The 'Court Circle' Excavation at Thynghowe, Hanger Hill, Sherwood Forest, Nottinghamshire.

Archaeological Report

Hanger Hill (SK 599 683).

Andy Gaunt and Sean Crossley
Mercian Archaeological Services CIC
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The Court Circle Excavation at Thynghowe,

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Archaeological Report

1. Summary

1.1. An excavation of earthworks in the vicinity of Hanger Hill, known historically as Thynghowe, was undertaken in April 2013. The excavation was carried out for the Friends of Thynghowe by Mercian Archaeological Services CIC (Mercian). The excavation took place over 3 days from the 23rd -25th April 2013 alongside volunteers from the Friends of Thynghowe who sieved 100% of the spoil generated. There were a further 3 days of recording by Mercian. The work involved the hand excavation of one 10m x 1.5m trench at right angles to the central section of a curvilinear earthwork consisting of a bank and ditch and an adjacent trackway. The location of the trench was at approximately SK5998 6841, about 50m to the northeast of the summit of Hanger Hill. The excavation was undertaken to investigate the nature of the earthwork; to understand its original shape and dimensions and to determine, if possible, the date of its construction and use. Also to determine, if possible, the age of the adjacent trackway.

1.2. The excavations revealed that the bank and ditch were considerably larger than the visible surface remains suggested. Evidence from the excavation and the preceding topographic survey, LiDAR and historic mapping suggests the feature may have originally formed part of a circular enclosure with the bank on the inside of the ditch. Environmental evidence does not directly suggest the enclosure was formed to enclose and area of woodland (Mike Allen, pers comm.). If the earthwork was originally circular the internal bank suggests the site was designed to limit access to an internal space. This function, the location of the feature at the extreme periphery of the Parish of Budby where the parish adjoins two others (often ancient meeting sites are at the periphery of

landscapes) (Mallett et al 2012), and the spatial proximity to Hangar Hill (a posited Viking assembly site) suggests that it is not impossible that the enclosure may be associated with the possible Viking meeting site of Thynghowe. The only artefacts recovered from the excavation (except for CBM, iron and pottery all from the adjacent modern trackway) were Heat Shattered Pebbles. These seem to have been deposited after the ditch and bank were constructed. Their presence, combined with the environmental evidence, indicates that a Bronze Age or Early Medieval construction period for the bank and ditch is not impossible and may even be most likely.

2. Project location, topography and geology

2.1. Site Location: The site is located near Hanger Hill (SK 599 683), in the parish of Budby, Nottinghamshire, and is adjacent to the boundaries of Edwinstowe and Warsop parishes.

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Figure 1: Site Location

2.2 Topography: Hanger Hill is situated on a ridge of high ground between the Maun Valley to the South and the valley of the River Meden to the north. The hill itself stands at a height of 108m Ordnance Datum

Newlyn (ODN) and commands notable views over the Meden Valley to the north. The site would have been a significant feature in the landscape from this direction in antiquity (Gaunt 2010). The site also commands views to the east, southeast and southwest (ibid).

2.3 Geology: Hanger Hill is located on the Nottingham Castle Sandstone Formation - Sandstone, Pebbly (gravelly). This Sedimentary Bedrock formed approximately 246 to 251 million years ago in the Triassic Period. The local environment at the time of deposition was dominated by rivers; depositing mainly sand and gravel detrital material in channels to form river terrace deposits, with fine silt and clay from overbank floods forming floodplain alluvium, and some bogs depositing peat; includes estuarine and coastal plain deposits mapped as alluvium (www.BGS.ac.co.uk- accessed 08/07/2013).

3. Archaeological and Historical Background

3.1. The English Place Names Society volume for Nottinghamshire published in 1940 gives the derivation of Hanger Hill as "formerly Thynghhowe". Spellings include Thinghowe c1300 and Thingaw Hill in the early 17th century. The origin of the name of Thynghowe is þing haugr ("þ" is the Saxon letter *thorn* pronounced "th"), meaning 'hill of assembly or meeting place' (Glover et al 1940).

3.2. A 14th century boundary perambulation of Birklands and Billhaugh, possibly produced for the Forest Eyre of 1334 includes the place name Thyghowe. This is recorded in 'The Sherwood Forest Book', edited by Helen Boulton in 1964 . Boulton in her footnotes for the perambulation, states "Hanger Hill, formerly Thynghowe" (1964, 54).

3.3. Tynghough Assart adjoins the hill to the northwest, between Warsop and Budby, on an early 17th century map of Sherwood Forest. The map is

probably part of the Crown Survey of Sherwood Forest in 1609 by Richard Bankes (PRO,MPF 295 [map 2] Mastoris & Groves 1997).

3.4. The location of Hanger Hill at the junction of a number of parishes may explain its original name. It has however also been suggested as a possible location for the meeting place of the wapentake of Bassetlaw (Mallett et al 2012). An alternative site for the Bassetlaw Wapentake meeting place has been suggested as Beacon Hill in East Markham (Crook 1982).

3.5. Thynghowe may have alternatively been the meeting place for the district of Hatfield which formed the western half of the Wapentake of Bassetlaw (Mallett et al 2012).

3.6 In 2005 Thynghowe was rediscovered by Stuart Reddish and Lynda Mallett using an 1816 perambulation document. The Friends of Thynghowe was subsequently formed to interpret, record, and promote the site. Recent work by the Friends of Thynghowe both at home and abroad has suggested that the site is a 'Thing' site as seen in Scandinavia, linking this site into a network of meeting sites stretching across northern Europe (Reddish and Mallett 2012).

3.7. The Thynghowe site was subjected to a topographic survey in 2010 by Nottinghamshire County Council Community Archaeology (Gaunt 2010). The survey helped to place the site in its wider landscape context, as well as identifying a number of earthworks including the curvilinear earthwork investigated here. The wider landscape around Thynghowe was also subject to a level one survey to record features and boundary stones detected by the group (Gaunt 2010).

3.8. The site has been included in a University College London (UCL) 'Landscapes of Governance' project to record the meeting and assembly sites of Britain. A geophysical (magnetometer) survey was undertaken by

Stuart Brookes and John Baker of UCL in 2011 (Baker & Brookes 2012) as part of that project.

3.9. A LiDAR survey of Thynghowe and the surrounding landscape was undertaken in 2012 by Geomatics Group- Environment Agency and the data was processed by a team consisting of Simon Crutchley of English Heritage, Peter Crow of Forest Research at the Forestry Commission, Amy Chandler, Hugh Mannall and Tim Yarnell, all of the Forestry Commission, Steve Horne and Lynda Mallett of the Friends of Thynghowe, Ian Major of the Sherwood Forest Trust and Stuart Reddish of Public Information Research Organisation. The results included the discovery of a trackway subsequently identified as Nether Warsop Gate by Gaunt from map source NRO ED 4 L. A series of ground-truthing sessions have taken place to record and interpret features on the ground that were detected by the recent LiDAR survey. The survey also confirmed the existence of the curvilinear earthwork that had been recorded in the topographic survey, and helped to suggest that the earthwork was originally part of a circular enclosure (*Thynghowe and the Forgotten Heritage of Birklands,* Heritage Lottery funded Project 2012).

3.10. A summary of the research and fieldwork up to end of 2011 has been published in the Transactions of the Thoroton Society as: Mallett, L., Reddish S., Baker, J., Brookes, S., & Gaunt, A. 2012. *Community Archaeology at Thynghowe, Birklands, Sherwood Forest.* Transactions of the Thoroton Society 116 (Mallett et al 2012).

3.11. Map regression research by Steve Horne of the Friends of Thynghowe has recently identified the curvilinear earthwork on a map of 1791 (NRO ED 4 L) and indicated that at this time it appeared to be part of a near circular feature (Horne pers comm.)

3.12. Thynghowe has recently been added to the list of Thing sites across the Viking diaspora and Scandinavia by the Thing Project (www.thingproject.eu), helping to confirm the importance attributed to the

site by international academics.

4. Research Aims and Objectives

4.1. The objective of the project was to excavate a section across the curvilinear earthwork described above in order to determine if the feature was modern or of antiquity and to establish the nature of surviving remains.

4.2. The excavation was also positioned to investigate and date the adjacent trackway. The purpose was to determine whether the trackway was part of Nether Warsop Gate as identified from the LiDAR and the 1791 map.

4.3. The excavation also aimed to address questions about the extent of the Thynghowe site and to add to the interpretation of the monument and its landscape.

4.4. Information from the excavation will form a key element in the formation of a management plan for the conservation of the site.

4.5. The project was designed with the aim of potentially addressing the following updated research agenda questions highlighted in the recent publication: (Knight, Vyner and Allen 2012). *East Midlands Heritage- An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands*.

4.6. *6.3* Neolithic and Early Bronze Age:

4.7. *6.3.4.1* Exploitation of different landscape zones: Can we further refine our knowledge of the selective use of particular landscapes for ritual, agricultural and other activities?

4.8. Research Objective 3F: Identify monument complexes and prioritise

for curatorial action.

4.9. *6.6* Early Medieval:

4.10. *6.6.7.5* The agricultural economy and rural landscape: To what extent did woodland regenerate in the post-Roman period and how were woodlands used and managed?

4.11. *6.6.1.5* Demography and the identification of political and social groups: How can we refine our understanding of the chronology and process of Scandinavian immigration during ninth and tenth centuries?

4.12. *6.6.4.1* Rural settlement patterns: What impact may Germanic and Scandinavian immigration have had upon rural settlement patterns, and how may place-name evidence contribute to studies of settlement evolution?

4.13. Research objective 6F: Identify cultural boundaries in the Early Medieval period.

4.14. Research objective 6G: Elucidate the development of the parochial system.

4.15. *6.7* High Medieval:

4.16. *6.7.7.2* Manors and manorial estates: How did the medieval manor and manorial estates develop from the Anglo-Saxon period, and what was the impact of the Danelaw?

4.17 Research objective 7I: Investigate the development of the open-field system and medieval woodland.

4.18 The project forms part of Mercian Archaeological Services CIC's research into the development of the landscape of Sherwood Forest.

5. Methodology

5.1. The excavation was undertaken by Mercian Archaeological Services CIC, with spoil from all contexts being 100% sieved by volunteers from the Friends Of Thynghowe.

5.2. During the excavation, Mercian supervisors taught volunteers various aspects of archaeological method and theory, including excavation techniques, recording techniques and conventions, site photography, surveying and leveling, in order to increase understanding and experience of archaeological theory and practice among the Friends of Thynghowe.

5.3. A 10 metre x 1.5 metre trench was excavated by hand across and at right angles to the line of a section of the curvilinear earthwork over six days in April 2013. The trench was centred at SK 5998 6841. The position of the trench was such that it took in the point where the curvilinear earthwork was closest to the adjacent trackway (figure 2), in order to permit examination of both features within the one trench and to determine the stratigraphic relationships between the two features, should such relationships exist. Excavation proceeded by context, or by spits where contexts happened to have an homogeneous appearance, but with the context unit having absolute priority.

