of the human skeleton. They can include additional sutures, facets, bony processes or foramina that occur in a minority of skeletons. They are not measurable and are simply recorded as present or absent. Most, at least, have a genic basis, so they likely reflect possible relatedness between and within populations (Saunders, 1989). Nonmetric traits can be unilateral, bilateral, paired or single and can also be asymptomatic or pathological (Saunders and Rainey, 2008). It has been noted that some are produced by factors from occupational stress.

Recording the traits presented by Berry and Berry (1967) and Finnegan (1978), HCSK002 displays various cranial and postcranial traits. Cranial traits present include bilateral supra-orbital notches, bilateral zygomatic and maxillary foramina, bilateral auditory torus and single occipital condylar facets. Postcranial, traits include bilateral accessory clavicular and sacral facets, bilateral septal apertures, bilateral ilium foramina and hypotrochanteric fossa's, and bilateral single facets to the talus and calcaneus articulates surfaces and peroneal tubercles. There is congenital absence of all 3rd molars.

### Pathological Conditions

HCSK002 was macroscopically and microscopically examined for any pathology or trauma on each bone and fragment. There is evidence of periostitis on both tibiae, a probable rib fracture, and some very mild linear enamel hypoplasia is visible on the lower central mandible incisors. There is also chronic periodontal disease present which is seen in most archaeological collections.

Linear enamel hypoplasia (LEH) is an indicator of 'systemic stress' during early childhood whilst the enamel is still forming on dentition. The stress can be nutritional, illness, environmental, or psychological. The hypoplasia occurs when the body is under so much 'stress' that is cannot continue producing enamel and this leaves thin bands of missing or thinned enamel on the teeth. The LEH on HCSK002 is very mild and the enamel is only slightly affected on the central mandibular incisors, canines and third premolars. Using the method compiled by Reid and Dean (2006) it was calculated that the 'stress' happened when HCSK002 was 3 years of age.


**Figure 14: Unusal 'wedge' shape to the vertebrae from HCSK002.**

There is a possibility that HCSK002 may have a genic condition called Marfan syndrome. To confirm this diagnosis genetic testing would be needed. The reasons for this tentative diagnosis is due partly because of how unusually elongated the long bones are but also because of the unusual wedging of the lumbar vertebrae, in addition to the angling and compression of some of the thoracic vertebrae (Figure 14). It is unlikely that the wedge shape and compressed appearance of T11 and T12 is because of fracturing or osteoarthritis as none of the other evidence of these pathologies is present. The spinal column shaping is very similar to the shape of vertebra CT scans taken of Marfan syndrome sufferers in modern populations (Kaissi et al, 2013). It must be stressed however, that this is a speculative diagnosis and so therefore cannot be confirmed without DNA testing.

HSK002 also has chronic periodontal disease (Figure 15) and root exposure from the alveolar bone receding. There are also caries present on the right lower 4$^{th}$ premolar and 1$^{st}$ molar and the left 1$^{st}$ molar has evidence of a substantial cavity. There is also calculus present on the lingual side of the central lower incisors. Calculus is a build-up of hardened plaque which is caused by a combination of poor dental hygiene and genetic factors.

**Figure 15: Dentition of HCSK002 displaying excessive periodontal disease.**

**Future Ambitions**

This preliminary report shows the diverse amount of information that has been accumulated from HCSK002. There are however many more avenues to consider. Firstly we would like to do some radiographic analysis on this individual, particularly to explore the possible trauma sustained to the ribs. Further reconstruction of the crania is under arrangement for a reanalysis of the Howell's ancestry results. The left 2nd maxillary molar has been extracted and replicas have been made. This tooth has been sent for radiocarbon and isotope analysis with results expected before the end of the year. These results will not only provide us an approximate date but also an interpretation about HCSK002's diet and whether this individual is local to the North West area or from elsewhere in the United Kingdom. A consideration into aDNA analysis is also being sought. Alongside this, we are chasing the possibility of a facial reconstruction.

Finally, animal remains were found amongst the assemblage. Further review will be considered to identify what these remains are and their significance in relation to HCSK002.

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# Appendix List

– Context sheet of HCSK001

- Visual inventory of HCSK001

– Detailed inventory of HCSK001 4 –

Post-X of HCSK001

– Context sheet of HCSK002

– Visual inventory of HCSK002

– Detailed inventory of HCSK002 8 –

Post-X of HCSK002

## Appendix 1: Context sheet of HCSK001

# Skeleton Sheet

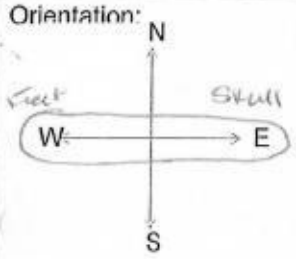
Site Code: HCB15 Area: Outer Bailey Trench: Trench 2 Context: Skeleton 001

Date: 28/07/15 Recorded by: KW

Level : Reduced :- Skull: Sacrum: Feet:

Grave Type: Pit | Grave Cut: Steep sided ephemeral | Grave Fill: Mid-dark greyish black | Coffin: Not Present

Orientation:




Sketch: See Photos.

Description and Notes:

Skeletal remains of adult male in a good level of preservation found excavated in the middle segment of T2, remains are fully articulated with evidence of ligature peri-mortum activity to the 3/4 Cervical Vertebrae. Evidence of severe stepped fracture to the left tibia which has healed, similar osteo pathology on right tibia. both upper limbs + hands present and laid over pelvis, potentially bound; Sex given on pelvic girdle + mastoid process. Located to the N of pit Feature and to the W of Structural post holes in T2. Base of grave appears to be level on bedrock.

Above: (007)

001 Skeleton

Below: NAT (003) Natural

Finds: Pot ☑ Lithic ☐ Bone ☑ Metal ☑ Other ☐

Small Finds: △ △ △ △ △ △ △ △

Samples: taken from beneath remains.

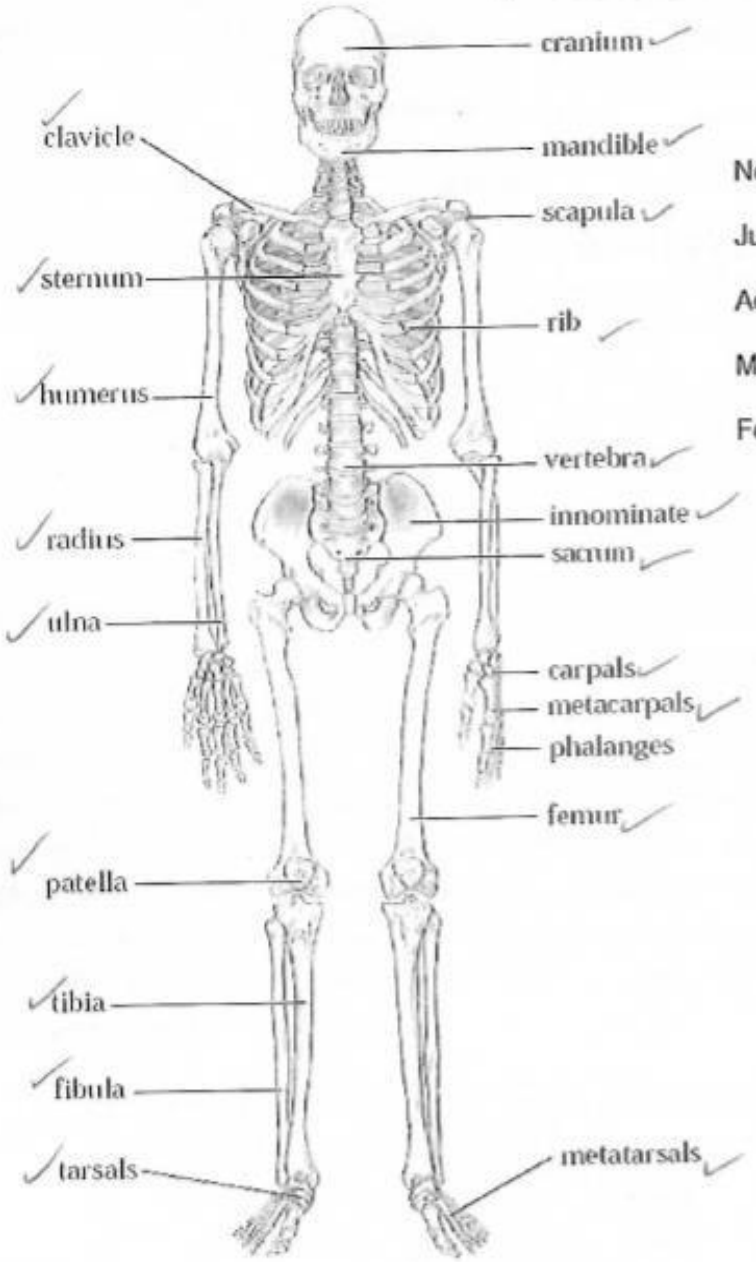
Plan: Section: Photo:

Period: Group: Burial Number:

record sheet based on MoLAS recording system

Mark the bones that were recovered

Skeleton Num: 001




Neonate? ☐

Juvinille? ☐

Adult? ☑

Male? ☐

Female? ☐

Age 25-30
Epiphysis Fusion
& Dental eruption.

001

Lifting:
Preservation: Good: ☑ Moderate: ☐ Poor: ☐
Retrieval: Good: ☑ Moderate: ☐ Poor: ☐

Reburied?: Yes ☐ No ☑

Further treatment:
deposited with Natural History Museum, on day of Exhumation.

record sheet based on MoLAS recording system

## Appendix 2: Visual Inventory of HCSK001

# Halton Castle Skeleton Collection

## Adult Skeleton Inventory

**Skeleton Number:** SK001

**Grave Number:**

**Cut Number:**

**Fill Number:**

**Number of boxes:** 2

**Accession Number:** 2015.2|5|1+2

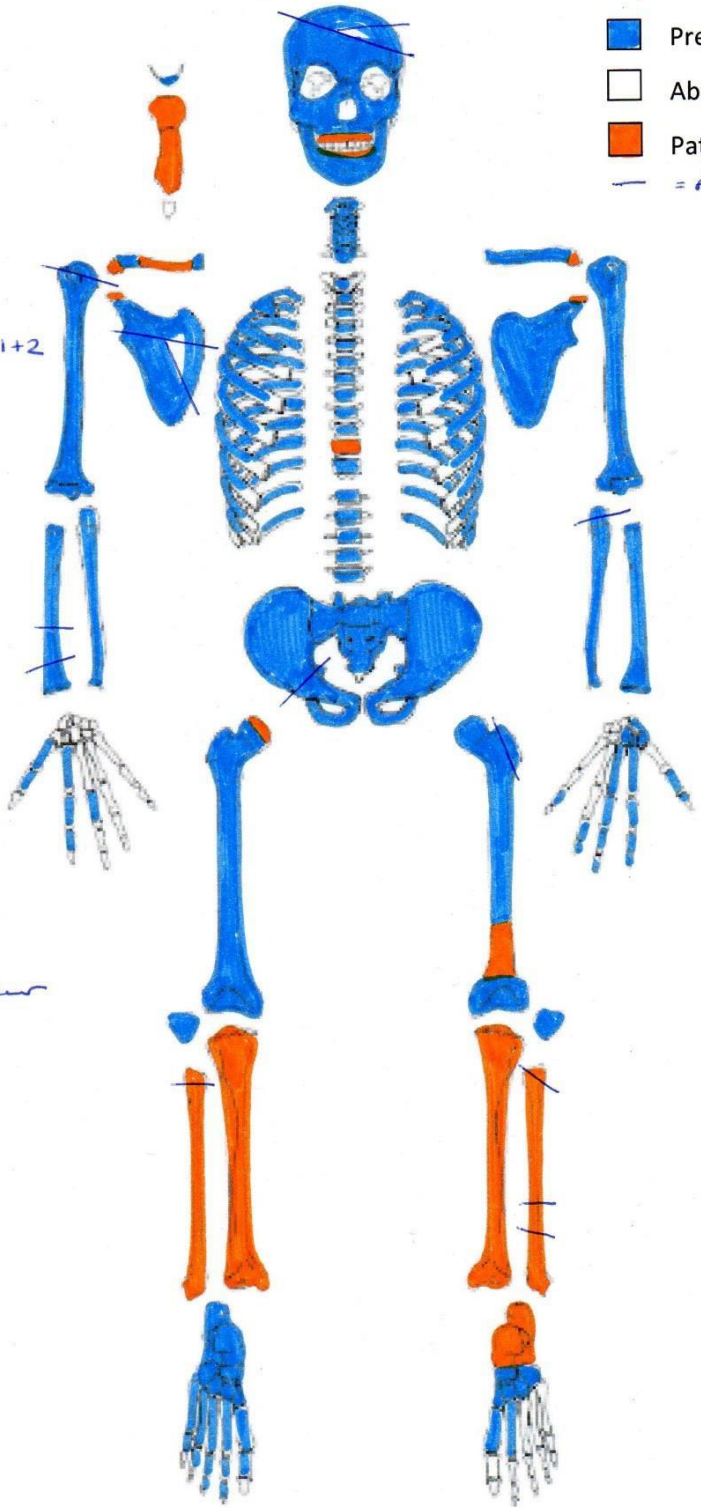
**Red Box Number:** N/A

**Recorder:** CLB + CRD

**Date:** 30/9/2015

**Notes:**

abscess at 46, 14, 34 + 35
Periodontal disease
compression fracture to T11
ossicle to sternum.
OA to both shoulders +
hip + left foot
Possible fracture to
rt clavicle.
fractures to both tibiae +
fibulae
osteoarthritis evident
throughout to
lower limbs
healing to distal left femur
dextrocardia of LS.



# Appendix 3: Inventory of HCSK001

Skeleton Number: 001 Grave: Cut: Fill: Red Box Number: Date: 30/9/15
Accession Number: 2015.215.172

Skeletal Inventory:

P = Present. A = Absent.

Cranial:

| Bone: | L | M | R | Bone: | L | M | R |
|---|---|---|---|---|---|---|---|
| Frontal | | P | | Sphenoid | | P | |
| Parietal | P | | P | Lacrimal | P | | P |
| Occipital | | P | | Ethmoid | | P | |
| Temporal | P | | P | Vomer | | P | |
| Zygomatic | P | | P | Nasal | P | | P |
| Maxilla | P | | P | I.N.C. | P | | P |
| Palatine | P | | P | Hyoid | | P | |
| Mandible | | P | | Thyroid | | A | |

Postcranial:

| Bone: | | L | M | R | Bone: | L | M | R |
|---|---|---|---|---|---|---|---|---|
| Sacrum | S1 | | P | | Scapula | P | | P |
| | S2 | | P | | Clavicle | P | | P |
| | S3 | | P | | Manubrium | | P | |
| | S4 | | P | | Sternal Body | | P | |
| | S5 | | P | | Xiphoid | | A | |
| | Coccyx | | A | | Patella | P | | P |
| Os Coxae | Ilium | P | | P | 1st Rib | P | | P |
| | Ischium | P | | P | 2nd Rib | P | | P |
| | Pubis | P | | P | 3rd to 12th Rib | 10 (of 10) | | 10 (of 10) |
| | Acetabulum | P | | P | | | | |
| | Auric. Surface | P | | P | | | | |

Comments:

Carla Burrell. Student Number: 383791.

Skeleton Number: 001 Grave: Cut: Fill: Red Box Number: Date: 30/9/15
Accession Number: 2015.213.112

**Vertebrae:**

| Bone: | Centrum | Neural Arch | Dens | Anterior Arch |
|---|---|---|---|---|
| C1 | P | P | | P |
| C2 | P | P | P | P |

| Bone: | Centrum | Neural Arch | Bone: | Centrum | Neural Arch |
|---|---|---|---|---|---|
| C3 | P | P | T7 | P | P |
| C4 | P | P | T8 | P | P |
| C5 | P | P | T9 | P | P |
| C6 | P | P | T10 | P | P |
| C7 | P | P | T11 | P | P |
| T1 | P | P | T12 | P | P |
| T2 | P | P | L1 | P | P |
| T3 | P | P | L2 | P | P |
| T4 | P | P | L3 | P | P |
| T5 | P | P | L4 | P | P |
| T6 | P | P | L5 | P | P |

**Long Bones:**

| Left Bone: | Prox. Epi. | Prox. 3rd | Med. 3rd | Dis 3rd | Dis. Epi. |
|---|---|---|---|---|---|
| Humerus | | P | P | P | |
| Ulna | | P | P | P | |
| Radius | | P | P | P | |
| Femur | | P | P | P | |
| Tibia | | P | P | P | |
| Fibula | | P | P | P | |

**Comments:**

Carla Burrell. Student Number: 383791.

