

**LAND ADJACENT TO 102 DEAN'S WAY,
GLOUCESTER.**

NGR: 383387.219634

ARCHAEOLOGICAL WATCHING BRIEF

June 2015

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Quality Assurance

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SUMMARY

Between the 1st and 4th of December 2014 Foundations Archaeology undertook a programme of archaeological watching brief during groundworks associated with the construction of a residential dwelling on land adjacent to 102 Dean's Way, Gloucester (NGR: 383387.219634). The project was commissioned by Aaron Mills of HCGI Properties.

The watching brief comprised the monitoring of the excavation and in-fill of house foundation trenches.

Significant features and deposits were identified during the course of the watching brief.

In the eastern part of the site these comprised a series of probable late Iron Age – early Roman ditches, which appeared to represent a north – south aligned boundary with an enclosure or ring-ditch immediately to the east. The ditches were cut by early Roman pits, which clearly disrespected the alignments of the earlier ditches and presumably represented a significant change of activity within the site.

All of the pottery associated with the ditches and pits was pre-Flavian, which suggested that at least some of these features were potentially related to military activity associated with the early Roman fort at Kingsholm.

The western part of the site contained the southeastern edge of a relatively large probable ditch. The relative locations of the sections containing the edge of the ditch indicated that it was most likely aligned northeast – southwest. Stratigraphic and artefactual evidence indicated that it is possible that the ditch was related to the early Roman fort.

Two probable human bone fragments were present within the site, one of which was derived from the fill of an early Roman pit. Another human bone, which had been sawn, was poorly provenanced and was therefore difficult to interpret.

GLOSSARY OF ARCHAEOLOGICAL TERMS AND ABBREVIATIONS

Archaeology

For the purpose of this project archaeology is taken to mean the study of past human societies through their material remains from prehistoric times to the modern era. No rigid upper date limit has been set, but AD 1900 is used as a general cut-off point.

CBM

Ceramic building material.

Medieval

The period between the Norman Conquest (AD 1066) and *circa* AD 1500.

Natural

In archaeological terms this refers to the undisturbed natural geology of a site.

NGR

National Grid Reference from the Ordnance Survey Grid.

OD

Ordnance datum; used to express a given height above sea-level.

OS

Ordnance Survey.

Roman

The period traditionally dated between AD 43 and *circa* AD 410.

Saxon

The period between AD 410 and AD 1066.

1 INTRODUCTION

- 1.1 Between 1st and 4th of December 2014 Foundations Archaeology undertook a programme of archaeological watching brief during groundworks associated with the construction of a residential dwelling on land adjacent to 102 Dean's Way, Gloucester (NGR: 383387.219634). The project was commissioned by Aaron Mills of HCGI Properties.
- 1.2 The project was undertaken in accordance with an approved Written Scheme of Investigation (WSI), produced by Foundations Archaeology (2014). The works were carried out in accordance with the *Standard and Guidance for Archaeological Watching Briefs*, issued by the Chartered Institute for Archaeologists (2014) and *Archaeological Guidance Paper 4: Archaeological Watching Briefs: (guidelines)* issued by English Heritage (London Region).
- 1.3 This document presents the findings of the archaeological watching brief.

2 PROJECT BACKGROUND

- 2.1 Planning permission was granted for the construction of a two-storey detached house on land adjacent to 102 Dean's Way (**Ref 14/00248/FUL**). These works had the potential to impact upon buried archaeological deposits, therefore, in accordance with NPPF12, a requirement for a programme of archaeological works was attached to the planning permission.
- 2.2 The site is located in an area of high archaeological potential. A desk-based assessment of the site by Foundations Archaeology (2014) indicated that Iron Age deposits of the Dubonni tribe have been uncovered within 100m of the study area. The site is likely to be located within the northwestern quadrant of an early Roman legionary or vexillation fortress and is also within an area of known Roman inhumations.
- 2.3 An evaluation was undertaken at the site in March 2014 by Foundations Archaeology. The evaluation identified Roman archaeological soil horizons and a possible bank of re-deposited natural, which also probably dated to the Roman period. These deposits were sealed by a substantial layer of subsoil, which suggested that any buried archaeological deposits were well-preserved. The pottery assemblage dated to the early Roman period, specifically to the pre-Flavian period, and was thus contemporary with the occupation of the Roman fortress at Kingsholm.
- 2.4 The main archaeological potential of the site was, therefore, for the presence of evidence relating to the Roman period, potentially including inhumation burials. This did not prejudice the watching brief against features and finds associated with other periods.

3 AIMS

- 3.1 The aims of the archaeological watching brief were to gather high quality data from the direct observation of archaeological deposits.
- 3.2 These aims were achieved by the pursuit of the following objectives:
- i) To identify, define and record any archaeological deposits and date these where possible;
 - ii) To attempt to characterise the nature of the archaeological sequence and recover as much information as possible about the spatial patterning of features present on the site;
 - iii) To recover a well dated stratigraphic sequence, with a view to determining the complexity of the horizontal and vertical stratigraphy present and to recover coherent artefact, ecofact and environmental samples;
 - iv) To determine the potential of the site to provide palaeoenvironmental and/or economic evidence and the forms in which such evidence may be present.

4 METHODOLOGY

- 4.1 The foundation trenches were excavated by use of a mechanical excavator equipped with a toothless grading bucket. All mechanical excavation was undertaken whilst under constant archaeological direction. Some deposits, or parts thereof, were removed manually by an archaeologist in order to facilitate dating.
- 4.2 Identified archaeological features were either manually excavated and recorded or noted and recorded in plan only. All archaeological excavation and recording was undertaken by Andrew Hood BSc. MCIfA. The amount of excavation and sampling was agreed on-site with the Gloucester City Archaeologist. Where features were recorded in plan only, they were covered with plastic sheeting prior to concrete backfill.
- 4.3 The concrete backfill was undertaken whilst under constant archaeological observation.
- 4.4 The drainage and service trenches did not penetrate to a depth greater than 0.80m below the Modern pavement level and, as such, these groundworks were not subject to archaeological observation.

- 4.5 Spoil tips were scanned for finds, both visually and by use of a metal detector. All recovered archaeological artefacts were allocated a context reference number and retained. Modern artefacts were noted and discarded.
- 4.6 All excavation and recording was undertaken in accordance with the Written Scheme of Investigation.

5 RESULTS

- 5.1 A full description of all contexts identified during the course of the watching brief is given in Appendix 1 and Figure 5. Specialist reports on the recovered pottery, charred plant remains and snail shells are presented in Appendices 2 – 4, as well as a Bone List in Appendix 5 and a Human Bone report in Appendix 6. A summary of the results is given below:
- 5.2 Visibility conditions at the level of the top of the natural deposits were very good; however, visibility above the level of the natural varied from moderate to poor.

Eastern Half of the Development Footprint

- 5.3 The stratigraphically earliest deposit comprised mottled bright orange brown natural sand (107), which was present, in the eastern half of the site, at an average depth of 1.05m below the top of the foundation trenches. The natural was overlaid by sand layers (106) and (105), up to 0.25m thick, which most likely represented a former subsoil horizon.
- 5.4 Ditch [108] was cut through layer (106), into the top of the natural sand and was most likely equivalent to probable ditch (119). It was uncertain if ditch [108]/(119) represented part of an enclosure ditch or a ring-ditch.
- 5.5 Ditch [113] was also cut through layer (106), was likely to be related to probable ditch (118) and probably represented a north – south aligned boundary ditch. A single sherd of pre-Flavian Roman pottery, a small metal object and three pieces of iron nail were present within the fill (114) of ditch [113]. Pre-Flavian pottery, as well as cow and sheep bones were also recovered from probable ditch (118).
- 5.6 Pits [110] and [115] were stratigraphically later than ditches [108] and [113] respectively. It is most likely that possible pits (117) and (120) were related to this later phase of activity. Pits [110] and [115] both contained pre-Flavian Roman pottery and animal bone and pit [110] yielded a small fragment of wall-plaster. A fragment of human femur was also recovered from pit fill (116).
- 5.7 Layer (103) was a thick deposit of soil, up to 0.75m thick, which overlaid the archaeological features present within the foundation trenches. A total of 21 sherds of pre-Flavian Roman pottery were recovered from this layer, along with

cow bone fragments and a single fragment of human femur, which had been sawn at the shaft.

