Land to the North of 25 & 27 Welton Road
Brough
East Yorkshire
SE9393 2700

Archaeological Observation, Investigation And Recording

Authorised by ……

Date:……

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Archaeological Observation, Investigation and Recording Brief Report

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Archaeological Observation, Investigation and Recording Brief Report

Non-technical Summary

An Archaeological Observation, Investigation and Recording Brief was conducted by MAP Archaeological Consultancy Ltd. at land to the north of 25 and 27 Welton Road, Brough, East Yorkshire during August 2006. The work involved monitoring the groundworks associated with the construction of a detached bungalow and garage.

Archaeological features of a Romano-British date were identified and included linear features, pits and three graves. Finds included Romano-British pottery dating from the 1st to 3rd centuries.

1. Introduction

1.1 This report sets out the results of an Archaeological Observation, Investigation and Recording Brief that was conducted during August 2006 by MAP Archaeological Consultancy Ltd. on a plot of land to the north of 25 and 27 Welton Road Brough, East Riding of Yorkshire (SE 9393 2700). The Watching Brief was commissioned by Mike Swanborough. The work was undertaken to in order to fulfil an archaeological condition attached to a Planning Application Consent (Ref. No. DC/05/05394/PLF/WESTES), SMR Casework No.SMR/ PA/CONS/12539.

1.2 The Archaeological Observation, Investigation and Recording Brief was designed to provide an appropriate level of recording for archaeological remains, deposits or finds that might be affected by the development, following the archaeology policy issued by the Secretary of State for the

Environment contained in *Planning Policy Guidance 16 'Archaeology and Planning' (PPG 16)*.

1.3 The site code for the project was MAP 02-08-06.

1.4 All work was funded by Mr and Mrs Blacker.

1.5 All maps within this report have been produced from the Ordnance Survey with the permission of the Controller of Her Majesty's Stationery Office, Crown Copyright, Licence No. AL 50453A.

2. Site Description

2.1 The site lies approximately 35m to the north of Welton Road, Brough, East Yorkshire, at SE 9393 2700. The site is accessed from Welton Road via a lane (Brentwood Close) and is situated immediately to the north of nos. 25 and 27 Welton Road. It is bounded on all sides by dwellings and gardens (Figs 1 & 2).

2.2 The site lies on soils of the Landbeach association. These are permeable, calcareous fine loamy soils affected by groundwater over a geology of chalky gravel (Mackney 1984).

3. Historical and Archaeological Background

3.1 The development area is located immediately to the north of the site of the walled Roman town of Petuaria, a Scheduled Ancient Monument, which covers an area of 1.8ha to the south of Welton Road. Petuaria developed as a civilian settlement or *vicus* that served an auxiliary fort that was established in the first century AD. During the 1st and second centuries the fort developed as a naval and supply base, with the early earth ramparts being replaced by a stone perimeter wall that also enclosed the civilian town. Major development occurred in the 3rd and 4th centuries, during which the town became the

civilian capital of the Parisi. The decline of the fort took place in the latter part of the 4th century, the town being abandoned circa AD 370.

3.2 A series of archaeological excavations were undertaken within the fort from 1933 to 1937, directed by Dr Philip Corder and the Rev. Thomas Romans. J.S. Wacher conducted further excavations for the Ministry of Public Buildings and Works between 1958 and 1961. The main areas examined during 1958-1961 campaign were at Brough House, in the north-western part of the fort, at Manor House in the south-western part of the fort, and at Bozzes Field in the central and eastern side of the fort. Extensive Romano-British remains, dating from the 1st to the 4th centuries, were identified (Wacher 1969). A sewer trench that ran the full length of Station Road and the High Street was also excavated in 1961 and produced more archaeological finds associated with the fort.

3.3 York Archaeological Trust undertook excavations to the east of the fort at Welton Road in 1994 and identified part of a Romano-British settlement that included field systems and associated structures. Other features included a corn dryer, graves, cremations and animal burials. A large finds assemblage was also recovered, including pottery wasters indicative of a possible pottery production site in the area (http://intarch.ac.uk/journal/issue9/brough).

3.4 The Specification (Appendix 9) states that a watching brief at 12 Cave Road by Northern Archaeological Associates in 1997, to the north of the Proposed Development Area uncovered a 2nd century pit and a 4th century stone building and the remains of a infant burial.