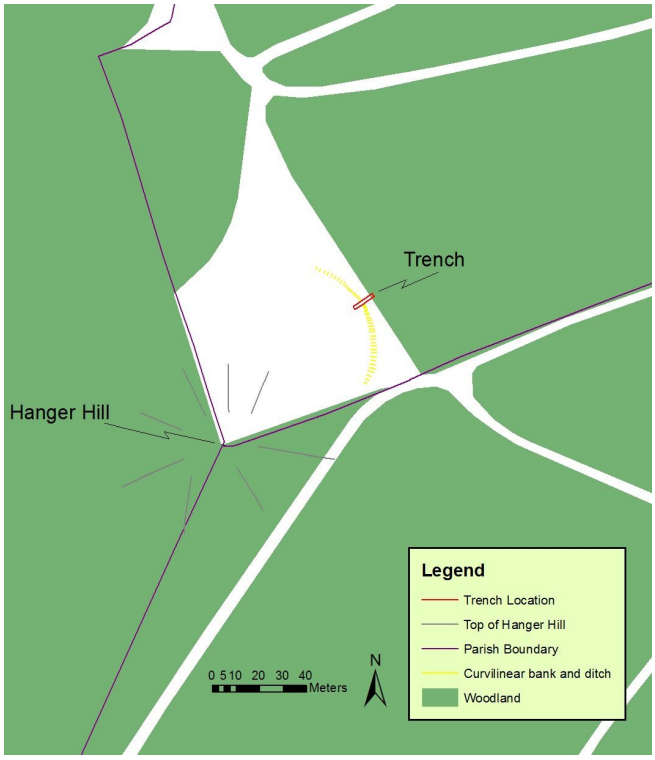

Figure 2: Trench Location.
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5.4. Excavation and reporting followed the IFA *Code of Conduct* (IFA 2012). Mercian also seek to follow best practice and standards and guidance including IFA *Standard and Guidance for Archaeological Excavation* (IFA 2008).

5.5. Environmental sampling on-site and post-sampling reporting was undertaken by Allen Environmental Archaeology.

5.6. Metal detecting by an experienced and responsible metal detectorist was undertaken on the spoil heaps to ensure no metallic objects were missed and all artefacts thus recovered were added to the site archive.

5.7. Sections of features were recorded at a scale of 1:10. They were recorded to include context changes and context numbers, Ordnance Survey heights and other necessary features. Drawings include dashed lines where the change between contexts was not discernible in the field or was too diffuse for precise recording (see sections and plans in

Appendix I).

5.8. Section lines were located on the site plan (see Appendix I).

5.9. Digital photographs using a DSLR with resolution of greater than 6 megapixels were taken of each context before removal, along with general views of the excavation and the most relevant features.

5.10. A context record sheet was filled in for each context using Mercian context record sheets, which follow the conventions set out in the Museum of London *Archaeological Field Manual* (MoLAS 1994).

5.11. A context register was completed on-site to record contexts as they were encountered.

5.12. A site note book was kept of the excavation.

5.13. X, Y and Z values were recorded on a Leica TCR805 Total Station. A Temporary Benchmark (TBM) was established on-site and control points established. An arbitrary height was given to the TBM for in the field recording. Corrections were then made to the measurements from LiDAR data to give absolute heights for the data. LiDAR is accurate to +/- 100mm (Crutchley 2010) which complies with English Heritage requirements for control of archaeological survey (Lutton 2003).

5.14. An OASIS entry pertaining to the work has been created. The OASIS identifier for the project is merciana2-187445. Mercian will also publish downloadable versions of the report via our online documents stores.

5.15. A summary of the work was published in the Archaeological Short Reports section of the Transactions of the Thoroton Society Volume 117 for 2013 (pp29 - 30).

5.16. Pottery was processed on site and following the fieldwork, by David Budge of Mercian. The recording and quantification fulfilled the 'Minimum Standards' published by the MPRG (MPRG 2001).

5.17. Heat Shattered Pebbles were analysed by David Budge.

5.18. Lithics and Iron Objects were analysed by David Budge.

5.19. Environmental Samples were taken on-site by Michael Allen of Allen Environmental Archaeology, these included: Bulk samples from basal fills, Monolith sample of the ditch and bank profiles and Kubiena tin samples. Samples have been preserved for future analysis. Should the client desire, Monolith and Kubiena samples will be subsampled for pollen, and the Kubiena sample considered for soil thin section manufacture.

5.20. A basic environmental description from field observations and preliminary examination of the samples by Allen Environmental Archaeology was produced to give a broad assessment of the depositional environment at the time that the bank and ditch were constructed (Appendix VII). Further information has also been provided by Mike Allen by personal communication.

5.21. The finds from the excavation and records have been given to the Friends of Thynghowe Group, and copies of the records are held by Mercian Archaeological Services CIC.

6. Results

6.1. The trench was circa 10m in length (southeast facing section being 9.89m and the northwest facing section measuring 9.96m). A layer of leaf mulch (101) dark orange brown in colour appeared to seal the entire trench on initial excavation except for an area of tree root disturbance towards the northeast. It could be seen in the southeast facing section that (101) was truncated by [116], an area of tree root disturbance including the remains of a large decomposing tree root (114). Above tree disturbance (114) lay a deposit of mid orangey brown leaf mulch (123) which appeared to be composed of a more recent accumulation of leaf fall.

6.2. Context (101) lay directly upon a blackish brown soil (102). Below (102) was context (109) consisting of a greyish brown silty sand with white

(quartzite) flecks, this deposit lay in a depression formed by ditch cut [110]. Beneath (109) lay a deposit of slightly mottled reddish brown sand (117), which included some silt and has been interpreted as a soil formed in an area of heath land. This suggests that the landscape was open with little or no tree canopy in antiquity (Appendix VII).

6.3. In the northwest facing section (117) was seen to seal upper bank deposit (103), though in the southwest facing section tree root disturbance had removed/truncated this relationship and (117) was not seen to continue on the southwest side of cut [125]. (117) also part covers contexts (104) and (105). Of note here is the fact that preserved archaeological deposits, specifically bank deposit (103), lay buried a mere 0.12m below the surface.

6.4. Ditch [110] was irregular in profile being steeper on the northeast side: in the southeast facing section it was seen to be 1.20m wide and 0.45m deep; in the northwest facing section the ditch cut was 1.15m wide and 0.35m deep. It was observed in section that upper bank deposit (103) appeared to be slumping forward into the ditch (towards northeast).

Plate 1: Northwest facing section, showing bank (103), (122), (127) and (128) in centre, the ditch [110] is to the left and (104) to the right hand side. Scales = 1m long with 0.5m divisions.

6.5. Ditch [110] contained a very homogeneous fill (121) the exact extent of which was not clearly seen against sealing deposit (105) due to the very diffuse interface between the two. In northwest facing section fill (121) was 1.01m wide and 0.21m deep; in southwest facing section fill (121) was recorded as 1.03m wide by 0.27m deep. The environmental archaeology report has assumed that (105) formed the secondary and tertiary fills of ditch [110] and this interpretation has been accepted in this report, however no trace of cut [110] could be discerned in (105) in section while excavating in the field. (105) appeared to form a continuous layer over fill (121) to the east; where it was clearly outside the cut of ditch [110]. The lower fill (121) would have filled in fairly rapidly, most likely over a few decades (Appendix VII), but the upper part of the environmental sample (taken from within context (105)) represents a much greater time period measured in centuries. The evidence from the soil sampling suggests that the deposits are no earlier than the Middle Bronze Age and certainly no younger than 300 years (Mike Allen pers comm).

Plate 2: Southeast facing section. The ditch [110] is to the right, the bank (103) is centre and (104) is to the left hand side. Orientation of long axis of compass housing at bottom left of the photo board indicates direction of north. Scales = 1m each with 0.5m divisions.

6.6. (105) was an orangey brown silty sand which appeared to be the result of natural soil build up to the northeast of bank (103) covering ditch [110] and ditch fill (121) as well as the Natural. No previous surface / turf

line etc. was identified below (105). At the northeast end of the trench (105) was presumed to extend under trackway (108) but, due to the very different texture of (105), being extremely compacted as a result of the passage of vehicular traffic here, it was allocated a separate context number (118). (105) contained 2 fragments of heat shattered pebbles.

Plate 3: Southeast facing section showing (105) and ditch [110] to the left hand side. Orientation of long axis of compass housing at bottom left of the photo board indicates direction of north. Scales = 1m each with 0.5m divisions.

6.7. Above (118) was (108), a trackway made up of gravels, quartzite pebbles and small crushed fragments of Ceramic Building Material (CBM). To the southwest cut into (118) was [107] the latest wheel rut where it appeared a vehicle had veered off track surface (108). Presumably wheel rut [107] added to up-cast (106) to immediate southwest. (106) is a mixture of (118), (108) and (102); also probably includes organic material in form of leaf debris (101).

6.8. Context (118) forms the very compacted fill of wheel ruts [119] and [120]. Both of these wheel ruts were clearly seen cut into the natural. [119] was seen to be a maximum width of 0.32m with a maximum penetration 0.40m into (118) as seen in northwest facing section; [120] was a maximum of 0.24m wide being slightly shallower cutting 0.24m into (118) as seen in southeast facing section. It is highly probable that damage in the form of compression and compaction has occurred to a greater depth in the unexcavated natural. The depth of damage caused by heavy vehicles on these sandy soils is clearly far greater than would be assumed based on visual evidence of surface compaction, and this should be considered when developing a management plan for the site.

Plate 4: Southeast facing section showing wheel ruts [119] and [120] at the northeastern end of trench. Orientation of long axis of compass housing at bottom left of the photo board indicates direction of north. Scales = 1m each with 0.5m divisions

6.9. (103) consisted of a brownish yellow sand which was the secondary bank deposit of the curvilinear earthwork bank. The maximum width of this deposit was 2.33m as seen in the northwest facing section. Tree root disturbance [125] seen in southeast facing section had removed/disturbed the full extent of bank (103) to southwest. The bank was not seen to extend beyond cut [125] to the southwest. This upper bank deposit (103) formed a barrier to soil movement down slope, which enabled the slow build up of colluvium (104) to occur inside the bank as seen to the southwest. Bank deposit (103) contained 3 pieces of heat shattered pebble of unknown date. (104) was the colluvial deposit build up inside the bank, consisting of a mid-brown silty sand matrix (mottled brown, yellow and blackish brown) which butted up against (103). Colluvial deposit (104) contained three fragments of heat shattered pebble of unknown date.

6.10. There is no evidence of an earlier surface on the inside of the bank even though a lighter orangey brown sandy context (129) has been

recorded in the northwest facing section. It is believed this is part of the build up of colluvium inside bank (103), or that it is the same as (128) (see below). It could be that (128) represents an earlier phase of the bank, but it may be that it represents a buried original soil layer (see 6.12).