- 5.8 Layers (101) and (102) were both stratigraphically later than soil deposit (103) and represented Modern concrete/make up and garden soil respectively.

Western Half of the Development Footprint

- 5.9 The natural sand was not encountered within the western half of the development footprint. The stratigraphically lowest deposit comprised a sloping deposit of light brown sand (121), up to 0.2m thick, which was possibly equivalent to subsoil layers (105) and (106).
- 5.10 Deposit (121) was overlaid by fill (112), which contained Roman pottery and animal bone fragments, as well as a fragment of wall-plaster. This was, in turn overlaid by layers (103), (102) and (101).

Artefacts

- 5.11 The artefacts recovered during the site works included a small Roman pottery assemblage, which was dominated by early Roman wares, wall-plaster fragments and metal objects, along with animal bone. Two human bone fragments were recovered from pit fill (116) and layer (103).

Environmental Evidence

- 5.12 Analysis of subsoil (106) indicated the presence of charred plant remains, snail shells and possible metallurgical debris. The charred plant assemblage included relatively poorly preserved wood charcoal fragments and a small number of possible spelt or emmer wheat fragments, as well as wild plant seeds.
- 5.13 The snail shell assemblage from layer (106) was representative of an open grassland environment; although, intrusive Medieval or later and Modern shells were present, so any conclusions drawn from the snail assemblage should be regarded as highly tentative.
- 5.14 Approximately 130 fragments of possible metallurgical debris/slag, present within layer (106), represented limited evidence for metal working, either within the site or its immediate vicinity. No features demonstrably related to metal working were present within the foundation trenches.

6 DISCUSSION

- 6.1 The eastern half of the development footprint contained a series of ditches which appeared to represent a north – south aligned boundary with an enclosure or ring-

- ditch immediately to the east. The stratigraphic and artefactual evidence suggested that they represented either late Iron Age or very early Roman activity. The ditches were subsequently cut by early Roman pits, which clearly disrespected the alignments of the earlier ditches and presumably represented a significant change of activity within the site. All of the pottery associated with the archaeological deposits in the eastern half of the site was pre-Flavian, which suggested that at least some of these features were potentially related to military activity associated with the early fort.
- 6.2 In the western half of the site, the upper profile of deposit (121) sloped downwards from southeast to northwest, which corresponded with the upper profile of soil deposit (205), present within Trench 2 in the previous evaluation. It is therefore possible that the sloping upper profiles of deposits (121)/(205) represented the southeastern edge of a relatively large linear cut, probably a ditch. The relative locations of the sections containing the edge of the ditch indicated that it was most likely aligned northeast – southwest. Artefacts contained within deposit (205) and fills (112) and (204), which were possibly related to the ditch, indicated a Roman date. The stratigraphic and artefactual evidence therefore indicated that it is possible that the ditch was related to the early fort; although, due to the limited nature of the investigation, this remains highly conjectural.
- 6.3 Late Roman burials are well attested in the Kingsholm area (Heighway 2012). It is, therefore, unsurprising that the watching brief yielded human bone fragments. However, one of the bone fragments was derived from the fill (116) of an early Roman pit. The desk-based assessment noted that human remains have previously been recovered from an early Roman pit during a watching brief at 127 Dean's Way (HER 1001), approximately 28m northwest of the current site. It is therefore apparent that human burial, in some form, was being undertaken in the Kingsholm area in the early Roman period. In light of the early Roman date for fill (116), it is a distinct possibility that this bone fragment may be related to Roman military activity.
- 6.4 Layer (103) was predominately removed mechanically during the excavation of the development footing trenches and, as such, the precise location of artefacts derived from layer (103) was not certain. The provenance of the sawn human bone recovered from this layer therefore remained unclear. In light of this, it is uncertain if this bone represented earlier Roman material deposited in a later Roman context, or, alternatively, later bone present as intrusive material.
- 6.5 The watching brief has yielded significant evidence for Roman activity within the site which warrants a short publication note in TBGAS.
- 6.6 The animal bones from the site comprise a relatively small assemblage and do not warrant further analysis. They will be retained with the site archive.

- 6.7 The pottery assemblage is entirely consistent with that to be expected from the Kingsholm area and does not warrant further analysis. The pottery, along with the wall-plaster fragments and metal objects should be retained with the archive.
- 6.8 The metallurgical debris from subsoil layer (106) is interesting in and of itself, however, it was clearly contained within a secondary context and was relatively poorly dated and, as such, no further analysis of this material is recommended; although it should be retained for possible inclusion in any future synthetic study.
- 6.9 The analysis of the environmental remains yielded a relatively small assemblage of charred plant remains and snail shells. However, there was evidence for intrusive shells, which suggested that the environmental samples could have contained later material. On this basis, no further analysis of the environmental remains is recommended, although the wood charcoal fragments and snail shells should be retained with the archive.
- 6.10 The archive is currently held at the offices of Foundations Archaeology, but will be deposited within 12 months with Gloucester City Museum. A short report, which will combine the results of the desk-based assessment, previous evaluation and the current project, will be submitted for publication in TBGAS and an OASIS form will also be submitted to ADS.

7 BIBLIOGRAPHY

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8 ACKNOWLEDGEMENTS

Foundations Archaeology would like to thank Aaron Mills of HCGI Properties and Andrew Armstrong of Gloucester City Council for their help during the course of the project.

APPENDIX 1: The Stratigraphic Data

CXT	L(m)	W(m)	D(m)	DESCRIPTION
101	apx.8	apx.5.5	0.29	Modern concrete and crushed stone bedding layer. Only present within the northwestern half of the development footprint.
102	apx.17	apx.5.5	0.34	Topsoil/former topsoil; dark brown soft clay sand, which contained frequent Modern detritus. Extended across the area of the development footprint.
103	apx.17	apx.5.5	0.75	Layer of variable mid to dark grey brown soft clay sand, which contained occasional limestone fragments. Extended across the area of the development footprint.
104				void = 121
105	1.47	0.6	0.21	Layer of mottled orange grey sand. Present at the south of the development footprint.
106	9	1.4	0.25	Layer of mottled and variable brown orange sand clay. Present at the east of the development footprint. Possibly equivalent to layer 105.
107	apx.9	apx.5	?	Deposit of mottled bright orange brown natural sand. Identified at the eastern and southern parts of the development footprint.
[108]	1.1	0.35	0.4	East - west aligned curvilinear ditch with regular steep sloping sides and a narrow, flat base. Contained fill 109. Possibly equivalent to probable ditch 119.
109	1.1	0.35	0.4	Fill of ditch [108]; brown sand.
[110]	1.44	0.37	0.39	Cut feature, probably a pit, with steep sides and a flat base. Contained fill 111.
111	1.44	0.37	0.39	Fill of pit [110]; grey green sand clay, which contained occasional gravel and occasional charcoal flecks.
112	?	4.3	0.21	Deposit of grey green clay sand gravel, which contained occasional charcoal flecks and occasional patches of orange sand.
[113]	1.05	0.6	0.35	North - south aligned ditch with a rounded profile. Contained fill 114. Possibly equivalent to probable ditch 118. Uncertain stratigraphic relationship with possible small pit 117.
114	1.05	0.6	0.35	Fill of ditch [113]; brown sand which contained rare charcoal flecks. Similar to fill 109.
[115]	1.7	0.45	0.63	Cut feature, probably a pit, with sloping sides. Not fully excavated. Contained fill 116.
116	1.7	0.45	0.63	Fill of pit [115]; mixed grey green clay sand gravel, which contained occasional lenses of orange brown gravel.
117	0.5	0.17	?	Deposit of mottled beige pink and brown clay to clay silt sand; possible small pit. Not excavated. Uncertain stratigraphic relationship with ditch [113].