4. Aims and Objectives

4.1 The aims of the Archaeological Observation, Investigation and Recording Brief were to record and recover archaeological remains, which could be affected by proposed development, and to prepare a report summarising the results of the work.

5. Methodology

5.1 The monitored groundworks consisted of the excavation of foundation trenches, and landscaping associated with the proposed housing development. The initial work involved the stripping of topsoil within the footprint of the house and garage plot (Pl. 1) following which the foundation trenches were excavated.

5.2 All excavations were undertaken by a back acting mechanical excavator, operating under archaeological supervision.

5.3 All work was carried out in line with the Institute of Field Archaeologists Code of Conduct (IFA 1998).

5.4 All deposits were recorded according to correct principles of stratigraphic excavation on MAP's *pro forma* context sheets, which are compatible with the MoLAS recording system.

5.5 A photographic record of the monitored groundworks was maintained throughout the recording brief on a digital camera and a drawn and written record was made of all archaeological deposits and features encountered.

6. Results (Figs. 3, 4 and 5)

6.1 The monitored groundworks consisted of the excavation of two sets of foundation trenches, one for the house and one for its associated garage. The house plot covered an area of 14.5m x 9.6m and was located in the northern part of the site, whilst the garage plot covered an area of 6.5m x 4.5m and was located in the south-eastern corner of the site (Fig. 3). The individual foundation trenches were 0.70m wide and between 0.70m and 1.5m deep (Pl. 2).

6.2 A number of archaeological features were identified and investigated during the Watching Brief, the most interesting of which proved to be three inhumation burials. The burials and other features are discussed below.

6.3 Burials

6.3.1 The first of the burials was located in the south-western corner of the house plot, and was contained within a 1.1m long, 0.5m wide, 0.25m deep (at 6.63m AOD) grave cut (context 1006). Grave Cut 1006 had a sub-rectangular plan and a steep-sided, flat-based profile. The northern part of the feature was truncated during the excavation of the foundation trench, whilst the remainder was recorded and excavated by hand (Pl. 4). Grave Cut 1006 was excavated into the underlying natural deposits and contained an adult skeleton (context 1005, Pl. 3). Skeleton 1005 was substantially complete, provbably and east-west alignment, and although the skull and parts of the upper body were disturbed during the foundation excavation, the majority of the disturbed bones were retrieved from the spoil. Skeleton 1005 lay in a prone position, face down with the head towards the east, at a height of 6.78m AOD. The legs were sharply flexed at the knees, with the feet lying on the left side of the pelvis. The upper part of the right arm was outstretched from the body, the lower arm tightly flexed at the elbow, with the upper body resting on the forearm and hand. The grave was backfilled by a silty sand deposit (context 1004) that contained sherds of Romano-British pottery (including East Yorkshire Greyware, Samian ware and Rusticated ware), animal bone and oyster shell (Appendix 2).

6.3.2 A second grave (context 1010) was located close to the north-eastern corner of the house plot (Fig. 3). Grave Cut 1010 was partially exposed in the base of the foundation trench, was situated at a height of 6.93m AOD and was excavated into underlying natural deposits. The feature had a width of 0.40m, was 0.18m deep and exhibited a concave, bowl-shaped profile. It contained the fragmentary skeleton of an infant (context 1009, Pl. 4). Skeleton 1009 consisted of skull fragments, vertebrae and a leg bone, but was too fragmentary to allow the position or orientation of the body to be discerned. The grave was backfilled by a deposit of silty sand (context 1008) that did not contain any artefacts.

6.3.3 The third grave (context 2006) was situated in the northern foundation trench of the garage plot, at a height of 6.87m AOD. The trench was widened to allow the full excavation and recording of the feature. Grave Cut 2006 was of sub-rectangular plan, of concave profile and was 2.1m long, 1m wide and 0.10m deep. The grave contained an adult skeleton (context 2005), aligned east-west, and a disturbed juvenile skeleton (context 2007). Skeleton 2005 lay in a supine position on its back. The head was towards the west, with the arms flexed across the pelvis and abdomen, the left arm positioned slightly lower than the right. Quantities of further human bone included an intact juvenile skull, together with unfused long bones (context 2007) were originally thought to represent disarticulated fragments, and were found in Grave Cut 2006. This skeleton (context 2007) had been badly disturbed during the excavation of the foundation trench. The skull of Skeleton 2007 rested upon the left upper thigh of Skeleton 2005 (Pl. 5). However, the disturbance to Skeleton 2007 made it impossible to discern whether this apparent physical relationship represented two inter-cutting burials or a double internment within Grave 2006. The grave (context 2006) was backfilled by a deposit of sandy clay (context 2004) which contained Romano-British pottery (including Samian ware, East Yorkshire Greyware, Imitation Black Burnished ware and Calcite Gritted ware: Appendix 2).

