YORK ARCHAEOLOGICAL TRUST

Archaeological Investigations at
Sycamore Place, York

By George Loffman

YAT Assessment Report 2018/91 November 2018

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Abbreviations

AOD	Above Ordnance Datum
BGL	Below Ground Level
WSI	Written Scheme of Investigation
YAT	York Archaeological Trust

NON-TECHNICAL SUMMARY

Between the 14th May and the 19th June 2018 York Archaeological Trust (YAT) conducted an archaeological watching brief at Sycamore Place, York YO30 7DW (NGR SE 5924 5236).

The work was undertaken for Coen Construction Ltd to satisfy a planning condition applied by the City of York Council (13/0372/FUL). The work was based on a Written Scheme of Investigation (WSI) produced by YAT. The works involved a watching brief on all ground works.

During the course of the watching brief a single human inhumation was uncovered probably dating to the Roman period. A number of intercutting pits, levelling and dump layers were also excavated containing Roman pottery.

KEY PROJECT INFORMATION

Project Name	Sycamore Place, York YO30 7DW
YAT Project No.	6061
Document Number	2018/91
Type of Project	Watching Brief
Client	Coen Construction Ltd
Planning Application No.	13/03727/FUL
NGR	NGR SE 5924 5236
Museum Accession No.	YORYM:2018.158
OASIS Identifier	Yorkarch1-320687

REPORT INFORMATION

Version	Produced by		Edited by		Approved by	
	Initials	Date	Initials	Date	Initials	Date
1	GL	22/11/18	IDM	28/11/18	IDM	03/12/18

1 INTRODUCTION

Between the 14TH May and the 19th June 2018 YAT conducted an archaeological watching brief and limited area excavation at Sycamore Place, York YO30 7DW (NGR SE 5924 5236) (Figure 1).

The work was undertaken for Coen Construction to satisfy an archaeological condition applied by CYC (13/03727/FUL).

The site lies within a designated conservation area of Clifton, and within the York City Centre Area of Archaeological Importance (AAI).

The following archaeological condition has been applied:

4 No work shall commence on site until the applicant has secured the implementation of a programme of archaeological work (an archaeological excavation and subsequent programme of analysis and publication by an approved archaeological unit) in accordance with the specification supplied by the Local Planning Authority. This programme and the archaeological unit shall be approved in writing by the Local Planning Authority before development commences.

Reason: The site lies within an Area of Archaeological Importance and the development will affect important archaeological deposits which must be recorded prior to destruction.

5 No work shall commence on site until the applicant has secured the implementation of a programme of archaeological work (a watching brief on all ground works by an approved archaeological unit) in accordance with a specification supplied by the Local Planning Authority. This programme and the archaeological unit shall be approved in writing by the Local Planning Authority before development commences.

Reason: The site lies within an Area of Archaeological Importance and the development will affect important archaeological deposits which must be recorded during the construction programme.

2 LOCATION, GEOLOGY & TOPOGRAPHY

The site is located on the former bowling green at Sycamore Place, York YO30 7DW (NGR SE 5924 5236), and covers 2200 square meters. It is bounded by Sycamore Place Street on its south western boundary, by buildings belonging to St Peter's School to the north-west and backyards of terraced houses fronting onto Bootham Terrace/Queen Anne's Road to the north and east.

The underlying bedrock is of the Sherwood Sandstone group, sedimentary bedrock formed approximately 237 – 272 million years ago in the Triassic and Permian periods. This is overlain by superficial deposits of alluvium consisting of clay, silt, sand and gravel. Deposits formed in the Quaternary period up to 2 million years ago

(http://mapapps.bgs.ac.uk/geologyofbritain/home.html - accessed 28-06-18).

The site was formerly occupied by a bowling green at the western side and a clubhouse on the eastern side of the development area. The site is topography is flat and was likely levelled for the creation of the bowling green.

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Previous investigations of the site have included a desk based assessment (Antoni 2012) and evaluation trench excavations (Antoni & Johnson 2013) carried out by YAT.

The DBA identified that the site was likely to contain remains dating to the Roman period. The Roman road 5 (RCHME 19) from *Cataractonium* (Roman Catterick) to *Eboracum* is projected to have passed through the southern side of the development site. This road links up with the legionary fortress on its south-western approach.

A Roman cemetery has been recorded by the Royal Commission survey (RCHME 1962) to the east of the site centred on SE59545272 (Ottaway 2011:150). The St Mary's/Bootham Terrace cemetery is present between Roman roads 5 and 6 (RCHME 1962).

A number of subsequent watching briefs have found human remains at 26-28 Marygate, 3 Clifton and Wentworth House, The Avenue. The cemetery stretches north-east of Road 5 to the line of Bootham and at least as far north-west as The Avenue. It is believed to have been in use from the 3rd to 4th centuries (Ottaway 2011:159).

The results of an evaluation excavation carried out by YAT in 2013 showed that the western two-thirds of the site had been cut down to the natural sub soils by ground works undertaken in advance of the formation of the bowling green. The eastern third of the site was found to contain a well-stratified sequence of 3rd – 4th century Roman deposits and features, including large pits and possible structural features such as beam slots and/ or drainage gullies. The environmental evidence showed that these features may have been excavated for the discard arising from metalworking and smithing and that such activity have been carried out close by. The pottery evidence recovered from the same features did, however, have ritual or sepulchral characteristics, suggesting that this may be an oversimplified interpretation for the site in general (Antoni & Johnson 2013).

Little is known about the site following the end of the Roman period. The development site is presumed to have been occupied by open agricultural land. On the 1831 OS map the site is within an area of fields to the north of the York-Scarborough Railway line.

The founding of the Bowling Green is subject to some dispute. A York Press article suggests that the club was founded by its namesake, a sportsman who played rugby, table tennis and later bowls in 1912

(http://www.yorkpress.co.uk/news/1707788.Historic_bowling_club_set_to_shut/ - accessed 29/06/18)

However on the 1931 OS map the development site is shown as being occupied by a tennis court (Antoni 2012:9).

4 METHODOLOGY

The methodology followed the WSI agreed with John Oxley City of York Archaeologist (Appendix 3).

The works consisted of a number of different interventions (Figure 2). Firstly ground reduction was undertaken in the area at the north of the site for the sighting of the welfare cabin carried out on 14th June 2018.

Then, between the 18th June and 22nd June 2018, footings were excavated for the construction of dwellings on the site (trenches 1 and 3).

Service trenches were excavated in the area of trench 2 from the 12th 16th July 2018. During the course of these a concentration of Roman pits and deposits were uncovered. An area measuring 4.0m by 3.0m was cleaned and archaeological features recorded and excavated.

A further visit was made on 19th July 2018 to observe the excavation of a drainage channel running north east/south west from the excavation area of Trench 2.

Groundworks were carried out using a 3CX machine equipped with a 0.8m wide toothless bucket. These were monitored by an archaeologist at all times.

Where archaeological deposits were encountered, groundworks were ceased and the area was cleaned sufficiently to identify the deposits. Recording proceeded according to the YAT recording manual.

As human remains were found during the course of the works, excavation was stopped to ascertain if this was a single burial or part of a cluster of burials. Human remains where exposed were initially covered over. A burial licence was applied for and granted before recoding and lifting the skeleton in accordance with *Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England* (Historic England 2005).

The human remains were washed and re-bagged for analysis by a qualified osteoarchaeologist. The remains are currently held within the YAT store under the accession number YORYM :2018.158.

Archaeological features were planned at a scale of 1:20 and sections at 1:10. A baseline was located using a Leica GPS unit. Features and working shots were photographed using a digital camera.

5 RESULTS

5.1 Phase 1 Natural

The earliest deposit encountered was natural clay, Context 1012. The deposit appears to be higher in the north and western side of the site, and lies directly underneath clinker deposit Context 1001. The interface between these two deposits was sharply defined and suggests that the natural was levelled for the creation of the bowling green surface in the north-western side of the site. The natural slopes towards the south-eastern corner of the site where it is found at its deepest from approximately 9.02m AOD to 8.09m AOD.

In trench 3 natural was not encountered during site works at a depth of 0.8m BGL.

5.2 Phase 2 Roman features and terracing

5.2.1 Group 1 – Roman pits

This group consisted of three intercutting pits (Context 1006, Context 1008 and Context 1010), small pit (Context 1019) and pit (Context 1023) (Plate 1). To the north-east of these features was found a linear or pit (Context 1037) and a small pit (Context 1039) (Figure 4).

Pit Context 1006 (fill Context 1005) was found to cut pit Context 1008 (fill Context 1007), although both contained similar fills making seeing the interface difficult (Figure 7 Section 1). The base of both these features was not reached due to reaching formation depth. The pottery within Context 1007 consisted of small sherds including a Samian rim and grey ware. Pottery within Context 1005 dated to between late 2nd to early 4th Century and consisted of grey ware, Samian ware and one large sherd of amphorae. Animal bone was also recovered from both features.

A shallow pit Context 1011 (fill Context 1010) was recorded in section only. This was found to cut the top of pit Context 1006. No finds were recovered from this feature; however the fills are consistent with other Roman features on the site and it was sealed by a later terracing layer (1009).

A small pit Context 1019 (fill Context 1018) contained pottery dating to the mid to late 2nd Century including a large sherd of Ebor ware mortaria. To the east of this feature was a shallow pit Context 1023 (fill Context 1022) (Plate 8) containing pottery dating to the 2nd Century as well as animal bone.

Within the drainage trench running north-east/south-west two shallow features were uncovered cutting into natural. These were a pit or linear Context 1037(fill Context 1036) containing pottery dating to the Late 2nd Early 3rd Century and animal bone. A posthole or small pit Context 1039 (fill Context 1038) contained pottery dating to the late 2nd Century.

5.2.2 Terracing/levelling deposit

A levelling or terracing deposit Context 1009 and Context 1021 was found to seal the features of Group 1 (Plate 6). The top of the deposit was at 9.21m to 8.78m AOD and is approximately 0.35m to 0.53m in thickness. The deposit contained animal bone and pottery dating to the 2nd to 3rd Century.

5.2.3 Group 2 – Roman pits

This group contained five pits cut into terracing/levelling deposit Context 1021 (Figure 5, Figure 7 Section 2). These were Context 1017, Context 1027 (Plate 9), Context 1029, Context 1031, and Context 1033. The pits were generally shallow, between 0.30m and 0.09m deep and sub-circular in shape. Pottery recovered from these features dates from the mid 2nd century to the early 3rd Century.

5.2.4 Dump/levelling deposit

Layer Context 1020 was found to overlay the Group 2 pits within Trench 2 (Plate 5). The top of the deposit was found at between 9.01m AOD and 8.92m AOD. This was approximately 0.22m in thickness and contained pottery dating to the 3rd Century.

5.2.5 Group 3 – Roman pits

A large pit Context 1015 (fill Context 1014) measuring 2.6m by 1.4m was cut into the dump/levelling layer Context 1020 (Figure 7 Section 2, Figure 8 section 4)(Plate 7). This was

backfilled with a much darker fill than the other Roman features on site. It contained pottery dating from the mid to late 3rd Century.

Pit Context 1025 (fill Context 1024) was only visible within section 3 (Figure 8)(Plate 3). The pit had concave edges and a rounded base. It contained animal bone as well as pottery dating to the late 2nd/3rd Century (Figure 6).

5.2.6 Group 4 – Roman grave

This consisted of grave cut Context 1004, Skeleton Context 1003 (Plate 10 and 11) and grave backfill Context 1002. The grave cut was very shallow and had been truncated by clearance for the bowling green surface. The cranium of the individual was found just beneath the clinker layer Context 1001 at a depth of 8.93m AOD. The grave was cut into natural deposit Context 1012.

The skeleton was a young middle-adult female and had been buried in a supine position with flexed legs, in a NE-SW orientation, with the head to the NE, facing north. She was approximately 157.6cm in height and osteological analysis revealed evidence for a number of non-metric traits, but few pathological lesions in the skeleton. Dental plaque deposits were seen on the teeth, and dental enamel hypoplasia, indicative of compromised health in early childhood, affecting eight maxillary and four mandibular teeth. Slight to moderate periodontal disease affected the molar teeth.

At the feet of the individual two sets of iron hobnails were found (SF2 & SF3). These comprised approximately 53 and 20 hobnails and indicate that the individual was buried with shoes. No grave goods were found associated with the skeleton. Within the grave backfill Context 1002 a copper alloy sheet fragment and iron working slag was found (Appendix 7).

The pottery within the grave backfill dated from between the late 2nd to mid 3rd Century.

5.3 Phase 4 Bowling Green – 20th Century

The latest deposit encountered were deposits relating to the bowling green. These consisted of a cinder deposit, Context 1001, which provided makeup for the bowling green playing surface and covered the majority of the east side of the site. It appears likely that this area had been levelled to provide a flat area for the bowling green.

Within trench 3 a makeup deposit was encountered probably associated with the clubhouse that occupied the east of the site. This extended to a depth of 0.8m where the limit of excavation was reached. It contained pottery of 20th Century date.

6 DISCUSSION

The investigations indicate that the western portion of the site contained natural deposits directly underneath the remains of the bowling green. Natural was encountered at its deepest to the south-east of the site, and was not reached in the eastern part of the site. This may suggest a natural slope from north-west to south-east across the site. Any remains on the higher ground at the north-west part of the site may have been removed during the levelling for the Bowling Green.