Skeleton Number: 001 Grave: Cut: Fill: Red Box Number: Date: 30/9/15

Accession Number: 2015.2|S|1+2

| Right Bone: | Prox. Epi. | Prox. 3rd | Med. 3rd | Dis 3rd | Dis. Epi. |
|---|---|---|---|---|---|
| Humerus | ..... | P | P | P | ..... |
| Ulna | ..... | P | P | P | ..... |
| Radius | ..... | P | P | P | ..... |
| Femur | ..... | P | P | P | ..... |
| Tibia | ..... | P | P | P | ..... |
| Fibula | ..... | P | P | P | ..... |

Extremities:

| Bone: | | L | R | Bone: | | L | R |
|---|---|---|---|---|---|---|---|
| Scaphoid | | P | A | Calcaneus | | P | P |
| Lunate | | P | A | Talus | | P | P |
| Hamate | | A | A | Cuboid | | P | P |
| Capitate | | A | A | Navicular | | P | P |
| Pisiform | | P | A | Medial Cuneiform | | P | P |
| Triquetral | | P | A | Intermediate Cuneiform | | P | P |
| Trapezium | | P | A | Lateral Cuneiform | | P | P |
| Trapezoid | | P | A | Metatarsals | 1st | P | P |
| Metacarpals | 1st | A | P | | 2nd | P | P |
| | 2nd | P | P | | 3rd | A | P |
| | 3rd | P | A | | 4th | A | P |
| | 4th | A | A | | 5th | A | P |
| | 5th | A | A | Proximal Phalanges | | 0 | 5 |
| Proximal Phalanges | | 3 | 3 | Medial Phalanges | | 0 | 2 |
| Medial Phalanges | | 4 | 1 | Distal Phalanges | | 0 | 0 |
| Distal Phalanges | | 4 | 0 | Sesamoids | | 2 | 2 |
| Sesamoids | | 0 | 0 | | | | |

Comments:

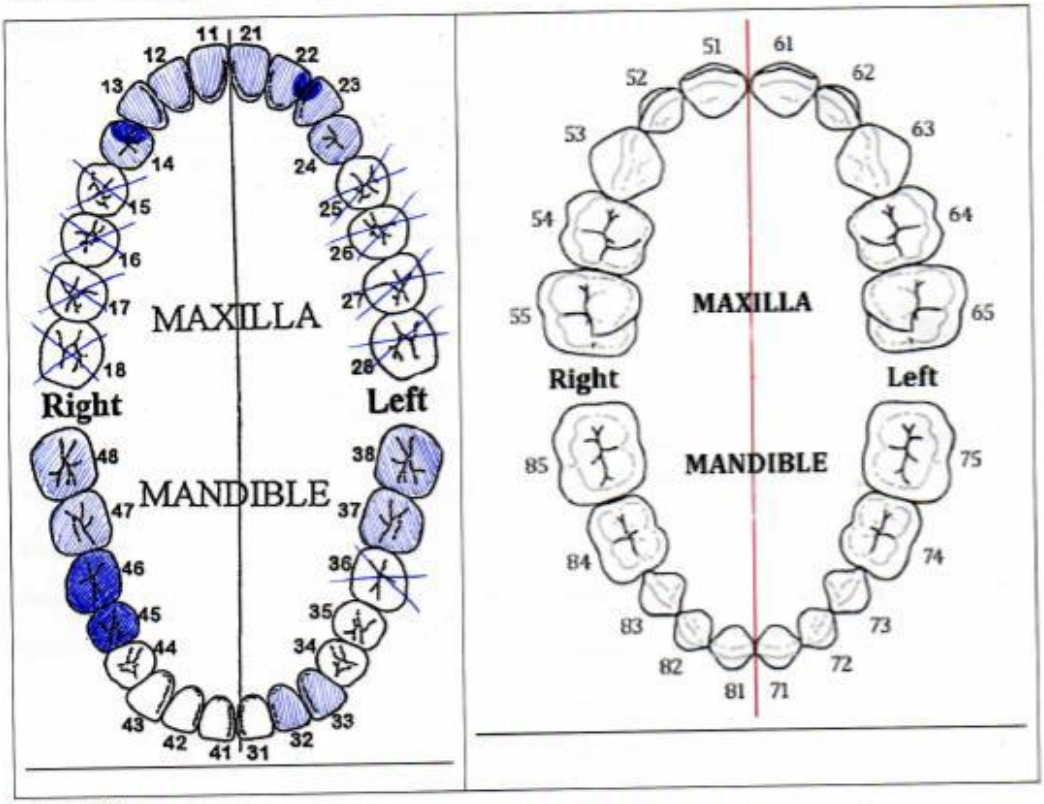
Carla Burrell. Student Number: 383791.

Skeleton Number: 001 Grave: Cut: Fill: Red Box Number: Date: 30/9/15

Accession Number: 2015.2/5/1+2

**Dentition:**

Coloured = Present. Blank = Absent/Post-mortem loss. Cross stroke = Absent/Ante-mortem loss.




**Comments:**

Abscess at 46, 14, 34 + 35.
Caries at 14, 22 + 23
45 + 46 are root only's.
Periodontal disease evidence.

#1 Left Second Molar selected for $^{14}C$ + Strontium analysis ✱

**Abnormalities:** Distinct changes to left Acet, L Ilium from fracture.
OA to both sternum/clavicle joints, to all T verts and right femur head.
Possible fracture to right clavicle
fracture to both distal tibia, Michigan Ankle
compressed fracture to T11, T12.
Swelling to left distal femur, infection from fracture L.MDS?
Lesions to sternum - infection?
Sacralisation of the L5 - congenital defect.
Periostitis to all lower L.MD bones.

**Percentage of Skeleton:** >75%

**Photographs taken:** Yes

**Radiographs taken:** T.3.A.

Carla Burrell.

Student Number: 383791.

# Appendix 4: Post-Excavation Analysis of HCSK001

Skeleton Number: SK001 Grave: Cut: Fill: Red Box Number: Date: 30/9/13
Accession Number: 2013.2151.1+2

General:

Adult ✓ Subadult .....

MNI: 1 Comments: Some cranial remains present

Sex Estimation :

0 = Undetermined Sex. 1 = Female. 2 = Probable Female. 3 = Ambiguous Sex. 4 = Probable Male. 5 = Male.

| Pelvis: | L | R | Skull: | L | M | R |
|---|---|---|---|---|---|---|
| Greater Sciatic Notch | 5 | 5 | Nuchal Crest | ..... | 4 | ..... |
| Subpubic Angle | 5 | 5 | Mastoid Process | 5 | ..... | 5 |
| Pre auricular Sulcus | 5 | 5 | Supra-Orbital Margin | 5 | ..... | 5 |
| Ventral Arc | 5 | 5 | Glabella | ..... | 5 | ..... |
| Subpubic Concavity | 5 | 5 | Mental Eminence | ..... | 5 | ..... |
| Ischiopubic Ramus Ridge | 5 | 5 | | | | |

| Humeral Head (mm): | L | R | Femoral Head (mm): | L | R |
|---|---|---|---|---|---|
| Females <43mm | ..... | ..... | Female <43.5mm | ..... | ..... |
| Indeterminate 43-47mm | 44 | ..... | Indeterminate 43.5-46.5mm | ..... | ..... |
| Male >47mm | ..... | ..... | Male >46.5mm | 49 | 48 |

Overall Estimation: Male Comments:

Age Estimation:

Overall Development of Dentition 21+ +/- .....

Dental Attrition 45+

| Pubic Symphysis | L | R | Auricular Surface | L | R |
|---|---|---|---|---|---|
| Phase | 5 | 5 | Phase | 6 | 6 |
| Age | 45-6 | 45-6 | Age | 45-49 | 45-49 |

Carla Burrell. Student Number: 383791.

Skeleton Number: S6001 Grave: Cut: Fill: Red Box Number: Date: 30/9/15
Accession Number: 2015.215/112

For Immature remains - Stage of Union:

0 = Unobservable. 1 = open. 2 = Partial Union. 3 = Complete Union.

Epiphyseal Fusion:

| Bone: | Epiphysis: | L | R | Bone: | Epiphysis: | L | R |
|---|---|---|---|---|---|---|---|
| Scapula | Coracoid | ..... | ..... | Os Coxae | Illiac Crest | ..... | ..... |
| | Acromion | ..... | ..... | | Triradiate | ..... | ..... |
| Clavical | Sternal | 3 | 3 | | Ischiopubic Ramus | ..... | ..... |
| Humerus | Head | ..... | ..... | Femur | Head | ..... | ..... |
| | Distal | ..... | ..... | | Greater Trochanter | ..... | ..... |
| | Distal Epicondyle | ..... | ..... | | Distal | ..... | ..... |
| Radius | Proximal | ..... | ..... | Tibia | Proximal | ..... | ..... |
| | Distal | ..... | ..... | | Distal | ..... | ..... |
| Ulna | Proximal | ..... | ..... | Fibula | Proximal | ..... | ..... |
| | Distal | ..... | ..... | | Distal | ..... | ..... |

Primary Ossification Centres:

| Bone: | Area of Union: | Stage of Union: |
|---|---|---|
| Cervical Vertebrae | Neural arches to each other | ..... |
| | Neural arches to centrum | ..... |
| Thoracic Vertebrae | Neural arches to each other | ..... |
| | Neural arches to centrum | ..... |
| Lumbar Vertebrae | Neural arches to each other | ..... |
| | Neural arches to centrum | ..... |

Overall Estimation: 45 to 49 Comments:

Carla Burrell. Student Number: 383791.

**Skeleton Number:** Sc001 **Grave:** **Cut:** **Fill:** **Red Box Number:** **Date:** 30/9/15
**Accession Number:** 2015.2.15/1+2

**Stature Estimation:**

| | Left Bone: | Length (cm): | Pieces: | Epi/Di: | Age: | |
|---|---|---|---|---|---|---|
| | Humerus | 32.6 | 1 | Ep | | |
| | Ulna | 26.2 | 2 | Ep | | |
| | Radius | 24.4 | 1 | Ep | | |
| | Femur | 46.7 | 1 | Ep | | |
| * | Tibia | 34.3 | 1 | Ep | | * |
| | Fibula | | | | | |

| | Right Bone: | Length (cm): | Pieces: | Epi/Di: | Age: | |
|---|---|---|---|---|---|---|
| | Humerus | | | | | |
| | Ulna | 26.9 | 2 | Ep | | |
| | Radius | | | | | |
| | Femur | 46.2 | 1 | Ep | | |
| * | Tibia | 35.3 | 1 | Ep | | * |
| * | Fibula | 34.8 | 2 | Ep | | * |

**Estimated Stature:** 172.0 cm +/- 3.3 cm. 5 ft 7.7 in.

**Comments:**
* = Fracture present.
Malunion evident in fractured bones.
Stature estimation does not include fractured bones.

**Abnormalities:**
See inventory.

**Photographs taken:** Yes

**Radiographs taken:** To be Arranged.

Carla Burrell. Student Number: 383791.

## Appendix 5: Context Sheet of HCSK002

# Skeleton Sheet

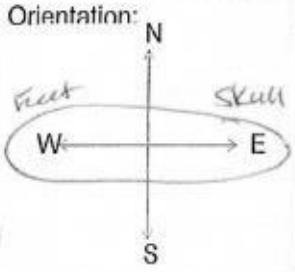
Site Code: HCRIS Area: Outer Bailey Trench: Trench 2 Context: Skeleton 002.

Date: 28/07/15 Recorded by: KW

Level : Reduced :- Skull: Sacrum: Feet:

Grave Type: Pit | Grave Cut: See SK001 | Grave Fill: mid-dark grey/brown black | Coffin: Not Present

Orientation:




Sketch: See SK 001

Description and Notes:

Adult female (?) skeletal remains uncovered in mid sequence of TR, laying articulated with no visible perimortem pathologies, laid E-W, placed not flexed/extended (passing through?) Right Radius/Ulna over right Illiac, Left radius/Ulna behind left illiac crest. Cranium is highly fragmented although mandible is well preserved. Legs are turned slightly to the (N).

Above: (007)

SK002 Skeleton

Below: NAT. (008) Bedrock

Finds: Pot ✓ Lithic ☐ Bone ✓ Metal ☐ Other ☐

Small Finds: Δ Δ Δ Δ Δ Δ Δ Δ

Samples: Femur bone and teeth.

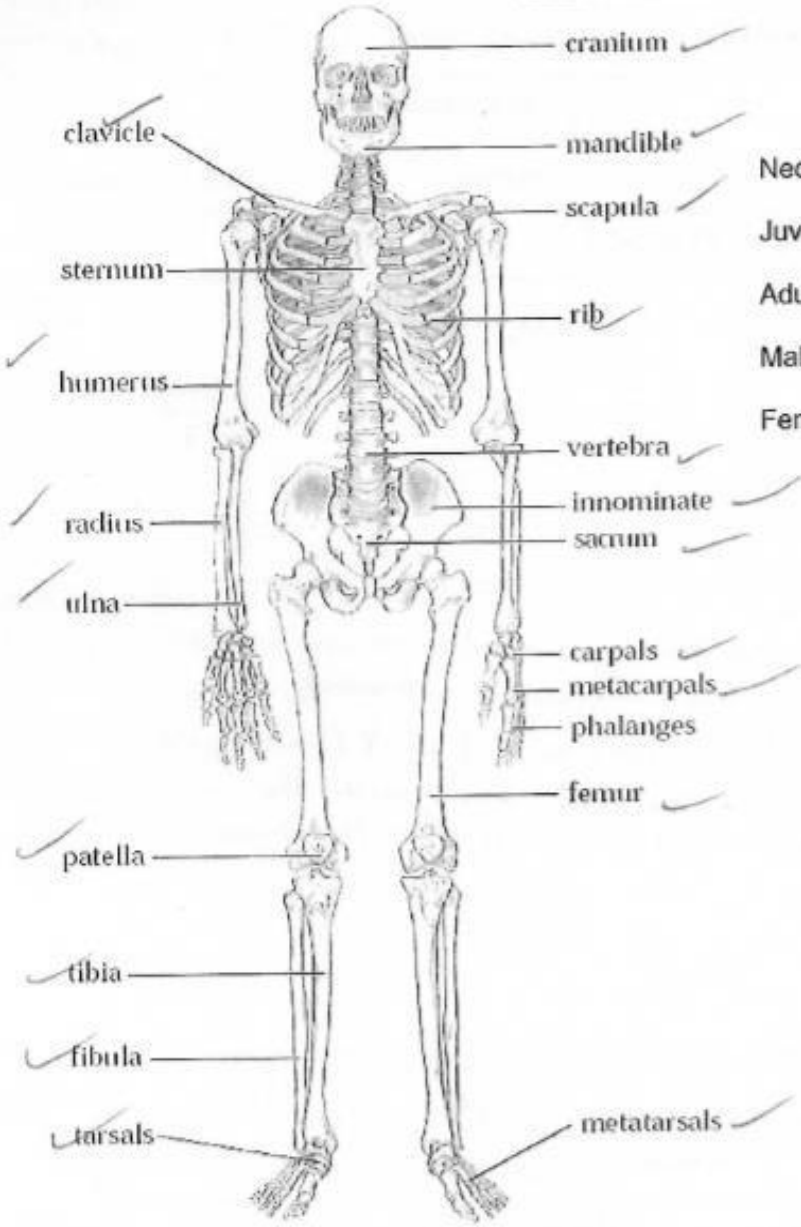
Plan: Section: Photo:

Period: Group: Burial Number:

record sheet based on MoLAS recording system

Mark the bones that were recovered

Skeleton Num: SK 002.




Neonate? ☐
Juvinille? ☐
Adult? ☑
Male? ☐
Female? ☑

Mastoid process
3rd molar
epiphyseal fusion.

002

Lifting:
Preservation: Good: ☐ Moderate: ☑ Poor: ☐
Retrieval: Good: ☑ Moderate: ☐ Poor: ☐

Reburied?: Yes ☐ No ☑

Further treatment:
Deposited with Natural Prop Trust after exhumation.

record sheet based on MoLAS recording system

## Appendix 6: Visual Inventory of HCSK002

PRI NORTON RY MUSEUM & GARDEN

# Halton Castle Skeleton Collection

Adult Skeleton Inventory

**Skeleton Number:** SKC002

**Grave Number:**

**Cut Number:**

**Fill Number:**

**Number of boxes:** 2

**Accession Number:** 2015.2|S|3+4

**Red Box Number:** N/A

**Recorder:** CLB, ERD

**Date:** 7/10/2015

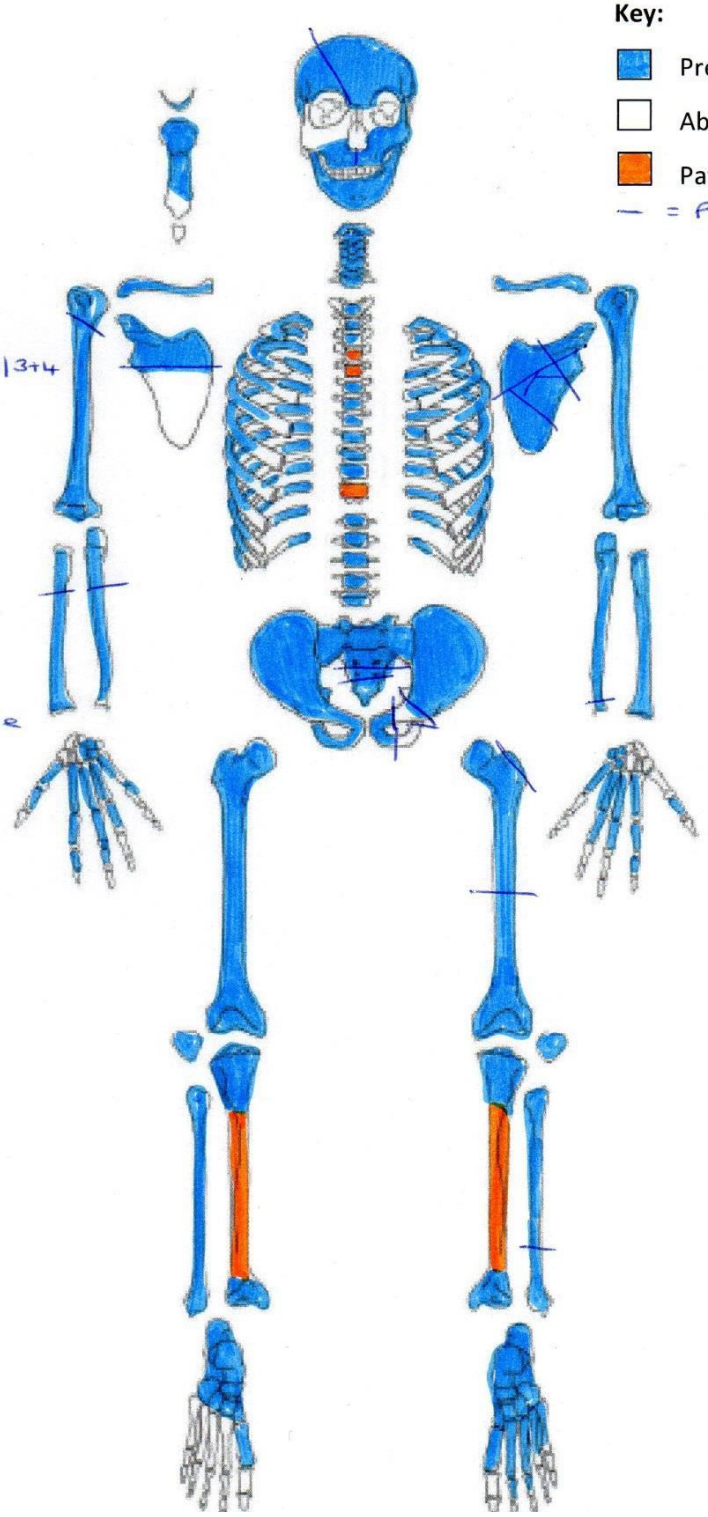
**Notes:**

Periosteal on both tibia
Possible Rib fracture
Slight curvature to vertebrae
Compression fracture to
4M, 5M+12M Thoracic
Humeral operatives.
Calculus evident
Caries evident
CEH evident

**Key:**

- Present
- Absent
- Pathology

— = PM Break



## Appendix 7: Inventory of HCSK002

Skeleton Number: Sco02 Grave: Cut: Fill: Red Box Number: Date: 9/10/13
Accession Number: 2015.2.15.134

Skeletal Inventory:

P = Present. A = Absent.