6.11. In the northwest facing section bank (103) could be seen in more detail and appeared to show signs of slumping both to northeast into the ditch as well as to the southwest. Beneath this was context (122) a 'dirty' mid yellowish brown silty sand which formed the lower bank deposit, 1.61m in width with a maximum thickness 0.29m. It seems likely that (122) was formed by the up cast spoil from ditch cut [110]. Under (103) and above (122) was a thin layer, (127), only a few millimetres thick, and identified as a turf line (Appendix VII). This is evidence that the bank (122) existed long enough for turf to develop on it, or that turf was laid on it to give it stability, and (103) is evidence of the bank being reconstructed (increased in height), and/or maintained. (103) is lighter in colour and 'cleaner' than (122), suggesting it was most likely constructed using 'natural' sand with very low organic content. The nearest and most easily accessible source of such sand is likely to have been the bottom of ditch [110], though no other evidence for the re-cutting of this ditch was encountered.

6.12. Below this was (128), width 1.57m and a maximum thickness of 0.14m, which may be either the original surviving ground surface (Appendix VII) prior to the bank being constructed or evidence of an earlier bank. If the latter, no evidence was seen for an earlier ditch cut prior to [110]. It is possible that ditch [110] has removed any evidence of an earlier ditch feature. Of interest context (129) to the southwest was of a similar thickness to (128), being 0.15m, which if (128) is considered to be a surviving early soil then possibly (129) could be part of that horizon. Unfortunately no turf line was seen above (128) or (129) to confirm this.

6.13. A sondage was excavated in the south western corner of the trench adjacent to the southeast facing section. This was undertaken to confirm

that the deposit underlying (104) was indeed the undisturbed 'natural'. It was.

Plate 5: Southeast facing section showing the location of the sondage in the south west corner of the trench adjacent to the section. Orientation of long axis of compass housing at bottom left of the photo board indicates direction of north. Scales = 1m each with 0.5m divisions.

7. Discussion

7.1. The bank and ditch were sealed by context (102) this was a *forest* or *woodland* soil which had built up during the life span of the current plantation (Mike Allen Appendix VII).

7.2. The surviving earthwork on the surface consists of a bank 0.42m high and a ditch 20mm deep.

7.3. Excavation has demonstrated that, due to the protection afforded to the archaeological remains by colluviation, the archaeological remains are far more significant than the surviving earthworks immediately suggest. The bank survives to a height of 0.52m above the original ground surface and has a width of up to 2.33m while the associated ditch is approximately 0.45m deep and 1.20m wide.

7.4. Excavation demonstrated that the track way is of 20th century date and revealed no evidence for any earlier track in this location, suggesting the present track was not part of an earlier route that can, in other locations, be identified from cartographic and documentary evidence as Nether Warsop Gate.

7.5. Topographic survey (Gaunt 2010), LiDAR results (2012), and Historic Mapping evidence (NRO ED 4 L) from 1791 suggests that the bank and ditch may have originally formed part of a circular enclosure.

7.6. If this was the case then the excavation demonstrated that the bank was internal to the ditch.

7.7. Environmental evidence from the excavation suggests that the area was not under woodland canopy during the construction or infilling of the bank and ditch (Mike Allen, pers comm.). If the original earthwork was a circular enclosure this rules out the possibility that it functioned as a wood bank to support a hedge to protect saplings in a hay or coppice.

7.8. Environmental analysis of the soils of the secondary and tertiary fill of the ditch (Appendix VII) identified as (105) in the excavation suggests that the soil developed over a timescale measured in centuries. Personal communication with Dr Allen suggests that a period of at least 300 years would be required for the soil to build up regardless of when it began infilling.

7.9. Cartographic evidence from 1791 shows that the earthwork was significant enough to warrant recording at that time. The map does not however indicate a function for the site and does not indicate the condition of the bank and ditch, thus it is not possible to infer from this source whether the earthwork was newly constructed or substantially silted at this time.

7.10 Environmental evidence suggests that the secondary and tertiary fills of the ditch (105) would not date from before the Middle Bronze Age (Allen, M, pers comm).

7.11. Although this is a wide date range, from Middle Bronze Age to 300 years ago, this range can be narrowed through analysis of finds.

7.12. The only artefacts recovered from the excavation (associated with the ditch fills, bank and soil build ups discussed above) were Heat Shattered Pebbles (HSPs) (Appendix III). There were no ceramic finds in any context except those associated with the adjacent modern track way.

7.13. The Heat Shattered Pebbles found in the excavations could not be directly associated with the construction of the bank and ditch. However, their absence in the initial construction deposits and primary ditch silts and presence in the stratigraphically later deposits – being: bank enhancement; colluvial deposit; soils built up after the construction - raises two possible interpretations, either that the HSPs were produced by activity following the construction of the bank and ditch, or that they come from earlier activity and were only mobilised by activities within the enclosure following its construction (Appendix III).

7.14. HSPs are found in many prehistoric contexts from the late Neolithic onwards (Appendix III).

7.15. One possible interpretation of the earthwork is that it is part of an enclosure associated with the Brickwork Plan Field System (Garton 2008), similar to the nearby *Hayman Rooke Enclosure,* which may date from this period (Gaunt 2009). Such an interpretation would assign a Romano-British date to the site. However, enclosures where HSP are common in these field systems are also abundant in ceramic finds of the period (Garton 2008). The lack of such ceramics in the excavations at Thynghowe suggests this interpretation may not be the most appropriate.

7.16. The HSP analysis for the site suggests they are very unlikely to come from a burnt mound and are more likely to derive from small scale cooking or possibly brewing activity. Scant evidence from England and Wales along with slightly more comprehensive evidence from Ireland indicates an early medieval date for the creation of the HSPs is not

impossible, while the lack of other artefact types suggests activity on the site may have occurred during a chronological period when durable artefacts such as flint and ceramics were scarce (Appendix III).

7.17. It should be noted that further excavation may reveal finds that were absent from this investigation, and also Radiocarbon Dating of environmental deposits planned for the future may prove these theories to be inaccurate. However at this time there is no evidence from the excavation or subsequent analysis of soils and artefacts to prove that the monument is not of early medieval date, and the general lack of artefactual evidence tentatively suggests that construction during the early medieval period may even be more likely than other periods.

7.18. The curvilinear earthwork is situated adjacent to the site of the posited Viking Age meeting place of Thynghowe (Mallett et al 2012). This site may well have Bronze Age origins as a burial mound (ibid.) Combination of environmental evidence and HSP analysis suggest the Bronze Age or the Early Medieval period as possible contenders for the creation of the feature. If the feature was originally circular then the south-western edge of the circle runs against the north-eastern edge of the Thynghowe mound.

7.19. The curvilinear earthwork excavated is located at the extreme south-western periphery of the parish of Budby. The parish boundary at this location extends in a rectangle around an area of land which includes the curvilinear earthwork. Budby parish boundary meets the parish boundaries of Edwinstowe and Warsop on top of the mound of Thynghowe; 3 stones mark their meeting (Mallett et al 2012). It is assumed that the Budby parish boundary has followed this line since the Early Medieval period; meeting the other parishes as it does on top of the mound. The boundary is depicted this way on Sanderson's 1835 Map of *20 Miles Around Mansfield*. It is possible that this part of the parish boundary extends to include the curvilinear earthwork which may have originally formed a circular enclosure, and other features to the north

which could be associated with the meeting site of Thynghowe (pers comm Stuart Reddish).

7.20. It is plausible that this enclosure could be associated with Thynghowe. The location of this site at the extreme periphery of Budby parish adjacent to Thynghowe suggests that it could be associated with the meeting site. If the earthwork was originally a circular enclosure it was designed to limit access to an internal space, not designed for the containment of livestock or as a wooded enclosure (Appendix VII).

7.21. It has been suggested by Stuart Reddish (pers comm) that, if the feature was originally circular and is part of the monumental landscape of Thynghowe, it could have functioned as a 'court circle' associated with activities of a Viking site. Although such a function has not been proved by this excavation, evidence to disprove it was not forthcoming either.

7.22. It should be noted that no case in England has been found where an enclosure can be genuinely associated with an assembly mound and such features are also rare in Nordic countries. However Thynghowe is posited to be a rare example of a 'pristine' assembly site where the larger landscape context and chronological development can be evaluated (Mallett et al 2012). Thynghowe is potentially therefore a site of national and international importance, which may indeed provide the only opportunity for such features as 'court circles' to survive.

7.23. As previously stated it should be noted that further archaeological excavation could prove the above suggestions to be incorrect. If further work was undertaken it could help to gain a better understanding of the site, not least as only the opening of a larger area over the bank and ditch would be able to detect traces of deliberate, regular features such as post holes or palisades.

7.24. Further interventions on the ditch and bank, combined with geophysical survey could help to confirm if it was a complete circular enclosure. Further environmental analysis including Radiocarbon dating

would potentially enable an absolute date for the feature to be gained and confirm or deny its association with a Bronze Age, Viking or Early Medieval monumental landscape.

7.25. Samples taken during this excavation have been preserved by Allen Environmental Archaeology for future analysis should the opportunity arise.

7.26. Geophysical survey would also be desirable within the area enclosed by the feature to look for evidence of occupation or use, and also in the immediate hinterland of Thynghowe to determine whether other enclosures or features exist.

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9. Acknowledgments:

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The Forestry Commission and the Thorseby Estate for permission to excavate the site.

The Heritage Lottery Fund for funding the excavation.

10. Disclaimer:

Appendix I:

Sections and Plans

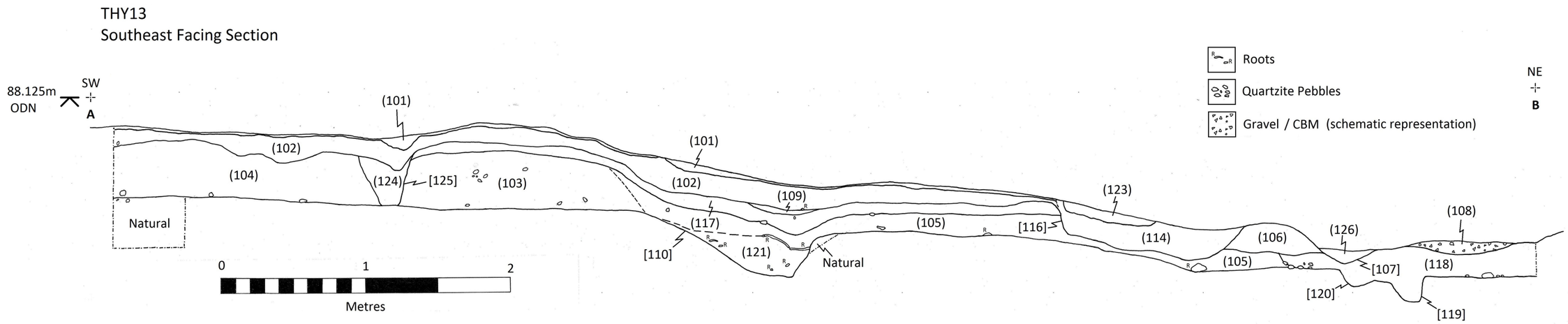

Figure 3: Southeast facing section

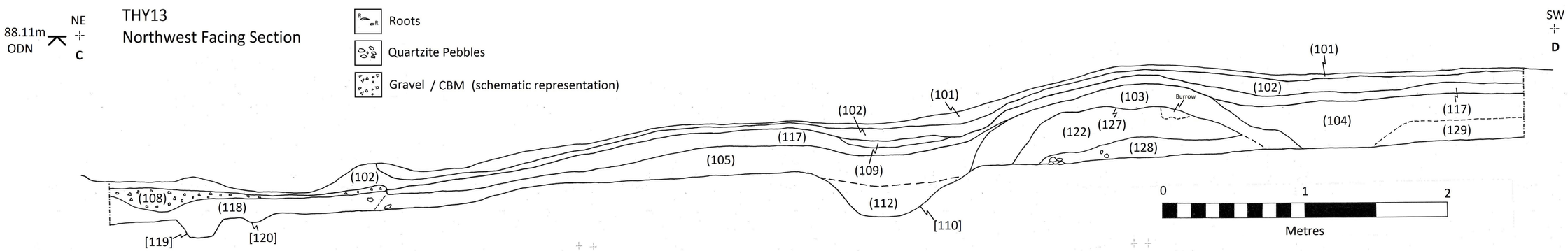

Figure 4: Northwest facing section.

