THE FORMER LONDON ROAD PETROL FILLING STATION, LONDON ROAD, NOTTINGHAM:

An Archaeological Investigation

For Monk Estates

Prepared by Camilla Collins

Report Number: 160/2019

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Summary

Trent & Peak Archaeology (TPA) was commissioned by Monk Estates to undertake an archaeological evaluation and mitigation at the site of a former petrol filling station off London Road, Nottingham. The fieldwork was carried out between 23rd April and 26th June 2019 in advance of residential development.

London Road is situated within the historic core of the city of Nottingham in an area of high archaeological importance. The potential for surviving remains of medieval and post-medieval date within the footprint of the development was therefore deemed high. Due to this, a staged programme of archaeological works was required by the Nottingham City Council (NCC) Archaeologist, Scott Lomax, in advance of the development.

The site is located in Nottingham city centre between London Road and Pemberton Street (NGR: SK 57840 39580). It was previously occupied by the Shell petrol filling station and forecourt, which was being used as a hand car wash facility with parking in its northern extent. To the north the site is bounded by Pemberton Street, where the historic sandstone cliff of Malin Hill is located. The site contains no structures or features on the statutory or local lists.

Geoarchaeological monitoring was previously undertaken during a window sample survey which demonstrated a variation in the depth of alluvium overlying the site (Keyworth 2017). Below the upper 2m of made ground the sequence of deposits (c. 2.5m-5m BGL) comprised alluvial deposits of clay, silts and sands indicative of a multiple or braided river channel (intermittent high and low energy phases of river channel activity), perhaps not dissimilar to the channel depicted on the 1610 John Speed map of Nottingham. A test pit was excavated during the current investigation to target this channel. The test pit revealed an intact sedimentary sequence related to this diverted water course, from which a number of samples were recovered for further analysis. The channel sequence contained deposits that have been provisionally dated to between the 13th and 15th centuries. A skull fragment was recovered from the sand and gravel at a depth of 3m BGL, which underlies the main channel.

A total of six phases of occupation were identified during the fieldwork, the chronology of which has been primarily based on the order of stratigraphic relationships. Phases 1, 2 and 3 encompass a range of industrial activities during the late medieval and early post-medieval periods, with Phases 4, 5 and 6 relating to 19th to 21st century developments. A total of three trenches were excavated, with Trench 2 being extended into a wider excavation.

The first archaeologically significant horizon comprised a widespread layering event of 13th to 14th century date, probably derived from both inundation from the nearby river and a deliberate attempt to raise the ground level in order to create a more habitable occupation area. A number of sandstone walls followed on from this episode of ground build up, most of which were of reasonably poor construction. The walls, which possibly formed a small makeshift structure or yard plot boundary, were typical reflections of this type of initial riverine expansion, built as required and used for short, perhaps seasonal, periods of time. In addition to this, structural remains very tentatively interpreted as being part of the former Leen Bridge were uncovered within the north-eastern extent of the site, based on the location of the sandstone wall in relation to cartographic depictions of the structure.

A large complex of sandstone walling provisionally dated to the 14th – 15th centuries was revealed during the excavation, which appeared to form a single building that would have fronted onto the commercial thoroughfare of Narrow Marsh. Cartographic evidence indicates that dense tenements and commercial properties lined the southern side of the road, and it is possible that the remains formed part of one of these structures. However, very little evidence of domestic occupation was uncovered during the investigation, and this was certainly reflected in the artefactual assemblage, archaeobotanical results and animal remains derived from the contemporary archaeological features and deposits. Evidence of preliminary industrial processing within the site boundary is limited to a large industrial hearth located in a yard space to the rear of the main building complex. The hearth itself could have fulfilled a number of purposes, with the proxy results providing little clarification on its function.

The 15th to 17th century occupation of the site appears to have been largely focused around the leather working industry. Although it is probable that the London Road site is located beyond the tanning and tawing workshops themselves, the waste derived from these industries was present in the layering material, with a significant amount of sheep metapodials being recovered. Additionally, two probable tawing pits were situated at the western boundary of the site.

The results of the London Road excavation are notable, in large part due to the unprecedented survival of archaeological remains across the site. The well-preserved sequence of activities has shed light on the high intensity of the land use from the 13th century to the present day, in addition to providing an insight of the aquatic and surrounding landscapes prior to these principal phases of occupation. Furthermore, as so few archaeological interventions have been targeted in the surrounding landscape of the historic core of Nottingham, and even fewer known previous assessments of waterlogged geoarchaeological remains have been undertaken, the results have the potential to significantly contribute to the research priorities of the city. Specifically, the assessments could form baseline data for future investigations.

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- Kris Poole (TPA) – Animal Bone
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- David Smith – Insect Remains
- Wendy Smith – Plant Macrofossils
- Tom Hill – Pollen
- Rebecca Hawkes-Reynolds – Fish Remains
- Kate Smart – Human Remains

Thanks are extended to Monk Estates for commissioning the work, and to Scott Lomax, City Archaeologist, for his help and advice throughout the course of the project.

1 Introduction

1.1 Trent & Peak Archaeology (TPA) was commissioned by Monk Estates to undertake an archaeological investigation at the site of a former petrol filling station, London Road, Nottingham. The fieldwork was carried out between 23rd April and 26th June 2019 in advance of residential development.

1.2 London Road is situated within the historic core of the city of Nottingham in an area of high archaeological importance. The potential for surviving remains of medieval and post-medieval date within the footprint of the development was therefore deemed high. Due to this, a staged programme of archaeological works was required by the Nottingham City Council (NCC) Archaeologist, Scott Lomax, in advance of the development. The programme comprised:

> ***Stage 1:*** A **Geoarchaeological Survey** was conducted by Trent & Peak Archaeology in June 2017 (Keyworth 2017), which demonstrated the survival of deposits dating from the Mesolithic to the medieval period associated with the former course of the River Leen. In addition, waterlogged archaeological remains were recorded within the boreholes which included worked wood and leather.
>
> ***Stage 2:*** An **Archaeological Evaluation** comprising the excavation of four trenches designed to assess the baseline conditions and archaeological potential of the site.
>
> ***Stage 3:*** Due to the presence of significant archaeological remains revealed during Stage 2, further mitigation was required by the NCC. This involved a targeted excavation to assess the extent of modern truncation and to ensure that all remains present were sufficiently investigated, ensuring *preservation by record.*

1.3 This document details the results of **Stages 2 & 3** and has been prepared in accordance with the guidelines laid out in the Chartered Institute for Archaeologists (CIfA) *Standard and Guidance for Archaeological Excavation* (CIfA 2014b) and *Code of Conduct* (CIfA 2014a).

2 Site Location, Geology and Topography

2.1 The site is located in Nottingham city centre between London Road and Pemberton Street (NGR: SK 57840 39580). It was previously occupied by the Shell petrol filling station and forecourt, which was being used as a hand car wash facility with parking in its northern extent. To the north the site is bounded by Pemberton Street, where the historic sandstone cliff of Malin Hill is located. The site contains no structures or features on the statutory or local lists.

2.2 The site is situated on bedrock geology of the Chester Sandstone formation which formed approximately 246-251 million years ago in the Triassic period, in a local environment previously dominated by rivers (British Geological Survey (BGS) 2019). The bedrock is overlain by Holocene alluvium comprised of clay, silt, sand and gravel. These superficial deposits as mapped by the BGS terminate to the immediate north of the site, with Pemberton Street being situated over the dividing line.

2.3 Geoarchaeological monitoring was undertaken during a window sample survey which demonstrated a variation in the depth of alluvium overlying the site (Keyworth 2017). Below the upper 2m of made ground the sequence of deposits (c. 2.5m-5m BGL) comprised alluvial deposits of clay, silts and sands indicative of a multiple or braided river channel (intermittent high and low energy phases of river channel activity), perhaps not dissimilar to the channel depicted on the 1610 John Speed map of Nottingham. Peat was present in some window samples, suggesting periods of stagnation. Beneath the high and low energy phases of river channel activity (c.5m and 7m BGL) a further alluvially-deposited sequence comprising superficial sands & gravels was observed. This sequence also contained a layer of peat at 6.2m BGL indicating a possible area of stagnant water, presumably the main channel of the River Leen at the time.

2.4 Wood fragments were also observed in BH03 in the central northern section of the site and in BH02 and BH08 in the northeast and central eastern sections of the site respectively in both alluvial deposits and underlying sands & gravels. A total of two samples of waterlogged wood were submitted for age determination which returned a Mesolithic (WS03) and medieval date (WS06). The Mesolithic date is accepted with caution, although recent work at the Broadmarsh site (Poole et al 2018) has demonstrated that deposits dating to the Mesolithic are present within the former floodplain of the Leen. The variation in age determinations from the site serves to illustrate the dynamic nature of the river.

3 Relevant Planning Context, Legislation and Guidance

3.1 Planning Context

3.1.1 The archaeological programme outlined herein is underpinned by the national legislation and local policies described below. The programme was designed in consultation with Scott Lomax, City Archaeologist for Nottingham City Council.

3.1.2 A planning application has been submitted and conditionally approved (planning reference 16/01352/PFUL3) for a residential development of 85 apartments including communal facilities, a commercial unit and provision for car parking. The archaeological works are required in order to fulfil Planning Condition 5, which states:

> *No development involving the breaking of the ground shall take place, until an archaeological Written Scheme of Investigation, covering the area where it is proposed to excavate below existing ground or basement levels, has first been submitted to and approved in writing by the Local Planning Authority. The Written Scheme of Investigation and works shall include:*
>
> *a. An archaeological evaluation of the site;*
>
> *b. Arrangements, supported by the conclusions of an archaeological evaluation, for the excavation of the affected areas, and the implementation of a watching brief during the course of the development;*
>
> *c. Arrangements for the recording of any finds made during the investigation and for the preparation of a final report;*
>
> *d. Arrangements for the deposition of the records of finds, and any significant finds, capable of removal from the site, in a registered museum; and*
>
> *e. Arrangements for the publication of a summary of the final report in an approved journal*
>
> *The archaeological investigation and works approved under this condition shall be carried out in accordance with the Written Scheme of Investigation.*
>
> *Reason: to ensure that any archaeological remains of significance are safeguarded in accordance with Policies BE16 of the Local Plan and Policy 11 of the Aligned Core Strategy.*

3.2 National Planning Policy Framework (NPPF)

3.2.1 Developments of this nature, and their impact upon the historic environment, are addressed by the revised 2019 *National Planning Policy Framework* (NPPF) published by the Ministry of Housing, Communities and Local Government (MHCLG), and the *NPPF Planning Practice Guide Conserving and Enhancing the Historic Environment* (DCLG 2014).

3.3 Nottingham City Local Plan

3.3.1 Nottingham City Council is committed to ensuring that heritage assets including known and potential archaeological remains are fully considered as part of the planning process and that important archaeological remains are preserved *in situ*. The archaeological mitigation works allowed remains to be preserved both *in situ* and by record.

4 Historical and Archaeological Background

4.1 The site lies immediately outside the Saxon pre-Conquest 'burgh' of Nottingham, which was located to the north of the development site, on the sandstone cliffs still visible today at the north of Pemberton Street (Malin Hill). There is, therefore, a significant possibility that the area beneath the cliff was utilised for occupation or activity of various kinds, including the disposal of domestic or industrial waste, or waterfront structures.

4.2 During the early medieval period the site was situated on or near to the banks of the River Leen, which flowed to the south of the site and is likely to have been used for transport, as a water source, in industrial processes or for waste disposal. A more recent study has suggested that "the site was almost certainly occupied during the early medieval period" (Phipps 2016).

4.3 By the 13th century, the aptly named 'Narrow Marsh' located between the foot of the historic cliff of Malin Hill and the Leen (incorporating the development site) had become an important commercial thoroughfare. A Franciscan friary was established in 'Broad Marsh' to the west by 1250 and possibly between 1224 and 1230 (Nottingham HER, MNU535: Greyfriars Friary), and was quickly followed by dense tenements in both areas. Narrow Marsh is also known to have been used for grazing, pasturing and various industrial processes, including tanning. The latter is documented in 1395, when a complaint was brought against the tanners of Littlemarsh (Narrow Marsh) for blocking the river with the activities of their trade (Stevenson 1882, 273).

4.4 It is not clear whether the site was part of the Norman town. However, there is evidence that this area of land between the cliffs and the Leen was developed during the medieval period.

4.5 The development site was situated in close proximity to important transport routes known as the gateway to the south, incorporating the Leen Bridge and the network of thoroughfares passing through Plumptree Square. From the medieval period onwards the river was crossed by the Leen Bridge, with individual channels of the braided river being crossed with 'chainy bridges' (Deering 1751, 167). The road today known as London Road was previously called Flood Road and this connected the Leen Bridge with the Trent Bridge. The Leen Bridge was originally of timber construction, but was frequently rebuilt and was later recorded to be of stone construction.

4.6 A watermill existed to the west of the Leen Bridge by 1677 (Kinsley *et al* 1997). A stone wall recorded at the south eastern corner of the site in 1954 during groundworks for the petrol station was interpreted by the amateur archaeologist George Campion as the northern wall of the medieval water mill shown in a loop of the River Leen on an unspecified map (Nottingham HER, ENU390, Discovery of a wall of a water mill, London Road/Lower Parliament Street). Parts of the same wall were said to also be visible on the development site above ground, following the former course of the River Leen (Nottingham Evening Post 1954). However, no river bed traces were exposed and any association of this stone wall with a mill remains unclear (Nottingham HER, ENU390, Discovery of a wall of a water mill, London Road/Lower Parliament Street).

4.7 Industrial and agricultural activity in the area between the sandstone cliff and the River Leen is known to have continued into the post-medieval period. To the west of the development site, Narrow Marsh continued to be a major commercial street. The area to the south of the thoroughfare was a significant tanning area into the mid-17th century, with Deering noting forty seven tanning yards in the area by 1664. The industry had fallen into serious decline by the 1740s. The first available map dates to 1609 (the Sherwood Forest map) and depicts the approximate area of the site as undeveloped, incorporating and extending to the south of Narrow Marsh (the town's southernmost, east-west aligned, thoroughfare). In or to the east of the site was the Leen Bridge. By 1610, when John Speed's map was produced, buildings had been constructed on the southernmost edge of Narrow Marsh. Thoroton's map of 1677 shows the same land use, with light tree coverage in the southern half of the approximate area of the site.

4.8 By the 18th century the approximate area of the site was becoming more formally organised. By the time of Badder and Peat's map of 1744 – the earliest to allow the development site to be identified with accuracy – buildings ran along the southern edge of the precursor to Narrow

Marsh and a north-south aligned track passed through the western extent of the site. The remainder of the site was formed of mixed agricultural plots.

4.9 In the 19th century the site underwent heavy redevelopment, facilitated by the arrival of the nearby canal (1793-94). The cartographic evidence, however, suggests that this site was less densely occupied than the Red Lion area (now Cliff Road) to the west. A map of 1820 (Smith and Wild) shows new structures along the north and west of the site, also extending downwards into the site at the north east. The Leen Bridge extended into the site and arches of the bridge were found in 1880 and 1969. On both occasions substantial stone remains survived, which appeared to date to the 18th century.

4.10 A number of small buildings filled the northern part of the site during this time, with only the southern edge and scattered parts of its centre undeveloped (Staveley and Wood map, 1831). Redevelopment occurred and by 1881 the site incorporated an undeveloped area (by 1907 the site of a Catholic church) in its north eastern corner, school buildings and a small parcel of undeveloped land (perhaps a school yard, and soon extended into) in its east, terraced buildings along its north and south (those at the north with small pockets of undeveloped land), and in its west a row of southwest-northeast aligned terraced buildings with rear plots (1881 1st series OS map). This basic configuration, with infill (including the construction of the church), was still visible in the mid-20th century (1916 and 1954 OS maps). The petrol station was then added in 1954 and the church and school were demolished in the 1970s. By 1989 the eastern half of the site had been cleared but a club or community centre occupied the northwest of the site and the petrol station the southwest.

4.11 The exact spatial relationship between the historic River Leen and the site is unclear, although the map of 1609 shows a "braided" river with a northern channel passing to the immediate south of the site's south eastern corner. There are several known human interventions, and it is likely that the river course has also evolved in further ways over time. In 1814 the Leen was widened between Lenton and its confluence with the River Trent. Within some areas of the historic core of Nottingham the river was arched over in 1824. It is culverted beneath Castle Boulevard, Canal Street and flows into the canal.

5 Aims and Objectives

5.1 The main aims of the work can be summarised as:

- To understand the chronology, development and significance of any archaeological remains recorded at the site
- To understand the nature of the depositional sequence associated with the former course of the River Leen
- To understand site formation processes in relation to the river sediments and any archaeological remains

5.2 The main objectives of the evaluation were as follows:

- To record and recover dating evidence from any archaeological features observed
- To recover material suitable for palaeoenvironmental assessment from waterlogged deposits
- To record the presence and recover dating evidence from any waterlogged wooden structures.
- To undertake post excavation analysis and reporting on any remains recovered

6 Regional Research Framework

6.1 The programme of archaeological mitigation may also have revealed evidence that addresses research priorities highlighted by regional research frameworks (Knight, Vyner, & Allen 2012). The following research questions are of particular significance to this project:

High Medieval (1066-1485)
7.6 Industry and Trade
3. Can we identify, investigate and date sites associated with the region's key extractive industries (especially iron, coal, lead and alabaster), the production and distribution of cloth and leather-work and freshwater or marine fishing?
4. Can we develop a typological classification of buildings associated with medieval industrial and commercial activities and can we identify sub-regional and chronological patterning?
7.7 The agrarian landscape and food-producing economy
4. What can environmental remains teach us about diet and living conditions in urban, rural and coastal communities?
Post-Medieval (1485-1750)
8.1 Urbanism: morphology, functions and buildings
4. What can studies of environmental data, artefacts and structural remains tell us about variations in diet, living conditions and status?

7 Methodology

7.1 This report details the results of Stages 2 and 3 of a phased archaeological programme (detailed in Section 1.2) comprising the excavation of three evaluation trial trenches (Fig. 01), two of which were stepped to allow access. A single trench (02) revealed significant archaeological remains, and the decision was made in consultation with NCC to extend this trench by approximately 5m into a wider excavation (*Stage 3)*.

7.2 Any archaeological features or deposits present were investigated using the methodology outlined below.

7.3 General Methodology

7.3.1 All work was undertaken by suitably qualified and experienced archaeologists in accordance with accepted archaeological practice and the *Code of Conduct* produced by the Chartered Institute for Archaeologists (CIfA 2014a). The work was also carried out in adherence to the relevant WSI produced by TPA (Krawiec 2019).

7.3.2 All machining was carried out using a 360° tracked excavator fitted with a toothless ditching bucket under constant archaeological supervision. Spoil was stored on site at a safe distance from the excavation area.

7.3.3 The excavation area and any archaeological features were located with reference to the Ordnance Survey Nation Grid using a Leica CS15/GS15 Differential GNSS prior to further investigation.

7.3.4 Any backfilling was monitored and only took place following the agreement of NCC.

7.4 Cleaning/Hand Excavation

7.4.1 Archaeological features and deposits were hand-cleaned prior to being sample excavated sufficient to determine their plan and form, and to recover dateable artefacts. The following sampling levels agreed by NCC were carried out:

- A minimum of 50% of the fills of discrete features were excavated. In some instances, 100% sampling was required to determine the nature of the feature/fill.
- In the case of substantial linear features, a minimum of 10% of the feature fills were excavated. Where possible within the confines of the excavation, linear features were excavated in both section and profile to provide a full stratigraphic record.

7.4.2 Feature fills were removed by contextual change (the smallest usefully definable unit of stratification) and/or in spits no greater than 100mm. Hand auguring was also used to establish the full depth of deeper deposits.

7.5 Recording and Sampling

7.5.1 The excavation area and all features/deposits of archaeological significance were recorded three dimensionally using a Leica CS15/GS15 RTK Differential GNSS.

7.5.2 In addition to the survey, sections of all contexts were drawn on drafting film in pencil at a scale of 1:10/1:20, and showed at least: context numbers, all colour and textural changes and levelling information given in the form of a datum line with O.D./arbitrary value.

7.5.3 Digital images of each context were taken together with general views illustrating the principal features of the excavation.

7.5.4 Written records were maintained as laid out in the TPA recording manual (TPA 2015).

7.5.5 Any structural remains were recorded using the methodology detailed above in addition to a photogrammetric model. The record detailed brick/stone dimensions and type, mortar and the extent of the surviving structure. Where appropriate, samples of architectural fragments were retained for specialist analysis.

7.5.6 The sampling of features with the potential to yield data of palaeoenvironmental value followed procedures set out within the English Heritage (now Historic England) guidelines in Environmental Archaeology (Campbell, Moffett & Straker 2011) under the supervision of TPA Environmental Manager Kristina Krawiec.

7.5.7 Environmental samples were taken of contexts with known archaeological character with preference given to well-preserved of regionally significant deposits. Sample points were suitably dispersed to determine variation in functional use of remains identified.

8 Results

8.1 Geology

8.1.1 A test pit was excavated during the investigation to target a known palaeochannel system relating to the former course of the River Leen that underlies the first occupational horizon (Plate 1, Fig. 02). The test pit revealed an intact sedimentary sequence related to this diverted water course, from which a number of samples were recovered for further analysis. The channel sequence contained deposits that have been provisionally dated to between the 13th and 15th centuries. A skull fragment was recovered from the sand and gravel (234) at a depth of 3m BGL, which underlies the main channel (see Section 22 and Fig. 07).

Plate 1: Excavation of the palaeochannel system in progress

8.1.2 The results of the geoarchaeological assessment (fully detailed within Section 15 of this report) are key to understanding the formative processes of occupation within this area. Although the relationship between the former channel and archaeological features remains inconclusive, and it is possible that to some extent they were concurrently in use, it can be inferred that occupation at the site post-dates the 13th century. The proximity of the river during this period would have had a direct effect on the habitability of the landscape and would have dictated the range of activities that could have been undertaken. As a result of this, a focus on the industrial economy was prevalent throughout the late medieval and post-medieval periods in the surrounding area, evidenced in the archaeological record across the site.

8.2 Archaeological Remains

8.2.1 A total of six phases of occupation were identified during the evaluation, the chronology of which has been primarily based on the order of stratigraphic relationships. Phases 1, 2 and 3 encompass a range of industrial activities during the late medieval and early post-medieval periods, with Phases 4, 5 and 6 relating to 19th to 21st century developments. Artefactual evidence has been used where possible to clarify the phasing sequence, though this was occasionally hampered by

general mixing of deposits during later levelling events and the very broad date ranges attributable to some ceramic wares.

8.2.2 Although the archaeological investigation was focused within three trench areas (Figs 01 and 03), it has been possible to establish chronological phasing for the site in its entirety. As such, the results outlined herein are organised by phase rather than by trench. Some of the ascribed phases have been further sub-divided into stratigraphic groups, enabling a more in-depth discussion of site development and specific human activities.

8.3 Phase 1 – 13th to 14th Century (Figs 02 and 04)

8.3.1 Phase 1 represents an initial period of activity during the 13th to 14th century, evidenced in the archaeological record by a number of deposits followed in close succession by the construction of several sandstone walls.

Layers

8.3.2 At the base of Trench 01 was (029), a softly compacted layer of humic black silty sand with dark grey laminations and occasional inclusions of rounded pebbles measuring less than 5mm in diameter (Fig. 06). This layer extended beyond the depth of the trench and had been substantially truncated by developments in the late 19th and 20th centuries, with no contemporary relationships established during the investigation. Layer (086), which also appeared to be alluvial in nature, was well-preserved with very little evidence of disturbance by later activity (Fig. 07). This layer comprised friable light greyish brown silty sand and was located across the south-west corner of Trench 02.

8.3.3 Towards the north-western corner of Trench 02 was a layer (186/187) of softly-compacted mid brown fine sand and degraded sandstone with mottles of dark yellow and moderate charcoal flecks. This layer measured greater than 0.38m in depth, appearing to be part of an occupational spread with moderate quantities of ceramic building material (CBM), pottery and animal bone recovered.

8.3.4 A layer (175) of softly-compacted greenish grey silt was present at the base of Trench 02 towards the southern extent of the excavated area (Fig. 09). This layer measured in excess in 0.2m. Sealing (175) was a thin layer of charcoal, (199), which itself was overlain by a layer (206) of softly-compacted mid greenish brown silty clay. Both of the latter layers measured a maximum of 0.1m in thickness.

8.3.5 Within a single intervention at the northern extent of Trench 02 was layer (155), composed of softly compacted mid brown grey sandy silt with moderately frequent inclusions of rounded pebbles (Fig. 09). The origin of this layer, which exceeded the depth of the excavation, remains unknown, though it was used as a levelling material for a single sandstone wall.

8.3.6 A widespread levelling event took place towards the end of this phase of ground built up in order to facilitate the construction of a number of sandstone walls. This comprised layers (193) and (154), which were both composed of firmly-compacted pinkish red clay measuring a maximum of 0.3m in depth (Fig. 09).

Structures

8.3.7 Within the south-east facing section of Trench 1 was an intriguing sandstone structure. Only a very small segment of [031] was exposed during the excavation, and could not be fully investigated as the depth of this trench exceeded the safe depth of 2m (Plate 2, Fig 06). Due to this, the function of this feature remains unknown. It is tempting to suggest that, because of its location, [031] could be part of a bridge pier for the no-longer extant Leen Bridge, though this would be based entirely on the indicative representation of the bridge in cartographic evidence.

Plate 2: Sandstone structure [031] within the south-east facing section of Trench 1, looking west. Scale = 2m

8.3.8 Truncating layer (086) was the construction cut [124] for a north to south orientated sandstone wall, the single foundation course of which, [125], was built of irregularly-sized roughly-faced blocks (Fig. 08). The bonding material comprised strong red clay and was identical to that of every other structure attributed to this phase of site usage. Measuring 0.34m in width and 0.25m in depth, wall [125] had an observed length of 5m and extended beyond the north- and south-west boundaries of Trench 02. Packing the base and sides of construction cut [124] around the foundation course was a fill (121) of friable light pinkish brown silty sand.

8.3.9 A small segment of a second wall course was visible towards the observed southern extent of [125], overlying but slightly offset from the foundation. [126] had only survived for a length of 1.14m and was built of randomly-coursed fair faced sandstone blocks.

8.3.10 Parallel to [125/126] and possibly forming a part of the same structure was a foundation course [219] of a no-longer extant wall, composed of irregularly-sized roughly-faced sandstone blocks (Plate 3). Built into the northern extent of this wall was a circular sandstone lined pit, [220] (Plate 4). The function of this pit remains unclear, as a lack of contemporary infilling episodes were identified during the investigation.

Plate 3: Foundation course [219] looking north-west. Scale = 1m

Plate 4: Pit [220] looking south. Scale = 0.4m

8.3.11 A second stone-lined pit, [217], was present to the south-east of wall [219] (Plate 5). This feature was lined with fair faced sandstone blocks and contained a single fill of dark brown silt and demolition rubble (216) that appeared to post-date the pit, appearing to originate from a widespread levelling event attributed to Phase 2 of site usage. The lack of contemporary infilling episodes has inhibited a conclusive interpretation of this feature, which may have been a well, storage pit or in fact used for industrial processing.

Plate 5: Pit [217] looking north-east. Scale = 1m

8.3.12 Located to the north of [219] was the construction cut [166] for sandstone wall [168], a possible continuation of this structure which was also built of roughly faced irregularly sized blocks. Wall [168] was poorly preserved due to substantial truncation by a later development (see Phase 2), with only a single foundation course surviving for a length of 1m, width of 0.5m and depth of 0.2m. Filling the construction cut was (167), composed of mottled red, yellow and black silty sand with frequent inclusions of sandstone fragments.

8.3.13 The most substantial structure attributed to Phase 1 of site usage was wall [127/148/191/128/211], built of roughly hewn sandstone blocks. Interestingly, this wall was orientated north-east to south-west, therefore forming an irregular angle with the contemporary structures within Trench 02 (Plate 6).

Plate 6: Photograph showing walls [125], [127] and [128]. [127] can be seen towards the top of the photograph, running north-east to south-west. See also Figure 03. Scale = 1m

Interpretation of Phase 1

8.3.14 During the late medieval period the landscape would have been dominated by boggy marshland, as the name 'Narrow Marsh' indicates. As such, the principle layering episodes comprising the first phase of site usage appear to have resulted from a combination of processes. They would presumably have been in part alluvially derived, as evidenced by (029) and (086). Both are sand dominated deposits highly indicative of over bank flooding. In other areas, the layering events appeared to be the product of a deliberate attempt to raise the ground level in order to create a more habitable occupation area.

8.3.15 Walls [125/126], [219], [168] and [127/148/191/127/211] were successive to the layering episodes and are all of reasonably poor construction, presumably designed to be yard boundaries of a temporary nature. Combined, they form a typical reflection of this type of initial riverine expansion, comprising a number of makeshift structures built as required and used for short, perhaps seasonal, periods of time.

8.4 Phase 2 – 14th to 15th Century (Figs 02 and 04)

8.4.1 The poor preservation of the Phase 1 structural remains appears to have stemmed from an inundation event from the nearby water course, heightened by the insubstantial construction. This was manifested by a widespread alluvial deposit of light brown silt, (063), which sealed the Phase 1 remains. Following this, a concerted attempt to create a usable horizon appears to have been undertaken, evidenced by a substantial layering event of alternating clay rich and dry, sandy materials. Built above the layers was a large complex of sandstone walling which superseded the structural remains associated with Phase 1.

Layers

8.4.2 A total of 21 distinct layers associated with the preliminary stage of Phase 2 were identified during the investigation, shown in broadly stratigraphic order in the table below.

Context	Description	Thickness (m)
139	Firmly compacted mottled dark brown and black silty clay	>0.1
138	Firmly compacted mottled dark brown, red and black coarse sand	0.24
137	Firmly compacted light brownish pink clay	0.02
117	Firmly compacted strong pink clay	0.3
084	Firmly compacted light pinkish orange clay	0.1
120	Firm but friable light greyish pink silty sand	0.1
064	Firmly compacted mid brown sand	0.2
205	Hard dark yellowish brown sand	0.32
207	Compact dark greenish grey silty clay	0.12
174	Firmly compacted strong reddish pink clay	0.1
065	Firmly compacted mottled strong and light orange brown silty clay	>0.1
141	Firmly compacted brownish pink and red clay	0.2
147	Firm/Friable dark grey sand with laminations of strong red clay	0.2
153	Loosely compacted mixed mid yellow and grey sand	0.2
152	Compacted light brownish grey sand and sandstone rubble	0.25
145	Compacted strong red clay	0.5
090	Friable mid yellowish orange sandy clay	>0.05
091	Firmly compacted light to mid grey clay	0.1
087	Loosely compacted light yellow sand	>0.15
200	Loosely compacted ashy sand and charcoal	0.1
215	Compacted strong red clay	0.2

Table 1: Phase 2 layers in stratigraphic order, with (139) being the earliest deposit, and (215) the latest.

Sandstone Walling

8.4.3 Extending across the entirety of Trench 02 on a north-east to south-west alignment was wall [136], which was impressive in its scale, appearance and construction (Plate 7, Fig. 10). This structure contrasted greatly with the more vernacular forms of building evidenced by the preceding Phase 1 walls. Built to regular courses, the composition of the wall was mainly of sandstone with occasional blocks of magnesian limestone and a bonding matrix of strong red clay. This structure had an observed length of 18m, extending beyond the south-west boundary of Trench 02. The north-eastern end of the wall had been truncated by 20th century buildings, though it is possible that [136] could have originally extended as far as London Road which marked the boundary of Narrow Marsh. Where it had survived, the full width of this wall measured approximately 0.8m. Only two courses in height had survived.

8.4.4 Wall [136] effectively divided the area into 'intramural' and 'extramural' space to the north-west and south-east respectively (Plate 8). As such, the south-eastern elevation would have comprised the external face of the building, fronting onto yard plots immediately beyond which would have been the river side. The north-western wall of this building would presumably have fronted onto the thoroughfare of Narrow Marsh, running parallel to [136]. However, this road frontage, if

surviving in the sub-surface record, would be located immediately outside of the excavation boundary and therefore was not encountered within the constraints of the investigation.

Plate 7: General view of the sandstone walling, showing [136] extending across the trench. No scale.

Plate 8: Wall [136] looking north-west. Scale = 1m

Intramural Space

8.4.5 Within the 'intramural area' to the north-west of [136] were three parallel walls used to delineate the space into at least four irregularly sized cells (Plate 9). This comprised walls [144], [235] and [236], all of which were built of fair faced sandstone blocks bonded with strong red clay and laid to regular courses on a north-west to south-east alignment (Fig. 09). All of the three walls had survived to a maximum of two courses with widths of between 0.7 and 0.8m.

Plate 9: Wall [144] looking south. Scale = 1m.

8.4.6 The smallest cell measured approximately 2.3m in width and encompassed the area between walls [158] and [235]. Located centrally within the space was a contemporary staircase [143] leading to a below-ground store (Plate 10, Fig. 09)). The staircase itself was built of stacked nib tiles measuring approximately 182 to 185mm in width and 20mm in thickness. Although [143] had four stairs surviving, only three were of tile construction. The fourth was formed by sandstone wall [148], an earlier feature attributed to Phase 1.