Cranial:

| Bone: | L | M | R | Bone: | L | M | R |
|---|---|---|---|---|---|---|---|
| Frontal | | P | | Sphenoid | | P | |
| Parietal | P | | P | Lacrimal | A | | A |
| Occipital | | P | | Ethmoid | | A | |
| Temporal | P | | P | Vomer | | A | |
| Zygomatic | P | | A | Nasal | A | | A |
| Maxilla | P | | P | I.N.C. | A | | A |
| Palatine | P | | P | Hyoid | | P | |
| Mandible | | P | | Thyroid | | A | |

Postcranial:

| Bone: | | L | M | R | Bone: | L | M | R |
|---|---|---|---|---|---|---|---|---|
| Sacrum | S1 | | P | | Scapula | P | | P |
| | S2 | | P | | Clavicle | P | | P |
| | S3 | | P | | Manubrium | | P | |
| | S4 | | P | | Sternal Body | | P | |
| | S5 | | P | | Xiphoid | | A | |
| | Coccyx | | P | | Patella | P | | P |
| Os Coxae | Ilium | P | | P | 1st Rib | P | | P |
| | Ischium | A | | P | 2nd Rib | P | | P |
| | Pubis | P | | P | 3rd to 12th Rib | 10 (of 10) | | 10 (of 10) |
| | Acetabulum | P | | P | | | | |
| | Auric. Surface | P | | P | | | | |

Comments:

Carla Burrell. Student Number: 383791.

Skeleton Number: S [illegible] Grave: Cut: Fill: Red Box Number: Date: 7/10/15
Accession Number: 2015 2151 3154

Vertebrae:

| Bone: | Centrum | Neural Arch | Dens | Anterior Arch |
|---|---|---|---|---|
| C1 | P | P | ..... | P |
| C2 | P | P | P | P |

| Bone: | Centrum | Neural Arch | Bone: | Centrum | Neural Arch |
|---|---|---|---|---|---|
| C3 | P | P | T7 | P | P |
| C4 | P | P | T8 | P | P |
| C5 | P | P | T9 | P | P |
| C6 | P | P | T10 | P | P |
| C7 | P | P | T11 | P | P |
| T1 | P | P | T12 | P | P |
| T2 | P | P | L1 | P | P |
| T3 | P | P | L2 | P | P |
| T4 | P | P | L3 | P | P |
| T5 | P | P | L4 | P | P |
| T6 | P | P | L5 | P | P |

Long Bones:

| Left Bone: | Prox. Epi. | Prox. 3rd | Med. 3rd | Dis 3rd | Dis. Epi. |
|---|---|---|---|---|---|
| Humerus | ..... | P | P | P | ..... |
| Ulna | ..... | P | P | P | ..... |
| Radius | ..... | P | P | P | ..... |
| Femur | ..... | P | P | P | ..... |
| Tibia | ..... | P | P | P | ..... |
| Fibula | ..... | P | P | P | ..... |

Comments:

Carla Burrell. Student Number: 383791.

Skeleton Number: S1000 2 Grave: Cut: Fill: Red Box Number: Date: 4/10/13

Accession Number: 2013.2.3.13.14

| Right Bone: | Prox. Epi. | Prox. 3rd | Med. 3rd | Dis 3rd | Dis. Epi. |
|---|---|---|---|---|---|
| Humerus | ..... | P | P | P | ..... |
| Ulna | ..... | P | P | P | ..... |
| Radius | ..... | P | P | P | ..... |
| Femur | ..... | P | P | P | ..... |
| Tibia | ..... | P | P | P | ..... |
| Fibula | ..... | P | P | P | ..... |

**Extremities:**

| Bone: | | L | R |
|---|---|---|---|
| Scaphoid | | A | A |
| Lunate | | P | A |
| Hamate | | P | A |
| Capitate | | P | P |
| Pisiform | | A | A |
| Triquetral | | A | A |
| Trapezium | | P | P |
| Trapezoid | | A | P |
| Metacarpals | 1st | P | P |
| | 2nd | P | P |
| | 3rd | P | P |
| | 4th | P | P |
| | 5th | A | A |
| Proximal Phalanges | | 5 | 4 |
| Medial Phalanges | | 2 | 1 |
| Distal Phalanges | | 0 | 0 |
| Sesamoids | | 0 | 0 |

| Bone: | | L | R |
|---|---|---|---|
| Calcaneus | | P | P |
| Talus | | P | P |
| Cuboid | | P | P |
| Navicular | | P | P |
| Medial Cuneiform | | P | P |
| Intermediate Cuneiform | | P | P |
| Lateral Cuneiform | | P | P |
| Metatarsals | 1st | P | P |
| | 2nd | P | A |
| | 3rd | P | A |
| | 4th | P | A |
| | 5th | P | A |
| Proximal Phalanges | | 2 | 0 |
| Medial Phalanges | | 0 | 0 |
| Distal Phalanges | | 0 | 0 |
| Sesamoids | | 1 | 1 |

**Comments:**

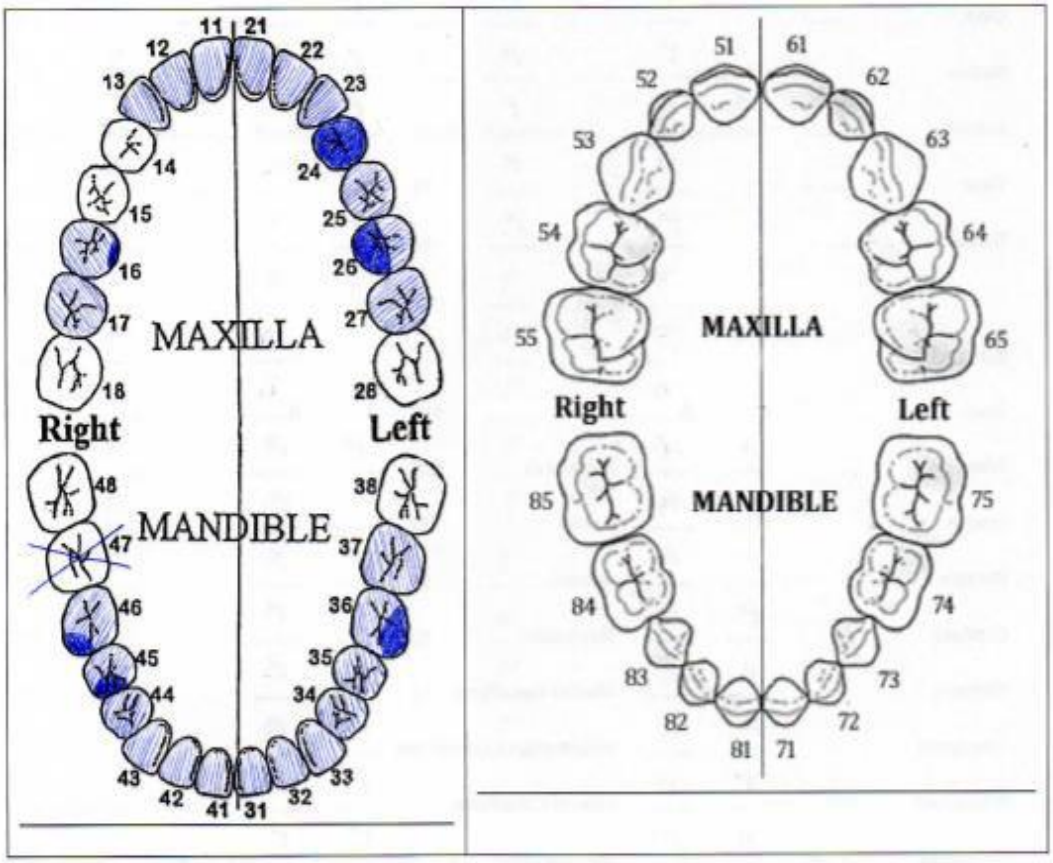
Carla Burrell.

Student Number: 383791.

Skeleton Number: Sk002 Grave: Cut: Fill: Red Box Number: Date: 31.01.15
Accession Number: 2015.2.5.1.3.4

**Dentition:**

Coloured = Present. Blank = Absent/Post-mortem loss. Cross stroke = Absent/Ante-mortem loss.




**Comments:**

Calculus evident
Caries evident at 16, 26, 24, 36, 45 + 46
24 is a root only.
LEH evident

Radiographs needed of 3rd Molars

* Left Second Maxillary Molar selected for $^{14}C$ and Strontium analysis *

**Abnormalities:**

Periosteal reaction
Possible rib fracture
Curvature to the vertebral column - congenital?
Compression fractures to 4th, 5th + 12th Thoracic vertebrae
Mineral deposit.

**Percentage of Skeleton:** >75%

**Photographs taken:** Yes

**Radiographs taken:** To Be Arranged

Carla Burrell. Student Number: 383791.

## Appendix 8: Post-Excavation Analysis of HCSK002

Skeleton Number: Sk002 Grave: Cut: Fill: Red Box Number: Date: 02/013
Accession Number: 2013.215.314

General:

Adult ✓ Subadult .....

MNI: 1 Comments: Animal bones present

Sex Estimation :

0 = Undetermined Sex. 1 = Female. 2 = Probable Female. 3 = Ambiguous Sex. 4 = Probable Male. 5 = Male.

| Pelvis: | L | R | Skull: | L | M | R |
|---|---|---|---|---|---|---|
| Greater Sciatic Notch | 1 | 1 | Nuchal Crest | | 1 | |
| Subpubic Angle | 1 | 1 | Mastoid Process | 1 | | 1 |
| Pre auricular Sulcus | 2 | 2 | Supra-Orbital Margin | 1 | | 1 |
| Ventral Arc | 1 | 1 | Glabella | | 1 | |
| Subpubic Concavity | 1 | 1 | Mental Eminence | | 1 | |
| Ischiopubic Ramus Ridge | 1 | 1 | | | | |

| Humeral Head (mm): | L | R | Femoral Head (mm): | L | R |
|---|---|---|---|---|---|
| Females <43mm | 41 | | Female <43.5mm | | |
| Indeterminate 43-47mm | | | Indeterminate 43.5-46.5mm | 44 | 44 |
| Male >47mm | | | Male >46.5mm | | |

Overall Estimation: Female Comments:

Age Estimation:

Overall Development of Dentition 21+ +/- ..... No 3rd Molars

Dental Attrition 35-45

| Pubic Symphysis | L | R | Auricular Surface | L | R |
|---|---|---|---|---|---|
| Phase | 4 | 4 | Phase | 3 | 3 |
| Age | 36 2 | 38 2 | Age | 30-34 | 30-34 |

Carla Burrell. Student Number: 383791.

Skeleton Number: Skel 2 Grave: Cut: Fill: Red Box Number: Date: 31/4/15
Accession Number: 2015.2151.314

For Immature remains - Stage of Union:

0 = Unobservable. 1 = open. 2 = Partial Union. 3 = Complete Union.

Epiphyseal Fusion:

| Bone: | Epiphysis: | L | R | Bone: | Epiphysis: | L | R |
|---|---|---|---|---|---|---|---|
| Scapula | Coracoid | ..... | ..... | Os Coxae | Illiac Crest | ..... | ..... |
| | Acromion | ..... | ..... | | Triradiate | ..... | ..... |
| Clavical | Sternal | 3 | 3 | | Ischiopubic Ramus | ..... | ..... |
| Humerus | Head | ..... | ..... | Femur | Head | ..... | ..... |
| | Distal | ..... | ..... | | Greater Trochanter | ..... | ..... |
| | Distal Epicondyle | ..... | ..... | | Distal | ..... | ..... |
| Radius | Proximal | ..... | ..... | Tibia | Proximal | ..... | ..... |
| | Distal | ..... | ..... | | Distal | ..... | ..... |
| Ulna | Proximal | ..... | ..... | Fibula | Proximal | ..... | ..... |
| | Distal | ..... | ..... | | Distal | ..... | ..... |

Primary Ossification Centres:

| Bone: | Area of Union: | Stage of Union: |
|---|---|---|
| Cervical Vertebrae | Neural arches to each other | ..... |
| | Neural arches to centrum | ..... |
| Thoracic Vertebrae | Neural arches to each other | ..... |
| | Neural arches to centrum | ..... |
| Lumbar Vertebrae | Neural arches to each other | ..... |
| | Neural arches to centrum | ..... |

Overall Estimation: 30 to 34 Comments:

Carla Burrell. Student Number: 383791.

Skeleton Number: SK067 Grave: Cut: Fill: Red Box Number: Date: 31.01.13

Accession Number: 2005.2.15/3.14

**Stature Estimation:**

| Left Bone: | Length (cm): | Pieces: | Epi/Di: | Age: |
|---|---|---|---|---|
| Humerus | 34.1 | 1 | Ep | |
| Ulna | 26.1 | 2 | Ep | |
| Radius | 24.4 | 1 | Ep | |
| Femur | 43.9 | 2 | Ep | |
| Tibia | 36.3 | 1 | Ep | |
| Fibula | 35.1 | 2 | Ep | |

| Right Bone: | Length (cm): | Pieces: | Epi/Di: | Age: |
|---|---|---|---|---|
| Humerus | | | | |
| Ulna | 26.4 | 2 | Ep | |
| Radius | 24.3 | 2 | Ep | |
| Femur | 48.4 | 1 | Ep | |
| Tibia | 37.3 | 1 | Ep | |
| Fibula | 36.3 | 1 | Ep | |

**Estimated Stature:** 121.6 cm +/- 3.5 cm. 5 ft 7.5 in.

**Comments:**

**Abnormalities:**
See Morbey.

**Photographs taken:** Yes

**Radiographs taken:** To Be Arranged.

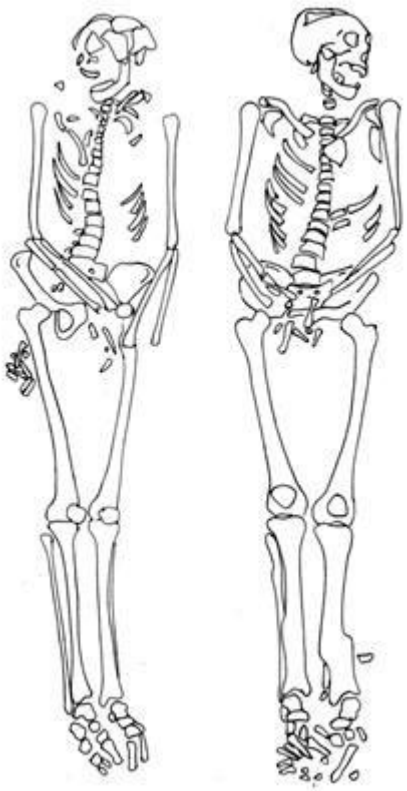
Carla Burrell. Student Number: 383791.

# Appendix 5: Radiocarbon Analysis Update

# Norton Priory Museum & Gardens

## Post-Excavation Analysis of the Human Skeletal Remains Recovered from Halton Castle: July 2015

## Radiocarbon Analysis Update



By

**Carla L. Burrell and Eleanor R. Dove**

June 2016

**Introduction**

The human skeletal remains of two individuals (HCSK001 and HCSK002) were excavated at Halton Castle during the summer of 2015 by the Salford C*f*AA. The ruins of Halton castle, situated in Runcorn on a hill facing the river Mersey estuary, date back to the 12th century. The site was in use over a time period spanning from the Norman period to the 20th century, but it was not expected that human remains would be uncovered during the castle excavations. The remains of both individuals were uncovered in Trench 2 and were consequently brought to Norton Priory Museum and Gardens where they were subjected to full osteological analysis.