Land Adjacent to 102 Dean's Way, Gloucester: Archaeological Watching Brief

CXT	L(m)	W(m)	D(m)	DESCRIPTION
118	1.3	0.45	?	Linear deposit of tan brown sand with occasional patches of light grey clay; probable north - south aligned ditch. Possibly equivalent to ditch [113]. Not excavated.
119	0.7	0.23	?	Linear deposit of tan brown sand; probable north - south aligned ditch. Possibly equivalent to ditch [108]. Not excavated.
120	0.9	0.85	?	Deposit of variable dark to mid grey clay sand, which contained occasional charcoal flecks; possible pit. Not excavated.
121	?	1.8	0.2	Deposit of light brown sand with a gently sloping upper profile. Possibly equivalent to layers 105 and 106.

APPENDIX 2: The Pottery

By Jane Timby

- 1 Introduction
 - 1.1 The watching brief resulted in the recovery of a small assemblage of 40 sherds of pottery weighing 27423 g accompanied by two fragments of painted wall-plaster and a broken iron object. The entire assemblage appears to date to the pre-Flavian period.
 - 1.2 Pottery was recovered from six defined contexts; the quantities ranging from single sherds to a maximum of 21 sherds from (103).
 - 1.3 The condition of the Roman material was moderately good with some large fresh sherds. The overall average sherd weight is extremely high at 68.5 g partly skewed by a very large fragment of storage jar from (118). The condition of the material suggests that has not undergone any on-going disturbance.
 - 1.4 For the purposes of the assessment the pottery assemblage was briefly scanned to assess its likely chronology and quantified by sherd count and weight for each recorded context. The resulting data is summarised in Table 1.
- 2 Roman
 - 2.1 The complete assemblage dates to the early Roman period, specifically to the pre-Flavian period and is thus contemporary with the occupation of the Roman military fortress at Kingsholm.
 - 2.2 The group comprises a mixture of imported continental types, native wares, Kingsholm military-type wares and Severn Valley ware.
 - 2.3 Imports include a single sherd of South Gaulish samian (Dragendorff 27 cup); one sherd of amphora from Baetica, southern Spain from a container used to transport olive oil and one fragment of Central Gaulish (Rhône Valley) mortarium. This latter vessel is slightly burnt on the interior.
 - 2.4 The Kingsholm wares embrace a range of fabrics considered to be made in the area by the army in the Neronian period. These include Gloucester type fabrics TF 24, 213 and 39. Most of the forms are jars, a flat rim hemispherical bowl and flagon.
 - 2.5 The native wares comprise two sherds of grog-tempered handmade ware which is found in the area in the pre-Roman Iron Age but continued to be used until the later 1st century AD.

- 2.6 Severn Valley wares are well-represented and include the lower part of a butt beaker with vertical combed decoration from cxt (116) and a particularly large rim fragment of a white-slipped handmade storage jar decorated with a zone of incised lattice-work from (118).
- 2.7 Amongst the other wares are a few oxidised sherds of Gloucester ware (TF 11A) and a fine black sandy ware.
- 3 Other material
- 3.1 A single piece of red painted wall-plaster was recovered from cxt (112) and two very small fragments of painted white from (111).
- 4 Summary and further work
- 4.1 The pottery assemblage recovered is entirely typical of that to be expected from the Kingholm area and in particular reflects the range of material from the 1972 excavations (Hurst 1985) considered to lie with the area of the early Roman fortress. The painted wall-plaster intimates a building of some quality nearby.
- 4.2 The assemblage is too small to warrant further work but adds to the gazetteer of finds already documented from this area.

Reference

Hurst, H R, 1985, Kingsholm, Gloucester Archaeological Reports Vol 1

TABLE 1

Cxt	sam	amp	mort	native	military	local	Tot No	Tot Wt	Date	other
103	0	0	0	0	18	3	21	614	pre-Flav	
111	0	0	0	0	2	0	2	26	pre-Flav	wall-plaster
112	1	1	1	1	3	0	7	300	Roman	wall-plaster
114	0	0	0	0	0	1	1	2	pre-Flav	Fe object
116	0	0	0	1	0	3	4	449	pre-Flav	
118	0	0	0	0	2	3	5	1351	pre-Flav	
TOTAL	1	1	1	2	25	10	40	2742		

APPENDIX 3: Assessment of the Charred Plant Remains

By Ellen Simmons

Introduction

A watching brief carried out by Foundations Archaeology at 102 Dean's Way, Gloucester revealed a subsoil layer (106) cut by Roman ditches and pits. A flotation sample was taken from context (106) and assessed in order to determine the concentration, diversity, state of preservation and suitability for use in radiocarbon dating, of any archaeobotanical material present. A further aim of this assessment was to evaluate the potential of the deposits encountered during the watching brief to provide evidence for the function of the contexts, the economy of the site or for the nature of the local environment.

Recovery, processing and laboratory methods

The flotation sample was processed for charred plant remains and wood charcoal by GeoFlo Southwest Geophysical and Flotation Services using a water separation machine. Floating material was collected in a 250µm mesh, and the remaining heavy residue retained in a 1mm mesh. The flots and heavy residues were air dried.

The sample was assessed in accordance with English Heritage guidelines for environmental archaeology assessments (Jones, 2011). A preliminary assessment of the sample was made by scanning under a stereo-binocular microscope (x10 - x65) and recording the abundance of the main classes of material present. Where less than five items of identifiable charred plant remains were present, these were fully identified and quantified. Identification of plant material was carried out by comparison with material in the author's own reference collection and various reference works (e.g. Cappers *et al*, 2006). Cereal identifications and nomenclature follow Jacomet (2006). Other plant nomenclature follows Stace (2010). The composition of the samples is recorded below in Table 1. The samples were sorted for molluscs, which were stored in sealable plastic bags.

Preservation

A relatively high proportion of intrusive roots were present in the sample indicating an increased likelihood that some charred material present in the sample may be intrusive.

A very low density of charred plant remains was present in the sample. Preservation of the charred cereal grains that were present was poor with grains being puffed and clinkered and missing epidermis. Wood charcoal was relatively abundant in the sample but preservation was relatively poor. Many of the charcoal fragments were affected by vitrification whereby charcoal takes on a glassy appearance resulting in anatomical features becoming fused and difficult to identify.

Charred plant material

Two indeterminate wheat grains (*Triticum* sp.), an indeterminate cereal grain and two indeterminate glume bases likely to be either spelt or emmer wheat (*Triticum dicocum* / *spelta*) were present in the sample. A seed of bedstraw (*Galium*) and a seed of vetch or pea (*Vicia* / *Lathyrus*) along with two unidentified wild or weed plant seeds were also present in the sample.

Wood charcoal

Wood charcoal was relatively abundant in the sample with over one hundred charcoal fragments greater than 2mm in size being present. Both diffuse and ring porous taxa were represented.

Molluscs

Over one hundred mollusc shells were present in the sample.

Discussion and recommendations for further work.

The low density and poor preservation of the charred plant remains present in the sample may be due to poor charring conditions for the preservation of charred plant remains. Over thirty possible fragments of metallurgical debris were observed in the sample along with over one hundred fragments of material that is possibly some form of slag. This suggests that the functional origin of the charred material in the sample may be related to some form of industrial process which would involve burning at high temperatures and so result in an increased likelihood of the destruction of plant material. The presence of a few charred cereal grains, chaff and wild or weed plant seeds does however indicate domestic activity in the vicinity. The charred plant remains are likely to represent charred crop processing waste although other sources of plant material may be represented such as kindling, animal fodder, roofing or flooring material.

No further analysis would be recommended for the charred plant assemblage, due to the paucity of remains present. The wood charcoal assemblage should be retained in order that it can be coherently synthesized with/incorporated into the results of any further work in the vicinity of the current site.