Plate 10: Staircase constructed of stacked nib tiles [143]. Looking north-west. Scale = 0.4m

8.4.7 At the base of the staircase was an interesting squared feature measuring 0.6m in length, width and depth, the sides of which were lined with heavily degraded sandstone, [169] to the north-east and [170] to the south-west (Plate 11). Infilling the feature was a humic deposit of black and dark grey silt, (165), with frequent inclusions of small freshwater shell fragments and rounded pebbles measuring <1mm in diameter (Fig 09).

Plate 11: Oblique view of staircase [143], showing square feature [169] at the bottom. Looking west. Scale = 1m

8.4.8 No other internal features, deposits or structures were encountered during the investigation. However, within the north-westernmost cell, a small drainage feature was identified, which had been tunnelled under wall [136]. Drain [197] had an inverted U-shaped profile and measured 0.3m in width and 0.5m in depth. This feature contained a single fill (198) of loosely-compacted mottled dark brown and black organic clay and silt with frequent charcoal inclusions. The purpose of this feature remains unclear, though it likely relates to some form of industrial processing within the structure that required water to be drained out of the cell.

Extramural Space

8.4.9 Towards the south-eastern extent of Trench 02 within the 'extramural area' were two parallel walls, [227] and [212], which presumably formed the boundaries of a small back yard plot. Both were orientated north-west to south-east on a perpendicular alignment to wall [136], which they abutted. As with the majority of the contemporaneous structures, walls [227] and [212] were built of fair faced sandstone blocks built to regular courses with a bonding matrix of strong red clay. The entrance into the yard was located at the north-western extent of wall [227].

8.4.10 Possibly the most significant archaeological feature identified during the excavation was a large industrial hearth [223], which was located in the small yard space between walls [227] and [212] (Plate 12). This feature was circular in shape with a kerb of 'ragstones', three of which had evidently been heat affected. Pitched ceramic tiles were positioned at the centre of the structure, all of which were burnt along the upper edge.

Plate 12: Hearth [223] looking south-east. Scale = 1m.

8.4.11 A large refuse pit, [047], was present to the south of wall [136] (Plate 13). This feature was broadly ovoid in shape with an asymmetrical profile, and contained a single fill of soft dark grey silty clay (048).

Plate 13: Pit [047] looking north. Scale = 1m

Interpretation of Phase 2

8.4.12 The complex of sandstone walling comprising [136], [158], [235] and [236] appeared to form a single building that would have fronted onto the thoroughfare of Narrow Marsh. Due to this, the structural remains could have possibly formed part of the dense tenements that are known to have lined the southern side of the road. However, the artefactual assemblage recovered from the associated contexts of the building were inconsistent with a primarily domestic function. Due to this, it is probable that the site fulfilled a more industrial focus with the sandstone walling forming a large workshop or mill.

8.4.13 Structure [223] is of particular interest to this interpretation in its similarity to a late 12th to early 13th century hearth investigated during an excavation at Swan Lane in London (Egan 1988), thought to be part of a fulling mill or dye works. The interpretation of the Phase 2 structural remains as part of milling or other industrial premises is not inconsistent with the character of the area in the late medieval and early post-medieval period. Fulling mills are thought to have been established on the banks of the Leen from the early medieval period and dye works were also present. The structural remains could conceivably have originated from either industry.

8.4.14 Furthermore, it seems highly plausible that if dyeing was being carried out nearby on the River Leen, this would be located at the eastern side of the medieval town so as not to contaminate the water that would have been used upstream as a drinking source (S. Lomax pers comm.). The reasoning behind this has been evidenced by a number of dye works of similar date, such as the workshop identified during excavations at Brook Street in Winchester. The London Road site would therefore have been ideally placed for this industry.

8.5 Phase 3 – 15th to 17th Century (Figs 02 and 04)

8.5.1 As with the previous two phases of site usage, the preliminary activity of Phase 3 of site usage was evidenced by a widespread layering event. However, unlike that of Phases 1 and 2, the layers comprising this episode of ground build-up were more likely to have been formed from a gradual accumulation of material derived from the intensity of the occupation during this period rather than a deliberate attempt to raise the ground level. Due to this more gradual transition between Phases 2 and 3, it is unsurprising that the principal structure of the site (comprising walls [136], [158], [235] and [236]) remained extant throughout this phase of occupation. However, the focus of the activities undertaken, though seemingly still industrial in nature, was isolated to a number of large pits created towards the later stages of Phase 3.

Accumulation of Occupational Activity

8.5.2 A total of 29 distinct layers were attributed to Phase 3 of site usage, all of which were likely derived from an accumulation of waste material (Plate 14). The layers are discussed in broadly stratigraphic order in Table 2 below.

Context	Description	Thickness (m)
184	Friable mid greyish brown sandy silt	>0.15
202	Friable light brownish yellow sand and degraded sandstone	0.2
203	Friable mid orange brown clay and sandy silt	0.34
204	Friable mid orange brown sandy silt	0.18
134	Compact mid yellowish brown sand	0.22
131	Compact dark orange red sandy/silty clay	0.26
132	Friable light brownish yellow silty sand	0.4
151	Compact strong red sandy/silty clay	0.2
196	Loose black ashy silt and charcoal	0.05
195	Friable black silt	0.08
194	Compact strong red clay	0.1
113	Friable dark grey silty sand and demolition rubble	0.15
115	Firmly compacted strong pink clay	0.2
116	Firmly compacted mid greyish brown silty sand	0.3
218	Loosely compacted black silty sand and demolition rubble	0.28
114	Friable black silt and charcoal	0.1
111	Firmly compacted mixed strong yellow and black sand	0.2
110	Firmly compacted dark grey clay	0.2
053	Compact red and dark brown silty clay	0.42
054	Friable black charcoal	0.14
112	Friable mixed light to mid grey and yellow silty sand and rubble	0.6
095	Compacted strong red clay with yellow sand laminations	0.25
094	Compacted strong red silty clay	0.2
096	Firmly compacted dark yellow sand	0.2
140	Compacted light reddish pink clay	0.12
093	Compacted mid reddish brown silty clay	0.3
083	Loosely compacted strong yellow sand	0.18
082	Firmly compacted mixed red and brown silty clay	0.2
081	Firmly compacted mid pinkish red silty clay	0.1

Table 2: Phase 3 Layers of occupational activity in stratigraphical order, with (184) being the earliest deposit, and (081) being the latest.

Plate 14: General view of the trench edge showing the layers of occupational activity. Looking north. Scale = 1m

Plate 15: Pit [159] looking north. Scale = 0.4m

Industrial Activity

8.5.3 Within the internal space of the extant structure were two large refuse pits, [197] and [079]. Obscuring drainage feature [197] was a sub-rectangular pit, [159] which exhibited vertical sides with a flat base (Plate 15, Fig. 11). Measuring 1.5m in length, 0.84m in width and a maximum of 0.8m in depth, this feature contained four distinct fills. The earliest in the sequence, (172), was composed of loosely compacted mixed dark to mid grey and blackish brown silty sand. Overlying this was a fill (171) of friable yellowish-brown sand and degraded sandstone. A fill (160) of loosely compacted black lignite and charcoal was present sealing (171). The uppermost fill in the sequence, (176), was composed of friable greyish white lime. The unusual curved profile of the deposits suggests that the pit was not filled by straightforward silting or backfilling, and deposits may have been washed or thrown in from the western edge. A large amount of animal bone was recovered from (172) and (160), and this together with the presence of lime in the top of the feature may indicate that the feature was a tanning pit. The shape of the feature is reminiscent of rectangular tanning pits found at the Green, Northampton (Shaw 1996).

8.5.4 Located to the north-east of pit [197], within the neighbouring 'cell', was a large oval pit [079] which exhibited steep sides and a concave base (Plate 16, Figs 09 and 11). Measuring 1.6m in length, 1m in width and 0.6m in depth pit [079] contained two fills. The earliest (088) comprised softly compacted light grey silty clay, which was overlain by a fill (089) of loosely compacted black clinker.

Plate 16: Pit [079] looking north. Scale = 1m

8.5.5 At the south-western extent of the site were two circular clay-lined pits, [034] and [036], both of which extended beyond the site boundary (Plate 17, Fig. 08). A large amount of animal bone was recovered from both features (see Section 20). Pit [034] measured 1.2m in diameter with a maximum depth of 0.78m and five distinct fills were identified. These consist of the clay lining of the feature, composed of grey and red silty clay (035) and pinkish orange clay (041), above which was a thin fill (042) of black organic material. The latter fill may have formed a wood lining of the pit which has since degraded. Sealing (042) were two fills associated with the disuse of the pit. The earliest of these fills was (053), composed of compacted red and dark brown silty clay. Sealing (053) was (054), which was composed of friable black charcoal.

8.5.6 Approximately 0.1m north of [034] was pit [036], which measured 1.26m in diameter and 0.5m in depth. This feature had a lining (043) of pinkish red clay, which had been sealed by a fill (058) of light grey silty clay. Overlying (058) was a firmly compacted fill (037) of dark greyish brown silty clay. The uppermost fill in the sequence was (055) which comprised weakly compacted black charcoal.

Plate 17: Pits [034] and [036] looking south. Scale = 1m.

Interpretation of Phase 3

8.5.7 Phase 3 represents the most intensive period of occupation within the immediate environs of the site, evidenced by a widespread accumulation of domestic waste, industrial residues and demolition rubble. The industrial activity itself appears to have been largely focused beyond the south-western extent of the excavation, hinted at by the two probable tawing pits that were partially exposed in the site section.

8.5.8 Leather working is known to have been the predominant industry of Narrow Marsh between at least the 14th to 17th centuries, using the banks of the River Leen as a focal point for the processing. Evidence of this industry has been identified at archaeological excavations along the northern bank of the former course of the River Leen, at Pemberton Street to the immediate west, Cliff Road and Broad Marsh car park, corroborating the documentary resources. Although it is probable that the London Road site is located beyond the tanning and tawing workshops themselves, the waste derived from these industries was present in the layering material.

8.6 Phase 4 – 18th to 19th Century (Figs 03 and 05)

8.6.1 Following a widespread clearance event in the late 18th to early 19th century, a series of brick walls were constructed (Plate 18). The walls appear to be consistent with the terraced housing constructed at the site between c.1831 and 1862, fronting onto Pemberton Street to the west. The remains attributed to Phase 4 are outlined in stratigraphic order in the table below.

Context	Description	Dimensions (m)
011	Concreted dark greyish brown building rubble, mortar and brick floor surface	1.1x>2x1.1
012	Concreted rubble column base	0.3x0.3x0.3
149	Construction cut for brick wall [133/180/181]	1.6(l)x0.8(w)
133/180/181	Red brick wall abutting [136]	1.26x0.24x0.5
178	Loose mixed brown and orange sand clay and CBM rubble fill of [149]	0.4x0.3x0.4
150	Compact dark black grey silty clay fill of construction cut [149]	0.8(l)x1.4(w)
129	Compact light orange red clay levelling layer for brick walls	3x0.2x0.2
130	Compact light greyish brown silty sand and charcoal levelling layer for brick walls	2.9x2.2x0.2
008	Red brick wall	0.24x0.12x0.06
010	Concreted brownish grey rubble	3.25x>2x1
006	Red brick wall	1.4x1.4x0.9
030	Loose brownish grey sandstone rubble levelling layer	1x2.5x0.2
158	Sandstone foundation for no longer extant wall	2.2x2x3
190	Firm reddish brown levelling for brick wall	1x1x0.1
185	Loose black clinker	0.6x0.4x0.2
007	Red brick wall	1.4x1.4x0.9
009	Tile floor surface	1.3x0.4x0.1

Table 3: Phase 4 remains, listed in stratigraphical order, with (011) being the earliest and (009) being the latest.

Plate 18: General view of Trench 1, showing some of the Phase 4 brick walls. Looking north-east. Scale = 2m.

8.7 Phase 5 – Early 20th Century (Figs 03 and 05)

8.7.1 Cartographic evidence indicates that the terraced housing comprising Phase 4 of site usage appears to have been demolished in the early 20th century to facilitate the construction of the Our Lady and St. Patrick's Church. During the excavation it was revealed that the foundations of this substantial structure had entirely truncated away any earlier features located with the eastern half of the site to a depth of approximately 3m below the existing ground level.

Context	Description	Dimensions (m)
013	Red brick wall aligned NE to SW	3.80(l)x0.35(w)
162	Backfill rubble within structure [158]/Made Ground	0.8x0.4x0.4
101	Levelling for concrete foundation	0.57(w)x0.23(d)
208	Concrete foundation of church, visible in Trench 02	>2.90(w)x0.37(d)
060	Sandy rubble layer from demolition of Phase 4 structures	>5.07(w)x0.31(d)
092	Sandy rubble layer from demolition of Phase 4 structures	>3.71x>1.48x0.11
100/103	Construction cut for red brick wall [018/019]	>2.80x>0.48x0.55
107	Fill of construction cut [100/103]	>2.80x>0.48x0.55
018/019	Red brick walls of Church	>2.80x>0.48x0.55
163	Cut of pit truncating earlier structural remains	0.8x0.6x0.2
164	Fill of [163]	0.8x0.6x0.2
026	Construction cut for red brick wall [015]	3.90(l)x0.22(w)
027	Fill of construction cut [026]	3.90(l)x0.22(w)
015	Red brick wall, part of Church	3.90(l)x0.22(w)
017	Blue brick surface	6.40(l)x2.91(w)
014	Red brick floor surface	3.08(l)x0.93(w)

Table 4: Phase 5 remains in stratigraphical order, with [013] being the earliest and [014] being the latest.

8.8 Phase 6 – Late 20th Century (Figs 03 and 05)

8.8.1 Our Lady and St. Patrick's Church was demolished in the 1970s, and the land was converted into a petrol station and car park. A number of made ground deposits were revealed, sealing the foundations of the former structure. These are discussed in stratigraphic order below.

Context	Description	Dimensions (m)
109	Dark grey demolition layer sealing earlier walls	>12.66(l)x0.32(d)
003	Demolition layer	3.16x2.07x0.90
002	Levelling/hardcore for existing ground surfacing material	0.09(d)
004	Cut of modern truncation	4.06x>0.90x0.73
005	Fill of [004]	4.06x>0.90x0.73
209	Friable mid orange brown silty clay made ground	1.58(w)x0.12(d)
210	Soft black silt made ground	0.92(w)x0.06(d)
183	Rubble/demolition layer	>3.06(w)x0.68(d)
020	Cut for modern floor surface	>16.58(l)x>8.44(w)
024	Fill of [020]	>16.58(l)x>8.44(w)
118	Modern floor surface	1.41(w)x0.46(d)
021	Fill of [020]	4.49(l)x4.13(w)
025	Demolition/made ground	>16.53(l)x>3.57(w)
022	Demolition/made ground	2.77(l)x1.50(w)
023	Demolition/made ground	2.76(l)x1.42(w)
001	Concrete ground surfacing material	>16.70x>9.50x0.07

Table 5: Phase 6 remains in stratigraphical order, with (109) being the earliest and (001) being the latest)

9 The Pottery *by Paul Blinkhorn*

9.1 The pottery assemblage comprised 398 sherds with a total weight of 13921g. The estimated vessel equivalent (EVE), by summation of surviving rimsherd circumference was 3.46. The pottery was all medieval or later in date. The medieval material was classified using the conventions advanced by Nailor and Young (2001), with the post-medieval and modern material recorded using the system of the Museum of London, as suggested by Nailor and Young (ibid.), as follows:

BLACK	Black-glazed Earthenware (1600-1900)	11 sherds, 506g.
CIST	Cistercian Ware (1470-1600)	24 sherds, 722g, EVE = 0.83.
DST	Developed Stamford Ware (mid 12th-mid/late 13th century)	1 sherd, 2g, EVE = 0.
LSWI	Lincoln Glazed Ware (12th-14th century)	2 sherds, 22g, EVE = 0..
METS	Metropolitan-type Slipware (1480-1900)	1 sherd, 3g.
MP	Midland Purple Ware (mid 14th – mid 17th century)	29 sherds, 1849g, EVE = 0.30.
MY	Midland Yellow Ware (mid 16th-mid 17th century)	10 sherds, 407g.
NCSW	Nottingham Coarse Sandy Ware (13th-15th century)	84 sherds, 3744g, EVE = 1.54.
NEMCS	Nottingham Early Medieval Coarse Sandy Ware (late 11th-mid 12th century)	3 sherds, 59g, EVE = 0.12.
NLBG	Light-bodied Gritty Ware (mid 14th-15th century)	30 sherds, 974g, EVE = 0.51.
NOTGL	Light-bodied Green-glazed Ware (early 13th-early/mid 14th century)	60 sherds, 1688g, EVE = 0.11.
NOTGR	Reduced Green-glazed Ware (late 13th – 15th century)	36 sherds, 861g, EVE = 0.
NOTS	Nottingham Stoneware (1700-1900)	1 sherd, 15g.
NSP	Nottingham Splashed Ware (early 12th – mid 13th century)	2 sherds, 76g, EVE = 0.
PMR	Post-medieval Redware (1550-1900)	14 sherds, 658g.
POTT	Potterhanworth Ware (1200-1500)	13 sherds, 317g.
STMO	Staffordshire-type Mottled Ware (1680-1800)	3 sherds, 21g.
STSL	Staffordshire Slipware (1650-1800)	1 sherd, 3g.
TPW	Transfer-Printed Whiteware (1830-1900)	69 sherds, 1861g.
TUDG	'Tudor Green' Ware (mid 15th- mid 16th century)	2 sherds, 26g, EVE = 0.05
WESE	Wesser Slipware (1580-1630)	1 sherd, 3g.

Table 6: Pottery classification list with quantification.

9.2 The pottery occurrence by number and weight of sherds per context by fabric type is shown in Tables 7 and 8. The range of fabric types is fairly typical of sites in the region and suggests that activity started in the earlier part of the medieval period, probably in the 13th century. Certainly, fairly common 11th – 12th century wares, particularly NSP and NEMCS are very scarce. It would then appear that the site was in more or less unbroken use, albeit at a low level, from that point onwards. A full quantification is provided in Appendix 1.

9.3 Chronology

9.3.1 Each stratified, context-specific pottery assemblage was given a ceramic phase ('CP') date based on the range of ware and vessel types present, and adjusted according to the stratigraphic matrix. The chronology, defining wares and the amount of pottery per phase is shown in Table 7 and the occurrence of the major fabrics per ceramic phase is shown in Table 8.

9.3.2 The data in Table 7 shows that there was no activity at the site before the 13th century, and that the main period of pottery deposition was from the mid 14th – mid 16th century, with only small amounts of material dating to before that time. The later groups are also much smaller, although the mean sherd weights are fairly large, indicating that they are the result of primary deposition.

Phase	Defining wares	Date	No Sherds	Wt. Sherds	Mean Sherd Wt
M1	NCSW, NOTGL	Early – late 13th C	12	167g	13.9g
M2	NOTGR	Late 13th – mid 14th C	25	262g	10.5g
M3	NLBG, MP	Mid 14th – late 15th C	77	2649g	34.4g
M4	CIST	Late 15th – mid 16th C	124	4493g	36.2g
PM1	MY, PMR	Mid - late 16th	14	1212g	86.6g
PM2	BLACK	Early – late 17th C	14	595g	42.5g
PM3	STMO	Late 17th - 18th C	21	992g	47.2g
MOD	TPW	19th – 20th C	37	885g	23.9g
U/S	-	Unstratified	74	2666g	36.0g
		Total	398	13921g	35.0g

Table 7: Ceramic Phase Chronology, Occurrence and Defining Wares

Fabric	M1	M2	M3	M4	PM1	PM2	PM3	MOD
NEMCS	6.6%	1.9%	0	1.0%	0	0	0	0
NCSW	3.6%	32.4%	49.8%	44.6%	0	0	0	0
NOTGL	88.6%	8.4%	6.0%	16.0%	0	78.5%	2.5%	0
NSP	0	14.5%	0	0.8%	0	0	0	0
NOTGR	-	41.6%	8.0%	12.0%	0	0	0	0
POTT	-	1.1%	11.9%	0	0	0	0	0
NLBG	-	-	20.9%	7.1%	0	4.4%	0	0
MP	-	-	3.4%	17.7%	63.0%	3.0%	15.5%	1.9%
CIST	-	-	-	0.2%	20.0%	0	35.2%	10.3%
MY	-	-	-	-	0	7.7%	29.6%	0
PMR	-	-	-	-	17.0%	0	0	17.6%
BLACK	-	-	-	-	-	5.9%	4.3%	2.8%
STMO	-	-	-	-	-	-	12.2%	0
TPW	-	-	-	-	-	-	-	39.7%
Total	167	262	2649	4493	1212	595	992	885

Table 8: Pottery occurrence per ceramic phase by fabric type, expressed as a percentage of the total weight per phase, major fabrics only. (Green cells = residual material)

9.3.3 The data in Appendix 1 shows that, of the two main periods of medieval pottery deposition, residuality is very high in CP M4, with c 75% of the pottery being redeposited earlier material. This is discussed in further detail below.

9.4 The Pottery

CP M1: Early – late 13th century. 12 sherds, 167g, EVE = 0.03

9.4.1 This CP assemblage is dominated by NOTGL (88.6% by weight), along with small quantities of NCSW and residual NEMCS. The only other pottery present is a single small sherd of DST. All the contexts which produced pottery of this date consisted of groups of less than five sherds so it is entirely possible that all of them are later than the bare pottery date suggests. A single rimsherd was noted, from a glazed jug in NOTGL, with all the other sherds appearing to be from similar vessels. The mean sherd weight (13.9g) is rather low, suggesting much of the material is the product of secondary deposition.

CP M2: Late 13th – mid 14th century. 25 sherds, 262g, EVE = 0.

9.4.2 Only five contexts produced pottery of this date, and all consisted of less than ten sherds other than context (155). No rimsherds were noted. The assemblage shows quite a different make-up

to that in the previous CP, with NOTGL now quite scarce (8.4%) and the bulk of the CP assemblage made up of NOTGR (41.6%) and NCSW (32.4%). There is also a single sherd of POTT and a residual fragment of NSP. Given the small size of this and the previous CP group, the patterns are probably the result of the vagaries of archaeological sampling and of no great significance. The mean sherd weight (10.5g) is also rather low, suggesting much of the material is the product of secondary deposition, and some of it appears likely to be residual.

CP M3: Mid 14th – late 15th century. 77 sherds, 2649g, EVE = 1.53.

9.4.3 This is one of the biggest CP groups from the site, with many large and well-preserved sherds. Nearly half the assemblage (49.8%) is NCSW, with new wares in the form of NLBG (20.9%) and POTT (11.9%) also being common, although the latter is entirely made up of sherds from a single vessel, from context 175. The rest of the assemblage is mostly made up of NORGR (8.0%), NOTGL (6.0%) and MP (3.4%). A single sherd (1g) of LSW1 was also noted.

9.4.4 A total of eight rimsherds were noted, of which five were from jars, two from bowls and one from a lamp (Plates 19-21). Four of the jar rims are in NCSW (EVE = 0.48), including one with an incised wavy line on the rim-top (Plate 20) and another with a double "bifid" form (Plate 21) typical of the later medieval period, and often found on cisterns or distilling-bases. The other jar rim was in NLBG (EVE = 0.45). The two bowl rims are in NOTGL (EVE = 0.08) and NCSW (EVE = 0.03). The latter is internally glazed, which is again fairly typical of the late medieval period. The lamp (Plate 19) occurred in two contexts, and survived to a full profile (EVE = 0.39). It had no obvious sooting marks so was probably not extensively used.

9.4.5 No rims from jugs were noted, and fragments of such vessels, although present, were relatively scarce, which is slightly unusual for "high" medieval assemblage of this date, suggesting that the site may have had a more specialist than usual function during this period.

Plate 19: Small Nottingham Coarse Sandy Ware lamp

Plate 20: Nottingham Coarse Sandy Ware jar rim

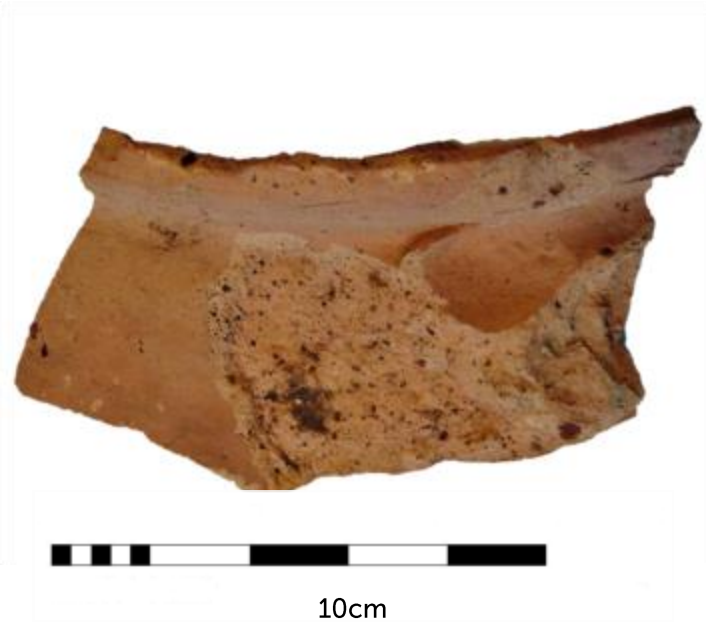

Plate 21: Nottingham Coarse Sandy Ware storage jar/cistern rim

CP M4: Late 15th – mid 16th century. 124 sherds, 4493g, EVE = 1.53.

9.4.6 Just five contexts dated to this CP. The bulk of the pottery (95 sherds, 3811g) comes from a single context, (041), a clay spread, with most of the material being residual but the generally large mean sherd weight suggesting that it is from an earlier domestic midden that was spread about during the consolidation and clearance of the site. Thus, just c 25% of the assemblage is probably contemporary material, with the rest residual. The commonest non-residual material is MP, making up 17.7% of the whole CP group, along with smaller quantities of NLBG (7.1%) and a few small sherds of CIST.

9.4.7 A single MP rimsherd was noted, from a jug (EVE = 0.11) with the only other contemporary rimsherds being a fragment of a rim of a CIST cup (EVE = 0.11) and another of a bowl in NLBG (EVE = 0.06). These are all fairly typical of the period.

9.4.8 The residual material mostly consisted of a mixture of jars, bowls and glazed jugs typical of the high medieval period (e.g. Plate 22).

10cm

Plate 22: Nottingham Coarse Sandy Ware bowl rim

CP PM1: Mid-late 16th century. 14 sherds, 1212g.

9.4.9 This CP assemblage, like all of those from the post-medieval period, consists of a small number of large sherds, with a few well-preserved vessels present. It all occurred in a single pit fill, (160), with the bulk of the assemblage made up of a partially complete cup/tyg in CIST (Plate 24), a near-complete jug in MP (Plate 23), and a number of sherds all from a single PMR bowl. The rest of the assemblage consists of a few sherds of CIST and MP.

10cm

Plate 23: Midland Purple jug

5cm

Plate 24: Cistercian cup/tyg

CP PM2: Early - late 17th century. 14 sherds, 595g.

9.4.10 All the pottery of this date came from a single context, layer (188). Most of the pottery (c 83%) is residual medieval material. The rest consists of single sherds of MP, MY, BLACK and METS.

CP PM3: Late 17th – 18th century. 21 sherds, 992g.

9.4.11 Five contexts produced pottery of this date, and there are a number of well-represented vessels present. Most notable of these is an imitation Rhenish Stoneware mug in Cistercian Ware (Plate 25). The vast majority of drinking vessels in this fabric are usually multi-handled cups or tygs (e.g. Plate 26). Imitations of stoneware mugs such as this one are rare in the region, but are more common in the west midlands, such as at Stafford Castle (Ratkai 2007, 75). Further north, a few sherds of such vessels are known from the manufacturing centre at Wrenthorpe in West Yorkshire (Moorhouse and Slowikowski 1992, fig. 58 no. 136), but otherwise there are few parallels in this area. Another very well-represented vessel is a miniature albarello (Plate 27). It is of a very similar form to examples from Wrenthorpe (e.g. Moorhouse and Slowikowski 1992, fig. 60 no. 185), where they occurred in both the "Black Ware and "Yellow Ware" fabric (ibid. 100).

5cm

Plate 25: Cistercian imitation Frechen mug

5cm

Plate 26: Cistercian mug with applied slip decoration

5cm

Plate 27: Midland Yellow miniature albarello

9.4.12 Perhaps the most remarkable find is the small fragment of the Weser Slipware dish (Plate 28). Such vessels, manufactured in north Germany, are reasonably well-known finds in major ports such as London, but rare inland. The rest of the assemblage largely consists of fragments of jars (e.g. Plate 29) and large bowls (Plate 30) in various fabrics, which is fairly typical of the period. It is worthy of note that specialist vessels associated with the storage, preparation, transportation and consumption of food were entirely absent from this CP assemblage and the post-medieval material generally, indicating that the site may have had a non-domestic use during this period, although this may simply be due to the relatively small assemblage sizes.

Plate 28: Weser Slipware dish

Plate 29: Midland Purple jar rim

10cm

Plate 30: Large Midland Yellow bowl

10 Ceramic Building Material *by Phil Mills*

10.1 Introduction

10.1.1 There were 1219 fragments of ceramic building material (CBM) weighing 203764g presented for study. This included 719 fragments, 153402g recovered as bulk finds from stratified contexts and 357 fragments, 23138g from samples.

10.1.2 The material was recorded to a fabric series already used for Nottingham CBM (Mills 2018) with forms identified where possible. The material was catalogued as sherd families based on fabric by context with metrics recorded including number of fragments (No), weight in grams (Wt), number of corners (Cnr), and complete dimensions were recorded in mm. Table 9 shows the breakdown of CBM by phase group. The majority of the material is from the late medieval period.

Phase	Date	No%	Wt%	CNR%
Unphased		1.9%	1.3%	1.7%
1	Medieval	4.3%	1.9%	2.6%
2	Late Medieval	61.5%	76.2%	75.4%
3	Early Med – early PM	30.0%	17.8%	16.2%
4	Victorian	1.9%	2.7%	3.9%
6	Late 20th C	0.3%	>0.1%	
N/AVG		*719*	*153402*	*228*

Table 9: CBM by context type

10.2 Taphonomy

10.2.1 Table 10 shows the breakdown by context type of the CBM assemblage. The largest amount comes from layers at 67% followed by walls at 24% and pits at 8%.

10.2.2 Table 11 shows the breakdown of CBM by context type and phase. Phases 1, 4, and 6 all have material coming only from layers. Phases 2 and 3 have a wider range of deposition, both having material from pits and walls, with the amount of material from pits rising from Phase 2 to 3. CBM deposition in pits is quite common in medieval urban contexts and may indicate increasing population density.

Context Type	No%	Wt%	CNR%	MSW
Layer	46.7%	44.6%	43.9%	203.54
Occupation layer	0.1%	0.0%	0.0%	62.00
Floor layer	19.7%	15.3%	16.2%	165.28
Demolition Layer	0.3%	0.0%	0.0%	4.50
Stone-Lined Pit	0.1%	0.1%	0.4%	157.00
Pit	8.8%	3.9%	3.5%	95.79
Wall	24.2%	36.0%	36.0%	317.69
N/AVG	*719*	*153402*	*228*	*213.3547*

Table 10: CBM by context type

Phase	Context Type	No%	Wt%	CNR%	MSW	*N no*	*N Wt*	*NCNR*
1	Layer	96.8%	97.9%	100.0%	94.33			
1	Occupation layer	3.2%	2.1%	0.0%	62.00	*31*	*2892*	*6*
2	Floor layer	32.1%	20.1%	21.5%	165.28			
2	Layer	27.1%	33.2%	32.0%	323.66			
2	Pit	4.3%	1.3%	1.2%	79.26			
2	Wall	36.4%	45.4%	45.3%	329.98	*442*	*116941*	*172*
3	Stone-Lined Pit	0.5%	0.6%	2.7%	157.00			
3	Layer	78.2%	81.2%	78.4%	131.18			
3	Pit	20.4%	16.6%	16.2%	102.93			
3	Wall	0.9%	1.7%	2.7%	226.00	*216*	*27308*	*37*
4	Layer	100.0%	100.0%	100.0%	299.00	*14*	*4186*	*9*
6	Demolition Layer	100.0%	100.0%		4.50	*2*	*9*	*0*

Table 11: CBM by context type and phase

10.3 Supply

10.3.1 The breakdown of the CBM assemblage by fabric is shown in Table 12.

Fabric Code	No%	Wt%	CNR%	MSW
TZ09	1.3%	0.5%	0.9%	78.11
TZ12	91.3%	90.1%	89.0%	209.93
TZ13	2.6%	2.3%	2.2%	187.84
TZ14	1.4%	0.5%	0.9%	69.90
TZ21	1.5%	2.1%	6.1%	287.64
TZ31	1.8%	4.5%	0.9%	536.15
N/AVG	*719*	*153402*	*228*	*213.35*

Table 12: CBM by fabric

Fabric TZ09

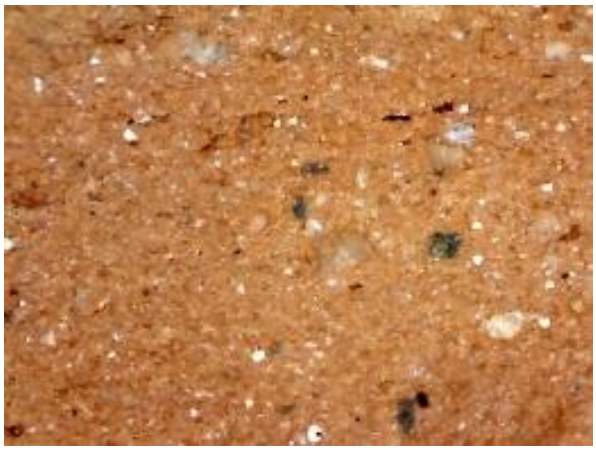

Plate 31: 6mm wide cross section of fresh break on TZ09

10.3.2 TZ09 is a red fabric which is hard with an irregular fracture and a sandy feel (Plate 31). It has inclusions of common quartz at 0.2mm with common lime at 0.2mm and moderate black iron stone at 0.4 mm.