A previous evaluation carried out on the site (Antoni & Johnson 2013) had suggested that the limit of the St Mary's/Bootham Terrace Cemetery was likely to be beneath or to the north-east

of Marygate Lane, which runs along the north-eastern boundary of the site. The discovery of a human inhumation directly below the clinker makeup suggests that the cemetery may have extended further to the south-west. The inhumation appeared to be an isolated burial; however it is likely that further human remains were cleared during the creation of the bowling green.

To the east of the inhumation was a series of three distinct pit digging episodes (Groups 1-3) interrupted by terracing or dumping activity. The function of these pits is not clear from the available evidence. The pits may have been from a domestic context as much of the pottery and animal bone is consistent with waste material from this type of activity. It is however possible that the pits could represent the clearance of grave offerings from Bootham Cemetery, as there are a number of finer wares including beakers and vessels that may have contained offerings of food or liquid. The pottery from the Roman features suggests a sequence from the late 2nd to 4th Century.

The relationship between the grave and the terracing and pit features is currently unclear. It is possible that the pits area demarcated a boundary to the St Mary's/Bootham Terrace cemetery known to the north-east of the site. If this is the case then the isolated burial may be part of a separate cemetery or zone within the larger burial ground.

There was no indication of the Roman Road 5 which is projected to pass through the southern part of the development site. This could be due it passing on a different alignment or the road has been removed by works in the 19th century for the construction of the bowling green.

LIST OF SOURCES

British Geological Survey http://mapapps.bgs.ac.uk/geologyofbritain/home.html

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Ottaway, P., 2011. *Archaeology in the Environs of Roman York: Excavations 1976-2005.* The Archaeology of York Volume 6: Roman Extra-mural Settlement and Roads. CBA.

RCHME 1962. *Inventory of the Historical Monuments in the City of York.* Volume 1 *EBURACUM.*

ACKNOWLEDGEMENTS

YAT would like to thank Coen Construction for their assistance during the fieldwork.

APPENDIX 1 – INDEX TO ARCHIVE

Item	Number of items
Context sheets	41
Levels register	1
Photographic register	0
Sample register	1
Drawing register	1
Original drawings	26
B/W photographs (films/contact sheets)	0
Colour slides (films)	0
Digital photographs	130
Written Scheme of Investigation	1
Report	1

Table 1 Index to archive

APPENDIX 2 – CONTEXT LIST

Context Number	Type	Description	Inclusions	AOD Height (top)	AOD Height (bottom)	Interpretation
1000	Deposit	Unstratified	N/A	N/A	N/A	Unstratified finds
1001	Deposit	Loose, dark grey/black, sandy clinker.	Frequent charcoal flecks. Moderate CBM flecks.	9.45m	9.16m	19th century clinker bedding for Bowling Green.
1002	Deposit	Firm, mid greyish brown, slightly sandy clay.	Occasional charcoal and chalk flecks.	9.02m	8.85m	Grave backfill.
1003	Skeleton	Supine with flexed legs.	N/A	8.93m	8.85m	Roman inhumation.
1004	Cut	Sub rectangular in plan, aligned NE-SW. Flat base.	N/A	9.02m	8.85m	Grave cut for skeleton 1003.
1005	Deposit	Firm, mid brownish grey, silty clay.	Moderate CBM flecks. Occasional charcoal flecks.	8.97m	8.30m	Fill of pit cut 1006. Contained Roman pottery and animal bone.
1006	Cut	Sub circular in plan. Aligned NE-SW. 1.8m long, 0.78m wide, 0.67m deep.	N/A	8.97m	8.30m	Pit containing fill 1005. Roman in date.
1007	Deposit	Firm, dark brownish grey, silty clay.	Occasional CBM, chalk, charcoal flecks. And small stones.	8.59m	8.34m	Fill of pit cut 1008. Contained Roman pottery.
1008	Cut	Sub circular shape in plan. Aligned NE-SW. 1.75m long, 0.55m deep. Visible to a width of 1.24m.	N/A	8.59m	8.34m	Pit containing fill 1007. Roman in date.
1009	Deposit	Firm, dark brownish grey, silty clay.	Moderate CBM, mortar flecks. Occasional charcoal flecks.	9.21m	8.86m	Levelling deposit sealing several Roman pits. No finds from this deposit but is likely to be Roman in date, same as 1020 in trench 2.
1010	Deposit	Firm, mid greyish brown, silty clay.	Occasional CBM flecks, small sub angular stones.	8.90m	8.67m	Fill of pit cut 1011. No finds but sealed by, and cuts Roman deposits.
1011	Cut	Only visible in section. Shape in plan/alignment	N/A	8.90m	8.67m	Pit containing fill 1010. Roman in date.

Context Number	Type	Description	Inclusions	AOD Height (top)	AOD Height (bottom)	Interpretation
		unknown. 0.77m long, 0.24m deep				
1012	Deposit	Firm, mid yellowish brown, clay with sandy lenses	Occasional chalky flecks	8.25m	Beyond L.O.E.	Natural geological deposit.
1013	Deposit	Corroded iron hobnails on underside of skeleton 1003 feet.	N/A	8.88m	8.93m	Remains of hobnail boots found with skeleton 1003.
1014	Deposit	Firm, dark bluish grey, silty clay	Occasional CBM and charcoal flecks, small angular stones, pebbles.	8.94m	8.48m	Fill of large pit cut 1015. Contained Roman pottery and decayed animal bone.
1015	Cut	Sub circular shape in plan. Extends beyond L.O.E so alignment unclear. Visible to 2.60m long, 1.40m wide, 0.46m deep.	N/A	8.94m	8.48m	Large pit containing 1014. Roman in date.
1016	Deposit	Firm, light to mid yellowish brown.	Occasional chalk and charcoal flecks.	8.71m	8.41m	Fill of pit cut 1017. Contained Roman pottery.
1017	Cut	Circular shape in plan, partially truncated. Survives to 1.14m long, 0.53m wide, and 0.30m deep.	N/A	8.71m	8.41m	Pit containing 1016. Roman in date.
1018	Deposit	Firm, dark orangey brown, sandy clay.	Occasional pebbles, charcoal flecks.	8.30m	Beyond L.O.E.	Fill of pit cut 1019. Not excavated but Roman pottery in top of fill.
1019	Cut	Circular shape in plan, not excavated, 0.37m diameter	N/A	8.30m	Beyond L.O.E.	Pit containing 1018. Roman in date.
1020	Deposit	Firm, dark orangey greyish brown, slightly sandy clay.	Occasional CBM and charcoal flecks, small to medium angular stones,	9.37m	8.99m	Levelling deposit

Context Number	Type	Description	Inclusions	AOD Height (top)	AOD Height (bottom)	Interpretation
			pebbles.			
1021	Deposit	Very firm, mid yellowish brown, slightly sandy clay with lenses of redeposited natural	Occasional charcoal flecks, cbm flecks, small angular stones	8.76m	8.26m	Terracing/levelling possibly redeposited natural
1022	Deposit	Friable to soft, mid to dark grey, sandy clay with laminations of grey sand in middle	Occasional cbm flecks, charcoal flecks, pebbles	8.25m	8.00m	Fill of pit 1023. Contained Roman pottery.
1023	Cut	Subcircular in plan, concave base, extends beyond L.O.E. Measures 1.55m long, 1.05m wide, 0.25m in depth	N/A	8.25m	8.00m	Pit cut. Contains fill 1022.
1024	Deposit	Firm. mid orangey brown, sandy clay	Occasional cbm flecks, pebbles	8.91m	8.69m	Fill of pit 1025. Roman pottery recovered.
1025	Cut	Shape in plan unknown, sharp break of slope at top, steep sides, concave base, only recorded in section	N/A	8.91m	8.69m	Pit containing fill 1024.
1026	Deposit	Firm, dark brownish grey, slightly sandy clay	Moderate cbm flecks, small angular stones. Occasional charcoal flecks	8.78m	8.68m	Fill of pit 1027.
1027	Cut	Sub circular in plan, sharp break of slope to moderate sides, uneven base. Extends beyond L.O.E. Measures 1.35m in length, 0.83m in width	N/A	8.78m	8.68m	Pit containing fill 1026.

Context Number	Type	Description	Inclusions	AOD Height (top)	AOD Height (bottom)	Interpretation
		and0.10m in depth.				
1028	Deposit	Firm, dark greyish brown, slightly sandy clay	Occasional small angular stones, cbm flecks, charcoal flecks	8.80m	8.64m	Fill of pit cut 1029. Contained Roman pottery.
1029	Cut	Subcircular in plan, moderately sloping sides to flat base. Extends beyond L.O.E. Measures 1.40m in length, 1.04m in width and 0.16m in depth	N/A	8.80m	8.64m	Pit cut containing fill 1028
1030	Deposit	Firm, mid orangey brown, sandy clay	Occasional cbm flecks, charcoal flecks	8.66m	8.59m	Fill of pit cut 1031. Contained Roman pottery.
1031	Cut	Circular in plan, slightly concave base. Measures 1.22m in length, 1.14m in width and 0.07m in depth	N/A	8.66m	8.59m	Pit cut containing fill 1030.
1032	Deposit	Firm, mid greyish orange brown, sandy clay	Occasional charcoal flecks, pebbles	8.72m	8.64m	Fill of pit cut 1033. Contained Roman pottery.
1033	Cut	Circular in plan, moderate break of slope at surface, moderate sloped sides, slightly concave base. Measures 1.13m in Length, 0.75m in width and 0.09m in depth.	N/A	8.72m	8.64m	Pit cut containing fill 1032.
1034	Deposit	Firm, mid brownish grey, silty clay	Occasional cbm flecks, charcoal flecks	N/A	N/A	Pit backfill same as 1005.
1035	Deposit	Firm, dark brownish grey,	Occasional cbm flecks,	N/A	N/A	Pit backfill same as

Context Number	Type	Description	Inclusions	AOD Height (top)	AOD Height (bottom)	Interpretation
		silty clay	charcoal flecks, pebbles			1007.
1036	Deposit	Friable, mid greyish brown, silty clay	Moderate charcoal flecks. Occasional sandstone pebbles	8.36m	8.25m	Fill of pit cut 137.
1037	Cut	Possibly linear in plan (although full plan unknown). Measures 1.27m in width, 0.66m in length, 0.11m in depth.	N/A	8.36m	8.25m	Cut of pit or gully. Contained fill 1036.
1038	Deposit	Friable, mid grey brown, silty clay	Occasional cbm flecks, crushed sandstone	8.29m	8.17m	Fill of pit cut 1039. Contained one sherd of Roman pottery.
1039	Cut	Semicircular in plan (as exposed). U shaped profile. Measured 0.79m in length, 0.26m in width and depth 0.12m	N/A	8.29m	8.17m	Pit cut containing fill 1038.

Table 2 Context list

APPENDIX 3 – WRITTEN SCHEME OF INVESTIGATION

Site Location: **Sycamore Place, York YO30 7DW**

NGR: **NGR SE 5924 5236**

Proposal: **The scheme 'the Sycamores, Sycamore Place' will include the erection of four two storey dwellings and one single storey dwelling Planning reference 13/03727/FUL.**

Planning ref: **13/03727/FUL**

Prepared for: **Coen Construction Ltd**

Version	Produced by		Edited by		Approved by	
	Initials	Date	Initials	Date	Initials	Date
	BR	11/05/18	IDM	11/05/18	IDM	11/05/18

1 SUMMARY

Coen Construction Ltd received planning consent to redevelop Sycamore Place, York YO30 7DW (NGR SE 5924 5236). The scheme 'the Sycamores, Sycamore Place' will include the erection of four two storey dwellings and one single storey dwelling (Planning reference 13/03727/FUL).

1.1 The following archaeological condition has been imposed: Archaeological Excavation/Watching Brief (see Designations and Constraints, Section 3)

1.2 This Written Scheme of Investigation (WSI) has been prepared in response to archaeological conditions attached to the CYC approved planning permission. The work will be carried out in accordance with this WSI.

2 SITE LOCATION & DESCRIPTION

2.1 The proposal site is at Sycamore Place, York YO30 7DW (Figure 1).

3 DESIGNATIONS & CONSTRAINTS

3.1 The site is within a designated conservation area (Clifton). Within such areas, the Council has a statutory duty to consider the desirability of preserving or enhancing the character and appearance of the area. The site is also within the City Centre of Area of Archaeological Importance (AAI).

3.2 The following conditions have been applied to the approved planning consent:

4 No work shall commence on site until the applicant has secured the implementation of a programme of archaeological work (an archaeological excavation and subsequent programme of analysis and publication by an approved archaeological unit) in accordance with the specification supplied by the Local Planning Authority. This programme and the archaeological unit shall be approved in writing by the Local Planning Authority before development commences.

Reason: The site lies within an Area of Archaeological Importance and the development will affect important archaeological deposits which must be recorded prior to destruction.

5 No work shall commence on site until the applicant has secured the implementation of a programme of archaeological work (a watching brief on all ground works by an approved archaeological unit) in

accordance with a specification supplied by the Local Planning Authority. This programme and the archaeological unit shall be approved in writing by the Local Planning Authority before development commences.