6.4 Other Features

6.4.1 Five further features were excavated. A small feature (context 1011) was situated 0.40m to the north of Grave Cut 1010 and was exposed in the base of the house foundation trench. Cut 1011 extended westwards into the trench baulk and appeared to be either a pit cut or the eastern terminal of a linear gully. The exposed part of the feature was 0.60m long, 0.60m wide and 0.20m deep (6.69m AOD), with a concave, bowl-shaped profile. It contained a deposit of silty sand, from which two sherds of Romano-British pottery were recovered (context 1003, Appendix 2).

6.4.2 A second small feature was located towards the north-eastern corner of the house footings (context 1013). Cut 1013 had a rounded terminal and was 0.6m long, 0.6m wide and 0.4m deep (6.40m AOD), with a steep-sided,

concave-based profile. The feature extended eastwards into the trench baulk and was filled by a sandy deposit (context 1012). Cut 1013 appeared to be on the same alignment as Cut 1011 and this, together with the similar morphology and dimensions of the features, suggested that they may have in fact represented the western and eastern ends of the same linear feature.

6.4.3 Situated immediately to the west of Cut 1013 was a north to south-aligned linear feature that was partially exposed in the western house foundation trench (context 1019). Cut 1019 ran the length of the trench, with an exposed width of 0.5m, a depth of 0.4m (6.58m AOD), and a steep-sided, concave-based profile. The sandy clay fill (context 1018) contained Romano-British pottery sherds, animal bone, oyster shell and a fragment of a whetstone (Appendix 2).

6.4.4 Another linear feature was exposed within the southern foundation trench of the garage (context 2008). Cut 2008 was aligned east to west, with an exposed width of 0.70m, a depth of 0.45m (6.50m AOD) and a steep-sided, concave-based profile. It was filled by deposit of sandy clay (context 2003) that included two sherds of Roman pottery (East Yorkshire Greyware: Appendix 2).

6.4.5 The final feature encountered on the site was a structure composed from stone, clay and a concrete-like deposit (context 1007, Pl. 6). Structure 1007 was situated at a height of 6.89m AOD and was formed by two parallel east to west-aligned sets of stonework that were spaced 0.70m apart (contexts 1016 and 1017). The space between Contexts 1016 and 1017 was filled by a 0.10m deep, hard, concrete-like deposit that contained gravel and other obvious inclusions (context 1015). Deposit 1015 was sampled aand was identified as modern by Sandra Garside-Neville (Brick and Tile Services pers. comm.). Deposit 1016 was partially sealed by a deposit of red clay (context 1014) that appeared to be part of the structure.

7. Discussion and Conclusion

7.1 The monitored groundworks uncovered a series of highly significant archaeological features, which appeared to date to the Romano-British period.

7.2 Activity on the site consisted of four burials, together with a series of associated features of broadly contemporary date. Since the site lies immediately to the north of the walls of the Roman fort (Fig. 2), close to the line of the former road running from the northern gate of the fort to Malton, there appears to be little doubt that the burials represent part of an extra-mural Roman cemetery.

7.3 Given that the site represents part of a Roman cemetery, the other features located in association with the burials are unlikely to represent domestic occupation. In this respect, Ditches 2008, 1019 and probable Ditch 1011/1013 are interesting in that they appear to define a rectangular area measuring at least 9m by 18m. Since the burials all lie within the defined area, it may be that the ditches represent boundaries within the cemetery, perhaps marking out a family plot. If one accepts this interpretation, then a case can be made that Structure 1007 represents the base or foundation of a small shrine or altar. Two burials were of an east-west alignment. Inhumation was the normal practice in the late third century AD, and the eat west alignment suggests a 3rd to 4th century date.

7.4 The remains of four individuals, ranging in age from an infant to mature adults, were recovered during the excavation. Osteological analysis revealed the mature adult male showing signs of trauma (fractures to clavicle, ribs and spine) and disease (including degenerative joint disease, osteoarthritis and Schmorl's nopes in the spine) and the juvenile showed lines on the teeth suggesting physical stress from malnutrition. The double burial might suggest that family groupings did exist in this cemetery (York Osteoarchaeology Ltd.: Appendix 6).