10.3.3 Table 13 shows the breakdown of this fabric by phase. There is only a small quantity from Phase 2 and this increases in Phase 3 suggesting that this has a late medieval/early post medieval fabric which is consistent with other sites. This fabric has been noted at Nottingham (Broadmarsh Bus Station: Mills 2018a) although a similar clean fabric has been noted being used for modern CBM (Nottingham Castle Service Courtyard: Mills 2018b).

10.3.4 Table 14 shows the breakdown of forms in this fabric as being plain tile or unidentifiable fragments. There is also a sample from Phase 2 stairs (143) which had 2 nib tiles with widths ranging from 182-185 mm and thickness c. 20mm.

Phase	No%	Wt%	CNR%	*MSW*	*N no*	*N Wt*	*NCNR*
2	0.5%	0.1%	0.6%	*82.50*	*442*	*116941*	*172*
3	2.8%	1.7%	2.7%	*79.00*	*216*	*27308*	*37*

Table 13: TZ09 by Phase

Form	No%	Wt%	Cnr%
B/T	22.2%	1.1%	0.0%
Tile	77.8%	98.9%	100.0%
N	*9*	*703*	*2*

Table 14: Forms in TZ09

Fabric TZ12

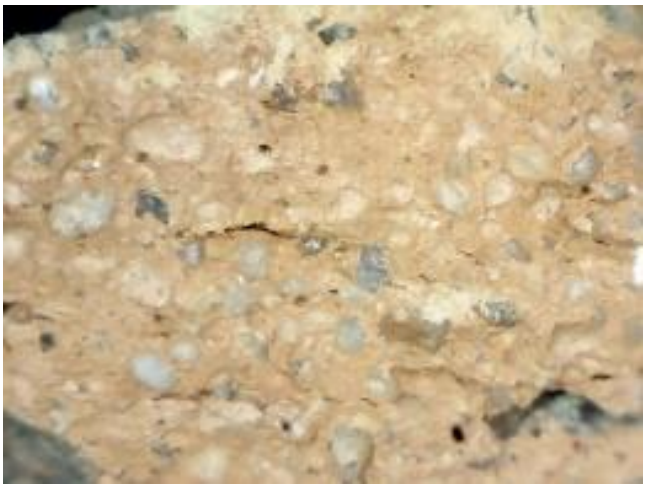

Plate 32: 2.6mm wide cross section of fresh break on TZ12

10.3.5 This is a pale reddish yellow fabric with a harsh feel and very irregular fracture (Plate 32). It has inclusions of abundant poorly-sorted rounded quartz at c. 0.3-0.6mm. This is the most common fabric noted on the site and is present in Phases 1, 2, 3, 4, and 6 (Table 15). This fabric has not been noted elsewhere in Nottingham.

10.3.6 Table 16 shows the forms noted in this fabric and Table 17 shows form occurrence by phase.

10.3.7 Brick occurs in phases 2 and 4. The brick from Phase 2 appears to have been slop moulded with wiped surfaces and rounded regular arrises with the only lengths noted being one 230mm long and one 248 mm long with widths ranging from 108 – 122 mm and thickness between 40 and 60 mm. This is consistent with the range for bricks expected between the 16th and 18th centuries.

10.3.8 The bricks from Phase 4 had sharp arrises with wiped upper surfaces. One example had slightly sunken upper margins. This is consistent with the range of bricks used in the 18th - 19th century.

10.3.9 There was a black mat glazed flange tile from Phase 2 pit fill (218). These usually date from the late 11th to early 14th century and are associated with high status ecclesiastical structures, and it seems likely that this tile has been reused here.

10.3.10 Floor tile included a fragment with worn black glaze measuring 108 x 111 x 30mm from Phase 2 layer (189), and a possible fragment from Phase 3 layer (041).

10.3.11 Nib tiles were the most common type of roof tile that could be identified, as is usual for Nottingham. Widths ranged from 155 – 190 mm and thickness 15 -20mm from Phase 2, between 170 and 180mm and thickness 20mm in Phase 3, and a single nib tile with a width of 184mm and thickness was recorded for Phase 4. This suggests an increasing standardisation in tile widths from the later medieval to early post-medieval periods.

10.3.12 Peg tile is noted from Phase 4 layer (130). These are rare in Nottingham and where they occur they are usually from medieval contexts (e.g. Mills 2018b and Mills 2018c). Therefore, this tile may be residual here.

10.3.13 Plain ridge tile was present in Phase 3.

10.3.14 Tile fragments (i.e. without the upper end to denote whether the tile was nib or peg) were the most common type, most likely deriving from nib tiles. There was one example with brown glaze from Phase 2 layer (049) a practice which is most common for 15th – 16th century tile.

Phase	No%	Wt%	CNR%	*MSW*	*N no*	*N Wt*	*NCNR*
1	83.9%	78.9%	66.7%	*87.81*	*31*	*2892*	*6*
2	91.2%	89.1%	89.0%	*258.54*	*442*	*116941*	*172*
3	92.6%	94.2%	89.2%	*128.67*	*216*	*27308*	*37*
4	100.0%	100.0%	100.0%	*299.00*	*14*	*4186*	*9*
6	100.0%	100.0%		*4.50*	*2*	*9*	*0*

Table 15: TZ12 by Phase

Form	No%	Wt%	Cnr%
B/T	0.3%	0.0%	0.0%
Brick	6.1%	15.8%	26.7%
FLANGED TILE	0.2%	5.2%	0.0%
Floor Tile	0.3%	0.5%	2.0%
Nib Tile	10.8%	18.4%	22.8%
Peg Tile	0.2%	0.3%	0.0%
Ridge Tile	0.3%	0.4%	1.0%
Tile	81.9%	59.5%	47.5%
N	656	138103	202

Table 16: TZ12 Forms

Phase	Function	No%	WT%	CNR%	N no	N WT	ncnr
1	Nib Tile	7.69%	14.37%	25.00%	26	2283	4
1	Tile	92.31%	85.63%	75.00%	26	2283	4
2	Brick	9.68%	20.55%	33.99%	403	104192	153
2	FLANGED TILE	0.25%	6.88%	0.00%	403	104192	153
2	Floor Tile	0.25%	0.61%	2.61%	403	104192	153
2	Nib Tile	11.66%	15.82%	21.57%	403	104192	153
2	Tile	78.16%	56.14%	41.83%	403	104192	153
3	Brick	0.50%	1.77%	6.06%	200	25733	33
3	Floor Tile	0.50%	0.07%	0.00%	200	25733	33
3	Nib Tile	10.00%	29.07%	30.30%	200	25733	33
3	Ridge Tile	1.00%	2.25%	6.06%	200	25733	33
3	Tile	88.00%	66.84%	57.58%	200	25733	33
4	Nib Tile	14.29%	25.08%	22.22%	14	4186	9
4	Peg Tile	7.14%	8.82%	0.00%	14	4186	9
4	Tile	78.57%	66.10%	77.78%	14	4186	9
6	B/T	100.00%	100.00%	100.00%	2	9	0

Table 17: TZ12 Forms by Phase

Fabric TZ13

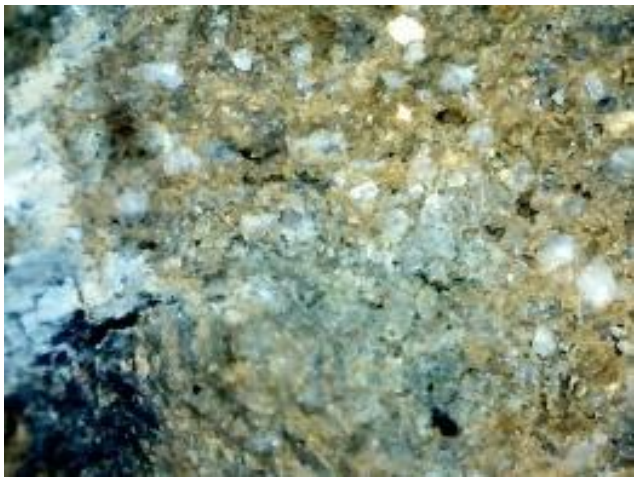

Plate 33: 6mm wide cross section of fresh break on TZ13

10.3.15 This is a pale brown fabric with a harsh feel and irregular fracture (Plate 33). It has inclusions of abundant quartz at 0.6mm and sparse lime at 0.3mm with occasional black iron stone at 0.3mm.

10.3.16 Table 18 shows the breakdown by phase for fabric TZ13, showing a small presence in Phases 1 and 2 and a likely residual presence in Phase 3.

10.3.17 Table 19 shows the forms in this fabric with Table 20 showing their occurrence by phase.

10.3.18 Floor tile comprised a fragment of counter relief decorated tile from Phase 2 layer (049) with traces of brown glaze (Plate 34). This can be identified as part of the Nottingham tile group (c. 1325-1365) with a pattern closely related to Stopford 2005 fig 19.2 no 97.

10.3.19 Only nib tiles were identified in the roof tile with plain tile likely to be derived from nib tiles.

Plate 34: Fragment of counter relief tile from (049)

Phase	No%	Wt%	CNR%	*MSW*	*N no*	*N Wt*	*NCNR*
1	3.2%	2.5%	16.7%	*73.00*	*31*	*2892*	*6*
2	3.8%	2.9%	2.3%	*196.53*	*442*	*116941*	*172*
3	0.5%	0.6%	0.0%	*155.00*	*216*	*27308*	*37*

Table 18: TZ13 by Phase

Form	No%	Wt%	Cnr%
Floor Tile	5.3%	6.9%	20.0%
Nib Tile	10.5%	20.5%	20.0%
Tile	84.2%	72.6%	60.0%
N	*19*	*3569*	*5*

Table 19: TZ13 Forms

Phase	Function	No%	WT%	CNR%	N no	N WT	ncnr
1	Tile	100.00%	100.00%	100.00%	1	73	1
2	Floor Tile	5.88%	7.39%	25.00%	17	3341	4
2	Nib Tile	5.88%	17.27%	25.00%	17	3341	4
2	Tile	88.24%	75.34%	50.00%	17	3341	4
3	Nib Tile	100.00%	100.00%		1	155	0

Table 20: TZ13 Forms by Phase

Fabric TZ14

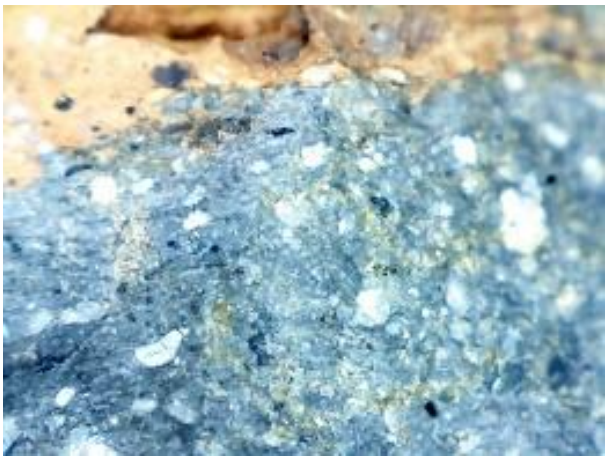

Plate 35: 6mm Cross section of a fresh break on TZ14

10.3.20 This is a sandy fabric with red surfaces and a grey core (Plate 35).

10.3.21 Table 21 shows the breakdown of this fabric by phase. It is most common in Phase 1 with residual presence in Phases 2 and 3.

10.3.22 Table 22 shows the forms in this fabric and Table 23 shows their occurrence by phase.

10.3.23 Ridge tiles were present in Phases 1 and 3. The examples from Phase 1 were glazed and crested with an example of a tapering crest from layer (175).

10.3.24 Tile was the most common type with the examples form Phases 1 and 3 all having traces of grown glaze.

Phase	No%	Wt%	CNR%	*MSW*	*N no*	*N Wt*	*NCNR*
1	9.7%	16.4%	16.7%	*158.00*	*31*	*2892*	*6*
2	0.9%	0.1%	0.6%	*27.75*	*442*	*116941*	*172*
3	1.4%	0.4%	0.0%	*38.00*	*216*	*27308*	*37*

Table 21: TZ14 by Phase

Form	No%	Wt%	Cnr%
Ridge Tile	20.0%	33.0%	0.0%
Tile	80.0%	67.0%	100.0%
N	*10*	*699*	*2*

Table 22: TZ14 Forms

Phase	Form	No%	WT%	CNR%	N no	N WT	ncnr
1	Ridge Tile	66.67%	48.73%	0.00%	3	474	1
1	Tile	33.33%	51.27%	100.00%	3	474	1
2	Tile	100.00%	100.00%	100.00%	4	111	1
3	Tile	100.00%	100.00%	100.00%	3	114	0

Table 23: TZ14 Forms by Phase

Fabric TZ21

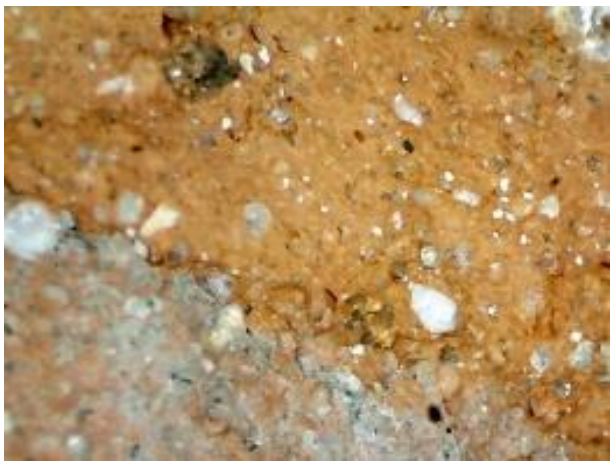

Plate 36: 6mm Cross section of a fresh break on TZ21

10.3.25 This is a pale reddish yellow fabric which is hard with a fine sandy feel and irregular fracture (Plate 36). It has inclusions of moderate lime up to 0.8mm and moderate quartz at 0.3mm and occasion black iron stone at 0.4mm,

10.3.26 Table 24 shows the occurrence of this fabric by phase suggesting a late medieval to early post-medieval occurrence, although evidence elsewhere in Nottingham suggests production continued into the 17th century (Mills 2018b). Table 25 shows the forms present in this fabric with Table 26 showing their occurrence by phase.

10.3.27 Brick fragments with 120mm width and 28-35mm thickness were noted in Phase 2 pit fill (218). There was a tapering Voussoir or tapering brick also from (218) with width 120mm

and thickness tapering from 35 to 21mm. There was an unusually thick flat fragment 22mm thick which was probably a thick roof tile. Only tile fragments were identified in this fabric, with one example from Phase 3 layer (041) having spots of glaze on it.

Phase	No%	Wt%	CNR%	*MSW*	*N no*	*N Wt*	*NCNR*
2	1.4%	2.1%	6.4%	*407.33*	*442*	*116941*	*172*
3	2.3%	2.6%	8.1%	*144.00*	*216*	*27308*	*37*

Table 24: TZ21 by Phase

Form	No%	Wt%	Cnr%
Brick	27.3%	53.7%	57.1%
Flat	9.1%	1.6%	0.0%
Tile	54.5%	23.7%	28.6%
Voussoir	9.1%	21.0%	14.3%
N	*11*	*3164*	*14*

Table 25: TZ21 Forms

Phase	Form	No%	WT%	CNR%	N no	N WT	ncnr
2	Brick	50.00%	69.52%	72.73%	6	2444	11
2	Flat	16.67%	2.13%	0.00%	6	2444	11
2	Tile	16.67%	1.23%	9.09%	6	2444	11
2	Voussoir	16.67%	27.13%	18.18%	6	2444	11
3	Tile	100.00%	100.00%	100.00%	5	720	3

Table 26: TZ21 Forms by Phase

Fabric TZ22

Plate 37: 6mm Cross section of a fresh break on TZ22

10.3.28 There was one brick from an unnumbered bag which was 120mm wide and 60 mm thick (Plate 37).

Fabric TZ31

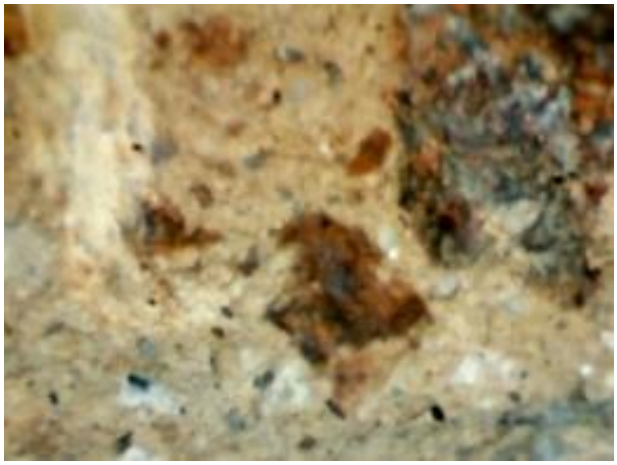

Plate 38: 6mm Cross section of a fresh break on TZ31

10.3.29 This is a pale yellowish red fabric which is hard with a harsh feel and an irregular fracture (Plate 38). It has inclusions of common ill sored sub angular red iron stone at up to 2mm and moderate black iron stone at 0.3mm and moderate quartz at 0.2mm.

10.3.30 Table 27 shows the breakdown of this fabric by phase, suggesting a medieval fabric occurring residually in later phases which is consistent with other sites in Nottingham (Mills 2018a)

10.3.31 Table 28 shows the breakdown of the fabric by form type. Most of the material was plain tile with one example of a peg tile with a squared peg hole from Phase 3 layer (041).

Phase	No%	Wt%	CNR%	*MSW*	*N no*	*N Wt*	*NCNR*
1	3.2%	2.1%	0.0%	*62.00*	*31*	*2892*	*6*
2	2.3%	5.7%	1.2%	*668.80*	*442*	*116941*	*172*
3	0.5%	0.4%	0.0%	*112.00*	*216*	*27308*	*37*

Table 27: TZ31 by Phase

Form	No%	Wt%	Cnr%
Peg Tile	7.7%	1.6%	0.0%
Tile	92.3%	98.4%	100.0%
N	*13*	*6970*	*2*

Table 28: TZ11 Forms

Fabric TZ64

Plate 39: 6mm Cross section of a fresh break on TZ64

10.3.32 This is a pale yellow very hard fabric with a harsh feel and irregular fracture (Plate 39). It has inclusions of some rounded quartz at 0.8mm occasional pale clay pellet at 1.2mm and occasional black iron stone are 0.7mm.

10.3.33 There was one fragment of a drain in this fabric with brown salt glaze from an unnumbered bag. This is likely to be of 19th century or later date.

10.4 Function

10.4.1 The overall range of forms from the stratified assemblage is shown in Table 29 with tile being the most common type noted. The breakdown by phase is shown in Table 30.

Forms	No%	Wt%	Cnr%
B/T	0.6%	0.0%	0.0%
Brick	6.0%	15.4%	27.2%
FLANGED TILE	0.1%	4.7%	0.0%
Flat	0.1%	0.0%	0.0%
Floor Tile	0.4%	0.6%	2.2%
Nib Tile	10.2%	17.0%	20.6%
Peg Tile	0.3%	0.3%	0.0%
Ridge Tile	0.6%	0.5%	0.9%
Tile	81.6%	61.1%	48.2%
Voussoir	0.1%	0.4%	0.9%
N	*719*	*153402*	*228*

Table 29: Forms in the Stratified Assemblage

Phase	Function	no%	Wt%	CNR%	*N no*	*N Wt*	*N CNR*
1	Nib Tile	6.45%	11.34%	16.67%			
1	Ridge Tile	6.45%	7.99%	0.00%			
1	Tile	87.10%	80.67%	83.33%	*31*	*2892*	*6*
2	B/T	0.23%	0.00%	0.00%			
2	Brick	9.50%	19.76%	34.88%			
2	FLANGED TILE	0.23%	6.13%	0.00%			
2	Flat	0.23%	0.04%	0.00%			
2	Floor Tile	0.45%	0.76%	2.91%			
2	Nib Tile	10.86%	14.59%	19.77%			
2	Tile	78.28%	58.14%	41.28%			
2	Voussoir	0.23%	0.57%	1.16%	*442*	*116941*	*172*
3	B/T	0.46%	0.01%	0.00%			
3	Brick	0.46%	1.67%	5.41%			
3	Floor Tile	0.46%	0.07%	0.00%			
3	Nib Tile	9.72%	27.96%	27.03%			
3	Peg Tile	0.46%	0.41%	0.00%			
3	Ridge Tile	0.93%	2.12%	5.41%			
3	Tile	87.50%	67.77%	62.16%	*216*	*27308*	*37*
4	Nib Tile	14.29%	25.08%	22.22%			
4	Peg Tile	7.14%	8.82%	0.00%			
4	Tile	78.57%	66.10%	77.78%	*14*	*4186*	*9*
6	B/T	100.00%	100.00%		*2*	*9*	*0*

Table 30: Forms by Phase

10.5 Other aspects

Sooting

10.5.1 24% by fragment count of the material showed sooting or burning. Table 31 shows the breakdown of sooting on forms with tile having the highest levels of sooting, with the high level suggested for floor tile exaggerated by the small number of those in the group. Table 32 shows the breakdown of sooting by phase with a high number of the material from phase 2 so probably connected with the hearth from this phase.

10.5.2 Tables 31, 32 and 33 show the breakdown of sooting by form and phase.

Function	No%	*N*
Brick	2.30%	*43*
Floor Tile	33.30%	*3*
Nib Tile	28.80%	*73*
Tile	25.10%	*587*

Table 31: Sooting by Form

Phase	No%	*N no*
1	12.9%	*31*
2	29.8%	*442*
3	13.4%	*216*
4	14.3%	*14*

Table 32: Sooting by Phase

Phase	Function	No%	*N*
1	Nib Tile	50.0%	*2*
1	Tile	11.1%	*27*
2	Brick	2.4%	*42*
2	Nib Tile	39.6%	*48*
2	Tile	32.4%	*346*
3	Floor Tile	100.0%	*1*
3	Nib Tile	4.8%	*21*
3	Tile	14.3%	*189*
4	Tile	18.2%	*11*

Table 33: Sooting by Form and by Phase

Mortaring

10.5.3 Some 14.2% of the stratified assemblage had traces of mortar. The breakdown of mortaring by phase is shown in Table 34 with the highest levels of mortaring on Phase 2 the breakdown of mortaring of forms is shown in Table 35 with bricks having the highest levels, the breakdown of mortaring by form and phase is shown in Table 36 which shows a very high level of mortaring on tile and nib tile on phase 2.

Phase	No%	*N*
1	16.1%	*31*
2	29.1%	*442*
3	5.6%	*216*

Table 34: Mortaring by Phase

Form	No%	*N*
Brick	55.8%	*43*
Floor Tile	33.3%	*3*
Nib Tile	12.3%	*73*
Tile	19.3%	*587*

Table 35: Mortaring by Form

Phase	Function	No%	*N*
2	Brick	57.1%	*42*
2	Floor Tile	50.0%	*2*
2	Nib Tile	18.8%	*48*
1	Tile	18.5%	*27*
2	Tile	27.4%	*346*
3	Tile	6.3%	*189*

Table 36: Mortaring by Form and by Phase

Marks

10.5.4 There were 2 possible animal prints both on tiles in TZ12, one from the tile sample (Plate 41) and one from Phase 2 pit (048) (Plate 40). There were also 5 examples of human fingertip marks, all in TZ12; 4 from phase 2 and 1 from the tile sample.

Plate 40: (048) TZ12 tile with dog print

Plate 41: (tile sample) TZ12 animal print

10.5.5 There was a possible graffiti (L) from a tile fragment in TZ12 from (186) (Plate 42).

Plate 42: (1896) TZ12 tile, graffiti

10.5.6 There was an incised cross and line from a tile fragment in TZ12 from (218) (Plate 43).

Plate 43: (218) TZ12 tile with incised lines

10.6 Discussion

10.6.1 This is a relatively large group of CBM from Nottingham. The assemblage has provided further evidence for the dating of a number of medieval and later fabrics in use in Nottingham. In particular it is now possible to suggest that TZ13 and TZ14 are medieval fabric, with TZ13 being associated with the Nottingham tile group (Stopford 2005) having a mid-14th century date range. TZ09 appears in the later medieval and early post medieval, although elsewhere in the city later CBM in this fragment have also been noted. TZ12 is a sandy fabric present in most contexts and would appear to have medieval and post medieval forms. TZ21 appears to be a later medieval fabric, although it is important elsewhere in the city into the 17th century. TZ22 is a post medieval or later fabric. TZ64 is a late post medieval to modern fabric.

10.6.2 There is a small amount of residual material probably derived from high status ecclesiastical structure(s) including a flange tile and a counter relief floor tile. The glazed and crested ridge tiles may also be from a similar structure.

10.6.3 The deposition patterns of the CBM presented here adds to our understanding of deposition practice in Nottingham from the medieval period. In the urban core CBM is mainly recovered from layers, and the level of CBM in pits may be a useful indicator for increasing intensification of activities in an area, either industrial or occupation.

10.6.4 There is a relatively high number of animal prints and finger marks from tile in TZ12 from Phase 2, which is consistent with the emerging pattern that animal prints are more common on earlier tile groups, although it is currently unclear if the same is true of human finger marks. There is a relatively small proportion of tiles with glaze fragment suggesting that this practice only becomes common after the date when most of the tile was deposited.

11 Mortar *by Phil Mills*

11.1 Introduction

11.1.1 There were 51 fragments of mortar weighing 21630g presented for study. These were examined by context and the mortar described by a type series.

11.2 Catalogue

11.2.1 Table 37 shows the catalogue of mortar from LRN2.

Sample no	Area	Context	Context key	Phase	Fabric Code	Function	NoSh	Wt	Comments
WS01	0	NN			M11	B/T	1	2	
s	0	tile sample			M11	Bonding	1	116	
s	0	tile sample			M11	Bonding	4	8628	
s	0	tile sample			M11	Bonding	4	8628	
	0	us			M11	B/T	1	11	
	0	us			M11	Bonding	2	188	
	0	us			M11	Bonding	2	119	
	0	us			M12	B/T	1	18	
	2	035	Pit	3	M11	B/T	1	316	
	2	035	Pit	3	M11	B/T	5	1128	
	2	041	Layer	3	M11	wall	5	120	
	2	188	Layer	2	M11	Bonding	1	40	
	2	189	Layer	2	M11	wall	2	27	
	2	189	Layer	2	M11	wall	1	533	TOOLING
	2	203	Layer	3	M11	Bonding	1	69	
	2	218	Wall	2	M11	Bonding	15	582	
	2	218	Wall	2	M11	Bonding	4	1105	

Table 37: Mortar by Context and Phase

11.3 M11

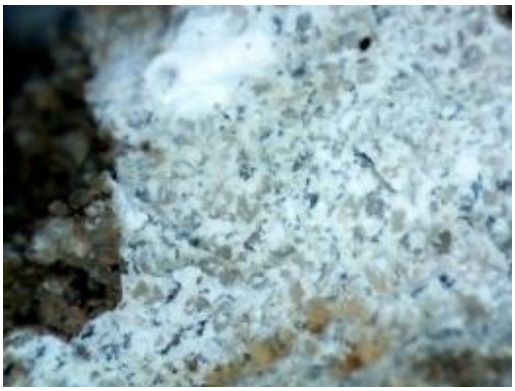

Plate 44: 6mm wide cross section of M11

11.3.1 This is a white fine-grained mortar with abundant quartz and occasional charcoal flecks (Plate 44).

11.4 M12

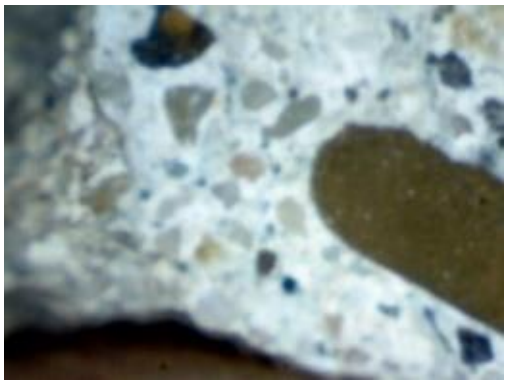

Plate 45: 6mm wide cross section of M12

11.4.1 This is a white coarse-grained mortar with common angular quartz and coarse charcoal inclusions (Plate 45).

Plate 46: (189) Mortar with trowel marks

11.4.2 The majority of material was bonding mortar to connect brick. There were a few examples of possible wall mortar/plaster including a large fragment with trowel marks (Plate 46).

11.5 Discussion

11.5.1 This is a small group of mortar from Nottingham. The majority is bonding mortar but with a small amount of wall plaster including a fragment with tooling marks. The phased material dates from the later medieval to early post medieval period.

12 Worked Stone *by Phil Mills*

12.1 Introduction

12.1.1 There were 32 fragments of stone weighing a total of 7665g presented for study. These were studied by context with a basic identification made.

12.2 Catalogue

Sample no	Area	Context	SF No	Context key	Phase	Fabric Code	Function	NoSh	Wt	Thickness	Mortaring	Comments
8	0	NN				Sandstone	Flat	1	262	30		0.3M
	0	us				Sandstone	Tile	2	117	20		
	2	035		Pit	3	Sandstone	Flat	1	473	0		
	2	035		Pit	3	Limestone	B/T	1	73	0		
	2	040		Layer	0	SLATE	B/T	1	154	15	1	pale gray slate
	2	041		Layer	3	Sandstone	Flat	3	404	25		
	2	041		Layer	3	Sandstone	Tile	1	207	22		
	2	048		Pit	2	Sandstone	roundel	1	592	46		diam 200mm
	2	048		Pit	2	Sandstone	slab	1	363	32		
	2	065		Layer	2	Sandstone	Flat	1	155	21		
	2	065		Layer	2	Sandstone	Tile	1	80	20		
	2	084		Layer	2	ST00	COBBLE	1	2011	0		WAER ROLLED
	2	084		Layer	2	Sandstone	COBBLE	1	365	40		
	2	174		Layer	1	Limestone	Tile	1	117	12		
	2	175	AJM	Layer	1	SLATE	Tile	10	207	10	1	
	2	189		Layer	2	Sandstone	B/T	1	236	0		
	2	189		Layer	2	Sandstone	Flat	1	175	23		
	2	203		Layer	3	Sandstone	flat	1	290	25		
	2	203		Layer	3	Sandstone	SLAB	1	1035	55		
	2	218		Wall	2	Sandstone	Flat	1	349	35		

Table 38: Complete catalogue of stone building material

12.2.1 Table 38 shows the catalogue of stone recorded. Stone tiles were worked flat fragments with a thickness of 10 – 20mmm. Flat fragments were defined as between 25 and 30mm slabs were defined as having greater than 30mm thickness There was s sandstone roundel with a diameter of 200mm and thickness of 15mm

12.3 Discussion

12.3.1 This is a small group of stone which derive from medieval to early post medieval phases. They include some roofing tile and other stone that may have been from a building as well as two cobbles and a worked rounded piece of sandstone.

13 Rotary Grindstone *by David Heslop*

13.1 Introduction

13.1.1 A single fragment of a rotary grindstone was recovered from an unstratified context. The fragment consists of a half fragment of a post-Medieval grindstone, broken through the square axle-socket. The side faces have chiselled tooling. The circumference working face has been heavily used, with wear producing a marked-slope to one side, and a slight concavity in the centre of the face.

13.2 Lithology

13.2.1 The lithology of the grindstone is light-grey medium-coarse sandstone, with sparse small, dark-red ferruginous inclusions. No larger inclusions or fossil pits are present. The stone is possibly a Coal Measures sandstone or similar.

13.3 Discussion

13.3.1 This type of grindstone is common on post-medieval sites, particularly those associated with industry, craft-working or agriculture, including farms. Many thousands were exported from the Tyne and Wear valleys in the late eighteenth and nineteenth centuries.

14 Clay Tobacco Pipe *by Alison Wilson*

14.1 Introduction

14.1.1 8 complete and incomplete clay tobacco pipe bowls and 43 stem fragments were recovered during an archaeological evaluation at London Road, Nottingham. These date to between the 17th and 19th centuries and were recovered from 5 contexts.