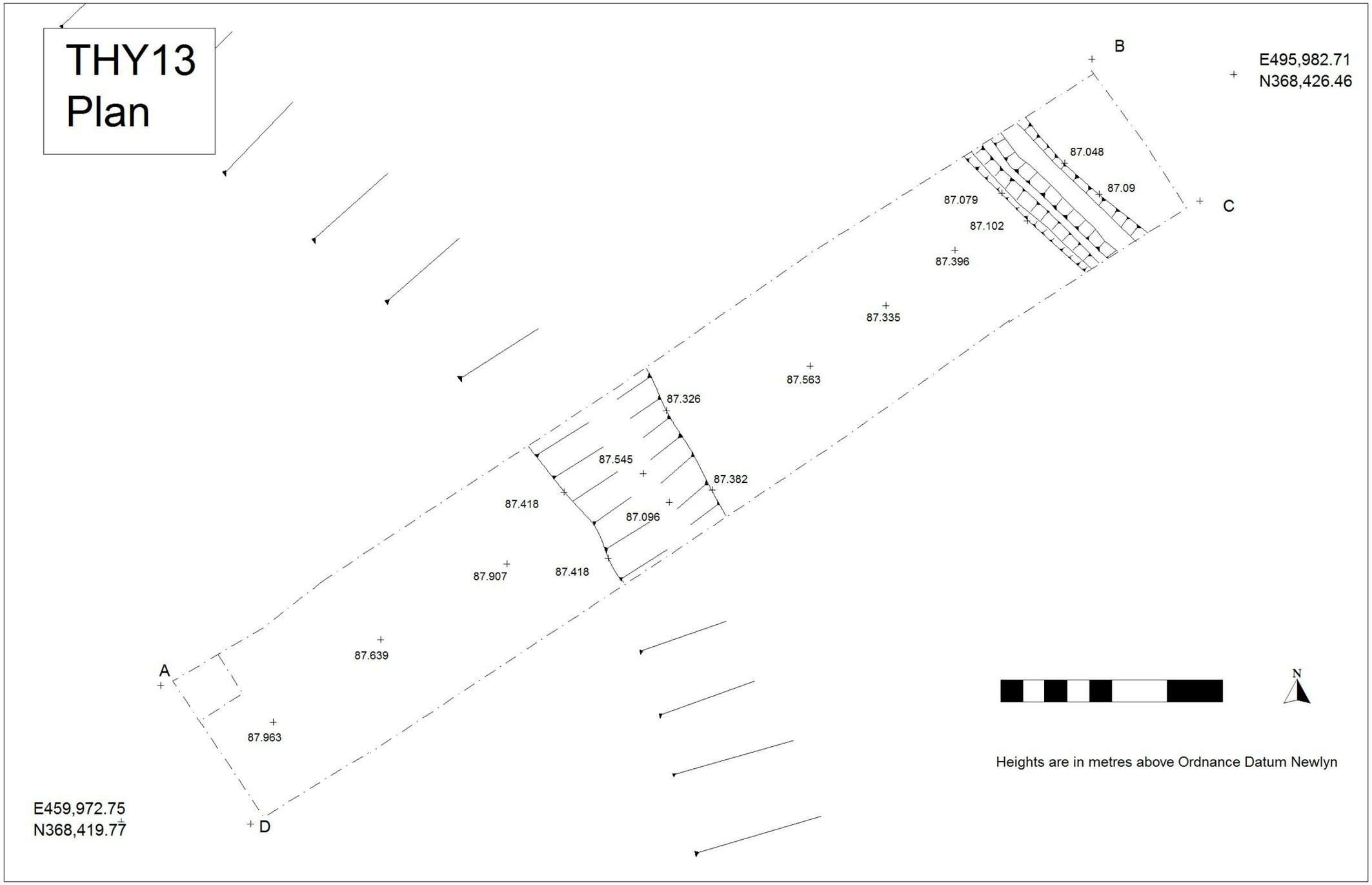

Figure 5: THY13 Plan

Appendix II:

Context Register and Site Matrix

(101)	Colour: Dark orangy brown Soil Type: leaf mulch sandy silt and organic material. Texture: Very soft, friable, leaf mulch Thickness: > 0.12m Interface: Diffuse – irregular Natural inclusions: none visible/ very very rare quartzite small gravels >10mm Man-made inclusions: None Disturbance: Tree roots > 0.15m, also common fine roots, frequency abundant, No worms Description, provisional date, interpretation: Modern date post Beech tree plantation circa 1960's? Post WWII. Deposit seals (102) and all others
(102)	Colour: Blackish Brown Soil Type: Sandy Silt Humic Texture: very soft Thickness: <100mm Interface: Clear Natural inclusions: section contains no natural inclusions Man-made inclusions: None Disturbance: roots < 45mm common – abundant fine roots; includes areas of tree disturbance; no worms Description, provisional date, interpretation: Forest soil - built up following plantation. Seals (117) turf line
(103)	Colour: Brownish yellow Soil Type: Sand – average grain size <0.25mm Thickness: <190mm Interface: Diffuse and irregular with lower bank deposit (122) Compaction: Firm structure – breaks loose between fingers Natural inclusions: Quartzite gravels <50mm sub-rounded unsorted 1% - 2% Man-made inclusions: HSP Disturbance: Large roots , 5mm; Fine roots – moderate – noticeably less than (117) above and (122) below; no worms Description, provisional date, interpretation: Top / secondary bank deposit of curvilinear bank (deposited from ditch bottom? during construction) sealed by (117) seals (122) and (natural); date unknown as yet
(104)	Colour: Mid Brown matrix overall (mottled brown yellow and blackish brown) Soil Type: Silty sand Texture: Firm – but soft between fingers / compaction Thickness: 0.30m Interface: Clear Natural inclusions: pebbles – cobbles quartzite < 150mm x 90mm x 70mm, 1% - 2% Man-made inclusions: HSP Disturbance: Abundant fine roots < 15mm tree roots; no worms Description, provisional date, interpretation: Slowly built up soil / colluvium. Sealed by (117), seals (natural) built up against (103) – no evidence of surface before (103). No evidence of surface before (103)
(105)	Colour: Orangey Brown Soil Type: Silty Sand (99% sand) Texture: Firm/ compact but loose between fingers Thickness: < 0.20m Interface with context beneath: Clear Natural inclusions: Roots fine abundant < 10mm – less than (122) Man-made inclusions: HSP Disturbance: No worms Description, provisional date, interpretation: Natural soil build up – date unknown – pre WWII. Seals (natural) sealed by (117)
(106)	**(106)** Colour: greyish black Soil type: Texture: friable / loose – compact at surface loose below Thickness: < 0.16m Natural inclusions: Roots abundant fine Disturbance: Description, provisional date, interpretation: upcast from wheel rut (107) caused by modern heavy vehicle. Seals part of (101)
[107]	Shape in plan: Linear Orientation: Northwest to southeast Length: Unknown Depth: 100mm Width: 0.40m Shape in profile: concave Shape of base: concave

	Disturbance, truncation etc: N/A Description, provisional date, interpretation: Modern wheel rut
(108)	Colour: greyish black Soil type: Silty Sand Texture: Very firm / cemented (compaction – very heavy) Depth of context: at surface Thickness: < 0.15m Interface: disturbed by vehicle compaction and movement Natural inclusions: quartzite pebbles < 20 – 30mm round and sub rounded Man-made inclusions: CBM – CMB presumably broken up for road surface; one pottery sherd (mid 19th Century/early 20th English Stone Ware); quartzite cobble (see finds appendix) Disturbance: disturbed by vehicles Description, provisional date, interpretation: Trackway – circa 1940's
(109)	Colour: greyish brown with white (quartzite) flecks has a purple hue Soil type: Silty sand Texture: Firm/compact Thickness: Interface: Diffuse Natural inclusions: Possible quartzite pebble 30mm rounded not sorting? Compaction: Compact Man-made inclusions: Charcoal Flecks Disturbance: Roots few fine? Description, provisional date, interpretation: Sealed by (108) seals/over (117) Date unknown pre (102)
[110]	Shape in plan: Curvilinear Orientation: In trench ditch is northwest to southeast Length: >50m Depth: 0.45m Width: 1.20m Shape in profile: Irregular Shape of base: Flattish Disturbance, truncation etc: Roots common/abundant fine Description, provisional date, interpretation: Cut of curvilinear ditch, date unknown
(111)	**(111) = (117)**
(112)	**(112) = (121)**
113	**Context not used**
(114)	Decomposing tree root, organic natural large tree root in excavated area of trench
115	**Context not used**
[116]	Shape in plan: Orientation: Length: Depth: Width: Shape in profile: Shape of base: Disturbance, truncation etc: Description, provisional date, interpretation: (116) Cut for tree root (114)
(117)	Colour: reddish brown some slight mottling Soil type: Silty Sand Depth of context: below (102)? Thickness: <80mm Interface: Diffuse Natural inclusions: N/A Man-made inclusions: N/A Disturbance: Moderate root activity <8mm Description, provisional date, interpretation: decomposed turf line or heath/ heather build up
(118)	Colour: yellowish grey - under (108) Soil type: Silty Sand Depth of context: 0.11m Thickness: 0.31m Interface: Clear Compaction: Heavily compacted / cement