Reason: The site lies within an Area of Archaeological Importance and the development will affect important archaeological deposits which must be recorded during the construction programme.

4 ARCHAEOLOGICAL INTEREST

4.1 Between 25th February and 6th March 2013 York Archaeological Trust undertook an archaeological evaluation at the Former Bowling Green, Sycamore Place, York (NGR SE 5924 5236; Figure 1). The site was subjected to a desk-based assessment in December 2012 (Antoni, YAT Desk-based Assessment Report 2012/58) which reasoned that the area was suspected to contain burials pertaining to a 3rd–4th century Roman cemetery, although there was no certain evidence from the site itself. The work was commissioned by MerryVale Developments, in advance of submitting a planning application for the proposed construction of five dwellings on the site.

4.2 The results of an evaluation excavation carried out by YAT in 2013 showed that the western two-thirds of the site had been cut down to the natural sub soils by ground works undertaken in advance of the formation of the bowling green. The eastern third of the site was found to contain a well-stratified sequence of 3rd – 4th century Roman deposits and features, including large pits and possible structural features such as beam slots and/ or drainage gullies. The environmental evidence showed that these features may have been excavated for the discard arising from metalworking and smithing and that such activity have been carried out close by. The pottery evidence recovered from the same features did, however, have ritual or sepulchral characteristics, suggesting that this may be an oversimplified interpretation for the site in general.

4.3 The evidence from the 2013 evaluation suggests that in the eastern part of the site the significant archaeological deposits were observed at a depth of 1.2m below ground level in Trench 1 and at 0.8m in Trench 2. In Trench 3 natural was found at 0.8m below ground level and was overlain by a deposit of uncertain origin to a depth of approximately 0.6m below ground level, and in Trench 4 natural was identified at a depth of around 0.5m below ground level but no significant archaeological features were found.

4.4 Natural was identified in the trenches on the western side of the site at between 0.7m and 1.0m below ground level and there were few archaeological features or deposits in this area. In Trench 7 possible Roman deposits were identified at a depth of 0.4–0.5m below ground level although their date was not confirmed.

4.5 There was an absence of large cut features/deposits in the trenches north-west of Trenches 2 and 7, suggesting Roman land-use was concentrated in the south-east end of the site where Trenches 1, 2 and 7 were placed.

5 GROUNDWORKS TO BE MONITORED

5.1 This work will comprise a **continuous** watching brief, on the excavation of all foundations, trenches services and any subsequent groundworks involving excavation. This approach will meet the requirements of Condition 5 (see 3.2)

5.2 Should significant archaeological remains be identified during the watching brief the City of York curator will be informed. A strategy for stripping the development area and undertaking archaeological excavation will be agreed as specified in Condition 4 of the planning consent (See 3.2)

6 DELAYS TO THE DEVELOPMENT SCHEDULE

6.1 All earth-moving machinery must be operated at an appropriate speed to allow the archaeologist to recognise, record and retrieve any archaeological deposits and material.

6.2 It is not intended that the archaeological monitoring should unduly delay site works. However, the archaeologist on site should be given the opportunity to observe, clean, assess and, where appropriate hand excavate, sample and record any exposed features and finds. In order to fulfil the requirements of

this WSI, it may be necessary to halt the earth-moving activity to enable the archaeology to be recorded properly.

6.3 Plant or excavators shall not be operated in the immediate vicinity of archaeological remains until the remains have been recorded and the archaeologist on site has given explicit permission for operations to recommence at that location.

7 RECORDING METHODOLOGY

7.1 If a base plan of intervention areas is available, the areas being monitored will be determined using this information. If a plan is not available, or the watching brief work involves monitoring of long linear works, interventions which are not mapped, or large open areas, the location of the monitoring will be determined using a hand-held GPS, which will provide accuracy to c.2m.

7.2 Unique context numbers will only be assigned if artefacts are retrieved, or stratigraphic relationships between archaeological deposits are discernible. In archaeologically 'sterile' areas, soil layers will be described, but no context numbers will be assigned. Where assigned, each context will be described in full on a pro forma context record sheet in accordance with the accepted context record conventions.

7.3 Archaeological deposits will be planned at a basic scale of 1:50, with individual features requiring greater detail being planned at a scale of 1:20. Larger scales will be utilised as appropriate. Cross-sections of features will be drawn to a basic scale of 1:10 or 1:20 depending on the size of the feature. All drawings will be related to Ordnance Datum. Where it aids interpretation, structural remains will also be recorded in elevation. All drawings will be drawn on inert materials. All drawings will adhere to accepted drawing conventions.

7.4 Photographs of archaeological deposits and features will be taken. This will include general views of entire features and of details such as sections as considered necessary. All site photography will adhere to accepted photographic record guidelines.

7.5 Areas which are inaccessible (e.g. for health and safety reasons) will be recorded as thoroughly as possible within the site constraints. In these instances, recording may be entirely photographic, with sketch drawings only.

7.6 All finds will be collected and handled following the guidance set out in the CIfA guidance for archaeological materials. Unstratified material will not be kept unless it is of exceptional intrinsic interest. Material discarded as a consequence of this policy will be described and quantified in the field. Finds of particular interest or fragility will be retrieved as Small Finds, and located on plans. Other finds, finds within the topsoil, and dense/discrete deposits of finds will be collected as Bulk Finds, from discrete contexts, bagged by material type. Any dense/discrete deposits will have their limits defined on the appropriate plan.

7.7 All artefacts and ecofacts will be appropriately packaged and stored under optimum conditions, as detailed in the RESCUE/UKIC publication *First Aid for Finds,* and recording systems must be compatible with the recipient museum. All finds that fall within the purview of the Treasure Act (1996) will be reported to HM Coroner according to the procedures outlined in the Act, after discussion with the client and the local authority.

7.8 A soil sampling programme will be undertaken for the recovery and identification of charred and waterlogged remains where suitable deposits are identified. The collection and processing of environmental samples will be undertaken in accordance with Historic England guidelines (Campbell, Moffatt and Straker 2011). Environmental and soil specialists will be consulted during the course of the evaluation with regard to the implementation of this sampling programme. Soil samples of approximately 30 litres for flotation (or 100% of the features if less than this volume) will be removed from selected contexts, using a combination of the judgement and systematic methodologies.

- **Judgement sampling** will involve the removal of samples from secure contexts which appear to present either good conditions for preservation (e.g. burning or waterlogging) or which are significant in terms of archaeological interpretation or stratigraphy. (Given the nature of an archaeological watching brief, it is anticipated that the implementation of a systematic sampling methodology will not be possible).

7.9 It is possible, given the discoveries made during the evaluation of this site in 2013, that industrial residues and features may be found on this site and industrial samples and process residues will be

collected. Separate samples (c. 10ml) will be collected for micro-slags (hammer-scale and spherical droplets) (Historic England 2015).

7.10 Other samples will be taken, as appropriate, in consultation with YAT specialists and the Historic England Regional Science Advisor, as appropriate (e.g. dendrochronology, soil micromorphology, monolith samples, C14, etc.). Samples will be taken for scientific dating where necessary for the development of subsequent mitigation strategies. Material removed from site will be stored in appropriate controlled environments.

7.11 In the event of human remains being discovered during the evaluation these will be left *in-situ*, covered and protected, in the first instance. The removal of human remains will only take place in compliance with environmental health regulations and following discussions with, and with the approval of, the Ministry of Justice. If human remains are identified, the Ministry of Justice and curator will be informed immediately. An osteoarchaeologist will be available to give advice on site.

- If **disarticulated** remains are encountered, these will be identified and quantified on site. If trenches are being immediately backfilled, the remains will be left in the ground. If the excavations will remain open for any length of time, disarticulated remains will be removed and boxed, for immediate reburial by the Church.
- If **articulated** remains are encountered, these will be excavated in accordance with recognised guidelines (see 7.12) and retained for assessment.
- Any grave goods or coffin furniture will be retained for further assessment.

7.12 Where a licence is issued, all human skeletal remains must be properly removed in accordance with the terms of that licence. Where a licence is not issued, the treatment of human remains will be in accordance with the requirements of Civil Law, CIfA Technical Paper 13 (1993) and Historic England guidance (2005).

8 REPORT & ARCHIVE PREPARATION

8.1 Upon completion of the groundworks, a report will be prepared to include the following:

a) A non-technical summary of the results of the work.

b) An introduction which will include the planning reference number, grid reference and dates when the fieldwork took place.

c) An account of the methodology and results of the operation, describing structural data, associated finds and environmental data.

d) A selection of photographs and drawings, including an overall plan of the site accurately identifying the areas monitored.

e) Specialist artefact and environmental reports as necessary.

f) Details of archive location and destination (with accession number, where known), together with a catalogue of what is contained in that archive.

g) A copy of the key OASIS form details

h) Copies of the Brief and WSI

i) Additional photographic images may be supplied on a CDROM appended to the report

8.2 Copies of the report will be submitted to the commissioning body and the HER/SMR (also in PDF format).

8.3 The requirements for archive preparation and deposition will be addressed and undertaken in a manner agreed with the recipient museum. In this instance Yorkshire Museum is recommended and an agreed allowance should be made for the curation and storage of this material.

8.4 Provision for the publication of results, as outlined in the Brief, will be made.

8.5 The owner of the Intellectual Property Rights (IPR) in the information and documentation arising from the work, would grant a licence to the County Council and the museum accepting the archive to use such documentation for their statutory functions and provide copies to third parties as an incidental to such functions. Under the Environmental Information Regulations (EIR), such documentation is required to be made available to enquirers if it meets the test of public interest. Any information disclosure issues would be resolved between the client and the archaeological contractor before completion of the work. EIR requirements do not affect IPR.

9 HEALTH AND SAFETY

9.1 Health and safety issues will take priority over archaeological matters and all archaeologists will comply with relevant Health and Safety Legislation.

9.2 A Risk Assessment will be prepared prior to the start of site works.

10 TIMETABLE & STAFFING

10.1 The timetable will be agreed with the client.

10.2 Specialist staff available for this work are as follows:

- Human Remains - Malin Holst (York Osteoarchaeology Ltd)
- Palaeoenvironemtal remains – John Carrott (PRS)
- Head of Curatorial Services - Christine McDonnell
- Finds Researcher - Nicky Rogers
- Medieval Pottery Researcher - Anne Jenner
- Finds Officers – Nienke Van Doorn
- Archaeometallurgy & Industrial Residues – Dr Rod Mackenzie & Dr Roger Doonan
- Conservation – Ian Panter

11 MONITORING OF ARCHAEOLOGICAL FIELDWORK

11.1 As a minimum requirement, the City of York Archaeologist John Oxley will be given a minimum of one week's notice of work commencing on site, and will be afforded the opportunity to visit the site during and prior to completion of the on-site works so that the general stratigraphy of the site can be assessed. York Archaeological Trust will notify John Oxley of any discoveries of archaeological significance so that site visits can be made, as necessary. Any changes to this agreed WSI will only be made in consultation with John Oxley.

12 COPYRIGHT

12.1 York Archaeological Trust retain the copyright on this document. It has been prepared expressly for Coen Construction Ltd, and may not be passed to third parties for use or for the purpose of gathering quotations.

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For the latest Historic England guidance documents see:

https://historicengland.org.uk/advice/latest-guidance/

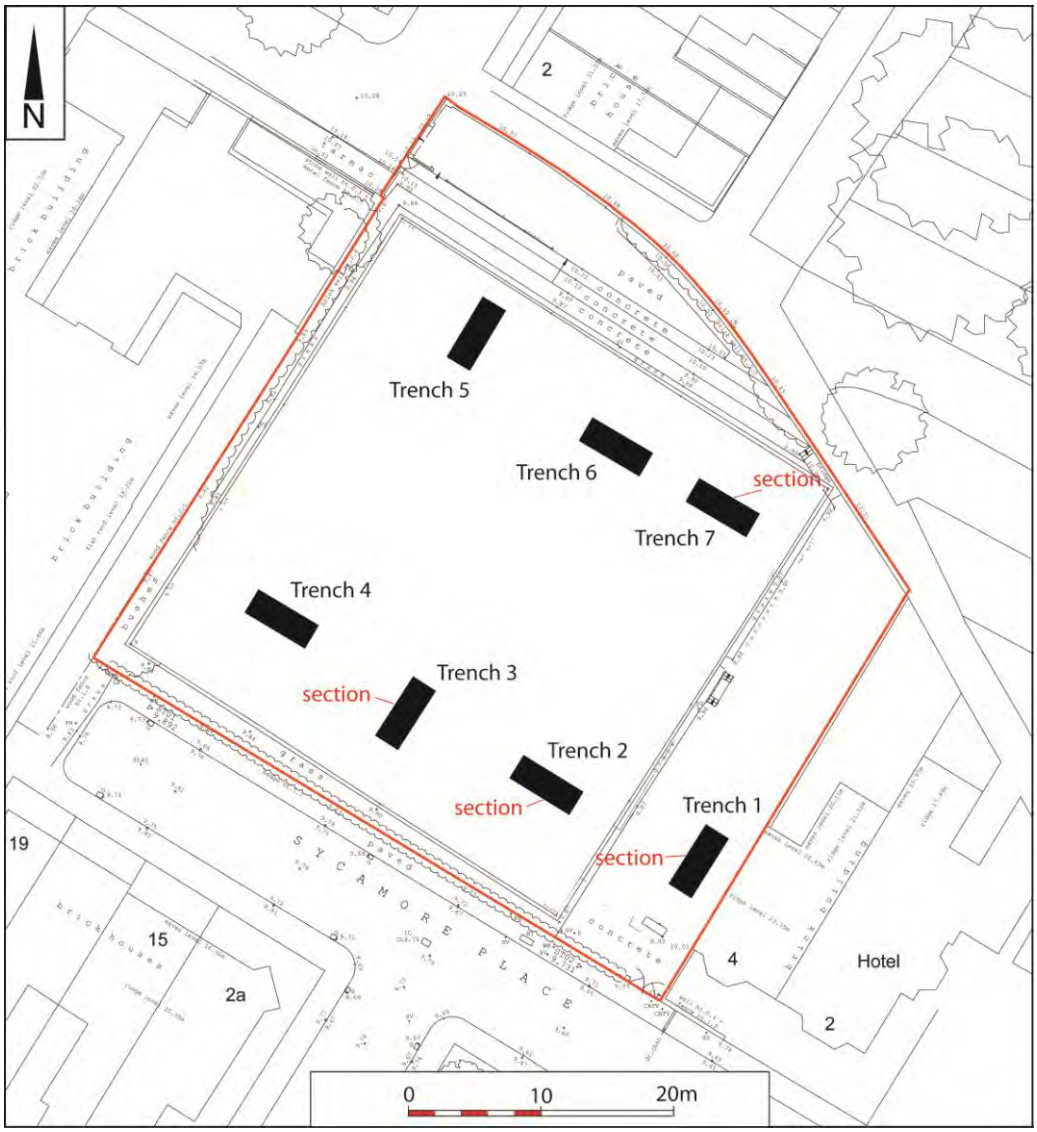

Illustration 1 Site location showing Evaluation trenches excavated between 25th February and 6th March 2013 (Basemap after client supplied drawing)