14.1.2 The pipe bowls were studied and recorded following guidelines set within Higgins and Davey 1994. Dating of bowl forms followed examples within Oswald 1975, as well as in relation to significant local published assemblages (Alvey 1972, Oswald 1980, Hammond 2012, Elliott 2015).

14.1.3 The bulk of the clay pipe fragments found during the excavation were lengths of stem. In the absence of any identifying features such as makers stamps or decoration, the stems have been dated using bore hole diameter (early clay pipes have a bore diameter of 3mm, decreasing over time until stems by the middle of the 18th century had a bore of less than 2mm). Pipe fragments with identifying features have been discussed according to period below.

14.2 The clay pipe assemblage

14.2.1 The following discussion is organised by context as given in the context register.

14.2.2 ***Trench 02, Context [047]***: a large refuse pit, contained a single partial stem with a borehole diameter of 2mm, placing the date of manufacture between the 18th and 19th centuries.

14.2.3 ***Trench 02, Layer (130):*** Charcoal layer (130) contained 2 partial stems with a borehole diameter of 3mm giving a date range of 17th-18th century

14.2.4 ***Trench 02, Context [163] (164):*** Context [163] (164), another pit, contained a complete bowl with partial stem. The stem had a 2mm bore diameter giving an 18th – 19th century date. The bowl was fluted with an oak leaf design along the seam and a long forward spur, dating to c.1730-80 using the Oswald typology (Oswald, 1975, p.40). The fluting and oak leaf design tend to be most common in the late 18th – 19th century so it is likely that the pipe was manufactured towards the end of the 18th century.

14.2.5 ***Trench 02, Context (189):*** Silt layer 189 contained a single fragment of stem with a 2mm borehole diameter.

14.2.6 ***Trench 02, Context [217] (218):*** Context [217] (218), a stone lined pit with a later demolition rubble fill, contained a single small fragment of unmarked stem with a 2mm diameter.

14.2.7 ***Unstratified:*** The bulk of the clay pipe assemblage was unstratified. There were 36 unmarked fragments of partial stem, a red painted mouth-piece common in the 19th century, a fragment of stem with roller decoration – no maker is named but this is in the style of Benjamin Marshal who manufactured clay tobacco pipes between 1730 and 1778. 1 of the stems had the remains of a pedestal foot probably dating to the end of the 17th century and another a long forward spur typical of the mid-late 18th century. A complete bowl with some remaining 3mm borehole stem and a flat pedestal base is likely to have been manufactured towards the end of the 17th century but the remaining fragments of bowl all have the oak leave design along the seam placing them in the 18th-19th century.

14.3 Discussion

Seventeenth Century

14.3.1 There was little evidence for 17th century clay tobacco pipe; the pedestal base on the unstratified bowl and 3mm borehole diameter stem fragments are the only items which could indicate an early date.

Eighteenth Century

14.3.2 At the start of the 18th century clay tobacco pipe bowls became larger with straight sided, thinner, finer walls, heeled spurs became common. Throughout most of the 18th century Nottingham clay pipe makers often used elaborate stem decoration incorporating their name. Usually this took the form of a band around the stem, with linear, scroll, circular, oval and often classical motifs. The only decorated stem recovered during the evaluation is similar to the motif used by Benjamin Marshall, a Nottingham clay pipe maker working between 1730-1788, while the fluted bowl and bowl fragments with oak leaf decoration on the seam place the bulk of the assemblage into the late 18th century.

Nineteenth century

14.3.3 By the 19th century, bowls are large and upright, but the bore diameter much narrower at 1.5mm. It is possible that some of the 2mm stem fragments were produced in the 19th century, but given the details on the surviving bowl fragments, an 18th century date seems more likely.

14.4 Conclusion

14.4.1 In general, the date range was predominantly 18th century with just several fragments which could indicate earlier, 17th century manufacture.

Trench	Context	Pipe stem diameter	Description	Date range
02	047	2mm	1 x unmarked partial stem	18th - 19th century
02	130	3mm	2 x unmarked partial stems	17th – 18th century
02	163	2mm	Complete bowl with fluting and oak leaf decoration	18th-19th century
02	189	2mm	1 x Unmarked partial stem	18th-19th century
02	217	2mm	1 x unmarked partial stem	18th-19th century
	Unstratified	3mm	36 x unmarked partial stem 1 x mouthpiece with red paint 1 x decorated stem 1 x pedestal foot and stem 1 x spur and stem 1 x complete bowl 5 x partial bowl fragments	17th-19th century

Table 39: Pipe fragments in context order

15 Leather *by Ian Panter*

15.1 Summary

15.1.1 A small assemblage of leather was recovered from layer (029) in trench 01. This comprised of;

15.1.2 A sole, almost complete with edge/flash seam, a pointed round toe and narrow distinct waist, stylistically dated from the 14th/15th century onwards.

15.1.3 Another incomplete sole, missing the toe and seat, but with a narrow distinct waist similar to the previously mentioned item.

15.1.4 Shoe upper fragments, both vamps pieces made of sheep or goat with flesh/grain seams. One fragment had leather laces present.

15.2 Discussion

15.2.1 As there would be primary and secondary waste if manufacturing was taking place on the site, it is likely that these items are discards or possibly cobbling waste.

15.2.2 The items can be dated from the 14th – 15th century onwards based on the sole style.

15.2.3 Conservation and retention is recommended.

16 Glass *by Alison Wilson*

16.1 Introduction

16.1.1 This report examines the glass recovered during archaeological works at London Road, Nottingham. A total of 3 fragments from 3 contexts were examined.

16.1.2 Pit [047] contained a degraded fragment of glass, probably part of a post-medieval small bottle, while (217) contained the neck of a 17th – 18th century green bottle.

16.1.3 Of most interest was a round blob seal with the design of a rampant lion inside a shield recovered from layer (188). Blob seals are a round disk of glass applied to the body, shoulder or neck of a bottle after blowing. They were marked with an intaglio design, usually a personal mark, crest or initials and were most common on wine bottle throughout the 17th, 18th and 19th centuries. It seems possible that this seal was associated with the Red Lion pub which stood to the north of the site and which gave Narrow Marsh/Cliff Road the short-lived name of Red Lion Street (S. Lomax pers.comm.).

16.2 Summary

16.2.1 The assemblage consists of small fragments of general 18th-20th century bottles and as such no further work is recommended for this assemblage. Discard is recommended with the exception of the blob seal from context (188).

Context	Quantity	Description	Dating
047	1	Small fragment	17th-20th century
188	1	Blob seal	17th – 19th century
217	1	Bottle neck	17th – 19th century

Table 40: List of the complete glass assemblage from all contexts.

17 Shell *by Alison Wilson*

17.1 Summary

17.1.1 3 unstratified complete oyster shells were collected from the archaeological evaluation at London Road, Nottingham. These are likely to be domestic waste and as such discard is recommended.

18 Metal *by Alison Wilson*

18.1 Summary

18.1.1 5 metal objects were recovered during the evaluation. Iron nails were found in layer [(041) and pit [217] (218), while a square fragment of lead was recovered from layer (221). A single iron nail and fragment of lead window came were unstratified. Discard is recommended.

19 Slate *by Alison Wilson*

19.1 Summary

19.1.1 Fragments of slate were recovered from layer (041) with a single small fragment in layer (049). These are likely to be roofing slates of uncertain date. Discard is recommended.

20 Animal Bone *by Dr. Kris Poole*

20.1 Introduction

20.1.1 During excavations at London Road, Nottingham, a number of fragments of animal bones and teeth were recovered from contexts dating to Phases 1-5, with the majority deriving from Phase 2 (Late Medieval) and 3 (Late Medieval – Early Post-Medieval) contexts. In total, 387 fragments of hand-collected bone were recorded, along with 204 fragments of predominantly unidentifiable bone retrieved from environmental residues. The most notable aspect of the assemblage comprises the large collections of sheep foot bones from phase 2 and 3 contexts, particularly layer (0189) and pit [0159]. These likely relate to leather production on, or nearby the site and whilst other aspects of the site will be addressed below, the main focus on this report is upon the nature of such activity. A full quantification is provided in Appendix 2.

20.2 Methods

20.2.1 Levels of preservation were recorded using Behrensmeyer's (1978) standards, with burning and gnawing also recorded. Butchery was recorded in detail, noting the butchery mark type (chop, cut, saw, shave) and its location on the bone. This was achieved using the standards set out by Lauwerier (1988), with additional butchery codes created when necessary.

20.2.2 Attempts were made to identify all bone fragments to element and species, with some exceptions. Mammal ribs, vertebrae and long bone fragments not identifiable to species, were classed as large-, medium-, or small-sized mammal (except for atlas and axis vertebrae). Ribs were only counted when the head was present and vertebrae were only recorded where part of the centrum was present. Apart from the calcaneii and astragali, carpals and tarsals were not recorded. Similarly, for birds, all elements were identified, where possible, to species, apart from vertebrae and ribs, which were classed simply as 'bird.'

20.2.3 All identified fragments were recorded as individual specimens, with the exception of fresh breaks, which were refitted where possible, and counted as one element. Partial or complete skeletons were recorded as one specimen, with details of the elements present, completeness, measurements and so on noted. This means that the total presented in this report is different than the total originally recovered from the site.

20.2.4 Morphological criteria of Boessneck (1969), Payne (1985), Prummel and Frisch (1986) and Halstead et al. (2002) were utilised to attempt to distinguish between sheep (Ovis) and goat (Capra). In addition, particular measurements were taken of medial metapodial condyles and proximal metatarsals of sheep/goat species, which have been shown to aid species separation (Rowley-Conwy 1998). Domestic pig and wild boar can be extremely hard to tell apart, one of the best ways being through tooth measurements (Payne and Bull 1988, 31), and thus measurements of the width of the greatest length (GL), length at cemento-enamel junction (CL), the width of anterior (WA) and width of posterior (WP) of the deciduous fourth premolar, first, second and third permanent molars were taken. Red deer were distinguished from cattle using Prummel (1988), with red and fallow deer differentiated using their antlers, and the criteria of Lister for postcrania (1996).

20.2.5 Attempts to distinguish between chicken and pheasant were made using the pneumatised proximal foramen of the femur and the continuation of the medial calcaneal ridge on the tarso-metatarsus (Cohen and Serjeantson 1996, 63, 79). Geese lack suitable morphological criteria on which to differentiate between individual species, and there is also considerable size overlap between species (Barnes et al. 2000, 91). Where bones are of a size obviously compatible with domestic goose, they were recorded as such, otherwise, they were

recorded as Anser/Branta sp. Similar problems exist for ducks, and so their remains were recorded as either 'mallard-size' or 'teal-size'.

20.2.6 All identified fragments were recorded as individual specimens, with the exception of fresh breaks, which were refitted where possible, and counted as one element. Partial or complete skeletons were recorded as one specimen, with details of the elements present, completeness, measurements and so on noted. The most straightforward method of quantification applied is the Number of Identified Specimens (NISP), being merely a count of the identified fragments. Such a method can be problematic as it will particularly overemphasise the larger taxa due to greater fragmentation. For this reason, the zoning systems set out by Serjeantson (1996) for mammals and Cohen and Serjeantson (1996) for birds were used to record elements. This was then used to work out the Minimum Number of Elements (MNE) and Minimum Number of Individuals (MNI) for each species.

20.2.7 Methods used for ageing specimens were dental eruption/attrition and epiphyseal fusion. Grant's methods (1982) were used for recording tooth wear in cattle, sheep and pig, with wear stages assigned using standards set out by Halstead (1985) for cattle, Grant (1982) for pigs, and Payne (1973; 1987) for sheep. Epiphyses were recorded as 'foetal', 'neonatal', 'unfused', 'fusing' or 'fused'. This data enabled age estimates to be calculated using the sequence outlined for sheep/goat by Popkin *et al* (2012) and cattle, pigs, equids and dogs using data given by Getty (1975) and cats using Smith (1969). As bird bones lack epiphyses, elements were recorded as either 'fused' or 'unfused.'

20.2.8 Where possible, pigs were sexed on the basis of their canines; male canines growing throughout life and being open-rooted, while sows have much smaller canines with closed roots (Schmid 1972, 80). In addition, the canines of castrates appear dwarfed and stunted, although they retain the open root characteristic of males (Armitage 1977, 94). Morphological and metrical traits of the pelvis were used to sex cattle and sheep/goat (Grigson 1982; Hatting 1995; Greenfield 2006). Cattle may be sexed using the metapodials, although other factors also play a part in the dimensions of these elements (e.g. Albarella 1997). Equids were sexed through the presence of canines and on the pelvis. Presence of the baculum was used to identify male dogs in the sample. Presence or absence of tarsometatarsi cockspurs was used to differentiate between male and female chickens. Medullary bone in femora and tibiotarsi was used to sex Galliformes (Driver 1982), as well as other birds, where possible.

20.2.9 Measurements were taken following von den Driesch (1976) for mammals, with the addition of metapodial measurements set out in Rowley-Conwy (1998), and Cohen and Serjeantson (1996) for birds. Log ratios were calculated for sheep using the mean for a sample of unimproved Shetland ewes (Davis 1996). Withers heights were calculated using the calculation factors given by von den Dreisch and Boessneck (1974). Pathological traits were recorded using the protocol developed by Vann and Thomas (2006).

20.3 Overall Taphonomy

20.3.1 The majority of bones were recovered from pits and layers, with a smaller amount from spreads, culverts and wall cuts. Irrespective of phase or context type, the vast majority of bones from London Road were almost all in good condition, with smaller numbers considered to be in fair condition and only a few bones that were in poor condition. Of the hand collected bone, only 11 out of 386 bones showed signs of dog gnawing, indicating that most bones were kept out of reach of dogs prior to their final deposition. Only one hand-collected bone, a medium mammal vertebrae, was burnt, but around a third of the bone from environmental samples was calcined – all of which were small, unidentifiable fragments. A large proportion of the bones bore butchery marks, 159 of 387 (41%) hand-collected bones, primarily comprising cut marks on sheep metapodials. The butchery data will be further discussed below.

20.3.2 Eight bones showed signs of being in contact with metals, either due to iron concretions upon them, or evidence of copper staining. In layer (0189), two bones had iron concretions and one had copper staining, in fill (0172) of pit [0159], one bone had iron concretions and two had copper staining, whilst single bones from layer (041) and fill 9089) of pit [079] had copper staining. Three sheep metatarsals from layer (0189) also had traces of a white substance upon them, possibly representing alum or lime.

20.4 Phase 1: Medieval

20.4.1 Only a small collection of bone dated to this period, with 23 fragments of hand collected bone that could be identified to species. All species were domestic, except for a single fallow deer metatarsal. Cat was represented by an articulating tibia and fibula, counted as one specimen. Bones retrieved from environmental samples consisted of unidentified bones and a number of bird bones, only one of which could be definitively identified as chicken but most of the other bird bones were consistent in size with chicken. One exception was a tarsometatarsus of a small passerine, consistent in size with a robin, but which could not be identified to species. In terms of body parts, there appears to be a slight bias towards bones from the head and feet for sheep and pigs, but not so for cattle. This assemblage does not share the same characteristics of specialised industry as the remains from Phases 2 and 3 and may be more domestic in nature. As smaller animals, sheep and pigs could have been butchered on site, leading to the presence of head and foot elements, but cattle may have been butchered elsewhere. Presence of the main meat-bearing bones of all species, however, imply some consumption waste, supported by the presence of bird bones in environmental samples. Processing of bird carcasses is typically a kitchen and/or table activity and it is notable that elements included head elements (a mandible) and extremities such as a foot phalanx, which would normally be removed prior to cooking. However, it must be borne in mind that the sample size for this phase is small and may not be properly representative.

20.4.2 All of the cattle bones (proximal calcaneus, distal humerus, proximal scapula) had fused epiphyses, representing animals over 36 months, 15 months and 7 months old at death respectively. By contrast, both of the pig bones with ageing data were unfused (a distal metacarpal and a proximal ulna), indicating animals aged under 15 months and 42 months old. A pig mandible was also immature, from an individual aged around 14-21 months old at death. By contrast to cattle and pigs, the ageing data for sheep were more mixed: a distal femur, distal metacarpal and proximal 1st phalanx were unfused and derived from sheep aged less than 42 months old, 15 months old and 7 months old respectively, but two distal metacarpals were fused, as was one 1st phalanx. No sexing data were available for any species.

20.4.3 Four bones had evidence of butchery. Two cattle bones showed evidence of carcass divison: a chop through a distal tibia and cuts on a proximal scapula, whilst an axially split cattle humerus likely represents marrow extraction. The fallow deer metatarsal had cut marks around its proximal end, likely caused during skinning.

20.5 Phase 2: Late Medieval

20.5.1 The make-up of the bone assemblage dating to this phase is very different from the earlier assemblage and is dominated by bones from layer (189) and pit [079]. For this reason, this period is discussed by context, rather than in general, before summarising the data.

Layer (189)

20.5.2 This is by far the largest context in terms of number of bones, which is somewhat surprising, given that it was only partially excavated. The assemblage consists almost exclusively of bones identified as sheep/goat and sheep, although no bones were positively identified as

goat and all probably derive from sheep (Plate 46). Of the sheep bones, all were metatarsals (97 in total: 47 from the left, 50 from the right, giving a MNI of 50), except for seven metacarpals. As will be discussed further below, this material is likely the waste product from light leather production.

20.5.3 Most of these metatarsals had butchery marks (72 of 97 bones – 74%), which almost all comprised single cut marks at midshaft, near the proximal end or between the two, and were usually on the posterior surface, but there was some variation in this. Whatever the process was that led to these marks, it is apparent that it involved standardised processing of these bones. Cut marks such as these on metapodials are typically associated with skinning of an animal, with the feet potentially being removed along with the toe bones and skin. A smaller number of metatarsals had cut marks at the distal end, indicating removal of the skin, perhaps with just toes left attached. However no toe bones (phalanges) were present in this assemblage, although it is possible that this is due to recovery bias, as these are small bones that are more likely to be missed during hand recovery. Of the 71 metatarsals for which fusion data were available, 62 were fused (89%) and 9 unfused. These bones fuse anywhere between 7 and 31 months of age, depending on sex (male, female or castrate and nutrition).

20.5.4 All of the sheep metacarpals in this context had fused (these fuse between 7 and 31 months) and all had cut marks indicative of skinning, although in most cases on the anterior side of the bone. The difference from metatarsals is likely a result of the way in which the carcass was skinned.

20.5.5 As noted above, a small number of these bones had traces of a white substance upon them, possibly lime or alum, both of which were used in the processing of sheep skins. A fragment of red deer antler, with burr intact, may have been used for antler working, but no evidence of butchery was present. However, any antler working is likely to have been small scale, by contrast to the level of industry implied by the sheep bones.

20.5.6 Not all of the bones in this context, however, appear to represent industrial waste. A few fragments of cattle, chicken, goose and pig were also present. At least some of these, especially the pig and cattle scapulae and the bird bones, are likely to represent waste from meals. An unfused proximal cattle femur and a fused proximal scapula were from animals younger than 36 months and older than 7 months respectively. The single pig bone, a scapula, was also fused and thus from an individual older than 9 months. All of the bird bones had fused. Some of these bones bore butchery marks: a cattle femoral head had been chopped off and a mandible had been chopped through just below the condyle, both from carcass division, whilst the pig scapula had cut marks on the lateral side of the proximal end, likely from severing tendons, also for dividing the carcass.

Pit [079]

20.5.7 The primary fill of [079] (088) contained a single sheep/goat ulna, but secondary fill (089) contained sixteen bones, all but one (a cattle maxilla) were identified as sheep and sheep/goat. These were dominated by foot bones, with six metatarsals, three metacarpals, a 1st phalanx and an astragalus, although a sheep horn core, radius and two pelves were also present. A single metacarpal and metatarsal bore cut marks indicative of skinning, as with the metapodials in (0189). The dominance of metapodials in this context may suggest that much of this assemblage represents remains of similar activities as evidenced in (0189) Nonetheless, the presence of sheep pelves indicate that some of the remains may be consumption waste, especially the one pelvis with a cut mark on it.

Pit [047]

20.5.8 By contrast to the other context from this phase already discussed, this context included equal numbers of cattle and sheep or sheep/goat bones (eight each) and a single large mammal long bone fragment. The cattle bones comprised a relatively even mix of head (a mandible), foot (a metacarpal, metatarsal, a 1st and 2nd phalanx) and meat-bearing bones (a humerus, radius and ulna), suggesting a mix of primary butchery and consumption waste. The metacarpal had been chopped through at midshaft, either for carcass division or to extract the marrow, whilst the metatarsal had cut marks at midshaft, probably made during skinning. All of the cattle bones had fused epiphyses.

20.5.9 Apart from a scapula, all sheep and sheep/goat elements were from the head (a maxilla and mandible, as well as two lower third molars) or feet (a metacarpal and two metatarsals). These bones likely derive from a primary butchery event rather than industry. The mandible gave a dental age of around 4-7 years old, whilst the two lower third molars were from animals aged 4-9 years old. By contrast, the single sheep metatarsal was unfused at the distal end.

Other Phase 2 contexts

20.5.10 Small numbers of bones were recovered from other phase 2 contexts and where they could be identified, were mostly from sheep. A sheep metacarpal from fill (033) of pit [032] had a skinning mark on its midshaft. A small amount of bone was found in residues from fill (062) of pit [061], layer (0165) and pit [0177]. Much of this bone comprised small, unidentifiable fragments, but a few bird bones were also present, including a chicken scapula and a chicken-size foot phalanx. These likely represent kitchen and/or table waste.

Summary of the Phase 2 animal bone assemblages

20.5.11 The characteristics of the bone assemblage from layer (0189) are strongly indicative of hide processing of sheep, with a smaller amount of consumption waste (Plate 47). By contrast, the fills of pits [079] and [049] are more mixed, but both potentially contain some waste from hide processing. This will be further explored in the discussion.

Plate 47: Sheep metapodials from Context (0189)

20.6 Phase 3: Late Medieval to Early Post-Medieval

20.6.1 The largest bone assemblages were recovered from primary fill (0172) and third fill (0160) of pit [0159].

Pit [0159]

20.6.2 The numbers of bones in both were lower than for phase 2 layer (0189), but both show a dominance of foot bones, particularly metapodials. However, by contrast to (0189), fill (0160) had similar numbers of metcarpals to metatarsals (14 and 15 respectively), whilst metacarpals were the most represented bone in (0172) (30, as opposed to 22 metatarsals). A small number of phalanges were also present in both contexts (single instance of 1st, 2nd and 3rd phalanges in (0160) and two 1st phalanges and one second phalanx in (0172). Both assemblages also differ from (0189) in terms of the number of unfused distal metapodials. For metacarpals, 69% were fused in (0160) and only 41% in (0172). Metatarsals show similar trends, with 58% fused in (0160) and 52% in (0172). Although it can only be said that a larger proportion of sheep in these contexts were unfused than in (0189), it is likely that many of these bones derive from notably younger animals, given their size. This is supported by the fact that many also had porous proximal ends and one half of a metatarsal shaft had not fused to the other half, as these fuse relatively early in life.

20.6.3 A large proportion of the metacarpals and metatarsals in (0160) and (0172) had skinning marks similar to those observed on metapodials in (0189). For metacarpals, these comprised 8 of 14 (58%) in (0160) and 16 of 30 (53) in (0172), whilst for metatarsals, the figures were 10 of 15 (67%) in (0160) and 10 of 22 (45%) in (0170).

20.6.4 A small number of other sheep bones were recovered from these contexts, comprising two radii and an ulna in (0160), as well as a scapula, the left side of a skull, tibia and two radii in (0172). One of the radii in (0160) had a cut mark at midshaft, likely caused during meat removal. Similar butchery was observed on a radius in (0172), as well as cut marks at the distal end of another radius, likely from removing the foot.

20.6.5 In addition to the sheep bones, a mixture of cattle elements were found in (0160), comprising a scapula, humerus, two tibiae and a third phalanx, as well as articulating bones from a front foot (distal metacarpal, a 1st phalanx, two 2nd phalanges and two third phalanges). One tibia had been chopped through the middle, probably during carcass division. In addition to a mallard tarsometarsus, these likely represent a background scatter of consumption waste, with some primary butchery waste included. Bones of other species than sheep in (0172) were a cattle third phalanx and tibia, a single horse upper incisor and large and medium mammal-sized ribs and vertebrae. The cattle tibia had part of the distal epiphyses removed, likely when dividing up the carcass.

20.6.6 A small number of bones were also recovered from environmental samples taken from fill (0172), comprising a sheep 2nd phalanx, lower incisor, a bird foot phalanx, some medium mammal long bone fragments and a number of unidentifiable fragments.

Clay spread (041)

20.6.7 Clay spread (041) also contained a number of sheep foot bones, all of which were metacarpals (seven in total), except for one calcaneus. One of the metacarpals had skinning marks, but another had a single hole pierced in the articulating surface of the proximal end, the purpose of which is unclear. Four of the metacarpals were fused at the distal end, with one unfused. In addition to these bones, there was also a sheep atlas vertebra, cleaved down the middle, as well as a mandible fragment and a scapula. Where epiphsyes were present, all were fused.

20.6.8 A range of cattle bones was also recovered from (041): an atlas vertebra, a calcaneus, a humerus, a metacarpal, a metatarsal, a pelvis, a 2nd phalanx, two radii and four tibiae. Butchery marks on these bones included chop marks, associated with carcass division, but an axially split metacarpal represents marrow extraction, whilst a cut mark on the ventral surface of an atlas vertebra probably stems from slitting the animal's throat during slaughter. Where epiphyses were present, all cattle bones had fused, except for distal tibia, suggesting an animal less than 24 months old. A single pig femur (unfused proximal end, fuses by 42 months), two chicken tarsometatarsi (one of which was from a female), a horse 1st phalanx, a dog humerus, cat radius and large and medium mammal ribs and vertebrae were also present.

20.6.9 This context likely represents a mixture of sheep skin processing waste, with a small amount of primary butchery waste, consumption waste and the remains of non-food animals.

Other Phase 3 contexts

20.6.10 A small number of bones were also recovered from fill (035) of pit [034], fill (037) of pit [036], deposit (0176) and fill (0198) of culvert [0197]. Species present were cattle, pig, mallard, chicken and sheep. Most of the bones had fused, except for a distal 4th metacarpal of pig (fuses at around 15 months) and a chicken humerus. A sheep mandible was from an animal aged around 4-7 years old, consistent with the sheep mandibles from Phase 2. Two bones were butchered: a cattle radius with a cut mark from meat removal and a cattle pelvis chopped through the acetabulum during carcass division.

Summary of the Phase 3 animal bone assemblages

20.6.11 By contrast to the Phase 2 animal bone, the character of the animal bone from Phase 3 features was more mixed, with an apparently greater proportion of consumption waste. However, both fills of pit [0159] appeared to comprise primarily of sheep skin processing waste.

20.7 Phases 4 and 5: Victorian and Modern

20.7.1 A small number of animal bones were recovered from Phase 4 and 5 features, all of which were from domestic species. These are too few in number to say anything about on-site activity at the time.

20.8 Metrics

20.8.1 The large amount of measurements available from metatarsals enable some insight into sheep size/shape at the site, as well as enabling comparison with metatarsals from other, broadly contemporary sites: Hungate, Lincoln (early-mid 16th century – Dobney *et al* 1996), Little Lane, Leicester (mid-16th – mid 17th century – Gidney 1992) and Castle Mall, Norwich (mid-late 14th to mid-16th century – Albarella *et al* 2009). These have been compared using log ratio analysis (see methods for information) and a scattergraph (Figures 1-3). The greatest length measurements for sheep at London Road indicate a wide range, indicating sheep of different heights, with the graph also having a bimodal distribution. By contrast, the distal breadth measurements are slightly less varied and has a unimodal distribution. Metatarsal size of sheep is affected by a range of factors, including genetic background, nutrition and sex (including whether an animal was castrated). Bones of females tend to be shorter and more slender than those of males, with those of castrates being longer and more slender than males (Davis 2000), although this does vary by element (Popkin *et al* 2012). Although there are two peaks of greatest length for London Road, which could be seen to represent different sexes, the breadth data do not show such variation. Many of the sheep are short and slender, whilst others are taller but most of these have comparable bone widths to the shorter group. It is possible that this reflects the presence of two

different types of predominantly female sheep, but the possibility also exists that the taller, but equally slender, sheep represent castrates.

20.8.2 The London Road metatarsals are overall noticeably shorter than those from Hungate, Lincoln, although the two sites do overlap, and the Lincoln metatarsals are also, on average, wider, although there is a greater degree of overlap with London Road with regards to these measurements. This suggests that sheep at Lincoln were of a slightly different type than those in Nottingham, being taller and their bones slightly wider, although due to increase in length, this does not mean that they were necessarily more robust. By contrast, sheep metatarsals at Little Lane, Leicester and Castle Mall, Norwich were overall shorter and narrower than those from London Road and showed less variation in both of these measurements. The differences between London Road, Nottingham, Hungate, Lincoln and Little Lane, Leicester, may indicate variation in the genetic make-up and type of sheep being drawn into different towns in the East Midlands. However, in each case the bones providing metric data were found in just one small part of each town and may not be entirely representative of wider patterns.

20.9 Pathology

20.9.1 A total of ten metatarsals, from across the assemblage, had a slight bony spur on the antero-medial surface, extending from near the proximal end to near midshaft. The cause of this condition is not entirely certain, but its location along a line where a tendon runs could indicate it is a result of age and/or activity. A sheep metatarsal in (0189) had signs of an ossified haematoma on the anterior side of the midshaft, a condition caused by an injury/knock to the bone, over which a mass of blood forms before becoming bone forms at that location. A sheep/goat metacarpal from fill (0172) of pit [0159] had bone growth consistent with periostitis over much of its anterior side. This is caused by an inflammation, due to infection, of the perisoteum, a layer of connective tissue that surrounds bone. One sheep mandible from Phase 1 layer had evidence of 'lumpy jaw', an infection of the jaw which causes the bone to distort and, in this case, appears to have led to the loss of teeth.

20.9.2 A cattle metatarsal from clay spread (041) had heavily skewed distal condyles, which is often a symptom of an animal that was put to the plough at too early an age, before the distal epiphyses had fused to the distal end. This may, therefore, represent a former plough animal being brought in for slaughter and consumption.

20.10 Discussion

The consumption evidence

20.10.1 A small proportion of the assemblage likely represented the remains of meals, possibly those consumed by the occupants of the site. The range of species represented, namely cattle, sheep, pigs and domestic birds, is typical for a medieval and post-medieval site (Albarella 2005). Some of the bone also probably comprises primary butchery waste, but there is no evidence for concentrations of butchery waste, rather a background scatter amongst the assemblage. Other animals within the assemblage, namely cat and dog, could have belonged to town dwellers or even been feral animals and it is not impossible that they were exploited for their skins, although no butchery marks were found on their bones.

The leatherworking evidence

20.10.2 The majority of the animal bone assemblage recovered from London Road is indicative of waste from leather production, specifically the light leather industry, also known as tawing. This is distinct from tanning, which only applies to the use of tannins from vegetable

products (typically oak bark), by contrast to processing of skins using alum and oils, as was the case for sheep skins (Shaw 1996, 197-198). The connection between accumulations of sheep foot bones and the leather processing industry relates to the ways in which animals were delivered to towns and how they were processed and various parts distributed to tradesmen. Evidence from many other medieval and post-medieval towns indicate that animals such as cattle and sheep were driven in "on the hoof", where they were slaughtered and their carcasses processed. Within towns this would typically be done by specialist butchers, of which there were a high number in Nottingham, during the post-medieval period at least (Clarkson 1966, 35). Butchers would then sell hides of animals such as sheep, pigs, horse, deer and dogs to the whittawyer, or by the post-medieval period, to the fellmonger, who would undertake some processing before selling to the whittawyer (Albarella 2003, 73). Hides would typically be sold with horns and hooves attached, but sometimes the butcher would remove the horns and sell them to the horner.

20.10.3 The skins would have then undergone various stages in order to turn them into leather and parchment. At some point in this process, the bones left in skins would be removed and disposed of, leading to accumulations of deposits consisting of head and foot bones, or just foot bones. One reason for leaving bones such as the feet left attached to skins may have included that they were useful during the hide working process, helping with tying the hide to stop them from shrinking. Another factor for retaining the metapodials is because they were boiled up in vats to produce oil that could then be used to treat the leather, before they were dumped (Serjeantson 1989, 139, 141). It is probable that the deposits of sheep foot bones recovered at London Road, Nottingham are an example of such waste products. The reason for the differences between deposits at London Road in terms of whether metatarsals or metacarpals were dominant is uncertain, but could be because different butchers left different bones in the skins when skinning. The presence of younger sheep bones in some of these deposits is likely due to a desire for softer, more supple skins, perhaps for more luxurious clothing. Sheep skins, as well as dog skins, were particularly in demand for use as gloves.