7.5 The pottery evidence from the site was somewhat inconclusive. The Pottery was assessed for spot dating with the fabrics and forms identified. The majority of the pottery assemblage is heavily abraded and represents residual material, disturbed by the cutting of the graves. Only two sherds of pottery are from the same vessel. All the rim shreds represent different forms and are consistent with a late 1st to 3rd century A.D. date.

7.6 Whilst some of the grave fills, notably Deposit 2004, contained abraded sherds that may have been disturbed from earlier domestic contexts. Other deposits, such as Deposit 1004, contained pottery sherds from vessel types that are known to appear in burial contexts as grave goods. In the case of the current site, the limited number of sherds of this type, together with their abraded appearance, suggested that they may have been disturbed from earlier burial, rather than representing deliberately-deposited material. The available evidence, the pottery and the alignment of the skeletons, suggests the burials were contemporary with the floruit of the town in the 3rd/4th centuries.

7.7 Despite the relatively limited extent of the monitored groundworks, the Watching Brief encountered a number of significant features that highlight the archaeological potential of this area of Brough. Significant archaeology was encountered at a height of 6.89m AOD, some 0.70m below existing ground level. This fact, together with the likelihood that further Romano-British burials may be encountered in the vicinity of the site, should be taken into account when assessing the archaeological impact of future developments in this part of the town.

8. Bibliography

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Wacher, J.S. 1969 — Excavations at Brough on Humber 1958-1961. Reports of the Research Committee of The Society of Antiquaries of London No. XXV. W.S. Maney and Son Ltd. Leeds.

Hunter-Mann, K. 2000 — Excavations on a Roman Extra-Mural Site at Brough-on-Humber, East Riding of Yorkshire, UK
HTTP://INTARCH.AC.UK/JOURNAL/ISSUE9/BROUGH_TOC.HTML