APPENDIX 4 – THE CERAMIC BUILDING MATERIAL

BY J. M. MCCOMISH

August 2018

INTRODUCTION

This assessment relates to 3.737kg of ceramic building material (CBM) recovered from the archaeological watching brief at Sycamore Place, York (York Archaeological Trust project code 6061). The collection was recorded to a standard YAT methodology (McComish 2015). The CBM ranged in date from Roman to medieval, though the majority of the collection was of Roman date.

RESULTS

The various forms present are summarised by historical period on Table 1, while a summary of the forms present in relation to context is given on Table 2.

Roman

The Roman CBM accounted for 73.6% of the total volume of CBM from the site. Though some roof tiles were present (tegulae and imbrices), the majority of the fragments were of indeterminate form (termed Roman brick). The Roman material was typical for York as a whole in terms of the forms, dimensions and fabrics present.

A single tegula was present, which was 17mm thick with a flange 39mm high. There was a pronounced finger smoothing line adjacent to the flange, which is a common feature on tegulae.

The imbrices ranged in thickness from 17-20mm (3 examples), but no complete breadths of lengths were preserved. One sherd was abraded.

The bulk of the Roman CBM was too fragmented to determine the original form (termed Roman brick). Most was too badly preserved for any original dimensions to be preserved though nine examples had an original thickness which ranged from 15-34mm. Twenty-one of these sherds were highly abraded. One had traces of a signature mark on the surface though this was too faint and incomplete to determine the design. Two of the sherds had reduced cores, caused by the exclusion of oxygen during part of the firing process. This is a common feature.

Medieval

Medieval CBM accounted for 26.4% of the total volume of CBM from the site. The Roman material was typical for York as a whole in terms of the forms, dimensions and fabrics present.

All the sherds were plain roofing tiles of 13-16th century date. The plain tiles examined ranged from 11-17mm in thickness 10 examples), but no lengths or breadths survived. Smoothing lines parallel to the edge of the tile were present on one tile, while a further two examples had finger drawn smoothing lines.

SUMMARY AND RECOMMENDATIONS FOR FURTHER RESEARCH

The collection of CBM was of very poor quality overall being highly fragmented and abraded, with many fragments lacking any surviving original dimensions or surfaces, making identification of the original forms difficult. The collection of CBM has no potential for further research, mainly being of use to provide dating evidence for the various contexts seen. No further work is recommended. None of the material was worthy of museum display.

For excavations within the City of York, YAT routinely adopts a record and discard policy, whereby only a representative selection of CBM from each site is retained. In the case of this site a single sherd was retained.

Table 3. CBM by form in relation to period

Period	Form	No. of sherds	Weight in grams	% of total weight
Roman	Brick	30	2202	58.9
	Imbrex	4	225	6.0
	Tegula	1	325	8.7
Medieval	Plain	10	985	26.4

Table 4. CBM in relation to context

Context	Dating	Forms present
1000	13-16th	Imbrex, Plain, Roman brick
1005	13-16th	Plain, Roman brick
1007	1-4th	Roman brick
1014	13-16th	Plain, Roman brick
1016	1-4th	Roman brick
1018	1-4th	Roman brick
1020	1-4th	Imbrex, Roman brick , Sfloor?, Stonepeg?
1021	1-4th	Imbrex
1022	1-4th	Imbrex, Roman brick
1024	1-4th	Roman brick
1026	1-4th	Roman brick
1028	1-4th	Roman brick
1031	1-4th	Roman brick
1033	1-4th	Roman brick
1036	1-4th	Tegula

APPENDIX 5 – THE STONE ROOFING AND FLOOR TILES

BY J. M. MCCOMISH

August 2018

This assessment relates to 400g of stone roofing and floor tiles recovered from the archaeological watching brief at Sycamore Place (York Archaeological Trust project code 6061). The material was recorded to a standard YAT methodology (McComish 2015).

DISCUSSION

Two fragments of micaceous sandstone were present which were 7mm and 12mm thick respectively. These probably originated from stone roofing tiles of Roman date. In addition, there was a further thicker fragment of micaceous sandstone (the original thickness did not survive), which weighed 325g. This probably originated from a Roman floor slab. All three items were from Context 1020.

The material was mainly of use for dating the context concerned. None of the material was worthy of retention.

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APPENDIX 6 - THE POTTERY

BY A.JENNER

INTRODUCTION

116 sherds of mainly domestic pottery were retrieved from 17 Contexts. The bulk of the material is Roman. It spans the late 1st to the 3rd centuries, but there is no calcite gritted or Dales wares that might indicate late 3rd/4th century activity on the site.

There is little obvious residuality or intrusion, though sherds are often quite small and can be abraded, perhaps due to secondary deposition. They may have been cleared from a nearby cemetery, or perhaps from a more domestic scenario. Equally, they may have been swept away and reburied after a graveside ritual, or to prepare the ground for another burial or use, as the wares include beakers and jars that have been used for libations or to contain food for the afterlife elsewhere in York.

However, a large sherd from a mortaria and another from an amphora suggest a more domestic context, as these forms are less frequently found during excavations of contemporary Roman cemeteries.

The pottery does not particularly indicate any high status and could be compared with typical assemblages from Newington Terrace, Trentholme Drive and other similar local cemeteries containing burials of people who may have obtained only a moderate level of wealth during their lives.

METHODOLOGY

Methodology

The pottery was quantified and recorded in the standard manner (see Orton, Tyers and Vince 1993; Orton and Hughes 2013). It was sorted into fabric and form groups, based on colour, firing, clay matrix, inclusions and glaze type. Where possible these groups were related to known types from the area. The number of sherds was calculated and these can be found with the archive together with all the details of the numbers of different wares per phase, group and set.

DISCUSSION

This assemblage consists entirely of Roman pottery. Types include local Grey wares, Ebor ware, Black Burnished, Samian and Colour coated wares, white wares as well as a sherd from an amphora and another from a mortaria. All these wares have been found in domestic and funerary contexts of the late 2nd to 3rd century elsewhere in the City.

RECOMMENDATIONS FOR FURTHER WORK

The Samian should be sent to Glwadys Monteuil for more information about their origin and date of manufacture if possible, as there are no stamps. However, this may not be possible due to a lack of any sherds with makers marks on them.

The amphora and mortaria should be sent to Kay Hartley in order to locate their provenance and period of production. However, this may not be possible due to a lack of any sherds with makers marks on them.

Context	Quantity	Dating	Details
1000	2	Roman	1 Ebor,1 local Roman coarse ware wheel thrown small sherds.
1002	1	LATE 2ND/ EARLY/MID 3RD CENTURY	1 Samian, 1 Ebor red ware, 1 course oxidised Ebor ware , 1 local grey ware, 1 Black burnished ware.

Context	Quantity	Dating	Details
1007	12	LATE 2ND/EARLY 3RD CENTURY	1 Samian rim, 4 sandy Ebor red ware including 1 with small beaker in jar form, 3 Crambeck grey ware, 3 local grey ware, 1 rusticated local grey ware.
1009	1	ROMAN	1 amphora large sherd.
1014	25	MID TO LATE 3RD CENTURY	1 NVCC indented beaker with black slip and applied vertical thumbed decoration, 1 NVCC buff fabric beaker black slip slightly abraded, 1 NVCC buff fabric brown slip slightly abraded, 1 NVCC buff fabric with brown slip with feint rouletting very abraded, 1 NVCC with red fabric with black slip, 1 NVCC buff fabric black slip with applied linear decoration possibly from a hunt cup, 2 Ebor mortaria rim, 1 local coarse ware with oxidised fabric, 1 fine Ebor, 1 sandy Ebor jar sooted, 1 Samian rim very abraded, 2 Roman white ware mortaria, 1 Black Burnished local copy shallow pie dish *profile, 1 Crambeck grey ware lid, 1 local grey ware jar rim, 1 local grey ware bowl rim, 1 local greyware jar flat rim, 3 local greyware body, 1 BB2, 1 local grey ware flagon rim, 1 late local red ware with black colour coat, bowl rim.
1016	1	MID TO LATE 2ND CENTURY	1 Ebor ware bowl with horizontal incised lines.
1018	6	MID TO LATE 2ND CENTURY	5 Ebor bowl small to medium sherds, 1 Ebor mortaria large sherd.
1020	13	3RD CENTURY	1 Ebor base, 1 BB2 rim 5 local grey ware, 1 micaceous grey ware, 1 NVCC buff fabric beaker abraded, 1 NVCC with horizontal rilling and raised decoration abraded, 1 Ebor light oxidised surfaces, 1 NVCC with red fabric very abraded, 1 grey ware with lightly oxidised core, 1 grey ware local grey ware with black surfaces horizontal rib all small sherds.
1021	16	2ND to 3RD CENTURY	9 local grey ware jar with base including, 4 joining sherds, 1 BB1, 2 Samian, 1 Ebor mortaria rim with rib decoration, 3 Ebor. including jar rim small to large sherds
1022	3	2ND CENTURY	1 Roman amphora, 1 Roman coarse ware amphora scrap, 1 Samian bowl with pedestal base.
1024	3	LATE 2ND / 3RD CENTURY	1 Samian hemispherical flange bowl rim and body (cf Hartley 1970, fig 77, No38), 2 Samian bowl with pedestal base.
1026	7	2ND/3RD CENTURY	2 Black Burnished with lattice decoration, 3 Samian, 1 NVCC with buff fabric applied curvilinear decoration and brown slip, 1 NVCC with buff fabric and black siip,1 oxidised scrap. All small sherds.
1028	6	LATE 2ND/3RD CENTURY	1 local Grey ware flat topped jar rim 3 Samian 1 Ebor 1 Black Burnished local Grey ware jar All small sherds
1030	24	LATE 2ND/EARLY 3RD CENTURY	1 Grey ware beaker in cooking pot form with narrow base large sherd, 11 Ebor jar small to large sherds, 2 white ware, 3 NVCC indented beaker with buff fabric and brown slip on one surface and back on the other surface, 1 NVCC bag beaker with lightly oxidised fabric and brown slip, 1 NVCC with lightly oxidised fabric and black slip on both surfaces, 2 Ebor type 2 Black Burnished, 1 Black Burnished with lattice decoration

Context	Quantity	Dating	Details
			Mainly small sherds.
1032	5		1 Samian moulded bowl with foliate decoration and central motif, 1 Roman coarse ware, 1 Ebor scrap, 1 Black Burnished, 1 Black Burnished local copy.
1034	1	LATE 1ST/2ND CENTURY	1 Samian bowl.
1035	1	2ND CENTURY	1 Grey ware with burnished band.
1036	5	LATE 2ND/EARLY 3RD CENTURY	1 Grey ware jar rim with lid seating, 1 Grey ware with burnishing, 1 Grey ware jar body, 1 Grey ware jar with coarse fabric and thick walls,1 Black Burnished jar base, 1 Roman white ware mortaria rim.
1038	1	LATE 2ND CENTURY	1 Roman white ware.

Table 1. Pottery quantification.

APPENDIX 7 - SMALL FINDS

BY N. ROGERS

05/09/2018

INTRODUCTION AND METHODOLOGY

A total of seven small finds, all of metal were analysed for this report. All of the finds had been X-rayed and identifications of the objects were made in conjunction with the information provided by the Xrays.