20.10.4 It has been argued that certain attribution of bone deposits as leather working waste may only be possible in cases where further corroborative evidence is available, such as structures associated with tanning and presence of plant remains, used in the tanning process (Albarella 2003, 141). Examples include the tanning complex at The Green, Northampton, dated to the 15th-17th century, which included tanning pits containing sheep foot bones, as well as evidence of heavy leather production (Shaw 1996), as well as the 18th century assemblage of sheep foot bones in tanning pits at Walmgate, York (O'Connor 1984). However, deposits dominated by sheep metapodials have been found at a range of other medieval and post-medieval towns, where they have been interpreted as leather working waste, including regionally at Hungate, Lincoln (Dobney *et al* 1996) and Little Lane, Leicester (Gidney 1992).

20.10.5 The London Road excavations were limited, meaning that any such tanning pits may exist on site but were not definitely identified within excavated areas. However, three pits extending beyond the south-western edge of Trench 2 may represent tanning pits, given the red clay deposits within them potentially representing lining, as seen for other tanning pits within Nottingham and other towns. The presence of certain tanning pits, filled with sheep foot bones, recently uncovered at an adjacent site on Pemberton Street (TPA forthcoming) also corroborates that the sheep metapodial deposits found at London Road are indeed related to light leather processing. It seems likely that such production extended as far as the Broadmarsh centre, given the finding of a deposit of sheep foot bones in recent excavations there (Poole *et al* 2018). That assemblage was small in size, but this was probably due to the limited area that could be excavated.

20.10.6 In addition to the use of caves for tanneries within Nottingham, documentary sources and other archaeological excavations inform us that the area along the (now culverted) River

Leen was a focus for leather production and would be consistent with the zooarchaeological evidence (Lomax 2013, 148-149). No evidence for tanning, or heavy leather production, was found at London Road, or to date at Pemberton Street. However, clay-lined pits and cattle horn cores were found at Cliff Road, around 240m to the west of Pemberton Street, whilst a large quantity of cattle tarsals and metatarsals were recovered from 13th-15th century deposits at Canal Street, 440m to the southwest of Pemberton Street (Brown 2006). Documentary sources show that in 1667 there were 47 tanneries in Nottingham by the River Leen, with cattle being grazed in pastures near the town (Clarkson 1966, 66). Medieval and post-medieval guild regulations attempted to impose clear restrictions on tanning and whittawying (Yeomans 2007) and the lack of evidence for both on one site in Nottingham may fit with this. However, by contrast, at the tanning complex at The Green, Northampton, both trades were being conducted side by side on the same site, meaning that such restrictions did not always work (Shaw 1996).

21 The Fish Remains *by Rebecca Hawkes-Reynolds*

21.1 Methodology

21.1.1 A small assemblage of fish remains from London Road, Nottingham was studied by the author using her own reference collection. Fragments were identified to species or family and element where possible. The diagnostic variability of certain species of fish is not enough to identify them beyond family level such as those of the cyprinid family (*Cyprinidae*). Any alterations such a crushing indicative of digestion or burning was noted when present.

21.2 Results

21.2.1 Appendix 3 shows the species and number of identified specimens of each recorded in the assemblage. The assemblage showed a high degree of fragmentation but despite this, elements of herring which are very fragile were identifiable.

21.2.2 Five different species were identified; herring, flatfish and whiting are marine species while cyprinid and eel are freshwater fish. All elements identified were very small and one vertebra showed signs of crushing most likely through having passed through the digestive tract.

21.2.3 All five species are commonly found in assemblages from all periods, especially in the medieval period where herring were widely traded including inland. Most often these were preserved before being transporting.

22 Human Remains *by Kate Smart*

22.1 Introduction

22.1.1 A single fragment of human skull was recovered from sample 8 within the palaeochannel test pit, at a depth of 3m BGL, context (234).

22.2 Methods

22.2.1 The fragment was recorded using the standards set out in Mitchell and Brickley (2017) and Buikstra and Ubelaker (1994).

22.3 Results

22.3.1 The condition of the bone was good, with a small area of surface erosion adjacent to the lambdoid suture. The remainder of the ectocranial surface is well-preserved and slightly polished. The endocranial surface shows a small amount of yellowish-red staining, probably as a result of minerals within the burial environment.

22.3.2 The fragment was identified as a right parietal bone, judged to have come from an adult individual based on its size. It is not possible to further estimate the age of the individual due to the absence of any of the skeletal elements normally used to determine adult age. Presence of fresh, unfused cranial sutures may indicate a young adult age, but this method is now widely accepted to be inaccurate so this cannot be confirmed (Mitchell and Brickley 2017, 27).

22.3.3 The sex of the individual was not able to be determined due to the lack of any sexually dimorphic skeletal elements (for example the pelvis, mandible, occipital or temporal bones).

22.3.4 No pathological lesions or irregularities were present on the bone. The lambdoid suture is irregularly-shaped, possibly indicating that the individual had an apical bone – a sutural bone located at the lambda point (the junction between the sagittal and lambdoid sutures). Sutural bones are small, additional bones not normally found in the cranium, which occur at specific points on the cranial vault. They are classed as a nonmetric trait and often run in families.

22.3.5 The bone appears to be slightly distorted, which is probably due to its location within the waterlogged gravels at the base of the test pit. Bone is porous, and can become misshapen when submerged in a wet environment.

22.3.6 A 3g sample of bone was removed from the junction between the coronal and saggital sutures (the bregma point) for scientific dating. This returned a date of AD 1025-1160.

22.4 Discussion

22.4.1 The skull fragment is from an adult individual, and shows signs of being buried within a wet, mineral-rich environment. It is likely to have been deposited within the river gravels at some point during or prior to the 12th century. Due to the absence of any other skeletal elements, any further analysis is not possible at this time.

23 Geoarchaeological Results *by Tom Keyworth*

23.1 Introduction

23.2 A series of samples were collected for palaeoenvironmental assessment. The samples were collected from a machine dug test pit (TP01) located in the base of Trench 2 and a window sample sediment core (WS02) drilled from ground level immediately to the south-west of Trench 2. TP01 was excavated to target a known palaeochannel system relating to the former course of the River Leen. This channel system had previously been encountered during window sample and borehole monitoring at London Road at a previous stage of the project (Keyworth 2017). Additional window sample boreholes were also sunk during the 2019 evaluation. These were undertaken in the hope that an intact sediment sequence could be recovered to complement to bulk samples which were retrieved from TP01. The sedimentary sequence for TP01 and WS02 will be detailed below.

23.2.1 The bulk sample (10L) sub-sample information from TP01 is outlined in Table 41 below:

	m OD	m BGL	Depth Recorded (m below trench base)	Sub Sample: Plant Macrofossils	Sub Sample: Insect Remains	Sub Sample: Pollen
GL	25.14	0.00				
Trench Base	22.98	2.16				
<1>	22.08	3.06	0.9			
<2>	21.78	3.36	1.2			X
<3>	21.48	3.66	1.5	X	X	X
<4>	21.08	4.06	1.9			X
<5>	20.78	4.36	2.2	X	X	X
<6>	20.48	4.66	2.5			X
<7>	20.18	4.96	2.8			X
<8>	19.88	5.16	3.0	X	X	X
<8>Skull Fragment	19.88	5.26	3.1			

Table 41: Showing sub-samples taken from TP01.

23.2.2 Three sub-samples were taken from organic lenses encountered within the sand dominated deposits from WS02 for palynological analysis. These samples came from 3.91m BGL (21.23m OD), 4.46m BGL (20.68m OD), and 4.81m BGL (20.33m OD).

23.2.3 The sub-samples were submitted for three assessments: analysis of insect remains, plant macrofossils and pollen. The respective reports have been reproduced below and will be discussed together alongside the radiocarbon results.

23.3 Sedimentology

23.3.1 Outlined below are the recorded descriptions for TP01 and WS02 from which sub-samples were taken. Detailed recording logs can be found in the appendix. As the sediment was observed from samples from a machine bucket rather than from an intact sediment sequence, such as that gained from the use of a window sampler, precise detail with regards to depositional sequence of the channel observed in TP01 was not possible. The discussion and interpretation of the deposits encountered will be discussed below (see Section 15.8).

TP01

23.3.2 Coarse yellow brown sand and sub-rounded medium gravel <8> was encountered at 5.26m BGL (19.88m OD). Immediately overlying this was the basal palaeochannel deposit comprising dark grey firm silty clay from 5.26-5.16m BGL (1.88-1.98m OD) This was overlain by dark grey silty clay <7> with visible fragments of unidentified molluscs from 5.16-4.96m BGL (19.88-20.18m OD). Overlying this was dark grey sand silt with clay <6> with visible fragments of unidentified molluscs and plant macrofossils from 4.96-4.66m BGL (20.18-20.48m OD). This was overlain by dark grey firm clay silt <5> with a high organic content, with abundant visible plant macrofossil remains from 4.66-4.36m BGL (20.48-20.78m OD). Overlying this was a similar organic dark grey clay silt with sand <4>, also with abundant visible plant macrofossils from 4.36-4.06m BGL (20.78-21.08m OD). This deposit was overlain by organic dark grey silt clay <3> with less visible plant macrofossil remains from 4.06-3.66m BGL (21.08-21.48m OD). Overlying this was the upper most channel deposit comprising dark grey silt clay with fine sand <2> from 3.66-3.36m BGL (21.48-21.78m OD). Sealing the channel deposits was dark grey clay sand <1> from 3.66-3.06m BGL (21.78-22.08m OD). This is likely to be overbank alluvial deposits.

WS02

23.3.3 Light yellow brown coarse sand was observed from 5.00-4.54m BGL (20.14-2.60m OD). Within this a very dark grey/black organic silt lense was observed (4.82-4.81m BGL / 20.34-20.33m OD). This deposit was overlain by mid-dark grey sand clay from 4.54-4.46m BGL (20.60-20.68m OD). Overlying this was a deposit of light yellow brown sand with clay from 4.46-4.34m BGL (20.68-20.80m OD). There was no recovery from 4.34-4.00m BGL. The net deposit encountered up sequence was light grey brown medium sand from 3.39-4.00m BGL (21.21-21.14m OD). Overlying this was dark grey sand clay with silt, with rare fragments of unidentified molluscs present from 3.93-3.88m BGL (21.21-21.26m OD). This was overlain by further mid yellow brown coarse sand with clay lenses from 3.88-3.60m BGL (21.26-21.54m OD). Overlying this was wet dark grey clay sand with frequent sandstone fragments from 3.60-3.25m BGL (21.54-21.89m OD). This was overlain by wet dark grey clay sand with frequent charcoal, coal, and CBM fragments from 3.25-3.00m BGL (21.89-22.14m OD).

23.3.4 The remaining upper sequence from 3.00m BGL to the surface was not recorded in detail as it contained deposits and layers that were mainly comprised of modern backfill and structural remains which were observed and recorded appropriately during excavation. The core was drilled from ground level (25.14m OD) to a total depth of 5.00m (20.14m OD).

23.4 Insect Remains *by David Smith*

Introduction

23.4.1 A series of samples were taken for environmental analysis from a section (TP01) through the past course of the River Leen in central Nottingham by Trent & Peak Archaeology. Three of these samples (<3>, <5> and <8>) were submitted to the University of Birmingham for assessment of the potential of any insect remains present.

23.4.2 It was hoped that an assessment of the insect remains from these samples would establish if further full analysis is warranted and if the insect remains can help us understand past land use and landscape at this time.

Methods

23.4.3 The samples were processed using the standard method of paraffin flotation as outlined in Kenward et al. (1980). The system for 'scanning' faunas, as outlined by Kenward et al. (1985) was followed for this assessment.

23.4.4 When discussing the faunas recovered, the following considerations should be taken into account:

1) Identifications of any insects present are provisional. In addition, many of the taxa present could be more precisely identified, possibly down to species level, during a full analysis, which can generate information that is more detailed.

2) The various proportions of insects suggested are very notional and subjective. As a result, the faunas described here should be regarded as incomplete and possibly biased.

Results

23.4.5 The insect taxa recovered are listed in Appendix 4. The taxonomy follows that of Lucht (1987) for the Coleoptera (beetles). Table 42 indicates the extent of preservation, the relative size of faunas and the degree to which they are interpretable. It also makes further recommendations and indicates the period of time required to complete the full analysis of each sample.

Discussion

23.4.6 The three samples produced insect faunas that were reasonably well-preserved and of moderate to large size. The majority of the insect fauna recovered were beetles (Coleoptera), with a limited number of caddis flies (Tricoptera), ants (Formicoidea), true bugs (Hemiptera) and adult flies (Diptera). These faunas were also diverse in terms of the range of taxa recovered and contain beetles from both aquatic and terrestrial landscapes, which clearly are interpretable.

23.4.7 The three insect taxa faunas are essentially similar and will be discussed below together.

23.4.8 The water beetle fauna is comparatively small when compared to those from similar palaeochannel deposits. Those that are present are normally associated with shallow, temporary and slow-flowing waters, for example *Ochthebius, Hydraena, Limnebius*, and *Helophorus* spp. (Foster *et al*. 2014). Sample 8 also contained an individual of the 'whirligig' beetle *Gyrinus* spp. which, again, indicates still water. There are almost no indicators for the presence of water reed and other waterside vegetation. This suggests that this watercourse did not contain stands of vegetation or was periodically cleared.

23.4.9 The faunas clearly indicate the nature of the landscape associated with the River Leen in this area of Nottingham. The recovery of relatively large number of *Aphodius* 'dung beetles' along with a small number of the 'dor beetle' *Geotrupes* indicates the presence of grazing animals (Jessop 1986). Grassland also is indicated by the recovery of the 'cock chaffer' (*Phyllopertha horticola*) which often is associated with old grassland and meadow (Jessop 1986). A range of beetles that feed on plants that are common in rough grassland and disturbed ground were recovered. For example, many of the *Apion* and *Sitona* species are associated with clover (*Trifolium* spp.), *Rhinocus* spp. with docks (*Rumex* spp.) and knotweed (*Polygonum* spp.) and *Cidnorhynus quadrimaculatus* with stinging nettle (*Urtica dioica* L.) (Koch 1992).

SAMPLE NUMBER	DEGREE OF PRESERVATION	SIZE OF FAUNA	POSSIBLE AQUATIC ENVIRONMENT	TERRESTRIAL LANDSCAPE
8	Good preservation	Moderate to large	Limited evidence for slow-flowing water suggested by the whirligig beetle *Gyrinus* spp. and the water beetles *Ochthebius* and *Helophorus* spp.	Evidence for pasture or grassland indicated by numbers of *Aphodius* dung beetles and the 'garden chaffer' *Phyllopertha horticola*. This is also indicated by a range of plant feeding species such as *Apion* spp., *Sitona* spp. *Rhinocus* and *Ceutorhynchus erysimi* which are associated with grasslands meadows and wasteland. There are no strong indicators for woodlands. There are also a range of species in low numbers that are associated with settlement waste such as the 'woodworm' *Anobium punctatum* and the 'spider beetle' *Ptinus fur* and the various *Oxytelus* spp.
5	Good preservation	Moderate to large	Evidence for slow-flowing water suggested the water beetles *Ochthebius, Helophorus, Laccobius* and *Cymbiodyta marginella*. There is no evidence for waterside vegetation.	Evidence for pasture or grassland indicated by numbers of *Aphodius* dung beetles and the 'garden chaffer' *Phyllopertha horticola*. This is also indicated by a range of plant feeding species such as *Apion* spp., *Sitona* spp., *Ceutorhynchus erysimi* and *Cidnorhynus quadrimaculatus* which are associated with grasslands meadows and wasteland. There are no strong indicators for woodlands. There are also a range of species in low numbers that are associated with settlement waste such as the 'woodworm' *Anobium punctatum, Xylodromus concinnus* and the various *Oxytelus* spp. Three human fleas (Pullex iritans) were also recovered.
3	good	moderate	Evidence for slow-flowing water suggested the water beetles *Haliplus, Ochthebius, Helophorus*. There is no evidence for waterside vegetation.	Evidence for pasture or grassland indicated by numbers of *Aphodius* dung beetles, the 'garden chaffer' *Phyllopertha horticola* and the 'dor' beetle *Geotrupes* spp. This is also indicated by a range of plant feeding species such as *Apion* spp *Ceutorhynchus contractus* and *Cidnorhynus quadrimaculatus* which are associated with grasslands meadows and wasteland. There are no strong indicators for woodlands. There are also a range of species in low numbers that are associated with settlement waste such as the 'woodworm' *Anobium punctatum* and the various *Oxytelus* spp.

Table 42: Preservation, size and interpretive value of the insect faunas from London Road, Nottingham

23.4.10 All of the samples contained a range of beetles that are associated with settlement waste in the archaeological record. This includes the 'spider beetle' *Ptinus fur* and the 'woodworm' *Anobium punctatum*. Perhaps the clearest indicators for the presence of settlement waste are the 4 heads of the human flea (*Pulex irritans*) recovered in sample 5. Similarly, the *Cercyon* spp., the 'rove beetles' *Xylodromus concinnus* and *Oxytelus* species recovered, along with the various cryptophagids and lathridiids, are normally associated with decaying settlement waste in the archaeological record (Kenward and Hall 1995). The presence of these taxa may indicate that some settlement waste was dumped or washed into the channel.

Recommendations

23.4.11 Though slightly out of date now, the 'Environmental Archaeology Database' indicates that no previous work on insect remains undertaken within Nottingham has been published (Environmental Archaeology Bibliography 2008). The insect remains clearly suggest that the area of land associated with this channel of the River Leen was either grazed or was waste land, and there is some evidence for the deposition of settlement material in the area.

23.4.12 The three faunas from this assessment clearly warrant further investigation. Full identification and quantification of the insect fauna from these three samples would clearly provide a detailed environmental reconstruction for the site. However, given the similarity of the three faunas it is not clear if a full analysis of the intervening samples is warranted at this stage. It is not clear how this would enhance or change the interpretation that could be reached from these present three faunas. Whether the additional samples are analysed is a decision that is probably best based on the extent to which the sedimentology and dating of the deposit indicate that it represents several or a single period of deposition. Potentially, the results of both the plant macrofossil and pollen assessments may also prove helpful in making this decision.

23.5 Plant Macrofossils *by Wendy Smith*

Introduction

23.5.1 In 2019, Trent and Peak Archaeology opened a test pit through an abandoned channel of the river Leen, which was identified during fieldwork in 2017 (Keyworth 2017). The various modifications of the river Leen are complicated and, therefore, a series of samples through a vertical section of this northern channel were collected, three of which are assessed here for waterlogged plant remains.

Aims

23.5.2 Samples were assessed in order to determine the following:

1) if plant remains were present

2) if plant remains were of sufficient number to be of interpretable value

3) if plant remains provide evidence for the surrounding environment

4) if plant remains provide evidence of crops

5) to select material for potential AMS radiocarbon determination.

Method

23.5.3 Sub-samples of approximately 1 L were collected from the three ca. 10 L environmental samples for the recovery of waterlogged plant remains; the entirety of remaining sediment was then used for insect analysis. Samples were processed by bucket flotation over a 0.3 mm geological sieve. The heavy residue (the material which does not float) was retained over a 0.3 mm geological sieve. Both the flot and heavy residue fractions were assessed. Plant remains were rapidly scanned using a Meiji EMZ binocular microscope at magnifications between x10 – x15. The entirety of each sample's flot and heavy residue were fully scanned, except for the heavy residue for sample 5 (2.20m below the base of the trench), where only 50% of the heavy residue component was scanned. The heavy residue

fractions for both samples 3 and 5 contained many clay nodules and will require re-washing prior to full analysis.

23.5.4 Plant remains were scored on a semi-quantified basis; such that, 1 = 1 item only, + = 2 - 5 items, ++ 5 - 10 items, +++ 10 - 25 items and ++++ = > 25 items. In the case of unidentified rootlets ++++ easily exceeds 300 items. Comparative material was not directly consulted during this assessment; therefore, the results presented here should be considered notional and all identifications should be viewed as provisional.

Results

23.5.5 The results of the archaeobotanical assessment are presented in Appendix 5. Nomenclature for plant remains follows Stace (2010). The samples will be discussed separately below.

Sample 3 (1.50 m below Trench base/ 3.66 m BGL/ 21.48 m OD)

23.5.6 The flot of sample 3 was dominated by hundreds of unidentified root fragments and many common nettle (*Urtica dioica* L.) seeds. Other plant remains were noted, but in all cases only a single seed (in the widest sense) was observed. The heavy residue had many clay nodules and clearly was not fully processed; despite this, it produced a wider range of taxa than the flot. Plants typically occurring as weeds of cereal crops were noted: narrow-fruited cornsalad (*Valerianella dentata* (L.) Pollich), stinking chamomile (*Anthemis cotula* L.) and possible corncockle (cf. *Agrostemma githago* L. – seed coat fragment). A single pondweed (*Potamogeton* sp.) seed also was observed, which suggests slow-flowing water conditions may be possible, but generally aquatic plants were limited in this assemblage.

23.5.7 Narrow-fruited cornsalad, stinking chamomile and pondweed all have seeds which are particularly woody and thick-walled. It is notable that the waterlogged plant macrofossils recovered from sample 3 are all relatively robust; certainly thin-walled seeds are notably absent. The low quantities of waterlogged plant macrofossils and the generally woody, robust nature of the seeds present suggests this upper layer is not as well preserved as the lower deposits in Test Pit 1, possibly due to drying out at some point(s) in the past. This may suggest that the best preserved environmental remains in this area of Nottingham are located below this depth.

Sample 5 (2.20 m below Trench base/ 4.06 m BGL/ 20.78 m OD)

23.5.8 Both the flot and heavy residue for Sample 5 were richer than those of Sample 3 and represent a wider range of plant taxa. Notably, one charred germinated cereal grain (possibly wheat – cf. *Triticum* sp.) was noted in the heavy residue component. No common nettle (*Urtica dioica* L.) were noted in sample 5, although one small nettle (*Urtica urens* L.) seed was observed. Sample 5 also has produced limited evidence for trees, with remains of elder (*Sambucus nigra* L.), blackthorn/ sloe (*Prunus spinosa* L.) and possible hazel (*Corylus avellana* L.) noted.

23.5.9 Open ground and/or grassland plants; such as meadow/creeping/bulbous buttercup (*Ranunculus acris* L./ *repens* L./ *bulbosus* L.), redshank/ pale persicaria (*Persicaria maculosa* Gray/ *lapathifolia* (L.) Delarbre), knotgrass (*Polygonum aviculare* L./ *Polygonum* spp.) and selfheal (*Prunella vulgaris* L.), were frequently recovered in sample 5. Other plants such as goosefoot (*Chenopodium* spp.), orache (*Atriplex* sp.) and thistle (*Carduus* sp./ *Cirsium* sp.) can be found in open grassland conditions, but also can exploit other habitats, especially waste ground and/or waysides. Taxa associated with damp or wet conditions also are

present in sample 5; including bogbean (*Menyanthes trifoliata* L.), sedge (*Carex* sp.) and possible water pepper (*Persicaria* cf. *hydropiper* (L.) Delarbre), but these were only recovered as single finds. In general, sample 5 has produced a wider range of taxa than sample 3, but this also is a relatively modest assemblage and, again, the robust nature of most of the plant remains recovered does suggest that this deposit has dried out at some point or points in the past.

Sample 8 (3.00 m below base of Trench/ 5.16 m BGL/ 19.98 m OD)

23.5.10 Sample 8 was the richest and most diverse sample of the three samples assessed for waterlogged plant remains, nevertheless, given 1 litre of sediment was processed this has produced a fairly modest assemblage (estimate between 100 – 200 identifications). Notably this sample produced a few fragments of linseed/ flax (*Linum usitatissimum* L.) capsule. Much less plant frass (rootlets, wood fragments, etc...) was present in this sample and the flax capsule fragments themselves constitute less than one whole capsule; therefore, there is not sufficient evidence to suggest any activity related to flax retting was taking place here. A number of typical arable crop weed taxa were noted; such as, cornflower (*Centaurea cyanus* L.), corn marigold (*Glebionis segetum* (L.) Fourr.), redshank/ pale persicaria (*Persicaria maculosa* Gray/ *lapathifolia* (L.) Delarbre), stinking chamomile (*Anthemis cotula* L.) and possible corncockle (*Agrostemma githago* L.). These taxa frequently were covered in larger numbers than the single identifications from the other two samples, located above sample 8, which suggests that the preservation improves at this depth in this part of Nottingham.

23.5.11 The recovery of flax remains and typical crop weeds in sample 8 is still at a relatively low-level, which implies that arable land is not immediately located in the vicinity of the sampling site but, instead, it is possible there is input into this river channel from agricultural lands/ storage facilities beyond this immediate area of the LRN2 excavations in Nottingham. Tree taxa are limited to willow, but frequent finds of willow (*Salix* spp.) buds and pistillate seed pods were made in sample 8, which may suggest that willow trees were in the vicinity of this northern channel of the river Leen.

Potential

23.5.12 Assessment of the plant remains from the series of three deposits taken from a section through a northern channel of the river Leen has successfully recovered waterlogged plant remains, with limited evidence for aquatic and/or waterside vegetation, and more evidence for weeds of crop and trees/ shrubs. In general, the plant remains are reasonably well persevered but thin-walled seeds are notably absent, which may suggest that these deposits may have dried out at various points in the past. There is limited evidence for agricultural crops in these samples, but the small numbers may imply that this arable land is located beyond the immediate area of the Test Pit 1 sampling site. A single charred grain (possibly wheat – cf. *Triticum* sp.), which was clearly germinated, was recovered from the heavy residue of sample 5 and several small flax/ linseed (*Linum usitatissimum* L.) capsule fragments (totaling < 1 complete flax/ linseed capsule) were recovered from the heavy residue of sample 8.

23.5.13 Material suitable for radiocarbon determination was extracted from samples 5 and 8. Unfortunately no suitable material was available from sample 3 (the largest seed – indeterminate meadow/ creeping/ bulbous buttercup (*Ranunculus acris* L./ *repens* L./ *bulbosus* L.) weighed merely 0.001 g and would be unlikely to generate a successful AMS radiocarbon determination). A sloe/ blackthorn (*Prunus spinosa* L.) thorn (0.015 g) and two elderberries (*Sambucus nigra* L. – combined weight 0.006 g) were selected for potential AMS radiocarbon determination from sample 5. Three linseed capsule fragments

(combined weight 0.005 g) and one willow bud intact on a twig fragment (0.015 g) were selected for potential AMS radiocarbon determination from sample 8.

23.5.14 Although somewhat out of date, the Environmental Archaeology Bibliography (York 2008) only records one brief medieval–post-medieval study of plant remains from Nottingham which has been published (the 1967 excavations of the town wall – Alvey 1971). As a result, although these samples are relatively modest, the plant macrofossil data is of regional importance. There appears to be relatively good insect results from these same deposits (see Insect Remains) as well. Therefore, it is recommended that the waterlogged plant macrofossils corresponding to any insect samples taken to full analysis also are analysed.

Conclusions

23.5.15 Environmental sampling from a section through an abandoned northern channel of the river Leen in central Nottingham has successfully recovered waterlogged plant remains. The plant remains are most abundant in the lowest deposit (sample 8), but as a whole they are biased toward thicker-walled, more robust plant remains which may suggest these deposits have dried out at some point(s) in the past.

23.5.16 It appears, only one other site in Nottingham (Nottingham Town Wall: Park Row Excavations 1967) has previously reported archaeobotanical data, therefore, there is an urgent need regionally to acquire more archaeobotanical data for medieval Nottingham. In addition, the corresponding insect remains from these samples have proven successful (pers. comm. D.N. Smith). Therefore, I recommend the full analysis of any plant remain samples which correspond to those insect samples to be fully analysed by D.N. Smith, to provide an independent environmental proxy to his data.

23.5.17 These modest assemblages will establish a baseline of archaeobotanical data for central Nottingham, but also can serve to establish the potential for further environmental archaeological study of waterlogged deposits from any future archaeological interventions in central Nottingham. These waterlogged plant assemblages have potential to provide benchmark archaeobotanical data on the water conditions, surrounding environment and agricultural crops in use in Nottingham for the period (presumed medieval – the deposits are currently not securely dated), from which further analyses can build. Given their significance and relatively modest size, it is recommended that the waterlogged plant remains are fully quantified.

23.6 Pollen Assessment by Tom Hill

Introduction

23.6.1 A total of 10 samples were submitted for pollen assessment from a sedimentary sequence extracted during ground investigations at London Road Petrol Filling Station, London Road, Nottingham. Sedimentary deposits from two archaeological features were sampled, comprising seven samples from a Test Pit (TP01) and three samples from a borehole (WS02). The age of the two sedimentary sequences are unknown at the time of the pollen investigation being undertaken. The samples were taken at regular intervals through each of the three features, and the sedimentology was found to comprise a mixture of minerogenic and organic deposits.

Methodology

23.6.2 A selection of 10 spot samples were prepared for pollen assessment from the sedimentary sequence. A summary of the sampling strategy applied by Trent & peak Archaeology to the two archaeological features can be reviewed in Table 43.

TP01	WS02
Depth (m)	Depth (m)
1.2	3.91
1.5	4.46
1.9	4.81
2.2	
2.5	
2.8	
3	

Table 43: Summary of 10 samples submitted for palynological consideration.

23.6.3 Pollen preparation followed standard techniques including potassium hydroxide (KOH) digestion, hydrofluoric acid (HF) treatment and acetylation (Moore *et al.,* 1991). A count of at least 100 total land pollen grains (TLP) excluding aquatics and spores were attempted for each sample. All samples had sufficient pollen preserved in relative abundance.

Results

23.6.4 Pollen preservation, abundance and diversity was found to be good in all samples. A summary of the pollen data is provided in Appendix 6.

23.6.5 Overall, the pollen assemblages encountered in the two sedimentary sequences were found to be broadly similar. Herb taxa dominate, contributing typically >80% TLP throughout the two sequences. Shrub and tree species were rare, whilst spore taxa were similarly rare and aquatics almost wholly absent across the sequences. Charcoal was found in abundance within all samples assessed. Poaceae (wild grasses) dominated the herbaceous assemblages, with contributions also by Lactuceae (dandelions), Asteraceae (asters), *Plantago* sp. (plantains) and Cyperaceae (sedges). Pollen grains tentatively identified as cereal are also relatively abundant throughout the samples, although further analysis would be necessary to confirm this. Subordinate herbaceous taxa include Chenopodiaceae (Goosefoot Family), Caryophyllaceae (Pink Family), Brassicaceae (mustards), *Centaurea cyanus* (cornflower) and *C. nigra* (knapweed). Tree pollen is relatively limited, with *Alnus* (alder) the only consistently present taxa, which is particularly abundant in the basal sample of WS02. Shrub pollen is fairly restricted to taxa such as Ericaceae (Heather Family) and *Corylus-Myrica* type (hazel or sweet gale). A summary of sequence-specific pollen is provided below.

TP01

23.6.6 Good pollen preservation throughout TP01 with grains encountered in abundance and diversity. The pollen assemblages encountered within the seven samples from TP01 are relatively consistent throughout, with limited obvious variation over time. Poaceae dominates, often contributing >50%TLP, with Asteraceae and Lactuceae similarly present throughout but in lower numbers. Cereals are also common, supported by Brassicaceae, Chenopodiaceae, *Plantago* sp, *C. cyanus* and *C. nigra*, whilst *Urtica* (nettles) are present in low numbers towards the base of the sequence. Shrub pollen is limited to *Corylus-Myrica* type and Ericaceae. Regarding the tree species, only *Alnus* is encountered in any relative

abundance, but rarely over 4%TLP, reaffirming the subordinate nature of arboreal taxa. Other tree species are encountered but are limited to isolated pollen grains, such as *Quercus* (oak), *Tilia* (lime), *Betula* (birch), *Ulmus* (elm) and *Fraxinus* (ash). A single grain of *Juglans* (walnut) is present in the uppermost sample of TP01. Aquatic taxa are limited to a few grains of *Typha latifolia* (bulrush) towards the base of the sequence, whilst a few samples contain some spores such as *Polypodium* (polypody), *Pteridium* (bracken) and *Pteropsida* (ferns). Charcoal was abundant throughout all samples, and superabundant in the upper 4 samples.

WS02

23.6.7 Good overall pollen abundance and diversity within the three samples from WS02, with only the basal sample containing a slightly lower diversity of flora. Overall, a similar palynological signal is encountered to that present in TP01, with the herbaceous taxa dominating through Poaceae, supported by the consistent presence Lactuceae and Asteraceae. Cereal grains are once again common, and similar herbaceous taxa such as Chenopodiaceae, *Plantago* and *Centaurea* sp are present, but in lower numbers than that encountered in TP01. There remains a low but consistent presence of shrub taxa such as Ericaceae and *Corylus-Myrica* type. The Tree pollen signal is however interesting in that the basal sample is dominated by *Alnus*, contributing c, 60%TLP, only to become subordinate in the overlying samples. Isolated grains of *Betula, Quercus* and *Tilia* are then encountered with height through the profile of WS02. Aquatic taxa are limited to isolated *T. latifolia* grains in the uppermost sample. Pollen grains in the uppermost sample were also found to be heavily crumpled, resulting in a number of grains being unidentifiable. Charcoal was abundant throughout the samples under assessment.