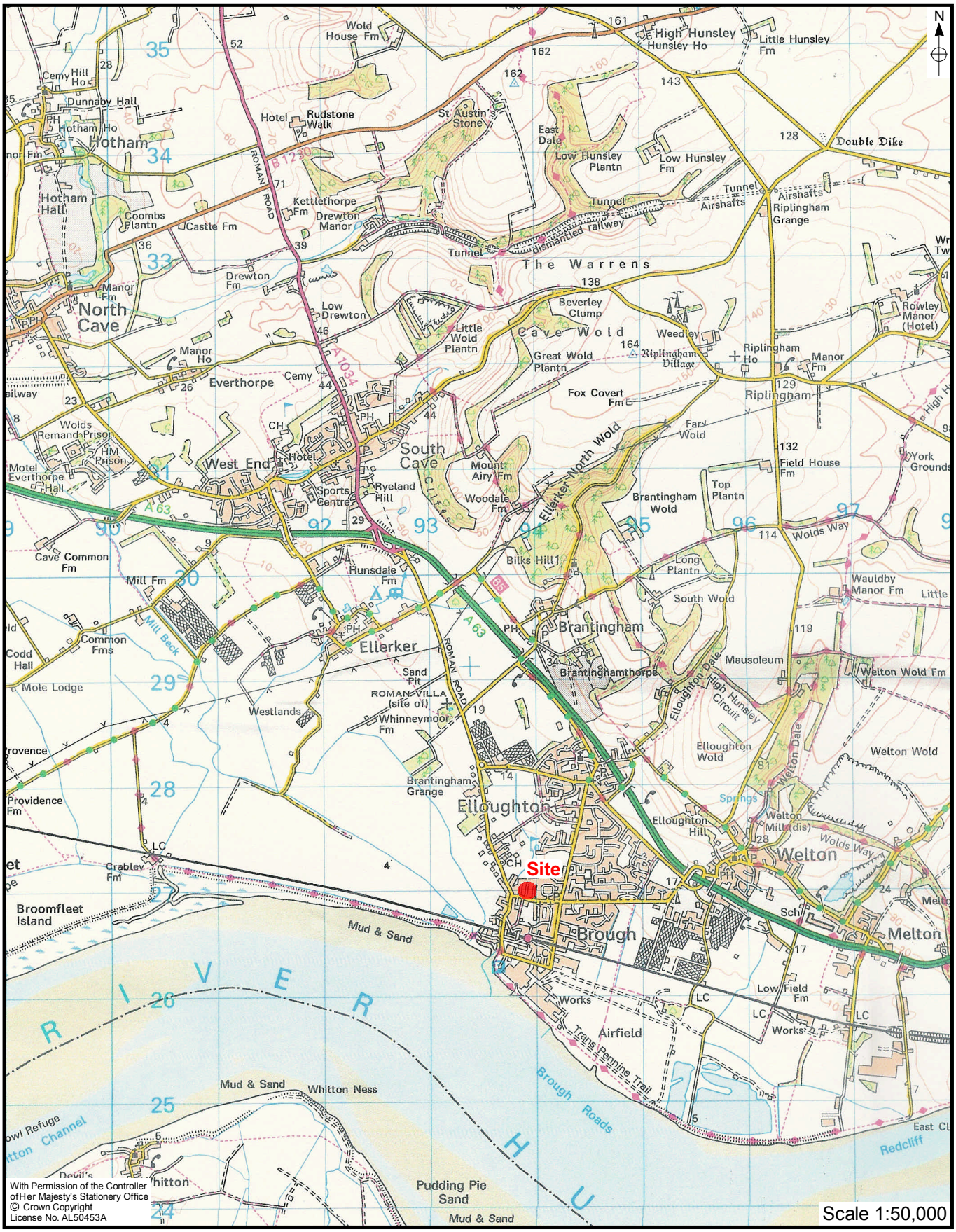

Figure 1. Site Location