THE FINDS

Iron

Five small finds comprised iron objects - SF4, C.1002; SF6 C.1020 and SF7 C.1030 are all nails. The other two iron small finds (SFs2, 3 C.1013) comprise hob nails which are the remnants of nailed leather shoes: SF2 contains approximately 20 hob nails, and SF3 contains approximately 53 hob nails.

Copper Alloy

SF1 C.1002 is an irregularly shaped sheet fragment which is undiagnostic.

Slag

SF5 C.1003 is a fragment of metalworking slag.

ANALYSIS OF THE FINDS

Apart from nail SF6 C.1020 which was found in a dump/spread deposit, and nail SF7 C.1030 which was recovered from pit backfill, all the finds derive from the burial Set 103. SF1 C.1002 is a fragment of copper alloy sheet from an unidentifiable object, SF4 C.1002 is an undiagnostic nail, and SF5 C.1003 is a fragment of metalworking slag which is likely to be a random find from the backfill, although it was recorded as being associated with the skeleton. The two groups of hob nails – SFs2 and 3 from C.1013 were identified as being found by the feet of the skeleton SK1; the hob nails in SF2 were found by the right foot, and those in SF3 were by the left foot, representing the remains of a pair of shoes which were probably being worn by the individual at the point of burial. Although shoes have sometimes been found in other locations in Roman burials, they are typically found in or around the feet area, or sometimes higher up by the legs. At the Roman cemetery at Hungate, York, excavated by York Archaeological Trust in 2006-2011, 22 burials contained shoes, with footwear being found in and around the feet in 12 cases (and assumed to have been worn), while in three other instances, the shoes appeared to have been placed on top of the coffin in the area of the feet. Slightly less than half of the burials with shoes at Hungate (c.45%) contained no other grave goods, as appears to be the case with Set 103; others contained additional pots or jewellery or both (Rogers in prep.). The earliest burials at Hungate date from the late 2nd century, and the latest to 4th century and this helps to provide a probable date range for this burial at Sycamore Place.

Apart from the cemetery at Hungate, hob nails from shoes have also been found in burials in excavations by York Archaeological Trust at numbers 3 and 6 Driffield Terrace, 35-41 Blossom Street, and 129 Holgate Road. Closer to the site at Sycamore Place, a survey of the evidence of burials in *Eburacum* notes the suggestion of possible hobnails in a stone coffin found near Scarborough Bridge: 'One contained a skeleton, with a little gypsum and some iron objects at the feet' (RCHM 1962, 85).

Find	Context	Name	Material
SF1	1002	Sheet Fragment	Copper Alloy
SF2	1013	Hob Nails	Iron
SF3	1013	Hob Nails	Iron

Find	Context	Name	Material
SF4	1002	Nail	Iron
SF5	1003	Slag	Slag
SF6	1020	Nail	Iron
SF7	1030	Nail	Iron

Table of small finds

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APPENDIX 8 – THE ANIMAL BONE

BY NIENKE VAN DOORN

INTRODUCTION

Excavations on the Sycamore Place site have produced an assemblage of hand collected animal bone. These animal bones were recovered from 15 contexts. This assemblage has been rapidly assessed focussing primarily on the range of animal taxa present.

METHODOLOGY

The faunal remains were examined and recorded with guidance from Dobney et al. (1999) and O'Connor (2008). Evidence of butchery, gnawing, burning or post depositional damage was recorded where present, with reference to Shipman et al. (1984) and Stiner et al. (1995).

Identification of species was completed using published identification guides (Pales & Lambert 1971). Wherever identification to species could not be achieved, bone fragments were classified using the following categories; unidentified mammal, unidentified bird, or unidentified fish. Mammalian fragments that retained characteristics that enabled estimation of the size of the animal were assigned to one or more of the following categories: large mammal (the size of horse/cow/large cervid [i.e. deer]), medium mammal 1 (the size of sheep/goat/pig/small cervid), medium mammal 2 (the size of dog/cat/hare), small mammal (the size of rodents, mustelidae (badger/otter/polecat family) etc). Very small bone scraps (usually smaller than 10mm) were recorded as unidentifiable and only counted approximately.

DISCUSSION

The results are outlined in table 1.

Table 1. Animal Bone from Sycamore Place

Context	Quantity and description	Taphonomy	Comments
1000	4 fragments of medium (1) mammal 3 fragments of large mammal	Light to middle brown colour, some abrasion	Some cut marks present
1002	8 fragments of large mammal, probably cattle vertebra/sacrum 1 fragment of bird long bone 1 fragment of burnt bone, fully calcified (5) 2 fragments of mammal bone, very abraded	Light to middle brown colour, varied abrasion	Bird bone shows "pitting" and is very abraded, likely to be due to taphonomy, not pathology
1005	5 fragments of large mammal 12 fragments of	Light to middle brown, varied abrasion	Smaller fragments were very abraded

Context	Quantity and description	Taphonomy	Comments
	mammal bone		
1007	1 fragment of medium (1) mammal, possible glenoid (scapula) 4 fragments of mammal	Light to middle brown, abrasion	
1014	1 fragment of cattle distal tibia 1 fragment of large mammal long bone 1 fragment of distal humerus, probably cattle 1 fragment of tibia, probably sheep 1 fragment of bird long bone 5 fragment of large mammal with cess concretions 2 fragments of mammal 1 fragment of burnt bone, partially calcified (4)	Middle brown colour	Humerus fragment shows cut marks
1018	1 pig tusk 1 fragment of cattle proximal metatarsus 18 fragments of large or medium (1) mammal	Light to middle brown colour, some abrasion	Some of the smaller fragments were paled and softened, possibly from acidic surroundings?
1020	1 cattle tooth 1 fragment of proximal metacarpal, possibly cattle 1 fragment of distal humerus, probably sheep 2 fragments of mammal	Light brown colour	Humerus fragment shows cut marks
1021	1 fragment of cattle mandible with teeth	Light to middle brown colour	No obvious cut marks on the mandible fragments, some cut marks on the large

Context	Quantity and description	Taphonomy	Comments
	7 fragments of cattle mandible 1 cattle tooth 6 fragments of large mammal bone (vertebra and long bone) 6 fragments of medium (1) mammal		mammal fragments
1022	1 cattle horn core		
1024	1 fragment of medium (1) mammal long bone, possible sheep tibia 1 fragment of cattle calcaneus	Light to middle brown colour	Possible cut on the calcaneus
1026	6 fragments of large to medium (1) fragments	Middle brown colour	1 fragment shows a possible cut and almost looks worked, but this might be an effect from abrasion
1030/1031	1 fragment of cattle distal metatarsal 1 fragment of cattle rib 20 fragments of large to medium (1) mammal 1 fragment of juvenile medium (1) mammal, possible sheep metacarpal	Middle brown colour	Some of the 20 fragments show a possible cut or almost look worked, but this might be an effect from abrasion
1032/1033	1 fragment of large mammal 2 fragments of medium (1) mammal 8 fragments of mammal	Light brown colour	
1034	1 fragment of large mammal	Light to middle brown colour, very abraded	
1036	1 cattle 3rd distal phalanx 1 fragment of	Light to middle brown colour, varied abrasion	Long bone shows possible gnawing marks

Context	Quantity and description	Taphonomy	Comments
	medium (1) mammal rib, possibly pig 1 fragment of medium (1) mammal long bone, possible sheep tibia 1 fragment of large mammal		

CONCLUSION

The animal bone recovered from Sycamore Place contained mostly mammalian bone, and consists of domestic taxa such as cattle, pig and sheep. In addition, a few fragments of bird bone were found.

Most of the assemblage seems to be consistent with undifferentiated domestic refuse. While some evidence of cut marks was present, no extensive evidence for specialised butchery was found. The material is very fragmented and variedly abraded, and while the colouration was fairly consistent throughout the assemblage, the strong variation in taphonomy may indicate a level of mixing has occurred.

RECOMMENDATIONS FOR FURTHER RESEARCH

The collection of animal bone may have some potential for further research, though this will be limited. This area of York has not had many excavations that have recovered Roman animal bone assemblages of a significant volume. However, while the assemblage might be of regional value, the material itself is very fragmented, abraded and did not show signs of specific activities on site.

RECOMMENDATIONS FOR RETENTION/DISCARD

Due to the location of the site within the York area it may be worth to retain animal bone from stratified Roman deposits at least until there are more representative Roman assemblages from that area discovered. Any animal bone material from residual or post-Roman date could be discarded after recording according to museum disposal guidelines.

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APPENDIX 9 – HUMAN REMAINS

BY ELINA PETERSONE-GORDINA AND MALIN HOLST

Summary

York Osteoarchaeology Ltd was commissioned by York Archaeological Trust (YAT) to carry out the osteological analysis of a single inhumation burial discovered during the 2018 excavations at Sycamore Place, York, North Yorkshire (NGR SE596523).

Skeleton 1 was almost fully complete, with slight fragmentation, and excellent to good surface preservation, allowing for a comprehensive osteological and palaeopathological analysis. The skeleton was a young middle adult female and had been buried in a supine position with flexed legs, in a NE-SW orientation, with the head to the NE, facing north. She was approximately 157.6cm in height and osteological analysis revealed evidence for a number of non-metric traits, but few pathological lesions in the skeleton. Dental plaque deposits were seen on the teeth, and dental enamel hypoplasia, indicative of compromised health in early childhood, affected eight maxillary and four mandibular teeth. Slight to moderate periodontal disease affected the molar teeth.

The skeleton probably dates to the Roman period, since grave fill contained Roman pottery and the location of the burial was near a large Roman burial ground. It is possible that other burials in the immediate vicinity had been removed when the land was levelled for the Bowling Green.

Although the burial from Sycamore Place, York, is thought to date to the Roman period, AMS dating of human remains is recommended to accurately assign the burial to a time period.

Acknowledgements

York Osteoarchaeology Ltd would like to thank George Loffman of the York Archaeological Trust for his help and support.

1.0 INTRODUCTION

In June 2018 York Osteoarchaeology Ltd was commissioned by York Archaeological Trust (YAT) to carry out the osteological analysis of one inhumation discovered during excavations at Sycamore Place, York, North Yorkshire (NGR SE596523).

A single inhumation burial was found in Trench 1 (Table 1). The grave had not been disturbed, and might have been either an isolated burial, or a part of a larger cemetery, which might have been cleared at an earlier date, during the construction of the Bowling Green. The burial was not far from a Roman cemetery, and Roman pottery was found in the fill of the grave. The skeleton was supine, with flexed legs, and oriented NE-SW, with the head to the NE. Animal bone was found underneath the pelvis on the left side of the skeleton, a copper alloy object from the backfill near the skull, and corroded iron objects around the feet, probably remains of hobnails from shoes or boots.

Table 5 Summary of burial 1

Context No	Burial No	Burial Position	Orientation	Date	Artefacts	Notes
1003	1	Supine, with flexed legs	NE-SW	Roman	Animal bone, hobnails, a copper alloy object	Single inhumation

1.1 AIMS AND OBJECTIVES

The aim of the skeletal analysis was to determine the age, sex and stature of the skeleton, as well as to record and diagnose any skeletal manifestations of disease and trauma.

1.2 METHODOLOGY

The skeleton was analysed in detail, assessing the preservation and completeness, as well as determining the age, sex and stature of the individual. All pathological lesions were recorded and described.

2.0 OSTEOLOGICAL ANALYSIS

Osteological analysis is concerned with the determination of the demographic profile of the assemblage based on the assessment of sex, age and non-metric traits. This information is essential in order to determine the prevalence of disease types and age-related changes. It is also crucial for identifying sex dimorphism in occupation, lifestyle and diet, as well as the role of different age groups in society. A summary of the osteological and palaeopathological data for Skeleton 1 is given in

Table 2 Summary of osteological and palaeopathological data

Sk No	C (%)	SP	F	Age	Age Group	Sex	Stature (cm)	Dental Pathology	Pathology
1	90	1-2	slight	26-35 years	YMA	F	157.6cm ±4.27 (L Ulna)	Calculus, DEH, periodontal disease	Slight DJC

SP = Surface preservation: grades 0 (excellent), 1 (very good), 2 (good), 3 (moderate), 4 (poor), 5 (very poor), 5+ (extremely poor) after McKinley (2004b)

C = Completeness

F = Fragmentation: min (minimal), slight, mod (moderate), sev (severe), ext (extreme)

Non-adult age categories: f (foetus, <38weeks *in utero*), p (perinate, c. birth), n (neonate, 0-1m), i (infant, 1-12m), yj (young juvenile, 1-5 years), oj (older juvenile, 6-11 years), j (juvenile, 1-11y), ad (adolescent 12-17y)

Adult age categories: ya (young adult, 18-25y), yma (young middle adult, 26-35y), oma (old middle adult, 36-45y), ma (mature adult, 46+y), a (adult, 18+y)

2, with a detailed catalogue provided in Appendix A.

Table 2 Summary of osteological and palaeopathological data

Sk No	C (%)	SP	F	Age	Age Group	Sex	Stature (cm)	Dental Pathology	Pathology
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Adult age categories: ya (young adult, 18-25y), yma (young middle adult, 26-35y), oma (old middle adult, 36-45y), ma (mature adult, 46+y), a (adult, 18+y)

2.1 PRESERVATION

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition. Preservation of human skeletal remains is assessed subjectively, depending upon the severity of bone surface erosion and post-mortem breaks, but disregarding completeness. Preservation is important, as it can have a large impact on the quantity and quality of information that it is possible to obtain from the skeletal remains.