	Natural inclusions: <1% quartzite pebbles rounded and sub-rounded <30mm Man-made inclusions: N/A Disturbance: Occasional fine roots and one larger root < 12mm diameter Description, provisional date, interpretation: Build up on natural below (108) trackway - fills wheel ruts [119] and [120] into natural - could suggest regular use - no evidence of soil build up
[119]	Shape in plan: Linear Orientation: Northwest to Southeast Length: Unknown Depth: 0.18m Width: 0.32m Shape in profile: Sharpe break of slope at top and base; steep sided (almost vertical) Shape of base: Flat Disturbance, truncation etc: N/A Description, provisional date, interpretation: Cut for wider wheel rut
[120]	Shape in plan: Linear Orientation: Northwest to Southeast Length: Unknown Depth: 0.12m Width: 0.24m Shape in profile: Moderately steep but concave Shape of base: Shallow concave Disturbance, truncation etc: N/A Description, provisional date, interpretation: Cut for narrow wheel rut
(121)	Colour: Mid reddish brown Soil type: Silty (1%) Sand (99%) Thickness: 0.27m (width 1.03) Interface: Clear Compaction: Firm Natural inclusions: quartzite pebbles rounded and sub-rounded < 80mm - 60mm average - poorly sorted 3% Man-made inclusions: N/A Disturbance: Abundant roots fine <20mm Description, provisional date, interpretation: Primary fill of ditch
(122)	Colour: Mid yellowish brown Soil type: Silty sand Thickness: < 0.29m Interface: Irregular – clear Compaction: Firm Natural inclusions: 2% quartzite pebbles rounded and sub-rounded <50mm Man-made inclusions: N/A Disturbance: Abundant roots fine <15mm - no worm activity Description, provisional date, interpretation: Primary layer of bank made up of soil and subsoil from what became ditch. Seals natural, sealed by (103)
(123)	Colour: Light brown Soil type: Leaf mulch Depth of context: Surface Thickness: Interface: Clear Compaction: Loose Natural inclusions: N/A Man-made inclusions: N/A Disturbance: N/A Description, provisional date, interpretation: Lense of leaf mulch in tree root (114)
(124)	**(124)** Colour: Greyish brown Soil type: Sandy Silty and organic material Thickness: 0.30m (0.37m wide) Interface: Moderately clear Compaction: Moderately firm Natural inclusions: N/A Man-made inclusions: N/A Disturbance: N/A Description, provisional date, interpretation: Area of tree root disturbance
[125]	Shape in plan: N/A Orientation: N/A Length: N/A Depth: 0.30m Width: 0.39m (cut is actually wider than fill)

	Shape in profile: V shaped Shape of base: Flat (possibly extends further into natural beyond L.O.E) Disturbance, truncation etc: N/A Description, provisional date, interpretation: Cut of tree root disturbance (124)
(126)	Colour: Blackish Grey Soil type: Sand with organic material Thickness: 100mm (0.40m wide) Interface: Clear Compaction: Loose Natural inclusions: N/A Man-made inclusions: N/A Disturbance: N/A Description, provisional date, interpretation: Fill of modern wheel rut [107]
(127)	Colour: Mid reddish brown Soil type: sand/organic Thickness: 2mm Interface: Clear Compaction: Firm Natural inclusions: Fine roots Man-made inclusions: N/A Disturbance: N/A Description, provisional date, interpretation: Turf or heather/heath (remains of)
(128)	Colour: Brownish yellow Soil type: Sand Thickness: 0.14m (length 1.57m) Interface: Clear Compaction: Firm Natural inclusions: Fine roots; quartzite pebbles <50mm Man-made inclusions: N/A Disturbance: Fine root activity Description, provisional date, interpretation: Build up behind (103)
(129)	Colour: Mid yellowish brown Soil type: Sand Thickness: 0.15m Interface: Diffuse Compaction: Firm Natural inclusions: N/A Man-made inclusions: N/A Disturbance: Fine root activity Description, provisional date, interpretation: Early sand build up behind (103)
Natural	moderate 5% pebbles decreasing with depth in sondage to c.2-3% quartzite rounded <80mm

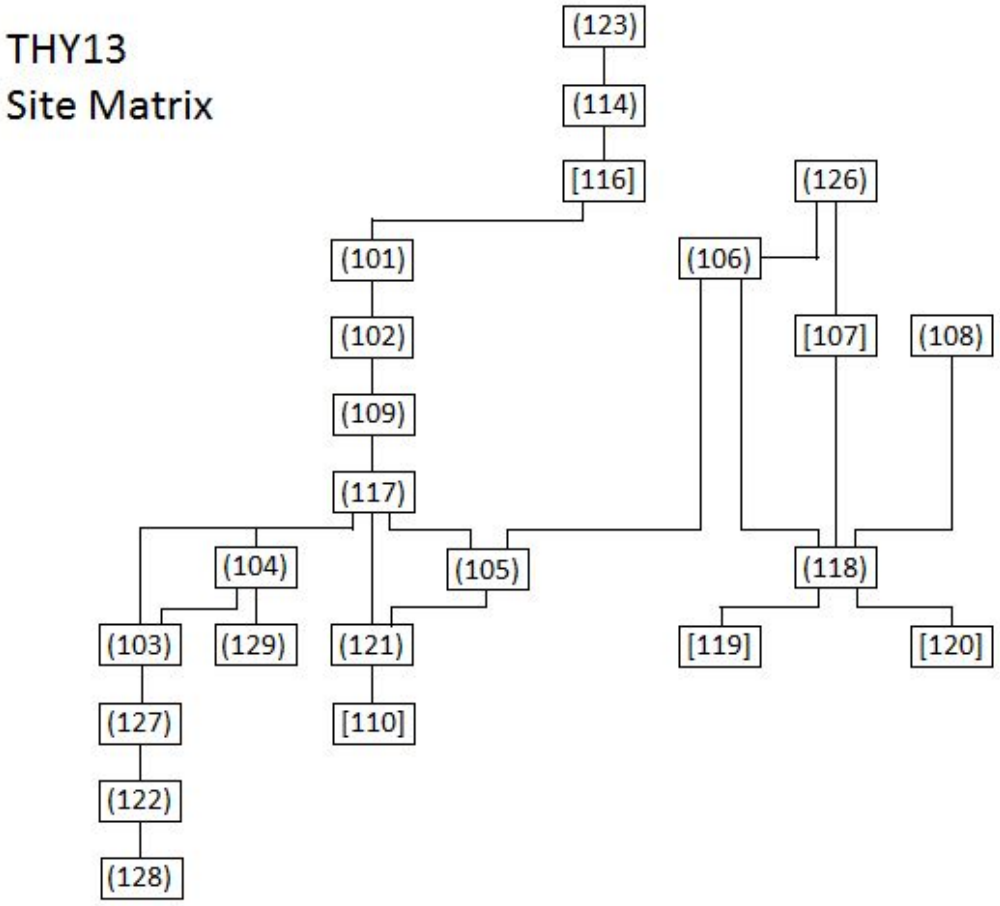

Figure 6: Context Matrix

Appendix III

Finds Report – Heat Shattered Pebbles:

Mercian
Archaeological Services CIC

Finds Report – Heat Shattered Pebbles

from Hangar Hill, Sherwood Forest, Nottinghamshire.

Site Code: THY13

David James Budge **22/10/2013**

Introduction:

A total of 8 heat-shattered pebbles (HSPs, sometimes known as fire-cracked pebbles) with a total mass of 443.6 grams were recovered during the THY13 excavations. The HSPs were recovered from three contexts, (103), (104) and (105). They had all been re-deposited and could not be linked directly to the construction, use or filling in of the bank and ditch. They may derive from prehistoric cooking activity upslope of the site, beyond the excavated area. The possibility that they may alternatively derive from early medieval activity upslope cannot entirely be discounted. Such activity may be cooking or possibly brewing. Possible HSPs from a number of other contexts were also submitted for analysis but, on inspection, proved to be devoid of evidence for human modification. A provisional recording system to allow intra and inter-site comparison of common features of HSP assemblages is proposed.

Heat Shattered Pebbles:

Heat Shattered Pebbles (HSPs), sometimes referred to as Heat Affected Stones or Fire Cracked Pebbles, are a category of artefact resulting from the utilisation of naturally occurring pebbles by humans. They are not deliberately manufactured but acquire their diagnostic characteristics as a, probably undesirable, side effect of the use to which they were put. HSPs were employed as a heat transfer system for the purpose of boiling liquids, often without the use of a ceramic or metal container. Diagnostic features of HSPs are irregular crazing to the surface and irregularly fractured edges. These features are generated as a result of thermal shock arising when the heated pebble is deposited in the liquid to be warmed and as a result suffers a rapid cooling.

A further feature that may occur on HSPs is a reddish or pinkish surface, which is a result of the oxidation of iron in the stone when the fire in which it is heated has an oxidising atmosphere.

Methodology:

The HSPs were washed in lukewarm water and air-dried for at least 24 hours until fully dry. When fully dry they were examined by eye and under 20x magnification using a Brunel Microscopes MX1 stereomicroscope where necessary. They were weighed using a Maplin VV52G electronic balance calibrated prior to use with a 100g mass and checked following recording with the same 100g mass. These control readings showed no deviation, being precisely 100.0g. Mass of the HSPs was recorded to the nearest 0.1g.

HSPs are a category of finds that have historically been discarded following quantification (or sometimes simply recorded as presence / absence by context and not even recovered from site). Given the present storage crisis in museums this situation is unlikely to change so a provisional methodology recording as much potentially useful data about the HSPs as possible was devised.

It is not currently known if all the information collected will prove to be of use in interpreting and understanding FCP assemblages as the factors determining the development and magnitude of the features recorded are likely to include both anthropogenic and geological processes, however it was considered that recording 'too much' information was preferable over recording too little for an artefact type unlikely to be retained for future study.

With this small assemblage the extra time required to record all the information over the basic

minimum was negligible, though for larger assemblages the process may require re-evaluation. It is hoped that more data and further research (including experimentation) will demonstrate how valid the categories of evidence recorded actually are. It is anticipated this methodology will be revised, refined and adapted as a result of research, experimentation, analysis and discussion with interested parties.

The categories chosen for recording were those felt to be most likely to reveal information about past activities and processes.

The basic categories of data collected were those that could be recorded objectively and are generally considered to be the basic minimum quantification required to enable objective comparison of assemblages within and between sites (eg Archaeological Ceramic Building Materials Group 2002, Medieval Pottery Research Group, 2001). They were as follows (spreadsheet column name in brackets following category name):

Context number (ContextNo),

Quantity (Quantity) - each artefact was recorded individually, therefore value was '1' in all cases,

Mass (Mass(g)) - to nearest 0.1g

Further categories of data were collected. Owing to their nature they were recorded in a more subjective manner as detailed below. These categories were included as it was considered possible they may hold information about the way in which the stones were used, although the degree to which they are affected by anthropogenic rather than natural processes both at the time of their creation and subsequently is unclear. The categories (and rationale for inclusion) were as follows:

Oxidation (Oxid?) - HSPs sometimes display surface alteration arising as a result of the oxidation of naturally occurring iron within the stone during heating. This alteration manifests itself in a range of pinkish to red surface colours. Presence / absence and degree of oxidation is likely to depend on a number of factors, including presence of Fe in parent mineral, temperature of fire, nature of fire (generally oxidising or reducing atmosphere), position of FCP within fire (likely to affect the availability of oxygen to the stone). Additionally, if thermal shock fracture surfaces show evidence of oxidation this is likely to indicate the use of the stone for more than one water-heating episode, since the fractures are believed to occur as a result of thermal shock **after** the stone has been removed from the fire as it is deposited in the cooler liquid. If present, such evidence should be recorded in the 'Notes' column. HSPs can be found without evidence of oxidation. Colour change due to a reducing atmosphere may also be anticipated, however, the often greyish natural colours of the raw materials used mean such change is likely to be much more difficult to spot than oxidation.