It would be recommended that the rich assemblage of molluscs present in the sample be assessed by a specialist in order to evaluate the potential of this material to provide palaeoenvironmental evidence for the nature of the local environment.

No charred material suitable for radiocarbon dating was present in the sample.

References

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Table 1 – Archaeobotanical sample scanning table

Archaeobotanical Sample Scanning Table	
SITE: 102 Deans Way, Gloucester	
CONTEXT NUMBER	106
FLOTATION SAMPLE NUMBER	1
PROVISIONAL DATE	Roman / pre Roman
BULK SAMPLE VOLUME (litres)	45
FLOT VOLUME (ml)	100
Charred plant material (*key - = < 5 items, + = > 5 items, ++ = > 10 items, +++ = > 30 items, ++++ = > 50 items, +++++ = > 100 items.)	
CROP MATERIAL*	
Indet. glume base	2
Wheat grain indet. (<i>Triticum</i> sp.)	2
Cereal grain indet.	1
Total identifiable crop material	+
WILD OR WEED PLANT SEEDS*	
Vicia / Lathyrus (vetch / pes)	1
Galium sp.	1
Other unidentified wild / weed plant seeds	2
Total identifiable wild / weed plant seeds	+
NON SEED PLANT MATERIAL*	
> 4mm wood charcoal fragments	++
> 2mm wood charcoal fragments	++++
> 2mm vitrified charcoal	++++
Intrusive plant material / non-plant material (- = < 5 items, + = > 5 items, ++ = > 10 items, +++ = > 30 items, ++++ = > 50 items, +++++ = > 100 items.)	
% Intrusive roots	20
Bone	4
Land snail shells (Mollusca)	+++++
Metallurgical debris?	+++
Sample summary information	
Further analysis of charred plant material	×
Further analysis of wood charcoal	✓
Charred material suitable for C14 dating	×
Retain flots	✓

APPENDIX 4: Assessment of the Snail Shells

By Matt Law

Introduction and Methods

Snails from 1 sample (106) were presented for assessment. For the purposes of rapid assessment, samples were scanned and estimated abundance of taxa were determined to at least genus level. Ecological information is derived from Evans (1972), Kerney and Cameron (1979) and Davies (2008).

Results

Preservation was extremely good. Estimated abundances are presented in Table 1. One of the juvenile *Cepaea* shells is a very modern intrusion in this context.

	Sample Number	1
	Context Number	106
<i>Cochlicopa cf. lubrica</i>		+
<i>Discus rotundatus rotundatus</i>		+
<i>Cecilioides acicula</i>		+++
<i>Cepaea sp.</i>		+
<i>Helicella itala itala</i>		++
<i>Trochulus spp.</i>		++
<i>Aegopinella nitidula</i>		+
<i>Bathyomphalus contortus</i>		+
<i>Pupilla muscorum</i>		+
<i>Vallonia cf. excentrica</i>		++
<i>Vertigo pygmaea</i>		+

Table 1: estimated abundance of snail taxa in samples. + = 1-10 individuals, ++ = 10-50 individuals, +++ = 50-100 individuals.

Discussion

The snail fauna is representative of an open grassland environment. The *Vallonia cf. excentrica*, *Helicella itala itala*, *Vertigo pygmaea* and *Pupilla muscorum* are associated with open grassland. The *Trochulus spp.*, *Cepaea sp.*, and *Cochlicopa lubrica* are tolerant of a broad range of environments. The presence of some shade, more likely taller vegetation than true shade, is suggested by the presence of a small number of *Discus*

rotundatus rotundatus. *Bathyomphalus contortus*, represented by just one shell, is a freshwater species. Its presence here is at odds with the rest of the snail fauna, it may be that the shell is a chance introduction, perhaps introduced to this context by flooding or human activity.

Cecilioides acicula, thought to be a medieval introduction, dominates the sample. This is a subterranean species found up to 2 metres below the ground surface and is very likely to be intrusive in these samples.

Statement of Potential and Recommendations

The sample is fairly productive, although further analysis is not likely to add appreciably to the interpretation of their contexts. The entire assemblage should be retained with the archive however in case of future synthetic study.

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APPENDIX 5: The Bone List

By David Pinches

Cxt	Element	Side	Species	Butchery	Age: Dental	Age: Skeletal	Pathology
103	Scapula	R	Bos	Chop	N/A	Adult	None
103	Scapula	R	Bos	Chop	N/A	Adult	None
103	Scapula	R	Bos	Cut	N/A	Adult	None
103	Scapula	L	Bos	Chop, Saw	N/A	Adult	None
103	Scapula	L	Bos	Chop	N/A	Adult	None
103	Scapula	L	Bos	Saw, Chop	N/A	Adult	None
103	Scapula	L	Bos	Saw, Chop	N/A	Adult	None
103	Scapula	R	Bos	Chop	N/A	Adult	None
103	Scapula	R	Bos	Saw, Cut	N/A	Adult	None
103	Scapula	R	Bos	Chop	N/A	Adult	None
103	Scapula	R	Bos	N	N/A	Adult	None
103	Scapula	R	Bos	Chop	N/A	Adult	None
103	Scapula	Unsided	Bos	Cut	N/A	Adult	None
103	Scapula	Unsided	Bos	N	N/A	Adult	None
103	Scapula	Unsided	Bos	N	N/A	Adult	None
103	Femur	L	HUMAN	N/A	N/A	Adult	Sawn at shaft
103	long bone	Unsided	Large mammal	Chop	N/A	Adult	None
103	Unidentified x4				N/A	Adult	None
111	Astragalus	L	Bos	N	N/A	U	None
112	Scapula	R	Bos	Chop	N/A	Adult	None

Cxt	Element	Side	Species	Butchery	Age: Dental	Age: Skeletal	Pathology
112	Rib	L	Bos	N	N/A	U	None
112	Rib	Unsided	Bos	N	N/A	U	None
112	Rib	Unsided	Bos	N	N/A	U	None
112	Humerus	L	Bos	Chop	N/A	Adult	None
112	Vertebra	N/A	Bos	Saw, Chop	N/A	Adult	None
112	Fibula	L	Canis	N	N/A	Adult	None
112	Tibia	R	Ovis/Capra	N	N/A	Juvenile	None
116	Femur	R?	HUMAN	N/A	N/A	U	Uncertain
116	Scapula	R	Bos	Saw, Chop	N/A	Adult	None
116	Scapula	Unsided	Bos	Cut	N/A	U	None
116	Scapula	Unsided	Bos	Cut	N/A	U	None
116	Mandible	R	Bos	Chop	N/A	U	None
116	Unidentified x3				N/A	N/A	None
118	Scapula	L	Bos	Cut, Chop	N/A	Adult	None
118	Scapula	L	Bos	Cut	N/A	Adult	None
118	Scapula	Unsided	Bos	N	N/A	Adult	None
118	Pelvis	L	Bos	Cut, Chop	N/A	Adult	None
118	Humerus	R	Ovis	Chop	N/A	Adult	None

APPENDIX 6: The Human Bone

By Kate Brayne of the Rudyard Consultancy

BACKGROUND

Foundations Archaeology undertook a watching brief at 102 Deans Way, Gloucester, in 2014. It is understood that the site was an over grown garden, partly laid to gravel and driveway. Two human bones were recovered, and it was considered possible that both displayed evidence of cut or saw marks. Consequently they were sent to the human bone specialist for further analysis.

METHODOLOGY

Recording

Both bones were examined by eye.

Determination of Sex

The sex of the individuals was assessed by metric measurements of the vertical diameter of the head of the femur.

Estimation of Age at Death

The age at death was estimated very approximately by determining the extent of epiphyseal fusion of the femoral heads.