Surface preservation, concerning the condition of the bone cortex, was assessed using the seven-category grading system defined by McKinley (2004), ranging from 0 (excellent) to 5+ (extremely poor). Excellent preservation implied no bone surface erosion and a clear surface morphology, whereas extremely poor preservation indicated heavy and penetrating erosion of the bone surface resulting in complete loss of surface morphology and modification of the bone profile. The degree of fragmentation was recorded, using categories ranging from 'minimal' (little or no fragmentation of bones) to 'extreme' (extensive fragmentation with bones in multiple small fragments). Finally, the completeness of the skeletons was assessed and expressed as a percentage: the higher the percentage, the more complete the skeleton.

Skeleton 1 was almost complete, with around 90% of skeletal elements present. These included fragments of the cranium, mandible, right and left arms and hands, ribs, pelvis and the right and left legs and feet, therefore the majority of the skeleton was represented. The skeleton had experienced slight fragmentation, but the surface preservation was very good, allowing for a thorough observation of the surface of the bones and thus, any pathology on them (see Table 2).

2.3 MINIMUM NUMBER OF INDIVIDUALS

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure in osteological reports on inhumations in order to establish how many individuals are represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). The MNI is calculated by counting all long bone ends, as well as other larger skeletal elements recovered. The largest number of these is then taken as the MNI. The MNI is likely to be lower than the actual number of skeletons which would have been interred on the site but represents the minimum number of individuals which can be scientifically proven to be present.

The inhumed skeletal remains represented the remains of a minimum of one adult individual, based on the presence of single left and right skeletal elements.

2.4 ASSESSMENT OF AGE

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b) and Cox (2000). For non-adults age was estimated using the stage of dental development (Moorrees *et al.* 1963a; 1963b), dental eruption (Ubelaker 1989), measurements of long bones and other appropriate elements and the development and fusion of bones (Scheuer and Black 2000b). In adults, age was estimated from stages of bone development and degeneration in the pelvis (Brooks and Suchey 1990, Lovejoy *et al.* 1985) and ribs (modified version of methods developed by İşcan *et al.* 1984; 1985 and İşcan and Loth 1986 provided in Ubelaker 1989), supplemented through examination of patterns of dental wear (Brothwell 1981). Age is split into a number of categories. Non-adults are subdivided into 'foetus' (f: where the age estimate clearly falls below 38-40 *weeks in utero*), 'perinate' (p: where the age estimates converge around birth), 'neonate' (n: where the age estimate suggests 0-1 month), 'infant' (i; 1-12 months), juvenile (j; 1-12 years) and adolescent (ad; 13-17 years). Adults are divided into 'young adult' (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years) and mature adult (46+ years). A category of 'adult' (a) is used to designate those individuals whose age could not be determined beyond the fact that they are eighteen or older.

Skeleton 1 fell into the age category of a younger middle adult (26-35 years). This age estimate was based on the degeneration of the pubic symphysis and the auricular surface, both of which were very well preserved. This estimate was also supported by the completely fused sternal ends of the clavicles. This fusion takes place between 22 and 30 years of age (Scheuer and Black 2000b, 251).

2.5 SEX DETERMINATION

Sex determination was carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex involves examination of the shape of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood. Evidence from the pelvis was favoured as its shape is directly linked to biological sex (the requirements of childbirth in females) whereas the shape of the skull can be influenced by factors such as age (Walker 1995). Measurements of certain bones were used to supplement the morphological assessment (Bass 1987). As with estimation of age, sex estimation in disarticulated remains could only be carried out where appropriate bones were preserved (i.e. pelvis and skull). Metrics alone are an unreliable method for estimating age.

The sex of Skeleton 1 (younger middle adult) was determined to be female, based pelvic traits and cranial morphology. This was supported by measurements of the right scapula glenoid width (24mm) and the right and left femoral head width (40.8mm and 40.5mm, respectively).

2.6 METRIC ANALYSIS

Measurements were taken of the skeleton where preservation allowed, but the fragmentation, although slight, prevented some measurements from being taken.

Stature depends on two main factors, heredity and environment; it can also fluctuate between chronological periods. Stature can only be established in skeletons if at least one complete and fully fused long bone is present, but preferably using the combined femur and tibia. Knowing the sex of the individual is also necessary, which is an issue with disarticulated long bones where sex cannot be determined. The bone is measured on an osteometric board and stature is then calculated using a regression formula developed upon individuals of known stature (Trotter 1970). Where possible, bones from the legs were used in preference to those of the upper limb as these carry the lowest error margin (*ibid*).

Stature for Skeleton 1 was based on the left ulna, which was the only complete long bone. The individual was approximately 157.6cm in height, which is very close to the average stature for females in this period (159cm, Roberts and Cox 2003, 396).

The *platymeric* index is a method of calculating the shape and robusticity of the femoral shafts, while the *eurycnemic* index describes the shape of the tibial shafts (Bass 1987). It was possible to calculate the platymeric index for the femora and the eurycnemic index for the tibiae of Skeleton 1. The femora fell into the *platymeric* (flattened) range; the right tibia was within the *eurycnemic* (flattened) range, while the left tibia fell into the *mesocnemic* (rounded) range (Table 3).

Table 6 *Platymeric* and *platycnemic* index

Sk No.	Sex	Platymeric Index		Eurycnemic Index	
		R	L	R	L

1	F	87.3	88.3	74.4	69.1 (mesocnemic)

These, and other post-cranial measurements are summarised in Table 4.

Table 4 Post-cranial measurements

Skeletal element	Side	Measurement in mm
Scapula Glenoid Length	L	34.4
Ulna Length	L	234.0
Femoral AP Diaphysis Width	R/L	26.3/26.5
Femoral ML Diaphysis Width	R/L	30.1/30.0
Tibia AP Diaphysis Width	R/L	31.2/31.1
Tibia ML Diaphysis Width	R/L	23.2/21.5

It was also possible to obtain a number of skull measurements for this individual, mostly from the mandible (Table 5).

Table 5 Skull measurements

Skeletal element	Measurement in mm
Palatal breadth	30.1
Breadth of mandibular body	10.5
Minimum ramus breadth	35.4
Maximum ramus breadth	48.3
Maximum ramus height	63.0

2.7 NON-METRIC TRAITS

Non-metric traits are additional sutures, facets, bony processes, canals and foramina, which occur in a minority of skeletons and are believed to suggest hereditary affiliation between skeletons (Saunders 1989). The origins of non-metric traits have been extensively discussed in the osteological literature and it is now thought that while most non-metric traits have genetic origins, some can be produced by factors such as mechanical stress (Kennedy 1989) or environment (Trinkhaus 1978). A total of thirty cranial (skull) and thirty post-cranial (bones of the body and limbs) non-metric traits were selected from the osteological literature (Buikstra and Ubelaker 1994; Finnegan 1978; Berry and Berry 1967) and recorded.

It was possible to observe a number of both cranial and post-cranial non-metric traits in Skeleton 1. She had an *ossicle at lambda* (at the back of the head - Plate 1). Bennett (1965) has suggested that the formation of *ossicles* in the lambdoid suture may be in response to stresses placed on the growing cranium during foetal life

and early infancy. The individual also had a *double atlas facet* (the first cervical vertebra) – a joint surface that is normally single. A *septal aperture* was present on the distal ends of the humeri (small hole in the elbow joint – Plate 1) and a *third trochanter* was observed on both femora. Likewise, a hypotrochanteric fossa was observed in both femora, and an exostosis in trochanteric fossa was observed on the right femur.

Plate 1 Ossicle at lambda (left) and septal aperture (right) in Skeleton 1

2.8 CONCLUSION

Preservation of Skeleton 1 from Sycamore Place, York, was very good, with 90% of skeletal elements present. Although moderate fragmentation prevented some measurements for metric analysis (e.g. a number of cranial measurements), osteological analysis established that the individual was a female aged 26-35 years (younger middle adult). She was approximately 157.6cm in height (close to the average female stature in the Roman period) and had flattened femora, and one flattened and one rounded tibia (normal morphological variants). It was also possible to measure the glenoid length of the scapula in this individual. Of cranial measurements, only the palatal breadth of the maxilla, and four mandibular measurements, could be obtained. A number of non-metric traits were also observed.

3.0 PATHOLOGICAL ANALYSIS

Pathological conditions (disease) can manifest themselves on the skeleton, especially when these are chronic conditions or the result of trauma to the bone. The bone elements to which muscles attach can also provide information on muscle trauma and excessive use of muscles. All bones were examined macroscopically for evidence of pathological changes.

3.1 Joint Disease

The term joint disease encompasses a large number of conditions with different causes, which all affect the articular joints of the skeleton. Factors influencing joint disease include physical activity, occupation, workload and advancing age, which manifest as degenerative joint changes and osteoarthritis. Alternatively, joint changes may have inflammatory causes in the *spondyloarthropathies*, such as septic or rheumatoid arthritis. Different joint diseases affect the articular joints in a different way and it is the type of lesion, together with the distribution of skeletal manifestations, which determines the diagnosis (Rogers 2000; Roberts and Manchester 2005).

In Skeleton 1, it was possible to observe both, spinal and extra-spinal joint disease.

3.2.1 Degenerative Joint Changes

The most common type of joint disease observed tends to be degenerative joint changes (DJC). Degenerative joint changes are characterised by both bone formation (osteophytes) and bone resorption (porosity) at and around the articular surfaces of the joints, which can cause great discomfort and disability (Rogers 2000).

Slight marginal osteophytes were present on the inferior body of the first cervical vertebra, the atlas (C1); and similar, very slight, changes were also observed on the right inferior talus and superior calcaneus. No other pathological changes were observed in this individual.

3.3 CONCLUSION

Although the completeness and surface preservation of Skeleton 1 were very good, few pathological lesions were observed, in the form of very slight DJC in the atlas (uppermost vertebra) and the right foot. The lack of pathological changes in this individual might be due to her young age, although it has to be taken into account that many pathological conditions do not involve the skeleton and are thus invisible in archaeological remains.

4.0 DENTAL HEALTH

Analysis of the teeth from archaeological populations provides vital clues about health, diet and oral hygiene, as well as information about environmental and congenital conditions (Roberts and Manchester 2005). All teeth and jaws were examined macroscopically for evidence of pathological changes.

The dentition of Skeleton 1 was very well preserved, with 27 of possible 31 teeth recovered (87.1%) and all 31 tooth positions preserved. There was no space in the alveolar bone for the left mandibular third molar, suggesting that it was congenitally absent.

4.1 Calculus

If plaque is not removed from the teeth effectively (or on a regular basis) then it can mineralise and form concretions of calculus on the tooth crowns or roots (if these are exposed), along the line of the gums (Hillson 1996, 255-257). Mineralisation of plaque can also be common when the diet is high in protein (Roberts and Manchester 2005, 71). Calculus is commonly observed in archaeological populations of all periods, although poor preservation or damage caused during cleaning can result in the loss of these deposits from the teeth (Roberts and Manchester 2005, 64).

Calculus deposits were observed on 22 teeth from Skeleton 1, providing an overall prevalence of 81.5%. The calculus deposits were mostly flecks, or slight. This is higher than in other Roman sites, with prevalence of the affected teeth ranging from 13.2% to 58.5% (Roberts and Cox 2003, 132). This might be due to both, differential diet, and also post-mortem loss of calculus deposits. It has to be taken into account, however, that one individual cannot be representative of prevalence of any pathological condition in the whole population.

4.2 DENTAL ENAMEL HYPOPLASIA

Dental enamel hypoplasia (DEH) is the presence of lines, grooves or pits on the surface of the tooth crown and occurs as a result of defective formation of tooth enamel during growth (Hillson 1996). Essentially, they represent a period when the crown formation is halted and they are caused by periods of severe stress, such as episodes of malnutrition or disease, during the first seven years of childhood. Involvement of the deciduous (milk) teeth can indicate pre-natal stress (Lewis 2007). Trauma can also cause DEH formation, usually in single teeth, therefore only individuals with three or more teeth with DEH defects are usually classed as experiencing childhood stress.

A total of twelve teeth in Skeleton 1 had linear defects associated with DEH (Plate 2). This gives a prevalence of 44.4% of teeth affected, which is much higher than the rates usually seen in Roman period populations (9%, Roberts and Cox 2003, 140). However, this value is likely skewed by there only being one individual in this assemblage, as was the case with dental calculus prevalence in this individual.

Plate 2. DEH on maxillary teeth of Skeleton 1

4.3 PERIODONTAL DISEASE

Calculus deposits in-between and around the necks of the teeth can aggravate the gums leading to inflammation of the soft tissues (gingivitis). In turn, gingivitis can progress to involve the bone itself, leading to resorption of the bone supporting the tooth and the loss of the periodontal ligament that helps to anchor the tooth into the socket (Roberts and Manchester 2005, 73). It can be difficult to differentiate between periodontal disease and continuous eruption (whereby the teeth maintain occlusion despite heavy wear) in skeletal material, since both result in exposure of the tooth roots (*ibid*, 74).