## Radiocarbon Dating

Here, a tooth was selected and extracted from each specimen in order to identify the date of both individuals. These samples were first subjected to photogrammetry at Liverpool John Moores University in order to create a replica tooth for any future purposes. Once completed, each sample was prepared and sent to Beta Analytic for Radiocarbon Dating. Beta Analytics' lab is based in Miami, Florida using Accelerator Mass Spectrometry (AMS) technology in order to provide the most advanced precision and accuracy for carbon 14 measurements.

**Table 1: Beta Analytic Radiocarbon Dating Results**

| Specimen Number | d13C | d15N | Conventional Age | 2 Sigma Calibrations |
|---|---|---|---|---|
| HCSK001 | **-19.7 o/oo** | **12.4** | **440 +/- 30 BP** | **Cal AD 1425 to 1470 (Cal BP 525 to 480** |
| HCSK002 | **-20.5 o/oo** | **11.7** | **280 +/- 30 BP** | **Cal AD 1520 to 1595 (Cal BP 430 to 355) and Cal AD 1620 to 1665 (Cal BP 330 to 285)** |

## Radiocarbon Results

For HCSK001, the left mandibular 2nd molar was selected for analysis due to minimal root exposure and lack of oral pathology (e.g. caries and calculous). The left maxillary 2nd molar was selected for HCSK002 for similar reasons. Collagen extraction with alkali was successful permitting further analysis. Table 1 presents the results received from the Beta Analytic Labs. HCSK001 presents a single date 1425-1470 AD which highlights that this individual is from the Medieval period (Whittock, 2009). However, HCSK002 presents two dates: 1520-1595 and 1620-1665 AD. This presents a much wider time period for

this individual, spanning the Tudors, Civil War and the Revolution (1485-1714). These results are interesting as they suggest that these burials were interred on different occasions. It must be noted that the isotopic results between the two individuals are also quite different to one another (see Table 1). This could be due to a change in diet through the ages. Further work is required in order to understand these differences and comparisons to other local data is required.

## Future Ambitions

Strontium and Oxygen isotopic results are pending and are expected September/October 2016. These analyses will highlight if these individuals are from the North West area or have come from further afar. Radiographic analysis is still pending and considerations into aDNA analysis is also being sought. Alongside this, we are chasing the possibility of a facial reconstructions.

# Appendix 6: Finds Assessment

Post Excavation report of materials recovered during the

excavation of Halton Castle, Halton, Runcorn.

By K.Whittall

## Introduction

This assessment report concerns the archaeological material recovered from Halton Castle Excavations in 2015, carried out by the Centre for Applied Archaeology, University of Salford on behalf of Norton Priory Trust. The works will form part of the HLF funded Halton Castle project and the aims of the works was to further assess the archaeological remains identified within the previous excavations of 1985/6; with an aim of furthering the understanding of the origin of the site and its subsequent medieval development. The findings from these works will inform the future treatment of the scheduled area and enhance the presentation to the wider public.

## Assessment Aims and Objectives.

The principal aim of the present assessment is to evaluate all classes of archaeological artefact data generated during the excavations of 2015 at the site of Halton Castle. A statement of significance of the result from each element of the artefactual assemblage is given below based on the assessment work undertaken, and the original research themes expressed in the project design.

The objectives of the assessment correspond to and are prescribed to English Heritage MoRPHE guidelines project planning note 3 Archaeological Excavation, "3.7 Analysis and Report Production" [English Heritage:2008] and "Selection, Retention and Dispersal of archaeological collections guidelines for use in England, Wales and Northern Ireland" chap 4 pp24-29. [Society of Museum Archaeologist : 1993: PP 24-29]

1 To assess the quantity, provenance and condition of all classes of stratigraphic artefactual and environmental data, with a view of retention and dispersal of materials in line with the stated Guidelines
2 To comment on the range and variety of the material, with a view of expanding the collected archaeological data and formulating new archival resources of artefactual information.
3 To formulate any further questions arising from the assessment of the excavated data, in line with the research agenda set out in the North West Research Framework.

Material Assessed.

The entirety of the stratigraphic archaeological artefact data along with a brief overview of the unstratified archaeological data was viewed and assessed for the production of this report. The quantifications are incorporated into each individual assessment.

Procedure of Assessment

The methodologies adopted for the assessment varied depending on the class of the material under examination. All classes of find were examined in full, with observations supplemented by the finds records generated during the course of the excavation.

Methodology

The finds recovered from the excavation comprised various categories of material including: Glass, Ceramic, Bone, Metal and Miscellaneous.

All categories of finds were examined in full, with observations in regards to the level of preservation, condition and any observable anomalies, such as decoration being noted. All categories of finds were given individual accession numbers in line with the Standard Operating Procedures [Whittall : *forthcoming* ] for Salford Public Archaeological Resource Centre (SPARC), and all finds were photographed digitally using a Canon Power Shot G12 with a Canon 6.1 – 30.5mm zoom lens.

All images were then downloaded on to Digital archives held at the Centre *for* Applied Archaeology.

The Assemblage

The totality of the assemblage of artefacts recovered from the excavations at Halton Castle was processed in a controlled laboratory environment based at Salford Public Archaeological Resource Centre (SPARC), hosted by the Centre *for* Applied Archaeology (C*f*AA) at the University of Salford.

The initial assessment consisted of the collecting and cleaning of all artefact material, and the calculation of the volume of artefacts recovered, the assemblage counts are as follows:

| **Material** | **T1** | **T2** | **Totals** |
|---|---|---|---|
| Clay pipe | 758 | 761 | 1519 |
| Glass | 248 | 149 | 397 |
| Ceramics | 993 | 742 | 1735 |
| Metals | 83 | 60 | 143 |
| Bone | 326 | 386 | 715 |
| Coins | 4 | 8 | 12 |
| Misc | 20 | 40 | 60 |
| **Total Count** | 2433 | 2144 | **4580** |

***Fig 1****: The above table shows the artefact assemblage count by material type and to total number of artefacts found at Halton Castle.*

The assemblage count gives a brief view into the overall distribution of artefacts recovered from the excavations at Halton Castle, giving a clear indication that the predominant collection centred on those classified as ceramics with a count of 1735, followed by clay pipe fragments, including stem and bowl fragments and full bowls, which account of 1519 items. Numismatics (coins) at a count of 11, although relatively low in the count number, the numismatics showed a good range in age and condition.

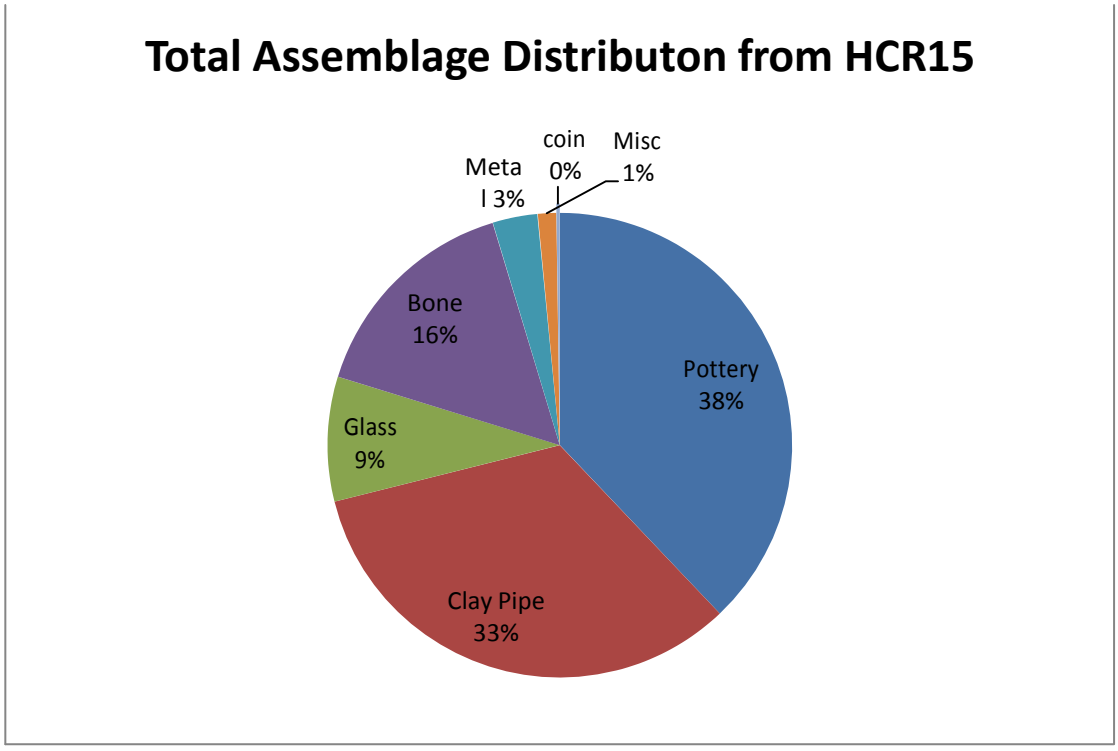



***Fig 2**: The Pie Chart above shows the distribution percentages of the entirety of the assemblage recovered from the excavations at Halton Castle 2015.*

The miscellaneous ceramics category includes industrial, post-industrial and common wares found in unstratified locations, modern wares found in disturbed contexts and ceramics which are degraded past identification. The count of miscellaneous ceramic artefacts concluded 60 individual items given the location of Halton Castle is currently used as a beer garden for a public house it is understandable that there would be such high levels of unstratified modern refuse present on site.

Clay pipes accounted for 33 % of the total assemblage with a count of 1519 items this is unusually high, again however, reason can be given as the location of the site is within the land of a public house, which was previously the location of a court house.

As clay pipes are regarded as having potentially diagnostic characteristics for the identification of date ranges, and with the previous clay pipe assemblage from the 1985/6 excavations having been analysed in detail (and numbered 858 items), all clay pipes were photographed digitally and are part of a full retention profile [Society

of Museum Archaeologist: 1993] . Further detail is given on these artefacts within this report.

In total the Ceramic artefacts recovered from the excavations number 1734 individual items including miscellaneous ceramics (60), clay pipes (1519) and identified ceramics (1475). The 1475 ceramics recovered account for 38% of the total collection.

The most common artefact materials recovered can be segmented into six material categories of ceramics, miscellaneous ceramics, metals, clay pipes, bone and glass, the below bar chart shows the distributions of these six types of artefact highlighting that ceramics accounts for 38% of the entire collection, glass accounts for 9% of the entire collection, metals account for 3% of the entire collection, clay pipes accounts for 33% and bone accounts for 16% of the totality of the assemblage.

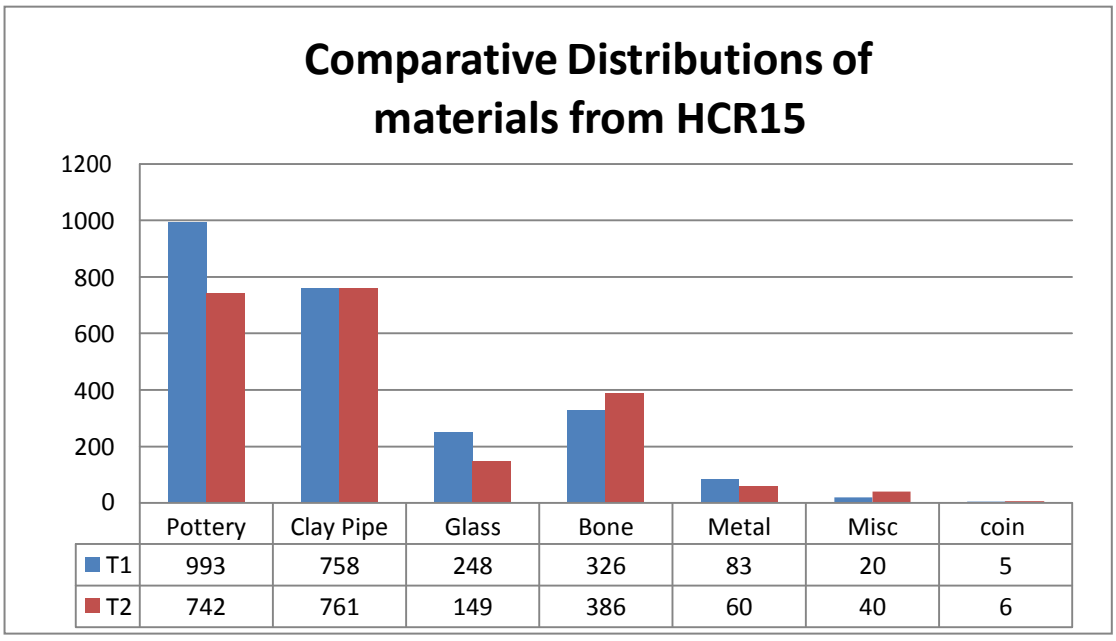



***Fig 3**: The above bar chart depicts the distribution of the more commonly found materials recovered from Halton Castle in 2015.*

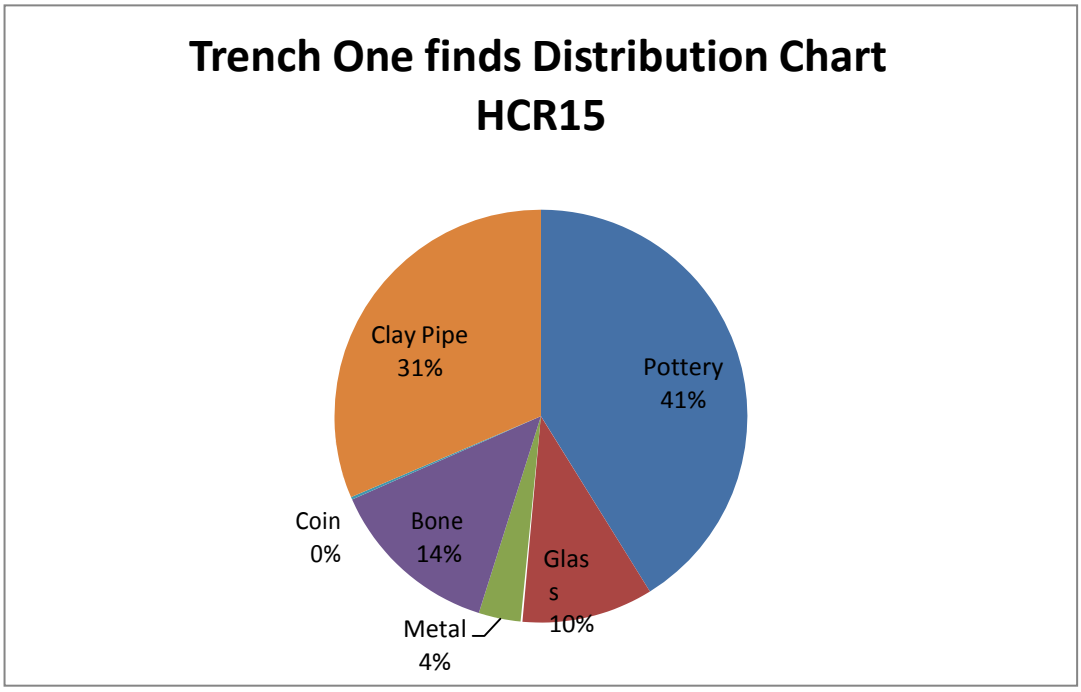



***Fig 4**: The above pie chart showing the assemblage distribution of Trench One from Halton Castle 2015.*

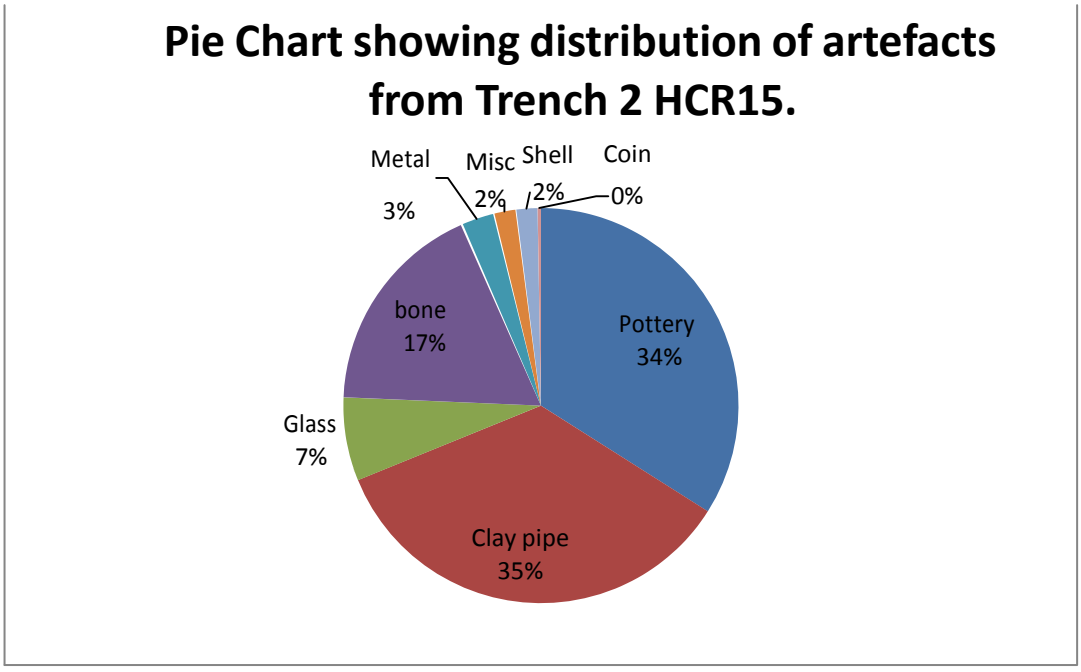



***Fig 5:** The above pie chart showing the assemblage distribution of Trench Two from Halton Castle 2015.*

The Ceramics

The pottery was examined in context groups alongside the other categories of artefacts recovered from the excavations. The ceramic material was separated off and catalogued according to type ware and sherds family (body sherd, rim sherd). The assessment conformed to the minimum standards established by the Medieval Pottery Group [Slowikowski *et al*: 2001] for the Processing, Recording and Analysis of Post Roman Ceramics. Each group within the context was assigned a unique accession number.