Discussion

23.6.8 Limited palaeoenvironmental interpretations can be made at assessment stage, but a relatively clear picture of the landscape could be hypothesised. The sequences under assessment were broadly similar and could be inferred as hence containing similar vegetation signals. With the exception of the basal sample from WS02, the overall absence of trees and limited shrub taxa indicates an open landscape, with grassland likely to dominate the surroundings, supported by herbaceous taxa often associated with meadows and disturbed soils. The relative abundance of grains provisionally identified as cereal would reinforce this interpretation. The absence of aquatic taxa from almost all samples would suggest no standing water at/near the site. The abundance of alder within the basal sample of WS02, only to be replaced by herbaceous taxa with height, could infer a shift from woodland to grassland, but this cannot be confirmed due to the limited number of samples under assessment from this sequence, in addition to the often super abundant production of alder pollen that can often biases signals. The age of the deposits are likely to be late prehistoric or historic due to the relative abundance of likely cereal grains. The single grain of walnut would suggest the uppermost section of TP01 at least, dates to the Roman period due to the fact the Romans introduced walnut to the UK.

Recommendations for further analysis

23.6.9 Pollen preservation was found to be very good in almost all samples under assessment. Once a greater understanding of the site is obtained, specifically in terms of the age and archaeological significance, further analysis has the potential to contribute to our understanding of the site. Both sequences therefore have the potential for further analysis. If materials are available, sample resolution should increase to improve the temporal resolution of the landscape conditions that prevailed over time.

23.7 Radiometric Dating

23.7.1 Four sub samples were also submitted for radiometric dating. The details of the sub-samples are outlined in Table 44 below.

Sample	Sample Type	mOD	mBGL	Depth Recorded (m below trench base)	Context	Calibrated Date (95.4%)	Lab Code
<3>	Unidentified roundwood	21.48	3.66	1.5	232	1295-1404 cal AD	BETA-534166
<5>	Prunus spinose L. (sloe/blackthorn)	20.78	4.36	2.2	233	(47.9%) 1347-1393 cal AD and (47.5%) 1276-1322 Cal AD	BETA-534167
<8>	*Salix sp*	19.98	5.16	3.0	234	(49.9%) 1307-1362 cal AD and (45.5%) 1385-1429 cal AD	BETA-534168
Skull Fragment	Human skull	19.88	5.26	3.1	234	1025-1160 cal AD	BETA-534169

Table 44: Details of samples submitted for radiometric dating from TP01.

23.8 Discussion, conclusions and recommendations

23.8.1 Following the assessment of sub-samples submitted for analysis of plant macrofossils, insect remains, and pollen from TP01 and WS02 from the site at London Road a number of conclusions can be drawn and recommendations made.

23.8.2 The sequence identified in TP01 is that of a former palaeochannel of the River Leen. The channel contained deposits that have been provisionally dated from the early 13th century to the early 15th century giving them a medieval date. The skull fragment from the sand and gravel which underlies the main channel sequence was dated to the early Medieval/ medieval periods at the latest. These dates should be regarded as indicative.

23.8.3 The sequence identified from WS02 is what appears to be a mid-channel bar possibly located between palaeochannels, but part of the broader palaeochannel system relating to the former courses of the River Leen. The crumpling of pollen in some samples may be indicative of fluvial reworking of sediment, which seems likely given the seemingly highly mobile nature of the system. It is clear from the specialist assessments that the samples warrant further analysis and investigation given the importance and quality of the sequence observed. Previous geoarchaeological research on the former course of the River Leen is lacking with only very recent developments providing opportunities for investigation (Keyworth 2017; Binns 2019; Poole *et al.* 2018). The only previous archaeological investigation was focused immediately to the east of London Road known as 'The Island' were monitoring of ground reductions revealed former channels of the Leen and possibly the Beck (Kinsley *et al.* 1997). The channels themselves were left unexcavated and no palaeoenvironmental works were forthcoming.

23.8.4 Between the Leen and the Trent there was the common meadows of the town. (Barely 1969: 4). The proxy evidence provides a picture which supports this. This area, broadly known as The Meadows, comprised the West Croft and East Croft on the respective sides of the north-south London road which lead to the bridge over the Trent.

23.8.5 The proxy assessments also provide an overview of the aquatic landscapes which are likely to have been present during this time. The channel appears to have been shallow, relatively shorted lived, and slow moving. This fits broadly with the historic, mainly cartographic, evidence that is available from the early 17th century onwards. The river Leen is alleged to have had two channels during the medieval period in the reach between Lenton and the Leen Bridge with the northern channel suggested to be a Norman diversion related to Nottingham Castle (Barley 1969: 3). Until the end of the medieval period the reaches of the

River Leen in close proximity to site of Leen Bridge formed a system of braided minor channels. The proxy evidence, at this stage, currently supports this. A reasonably mobile system with a high sediment loads of bedrock derived coarse-grained sand from Chester Formation sandstone (formally Nottingham Castle Sandstone Formation) and Lenton Sandstone Formation was deposited in slower reaches of the river immediately to the south of the historic core of Nottingham. The suspension of the sand dominated sediment in slower reaches of the river resulted in higher deposition of sand as material fell out of transport. Such deposits ultimately form mid-channel bars. These bars would have resulted in a highly mobile stretch of the river with channels being short lived and constantly shifting. This high mobility would have been exacerbated by flooding events and is likely to have led to reworking of sand and gravel bars. The finer grained and organic channel material observed appears to have accumulated over a relatively short period of time, which is further indicative of the highly mobile system. Consequently, it is difficult to say whether the channel observed is the main braid or one of several possible minor or side braids.

24 Archaeobotanical Analysis *by Julie-Anne Bouchard-Perron*

24.1 Introduction

24.1.1 Twelve whole earth samples between 4 and 42 litres were collected during the excavations on London Road in Nottingham (Appendix 7). The earliest deposits sampled are two undated successive layers (samples 15 and 16), located below a layer of medieval date (sample 14). Another medieval sample (18) comes from a layer cut by a post-medieval pit (sample 17). Four other pits dating to the late medieval and the early post-medieval period were sampled (sample 9 to 12). These pits were potentially used for tanning or industrial processing, and one of them might additionally entail domestic waste (sample 12). Finally, a sample (20) was collected in a 16th century hearth the function of which is not clear. The flots from these samples were submitted for archaeobotanical analysis. A full quantification is provided in Appendix 7.

24.2 Method

24.2.1 The samples were floated by the Trent and Peak Archaeology team with a modified Ankara flotation machine using a 1mm mesh to collect residues and a 250µm sieve to collect the flots.

24.2.2 Once dried, the flots were poured into a stack of sieves ranging from 2mm down to 0.25mm to facilitate their observation. A stereomicroscope was used at magnifications between 4x to 40x to isolate any plant remains present. At the same time, the occurrence of charcoal, bones, molluscs and finds was scored on an abundance scale (Appendix 7 Table 57).

24.2.3 The results of the analysis are presented in Appendix 7. The English and Latin names used to designate the taxa identified follow Stace (1997) for wild plants and Zohary and Hopf (2000, Appendix 7 Tables 57 and 58 – traditional classification) for cereals. Stace (1997) taxonomical classification was further used to order taxa in Table 58.

24.3 Results and discussion

24.3.1 The flots all contained charcoal, which was particularly abundant (over 100 fragments) in samples 9, 10, 11, and 17 from pits and in sample 14 from the silt deposit. In addition, spores were found in samples 20, fish scales were observed in samples 12 and 15 and a medium mammal rib fragment was recorded in sample 18.

24.3.2 Low numbers of carbonised remains were recorded in all samples with the exception of samples 12, 15 and 16. Cereal grains were the most commonly encountered plant category. Overall, the grains were in such poor condition that it often hampered identification at the species and even genus levels. It was nonetheless possible to identify free-threshing wheat (*Triticum aestivum/durum/turgidum*) in samples 9, 10 and 11. These free-threshing wheat grains come from pits dating to the late medieval/early post-medieval period and this corresponds well with the fact that this cereal became more common from the Saxon period onwards in the Midlands (Carruthers and Hunter, 2019: 104). Spelt (*Triticum spelta* L.), however, declines in importance during the Saxon period (Carruthers and Hunter, 2019: 104) and was present in sample 13 from an undated fill. Unless the grain is residual, this hints at a pre-Saxon date for this layer.

24.3.3 In comparison with the cereal grain, the seeds of other plants were well preserved. However, it is difficult to draw any conclusion based on their presence given the low numbers in every sample. Even when grains and seeds are combined, the richest samples

analysed (9 and 13) only comprised one item per litre which is too low to support any statistics or to determine the remains' depositional origins.

24.3.4 All the flots produced uncharred plant remains, with the exception of sample 11. Most of them came from wild plants and their density tended to be lower than 1 item per litre, limiting avenues for interpretation. Nonetheless, the recurrent presence of elder in the samples suggests that the remains represent modern contamination. It is, however, impossible to rule out that some more sturdy seeds such as those of grape, fig and blackberry are ancient. These seeds might derive from domestic waste or represent later sewage contamination. Fig and grape are imports and have commonly been recorded in midlands archaeobotanical assemblages from the Roman period onwards (Carruthers and Hunter, 2019).

25 Discussion and Conclusion

25.1 Despite significant truncation events during the post-18th century occupation of the site, the recent excavation has conclusively demonstrated that elements relating to late medieval and post-medieval activities are well preserved in the archaeological record.

Evidence for Early Medieval Activity

25.2 The site is known to be situated beyond the southern boundary of the pre-Saxon *burh* of Nottingham and is additionally presumed to also be located outside of the Norman town This was confirmed during the excavation by the dearth of remains dating to these periods of occupation. However, small glimpses of pre-13th century activity within the surrounding landscape of the site were gleamed from further analysis of the geoarchaeological and archaeobotanical remains.

25.3 Firstly, a small fragment of human skull dated to AD 1025-1160 was recovered from the sand and gravels underlying the sequence of channel deposits relating to the former course of the River Leen. The skull fragment is presumably residual, but may have been deposited by processes of fluvial reworking caused by the diversion of the river at this time. If so, it is probable that the human remains were originally deposited nearby. The second possible evidence of earlier occupation was indicated by the presence of spelt, a crop that is rarely found in post-Saxon contexts. In this case, the archaeobotanical remains were residual, probably caused by the general mixing of layering deposits, but may have originated either from the site itself or from the immediate environs (assuming that deposits were not being brought in from far distances).

The River Leen

25.4 Underlying the first archaeologically significant horizon was a known palaeochannel system relating to the former course of the River Leen. A targeted investigation of a single channel within this system revealed evidence that this stretch of the river was highly mobile with short lived, constantly shifting channels exacerbated by flooding events. This fits broadly with the historic accounts of the river being comprised of a number of highly mobile minor braided channels throughout the medieval and post-medieval periods.

25.5 Proxy assessments of the revealed channel deposits have provided intriguing insights into both the aquatic and surrounding landscapes which were likely to have been present in the medieval period, and the impact of these on human occupation. Waterlogged pollen, plant macrofossils and insect remains recovered from the channel deposits indicate that the surrounding landscape was open and dominated by grassland perhaps used for grazing animals. Despite the largely agrarian surroundings, occupation was inferred from the presence of settlement waste that had been either dumped or washed into the channel at this point, indicated by the presence of robe beetles, spider beetle, woodworm and human fleas derived from the lower channel deposits. Combined, the results strongly correlate to historical descriptions of the landscape during the late medieval period. The site would have been positioned between the main focus of settlement activity, located beyond Malin Hill to the north, and the common meadows of the town beyond the southern banks of the river. The Meadows, comprising the West Croft and East Croft, would presumably have been largely dominated by grassland with a larger arable focus to the east.

25.6 Radiometric dating has been secured from the observed deposits providing a maximum date range for the channel sequence of 1295-1404 cal AD. These results are key to understanding the formative processes of occupation within this area of Narrow Marsh.

Although it remains unclear whether the former channel significantly pre-dates the earliest archaeological features or whether, to some extent, they were concurrently in use, it can be inferred that initial occupation at the site post-dates the 13th century. The close proximity of the river at this point would have made the conditions unfavourable to settlement activity, with the boggy nature of the environs and high susceptibility to over bank flooding precluding habitation. However, the landscape would have been ideal for a broad number of industrial processes, which appear to have been the dominant focus of site use throughout the late medieval and post-medieval periods.

Riverine Expansion

25.7 The first archaeologically significant horizon comprised a widespread layering event of 13th to 14th century date, probably derived from both inundation from the nearby river and a deliberate attempt to raise the ground level in order to create a more habitable occupation area. A number of sandstone walls followed on from this episode of ground build up, most of which were of reasonably poor construction. The walls, which possibly formed a small makeshift structure or yard plot boundary, were typical reflections of this type of initial riverine expansion, built as required and used for short, perhaps seasonal, periods of time.

25.8 In addition to this, structural remains very tentatively interpreted as being part of the former Leen Bridge were uncovered within the north-eastern extent of the site, based on the location of the sandstone wall in relation to cartographic depictions of the structure. However, the investigation of these remains was greatly hampered by the restraints of the excavation and site conditions, meaning that this interpretation is at best speculative and would require further investigation to corroborate.

The Industrial Economy

25.9 A large complex of sandstone walling was revealed during the excavation, which appeared to form a single building that would have fronted onto the commercial thoroughfare of Narrow Marsh. Documentary evidence indicates that dense tenements and commercial properties lined the southern side of the road, and it is possible that the remains formed part of one of these structures. However, very little evidence of domestic occupation was uncovered during the investigation, and this was certainly reflected in the artefactual assemblage, archaeobotanical results and animal remains derived from the contemporary archaeological features and deposits. Some dumping of settlement waste was present, but in a quantity inconsistent with a primarily domestic use of the space. Instead, it is perhaps more likely that the site fulfilled a more industrial focus throughout the 14th-17th centuries, with the sandstone building forming part of a large workshop or mill.

25.10 Evidence of preliminary industrial processing within the site boundary is limited to the large industrial hearth located in a yard space to the rear of the main building complex. The hearth itself could have fulfilled a number of purposes, with the proxy results providing little clarification on its function. This is in large part due to the lack of contemporary infilling episodes, and a substantial truncation event that removed much of the surrounding layers. However, the similarity of the structure to a late 12th to early 13th century hearth investigated during an excavation at Swan Lane in London (Egan 1988) may provide some insight to its use. This comparative structure was thought to be part of a fulling mill or dye works, an interpretation which would not be inconsistent with the known character of the Narrow Marsh area during this period. Both fulling mills and dye works

were established on the banks of the Leen from the 14th century, and the hearth at London Road could conceivably have originated from either industry.

25.10.1 Furthermore, it seems highly plausible that if dyeing was being carried out near to the River Leen, this would be located at the eastern side of the medieval town so as not to contaminate the water that would have been used upstream as a drinking source (S. Lomax pers comm). The reasoning behind this has been evidenced by a number of dye works of similar date, such as the workshop identified during excavations at Brook Street in Winchester (Keene and Rumble 1985). The London Road site could therefore have been ideally placed for this industry.

25.10.2 Leather working is known to have been the predominant industry of Narrow Marsh between at least the 14th to 17th centuries, using the banks of the River Leen as a focal point for the processing. Evidence of this industry has been identified at archaeological excavations along the northern bank of the former course of the River Leen at Pemberton Street to the immediate west, Cliff Road and Broad Marsh car park, corroborating the documentary resources.

25.10.3 The 15th to 17th century occupation of the site appears to have been largely focused around this industry. Although it is probable that the London Road site is located beyond the tanning and tawing workshops themselves, the waste derived from these industries was present in the layering material. Additionally, two probable tawing pits were situated at the western boundary of the site, and a rectangular pit possibly related to tanning was also found. An alternative interpretation for this pit, due to the curved formation of the fills possibly formed through water washed in from one side, is a retting pit (G. Davies pers. comm); however, no environmental evidence for textile production was recovered from the site.

Conclusions and Recommendations

25.10.4 The results of the London Road excavation are notable, in large part due to the unprecedented survival of archaeological remains across the site. The well-preserved sequence of activities has shed light on the high intensity of the land use from the 13th century to the present day, in addition to providing an insight of the aquatic and surrounding landscapes prior to these principal phases of occupation. Furthermore, as so few archaeological interventions have been targeted in the surrounding landscape of the historic core of Nottingham, and even fewer known previous assessments of waterlogged geoarchaeological remains have been undertaken, the results have the potential to significantly contribute to the research priorities of the city. Specifically, the assessments could form baseline data for future investigations.

26 Potential for Further Work

26.1 While most of the specialist analysis for the project has been fully completed, there are several areas which would benefit from further work, in order to fully understand and interpret the results of the excavation. These are as follows:

- The leather finds require full conservation for archiving and possible museum display.
- The pollen, insect remains and plant macrofossils from the test pit samples should be fully analysed, in order to bring them in line with the rest of the specialist work.
- Publication of the site in the local archaeological journal, the *Transactions of the Thoroton Society of Nottinghamshire,* is recommended, due to the important nature of the site.

27 Archiving

27.1 The archive will be fully catalogued and prepared to recognised standards (Brown 2007) and will contain:

- copies of correspondence relating to fieldwork
- site notes
- original photographic records
- annotated site drawings including on-site photographic viewpoints
- a full copy of the final report
- copies of documentary evidence retrieved from the archival research

27.2 Finds will remain the property of the client until deposition with the Nottingham Museums and Galleries Archives. These will remain at the TPA office at Unit 1, Holly Lane, Chilwell, NG9 4AB until deposition.

27.3 The paper archive will remain the property of TPA until deposited with the Nottingham Museums and Galleries Archives.

27.4 An OASIS online record form has been started, a copy of which is included within this report as Appendix 8. The form will be completed upon approval of the Final Report by NCC.

27.5 Two bound copies of this report along with a digital copy in PDF/A format on disc will be provided for inclusion within the Historic Environment Record.

27.6 In addition, a digital copy in PDF/A format will be provided to NCC.

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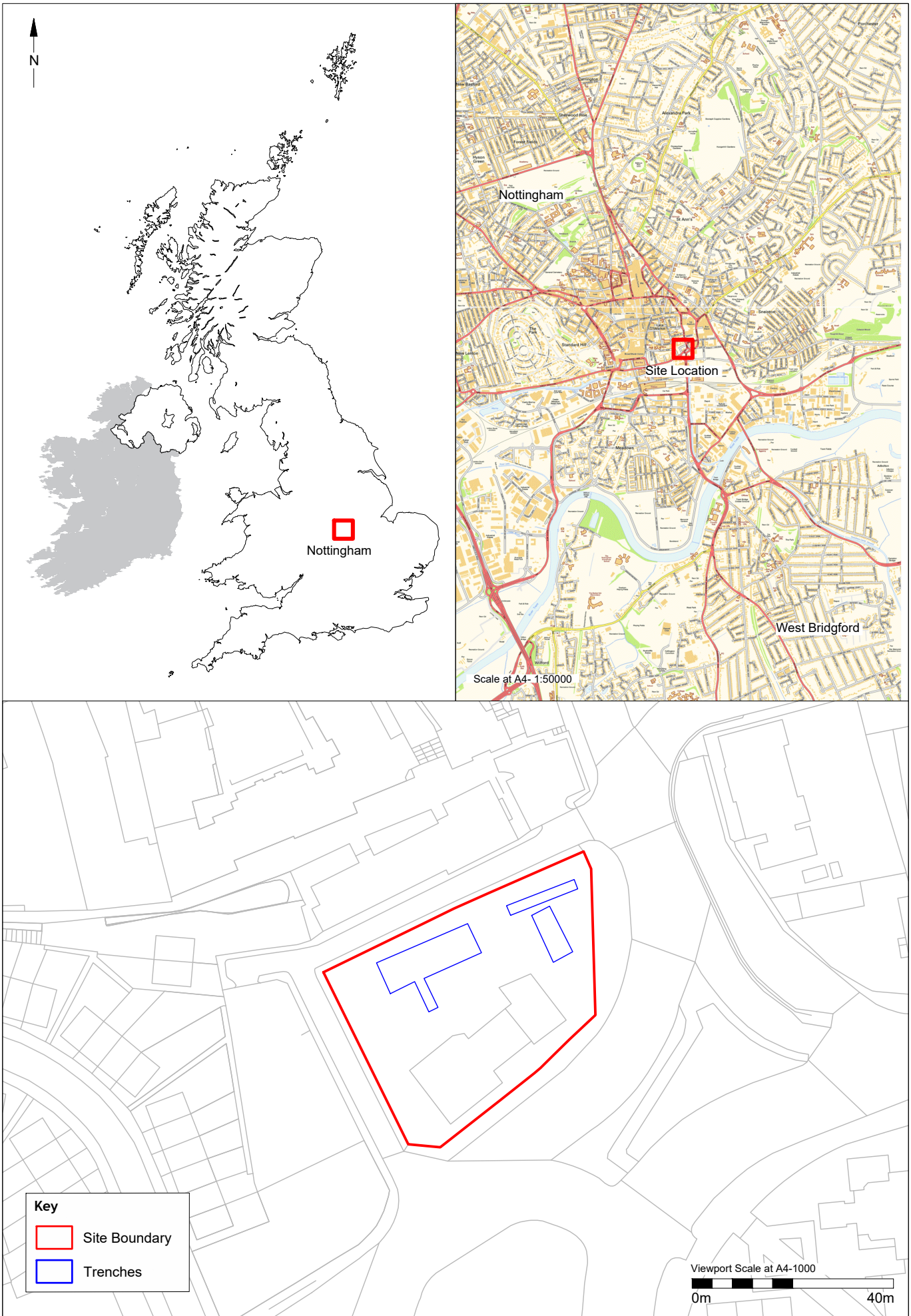
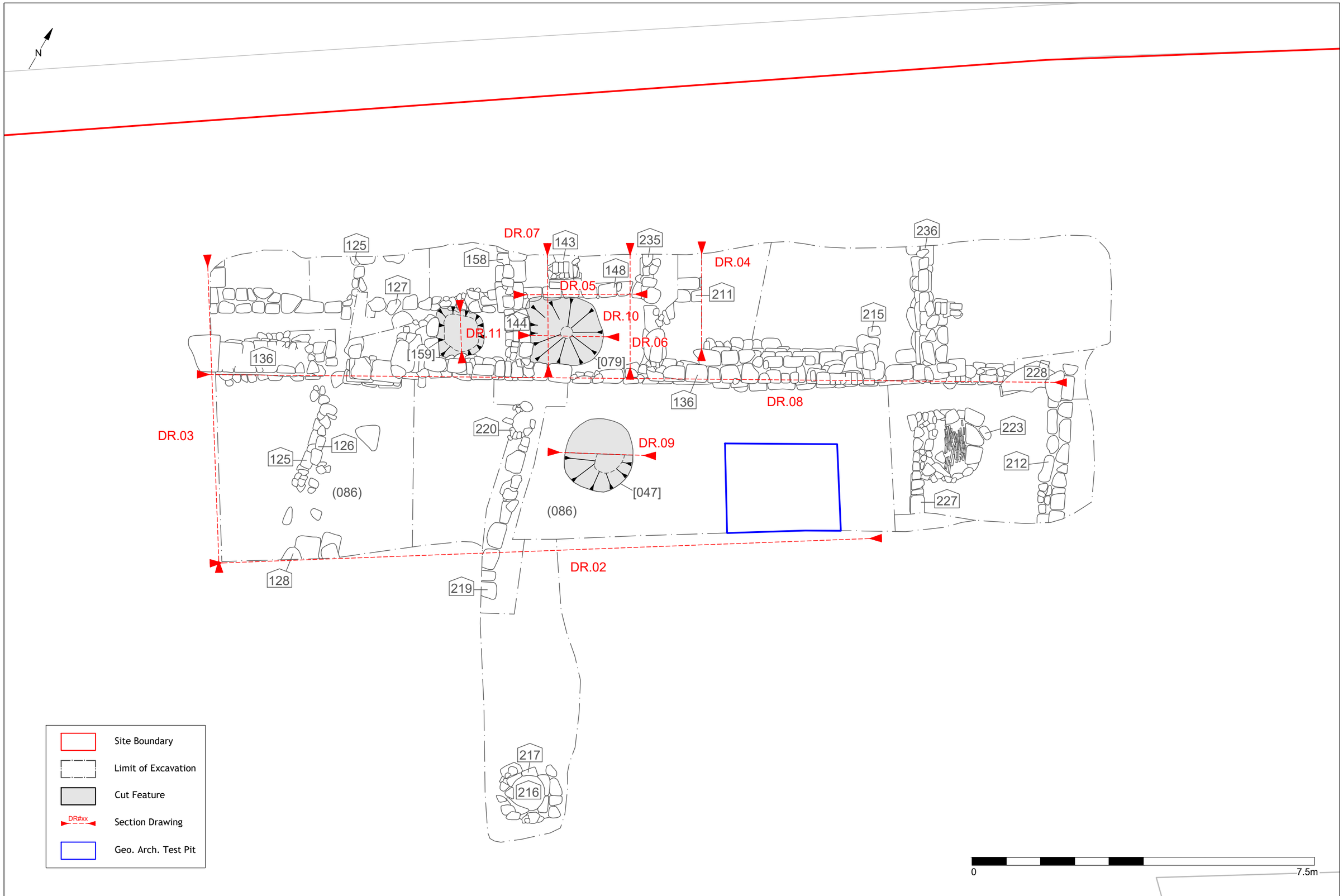
Figures



Trent & Peak ARCHAEOLOGY

Figure 01 - Location Map
LRN2 - London Road, Nottingham

Scale at A4 - varies
Drawn by MI



Trent & Peak ARCHAEOLOGY

Figure 02 - Trench 02 Plan (Phases 01 - 03)
LRN2 - London Road, Nottingham

Scale at A3 - 1:75
Drawn by MH

N

Trench 01

Trench 02

Trench 03

(003)
006
DR.12
009
DR.01
(011)
(005)
(003)
[004]
007
(008)
DR.13
008
070
(072)
068
(076)
(073)
071
069
(025)
015
018
(022)
(024)
(023)
014
013
(021)
[020]
019
017
026
014

Site Boundary

Limit of Excavation

Cut Feature

DR#xx
Section Drawing

Geo. Arch. Test Pit

0
15m

Trent & Peak ARCHAEOLOGY

Figure 03 - Trenches 1-3 Plan (Phases 04 - 06)
LRN2 - London Road, Nottingham

Scale at A3 - 1:150
Drawn by MH

Trent & Peak ARCHAEOLOGY

Figure 04 - Trench 02 Medieval/Post-Medieval Horizon (Phases 01 - 03)
LRN2 - London Road, Nottingham

Scale at A3 - 1:75
Drawn by MH

N

Trench 01

(003)
006
009
(011)
(005)
(003)
[004]
007
(008)
008

Trench 02

018
015
(022)
(025)
(023)
(024)
014
013
(021)
020
019
017
026
014

Trench 03

070
(072)
068
(076)
(073)
071
069

Phase 01 - 13th to 14th C
Phase 02 - 14th to 15th C
Phase 03 - 15th to 17th C
Phase 04 - 18th to 19th C
Phase 05 - Early 20th C
Phase 06 - Late 20th C

0
15m

Trent & Peak ARCHAEOLOGY

Figure 05 - Trenches 1-3 Victorian/Modern Horizon (Phases 4 - 6)
LRN2 - London Road, Nottingham

Scale at A3 - 1:150
Drawn by MH

DR.01
Trench 01 South East Facing Section of Sondage

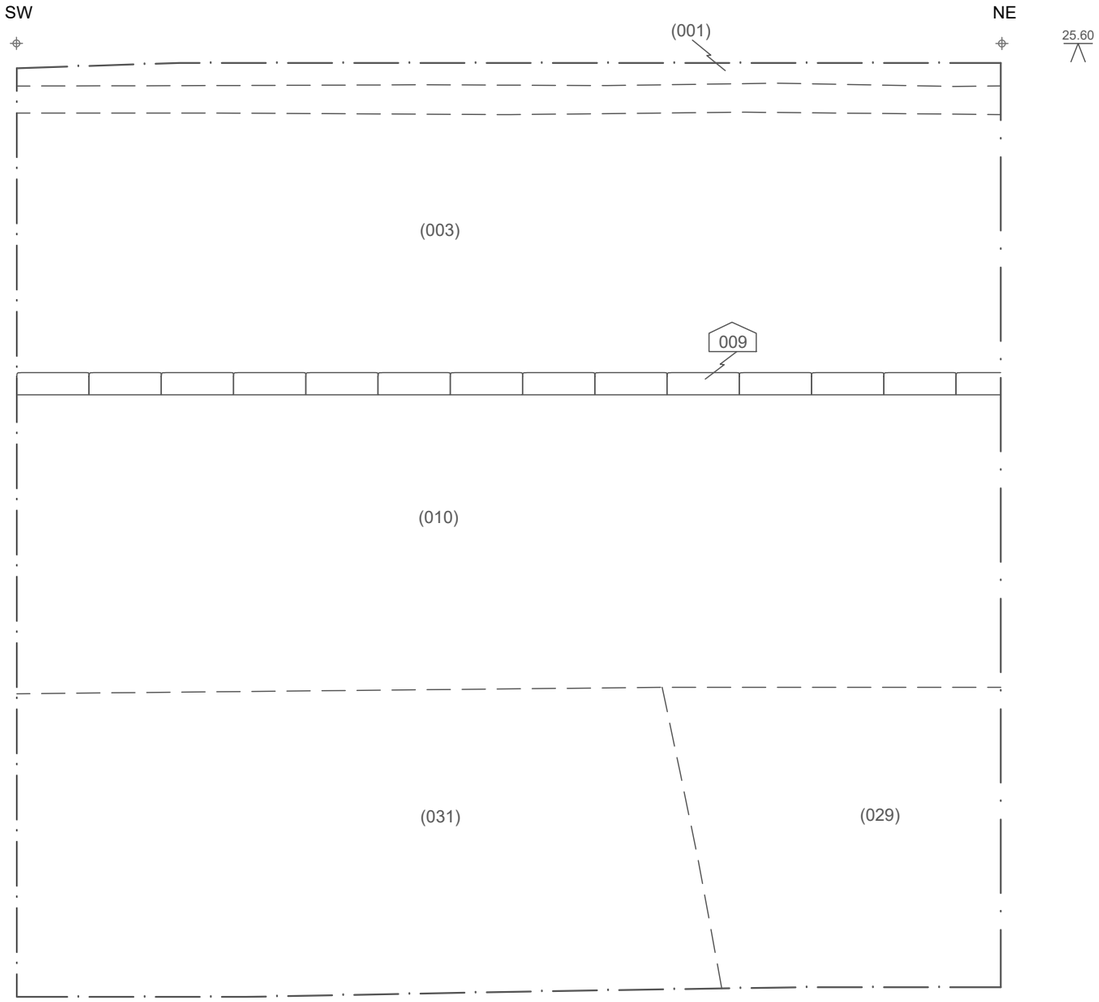


Figure 06 - Section Drawing 01, Trench 01
LRN2 - London Road, Nottingham

Scale at A3 - 1:20
Drawn by MH

DR.02
North West Facing Section of Site and Investigatory Test Pit

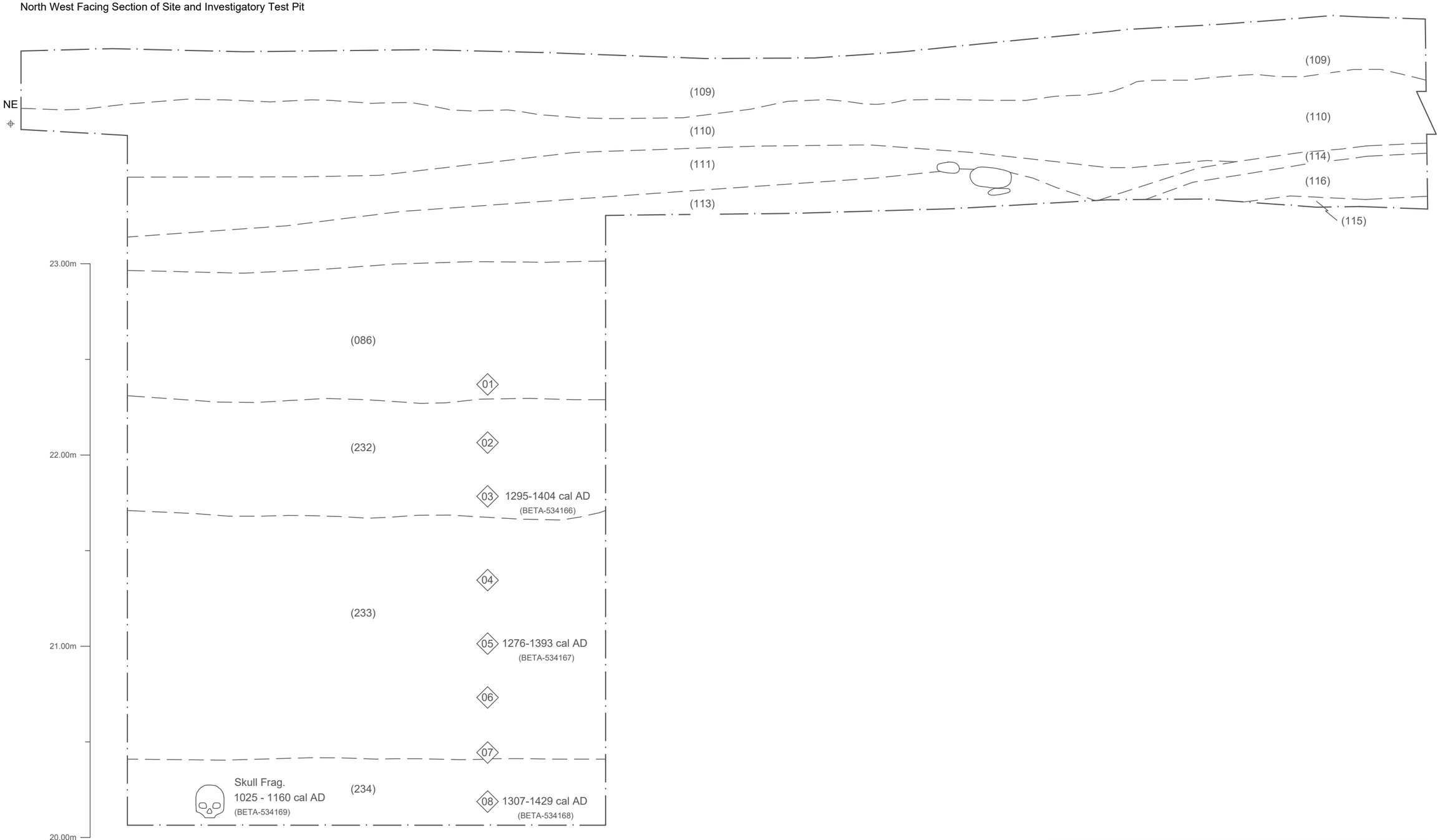
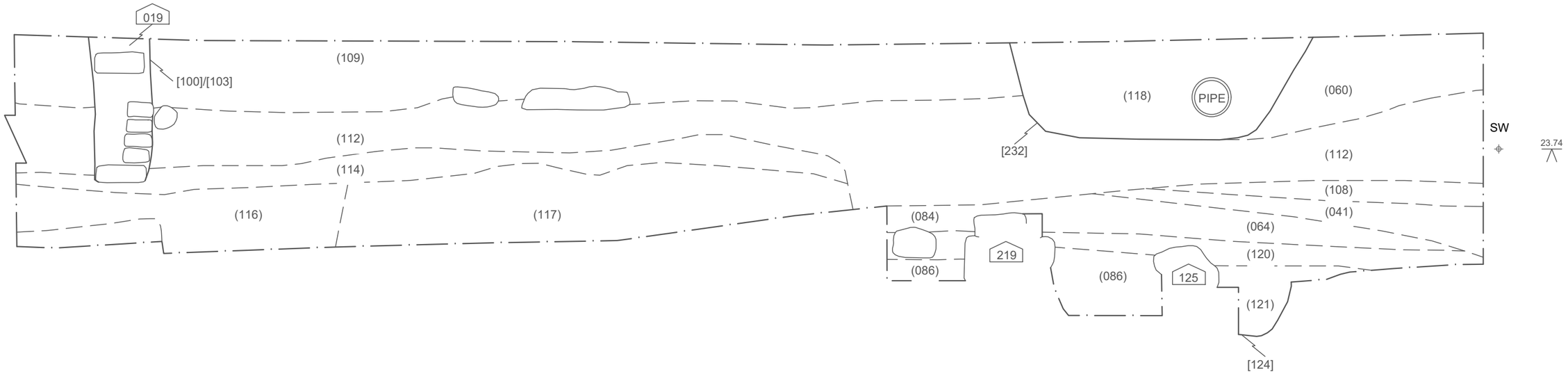