Slight periodontal disease was present on the mandible, affecting the molars, with moderate resorption affecting the area of the left second molar. Due to the slight calculus deposits, it is unlikely that calculus was the main cause of periodontal disease in this individual. A softer diet might also have been a factor (Barmes, 1977, Cutress *et al.*, 1982), while more pronounced periodontal disease around the left second mandibular molar might be linked to the congenital absence of the third molar.

4.4 DENTAL CONCLUSIONS

Due to very good preservation of the dentition of Skeleton 1, oral health could be assessed and discussed for this individual. Slight deposits of mineralised plaque on the teeth might be related to the relatively young age of the individual, but its presence indicates poor oral hygiene practices. Dental enamel defects in the form of lines were observed on twelve teeth, and these may be indicative of episodes of illness or malnutrition during early childhood. Finally, slight periodontal disease was affecting the mandibular molar teeth, while the condition was moderate around the second left molar. Softer diet, as well as congenital absence of the third left mandibular molar, might have contributed to the condition in this individual.

5.0 MORTUARY PRACTICE

A single skeleton was recovered from Sycamore Place, York. The skeleton was a young middle adult female and had been buried in a supine position with flexed legs, in NE-SW orientation, with the head to the NE, facing north.

Although cremation was the predominant funerary practice in the early Roman period, from the mid-second century AD, inhumation replaced cremation as the more common burial, becoming predominant from the

mid-third century to the end of the Roman period in the early fifth century (Pearce 2013). Likewise, the west-east orientation became a general trend for inhumation burials. This, however, is not an indication of the adoption of Christian ways of burial, since the earliest evidence for Christianity only appears in the fourth century AD (Millett 2005, 115). Skeleton 1 thus is representative of a typical burial in the mid to later Roman period.

While Skeleton 1 was an isolated burial, its location is close to the Bootham/Clifton area, which contains a large Roman burial ground on the north-west side of the fortress beside the Roman road to Catterick and the north (Jones 1984). In this area, both inhumation and cremation burials have been found, with associated pottery covering most of the Roman period, from the first to the fourth century AD (*ibid*.). Like Skeleton 1, most have been found as isolated burials, including two inhumation burials at 18 Bootham Terrace (both male, aged between 26 and 35, and older than 36 years, respectively) (Holst 2006), as well as a richly furnished female burial (18-23 years old) near Sycamore Terrace, Bootham. She was likely an immigrant to York, and her grave goods included ivory bangles (Leach et al. 2010).

6.0 DISCUSSION AND SUMMARY

Skeleton 1 was almost fully complete, with slight fragmentation, and excellent to good surface preservation. The burial was located near a large Roman burial ground alongside an ancient road to the north. The skeleton had been buried in a supine position with flexed legs, in NE-SW orientation, with the head to the NE, facing north. The type of the burial (inhumation) and the orientation suggested a mid to later Roman period date. The fill of the grave also contained Roman pottery.

Osteological analysis revealed that the individual was a female, aged 26 to 35 years (young middle adult). She was approximately 157.6cm in height. Several non-metric traits were present in the skeleton, including an extra bone in the back of the skull, and septal apertures on both humeri.

Few pathological lesions were present in the skeleton, probably due to her young age. Slight marginal osteophytes were present on the inferior body of the uppermost vertebra, and very slight degenerative changes were also observed on the right heel and ankle. Slight dental plaque deposits were seen on the teeth, and slight to moderate periodontal disease affected the mandibular molar teeth, particularly the left second molar. The presence of periodontal disease was probably indicative of a softer diet. Dental enamel hypoplasia, indicative of compromised health in early childhood, affected eight maxillary and four mandibular teeth.

7.0 FUTURE RECOMMENDATIONS

Obtaining AMS dates for skeletal remains is highly recommended to better understand the significance of the funerary, osteological and palaeopathological data presented in this report.

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APPENDIX A: OSTEOLOGICAL AND PALAEOPATHOLOGICAL CATALOGUE

Skeleton Number	**1**
Preservation	Excellent-good (0-1)
Completeness	90% Cranium, mandible; hyoid; 7 cervical, 12 thoracic, 5 lumbar vertebrae; fragmentary sacrum; 12 right and 12 left ribs; clavicles; scapulae; humeri; radii; ulnae; right hand; left hand; right and left pelvis; femora; tibiae; fibulae; left foot; right foot
Age	26-35 years (younger middle adult)
Sex	Female
Stature	157.6cm ±4.27 (L Ulna)
Non-Metric Traits	*Ossicle at lambda, double atlas facet* (right), *septal aperture* (bilateral), H*ypotrochanteric Fossa* (bilateral), E*xostosis in Trochanteric Fossa* (right), *Third Trochanter* (bilateral)
Pathology	Very slight osteophyte formation in C1 and right talus and calcaneus
Dental Health	31 tooth positions, 27 teeth present, 4 lost post-mortem; 22 teeth with calculus (flecks-slight), 12 teeth with DEH; slight periodontal disease affecting molars, especially lower left 2nd molar

	Right Dentition								Left Dentition							
Present	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Calculus	Fdl	Fl	Fb	-	Sm	Fb	-	-	Fb	Fb	Fb	Fb	-	Sl	Sl	Sdl
DEH	-	-	-	-	L	L	L	L	L	L	L	-	L	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	2	3	4	3	3	4	4	4	4	4	4	3	3	4	3	2
Maxilla	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Mandible	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8***
Present	P	P	P	-	-	PM	PM	PM	P	P	PM	P	P	P	P	-
Calculus	Slb	Fl	Sbml	Fl	-				Smbl	Smbl		Sm	Sm	Sl	Sl	-
DEH	-	-	-	L	L				L	L		-	-	-	-	-
Caries	-	-	-	-	-				-	-		-	-	-	-	-
Wear	3	4	4	3	3				4	4		3	3	4	3	-

*Congenitally no space on the lower jaw for the left lower third molar

KEY:

Present - Tooth presence; am - ante-mortem tooth loss; pm - post-mortem tooth loss; p - tooth present; - - jaw not present; e – erupting; (l) – loose, i.e. socket not present

Caries - Calculus; F - flecks of calculus; S - slight calculus; M - moderate calculus; H - heavy calculus; a - all surfaces; b - buccal surface; d - distal surface; m - mesial surface; l - lingual surface; o - occlusal surface

DEH - dental enamel hypoplasia; l - lines; g - grooves; p - pits

Caries - caries; s - small lesions; m - moderate lesions; l - large lesions

Wear - dental wear; numbers from 1-8 - slight to severe wear

PLATES

Plate 1 Section 1 Pits Context 1006 and 1008 facing south east 0.5m scale.

Plate 2 Section 2 facing south east 0.5m scale

Plate 3 Section 3 showing pit Context 1025 facing north west scale 0.5m.

Plate 4 Section 4 showing pit Context 1014 and pit Context 1023 facing north east 0.5m scale.

Plate 5 Context 1020 facing south west 0.5m scale

Plate 6 Context 1021 facing south west 0.5m scale

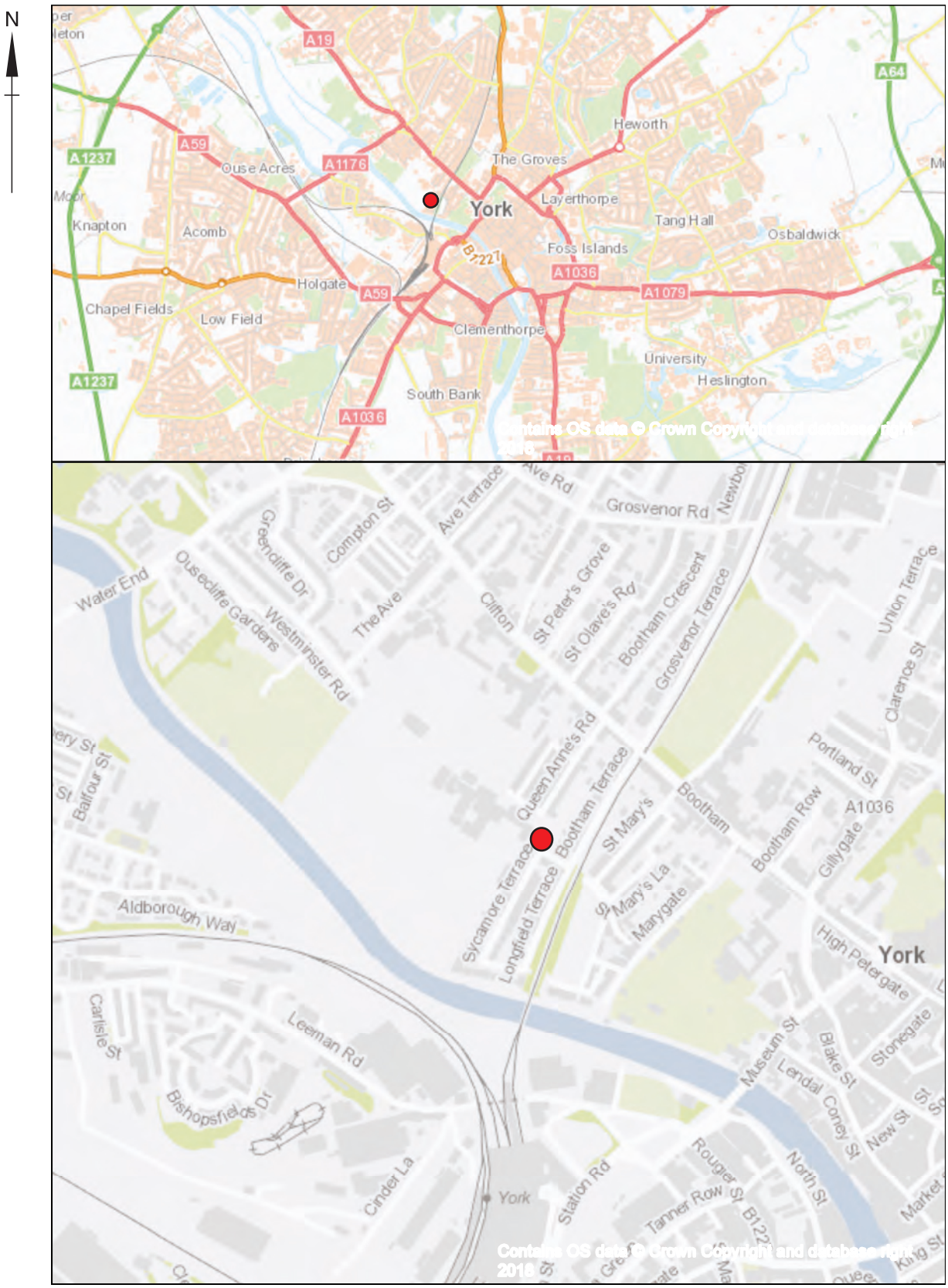
Plate 7 Pit Context 1015 facing north 0.5m scale.

Plate 8 Pit Context 1023 facing north east 0.5m scale.

Plate 9 Pits Context 1029 (left) and 1027 (right) facing south east 0.5m scale.

Plate 10 Skeleton Context 1003 facing south east 0.5m scale

Plate 11 Skeleton Context 1003 facing south west 0.5m scale.



Key

- Site location

Fig. 1 Site location 1:20000 and 1:10000

Fig. 2 Areas monitored (basemap supplied by client)