The pottery was washed by hand where appropriate, left to air dry in non-direct sunlight and placed in to industry standard air tight zip lock bags, before being transported to SPARC to be further sorted by context.

Each stratified artefact was assigned an accession number based on type, and in accordance with Norton Priory Trust's own accession codex, and was photographed. Each artefact was then re-bagged and placed into large archive boxes ready for decision in regard to selection, retention and dispersal in accordance to the appropriate guidelines. [Society of Museum Archaeologist: 1993]

The ceramic collection has been separated into three main categories for further analysis, these are:

4 Clay Pipes
5 Miscellaneous Ceramics
6 Identifiable Ceramics.

All clay pipes are recommended for retention as diagnostic information is possible through further study of the borehole diameter and where a bowl is present, the style, size and shape of the bowl is diagnostic to set identifiable date ranges.

Miscellaneous Ceramics are recommended for dispersal given that these are predominantly mass produced modern white wares, and although it is recognised that the collection could provide some limited information, the information which could be ascertained from a study of these items would not offer further insight into the history of the material culture of this site.

A selection medieval and post medieval ceramics are recommended to be retained in line with the selection, retention and dispersal guidelines [Society of Museum Archaeologist :1993] this is due to the relative scarcity of identifiable medieval and post medieval wares. The collection of the medieval and early post medieval (EPM) materials recovered, include 52 fragments of a dark grey hard fabric with green glaze, 45 fragments of Midland Purple type ware, 156 fragments of black ware, similar to the Rainford EPM dark glaze, 9 fragments of a buff sandy ware, and 19 fragments of EPM applied slip wares.

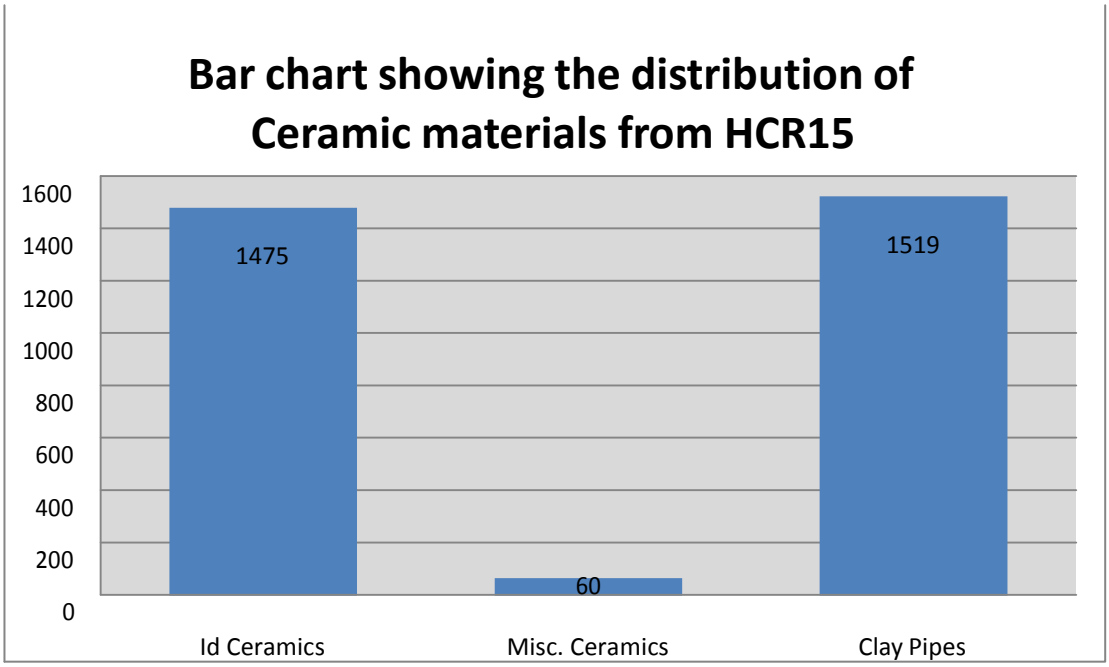



***Fig 6:*** *Bar chart showing the distribution of ceramic materials recovered from the excavations at Halton Castle 2015.*

Clay Pipes

The clay pipes recovered from excavation spanned across the site in both stratified contexts and unstratified locations. The distribution of clay pipes across the site of Halton Castle was relatively dense. The Clay pipe fragments counting both bowls and stems as fragments, accounted for 33% for the totality of the collected assemblage from the excavations in 2015. During the 1985/86 excavations conducted by Robina McNeil, a total of 858 clay pipe fragments were uncovered, creating a total count of all clay pipes recovered from the site at 2377, a substantial number, and adequate for a further detailed study.

The large number of clay pipes recovered from the site span a potential date range from approximately 1680-1900, thus further study could identify a full date range, any stratigraphic distributions and assess the typology of the clay pipe assemblage.

Identifiable Ceramics

The selection of identifiable ceramics recovered from Halton Castle, consists of items or artefacts where the predominant parent material of the items or artefacts construction is recognisable as formation of ceramic vessels.

The Identifiable Ceramics recovered from Halton Castle reflect the continual use of the area as both a private residence during the earlier phase, a public house during its latest phase. The high percentage of white wares (51%) are indicative of the later phases of occupation as a public house and gardens, this is again reflected in the levels of Dark glaze (Iron Glaze)(23%) and stoneware (6%) which are indicative of residential activities. The identifiable ceramics dating from the medieval and early post medieval are green glazes at 4%, the Midland Purple types at 3% and EPM black glaze at 11%, all of which are forms of finer wares rather than coarse wares and suggest a higher status level for the residential phase of activity seen at this site.

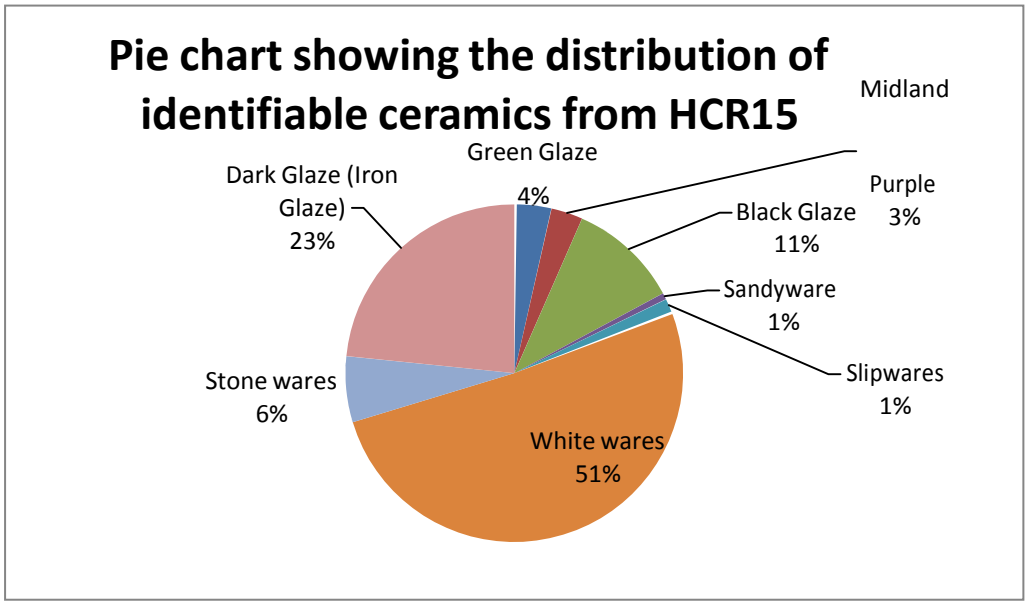



***Fig 7**: Pie chart showing the distribution of Identifiable ceramics from Halton Castle.*

The above Pie Chart shows the distribution of items from the identified ceramics collection at Halton Castle, the assemblage is dominated by the 19th and 20th century white wares, which are associated with the domestic materials from the later phases of occupation at Halton as a public house and gardens. These domestic white wares account for 51% of the total identifiable ceramics assemblage.

The medieval and early post medieval ceramics recovered from Halton castle can be separated into ware types for further assessment, in this instance into 3 clear categories or Green glazes, Midland Purple types and Black glazes.

Green Glazes

The artefacts recorded under the green glaze assemblage are done so due to the presence of a greenish glaze, these fragments are sub identified by fabric, temper and decoration types. The green glaze assemblage is predominantly sherds of a hard mid to dark greyish fabric with low levels of mica inclusions present in the temper, this type was identified as partially reduced green glaze, with a date range of 13th century to 15th century. There was also reduced northern grey ware with green glaze fragments dating from the mid14th to 16th centuries, and the predominant decoration type was incised rouletting.

It should be noted that the pottery recovered from the direct vicinity of the burials fall within the Medieval Green Glaze, with characteristic dark grey hard fabric, most likely to be partially-reduced green glaze ware with a date range spanning the mid-13th to 14th centuries

The following are descriptions of the fabric and glaze types for all the Green Glaze fragments recovered from Halton Castle during the 2015 excavations:

**2015.2/7.86** contained three fragments of green glaze, all of which are characteristically different. Each fragment is considered to be partially reduced Green Glaze in origin and dating from the 13-14th centuries.

Fragment one has a mid to light yellowish green glaze with no incised decoration a mid to light grey hard fabric to the exterior and a mid to light reddish orange fabric to the inner, fragment one is a finer ware most likely a sandy ware of local production dating from the late 13th to 15th centuries.

Fragment two has a light yellowish green glaze with regulated short incision decorations producing a dotted effect, the fabric is similar to fragment one, with a mid-light hard grey fabric to the exterior and mid to light reddish orange fabric to the interior. Fragment two is again likely to be a sandy ware of localised production with a date of 14th century.

Fragment Three has a dark brownish green glaze, with curved incised decoration, creating a wave like design; the fabric structure is the same as fragments one and two and is likely to be of regional production and a similar date.


***Fig 7:*** *showing 2015.2/7.59 Green glaze jug handle, with refit sherds description below*

**2015.2/7.59** contained two fragments refitted to form a handle. The handle appear to have a mid to light yellowish green glaze, with regulated elongated incised decoration along each edge of the handle to create a feathered like effect. The fabric is a hard mid to dark greyish material, although a mid to light reddish orange material is visible under the glaze on the upper exterior of the handle. The handle is a strap handle with

partial grey ware with green glaze and stabbed decoration, dating from the 13th to 14th centuries.

**2015.2/7.92** contained fragments of green glazed pottery, all of which differ in decoration and fabric type. All fragments are similar to the partially reduced green glaze dating from mid-13th to 14th centuries.

Fragment one is a mid to light yellowish green glaze, with regulated short incised decoration, creating a dotted effect similar to fragment two from 2015.2/7.86, the fabric is a mid to light hard greyish fabric to the exterior and a mid to light reddish orange to the interior.

Fragment two was a mid to light yellowish green glazed fragment with a mid to light yellowish orange fabric which is softer than that of fragment one, there is no visible decoration on the exterior of the fragment.

Fragment three was a small sherd with a hard grey fabric throughout, there is no visible decoration and had a mid to light yellowish green glaze. Fragment four is a mid to dark brownish green glaze with no visible decoration and a firm hard grey fabric throughout.

Fragment five was a single fragment of a dark green glaze, over a mid to dark reddish red firm fabric, similar in form and fabric and decoration to 2015.2/7.85, this rim sherd is possibly from the same vessel as 2014.2/7.85 and is a reduced northern green ware dating from approximately late 14th-16th centuries.

**2015.2/7.73** contained two fragments of green glaze pottery, fragment one, is a large sherd with a mid to light yellowish green glaze overlaying a mid-reddish orange external fabric with the inner fabric being a hard coarse grey, the sherd itself appears irregular in shape and could be waste from pottery production. Fragment two, is a small sherd of a mid to light yellowish green glaze, with a mid-grey hard fabric, the sherd is smooth similar to other fine wares.

**2015.2/7.85** contained a single fragment of reduced northern green glaze, with a mid to dark reddish red fabric, this sherd is similar to form and fabric as fragment five from 2015.2/7.92, and is most likely a base fragment from a tripod pitcher the fragment includes a possible foot and dates from approximately the 14th-15th century.

**2015.2/7.96** five fragments of reduced northern green glaze pottery, dating from 14th-15h century, fragment one was a mid to light yellowish green glazed sherd with a hard greyish fabric, decorated on the anterior face, with a pinched effect and collared effect decoration.

Fragment two was a mid to light yellowish green glazed sherd with a hard grey fragment, no visible decoration on the anterior side.

Fragment three, was a mid-yellowish green glazed sherd with a firm mid brownish grey fabric with no visible decoration.

Fragment four with a mid to light yellowish green glazed sherd, with a firm grey fabric, with shallow incised decoration creating a dotted effect.

Fragment five was a mid to light yellowish green glaze overlaying a mid to dark reddish orange softer fabric, with no visible decoration.

**2015.2/7.117** three fragments of green glaze pottery, all of which differ in characteristics, fragment one was a mid to dark brownish green glaze overlaying a mid-reddish orange clay with a mid-firm greyish fabric., possibly partially reduced green glaze dating to the mid-13th century.

Fragment two was a mid to light yellowish green glaze, overlay a mid-reddish orange material with a firm grey fabric, there was no visible decoration, potentially reduced northern green glaze, dating to approximately the 14th-15th century.

Fragment three was a mid to light yellowish green glazed hard grey fabric sherd, with no decoration and irregular shape, possible waste sherd, from the reduced northern green glazes, dating to approximately the 14th-15h century,

**2015.2/7.118** contained a single sherd of mid-light yellowish green glazed pottery with a firm coarse fabric and no visible decoration, likely to be reduced northern green glaze dating from approximately the 14th-15th century.

**2015.2/7.139** contained six fragments of green glaze pottery, fragment one is a mid to light reddish fabric with a mid to dark grey core, the glaze is a mid to light yellowish green, the sherd appears to be a rim fragment with double lines around the collar of the vessel, the fabric and glaze match that of fragment two suggesting here that these fragments may originate from the same vessel. The fragments appear as a partially oxidised red wear with applied green glaze most likely dating to the 14th – 15th century.

Fragment three, four and five, all appear to have a similar fabric however differ slightly in the applied glaze, all three fragments are similar to that of the partially reduced green glaze, with a firm grey fabric and minimal inclusions, the glazes of each fragment appear to be a mid – dark greyish green glaze, which is altered in consistency but this could be due to disposition. The fragments date to approximately the 14th-15th century.

**2015.2/7.150** contained 5 fragments of green glazed pottery sherds, fragments one – three appear to be of a partially oxidised reduced fabric, with a mid-light yellowish green glaze with rouletted decoration, the fragments do not refit, but do appear to be from similar vessels, the date range is approximately 13-14th century.

Fragments four and five are both a reduced norther grey ware with green glaze and partial rouletted decoration, dating to approximately 14th-15th century.

**2015.2/7.145** contains two fragments of partially reduced green glaze sherds, each has faint rouletted decoration present, and however, the fragments are not from the same vessel. The date range for these two fragments is mid-late 13th century.

**2015.2/7.151** contained a single fragment of partially reduced green glaze with a mid to dark greyish green glaze, and some small amounts of quartz inclusions in the temper, the fragment appears to be in the form of a neck fragment, possibly just

before the rim and was found context (011) with a 1580-1610 jetton coin, the reduced green glaze has an approximate date range of 14th-15th century.


***Fig 8:*** *showing 2015.2/7.151 the single fragment of Green Glaze recovered alongside the Jetton Coin.*

The Green Glaze assemblage recovered from the excavations of Halton Castle during 2015 is a combination of several different styles and variations of medieval potteries under the collective Green Glaze term. Ranging from the earliest pieces of partially reduced green glazes, to the later medieval reduced northern grey ware with green glaze, the Halton Castle Green Glaze assemblage ranges from the early 13th century – 16th centuries and offers a unique insight into the large variations of this form of glaze.

The green glazes account for 4% of the identifiable ceramics assemblage, equalling a count of 52 individual green glaze sherds, incorporating the fragments previously found by McNeil (1985/6), the total Green Glaze count for Halton Castle is 58 identified sherds. The levels of preservation from both assemblages is relatively high, where the vessels are highly fragmented but the levels of fragment survival is strong, with little to no abrasion.

The amount of Medieval and Early Post Medieval pottery from Halton Castle can be considered a significant collection of early pottery from a region with little to no consistent identification of Medieval and EPM pottery. However, as noted in the North West Regional Framework "although the local wares cannot be securely dated or provenienced it is clear that they are quite different to the bulk of pottery found in Chester and have more affinity with the northern gritty ware tradition" [NWRF:Pp138] this quote reflects the need for a more careful and clear identification methodology for medieval and early medieval pieces recovered from all sites within the region and shows the potential difficulties seen in the cataloguing of site specific or region specific ceramic artefacts.. The numbers of Medieval and EPM pottery from Halton Castle would suit a structured study which may look at addressing this issue.

Midland Purple

The assemblage of midland purple fragments, recovered from the 2015 Halton Castle excavations, account for 3 % (45sherds) of the total identifiable ceramics assemblage, this count is relatively low for the context in which these sherds were recovered, the presence of high status pottery sherds were expected to be higher, due to the Halton Castle being a high status residence in the Medieval and Early Post Medieval (EPM).