Figure 07 - Section Drawing 02, Showing Environ. Samples and C^{14} Dates, Trench 02
LRN2 - London Road, Nottingham

Scale at A3 - 1:20
Drawn by MH

Trent & Peak ARCHAEOLOGY

DR.02 (cont.)
North West Facing Section of Site and Investigatory Test Pit



DR.03
North-East Facing Section Bulk Showing Pits [032], [036], [052] and [061]

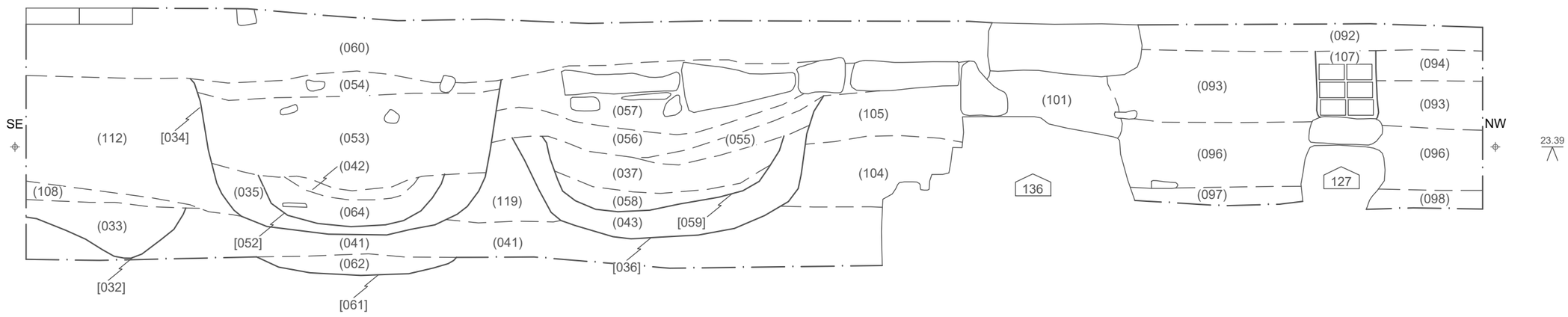
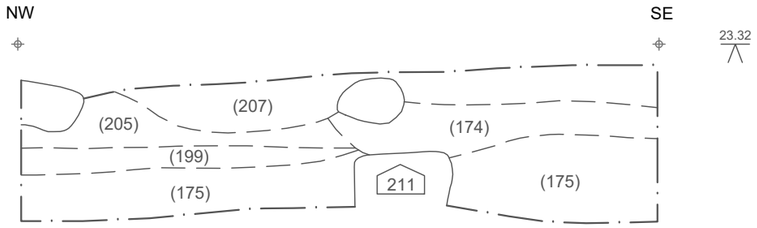


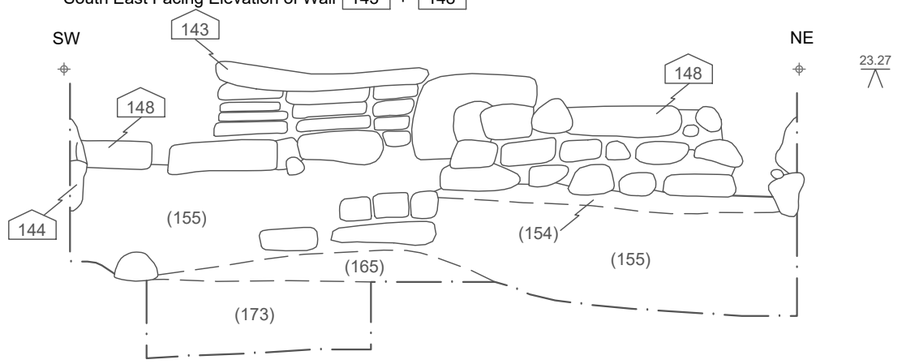
Figure 08 - Section Drawings 02 (cont.) and 03, Trench 02
LRN2 - London Road, Nottingham

Scale at A3 - 1:20
Drawn by MH

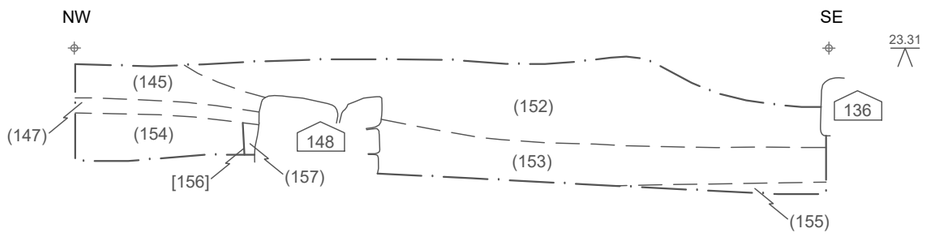
DR.04
North East Facing Elevation of Wall 211



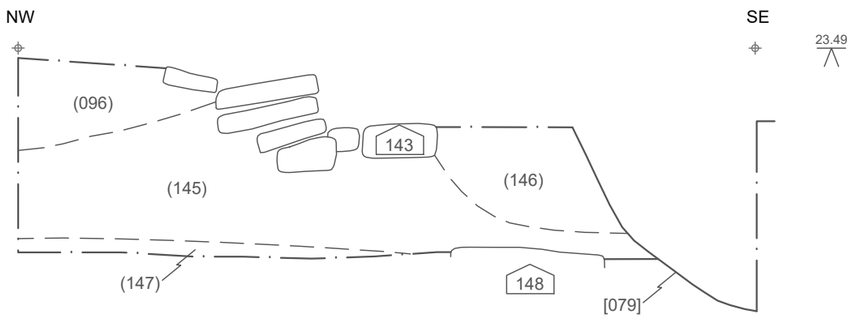
DR.05
South East Facing Elevation of Wall 143 + 148



DR.06
South Facing Elevation of Walls 148 + 136



DR.07
South West Facing Section Showing Profile of Pit [079] and Walls 143 + 148



Trent & Peak ARCHAEOLOGY

Figure 09 - Section Drawings 04 - 07, Trench 02
LRN2 - London Road, Nottingham

Scale at A3 - 1:20
Drawn by MH

DR.08

South East Facing Elevation of Wall 136

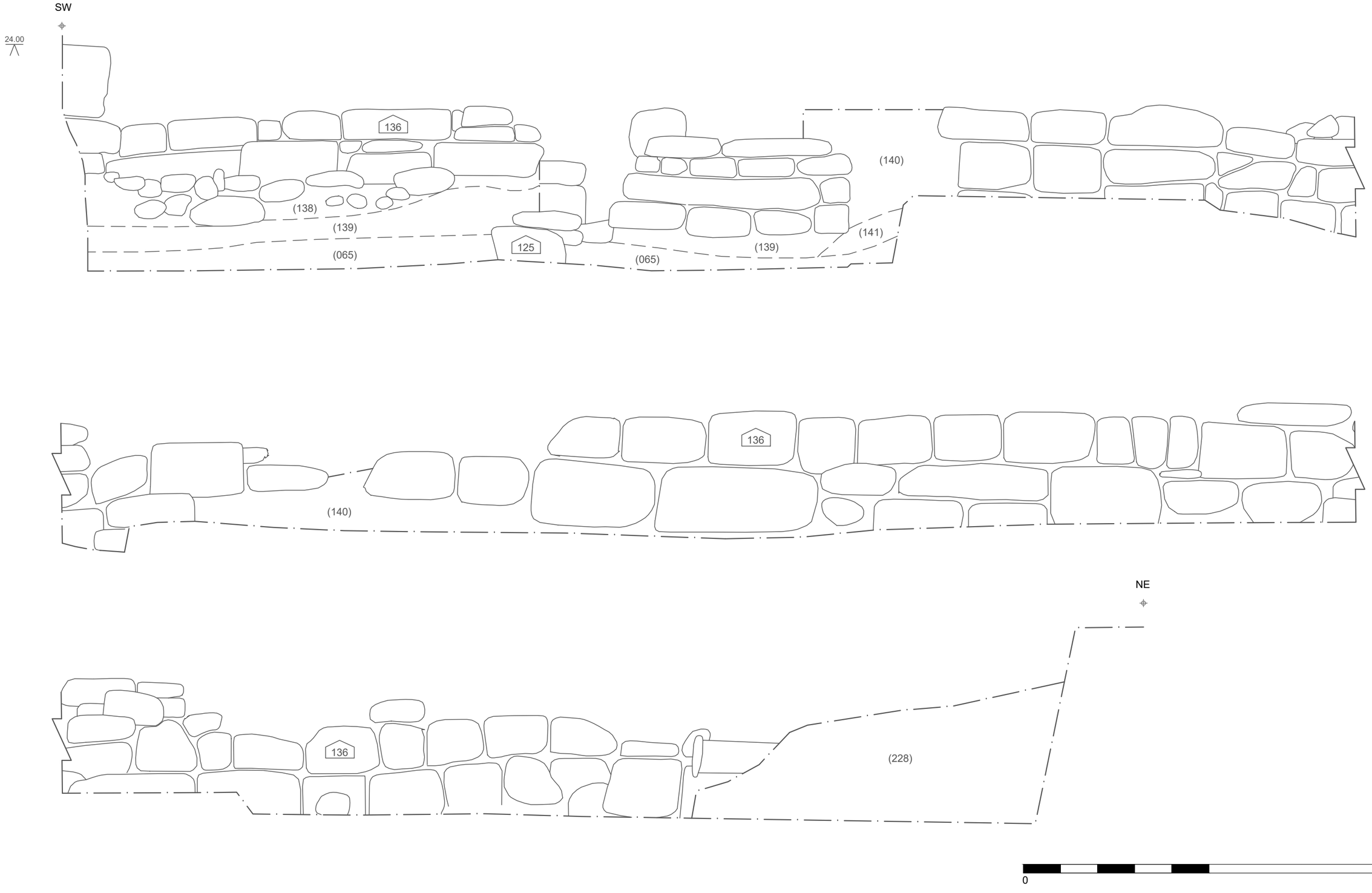
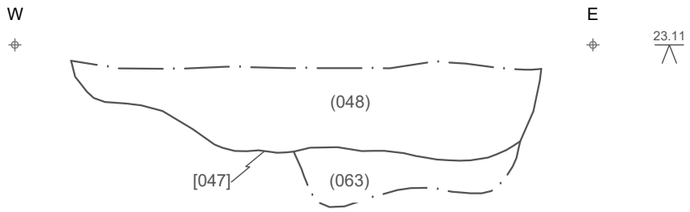


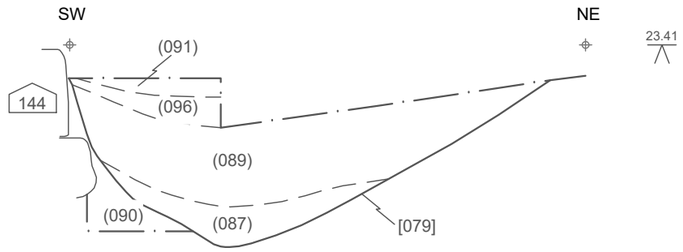
Figure 10 - Section Drawing 08, Trench 02
LRN2 - London Road, Nottingham

Scale at A3 - 1:20
Drawn by MH

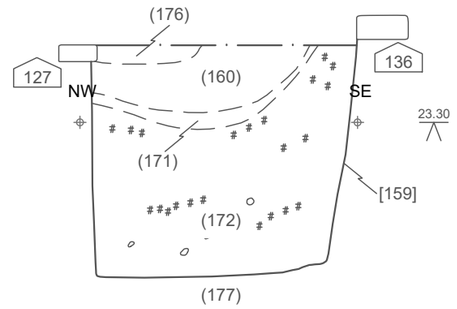
DR.09
South-East Facing Section of Pit [047]



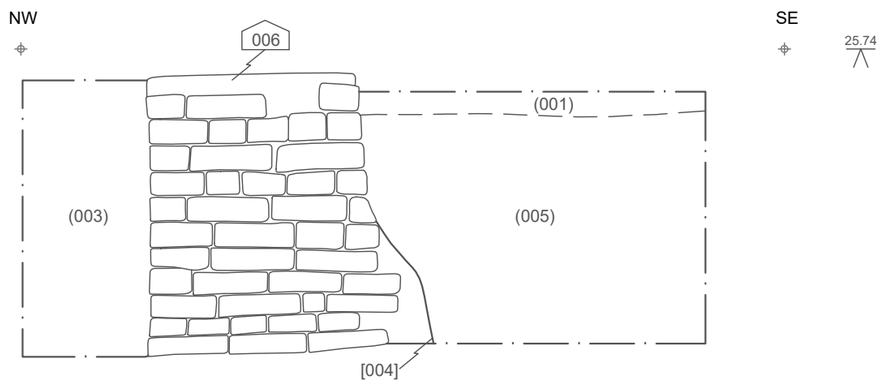
DR.10
South-East Facing Section of Pit [079]



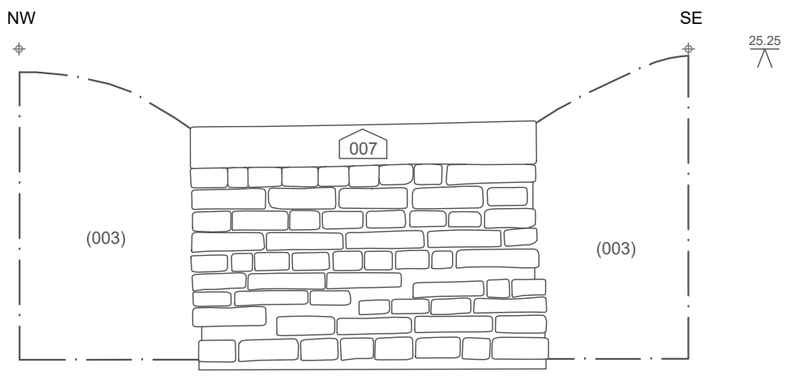
DR.11
South-West Facing Section Pit [159]



DR.12
South West Facing Elevation of Brickwork 006



DR.13
South West Facing Elevation of Brickwork 007



Trent & Peak ARCHAEOLOGY

Figure 11 - Section Drawings 09 - 13, Trenches 01 and 02
LRN2 - London Road, Nottingham

Scale at A3 - 1:20
Drawn by MH

Appendix 1: Pottery Quantification Tables

	NSP		NEMCS		NOTGL		NOTGR		NCSW		F304		POTT		DST		NLBG		MP		CIST		TUDG		
Cntxt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	Date
029							1	7																	M2
033							1	17	1	143									1	51					M3
035					3	105	2	13											1	10					M4
037									3	41															M4
038									3	184															M3
039					3	80	1	55	1	8															M3
040					1	6			1	134							3	73							M3
041	1	38	1	43	25	616	16	528	34	1932	1	21					9	207	8	426					M4
044					1	57																			M1
049					1	19																			M1
050									5	154									2	40					M3
062					1	1																			M1
063									1	29							1	49					1	1	M4
064					1	19			1	12	1	1													M3
065							1	9																	M2

	NSP		NEMCS		NOTGL		NOTGR		NCSW		F304		POTT		DST		NLBG		MP		CIST		TUDG		
Cntxt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	Date
084			1	5	2	11	2	57	2	25															M2
090					1	28																			M1
109									2	27															M3
138																	1	14							M3
139					1	3			1	1							1	27							M3
154							1	11									1	15							M3
155	1	38					6	26	5	60			1	3											M2
165																					3	5			M4
172																	3	63	6	360	5	6			M4
173									3	6															M1
174							4	128	13	332															M3
175					3	51			5	324			12	314			6	425							M3
187			1	11	2	37									1	2									M1
196					2	11	1	10																	M2
221					1	6																			M1
Total	2	76	3	59	48	1050	36	861	81	3412	2	22	13	317	1	2	25	873	18	887	8	11	1	1	

Table 45: Pottery occurrence by number and weight (in g) of sherds per context per fabric type, medieval contexts

	NOTGL		NCSW		NLBG		MP		CIST		TUDG		MY		METS		STMO		STSL		WESE		PMR		BLACK		NOTS		TPW		
Cntxt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	Date
000	3	146	3	332	3	75	1	9	4	29			4	67									3	296	2	187	1	15	50	1510	U/S
048							2	17	5	91	1	25											3	156					3	89	MOD
087									1	248																					PM3
088							2	113	1	96																					PM3
089																															PM3
091													2	69			1	19													PM3
129							1	9																	2	43					PM3
160							2	764	4	242													8	206							PM1
164																													3	141	MOD
188	8	467			2	26	1	18					1	46	1	3									1	35					PM2
189	1	25					2	32	1	5			3	225			2	102	1	3	1	3									PM3
218																									7	245			13	121	MOD
Total	12	638	3	332	5	101	11	962	16	711	1	25	10	407	1	3	3	121	1	3	1	3	14	658	12	510	1	15	69	1861	

Table 46: Pottery occurrence by number and weight (in g) of sherds per context by fabric type, post-medieval contexts

Appendix 2: Animal Bone Quantification Tables and Graphs

	Phase						
Species	**1**	**2**	**3**	**4**	**5**	**Undated**	**TOTAL**
Cattle	6	14	28	2		7	57
Sheep	4	100	58	1		1	164
Sheep/Goat	7	31	57	2		2	99
Pig	4	2	2			1	9
Horse			2				2
Dog			1			1	2
Cat	1		1				2
Red deer		1					1
Fallow deer	1						1
Chicken/guinea fowl		2	3				5
Chicken/pheasant/guinea fowl			1			1	2
Goose		2					2
Mallard			3				3
Large mammal	3	3	10	1	1	2	20
Medium mammal	4	1	8	1			14
Bird						1	1
Unidentified		2				1	3
TOTAL	**30**	**158**	**174**	**7**	**1**	**17**	**387**

Table 47: Number of Identified Specimens by Phase (Hand Collected)

Phase	Context	Cattle	Sheep	Sheep/goat	Pig	Horse	Dog	Cat	Red deer	Fallow deer	Chicken/ guinea fowl	Chicken/ pheasant/ guinea fowl	Goose	Mallard	Large mammal	Medium mammal	Bird	Unidentified	TOTAL
1	155	1	2	3	1											1			8
	175	4	1	4	3					1					3	3			19
	186	1	1																2
	TOTAL	**6**	**4**	**7**	**4**					**1**					**3**	**4**			**29**
2	33			2															2
	48	8		8											1				17
	63															1			1
	65				1													2	3
	84														1				1
	87			1															1
	88			1															1
	89	1	5	10															16
	135	1																	1

	137												1						1
	139	1																	1
	161			1															1
	189	3	95	6	1				1		2		1		1				110
	218			2															2
	TOTAL	**14**	**100**	**31**	**2**				**1**		**2**		**2**		**3**	**1**		**2**	**158**
3	35	2														1			3
	37	3			1							1		2		1			8
	41	15	4	7	1	1	1	1			2				4	5			41
	140		1																1
	160	6	16	24							1			1					48
	172	2	36	25		1									6	1			71
	176			1															1
	198		1																1
	TOTAL	**28**	**58**	**57**	**2**	**2**	**1**	**1**			**3**	**1**		**3**	**10**	**8**			**174**
4	29	1	1	1															3
	129														1	1			2
	130	1		1															2
	TOTAL	**2**	**1**	**2**											**1**	**1**			**7**
5	164														1				1
	TOTAL														**1**				**1**
Undated	39	1																	1
	40	1																	1
	49				1		1					1			1				4
	50			1											1				2
	67			1														1	2
	122	1																	1
	WALL	4	1														1		6
	TOTAL	**7**	**1**	**2**	**1**		**1**					**1**			**2**		**1**	**1**	17
All Phases	**TOTAL**	**57**	**164**	**99**	**9**	**2**	**2**	**1**	**1**	**1**	**5**	**2**	**2**	**3**	**20**	**14**	**1**	**3**	**386**

Table 48: Number of Identified Specimens by Phase (Hand Collected)

Species	1	2	3	4	Undated	TOTAL
Sheep/goat			2			2
Chicken/pheasant/ guinea fowl	1	1				2
Small passerine	1					1
Amphibian			53		3	56
Medium mammal		1	2			3
Bird	3	3	3			9
Unidentified	18	18	60	5	30	131
Grand Total	**23**	**23**	**106**	**5**	**33**	**408**

Table 49: Number of Identified Specimens by Phase (Environmental Residues)

	Phase						
Feature type	1	2	3	4	5	Undated	TOTAL
Culvert		2	1				3
Deposit		1	1				2
Layer	29	118	1	7		6	161
Pit		37	130		1	2	170
Spread			41			3	44
Wall						6	6
TOTAL	**29**	**158**	**174**	**7**	**1**	**17**	**386**

Table 50: Number of bones found, by phase and feature type

	COW			SHEEP			PIG		
Element	**L**		**R**	**L**		**R**	**L**		**R**
Horn Core				1					
Maxilla							1		
Mandible				2					1
Tooth			1						
Scapula			1						1
Humerus			1						
Radius	1								
Ulna									1
Metacarpal				2		1			1
Pelvis									
Femur				1					
Tibia	1								
Astragalus									
Calcaneus			1						
Metatarsal				1					
Phalanx 1					2				
Phalanx 2									
Phalanx 3					1				
TOTAL	**6**			**11**			**5**		

Table 51: Phase 1 Body-Part Patterns

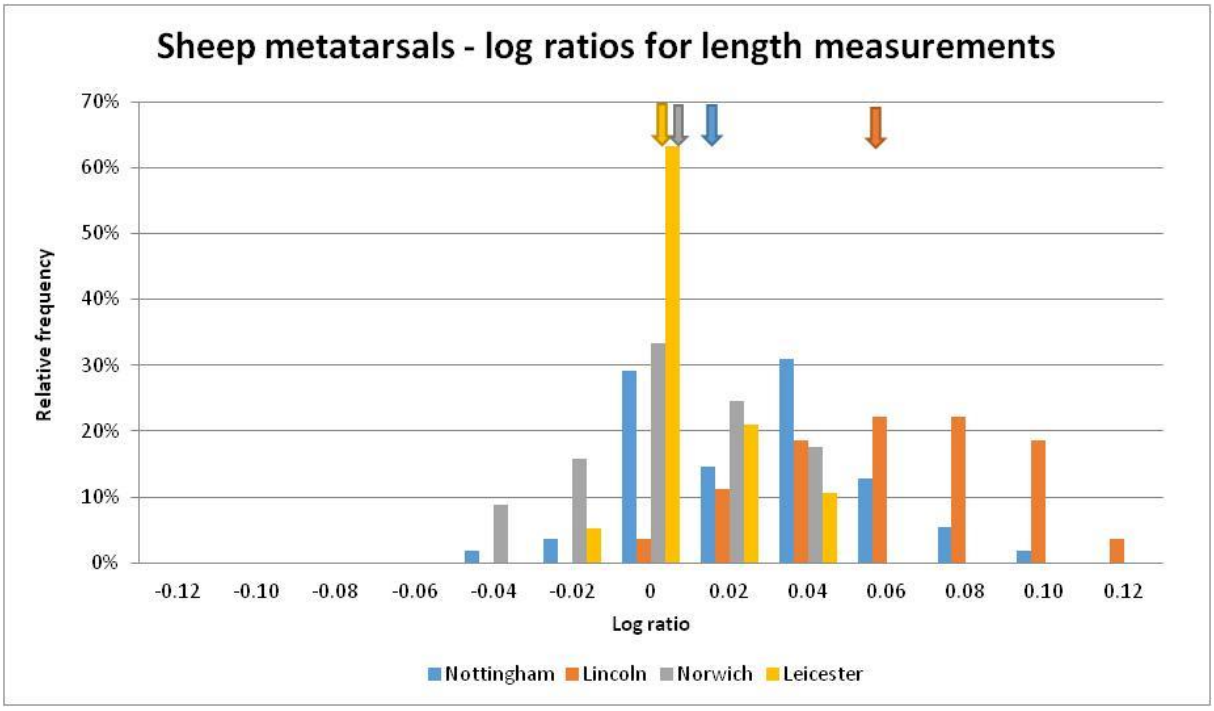


Figure 12: Graph showing comparison of log ratios for sheep length measurements (arrows show the mean for each site)

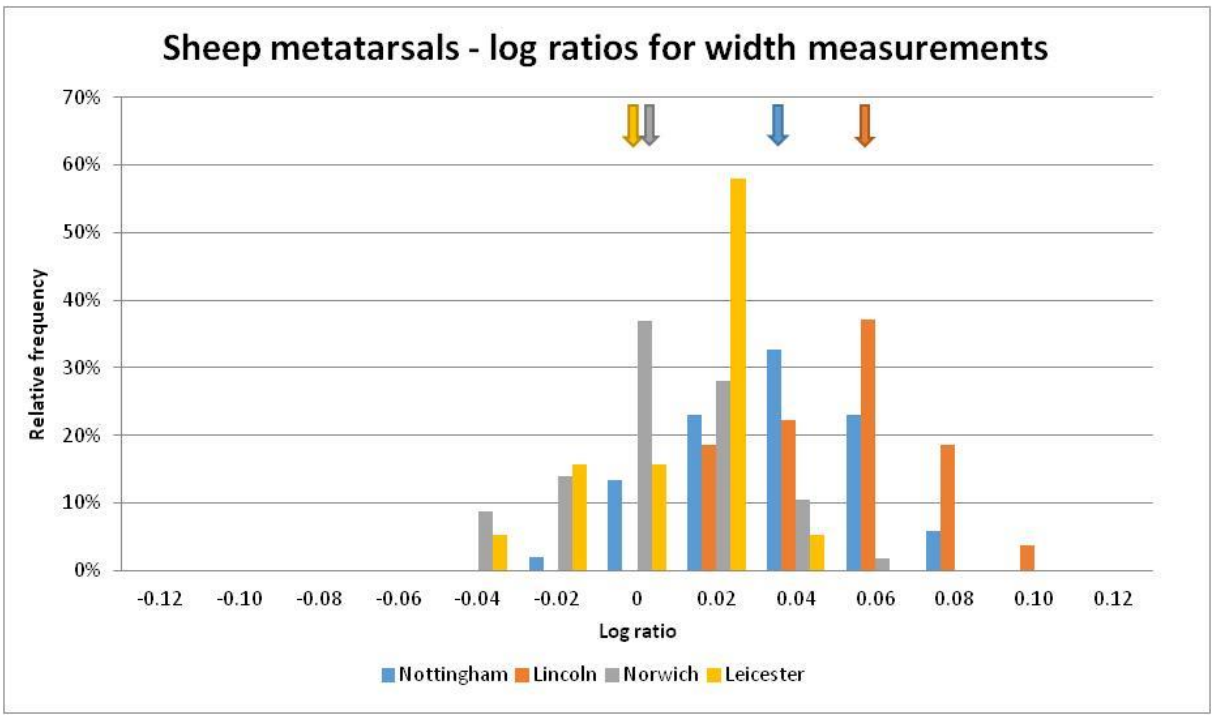


Figure 13: Graph showing comparison of log ratios for sheep width measurements (arrows show the mean for each site)

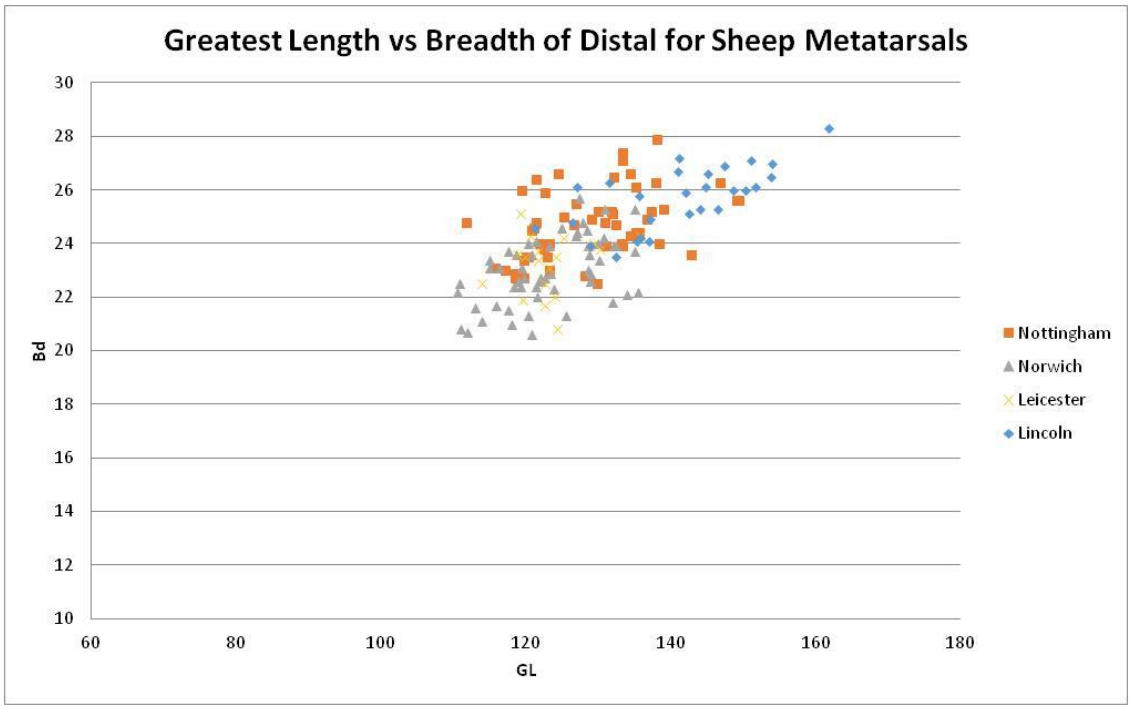


Figure 14: Graph showing Greatest Length vs Breadth of Distal measurements for Sheep Metatarsals for London Road and comparative sites