Surface Crazing (Crazed?) – Records the extent and quality of surface fractures (which have not (yet) resulted in the fragmentation of the pebble). This factor is very much linked to that following as surface crazing simply indicates fractures that, for whatever reason, did not result in fragmentation of the original pebble. This may be due to insufficient penetration into the pebble or just the geometry of the fractures themselves. The degree of crazing is likely to result from a number of factors, including temperature difference between the outer surface of the FCP and the liquid into which it is placed, the nature of the parent material and potentially the number of times an FCP is used. A probably overly simplistic (and presently scientifically untested as far as the author is aware) model would envisage a basic progression from lightly utilised / heated HSPs displaying minor surface crazing that progresses with increased temperature and / or reuse into more extensive crazing and fragmentation of the pebble (eg Hawkes 2011, 77), however, the nature of the parent material is likely to exert a significant influence on surface crazing and fragmentation and it is possible some stone types may fragment almost immediately. If the stone shows no evidence of crazing or irregular fractures it is felt that the evidence is too insubstantial for it to be considered an HSP.

Irregular fractures / (Edges?) – indicates the quality (irregularity and depth of penetration of

irregularity) of the thermally fractured edges of FCP fragments. Linked to the preceding category, as irregularly fractured edges are the ultimate result of crazed surface cracks propagating through the material. Factors likely to impact this category include qualities of the parent material, temperature gradient between pebble surface / immersion liquid, possibly the thermal gradient from exterior to interior of pebble (which may provide an indication of the length of time the pebble was heated for?). Fragmentation may also occur following use due to mechanical shock causing the pebble to break apart along the existing lines of weakness represented by the surface craze lines. This may occur for example if, following use, the pebbles are cleaned out and thrown on a pile, or as a result of impact from agricultural machinery. This category is probably more meaningful for HSPs recovered from primary contexts where the impact of these latter factors will be considerably reduced.

These categories were recorded using a four point system, being None (traces of the category were entirely absent, shown as 'x'), Poor (traits were present but very poorly expressed, eg slight oxidation to a small part of the surface, one or two minor and short craze lines, one or two edges with slightly irregular fractures not penetrating far into the interior), Moderate (trait clearly present but not fully developed, eg overall light surface oxidation or small patches of more intense oxidation, reasonable coverage of irregular craze lines over the surface, edges irregular but only close to the surface), Good (trait very well developed, eg extensive blushing to surface, extensive crazing to whole surface, all fractured edges very irregular with irregularities extending right into the heart of the pebble).

A further two columns were included:

Fragmentation (Frag) – this category records an estimate of the maximum surviving surface of the pebble in degrees. It appears to be the most unsatisfactory category as it does not take into account the three-dimensional nature of the artefacts. However, it has the potential to yield some information about the degree of fragmentation of the pebbles, particularly if combined in some manner with the mass.

Notes (Notes) – a free text field to record any relevant information not covered by the other categories, such as oxidised thermal fracture surfaces, extent of penetration of irregular fractures into the centre of the pebble and minimum dimensions of the parent stone if enough surfaces remain to enable useful measurement.

Once the quantification was complete the data were input into a Microsoft Excel spreadsheet and queried. The data are included at the end of this report.

Results:

A total of eight (8) fire cracked pebble fragments were recovered from three (3) contexts. Three (3) fragments were discovered in context (103), the upper bank deposit, three (3) in context (104), colluvial deposit behind bank, and two (2) from (105), build up of soil outside the enclosure.

Other fragments also submitted for analysis from contexts (103), (104), (105) and (117) proved to be entirely natural fragments of stone when examined following washing.

The HSPs were generally small, highly fragmented pieces, with only a single example from context (104) (the colluvial deposit) possessing a relatively high degree of completeness.

Only two pieces had visible surface oxidation, with one of these showing possible oxidation of a thermally fractured surface.

Source:

In all cases the parent stones were sub-rounded to rounded pebbles and all appeared to be quartzite. The only HSP with sufficient surviving surfaces to be measured indicated a parent rock with minimum dimensions of 60 x more than 55mm. Such stones are a common natural component of the Nottingham Castle Sandstone Formation, the bedrock of the site. They may be readily encountered locally whenever there is ground disturbance such as tree throws or erosion patches (pers obs) and it is likely this situation was no different in the past. It is therefore probable the pebbles were collected in the immediate vicinity of the site prior to use.

Discussion:

It should be borne in mind during the following discussion that the brief from the client seeks investigation of the possibility that the excavated features relate to early medieval, specifically Viking, activity.

Heat Shattered Pebbles seem to have been used for heating liquids. They were used for domestic cooking and also for larger scale 'industrial' processes. This latter activity is represented throughout Britain and Ireland by burnt mounds, monuments consisting of extensive spreads of discarded HSPs in a charcoal rich soil matrix and with associated hearths and large pits or troughs in which the water was heated. They may also sometimes have other structures associated.

It is unclear what purpose the water boiled at these sites was put to and a variety of uses have been postulated, from brewing (Quinn and Moore 2007) to dyeing and textile / wool processing (Jeffrey 1991 for the former, Ripper 2004 for arguments for the latter) and sweat lodges (Barfield and Hodder 1987). Recent evidence from South Derbyshire and Leicestershire has also resurrected the idea they were cooking / food preparation sites possibly for large scale feasting (Beamish and Ripper 2000, Beamish 2001). It is likely however that a single overarching interpretation for this site type is unwarranted and they may have been employed for a myriad of processes where large quantities of heated water were required.

Burnt mounds appear to be mostly prehistoric in date. Specifically, many appear to belong to the Bronze Age, though Late Neolithic examples are known (eg Willington, Derbyshire, Beamish 2001, Birstall, Leicestershire, Ripper 2004). However, in Ireland the apparent appearance of burnt mounds in early documentary sources combined with a few radiocarbon dates and supposedly early medieval artefacts associated with burnt mound sites suggested that the monument type persisted into the early medieval period. A more recent review of the documentary and archaeological evidence has, however, suggested this was probably not the case (Hawkes 2011).

Hawkes proposes that the majority of early medieval dates for burnt mound sites in Ireland derive from samples or contexts unlikely to be associated with the original use of the sites. However, he discounts a small number of sites where he considers the carbon samples yielding early medieval and medieval dates are highly likely to be associated with the original use of the burnt mound. These sites are discounted primarily on the basis that the dating consists of single samples (Hawkes 2011, 89, 94) or that they do not represent sites where water was boiled due to the small size of the associated pit (Hawkes 2011, 92). While a degree of caution is certainly warranted where a single radiocarbon date from one of a number of cut features is concerned, it does not entirely discount the possibility of an early medieval date for a few of the burnt mound sites in Ireland.

Additionally, Hawkes latter assertion, that none of the early medieval sites represent the specific burnt mound monument type but could represent other early medieval use of hot stone technology is interesting. Unfortunately, the gazetteer appears to use the terms 'heat affected stone', 'heat shattered stone' and 'burnt stone' somewhat interchangeably (Hawkes 2011, 90, 92) and the precise meaning of each is not defined. Burnt stone appears particularly problematic as it implies a stone showing signs of heating but not necessarily one displaying the effects of thermal shock resulting from immersion in liquid, as should be the case for an HSP as defined above. Indeed, a number of gazetteer sites where the stones are

listed as limestone are unlikely to have been used for heating liquid since the conversion of heated limestone into Calcium Hydroxide, slaked lime, on contact with water, would likely be undesirable.

Despite this, the gazetteer does appear to indicate a number of sites where probable HSPs as defined above have been discovered in apparently secure early medieval and medieval contexts in Ireland. The description of the site at Doughiska, County Galway (site 25, Hawkes 2011, 92) is particularly promising, where an approximately 6x6m spread of heat-shattered stone and charcoal sealing a pit containing similar material yielded three carbon dates spanning the late 9th to 12th centuries AD (cal). Other sites in the gazetteer also indicate early medieval or medieval dates for features associated with probable HSP use, including Derver 4 (site 24, Hawkes 2011, 91 - 92) where a pit containing some burnt stones yielded a similar date to Doughiska, though the stones may have been residual, Kilmurry North 2 (site 34, Hawkes 2011, 93 - 94), where two pits containing charcoal and heat-shattered stone were dated 10th to mid 13th century (cal), Cloonaghboy III (site 15, Hawkes 2011, 89 - 90), where one of two small spreads of heat shattered stone and charcoal gave calibrated dates of late 9th to mid 12th century, and Cloonfane VI (site 18, Hawkes 2011, 90), where a small spread of heat affected stone and charcoal gave a calibrated date of late 8th to late 10th century.

Of particular importance to the interpretation of the HSP from the Hangar Hill site is that burnt mounds are primarily situated in areas close to water, where the trough can fill with water naturally (via a high water table or presence of a spring) or where water (being the most difficult component of the system to transport) can be introduced to the trough with a minimum of effort. The lack of nearby streams (the closest water source is the River Meden, approximately 1.7km away from the site at its closest), locally elevated situation (just above the 100m contour) and the porous sandstone geology suggest the HSPs are extremely unlikely to derive from a burnt mound in the vicinity.

This, then, leaves the possibility of cooking or smaller-scale liquid heating. HSPs commonly appear in domestic contexts from the Neolithic to the late Iron Age / Roman period. HSPs from the latter part of this time span are frequently encountered in close association with settlement. It seems likely that if the HSPs from Hanger Hill were associated with Late Iron Age or Romano British settlement then sherds of pottery or other contemporary rubbish material would be encountered with them, particularly as the HSPs may often be found in more sheltered locations such as pits dug into partially silted up boundary ditches (eg Palfreyman 2001, 87), and may therefore be less prone to erosion than associated occupation surfaces. Similarly, if the HSPs were associated with Neolithic or Bronze Age occupation, whether temporary or more permanent, then it might be reasonable to expect some trace of lithic debitage or tools.

An early medieval radiocarbon date (mid 7th to late 10th century) from a mound of burnt stone at Morfa Mawr in South West Wales (Williams 1990, 134) and an early medieval pit containing HSPs at Catholme in Staffordshire (thanks to Daryl Garton for pointing out the existence of this evidence) are the only British examples currently known to the author. However, Hawkes' review of the Irish evidence (2011) showed that recent archaeological interventions arising as a result of development had identified a number of sites with probable HSPs dating to the early medieval and medieval periods. Though the archaeology of Ireland is not the same as that of Britain, Hawkes' work suggests the possibility that a similar review and synthesis of recent British developer funded work might reveal more securely dated evidence of early medieval HSP use in Britain.