The Midland Purple type wares have a relatively broad date range from the early 14$^{th}$ century to the 18$^{th}$ century, however the coarser fabric of the fragments recovered, and their relation to the earlier green glazes, would suggest that the fragments recovered from the 2015 excavations could offer a date range closer to the EPM, approximately 14$^{th}$-16$^{th}$ century, although the majority of the items, as noted before, are from none secured contexts, the date ranges given are proxy dates in relation to the material found within the immediate area.

McNeil's excavations during 1985/6 recovered nine fragments of Midland type wares, four sherds of Midland Purple, two sherds of Midland Yellow. This takes to total count of all Midland type wares recovered from Halton Castle to 51 sherds.

Consideration should be given to the status of the Castle and as such, this reflects a low level of recovery for this type of ware. Similar to the Green Glaze assemblage, the levels of preservation are remarkable good, with little to no additional depositional damage, and again the fragments were largely found within the broader contexts, hindering any further contextual assemblage estimations.

Along with the Green Glaze, the Midland purples formulate part of the EPM assemblage recovered from Halton Castle, and should be offered for further academic study.

Black Glaze

The assemblage of Black Glazed pottery recovered from the excavations at Halton Castle, account for 11% (156) of the identifiable ceramics assemblage. The classification of Black Glaze pottery, included groups considered to be potentially Cistercian, groups considered to be Midland Black [McNeil :1986] and those groups considered to be black glazed fine wares. The fragments within the Black Glaze assemblage offer a date range of 16$^{th}$ century to 18$^{th}$ century.

The inclusion of potential Cistercian and Midland Black are in respect to McNeil's classifications offered in the Halton Castle report of 1986, where McNeil suggests a slight variation on the black glaze assemblage to identify both Cistercian and Midland Black pieces. Since the production of McNeil report, the previously classified Midland Black has been re-classified as Black Glaze, whereas Cistercian is now identified by its slightly coarse and thicker temper than that of the much finer and uniform black glaze.

The addition of McNeil's black glaze assemblage to those excavated during the summer of 2015 brings the Halton Castle Black Glaze assemblage to a count of 181 fragments of various Black Glazes.

As noted with the previous sections on the identifiable ceramics, all the Black Glazed ceramics recovered showed a good level of preservation with little to no post depositional abrasion or damage.

Due to the combination of Cistercian, the discontinuation of Midland Black and the presence of varying Black Glazed fine and coarse ware, it is strongly advised that the totality of the Black Glazed ceramics should be studied further in order to ascertain fully the levels of Cistercian, Black Glaze fine wares and Black Glaze coarse wares which will aid the contextualisation of the assemblage found at Halton Castle, with the surrounding area.

Numismatics

Numismatics refers to the recovery of coins, tokens or anything else which may have held an economic value and was used for the purchasing of goods. In the instance of Halton Castle, the numismatic assemblage is dominated by coins and a single potential jetton. The coins are invaluable for the interpretation and dating of archaeological material, and can offer proxy or relative dates to the contexts in which they are found; if they are recovered from a sealed context, however, a relatively percentage of the numismatics recovered from Halton Castle where from 19th and 20th century deposits and therefore hold less archaeological interest than the earlier items which were recovered.

In total 12 items of numismatic classification were recovered during the 2015 excavations, of which 5 items predate 1700 AD. The assemblage is outlined in brief below via accession number, with a short description of the item.

**2015.2/19.2** Three pence piece recovered from Trench One, context (001)

**2015.2/19.3** A small coin of Cu alloy, with embellishments dating "…187…" recovered from Trench One, context (001)

**2015.2/19.5** a single 1936 Penny recovered from Trench One, context (002)

**2015.2/19.14** a single ½ penny coin, date not visible, recovered from Trench One, context (003)

**2015.2/19.11**two silver hammered William III "Love token" coins, dating to 1696 based on design were recovered from Trench Two context (007)

**2015.2/19.13** a single Cu alloy rose orb jetton of Nuremberg design dated approximately 1550-1560 was recovered from Trench Two context (011)

**2015.2/19.10** a single item of a James I farthing dating to approximately 1614-1625 was recovered from Trench Two context (015), and was immediately north of SK002 and was included within the burial context.

**2015.2/19.6** a single 1941 silver sixpence was recovered from Trench Two, context (001)

**2015.2/19.8** a single 1897 penny was recovered from Trench Two, context (001)

**2015.2/19.7** a single 1843 shilling was recovered from Trench Two, context (001)

**2015.2/19.9** was a single 1936 penny, recovered from Trench Two, context (001)

**2015.2/19.12** a single penny, similar in size and level of preservation to 2015.2/19.9 was recovered from Trench Two, context (001)

Recovery of any form of numismatic artefact can provide crucial chronological evidence for archaeological deposits. Three of the coins recovered during the 2015 excavations provide this type of information.


***Fig 9:*** *showing the design on the reverse of the smaller "love token" coin 2015.2/19.11*

**2015.2/19.11** the two William III silver coins, the smaller being identified as a sixpence, where recovered from (011) in Trench Two, and provide a proxy or relative date for the (011) context. The coins dubbed "love tokens" are from the period of William and Mary or William III, and date to approximately 1696AD. These coins where recovered within a relatively sealed context and as such can offer the date of 1696 to the feature, and all features beneath (011) can be inferred as predating 1696. The artefacts consisted of two silver coins, the smaller being identified as a sixpence, due to a highly faded but still visible design on the reverse, whereas any design on the larger coin has been completely eradicated. It is possible that the two coins where utilised as tokens and the abrasion on both sides of the coins suggest this. Although not entirely uncommon, the recovery of these coins is unusual and as such should be considered to be regionally significant.

**2015.2/19.13** the Nuremberg Jetton Coin found with context (011) although away from 2015.2/19.11 William III love tokens, offered a proxy date of 1600. Unlike monetary coinage, the Jettons were used for the calculation of accounts, and the designs of the Jettons varied remarkably, the Jettons were first produced in England during the reign of Edward I and were minted from 1280 onwards, however, by the 14$^{th}$ century, the Jettons used in England were predominantly imported from France and Germany. France was the first country to use Jettons for the settling of accounts, and Germany started to produce Jettons around the late 14$^{th}$ century. 2015.2/19.13 which was recovered during the 2015 excavations was well preserved and the design on the reverse was fairly legible, equally the legends were visible. The Jetton was Cu alloy and showed a Nuremberg design, from the production of Hans Krauwinckle, most notably the designs used between 1586 and 1610 to this extent the proxy date offered by the recovery of the Jetton is 1600AD, which significantly predates the 1696 William III tokens. The Jetton was found within the same feature as 2015.2/7.151 a single sherd of partially reduced green glaze pottery, and as such can offered the same date range to this sherd.


***Fig 10:*** *showing the Rose and Orb design on the reverse of 2015.2/19.13 the Nuremberg Jetton.*

With consideration to both the William III love tokens and the Nuremberg Jetton the numismatics recovered from (011) offer of a *Terminus Post Quem* (TPQ) of 1600AD and a *Terminus Ante Quem* (TAQ) of 1700AD, meaning the earliest possible date range for the features of (011) are found with the Jetton at 1600AD, whereas the latest possible date range for the features of (011) are found with the love tokens at 1696AD.

Due consideration must be given that the Jetton may have been used for a long time as there is little to no monetary value given to the coin, it is simply representative of a fixed volume of monies during the calculation of accounts, and as such it cannot be disregarded as being a relic. However, the recovery of such an item at Halton Castle which was noted as being an administrative centre, would suggest that the Jetton is not a relic and the TPQ date should be considered valid at 1600AD.

**2015.2/19.10** is a coin of significant interest within the assemblage recovered from Halton Castle, the James I farthing was recovered from (015) which was part of the burial context within which an adult male and adult female were recovered. This coin offers a date range for the context (015) 1613-1614AD. The coin was fairly degraded, with the bust side being almost obliterated, the reverse however still showed the diagnostic harp with knob detailing and single arched crown identifying it as a Type 1 Harrington style James I farthing. A comparison can be found on the Portable

Antiquities Scheme database under LVPL-BBE9E0. To this extent is possible to offer an archaeological proxy date to the burials of 1613-1614AD. This coin should be considered regionally significant for the proxy date it offers for the relatively rarer castle burials.


***Fig 11:*** *the James I Farthing in Harrington style.*

The numismatics recovered from Halton Castle are in a good level of preservation, however, it is highly recommended that coins 2015.2/19.11, 2015.2/19.13 and 2015.2/19.10 are sent for stabilising conservation to preserve the good level of preservation and for further study into these objects.

Discussion

The assemblage of artefacts recovered from the 2015 excavations at Halton Castle, have been accessioned and assessed based on the guidelines set out above. Each fragment from the assemblage has been evaluated and accessioned in accordance to the guidelines set out by Norton Priory Trust, prior to the excavations. The above report highlights key items from the assemblage and assesses them for their local, regional and national significance, along with their significance within the context of Halton Castle, both recently and in respect to the excavations carried out by McNeil in 1985/6.

It is important to assess the totality of the items recovered from Halton Castle both from 2015 and 1985/6, as both sets of assemblages were recovered from within the setting of a seat of power and a prominent political location. The total assemblage offers ways in which to contextualise Halton Castles past, with comparison to the assemblages recovered from other prominent seats of power within the North West.

Halton Castle has a rich history, and through the excavations carried out here, evidence of each element of Halton Castles historical background has been recovered. McNiel in 1985/6 made structural discoveries and evaluated that Halton Castle is characteristic of a Shell Keep castle, rather than the Motte and Bailey Castle it had previously been described as. The SA excavations have proven through the material assemblage that the area considered to be the outer bailey, has significant archaeological remains, showing the structural remains and material remains of the Castle and the people who utilised it.

To assess the levels of significance of this type of assemblage is particularly challenging, the levels of preservation have been fair to good throughout the material assemblage. However, there were significant levels of disturbance found throughout both trenches, which have disrupted the contextual deposits.

This report has focussed on the recovery of Green Glaze Pottery, Midland purple pottery, Black glazed pottery and Numismatics. The justification for this, is the continual usage of the area of Halton Castle, and the re-landscaping seen in the Victorian period and more recent periods, has caused a large amount of the later 18th and 19th century artefacts of be more mobile throughout the site, shifting them from any original contexts and depositing them within unstratified locations. This caused the majority of the later finds to be found along with 20th century deposits, however, a large majority of the earlier finds such as the medieval and early post medieval finds, were recovered from areas with significantly less recent disruption. Whereas this does
not insinuate that disrupted items are of any less significance, it does suggest that items from relatively undisturbed contexts offer a more sustainable proxy date range for their deposition.

The total number of items recovered from the excavations was 4548 individual items, including 1519 clay pipes, 1475 identifiable ceramics of which 77 were medieval and 165 were early post medieval. 397 fragments of glass, predominantly 19th and 20thcentury, 712 fragments of animal bone, 143 pieces of metal, including, 6 musket and pistol balls, 3 0.22 pistol shell cases and 2 pulled grenade pins, 60 items of miscellaneous description, 11 coins and 2 sets of human remains. All items were recovered from Two 15m by 5m trenches, opened by hand within the outer bailey area, all items were recovered within a three week period.

The total assemblage from the 2015 excavations, along with the assemblage from the 1985/6 excavations should be considered to be of regional significance, and are strongly advised to be subject to a full and detailed study to assess the total assemblages significance on a national level.

The Medieval and EPM ceramics assemblage should be considered to be of a high level of regional significance and should be examined for further study, with an aim of investigating the material to further tackle the questions set out in the North West Regional Framework in regard to the limited information of Medieval and EPM pottery production sites, and to aid with the standardising of pottery terminology and characteristics of regional and local ware types.

Furthermore the success of the Rainford project, which has identified significant materials from nearby areas, the assemblage could be offered to be incorporated into the findings of the Rainford project which would allow the collection to be assessed and contextualised within the wider setting of the North West. As stated in the NWRF "for pottery, the most frequently recovered artefact, there is a lack of both agreed ware terminology and of a means of accurate identification. The establishment of trading patterns remains therefore highly speculative" [NWRF:pp129] As such any future progress on the wider contextualisation of medieval and EPM pottery production, consumption and trade, relies heavily on the level of significance given to these forms of assemblages.

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| Site Code | Accession number | Catogory | Trench | Context | Contents | Description |
|---|---|---|---|---|---|---|
| HCR15 | 2015.2/7.1 | Pottery | One | U/S | 13 | 20th century plant pot fragments |
| HCR15 | 2015.2/7.2 | Pottery | One | U/S | 4 | circa 17th century potentially midlan purple ceramic fragments |
| HCR15 | 2015.2/7.3 | Pottery | One | U/S | 3 | Mixed bag of 3 sherds of glazed fineware circa 19th century |
| HCR15 | 2015.2/7.4 | Pottery | One | U/S | 2 | circa 20th century stoneware fragements, possible cup |
| HCR15 | 2015.2/7.5 | Pottery | One | U/S | 7 | Mixed bag of 20th century white ware fragements, some with transfer blue |
| HCR15 | 2015.2/7.6 | Pottery | One | U/S | 3 | Mixed bag of general late 19th early 20th century coarse ware |
| HCR15 | 2015.2/8.1 | Clay Pipe | One | U/S | 3 | 3 fragments of clay pipe stems |
| HCR15 | 2015.2/9.1 | Glass | One | U/S | 4 | four fragments of various glass, 1 bottle neck, 1 decorative clear,1 red and 1 |
| HCR15 | 2015.2/7.7 | Pottery | One | U/S | 24 | Fragments of Iron Glaze Pottery |
| HCR15 | 2015.2/7.8 | Pottery | One | U/S | 1 | Potential Midland Purple fragmen |
| HCR15 | 2015.2/9.2 | Glass | One | U/S | 1 | single sherd of a bottle base with pontif impression |
| HCR15 | 2015.2/8.2 | Clay Pipe | One | U/S | 67 | 65 fragments of Clay Pipe Stem and 2 Bowl fragments. |
| HCR15 | 2015.2/9.7 | Glass | One | U/S | 2 | 2 Fragements of HLLA Glass, showing long term degredation |
| HCR15 | 2015.2/28.1 | Glass | One | U/S | 2 | fragments of glass slag |
| HCR15 | 2015.2/9.6 | Glass | One | U/S | 38 | mixed coloured glass sherds, including bottle sherds |
| HCR15 | 2015.2/32.2 | Slag | One | U/S | 2 | glass slag |
| HCR15 | 2015.2/7.18 | Pottery | One | U/S | 14 | 20th cent white ware fragments |
| HCR15 | 2015.2/7.19 | Pottery | One | U/S | 10 | 19th cent. White Wares |
| HCR15 | 2015.2/7.24 | Pottery | One | U/S | 1 | Stone Ware |
| HCR15 | 2015.2/7.22 | Pottery | One | U/S | 1 | Stone warem fragment |
| HCR15 | 2015.2/7.17 | Pottery | One | U/S | 4 | Painted 20th cent. Pottery |
| HCR15 | 2015.2/9.13 | Glass | One | U/S | 8 | bottle glass |
| HCR15 | 2015.2/9.12 | Glass | One | U/S | 5 | Dark Glass Fragments |
| HCR15 | 2015.2/7.21 | Pottery | One | U/S | 14 | 20th cent. Blue transfer ware |
| HCR15 | 2015.2/9.11 | Glass | One | U/S | 6 | Bottle Glass |
| HCR15 | 2015.2/9.10 | Glass | One | U/S | 7 | Clear Glass Fragments |
| HCR15 | 2015.2/9.14 | Glass | One | U/S | 5 | Large sherds of clear glass |
| HCR15 | 2015.2/7.48 | Pottery | One | U/S | 75 | 20th cent. Standard white ware |
| HCR15 | 2015.2/7.45 | Pottery | One | U/S | 11 | 20th cent. White ware pottery |
| HCR15 | 2015.2/746 | Pottery | One | U/S | 11 | colour coated 20th cent potterty |
| HCR15 | 2015.2/7.42 | Pottery | One | U/S | 18 | Midland Purple sherds |
| HCR15 | 2015.2/7.44 | Pottery | One | U/S | 2 | 20th cent pearl ware |
| HCR15 | 2015.2/7.43 | Pottery | One | U/S | 1 | single sherd of late 19th cent. Mocha slipware |
| HCR15 | 2015.2/7.41 | Pottery | One | U/S | 24 | Black/dark glazed pottery sherds |
| HCR15 | 2015.2/7.36 | Pottery | One | U/S | 13 | Stone ware |
| HCR15 | 2015.2/7.47 | Pottery | One | U/S | 36 | Blue transferwares |
| HCR15 | 2015.2/7.40 | Pottery | One | U/S | 28 | Brown glazed pottery |
| HCR15 | 2015.2/7.38 | Pottery | One | U/S | 20 | orange glazed pottery |
| HCR15 | 2015.2/7.37 | Pottery | One | U/S | 36 | Iron glaze and cook wares |
| HCR15 | 2015.2/7.35 | Pottery | One | U/S | 3 | 3 examples of metroplotian slipware |