OSTEOLOGICAL ANALYSIS

CONTEXT (103)

Description

A human bone was recovered from the dark soil above the Roman stratigraphy, context number (103). Because of the nature of a watching brief, it was not possible to specifically identify from where in the over burden this bone derived. The bone was the proximal third of a left femur. In general the bone was in good condition. It showed dark staining, particularly on the architecture associated with muscle and ligament insertions, and in general was a greyish colour. The greater trochanter is missing due to post depositional damage. There are also several recent post depositional scratches on the surface of the shaft which have exposed the underlying cortex. It is suggested that this damage occurred during machining in the course of the watching brief. The distal extent of the bone is a linear plane, polished smooth, with a series of fine parallel striations. This has been interpreted as being created by a saw and the cut surface will therefore be referred to in the correct terminology as a "kerf".

On the anterior lateral aspect where the kerf intersects with the shaft there is a notch which is interpreted as the point of the breakaway spur at the foot of the terminal cut. This notch reveals the porous trabecular bone rather than a polished, compressed surface. The breakaway spur is a projection of uncut bone at the terminal end of the cut after the force breaks the remaining tissue. The size of the spur often depends on the amount of force applied across the bone resulting in a fracture. For example, the weight of a handheld circular power saw which offers leverage often produces a large breakaway spur. The small size of the notch suggests that there was not a high level of force applied to the bone. The location of the notch indicates that the bone was sawed from the posterior through to the anterior surface. In other words, the individual would have been lying on their front when the sawing took place.

Hand sawn bone can be distinguished by the somewhat irregular sawn surface with groups of parallel, often coarse striations at angles with one another on the kerf walls¹. Machine sawn bone on the other hand usually shows a flat polished surface with fine parallel striations on the kerf walls. It is suggested that this bone appears to have been sawn by hand rather than with a power tool. This is because the striations appear to change direction about half way across the anterior-posterior plane of the kerf, and there is only a small breakaway spur. The presentation of this kerf suggests use of a hand saw, because there is no evidence of high energy and there is an indication of the direction of the perpetrator's arm movement – which has created non-parallel striations that changed direction with a rocking motion.²

There is no evidence of healing, which indicates that either the individual died soon after the amputation had taken place, or was already dead before being dismembered.

Age

The line of fusion between the epiphysis and the diaphysis is just visible. This suggests that fusion had not occurred very many years previously. The head of the femur usually fuses at some time between the age of 15 – 20 so it is probable that this individual was in their late teens or early 20s.

¹ Adams and Crabtree, 2008

² Symes et al 2007



Figure 1: Photograph to Show Close Up of Saw Marks

Sex

The diameter of the femoral head was 45mm. An average femoral head diameter of under 48mm indicates that a skeleton is more likely to be female.

Discussion

There are several possible theories about why a single, sawn proximal femur was present on this site. Because of the nature of an archaeological watching brief, the provenance of artefacts recovered during machining is always hard to establish. If the bone and associated sawing are both Roman, then it is possible that this was a young Roman woman who lost a leg during the period of occupation of the fort. This may have been due to a planned medical intervention, it may have been an act of war, or it may have been a criminal act carried out by one individual, without official sanction.

It should come as no surprise that a planned medical intervention could result in amputation of a limb in the Roman period. It has long been known that the Romans had the capacity to perform successful surgery including amputation. The 1st century author Celsus referred to the practice of surgical amputations and described operating tools including saws, rasps and files in Book 8 of *de Medicina*.

It is generally believed that medical facilities (*valetudinaria*) were available at Roman army camps. There is written evidence for this - the Roman author Hyginus wrote that *valetudinaria* were to be a part of every marching camp. In addition, Celsus mentioned *valetudinaria* being present in a civilian context, and some towns might also have had *tabernae medicae* – shops where medical treatment could be purchased. There is also archaeological evidence - medical tools have been recovered from Roman military sites on the Rhine, Upper and Middle Danube and British Frontiers.³

There is one known example of a successful amputation of a leg in the 2nd century AD. A femur with healed saw marks was recovered from the Isola Sacra cemetery outside Rome by Roberto Macchiarelli, of the Museo Preistorico e Etnografico L Pigorini in Rome. The bone was found mixed with a number of skeletal remains in a large monumental tomb at the cemetery. The bone was analysed by David Weaver, an osteologist at Wake Forest University, North Carolina, who interpreted the femur as belonging to a tall man, who possibly wore a wooden leg, because of the way the cut end had worn. The femur also showed signs of a painful infection, *pyogenic osteomyelitis*, which may either have caused amputation to be required in the first place or have set in afterwards owing to inadequate hygiene. By coincidence, the tomb lay close to another imposing monument to Ulpus Amerimnus, who was a famous doctor of medicine, and to his Greek wife, Scribonia Attice. The couple's tomb bore a bas-relief showing surgical cutting tools⁴.

A Roman date would not preclude the possibility that this bone derived from the surrounding inhumation cemeteries, which had been excavated at some point in the past and then underwent a process of sawing. In this instance it is not clear how this bone became incorporated into the site, but in a garden there can be countless opportunities for new soil, or indeed just individual artefacts, to be brought onto a site and later pits backfilled with garden soil are unlikely to be visible under watching brief conditions.

This might also be a post-Roman bone, which had been involved in some form of medical intervention – perhaps within a hospital or at a barber's surgery.

The final possibility is that this may be a Modern victim of crime.

CONTEXT (116)

A femur head was recovered from pit fill context (116). This bone was not from the same individual as the other femur – it was smaller in diameter and the fovea was a different shape. The bone was damaged by two linear cuts on the superior and inferior aspects. It was initially considered possible that this bone also presented with evidence for amputation or dismemberment. However, this author considers this to be unlikely because the cuts could not have been created when the bone was articulated during life – it would not be possible to have sawn or cut off the head of a femur on these two planes while it was within the acetabulum of the pelvis. Therefore, if this bone was sawn or cut, it must have happened post-mortem when the bone was disarticulated.

The bone was examined with bright light held perpendicular to the angle of the plane, in order to determine whether there was evidence for saw marks. The trabecular bone on the

³ Baker, P. Archaeological Remains as a Source of evidence for Roman Medicine, University of Kent

⁴ Booth, J 2000 Thigh Bone Shows Roman Surgeons Could Amputate The Telegraph

femoral head is only present as a very thin layer, so it is more difficult to observe than the much thicker layer of trabecular bone on the femoral shaft. However, no parallel striations could be observed, and it was determined that no evidence for saw marks was present. It was then considered whether evidence for a sharp edged implement such as a knife was present.

Cut marks on human bone from edged blades have four diagnostic criteria:

- Linearity
- A well-defined clean edge
- A flat, smooth, polished cut surface
- The presence of parallel scratch marks on the bone surface when viewed by light or scanning electron microscopy⁵

Although there is a linear delimitation between the surviving bone and the absent portion on both planes, none of the other diagnostic features were present. The edge of the cortical bone was not sharp and well defined, and the trabecular (spongy) bone in the interior had an irregular profile. The author therefore considers that although this pseudo-pathology had features which resemble a sharp-blade or saw trauma, it was in fact more likely to have been caused by post-depositional processes.

ACKNOWLEDGEMENT

With grateful thanks to Steven A. Symes, PhD, Mercyhurst Archaeological Institute, USA for examining photographs of the bone from Context (103) and sharing his expert opinion.