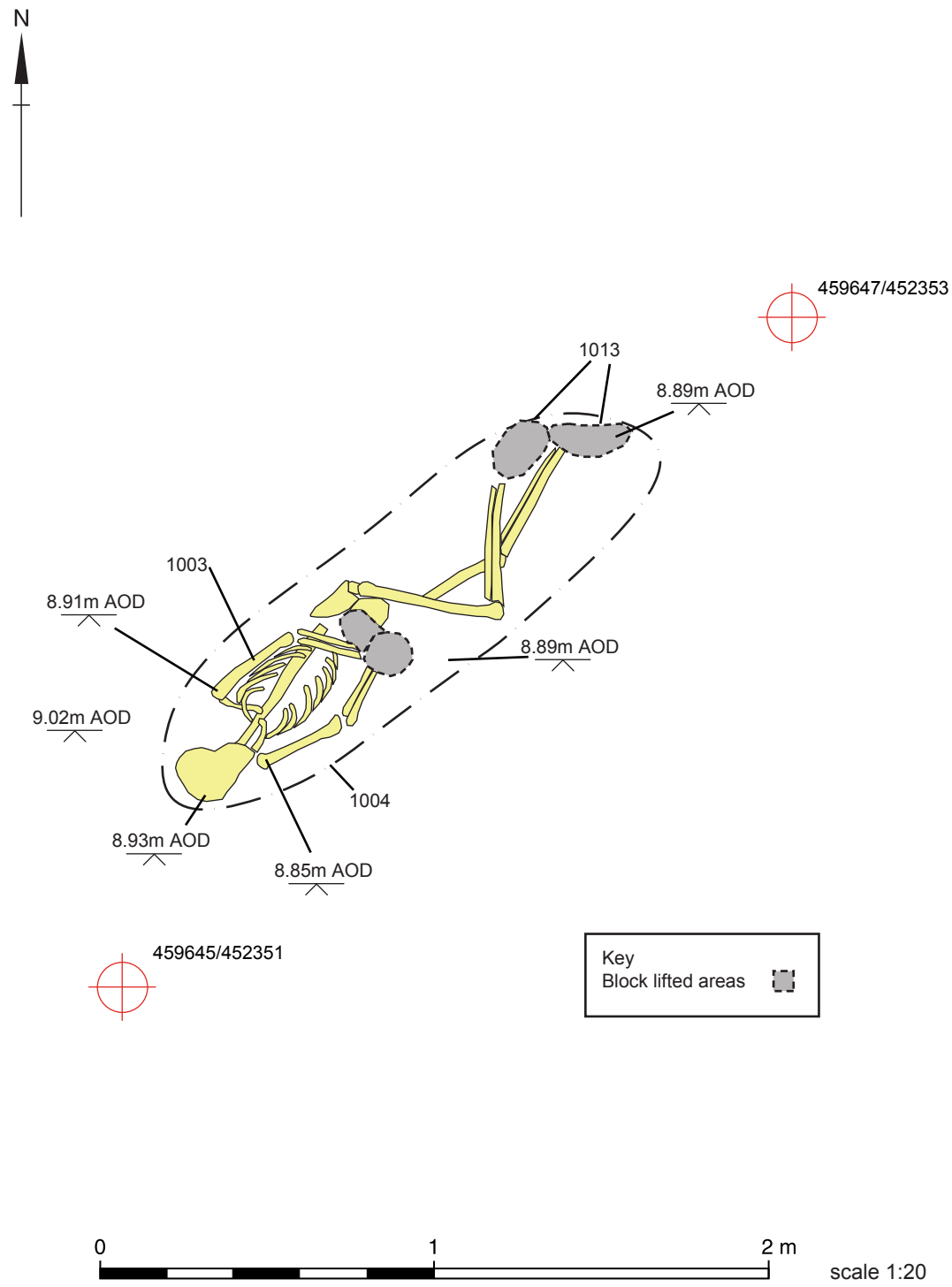


Fig. 3 Plan of skeleton Context 1003

Fig. 4 Plan of natural Context 1012, Group 1 and Group 4

Fig. 5 Plan of terracing/levelling Context 1021 and Group 2

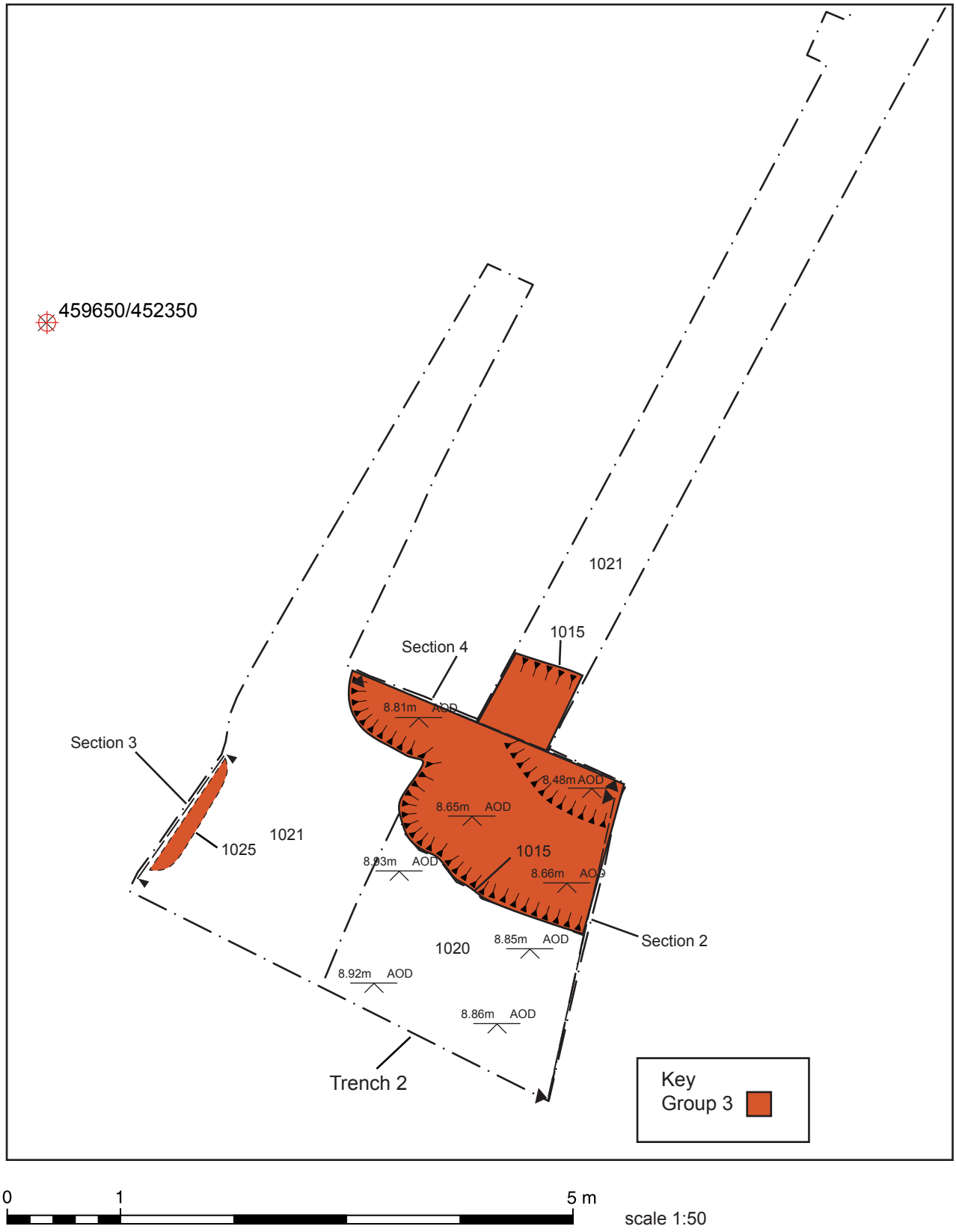
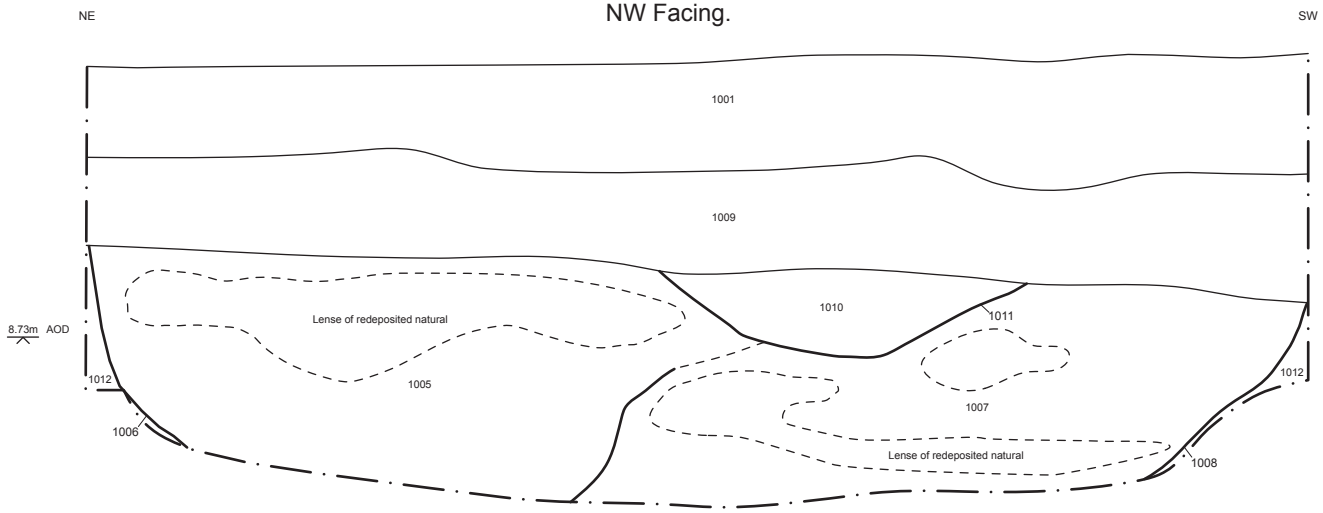


Fig. 6 Plan of terracing/levelling Context 1021, Context 1020 and Group 3

Section 1.

NW Facing.



Section 2.

NW Facing.

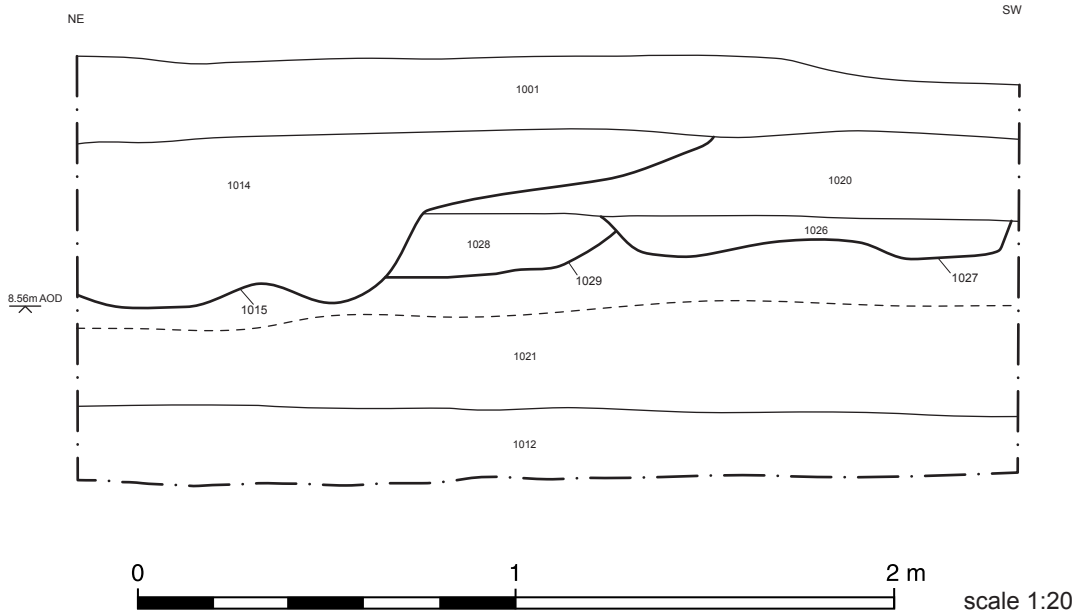
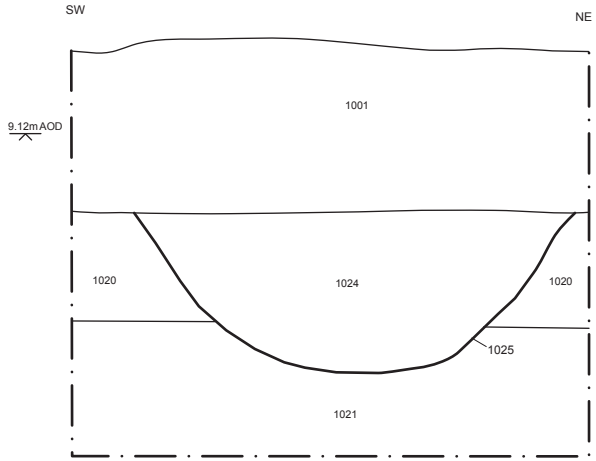


Fig. 7 Section 1 and 2

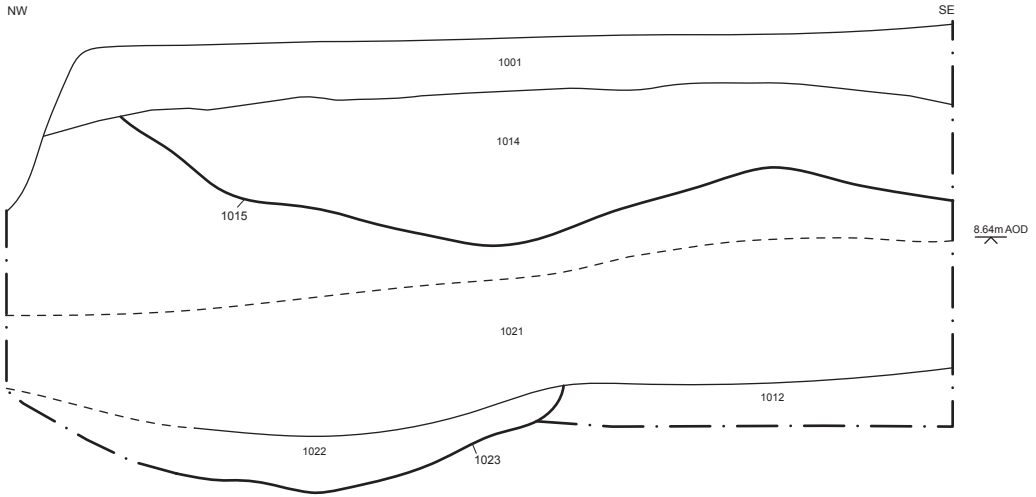
Section 3

South-East Facing.



Section 4.

South West Facing.



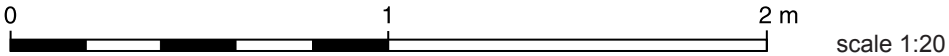


Fig. 8 Section 3 and 4

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