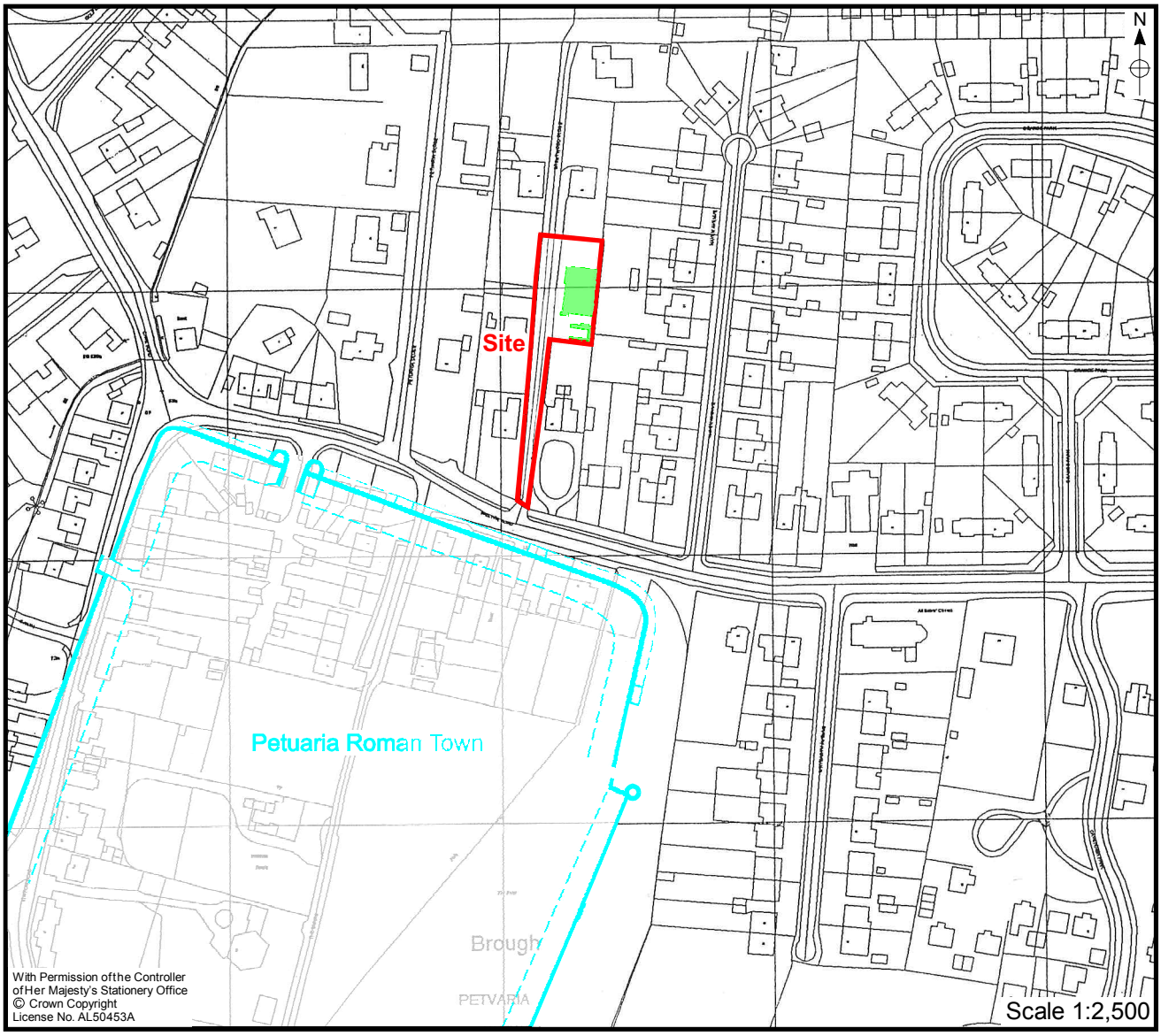

Figure 2. Area of Development in Relation to the RomanTown.