| | | | | | | |
|---|---|---|---|---|---|---|
| HCR15 | 2015.2/7.39 | Pottery | One | U/S | 1 | Medival yellow ware |
| HCR15 | 2015.2/8.7 | Clay Pipe | One | U/S | 60 | Clay pipe stem fragments |
| HCR15 | 2015.2/18.3 | Animal Bone | One | U/S | 4 | fragments of animal teeth |
| HCR15 | 2015.2/32.5 | Misc | One | U/S | 2 | two buttons |
| HCR15 | 2015.2/12.1 | Metal | One | U/S | 28 | fragments of ferrous metals |
| HCR15 | 2015.2/18.5 | Bone | One | U/S | 35 | Animal bone framgents |
| HCR15 | 2015.2/9.20 | Glass | One | U/S | 9 | Glass sherds |
| HCR15 | 2015.2/3.1 | Glass | One | (001) | 3 | window Glass |
| HCR15 | 2015.2/9.3 | Glass | One | (001) | 1 | Torpedo Bottle Base and Body |
| HCR15 | 2015.2/9.4 | Glass | One | (001) | 3 | Green Glass bottle sherds |
| HCR15 | 2015.2/9.5 | Glass | One | (001) | 21 | Clear Glass Fragments |
| HCR15 | 2015.2/7.9 | Pottery | One | (001) | 2 | White ware pottery |
| HCR15 | 2015.2/7.10 | Pottery | One | (001) | 15 | Blue Transfers Wares |
| HCR15 | 2015.2/7.11 | Pottery | One | (001) | 7 | White ware pottery |
| HCR15 | 2015.2/7.12 | Pottery | One | (001) | 17 | Iron glaze Ceramics |
| HCR15 | 2015.2/31.1 | CBM | One | (001) | 1 | Single fragment of Ceramic Building Material/ Drain |
| HCR15 | 2015.2/32.5 | Shell | One | (001) | 2 | 2 fragments of oyster shell |
| HCR15 | 2015.2/9.19 | Glass | One | (001) | 2 | 2 fragments of glass, one of which is a bottle base |
| HCR15 | 2015.2/8.5 | clay Pipe | One | (001) | 27 | 26 fragments of clay pipe stem and single bowl fragment |
| HCR15 | 2015.2/7.23 | Pottery | One | (001) | 15 | finer wares |
| HCR15 | 2015.2/9.20 | Glass | One | (001) | 2 | Dark/ brown glass fragments |
| HCR15 | 2015.2/7.34 | Pottery | One | (001) | 2 | Reduced coarse ware pottery |
| HCR15 | 2015.2/7.32 | Pottery | One | (001) | 3 | Midland Purple Fragments |
| HCR15 | 2015.2/7.20 | Pottery | One | (001) | 8 | Iron glaze Ceramics |
| HCR15 | 2015.2/7.31 | Pottery | One | (001) | 4 | white wares |
| HCR15 | 2015.2/7.27 | Pottery | One | (001) | 17 | Fragments of blue transfer ware |
| HCR15 | 2015.2/9.9 | Glass | One | (001) | 1 | Aqua glass bottle neck |
| HCR15 | 2015.2/7.25 | Pottery | One | (001) | 2 | 19thcent blue transfer ware |
| HCR15 | 2015.2/31.2 | CBM | One | (001) | 1 | ceramic building material/drain fragment |
| HCR15 | 2015.2/7.30 | Pottery | One | (001) | 10 | Coarse ware pottery |
| HCR15 | 2015.2/17.1 | Flint | One | (001) | 1 | Gernal flint waste |
| HCR15 | 2015.2/7.35 | Pottery | One | (001) | 2 | Coarse ware pottery |
| HCR15 | 2015.2/8.4 | Clay Pipe | One | (001) | 6 | Clay pipe stem fragments |
| HCR15 | 2015.2/32.4 | Misc | One | (001) | 1 | Clay bottle stopper |
| HCR15 | 2015.2/9.17 | Glass | One | (001) | 3 | Dark glass |
| HCR15 | 2015.2/7.28 | Pottery | One | (001) | 7 | 20th cent. White ware pottery |
| HCR15 | 2015.2/9.18 | Glass | One | (001) | 6 | Cod Bottle glass |
| HCR15 | 2015.2/9.16 | Glass | One | (001) | 6 | Bottle Glass |
| HCR15 | 2015.2/9.15 | Glass | One | (001) | 1 | Clear bottle neck |
| HCR15 | 2015.2/7.29 | Pottery | One | (001) | 2 | Painted 20th cent. Pottery |
| HCR15 | 2015.2/7.23 | Pottery | One | (001) | 11 | Iron glaze Ceramics |
| HCR15 | 2015.2/7.26 | Pottery | One | (001) | 28 | Iron glaze Ceramics |
| HCR15 | 2015.2/32.3 | Misc | One | (001) | 1 | Ceramic ball |

| | | | | | | |
|---|---|---|---|---|---|---|
| HCR15 | 2015.2/19.2 | Coin | One | (001) | 1 | Three pence coin dated 1939 |
| HCR15 | 2015.2/26.2 | Enviro | One | (001) | 1 | Charcoal |
| HCR15 | 2015.2/18.6 | Bone | One | (001) | 4 | animal teeth |
| HCR15 | 2015.2/18.8 | Bone | One | (001) | 2 | animal teeth |
| HCR15 | 2015.2/32.6 | Misc | One | (001) | 10 | plastic buttons |
| HCR15 | 2015.2/19.1 | Coin | One | (001) | 2 | George VI Pennys |
| HCR15 | 2015.2/19.3 | Coin | One | (001) | 1 | single coin dating "187.." |
| HCR15 | 2015.2/11.1 | Metal | One | (001) | 2 | Pb fragment and toy |
| HCR15 | 2015.2/12.2 | Metal | One | (001) | 4 | Misc. collection of ferrous metals |
| HCR15 | 2015.2/7.49 | Pottery | One | (001) | 3 | 17th cent. Pottery |
| HCR15 | 2015.2/7.51 | Pottery | One | (001) | 10 | Glazed mixed pottery E 20th cent |
| HCR15 | 2015.2/26.1 | Enviro | One | (001) | 6 | Charcoal |
| HCR15 | 2015.2/7.50 | Pottery | One | (001) | 7 | Stoneware pottery |
| HCR15 | 2015.2/7.52 | Pottery | One | (001) | 38 | Blue and white transfer ware |
| HCR15 | 2015.2/32.6 | Misc | One | (001) | 1 | glazed floor tile 20th cent |
| HCR15 | 2015.2/9.21 | Glass | One | (001) | 22 | Mixed bottle glass |
| HCR15 | 2015.2/18.5 | Bone | One | (001) | 26 | Animal bone framgents |
| HCR15 | 2015.2/12.3 | Metal | One | (001) | 10 | Ferrous metal fragments |
| HCR15 | 2015.2/8.8 | clay Pipe | One | (001) | 131 | Fragments of clay pipe stems and bowls |
| HCR15 | 2015.2/12.4 | Metals | One | (001) | 6 | Fragments of ferrous metals |
| HCR15 | 2015.2/7.84 | Pottery | One | (001) | 1 | Black Glaze fragment, base of vessel |
| HCR15 | 2015.2/7.85 | Pottery | One | (001) | 1 | Large sherd of early green glaze |
| HCR15 | 2015.2/7.86 | Pottery | One | (001) | 3 | 3 sherds of decorated green glaze fragments |
| HCR15 | 2015.2/8.21 | Clay Pipe | One | (001) | 1 | Single clay pipe stem |
| HCR15 | 2015.2/7.87 | Pottery | One | (001) | 1 | Yellow slip ware |
| HCR15 | 2015.2/32.10 | Misc | One | (001) | 1 | Glass Slag |
| HCR15 | 2015.2/12.7 | Metal | One | (001) | 1 | Musket Ball |
| HCR15 | 2015.2/12.8 | Metal | One | (001) | 1 | Musket Ball |
| HCR15 | 2015.2/12.9 | Metal | One | (001) | 1 | Pistol Ball |
| HCR15 | 2015.2/18.7 | Bone | One | (001) | 83 | Fragments of animal bone |
| HCR15 | 2015.2/7.57 | Pottery | One | (002) | 2 | Midland Purple fragments |
| HCR15 | 2015.2/32.6 | Shell | One | (002) | 1 | Oyster shell fragment |
| HCR15 | 2015.2/11.2 | metal | One | (002) | 1 | Metal pipe possible gas pipe |
| HCR15 | 2015.2/7.54 | Pottery | One | (002) | 17 | stone ware and later slip |
| HCR15 | 2015.2/18.9 | Animal bone | One | (002) | 4 | Animal teeth |
| HCR15 | 2015.2/7.53 | Pottery | One | (002) | 13 | Midland purple fragments |
| HCR15 | 2015.2/18.10 | Animal bone | One | (002) | 60 | Various fragments of animal bones |
| HCR15 | 2015.2/9.22 | Glass | One | (002) | 50 | Various fragments of glass |
| HCR15 | 2015.2/32.7 | Shall | One | (002) | 1 | Large fragment of oyster shell |
| HCR15 | 2015.2/7.56 | Pottery | One | (002) | 33 | Fragments of Iron Glaze Pottery |
| HCR15 | 2015.2/7.55 | Pottery | One | (002) | 66 | Blue transferwares and L20th cent. White wears |
| HCR15 | 2015.2/7.88 | Pottery | One | (002) | 1 | single frag of jewelled slip ware |

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|---|---|---|---|---|---|---|
| HCR15 | 2015.2/89 | Pottery | One | (002) | 2 | Fragments of sandy ware |
| HCR15 | 2015.2/7.90 | Pottery | One | (002) | 2 | fragments of orange glaze |
| HCR15 | 2015.2/7.91 | Pottery | One | (002) | 2 | dark glaze fragments |
| HCR15 | 2015.2/7.92 | Pottery | One | (002) | 5 | various green glaze fragments |
| HCR15 | 2015.2/7.93 | Pottery | One | (002) | 1 | single brown glaze handle. |
| HCR15 | 2015.2/8.9 | clay Pipe | One | (002) | 263 | Clay pipe stem fragments and bowls |
| HCR15 | 2015.2/7.15 | Pottery | One | (003) | 1 | Midland Purple fragment |
| HCR15 | 2015.2/7.14 | Pottery | One | (003) | 1 | Mixed fragments of Stone wares |
| HCR15 | 2015.2/7.13 | Pottery | One | (003) | 34 | Mised 20th century ceramics |
| HCR15 | 2015.2/7.16 | Pottery | One | (003) | 9 | Fragments of Iron Glaze Pottery |
| HCR15 | 2015.2/9.8 | Glass | One | (003) | 19 | Mixed fragments of Glass |
| HCR15 | 2015.2/8.3 | Clay Pipe | One | (003) | 24 | Fragments of clay pipe stems |
| HCR15 | 2015.2/7.63 | Pottery | One | (003) | 1 | single large mug dated 1943 |
| HCR15 | 2015.2/31.2 | Drain | One | (003) | 1 | single refitted sherd of drain pipe |
| HCR15 | 2015.2/19.3 | Coin | One | (003) | 1 | 1/2 penny coin |
| HCR15 | 2015.2/24.1 | Drain | One | (003) | 2 | refitted fragments of brick/tile |
| HCR15 | 2015.2/7.62 | Pottery | One | (003) | 15 | Iron Glazed Pottery |
| HCR15 | 2015.2/32.9 | Misc | One | (003) | 1 | Single fragment of roof tile |
| HCR15 | 2015.2/9.24 | Glass | One | (003) | 5 | Glass fragments |
| HCR15 | 2015.2/18.12 | bone | One | (003) | 46 | fragments of animal bone |
| HCR15 | 2015.2/12.5 | Metal | One | (003) | 25 | various ferrous metals |
| HCR15 | 2015.2/9.23 | Glass | One | (003) | 16 | Glass sherds |
| HCR15 | 2015.2/7.61 | Pottery | One | (003) | 22 | Fragments of 20th century white ware |
| HCR15 | 2015.2/7.59 | Pottery | One | (003) | 2 | refit fragments of Green glaze |
| HCR15 | 2015.2/7.58 | Pottery | One | (003) | 2 | glazed midland purple wares |
| HCR15 | 2015.2/7.60 | Pottery | One | (003) | 3 | Stonewares |
| HCR15 | 2015.2/32.8 | Misc | One | (003) | 4 | fragments of lime mortar |
| HCR15 | 2015.2/8.10 | clay Pipe | One | (003) | 21 | Fragments of Clay pipe stems and bowls |
| HCR15 | 2015.2/18.14 | Animal bone | One | (003) | 1 | animal remains fragment |
| HCR15 | 2015.2/18.13 | Animal bone | One | (003) | 3 | animal remains fragment |
| HCR15 | 2015.2/7.83 | Pottery | One | (004) | 23 | Fragments of Iron Glaze Pottery |
| HCR15 | 2015.2/7.81 | Pottery | One | (004) | 8 | Stoneware |
| HCR15 | 2015.2/7.82 | Pottery | One | (004) | 19 | Mixed 20th cent. Whiteware |
| HCR15 | 2015.2/18.16 | Animal bone | One | (004) | 6 | fragments of animal bones |
| HCR15 | 2015.2/18.19 | Animal bone | One | (004) | 19 | fragments of animal bones |
| HCR15 | 2015.2/12.6 | Metal | One | (004) | 3 | ferrous metal objects |
| HCR15 | 2015.2/7.66 | Pottery | One | (004) | 1 | Sandyware pottery |
| HCR15 | 2015.2/7.80 | Pottery | One | (004) | 12 | glazed pottery |
| HCR15 | 2015.2/18.18 | Animal bone | One | (004) | 1 | single large animal tooth |

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|---|---|---|---|---|---|---|
| HCR15 | 2015.2/9.27 | Glass | One | (004) | 1 | single sherd of bottle neck glass |
| HCR15 | 2015.2/18.15 | Animal bone | One | (004) | 1 | single large animal tooth |
| HCR15 | 2015.2/7.65 | Pottery | One | (004) | 1 | Coarse ware pottery |
| HCR15 | 2015.2/7.76 | Pottery | One | (004) | 3 | pottery |
| HCR15 | 2015.2/7.77 | Pottery | One | (004) | 4 | pottery |
| HCR15 | 2015.2/9.25 | Glass | One | (004) | 1 | single fragment of glass |
| HCR15 | 2015.2/7.78 | Pottery | One | (004) | 4 | Various fragments of slipware |
| HCR15 | 2015.2/7.79 | Pottery | One | (004) | 10 | reduced pottery |
| HCR15 | 2015.2/7.64 | Pottery | One | (004) | 8 | 20th cent white wares |
| HCR15 | 2015.2/19.4 | Coin | One | (004) | 1 | coin "…94…" |
| HCR15 | 2015.2/8.13 | Clay Pipe | One | (004) | 1 | single fragment of clay pipe stem |
| HCR15 | 2015.2/8.20 | clay Pipe | One | (004) | 2 | E 17th cent Tulip style clay pipe bowls |
| HCR15 | 2015.2/8.21 | clay Pipe | One | (004) | 1 | Single tulip style decorated clay pipe bowl |
| HCR15 | 2015.2/8.19 | clay Pipe | One | (004) | 3 | Full clay pipe bowls |
| HCR15 | 2015.2/8.18 | clay Pipe | One | (004) | 7 | several fragments of fragmented clay pipe bowls |
| HCR15 | 2015.2/8.11 | clay Pipe | One | (004) | 7 | Fragments of clay pipe stems and bowls |
| HCR15 | 2015.2/8.17 | clay Pipe | One | (004) | 60 | Framgnets of clay pipe stems. |
| HCR15 | 2015.2/18.1 | Animal bone | One | (004) | 16 | Fragments of Animal Bone, possible Bovine |
| HCR15 | 2015.2/18.2 | Animal Tooth | One | (004) | 1 | single framgnet of Animal Tooth with distinctive wear pattern, possible bovine |
| HCR15 | 2015.2/32.1 | Shell | One | (004) | 1 | single Mollusc Shell |
| HCR15 | 2015.2/7.75 | Pottery | One | (004) | 23 | Iron Glaze fragments |
| HCR15 | 2015.2/7.69 | Pottery | One | (004) | 8 | Black/dark glazed pottery sherds |
| HCR15 | 2015.2/7.72 | Pottery | One | (004) | 3 | L 17th cent pottery |
| HCR15 | 2015.2/11.3 | Metal | One | (004) | 1 | Slight weight |
| HCR15 | 2015.2/7.73 | Pottery | One | (004) | 3 | Green glaze |
| HCR15 | 2015.2/18.17 | Bone | One | (004) | 14 | Mixed Animal Bone |
| HCR15 | 2015.2/7.74 | Pottery | One | (004) | 41 | Mixed 20th cent whiteware |
| HCR15 | 2015.2/7.70 | Pottery | One | (004) | 6 | Reduced fine ware |
| HCR15 | 2015.2/7.66 | Pottery | One | (004) | 2 | Slipware |
| HCR15 | 2015.2/7.67 | Pottery | One | (004) | 4 | glazed coarseware |
| HCR15 | 2015.2/7.68 | Pottery | One | (004) | 10 | Stonware fragments |
| HCR15 | 2015.2/9.26 | Glass | One | (004) | 17 | various glass fragments |
| HCR15 | 2015.2/7.71 | Pottery | One | (004) | 7 | Coarseware fragments |
| HCR15 | 2015.2/8.12 | clay Pipe | One | (004) | 50 | Fragments of clay pipe stems |
| HCR15 | 2015.2/8.15 | clay Pipe | One | (004) | 1 | bowl fragment with large frag of stem |
| HCR15 | 2015.2/8.14 | clay Pipe | One | (004) | 23 | Fragments of clay pipe stems |