At the very least, the evidence suggests that an Early Medieval origin is not necessarily impossible for the Hangar Hill finds. Indeed, the complete lack of other finds within the excavated area seems to suggest activity on Hangar Hill was taking place during a period when artefacts are few. The Early Medieval period in Nottinghamshire is notably poor in domestic artefacts (pers obs from working at the Notts HER) and has been described as "a culture of low archaeological visibility with a prominent role for organic and perishable materials" (Knight, 2004, 162, discussing the early Saxon period).

Quinn and Moore suggested the possible use of burnt mound monuments for brewing (Quinn and Moore 2007) but also drew attention to other brewing methods, which would generate smaller quantities of heat shattered pebbles. These methods are historically attested, one still

being practiced in Finland (though was probably imported to that area in high or late medieval times) for the brewing of Sahti (Sysila, 1998) and another practiced in Germany until relatively recently (Deutsches Museum, nd). They both involve heating the mash in wooden containers using red-hot stones. In the brewing of Sahti, when the mash is ready it is decanted into fermentation containers. The stones are presumably removed from the mash container and discarded or retained for re-use if necessary at this point. The archaeological signature of such brewing would be difficult to detect, consisting of little more than small groups of discarded HSPs, a hearth and maybe some associated traces of malted grain, though the latter substance is unlikely to be discarded as it could be used as a foodstuff for humans or animals.

The writer is unaware whether consumption, and particularly brewing, of alcohol was a part of the events occurring at an early medieval meeting place and is not aware of any archaeological evidence for the above mentioned form of brewing. Ethnographic studies suggest attrition of the interior surface of 265 out of 958 Anglo-Saxon ceramic vessels (which were subsequently utilised as cremation urns in the Cleatham, Lincolnshire, cemetery) is most likely to occur as a result of the vessels being employed as fermentation containers (Perry 2011). The processes leading to the production of fermenting liquids are many and varied and the presence of fermentation in early medieval Britain certainly does not imply the use of the above-mentioned brewing methods.

However, the possibility of brewing should perhaps be borne in mind should further work take place at Hangar Hill, although the lack of nearby water sources would probably discount any possibility of larger scale brewing.

Irrespective of the date of origin of the HSPs, due to the contexts in which they were found they would not provide an accurate date for the of construction of the bank and ditch under investigation. The contexts in which they were found were the colluvial deposit built up against the bank (104), the secondary bank make up (103) and the soil outside the enclosure (105). None were present in the ditch fills or original bank deposits.

It is not clear what amount of time elapsed between the construction of the bank and the formation of the colluvial deposit (104). Consequently, the HSPs within this deposit could derive from upslope activity contemporary with the construction of the bank and ditch. They could just as easily have been present upslope for some considerable time prior to their inclusion in the colluvial deposit, or could equally relate to activity much later than the construction of the bank if the colluvium is significantly later than the bank.

Layer (105) was interpreted as a soil layer to the north east of the bank, formed following the initial silting of the ditch, the primary fills of which it sealed. The HSPs in this layer could again be of any period. However, the apparent presence of the bank by the time this deposit was forming would likely act as a barrier to colluvial movement. The HSPs in layer (105) are of smaller size than those in (104) so could have been more mobile and more likely to be moved around the site by anthropogenic or natural means. However, given the presence of HSPs in the secondary bank material (103), which is earlier than layer (105), it is possible the HSPs in (105) may have eroded out of (103).

The secondary bank deposit (103) appears to have been an enhancement or repair to the bank. Again, it is unclear how much time elapsed from the original construction to the repair. The HSPs from (103), like those from (105), are relatively more fragmented than those from (104).

It is notable that no HSPs were recovered from the primary bank deposits / possible buried soil beneath the bank or the early silting of the ditch. Only a small area was excavated and only a few HSPs were recovered, resulting in a sample size effectively too small to allow secure conclusions to be drawn. However, had HSPs already been present in the soils into which the ditch was dug they might have been encountered in the primary bank make up or the early silting of the ditch, in a similar fashion to the way HSPs were recovered from the stratigraphically later deposits.

On the basis of this scanty evidence it could be very tentatively suggested that the HSPs may have been produced by activities taking place following the initial construction of the bank and ditch but prior to the repair / enhancement of the monument, or that they pre-date it and

became mobilised by activities upslope following the initial construction of the ditch but prior to the enlargement of the bank. As such a small area of the feature was sampled though, further work may prove this suggestion inaccurate.

Conclusions:

The Heat Shattered Pebbles found in the excavations could not be directly associated with the construction of the bank and ditch. However, their absence in the initial construction deposits and primary ditch silts and presence in the stratigraphically later deposits – being: bank enhancement; colluvial deposit; soils built up after the construction - leads to the tentative suggestion that the HSPs may have been produced by activity following the construction of the bank and ditch, or that they come from earlier activity and were only mobilised by activities within the enclosure following its construction.

They are very unlikely to come from a burnt mound and are more likely to derive from small scale cooking or possibly brewing activity. Scant evidence from England and Wales and slightly more comprehensive evidence from Ireland indicates an early medieval date for the creation / use of the HSPs is not impossible, and the lack of other artefact types suggests activity on the site occurred during a chronological period when durable artefacts were scarce.

MERCIAN ARCHAEOLOGICAL SERVICES CIC

Heat Shattered Pebble Quantification Sheet

Site code: THY13 Site Name: Thynghowe, Hangar Hill, Sherwood Forest, Nottinghamshire

David Budge 20/11/2013

ContextNo	Quantity	Mass(g)	Oxid?	Edges?	Crazed?	Frag	Notes
103	1	13.8	x	Good	Good	5	
103	1	7.0	x	Good	Good	<5	
103	1	29.0	Good	Mod	Mod	130	
104	1	61.5	x	Good	Good	90	
104	1	197.0	x	Good	Good	180	pebble 60mm x >55mm
104	1	96.9	x	Mod	Mod	85	
105	1	1.8	x	Good	Mod	<5	
105	1	36.6	Mod	Mod	Mod	75	Possibly oxid over break?

TotalNo	TotalMass
8	443.6

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Appendix IV:

Finds Report – Post Roman Pottery

Mercian
Archaeological Services CIC

Finds Report – Post Roman Pottery

from Hangar Hill, Sherwood Forest, Nottinghamshire.

Site Code: THY13

David James Budge **22/10/2013**

Introduction:

A single fragment of English Stoneware was found in road metalling deposits (108). It was a fragment of ink bottle of mid 19th to early 20th century date. The pottery has been fully archived to the level required by the Medieval Pottery Research Group (2001).

Methodology:

The pottery was washed in lukewarm water using a soft bristled brush and air dried for at least 48 hours. When fully dry the material was examined by eye and under 20x magnification using a Brunel Microscopes MX1 stereomicroscope. The assemblage was quantified using sherd count, sherd mass and vessel count in each context. Weighing was carried out using a Maplin VV52G electronic balance calibrated prior to use with a 100g mass and checked following recording with the same 100g mass. These control readings showed no deviation, being precisely 100.0g. The mass of the pottery sherds was recorded to the nearest 1g.

The data were input into a Microsoft Access database using code names developed for the City of Nottingham Type Series (Nailor and Young 2001) and the Lincoln Ceramic Type Series (Young, Vince and Nailor 2005). The database and code list was kindly supplied by Jane Young, independent post-Roman ceramic specialist. The resulting archive conforms to the standards and guidelines set out by the Medieval Pottery Research Group (2001).

Results:

A single sherd of pottery was found during the excavation. This was a sherd of English Stoneware from context (108), the metalling of the road. The sharply angled shoulder is from an ink bottle made from light grey stoneware with slightly bubbly transparent glaze on both interior and exterior surfaces. It is decorated with a horizontal line just above the shoulder. A bottle of identical profile, colour and decoration is in the Museum of London, accession no 80.486/71, where it is dated 1850 to 1900. Such bottles may also continue into the 20th century. Bottles of this type were made throughout Britain, with the Derbyshire stoneware industries being some of the largest producers at this period, but with other centres such as Bristol having significant impact.

Discussion:

There are too many factors which could control the circumstances surrounding the deposition of a single pot sherd in the metalling of a road, so it is not possible to attempt to draw any conclusions from such a small assemblage.

Conclusions:

A sherd from a mid 19th to early 20th century ink bottle was recovered from the road metalling (108).

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Mercian Archaeological Services CIC

Pottery Archive for Site THY13, Hangar Hill, Nottinghamshire

David Budge

trench	context	cname	full name	sub fabric	form type	sherds	weight	part	description	date
1	108	ENGS	Unspecified English Stoneware	Light grey fab;int and ext clear slightly bubbly glaze	Bottle	1	7	BS	Ink bottle;identical vessel with same dec in Museum of London acc no 80.486/71	early/mid 19 20th

Appendix V:

Finds Report – Ceramic Building Material

Mercian
Archaeological Services CIC

Finds Report – Ceramic Building Material

from Hangar Hill, Sherwood Forest, Nottinghamshire.

Site Code: THY13

David James Budge **22/11/2013**

Introduction:

143 fragments of Ceramic Building Material weighing a total of 1.360kg were recovered during the THY13 excavations. All were from context (108). All were extensively fragmented and abraded. They had been dumped as hardcore to create the road surface (108).

Methodology:

The CBM was washed in lukewarm water using a soft bristled brush and dried in a warm air current for at least 48 hours. When fully dry the material was examined under 20x magnification using a Brunel Microscopes MX1 stereomicroscope and divided into fabric groups. They were then counted and weighed in their fabric groups. Weighing was carried out using a Maplin VV52G electronic balance calibrated prior to use with a 100g mass and checked following recording with the same 100g mass. These control readings showed no deviation, being precisely 100.0g. The mass of the CBM fragments was recorded to the nearest 1g.

The data were input into a Microsoft Access database using nationally and locally agreed code names. The database and code list was kindly supplied by Jane Young, independent post Roman ceramic specialist. The resulting archive conforms to the standards and guidelines set out by the Medieval Pottery Research Group (2001). Given the date and origin of the assemblage, it was not considered desirable to produce detailed written descriptions of the fabrics.

Results:

A total of 143 fragments of CBM with a combined mass of 1.360kg were recovered from a single context, road surface (108). CBM was not encountered in any other contexts. The material consisted of small, extensively abraded, fragments. Insufficient survived of any of the fragments to attempt to measure brick dimensions.

Only two roof tile fragments were positively identified. The fragments were too small to determine the form of tile they had come from, but they are likely to be of later post medieval or modern date.

A number of fragments were very small and abraded and were small enough that they could have come either from tiles or bricks.

The remaining fragments were large enough or had enough evidence of shape, or similarity of fabric to definitely identifiable bricks, that they were

classified as bricks.

Three main fabric groups were identified, though there was a reasonable degree of variation within the groups, suggesting that each group may actually include products of more than one production site using similar raw materials.