Appendix 3: Fish Remains - Quantification Tables

Sum of Quantity																	
	1	2	3	5	7	13	16	18	19	21	23	29	39	42	49	56	Grand Total
amphibian	1	4															5
cyprinid	2	2															4
eel	2											29					31
flatish	5	2				13											20
herring	3	2	3	5			16										29
unidentifiable	2	12	6		7	13			19	21	23		39	42	49	56	289
whiting	3			5				18									26
Grand Total	18	22	9	10	7	26	16	18	19	21	23	29	39	42	49	56	404

Table 52: Quantification of fish remains by sample

Species	NISP
amphibian	5
cyprinid	4
eel	31
flatish	20
herring	29
unidentifiable	289
whiting	26
Total	404

Table 53: Number of Identified Specimens

Appendix 4: Insect Remains from the Geoarchaeological Samples – Identification Table

Sample number	**8**	**5**	**3**
Context number			
Sample depth m.	3.00	2.20	1.50
Weight Kg	5	5	7
Volume l	6	6	10
HEMIPTERA			
Family, genus and spp. Indet.	+	-_	+
COLEOPTERA			
Carabidae			
Clivina fossor (L.)	+	-_	-
Trechus spp.	-	+	++
Bembidion spp.	-	++	++
Harpalus spp.	+	-	-
Stomis pumicatus (Panz.)	-	-	+
Amara spp.	-	+	-
Chlaenius spp.	+	-	-
Halididae			
Haliplus spp.	-	-	+
Gyrinidae			
Gyrinus spp.	+	-	-
HYDRAENIDAE			
Ochthebius spp.	+++	++++	+++
Helophorus spp.	++	++	++
Hydrophilidae			
Cercyon spp.	-	-	+
Megasternum boletophagum (Marsh.)	+++	-	+
Laccobius spp.	-	+	+
Hydrobius fuscipes (L.)	+	-	-
Enochrus spp.	+	-	-
Cymbiodyta marginella (F.)	-	+	-
Staphylinidae			
Xylodromus concinnus (Marsh.)	-	+	+
Lesteva spp.	++	++	+
Trogophloeus spp.	+++	-	-
Oxytelus rugosus (F.)	++	+++	+
Oxytelus sculpturatus Grav.	-	+++	+
Oxytelus nitidulus Grav.	++	++	++
Oxytelus spp.	++	-	-
Platystethus arenarius (Fourc.)	-	+	+
Platystethus spp.	++	+	-
Stenus spp.	-	-	+
Bledius spp.	+	-	-
Lathrobium spp.	-	-	+
Gyrohypnus fracticornis (Müll.)	+	-	-
Xantholinus spp.	-	+++	+
Philonthus spp.	++	-	-
Ocypus spp.	-	+	-
Tachyporus spp.	-	-	+
Aleocharinidae Genus & spp. Indet.	+++	++	+++
Dryopidae			
Esolus parallelepipedus (Müll.)	+	-	-
Nitidulidae			
Meligethes spp.	++	-	+++
Cucujidae			
Monotoma spp.	+	-	-
Cryptophagidae			
Cryptophagus spp.	+	-	+
Atomaria spp.	-	++	+
Phalacridae			
Phalacrus spp.	+	-	-
Lathridiidae			
Enicmus minutus (Group)	-	-	+
Corticaria spp.	+	-	-

Anobiidae			
Anobium punctatum (Geer)	++	+++	+++
Ptinidae			
Ptinus fur (L.)	+	-	-
Scarabaeidae			
Geotrupes spp.			+
Aphodius spp.	+++	++++	++
Phyllopertha horticola (L.)	+	++	+
Chyrsomelidae			
Lema spp.	+	-	-
Prasocuris phellandrii (L.)	-	-	+
Phyllotreta spp.	+++	+++	+++
Chaetocnema spp.	++	++	-
Curculionidae			
Apion spp.	+++	++++	+++
Sitona spp.	+++	+++	-
Hypera spp.	-	+	-
Notaris spp.	-	-	+
Rhinocus spp.	+	-	-
Ceutorhynchus contractus (Marsh.)	-	-	+
Ceutorhynchus erysimi (F.)	+++	++	-
C. spp.	+	-	-
Cidnorhinus quadrimaculatus (L.)	-	++	+
SIPHONAPTERA			
Pulex irritans (L.)	-	++	-
DIPTERA			
SUBORDER NEMATOCERA			
Family, genus & spp. indet.	+	-	-
SUBORDER CYCLORRHAPHA			
Family, genus & spp. indet.	-	+	-
TRICOPTERA			
Genus and spp. Indet.	+	-	-
HYMENOPTERA			
Formicoidea Family Genus and spp. indet.	++	++	+
Key + = 1-2 individuals ++ = 2-5 individuals +++ = 5-10 individuals ++++ = 10-20 individuals +++++ = 20+ of individuals			

Table 54: Insects recovered from London Road,Nottingham (Nomenclature follows Lucht 1987)

Appendix 5: Plant Macrofossils from the Geoarchaeological Samples – Identification Table

Sample	**3**		**5**		**8**			
Depth (m below Trench base)	**1.50 m**		**2.20 m**		**3.00 m**			
Depth (m BGL)	**3.66 m**		**4.06 m**		**5.16 m**			
Depth (m OD)	**21.48 m**		**20.78 m**		**19.98 m**			
Sample Volume (L)	**0.9 L**		**1 L**		**1 L**			
Fraction (Flot or Heavy Residue [HR])	**FLOT**	**HR**	**FLOT**	**HR**	**FLOT**	**HR**		
Proportion Scanned	**100%**	**100%**	**100%**	**50%**	**100%**	**100%**		
LATIN BINOMIAL							**HABITAT**	**ENGLISH COMMON NAME**
CULTIVATED PLANTS								
Cereals								
cf. *Triticum* sp. - germinated, charred grain (fragment)	-	-	-	1	-	-		
Other Crops								
Linum usitatitissimum L. - capsule fragment	-	-	-	-	-	+		
Weed/ Wild Plants								
Pteridium aquilinum (L.) Kuhn - leaf fragment	-	-	-	-	-	1	Wo/ He/ Mo	bracken
Ranunculus acris L./ *repens* L./ *bulbosus* L.	-	-	1	-	+	1	Typ G	meadow/ creeping/ bulbous buttercup
Ranunculus subgenus BATRACHIUM (DC.) A. Gray	-	-	-	-	1	-	Typ ShW/ D/ W	crowfoot
Prunus spinosa L. - thorn	-	-	1	-	-	-	H/ Sc/ Wo	blackthorn/ sloe
Potentilla sp.	-	-	-	-	1	-	V	cinquefoil
Urtica dioica L.	+++	++	-	-	+	-	Wo/ F/ C/ N	common nettle
Urtica urens L.	-	-	1	-	-	1	C/ Wa/ Ar	small nettle
cf. *Corylus* sp. - catkin fragment	-	-	-	1	-	-	He/ Wo/ Sc	possible hazel catkin
Salix spp. - bud	-	-	-	-	1	+	Typ D	willow
Salix spp. - seed pod (pistillate)	-	-	-	-	+	++	Typ D	willow
Brassica nigra (L.) W.D.J. Koch	-	1	-	-	1	1	D/ R/ Wa	black mustard
Brassica spp./ *Sinapis* spp. - seed coat fragment	-	1	-	-	1	-	V	cabbage/ mustard
Persicaria maculosa Gray/ *lapathifolia* (L.) Delarbre	-	-	1	+	+	+	C/ Wa/ O	radshank/ pale persicaria
Persicaria cf. *hydropiper* (L.) Delarbre	-	-	-	1	-	-	D/ ShW/ SH	water-pepper
Persicaria spp.	-	1	1	-	1	+	V	knotweed
Polygonum aviculare L.	-	1	+	+	+	+	O	knotgrass
Polygonum spp.	-	1	1	-	-	-	-	knotgrass
cf. *Polygonum* sp. - immature	-	-	1	-	1	-	-	possible immature knotgrass
Rumex spp.	-	-	1	1	1	1	V	dock
Stellaria spp.	-	-	-	-	+	+	V	stitchwort
cf. *Agrostemma githago* L. – seed coat fragment	-	1	-	-	-	1	C/ Wa/ Ar	possible corncockle
Silene sp. - seed coat fragment	-	1	-	-	-	-	V	campion
Chenopodium spp.	-	1	+	+	1	+	V	goosefoot
Atriplex spp.	1	1	-	1	-	1	V	orache
Anagallis sp.	-	1	-	-	-	-	V	pimpernel
Hyoscyamus niger L.	-	-	-	-	+	-	R/ Wa/ N/ Ar	henbane
Solanum nigrum L.	-	-	-	1	-	+	C/ Wa	black nightshade

Sample	**3**		**5**		**8**			
Depth (m below Trench base)	**1.50 m**		**2.20 m**		**3.00 m**			
Depth (m BGL)	**3.66 m**		**4.06 m**		**5.16 m**			
Depth (m OD)	**21.48 m**		**20.78 m**		**19.98 m**			
Sample Volume (L)	**0.9 L**		**1 L**		**1 L**			
Fraction (Flot or Heavy Residue [HR])	**FLOT**	**HR**	**FLOT**	**HR**	**FLOT**	**HR**		
Proportion Scanned	**100%**	**100%**	**100%**	**50%**	**100%**	**100%**		
LATIN BINOMIAL							**HABITAT**	**ENGLISH COMMON NAME**
Lamium sp. - type	1	-	-	-	-	-	Typ SH	dead-nettle type
LAMIACEAE - unidentified	-	1	-	-	-	-	-	Mint Family
Prunella vulgaris L.	-	-	1	1	-	-	Typ G/ R/ Wc	selfheal
Menyanthes trifoliata L.	-	-	-	1	-	-	B/ F/ ShW	bogbean
Carduus sp./ *Cirsium* sp.	-	-	-	1	-	-	V	thistle
Centaurea cyanus L.	-	-	-	-	-	1	Typ C/ Ar	cornflower
Picris hieracioides L.	-	-	-	-	-	1	Typ G/ O/ R	hawkweed oxtongue
Anthemis cotula L.	1	-	-	-	++	++	C/ R/ Wa/ Hs/ Ar	stinking chamomile
Glebionis segetum (L.) Fourr.	-	-	1	-	1	+	C/ Wa/ Ar	corn marigold
Sambucus nigra L.	-	-	2	-	-	-	He/ R/ Wo/ Wa/ N	elder/ elderberry
Sambucus nigra L. - seed coat fragment	-	1	-	-	-	-	He/ R/ Wo/ Wa/ N	elder/ elderberry
cf. *Valerianella locusta* (L.) Laerr.	-	-	-	-	1	-	C/ R/ G	common cornsalad
Valerianella dentata (L.) Pollich	1	-	-	-	-	-	C/ R/ Ar	narrow-fruited cornsalad
Potamogeton sp.	1	-	-	-	-	-	Typ W	pondweed
Carex sp. - 3-sided	-	-	1	-	-	-	Typ D	sedge
Unidentified - bud	-	-	-	1	-	-	-	-
Unidentified - capsule	-	-	-	-	1	-	-	-
Unidentified - internal structure of seed	-	-	-	-	1	-	-	-
Unidentified - rootlets	++++	-	++++	++	-	-	-	-
Unidentified - roundwood fragments	+	-	+	-	-	-	-	-
Unidentified - wood fragments	-	-	+	++	-	-	-	-
Unidentified	-	-	1	-	-	-	-	-
Items extracted for AMS Radiocarbon determination	No		Yes		Yes			
Other remains noted in WPR sample								
Anthracite		1						
Fish vertebra		1						
Snails (Molluscs)	+				1			
Moss (Bryophytes)			+		1			
Insects (Coleoptera)	+	+		++	+			

Table 55: Assessment results for waterlogged plant macrofossils from Test Pit 1, London Road, Nottingham

Appendix 6: Pollen from the Geoarchaeological Samples - Quantification

		TP01							WS02		
Depth (m BGL)		1.2	1.5	1.9	2.2	2.5	2.8	3	3.91	4.46	4.81
Trees	*Alnus*	1	5	6			6	6	4	1	68
	Betula					1			1		
	Fagus										
	Fraxinus					1		1			
	Juglans	1									
	Pinus	1									
	Quercus	1		2				1	2	1	
	Tilia		1						1	1	
	Ulmus	2					1				
Shrubs	*Corlylus-Myrica type*		6	3	3	5	4	4	5	3	7
	Ericaceae undiff.	11	9	7		1	4	2	5	5	3
	Hedera helix									1	
	Hex									1	
	Salix	1									
Herbs	*Poaceae*	49	39	51	56	55	50	56	58	61	8
	Cyperaceae	7	7	3	4	4	4	1	2	7	
	Cereal	4	3	4	3	12	7	4	14	5	2
	Apiaceae (Umbelliferae) undiff.		1						2		
	Artemesia							1			
	Asteraceae	9	13	21	10	7	7	5	5	6	8
	Lactuceae	12	23	9	7	9	15	11	14	11	
	Brassiccaceae	4	7	3	6	1	2	3	1		
	Caryophyllaceae		1	1	3	3	1	2		2	
	Centaurea cyanus	5	2	6		1	3	1	3	1	
	Centaurea nigra	1	3					1	1	1	
	Chenopodiaceae	6	9	5	5	2	2	1	1	1	
	Cirsium type	1						1	1		
	Helianthemum										
	Helleborous										
	Plantago sp.			3	8	9	2	4	4		2
	Polygonum	2	1	2				2			
	Ranunclus	2	1		5	1		2	1	1	
	Rubiaceae	1		1	1	3	1				1
	Rumex			1	2	1					
	Sanguisorba				1						
	Succisa								1		

	Thalictrum						1				
	Urtica				3	1	2	2			
Spores	*Diphasiastrum*										
	Osmunda										
	Polypodium			1	2	2	1			1	
	Pteridium			7	1	2	2				
	Pteropsida (monolete) undif.			3	3	2	2			3	
	Sphagnum										
Aquatics	*Myriophyllum*										
	Nuphar										
	Nymphaea										
	Potemogeton										
	Sparganium										
	Typha angustifolia										
	Typha latifolia						2		2		
Abundance		high	high	high	high	high	high	high	high	high	high
Diversity		high	high	high	high	high	high	high	high	high	mod
Unknown		5	4	9	10	3	1	3	16	3	4

Table 56: Summary of pollen encountered in the London Road samples

Appendix 7: Archaeobotanical Quantification Tables

Abundance scale		Number of items
x	Rare	1-5
xx	Frequent	6-25
xxx	Common	26-100
xxxx	Abundant	101-500
xxxxx	Super abundant	500+

Table 57: Abundance Scale Used

	Sample	9	10	11	12	13	14	15	16	17	18	19	20
Carbonised cereal grains													
Cerealia	Cereal	11				4	8			1	5		6
cf. *Hordeum*	Barley												2
Triticum/Secale sp.	Wheat/Rye	1											
Triticum sp.	Wheat	2											1
Triticum cf. *aestivum/durum/turgidum*	Free-threshing wheat			1									
Triticum aestivum/durum/turgidum	Free-threshing wheat	5	1										
Triticum spelta L.	Spelt					1							
Carbonised wild seeds													
Melilotus/Medicago/Trifolium sp.	Melilots/Medicks/ Clovers											1	
Euphorbia helioscopia L.	Sun Spurge						2						
Rumex sp.	Docks	1										1	
Caryophyllaceae (inside)	Pink family						1					1	
Chenopodiaceae	Goosefoot family						1					1	
Galium sp.	Bedstraw											1	
Centaurea sp.	Knapweeds										1		
cf. *Leucanthemum*	Oxeye Daisies						1						
Poaceae (small)	Grasses	1					3					1	
Indeterminate		1									1		
TOTAL (Carbonised remains)		**22**	**1**	**1**	**0**	**5**	**16**	**0**	**0**	**1**	**7**	**6**	**9**
DENSITY (Carbonised remains)		**1,1**	**0,1**	**0,2**	**0**	**1**	**0,4**	**0**	**0**	**0,03**	**0,2**	**0,2**	**0,2**
	Sample	9	10	11	12	13	14	15	16	17	18	19	20
Uncarbonised seeds													
Ranunculus sp.	Buttercups					4					1		15
Vitis sp.	Grape-vine								1				
Vitis vinifera L.	Grape-vine							1					
Fabaceae (small)	Pea family					1							
Rubus sp.	Brambles etc.											1	1
Rubus sp. section Glandulosus	Blackberry											1	

cf. *Ficus*	Fig									1			
Ficus carica L.	Fig					2			1		1		
Urtica urens L.	Small Nettle					8							1
Persicaria spp.	Knotweeds												14
Polygonum aviculare L.	Knotgrass												24
Fallopia convolvulus (L.) A. Löve	Black Bindweed												2
Rumex sp.	Docks												9
Stellaria media (L.) Vill.	Common Chickweed												16
Silene sp.	Campions												3
Chenopodiaceae	Goosefoot family											2	96
cf. *Chenopodium*	Goosefoots												
Chenopodium sp.	Goosefoots										3		78
Atriplex sp.	Oraches										3		
Hyoscyamus niger L.	Henbane					1			1				
Lamiaceae	Dead-nettle family											1	
Galeopsis sp.	Hemp-nettles												1
Lycopus europeaus L.	Gypsywort					1							
Asteraceae	Daisy family												1
Cirsium/Carduus sp.	Thistles					1							
	Sample	9	10	11	12	13	14	15	16	17	18	19	20
Sambucus sp.	Elders				1		3		2			5	
Sambucus nigra L.	Elder	5	6			4	11	1	38	3	26		1
Cyperaceae	Sedge family					5			1			1	1
Carex sp.	Sedges					2					1		1
Indeterminate		1	2		1	5	2	1			1	2	9
TOTAL (Uncarbonised remains)			**8**	**0**	**2**	**34**	**16**	**3**	**44**	**4**	**36**	**13**	**272**
DENSITY (Uncarbonised remains)		**0,25**	**0,8**	**0**	**0,4**	**6,8**	**0,4**	**0,8**	**1,1**	**0,1**	**0,9**	**0,33**	**6,8**
Other													
Charcoal		xxxx	xxxx	xxxx	xxx	xx	xxxx	xx	xx	xxxx	xxx	xxx	xxx
Spore													xxx
Fish scale					x			x					
Animal bone											x		

Table 58: Analysis results

Appendix 8: Context List

Context	Area	Category	Description	Phase
001	TR1,2,3	Tarmac	Carpark tarmac	6
002	TR1,2,3	Leveling	Leveling/Hardcore	6
003	TR1	Layer	Demoliton dump/Layer	6
004	TR1	Cut	Modern Truncation	6
005	TR1	Fill	[004] fill, contains tarmac	6
006	TR1	Brickwork	Brickwork at NE end of TR1	4
007	TR1	Brickwork	Brickwork in the centre of TR1	4
008	TR1	Brickwork	Brickwork at SW end of TR1	4
009	TR1	Surface	Tile surface between 006+007	4
010	TR1	Surface	Surface/compact rubble below tiles 009	4
011	TR1	Surface	Surface/compact rubble between 007+008	4
012	TR1	Concrete	Concrete base	4
013	TR2	Wall	NE-SW wall, abbutt by brick floor 014	5
014	TR2	Floor	Red Brick Floor	5
015	TR2	Wall	Modern red brick wall NE truncation 014	5
016	TR2	Wall	Wall with APS? NE 014	5
017	TR2	Floor	Black/Blue Brick surface	5
018	TR2	Wall	Wall with rectangular cells	5
019	TR2	Wall	Possible continuation of 018 SE	5
020	TR2	Cut	Cut of modern floor	6
021	TR2	Fill	Fill of structure 020	6
022	TR2	Fill	Demolition backfill of NE most cell 018	6
023	TR2	Fill	Demolition backfill of SW cell 018	6
024	TR2	Fill	Dark sand backfill abutting 018 to SE	6
025	TR2	Fill	Demolition/backfill NW of trench	6
026	TR2	Cut	015 construction cut	5
027	TR2	Fill	Fill of construction cut for [026]	5
028	VOID	VOID	VOID	VOID
029	TR1	Layer	Dark humic layer at the base of TR1	4
030	TR1	Fill	Backfill/levelling of cellar NE end of the trench	4
031	TR1	Structure	Sandstone base at 2-3m depth	4
032	TR2	Cut	Cut of possible pit	2
033	TR2	Fill	Fill of [032]	2
034	TR2	Cut	Cut of possible pit	3
035	TR2	Fill	Fill of [034]	3
036	TR2	Cut	Cut of possible pit	3
037	TR2	Fill	Fill of [036]	3
038	TR2	Layer	Clay spread	Unknown
039	TR2	Layer	Sandy spread	Unknown
040	TR2	Layer	Red clay spread	Unknown

041	TR2	Layer	Clay spread	3
042	TR2	Fill	Fill of pit [034]	3
043	TR2	Fill	Fill of pit [036]	3
044	TR2	Deposit	Worked stone/structural	Unknown
045	TR2	Cut	Possible pit	Unknown
046	TR2	Fill	Fill of [045]	Unknown
047	TR2	Cut	Pit	2
048	TR2	Fill	Fill of [047]	2
049	TR2	Layer	Mixed sand	Unknown
050	TR2	Layer	Charcoal rich layer below (049)	Unknown
051	TR2	Layer	Possible structural layer	Unknown
052	TR2	Cut	Recut of [034]	3
053	TR2	Fill	Fill of [034]	3
054	TR2	Fill	Fill of [034]	3
055	TR2	Fill	Fill of [036]	3
056	TR2	Layer	Fill of [036]	3
057	TR2	Layer	Fill of [036]	3
058	TR2	Fill	Fill of [036]	3
059	TR2	Cut	Recut of [036]	3
060	TR2	Layer	Mixed sandy demolition layer	5
061	TR2	Cut	Pit	2
062	TR2	Fill	Fill of [061]	2
063	TR2	Layer	Brown silt	2
064	TR2	Layer	Sandy layer below (041A)	2
065	TR2	Layer	Sandy layer	2
066	TR2	Deposit	Cluster of stones, possible surface	Unknown
067	TR2	Cut	Pit	Unknown
068	TR3	Structure	Brick pilar (Most likely of the bridge)	5
069	TR3	Structure	Brick wall	5
070	TR3	Structure	Possible brick pilar	5
071	TR3	Structure	Brick wall, SE of the trench, running N	5
072	TR3	Surface	Concrete surface (north of 068)	5
073	TR3	Surface	Brick/concrete surface, between 068 and 069	5
074	TR3	Surface	Concrete surface (above 069)	5
075	TR3	Layer	Layer of brown soil	5
076	TR3	Layer	Demolition layer	6
077	TR3	Cut	Cut of drain pipe	6
078	TR3	Fill	Fill of [077]	6
079	TR2	Cut	Cut of possible pit, within E-W wall	2
080	TR2	Fill	Fill of [067]	Unknown
081	TR2	Layer	Pink red clay	3
082	TR2	Layer	Brown silty sand, below (081)	3
083	TR2	Layer	Yellow sand	3

084	TR2	Layer	Pinkish-orange clay	2
085	VOID	VOID	VOID	VOID
086	TR2	Layer	Brown sand	1
087	TR2	Fill	Fill of [079]	2
088	TR2	Fill	Fill of [079]	2
089	TR2	Fill	Charcoal, fill of [079]	2
090	TR2	Layer	Orange clay	2
091	TR2	Layer	Greyish clayey silt	2
092	TR2	Layer	Sandy domolition layer	5
093	TR2	Layer	Compact silty clay	3
094	TR2	Layer	Compact silty clay	3
095	TR2	Layer	Compact silty clay	3
096	TR2	Layer	Dark yellow sand	3
097	TR2	Layer	Compact silty clay	2
098	TR2	Layer	Compact silty clay	2
099	TR2	Layer	Dense charcoal spread	2
100	TR2	Cut	Construction cut	5
101	TR2	Layer	Layer beneath concrete block	5
102	TR2	Deposit	Dense charcoal deposit	2
103	TR2	Cut	Construction cut	5
104	TR2	Layer	Mixed sand	3
105	TR2	Layer	Silty clay	3
106	TR2	Fill	Fill of comstruction cut [103]	5
107	TR2	Fill	Fill of construction cut [100]	5
108	TR2	Layer	Pink clay	2
109	TR2	Layer	Dark grey demolition layer	6
110	TR2	Layer	Rubble (made ground)	3
111	TR2	Layer	Yellow and black mixed layer	3
112	TR2	Layer	Mixed demolition layer	3
113	TR2	Layer	Rubble	3
114	TR2	Layer	Charcoal spread	3
115	TR2	Layer	Pink clay spread	3
116	TR2	Layer	Mid grey brown silty clay	3
117	TR2	Layer	Pink disturbed clay	2
118	TR2	Fill	Fill of drain cut	6
119	TR2	Layer	Grey silty clay same as (104)	3
120	TR2	Layer	Light grey silty sand	2
121	TR2	Fill	Fill of [124]	1
122	TR2	Layer	Charcoal spread	Unknown
123	TR3	Structure	Brick wall running N-W	5
124	TR2	Cut	Construction cut of N-S wall 125	1
125	TR2	Structure	N-S wall running under main wall	1
126	TR2	Structure	Stones overlying 125	1

127	TR2	Structure	Wall abbutting 125	1
128	TR2	Structure	Wall under 125, EW	1
129	TR2	Layer	Light red clay	4
130	TR2	Layer	Light grey black (charcoal)	4
131	TR2	Layer	Dark orange red	3
132	TR2	Layer	Light yellow stone inclusions	3
133	TR2	Structure	E-W brick wall	4
134	TR2	Layer	Wall foundations, under 133	3
135	TR2	Layer	Rubble under (134)	2
136	TR2	Structure	NE-SW wall, W end of trench 2	2
137	TR2	Deposit	Pinkish clay, bonding material of wall 136	2
138	TR2	Layer	Rubble foundation layer of wall 136	2
139	TR2	Layer	Dark layer below foundations (138)	2
140	TR2	Layer	Pinkish clay, above wall 136	3
141	TR2	Layer	Pink foundation below 136	2
142	TR2	Structure	Brick wall above structure 143	3
143	TR2	Structure	Tile structure	2
144	TR2	Structure	Stone wall	2
145	TR2	Layer	Red clay below 143+144	2
146	TR2	Layer	Black clinker layer above 145	2
147	TR2	Layer	Dark grey silt, with red laminations	2
148	TR2	Structure	Stone wall (same as 127)	1
149	TR2	Cut	Construction cut for 133	4
150	TR2	Fill	Fill of [149]	4
151	TR2	Layer	Strong red laminated clay	3
152	TR2	Layer	Light grey rubble	2
153	TR2	Layer	Yellow+grey sand	2
154	TR2	Layer	Red clay	1
155	TR2	Layer	Brownish/Greenish grey silt	1
156	TR2	Cut	Construction cut for wall 148	1
157	TR2	Fill	Fill of [156]	1
158	TR2	Structure	Brick structure above 127, SW of 148	4
159	TR2	Cut	Pit	3
160	TR2	Fill	Fill of pit [159]	3
161	TR2	Layer	Foundation pink clay of structure 158	2
162	TR2	Layer	Backfill rubble within structure 158	5
163	TR2	Cut	Cut of pit truncating structure 158	5
164	TR2	Fill	Fill of [163]	5
165	TR2	Layer	Dark grey silt	2
166	TR2	Cut	Construction cut for 168	1
167	TR2	Fill	Fill of [166]	1
168	TR2	Structure	Sandstone wall	1
169	TR2	Layer/Structure	Degraded sandstone, N of (165)	2

170	TR2	Layer/Structure	Degraded sandstone, S of (165)	2
171	TR2	Fill	Sandstone in [159]	3
172	TR2	Fill	Fill of [159], below (171)	3
173	TR2	Layer	Dark green grey silt	1
174	TR2	Layer	Red clay	2
175	TR2	Layer	Greenish grey silts	1
176	TR2	Deposit	White degraded mortar associated with 158	3
177	TR2	Layer	Brown silt at the base of pit [159]	2
178	TR2	Fill	Rubble backfill, below 158 truncating NE end of 128	4
179	TR2	Structure	Sandstone wall	2
180	TR2	Structure	Brick wall	4
181	TR2	Structure	Brick wall	4
182	TR2	Structure	Sandstone wall	2
183	TR2	Layer	Rubble layer	6
184	TR2	Layer	Sandy silt layer	3
185	TR2	Deposit	Clinker/burnt material within 158	4
186	TR2	Layer	Dark brown silt, medieval occupational horizon.	1
187	TR2	Layer	Mid brown silt/sandstone below (186)	1
188	TR2	Layer	Red clay	2
189	TR2	Layer	Greyish brown sandy silt	2
190	TR2	Layer	Clay layer below structure 158, same as 161?	4
191	TR2	Layer	Mix clay silt, bonding of structure 128	1
192	TR2	Structure	Wall	2
193	TR2	Layer	Pinkish clay under 187 same as 141?	1
194	TR2	Deposit	Red clay deposit, wall 192	3
195	TR2	Deposit	Dark black silt deposit, wall 192	3
196	TR2	Layer	Charcoal layer	3
197	TR2	Cut	Cut of a possible culvert, within [159], undermines 136	3
198	TR2	Fill	Fill of [197], same as (172)	3
199	TR2	Layer	Charcoal layer above (175)	1
200	TR2	Layer	Charcoal below wall	2
201	TR2	Layer	Rubble foundation below structure	2
202	TR2	Layer	Friable light brownish yellow sandstone layer, below 204	3
203	TR2	Layer	Charcoal layer, contains burnt tile+mortar.	3
204	TR2	Layer	Friable mid orange brown sandy silt rubble, CBM, plaster.	3
205	TR2	Layer	Hard dark yellowish brown sandy silt	2
206	TR2	Layer	Soft mid greenish brown silty clay w/ frequent charcoal	1
207	TR2	Layer	Compact dark greenish grey silty clay	2
208	TR2	Layer	Compact dark grey/black silty sand w/ frequent charcoal	5
209	TR2	Layer	Friable mid orange brown silty clay	6

210	TR2	Layer	Soft dark grey/black silt and charcoal	6
211	TR2	Structure	Continuation of wall 148	1
212	TR2	Structure	Sandstone wall	2
213	TR2	Cut	Construction cut for wall 211	1
214	TR2	Fill	Friable light greyish brown silt fill of [213]	1
215	TR2	Layer	Soft strong red clay below [213]	2
216	TR2	Structure	Culvert	2
217	TR2	Structure	Circular stone structure within 216	2
218	TR2	Fill	Fill of 217	3
219	TR2	Structure	Wall	1
220	TR2	Structure	Circular structure	1
221	TR2	Fill	Red clay layer	1
222	TR2	Fill	Fill of 220	1
223	TR2	Structure	Stone-lined and based pit	2
224	TR2	Structure	Outer sandstone structure	2
225	TR2	Structure	Inner sandstone surface	2
226	TR2	Structure	Inner tile surface	2
227	TR2	Structure	Sandstone wall, abutted by kiln 223	2
228	TR2	Cut	Cut of drain pipe	6
229	TR2	Fill	Fill of [228]	6
230	TR2	Fill	Fill of 226	2
231	TR2	Structure	Wall	1
232	TR2	Cut	Cut for drain (118)	6

Appendix 9: OASIS Form

OASIS DATA COLLECTION FORM: England

Printable version

OASIS ID: trentpea1-367818

Project details

Project name	The Former London Road Petrol Filling Station, London Road, Nottingham: An Archaeological Evaluation
Short description of the project	Trent and Peak Archaeology (TPA) was commissioned by Monk Estates to undertake an archaeological evaluation and mitigation at the site of a former petrol filling station, London Road, Nottingham. The fieldwork was carried out between 23rd April and 26th June 2019 in advance of residential development. London Road is situated within the historic core of the city of Nottingham in an area of high archaeological importance. The potential for surviving remains of medieval and post-medieval date within the footprint of the development was therefore deemed high. Due to this, a staged programme of archaeological mitigation was required by the Nottingham City Council Archaeologist, Scott Lomax (NCC), in advance of the development. This stage comprised an archaeological trial trench evaluation and mitigation.
Project dates	Start: 23-04-2019 End: 26-06-2019
Previous/future work	Yes / No
Any associated project reference codes	LRN2 - Sitecode
Any associated project reference codes	16/01352/PFUL3 - Planning Application No.
Type of project	Field evaluation
Current Land use	Other 15 - Other
Methods & techniques	"'Sample Trenches"'
Development type	Urban residential (e.g. flats, houses, etc.)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)

Project location

Country	England
Site location	NOTTINGHAMSHIRE NOTTINGHAM NOTTINGHAM The Former London Road Petrol Filling Station, London Road, Nottingham
Postcode	NG1 1JF
Study area	2660 Square metres
Site coordinates	SK 57830 39578 52.95014775584 -1.139184495443 52 57 00 N 001 08 21 W Point

Project creators

Name of Organisation	Trent and Peak Archaeology
Project brief originator	Nottingham City Council
Project design originator	Kristina Krawiec
Project director/manager	Tom Hooley and Kristina Krawiec
Project supervisor	Paul Renner, Tom Keyworth and Pov Cepauskas
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Monk Estates

Entered by	Kate Smart (ksmart@yorkat.co.uk)
Entered on	13 November 2019

OASIS:

Please e-mail Historic England for OASIS help and advice

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