| Site Code | Accession number | Catogory | Trench | Context | Contents | Description |
|---|---|---|---|---|---|---|
| HCR15 | 2015.2/12.11 | Metals | Two | (001) | 1 | Musket ball |
| HCR15 | 2015.2/12.12 | Metals | Two | (001) | 1 | arquebus ball |
| HCR15 | 2015.2/12.13 | Metals | Two | (001) | 1 | Musket Ball |
| HCR15 | 2015.2/19.6 | Coin | Two | (001) | 1 | 1941 sixpence |
| HCR15 | 2015.2/19.7 | Coin | Two | (001) | 1 | 1843 shilling |
| HCR15 | 2015.2/19.8 | Coin | Two | (001) | 1 | 1897 penny |
| HCR15 | 2015.2/19.12 | Coin | Two | (001) | 1 | Penny |
| HCR15 | 2015.2/19.9 | Coin | Two | (001) | 1 | 1936 Penny |
| HCR15 | 2015.2/8.24 | Clay Pipe | Two | (001) | 129 | Mix of clay pipe stems |
| HCR15 | 2015.2/8.22 | Clay Pipe | Two | (001) | 22 | mixed clay pipe bowls |
| HCR15 | 2015.2/18.20 | Animal Bone | Two | (001) | 34 | Mixed Animal bone Fragments |
| HCR15 | 2015.2/9.29 | Glass | Two | (001) | 54 | various fragments of clear glass |
| HCR15 | 2015.2/7.103 | Pottery | Two | (001) | 89 | mixed 20th century white ware fragments |
| HCR15 | 2015.2/7.94 | Pottery | Two | (001) | 57 | large collection of Iron Glaze fragments |
| HCR15 | 2015.2/8.23 | Clay Pipe | Two | (001) | 1 | 1650's tulip pipe bowl |
| HCR15 | 2015.2/32.16 | Misc | Two | (001) | 1 | potential lead window came |
| HCR15 | 2015.2/32.15 | Misc | Two | (001) | 1 | misc. iron slag |
| HCR15 | 2015.2/32.14 | Misc | Two | (001) | 1 | Misc. Metal fragment |
| HCR15 | 2015.2/18.21 | Bone | Two | (001) | 5 | fragments of animal teeth |
| HCR15 | 2015.2/32.13 | Misc | Two | (001) | 5 | clay marbles from pop bottles |
| HCR15 | 2015.2/9.28 | Glass | Two | (001) | 8 | fragments of older glass |
| HCR15 | 2015.2/32.11 | Misc | Two | (001) | 1 | .22 bullet casing |
| HCR15 | 2015.2/32.12 | Misc | Two | (001) | 1 | blue "god Bless His Majesty" token |
| HCR15 | 2015.2/7.102 | Pottery | Two | (001) | 2 | Sandy ware pottery Early Post Med (EPM) |
| HCR15 | 2015.2/7.101 | Pottery | Two | (001) | 3 | three fragments of reduced EPM |
| HCR15 | 2015.2/7.99 | Pottery | Two | (001) | 4 | fragments of slipware |
| HCR15 | 2015.2/7.100 | Pottery | Two | (001) | 1 | yellow glazed pottery fragment.. Rim. |
| HCR15 | 2015.2/7.97 | Pottery | Two | (001) | 2 | coarseware pottery fragments |
| HCR15 | 2015.2/7.96 | Pottery | Two | (001) | 5 | Framgnets of green glaze pottery |
| HCR15 | 2015.2/7.95 | Pottery | Two | (001) | 2 | reduced pottery fragments |
| HCR15 | 2015.2/7.98 | Pottery | Two | (001) | 2 | brown glazed purple pottery fragments |
| HCR15 | 2015.2/8.26 | Clay Pipe | Two | (001) | 10 | Various pipe bowls |
| HCR15 | 2015.2/8.25 | Clay Pipe | Two | (001) | 28 | Various clay pipe stems |
| HCR15 | 2015.2/8.27 | Clay Pipe | Two | (001) | 1 | Large intact fragment of clay pipe |
| HCR15 | 2015.2/18.22 | Animal Bone | Two | (001) | 70 | fragments of animal bone |
| HCR15 | 2015.2/18.24 | Animal Bone | Two | (001) | 4 | fragments of burnt bone |
| HCR15 | 2015.2/22.1 | Shell | Two | (001) | 15 | fragments of sea shells |
| HCR15 | 2015.2/18.23 | Animal | Two | (001) | 8 | fragments of various animal teeth |

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|---|---|---|---|---|---|---|
| | | Bone | | | | |
| HCR15 | 2015.2/7.114 | Pottery | Two | (001) | 36 | framgnets of various iron glazes |
| HCR15 | 2015.2/7.111 | Pottery | Two | (001) | 10 | black glaze pottery |
| HCR15 | 2015.2/7.110 | Pottery | Two | (001) | 11 | brown glazed red tempered pottery |
| HCR15 | 2015.2/7.109 | Pottery | Two | (001) | 16 | Stoneware pottery |
| HCR15 | 2015.2/7.107 | Pottery | Two | (001) | 10 | Mixed fragments of purple wares and poss. Cistercian |
| HCR15 | 2015.2/7.115 | Pottery | Two | (001) | 11 | Sandy ware with green glaze |
| HCR15 | 2015.2/7.113 | Pottery | Two | (001) | 2 | Coarse ware pottery, early post med |
| HCR15 | 2015.2/7.112 | Pottery | Two | (001) | 1 | cistercian ware with slip |
| HCR15 | 2015.2/7.108 | Pottery | Two | (001) | 14 | mixed post med pottery |
| HCR15 | 2015.2/7.106 | Pottery | Two | (001) | 4 | various slipwares |
| HCR15 | 2015.2/32.32 | Misc | Two | (001) | 2 | unidentifiable pottery |
| HCR15 | 2015.2/7.105 | Pottery | Two | (001) | 14 | 20th cent white ware ceramics |
| HCR15 | 2015.2/9.30 | Glass | Two | (001) | 9 | mixed 19th cent glass |
| HCR15 | 2015.2/9.29 | Glass | Two | (001) | 8 | mixed 20th cent glass |
| HCR15 | 2015.2/32.22 | Misc | Two | (001) | 1 | possible plastic bead |
| HCR15 | 2015.2/7.104 | Pottery | Two | (001) | 1 | metropolitan slipware 17th cent |
| HCR15 | 2015.2/32.17 | Metal | Two | (001) | 2 | grenade pins |
| HCR15 | 2015.2/32.18 | Metal | Two | (001) | 1 | brooch pin |
| HCR15 | 2015.2/32.20 | Metal | Two | (001) | 4 | Bullet casing |
| HCR15 | 2015.2/32.19 | Metal | Two | (001) | 1 | shotgun shell casing |
| HCR15 | 2015.2/32.21 | Metal | Two | (001) | 2 | military buttons |
| HCR15 | 2015.2/7.117 | Pottery | Two | (001) | 3 | green glaze fragments |
| HCR15 | 2015.2/7.116 | Pottery | Two | (001) | 1 | decorated sandyware |
| HCR15 | 2015.2/9.31 | Glass | Two | (002) | 45 | various 20th century glass fragments |
| HCR15 | 2015.2/19.5 | Coin | Two | (002) | 1 | 1936 Penny |
| HCR15 | 2015.2/8.29 | Clay Pipe | Two | (002) | 112 | various pipe stems |
| HCR15 | 2015.2/8.28 | Clay Pipe | Two | (002) | 8 | Clay pipe bowls |
| HCR15 | 2015.2/12.7 | Metals | Two | (002) | 20 | various mix of ferrous metals and nails |
| HCR15 | 2015.2/18.26 | Animal Bone | Two | (002) | 32 | Mixed Animal bone Fragments |
| HCR15 | 2015.2/32.33 | Misc | Two | (002) | 1 | single fragment of roof tile |
| HCR15 | 2015.2/7.122 | Pottery | Two | (002) | 140 | 20rh century white wares |
| HCR15 | 2015.2/7.121 | Pottery | Two | (002) | 18 | Various iron glazes and kitchen wares |
| HCR15 | 2015.2/18.25 | Animal Bone | Two | (002) | 2 | animal teeth |
| HCR15 | 2015.2/22.2 | Shell | Two | (002) | 4 | fragments of shell |
| HCR15 | 2015.2/7.119 | Pottery | Two | (002) | 11 | Stoneware fragments |
| HCR15 | 2015.2/7.120 | Pottery | Two | (002) | 5 | Slipwares |
| HCR15 | 2015.2/7.121 | Pottery | Two | (002) | 2 | Sandyware fragments |
| HCR15 | 2015.2/7.118 | Pottery | Two | (002) | 1 | single fragment of green glaze |
| HCR15 | 2015.2/32.34 | Misc | Two | (002) | 1 | glazed mortar |
| HCR15 | 2015.2/19.5 | Coin | Two | (002) | 1 | single 1936 penny |
| HCR15 | 2015.2/12.8 | Metals | Two | (003) | 18 | large fragments of ferrous metals |

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|---|---|---|---|---|---|---|
| HCR15 | 2015.2/8.31 | Clay Pipe | Two | (003) | 63 | Fragments of clay pipe |
| HCR15 | 2015.2/8.30 | Clay Pipe | Two | (003) | 7 | fragments of clay pipe bowls |
| HCR15 | 2015.2/9.32 | Glass | Two | (003) | 66 | various fragments of glass |
| HCR15 | 2015.2/18.28 | Animal Bone | Two | (003) | 19 | large fragments of animal bone with additional butchery marks |
| HCR15 | 2015.2/32.34 | Misc | Two | (003) | 1 | decorative bead |
| HCR15 | 2015.2/18.27 | Animal Bone | Two | (003) | 42 | large fragments of animal bone with additional butchery marks |
| HCR15 | 2015.2/7.128 | Pottery | Two | (003) | 11 | fragments fo iron glaze pottery |
| HCR15 | 2015.2/9.33 | Glass | Two | (003) | 3 | Glass Marbles |
| HCR15 | 2015.2/22.3 | shell | Two | (003) | 2 | fragments of oyster shell |
| HCR15 | 2015.2/18.29 | Animal Bone | Two | (003) | 1 | Large dogs/ canines tooth |
| HCR15 | 2015.2/7.124 | Pottery | Two | (003) | 9 | 20th century whiteware |
| HCR15 | 2015.2/7.127 | Pottery | Two | (003) | 6 | brown glazed fragments |
| HCR15 | 2015.2/7.123 | Pottery | Two | (003) | 11 | Black glazed pottery |
| HCR15 | 2015.2/7.122 | Pottery | Two | (003) | 1 | clay marbles from pop bottles |
| HCR15 | 2015.2/7.126 | Pottery | Two | (003) | 2 | fragments of green glazed pottery |
| HCR15 | 2015.2/7.125 | Pottery | Two | (003) | 3 | Framgnets of slip ware pottery |
| HCR15 | 2015.2/18.31 | Animal Bone | Two | (005) | 5 | animal teeth |
| HCR15 | 2015.2/18.30 | Animal Bone | Two | (005) | 44 | Animal bone fragments |
| HCR15 | 2015.2/32.35 | Misc | Two | (005) | 15 | Fragments of painted plaster |
| HCR15 | 2015.2/22.4 | shell | Two | (005) | 18 | Mixed shell fragments |
| HCR15 | 2015.2/9.34 | Glass | Two | (005) | 11 | Mixed fragments of torpedo bottle |
| HCR15 | 2015.2/12.9 | Metal | Two | (005) | 9 | fragments of metals |
| HCR15 | 2015.2/8.32 | Clay pipe | Two | (005) | 21 | fragments of clay pipe stems |
| HCR15 | 2015.2/7.129 | Pottery | Two | (005) | 7 | fragments of iron glazer pottery |
| HCR15 | 2015.2/7.134 | Pottery | Two | (005) | 1 | orange glaze pottery |
| HCR15 | 2015.2/7.130 | Pottery | Two | (005) | 3 | post med pottery fragments |
| HCR15 | 2015.2/7.135 | Pottery | Two | (005) | 1 | stoneware fragments |
| HCR15 | 2015.2/7.132 | Pottery | Two | (005) | 1 | Sandyware fragments |
| HCR15 | 2015.2/7.131 | Pottery | Two | (005) | 2 | slipware pottery |
| HCR15 | 2015.2/7.133 | Pottery | Two | (005) | 1 | White ware |
| HCR15 | 2015.2/8.32 | Clay Pipe | Two | (007) | 344 | fragments of clay pipe stems |
| HCR15 | 2015.2/19.11 | Coin | Two | (007) | 2 | "love tokens" 1696 William III silver coins |
| HCR15 | 2015.2/18.32 | Animal Bone | Two | (007) | 53 | large fragments of animal bone |
| HCR15 | 2015.2/9.35 | Glass | Two | (007) | 9 | various fragments of glass |
| HCR15 | 2015.2/7.136 | Pottery | Two | (007) | 137 | mixed 20th century white ware ceramics |
| HCR15 | 2015.2/18.33 | Animal Bone | Two | (007) | 4 | animal teeth |

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|---|---|---|---|---|---|---|
| HCR15 | 2015.2/32.36 | Misc | Two | (007) | 7 | clay marbles from pop bottles |
| HCR15 | 2015.2/7.139 | Pottery | Two | (007) | 6 | green glaze fragments |
| HCR15 | 2015.2/7.142 | Pottery | Two | (007) | 1 | stoneware |
| HCR15 | 2015.2/7.141 | Pottery | Two | (007) | 1 | pottery un identified |
| HCR15 | 2015.2/7.137 | Pottery | Two | (007) | 8 | post medieval pottery |
| HCR15 | 2015.2/7.136 | Pottery | Two | (007) | 9 | mixed iron glaze |
| HCR15 | 2015.2/7.138 | Pottery | Two | (007) | 3 | mixed 19th cent slipware |
| HCR15 | 2015.2/7.140 | Pottery | Two | (007) | 5 | possible cistercian ware |
| HCR15 | 2015.2/18.34 | Animal Bone | Two | (009) | 60 | fragments of larger animal bones |
| HCR15 | 2015.2/9.36 | Glass | Two | (009) | 2 | fragments of mixed quality glass |
| HCR15 | 2015.2/18.35 | Animal Bone | Two | (009) | 3 | animal teeth |
| HCR15 | 2015.2/8.33 | Clay Pipe | Two | (009) | 1 | full clay pipe bowl |
| HCR15 | 2015.2/8.34 | Clay Pipe | Two | (009) | 7 | clay pipe stems |
| HCR15 | 2015.2/7.144 | Pottery | Two | (009) | 3 | midland purple fragments |
| HCR15 | 2015.2/7.143 | Pottery | Two | (009) | 9 | mixed post med pottery |
| HCR15 | 2015.2/7.146 | Pottery | Two | (009) | 2 | mixed 20th cent white ware pottery |
| HCR15 | 2015.2/7.145 | Pottery | Two | (009) | 2 | green glaze fragments |
| HCR15 | 2015.2/19.13 | Coin | Two | (011) | 1 | 1550-60 rose and orb jetton |
| HCR15 | 2015.2/7.151 | Pottery | Two | (011) | 1 | green glaze fragments |
| HCR15 | 2015.2/7.149 | Pottery | Two | (013) | 4 | post med yellow glaze |
| HCR15 | 2015.2/7.148 | Pottery | Two | (013) | 2 | post med green glaze |
| HCR15 | 2015.2/7.147 | Pottery | Two | (013) | 6 | iron glaze pottery |
| HCR15 | 2015.2/32.37 | Misc | Two | (013) | 2 | possible glass slag fragments |
| HCR15 | 2015.2/8.35 | Clay pipe | Two | (013) | 7 | fragments of clay pipe stems |
| HCR15 | 2015.2/7.150 | Pottery | Two | (015) | 5 | green glaze fragments |
| HCR15 | 2015.2/19.10 | Coin | Two | (015) | 1 | 1614-25 James I Coin |

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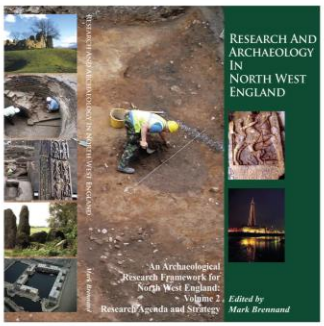
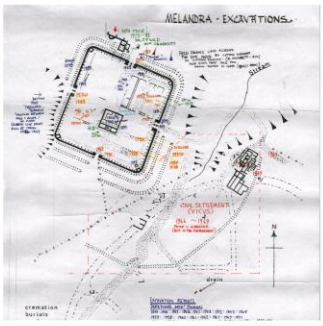
## CONSULTANCY




## DESK BASED ASSESMENTS

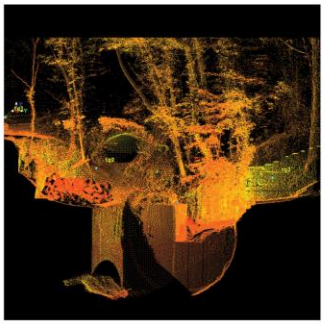



## WATCHING BRIEF & EVALUATION

## EXCAVATION

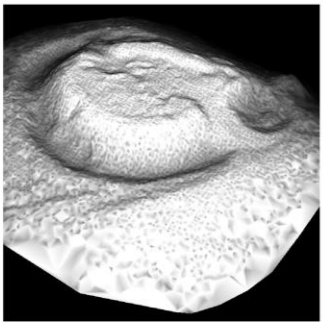
## BUILDING SURVEY

## 3D LASER SCANNING



## COMMUNITY INVOLVEMENT

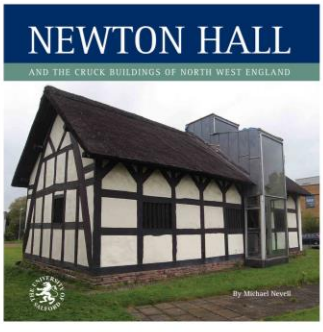
## LANDSCAPE SURVEYS



## GEOPHYSICAL SURVEYS

## WORKSHOPS & VOCATIONAL TRAINING

## RESEARCH PUBLICATIONS




## SEMINARS, DAYSCHOOLS CPD EVENTS

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