The biggest group, both in terms of number of fragments (50) and total mass (385g) was characterised by a soft orange to pink fabric with common fine sub-rounded calcareous inclusions in the background of the clay. A few examples had occasional larger sub rounded calcareous inclusions. This fabric could derive from clays associated with the limestone areas not far to the west of the site, extending into Derbyshire.

The second largest group (46 fragments, 301g total mass) was a soft orange fabric with moderate quartz sand. This fabric is similar to those found in the Trent Valley.

The third largest group (32 fragments, total mass 295g) had a soft orange sandy fabric with a background of fine mica. Relatively iron rich clays with a micaceous background may have been exploited in Roman and Medieval times at a presently unknown location near Southwell in Nottinghamshire (Jane Young, pers comm.) but also occur elsewhere in Nottinghamshire and Derbyshire, suggesting these bricks too may be of local origin.

Due to the lack of pieces large enough to obtain measurements of the original brick sizes, dating these groups is very difficult. The bricks could have been manufactured at any time from post medieval to the end of the 19th century.

The fourth largest group, in terms of combined mass (249g), consisted of just four fragments, two of which joined. The large size of the fragments is explained by the much harder fabric of this group. The bricks had a fine buff fabric with rough vitrified surfaces ranging in colour from purple and dull red to yellow. These bricks are not likely to pre-date the 18th century but could have been manufactured any time from then to the 20th century.

The other fragments are mostly variants of the first three groups, some harder fired, some potentially just extreme outliers of the groups. None have particularly unusual inclusions for Nottinghamshire and could all be of local origin

Discussion:

The bricks had been dumped as hardcore to make up the road surface (108). The less fragmented nature of the harder fabrics suggests they may not have been crushed in a crushing machine, since this would probably reduce all fragments equally. They may have been initially broken up manually and spread on the road surface, where the softer pieces further fragmented with the passage of heavy traffic.

Conclusions:

The bricks are all likely to be of relatively local origin, with the clays and tempers of the main fabric groups all being available in Nottinghamshire or the immediate vicinity. The bricks were too fragmentary to be closely dated and for the most part can only be assigned a broad post medieval to modern date.

They probably came from a variety of structures of different dates that were demolished and the rubble from which was used as metalling for the road. The CBM and single pottery find from (108), together with the crushed nature of the CBM and quartzite from this context suggesting passage of heavy machinery may support the excavator's interpretation of the road as a feature constructed by the military at some point during their use of Sherwood Forest as a training ground.

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Mercian Archaeological Services CIC

Brick and Tile Archive for THY13, Hanger Hill, Nottinghamshire

David Budge

context	cname	full name	fabric	frags	weight	date
108	BRK	Brick	Red sandy micaceous	1	9	Pmed - mod
108	PNR	Peg, nib or ridge ti	Fine orange micaceous	1	15	Pmed - mod
108	PNR	Peg, nib or ridge ti	Fine orange sandy micaceous;fine calcareous	1	34	Pmed - mod
108	BRK	Brick	Vitrified sandy;Purple dull red core	1	30	18th to 20th
108	BRK	Brick	Soft orange sandy	46	301	Pmed - mod
108	BRK	Brick	Hard fine buff / cream;vitrified surfaces	4	249	18th to 20th
108	BRK	Brick	Soft orange sandy micaceous	32	295	Pmed - mod
108	BRK	Brick	Soft orange / pink sandy calcareous	50	385	Pmed - mod
108	BRK	Brick	Orange / buff soft fine micaceous	1	1	Pmed - mod
108	BRK	Brick	Hard sandy buff;bkgrnd common fine calc	1	9	Pmed - mod
108	BRK	Brick	Hard red fine slightly micaceous mod sandy	1	6	Pmed - mod
108	BRK	Brick	Hard red fine micaceous	1	3	Pmed - mod
108	BRK	Brick	Hard red fine calcareous	1	1	Pmed - mod
108	BRK	Brick	Soft orange fine micaceous;occ rounded clay pellet	1	5	Pmed - mod
108	BRK	Brick	Hard red slightly sandy	1	17	Pmed - mod

Appendix VI:

Finds Report – Flaked Stone and Iron Objects

Mercian
Archaeological Services CIC

Finds Report – Flaked Stone and Iron Objects

from Hangar Hill, Sherwood Forest, Nottinghamshire.

Site Code: THY13

David James Budge **22/11/2013**

Introduction:

A flaked quartzite pebble and an iron object were discovered during the Hanger Hill excavation. The quartzite pebble was recovered from metalling deposits associated with a modern trackway. The pattern of flaking was consistent with crushing damage inflicted either by the wheels of heavy machinery or by a crushing machine. The iron object was totally mineralised. It was probably a nail. It came from the decaying organic fill of a relatively recent tree root high in the stratigraphic sequence.

Methodology:

The flaked pebble was washed, air dried and examined by eye. Due to its modern date and origin as hardcore or as a result of mechanical damage, no further action was taken. The nail was examined by eye. Being completely mineralised with no metallic iron remaining, it was allowed to air dry. As fully mineralised iron is stable, though brittle (Watkinson and Neale 1998, 35), no further treatment was necessary. The object was measured with a 30cm rule with 1mm divisions and weighed using a Maplin VV52G electronic balance calibrated prior to use with a 100g mass and checked following recording with the same 100g mass. These control readings showed no deviation, being precisely 100.0g. Mass of the iron object was recorded to the nearest 0.1g.

Results:

Lithics:

The pebble, from (108), is quartzite. It has had a series of consecutive flakes removed from three platforms, each platform at an almost 90° angle to the previous and formed on the distal end of the previous flake scar, suggesting the core was rotated about a single plane during flaking. In addition to the detached flakes, each platform shows evidence of heavy crushing.

Iron:

From context (114). Iron object, two joining fragments, recent break. Completely mineralised with central void, no metallic iron remaining. Surface showing orange brown corrosion with adhering sand particles. Roughly oval in section with a swelling at one end. Probably a nail.

Dimensions:

Length: 61mm

Width (shaft): 17 x 10mm

Width (head): 19 x 14mm

Mass: 14.8g

Discussion:

The pattern of flaking on the quartzite cobble is consistent with the damage expected of a pebble being rolled under the wheel of heavy machinery (such as agricultural vehicles or a tank) or with a pebble being rotated in the rollers of a crushing machine. Given the presence of large quantities of crushed CBM also within context (108), it is likely that the flaking of the pebble is modern and that it was either imported to the site as hardcore to surface the road, or that it was damaged by the passage of heavy, probably military, vehicles using the road.

The iron object is most likely to be a nail. It is too corroded to determine the exact form. Assuming it is hand made it may date any time from the Iron Age to the 20th century. The relatively high stratigraphic position of the context in which it was found (114) suggests a post medieval to modern date is most likely.

Conclusions:

The quartzite core is a product of modern mechanical crushing. It may be discarded if necessary. The iron object is probably a nail. It cannot be closely dated. As it is entirely mineralised and has been dried it is stable and can be stored if necessary without requiring further conservation.

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Appendix VII:

Environmental Archaeological

Site Visit Résumé

AEA210: Edwinstowe, Nottinghamshire; Site visit résumé (THW 13)

Michael J. Allen

The site at Edwinstowe, comprising a trench across a clear bank and ditch, was visited on 3rd May 2013 with Andy Gaunt. Three profiles were described and two sampled. The bank and buried soil profile was described and samples as undisturbed 50cm monolith (for subsampling for pollen and more detailed geoarchaeological description), and a kubiena sample (for consideration for soil thin section and subsampling for pollen). The ditch profile was cleaned, described and also sampled in 50cm monolith, and the colluvial build-up behind the bank was recorded.

The site was under beech woodland plantation in Sherwood Forest, and present day soils consist of sandy pozolic brown earth under leaf litter. All profiles were very sandy and had common fine fleshy to medium woody roots penetration throughout the profile, comprising the integrity of the disturbed samples. Each profile was cleaned prior to description following standard sedimentological notation (Hodgson 1976) and munsell colours were recorded in the field moist.

Figure 1. The bank and ditch profile

A very brief summary of the three profiles follows:-

Figure 1. The bank and ditch profile

A very brief summary of the three profiles follows:-

Profile 1: bank and buried soil

The bank comprised minerogenic sand about 36cm thick, underneath the podzolic brown earth A horizon.

A clear upper humic sand was separated from a lower humic sand by a very thin (1-2mm) thin lens of minerogenic sand. This was assumed to represent a turf/redposited Ah material (upper), and *in situ* Ah horizon or the former ground surface. No structure or obvious features were present, and the profile seems to represent a sandy brown earth.

The full profile was sampled in a 50cm long monoliths, and the buried soil in a 12cm kubiena tin (Fig. 1). It is proposed that both will be described and subsampled for pollen, and the kubiena sample considered for soil thin section manufacture.

in addition to these undisturbed soil/sediment samples, a bulk disturbed sample of *c.* 7 litres was taken from the buried soil.

Figure 2. The bank and buried sol with 50cm monolith and kubiena sampling the buried soil (and overlying bank)

Profile 2: ditch

The ditch profile was about 0.63 m deep and under the present Ah horizon (topsoil) was a massive, uniform sandy upper fill becoming slightly more cohesive with depth (17-33cm and 33-54cm). This represents the secondary / tertiary fills. A basal primary fill (45-63) was also a uniform less humic fill, representing rapid infill of the ditch principally from weathering of the sides and the soil through which the ditch was cut.

A single 50cm long monolith was taken through this profile (Fig. 3)

Figure 3. The ditch profile and 50cm monolith sampling the main sequence

Profile 3: colluvial accumulation behind bank

A loose massive slightly humic sand accumulated behind the bank and represents local small-scale colluviation from the area immediate upslope and behind the bank. This could have occurred under either woodland or more

open conditions. Examination of the field log may go towards determining this. No sampling was considered necessary of this sequence - and this area was more heavily rooted significantly compromising the integrity of any sample

Discussion and Summary

A clear buried soil was present under the bank, and fieldwork indicated a low line of turves were placed onto of the soil before the more minerogenic material piled up to form the main the bank. The ditch infilled relatively rapidly, principally with material weathering from the ditch sides and soil. The last main event was the sandy colluvium washing against the bank.

The sequence has the potential to provide a local and subregional history of the development of the pre-ditch and post ditch landscape. This could include the changing nature of the soils and of the local environment and woodland.

Reference

Hodgson, J.M. 1976. *Soil Survey Field Handbook.* Harpenden: Soil Survey Technical Monograph 5

LIST OF SAMPLES

M1 50cm monolith though bank and buried soil

K2 12cm kuniena tin through buried soil

M3 50cm monolith through the ditch

4 7 litre bulk sample from the buried soil

Appendix VIII:

Community Archaeology Photographic Archive

Mercian Archaeological Services CIC and the Friends of Thynghowe

Excavation looking north-west

Excavation looking north-west

Excavation looking east

Excavation looking north-east

Excavation looking north-east

Views from the excavation southwest towards the top of Thynghowe mound