⁵ Boylston, A, 2000, *Evidence for Weapon-Related Trauma in British Archaeological Samples* in Cox and Mays, (eds) 2000 *Human Osteology in Archaeology and Forensic Science*

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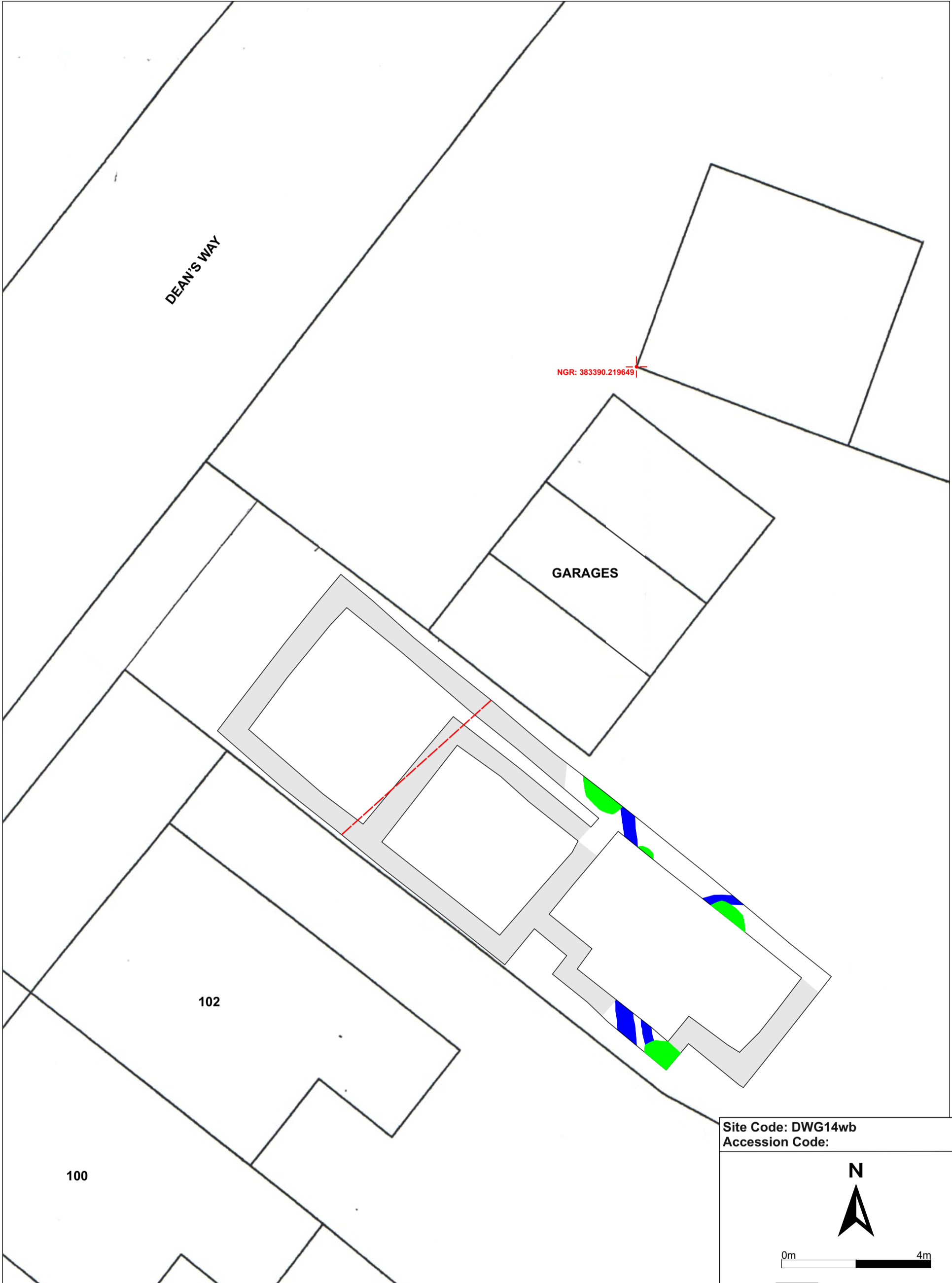
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Site Code: DWG14wb
Accession Code:

FIGURE 1: Site Location



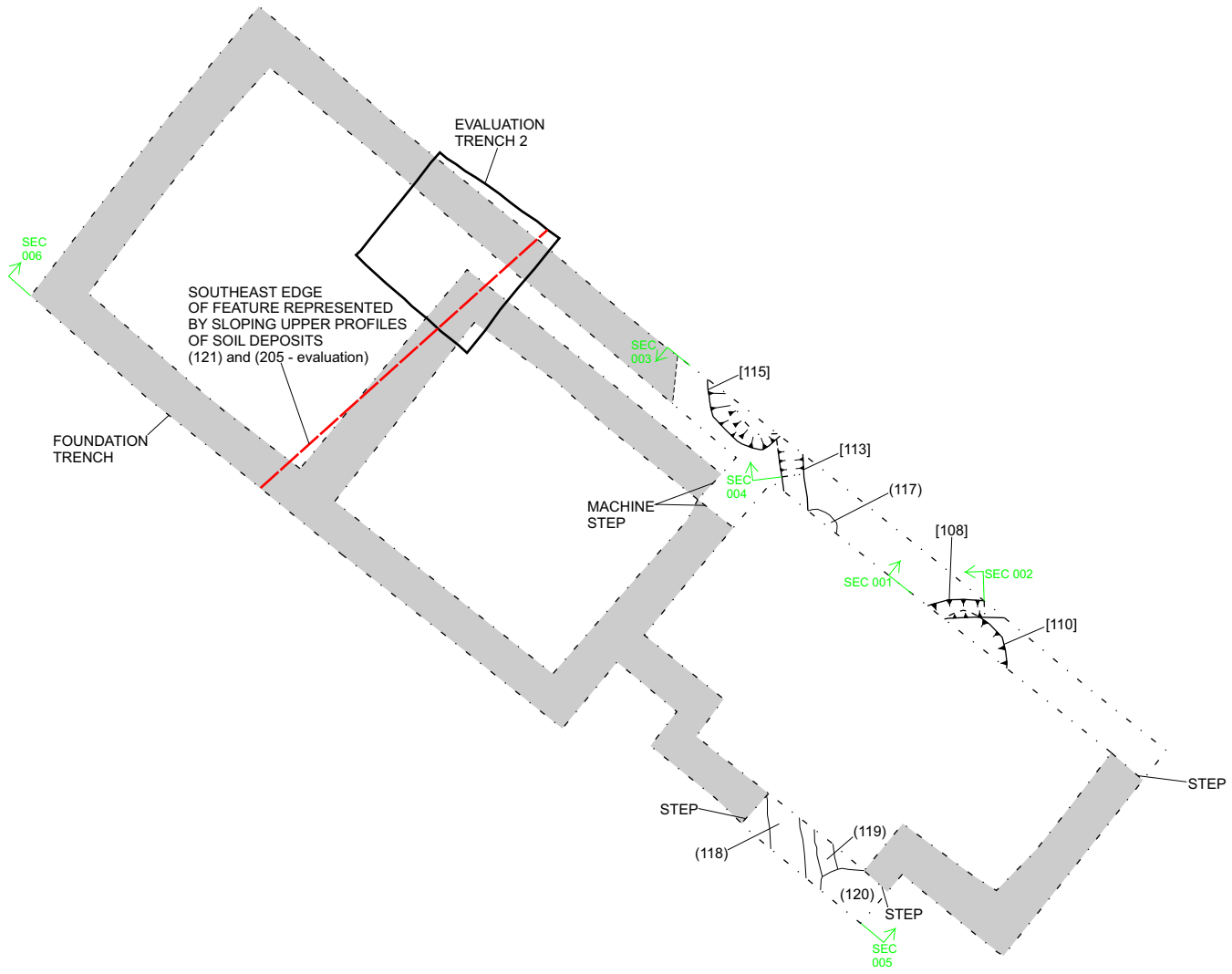
Site Code: DWG14wb
 Accession Code:

N

0m 4m

- = FOUNDATION TRENCH EXCAVATED INTO MIXED/LAYERED SOIL DEPOSITS
- = FOUNDATION TRENCH EXCAVATED ONTO TOP OF NATURAL SAND (107)
- = DITCH
- = PIT/OTHER
- = SOUTHEASTERN EDGE OF PROBABLE LARGE DITCH

FIGURE 2: Site Plan



Site Code: DWG14wb
Accession Code:

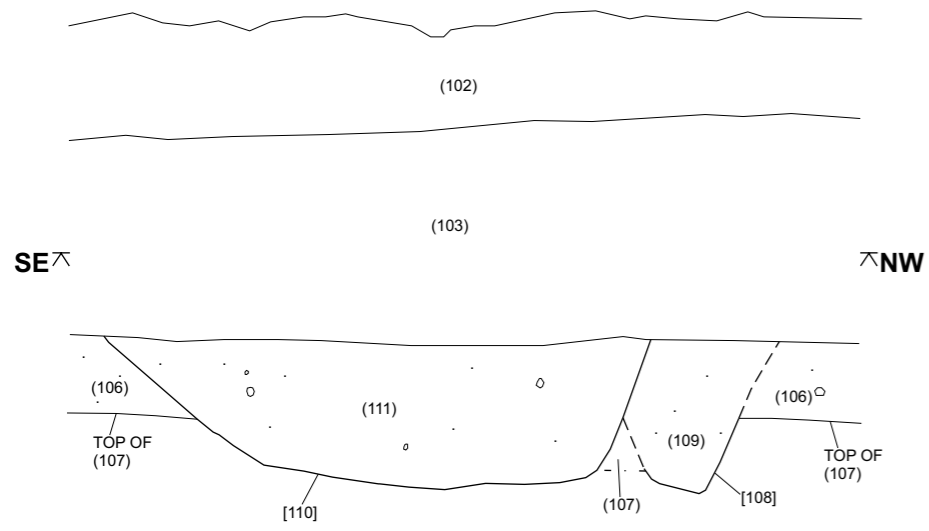
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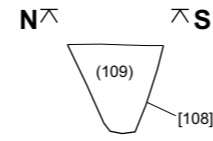
= FOUNDATION TRENCH EXCAVATED INTO MIXED/LAYERED SOIL DEPOSITS
 = FOUNDATION TRENCH EXCAVATED ONTO TOP OF NATURAL SAND (107)

FIGURE 3: Foundation Trench Plan

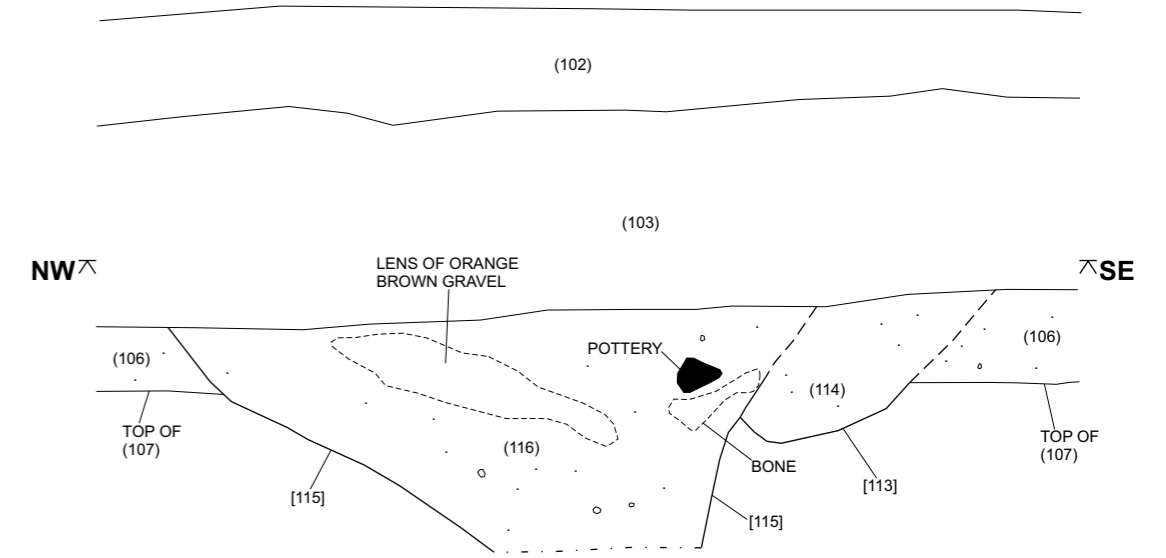
SEC 001: NORTHEAST FACING SECTION [108] and [110]



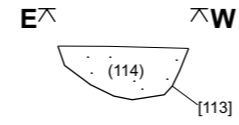
SEC 002: WEST FACING SECTION [108]



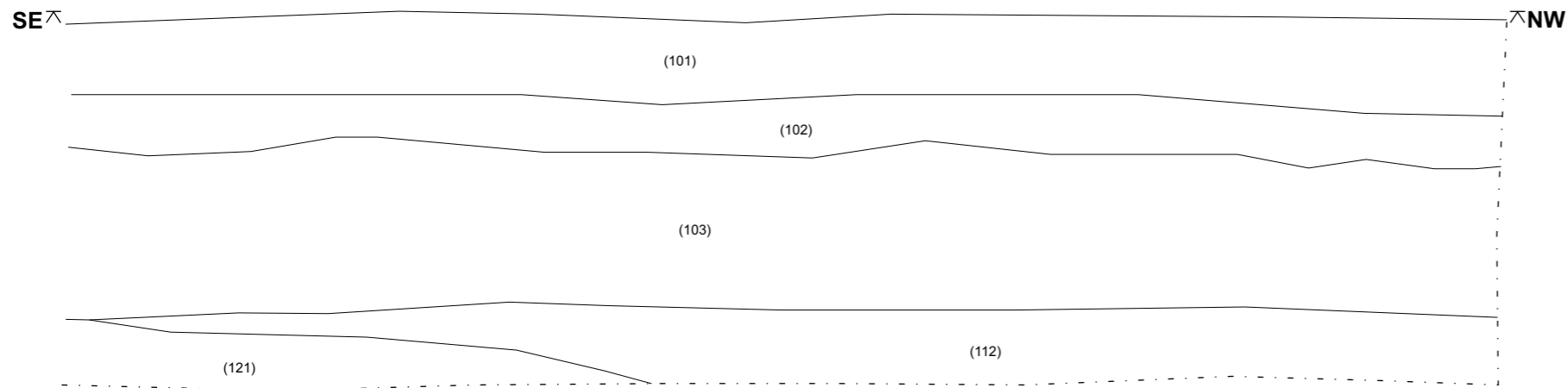
SEC 003: SOUTHWEST FACING SECTION [113] and [115]



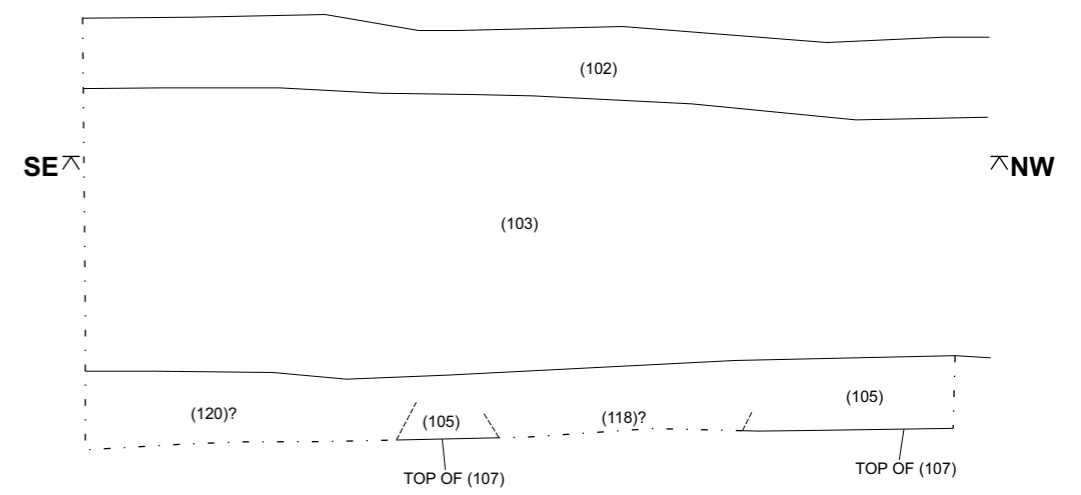
SEC 004: NORTH FACING SECTION [113]



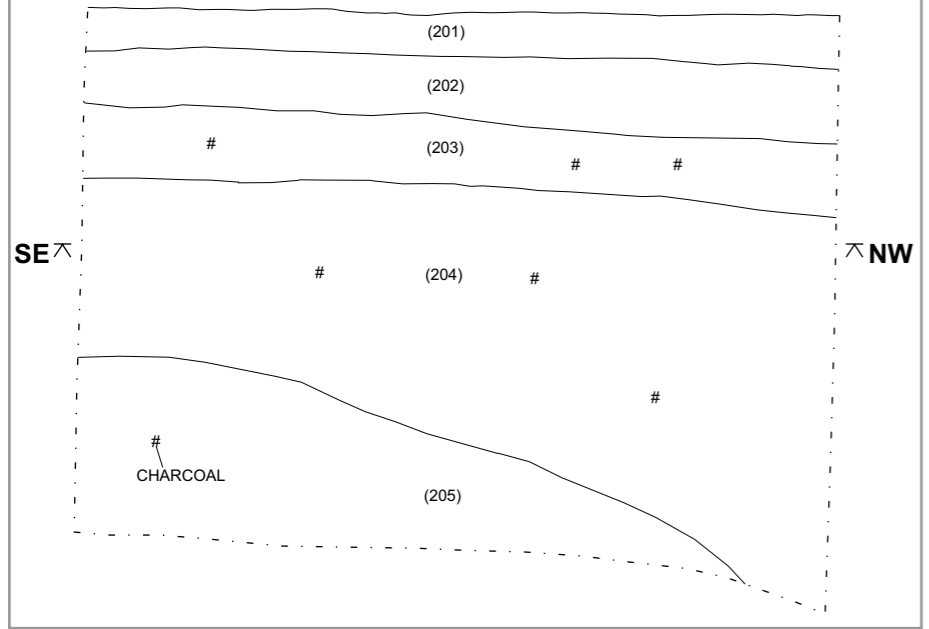
SEC 006: NORTHEAST FACING SECTION SHOWING (101-3), (112) and (121)



SECTION 005: NORTHEAST FACING SECTION SHOWING (102), (103), (105), (118) and (120)

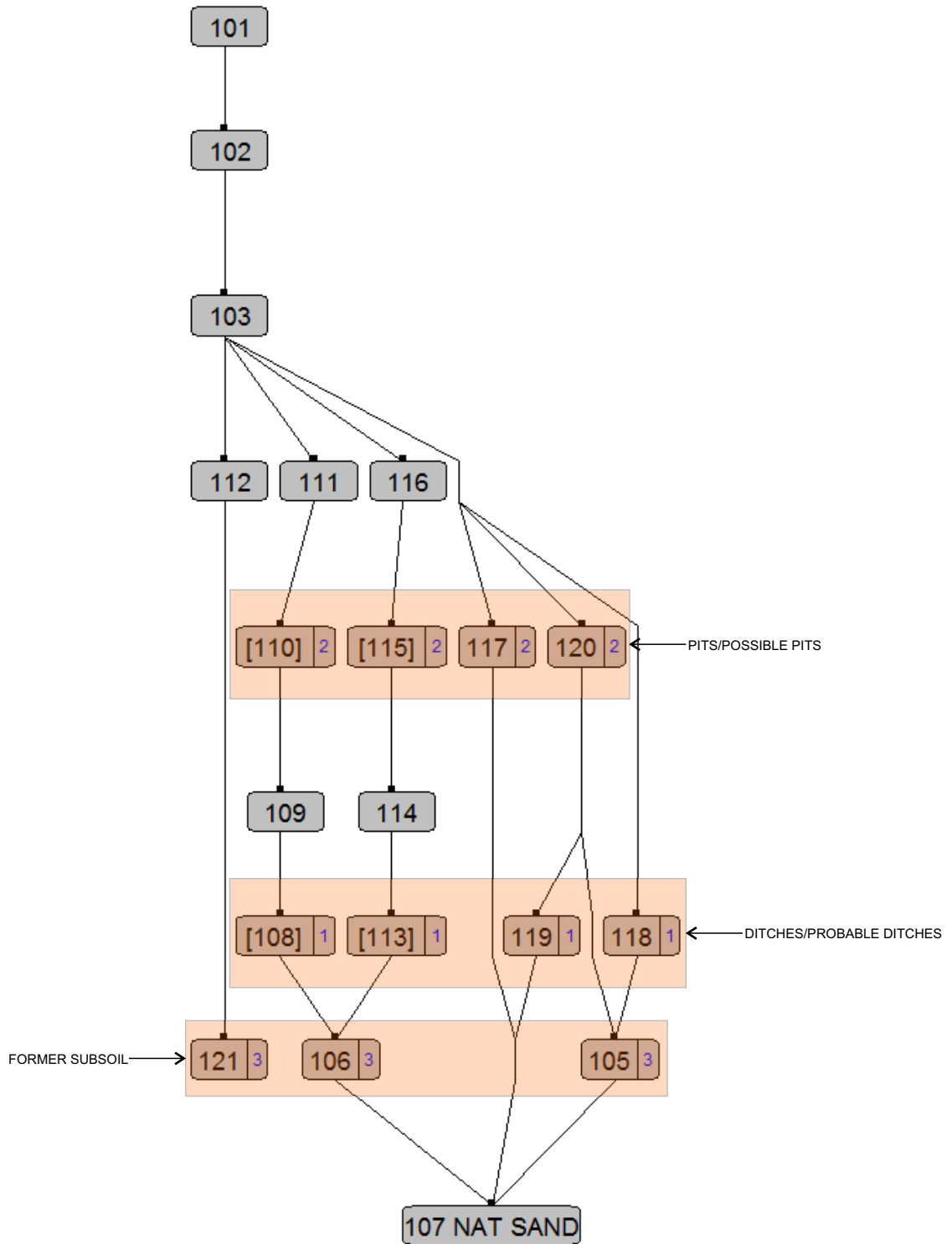


NORTHEAST FACING SECTION TRENCH 2



SECTION DRAWING FROM PREVIOUS EVALUATION REPORT (2014; FIG 4)

Site Code: DWG14wb
 Accession Code:
 0m 1m
FIGURE 4: Sections



Site Code: DWG14wb
 Accession Code:
FIGURE 5: Harris Matrix



PHOTOGRAPH 1: DITCH [108] AND PIT [110] LOOKING SOUTHEAST



PHOTOGRAPH 2: DITCH [108] WEST FACING SECTION



PHOTOGRAPH 3: TRENCH SECTION SHOWING DITCH [108] AND PIT [110]



PHOTOGRAPH 4: DITCH [113] AND PIT [115] LOOKING SOUTHEAST



PHOTOGRAPH 5: TRENCH SECTION SHOWING DITCH [113] AND PIT [115]



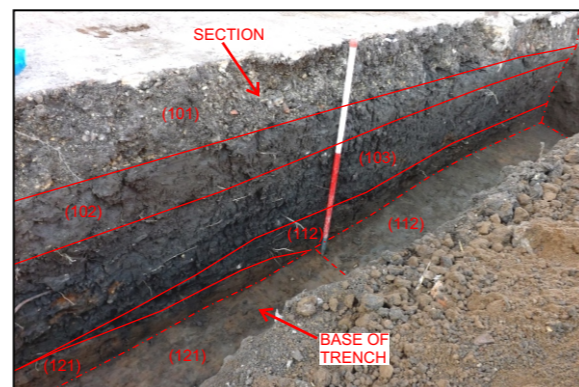
PHOTOGRAPH 6: DITCH [113] AND PIT [117] LOOKING SOUTHEAST



PHOTOGRAPH 7: DITCHES (118) AND (119) AND PIT (120) LOOKING SOUTHEAST



PHOTOGRAPH 8: SECTION 006 LOOKING WEST - SHOWING (121) and (112)



PHOTOGRAPH 8a: SECTION 006 - ANNOTATED



PHOTOGRAPH 9: PREVIOUS EVALUATION - NORTHEAST FACING SECTION TRENCH 2

SMALL SCALE = 0.5m TOTAL, LARGE SCALE = 1m TOTAL

Site Code: DWG14wb
Accession Code:

FIGURE 6: Site Photographs