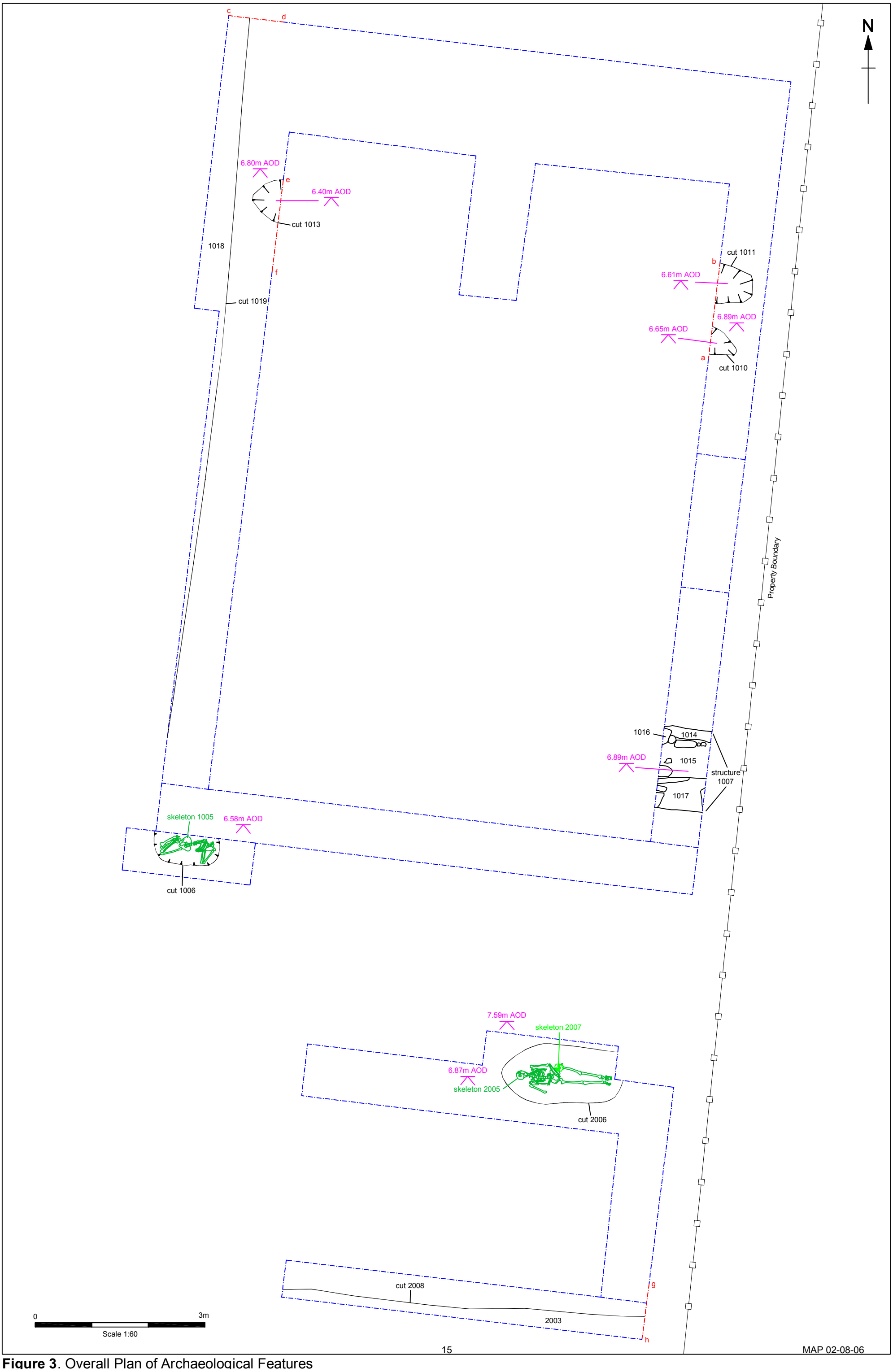

Figure 3. Overall Plan of Archaeological Features

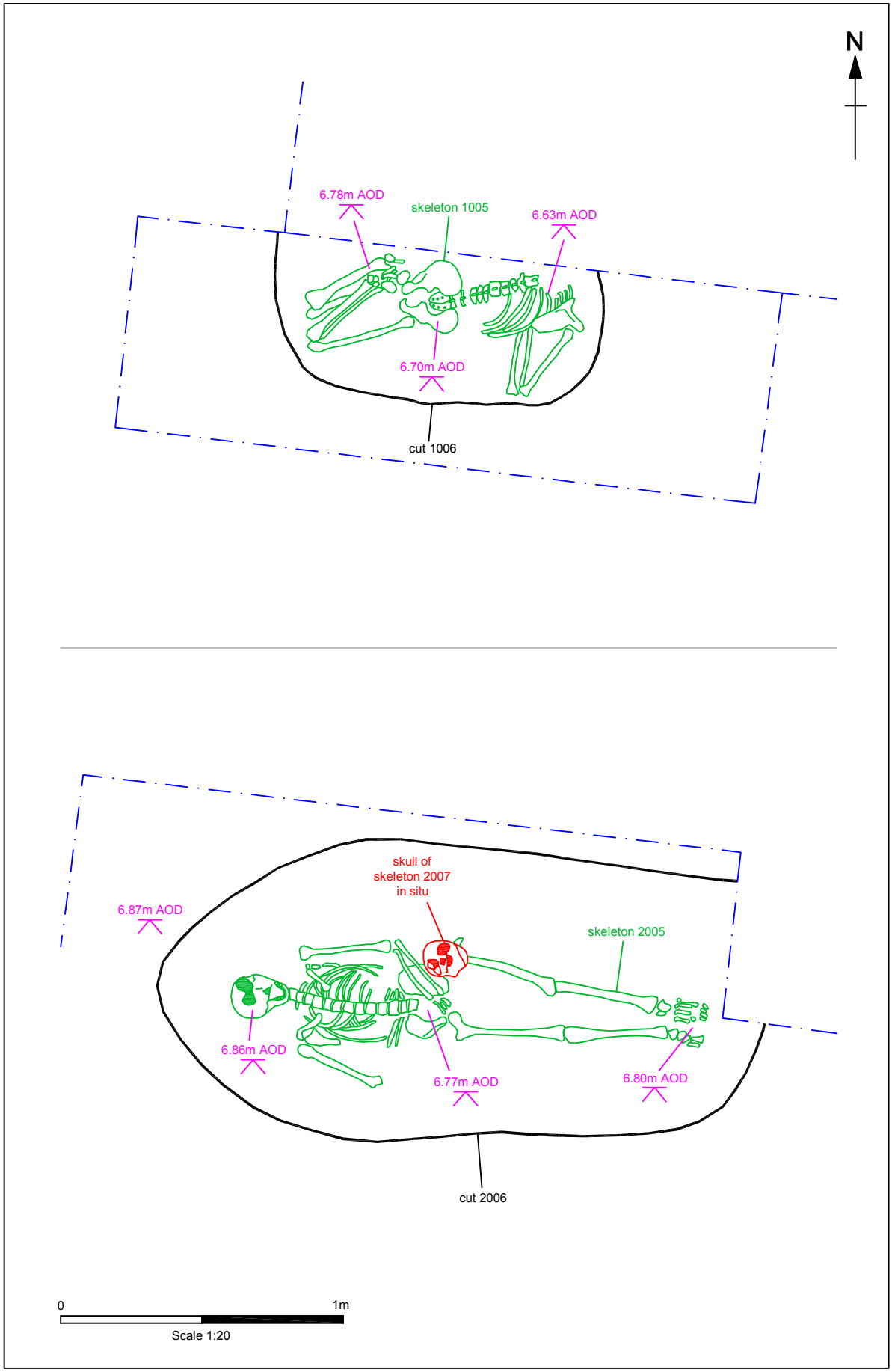

Figure 4. Plan of Inhumations

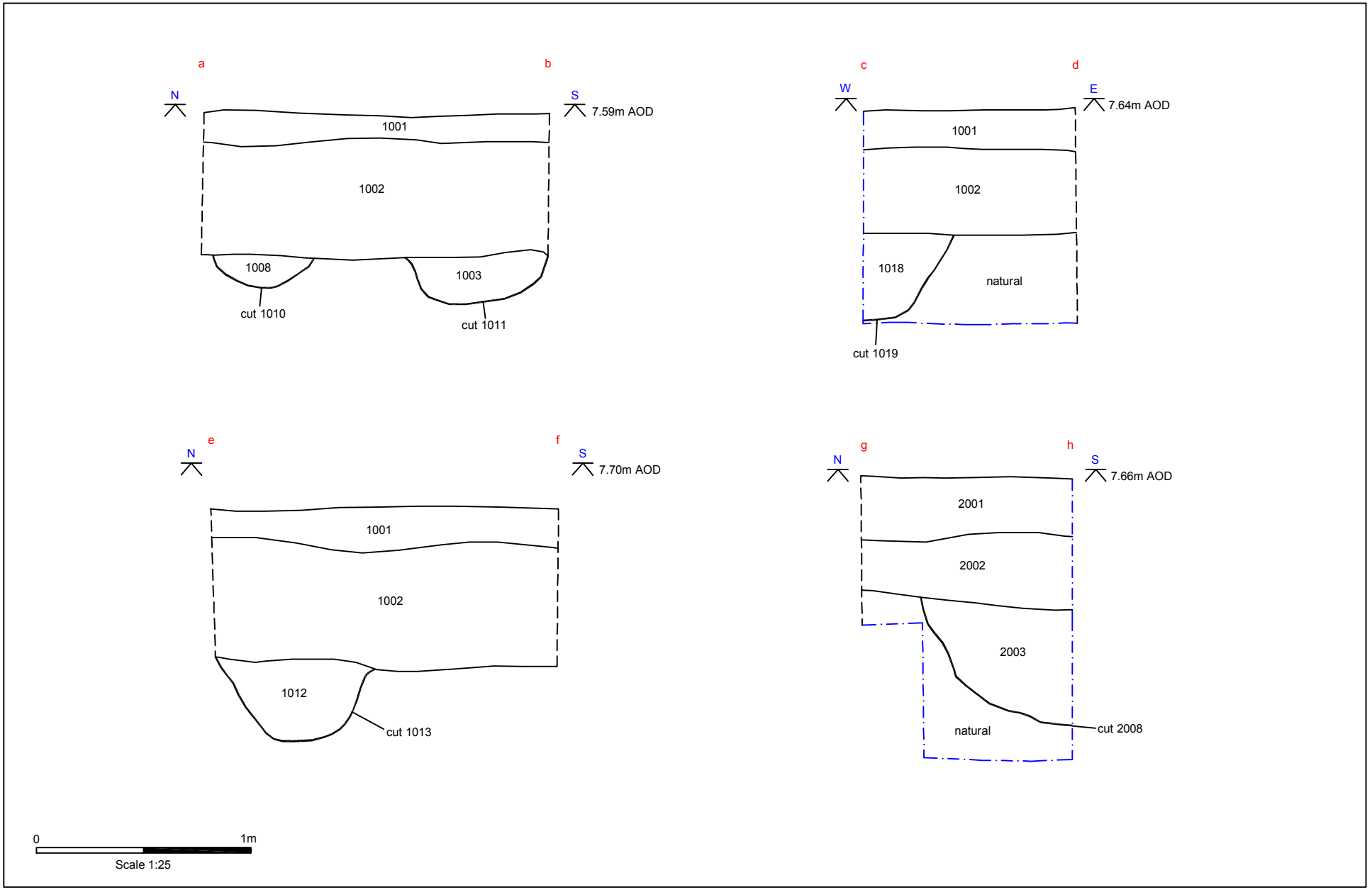

Figure 5. Sections

Plate 1. View of Site after Topsoil Strip. Facing South West

Plate 2. Overall View of Foundation Trenches. Facing South

Plate 3. Skeleton 1005. Facing North

Plate 4. Skeleton 1009. Facing North

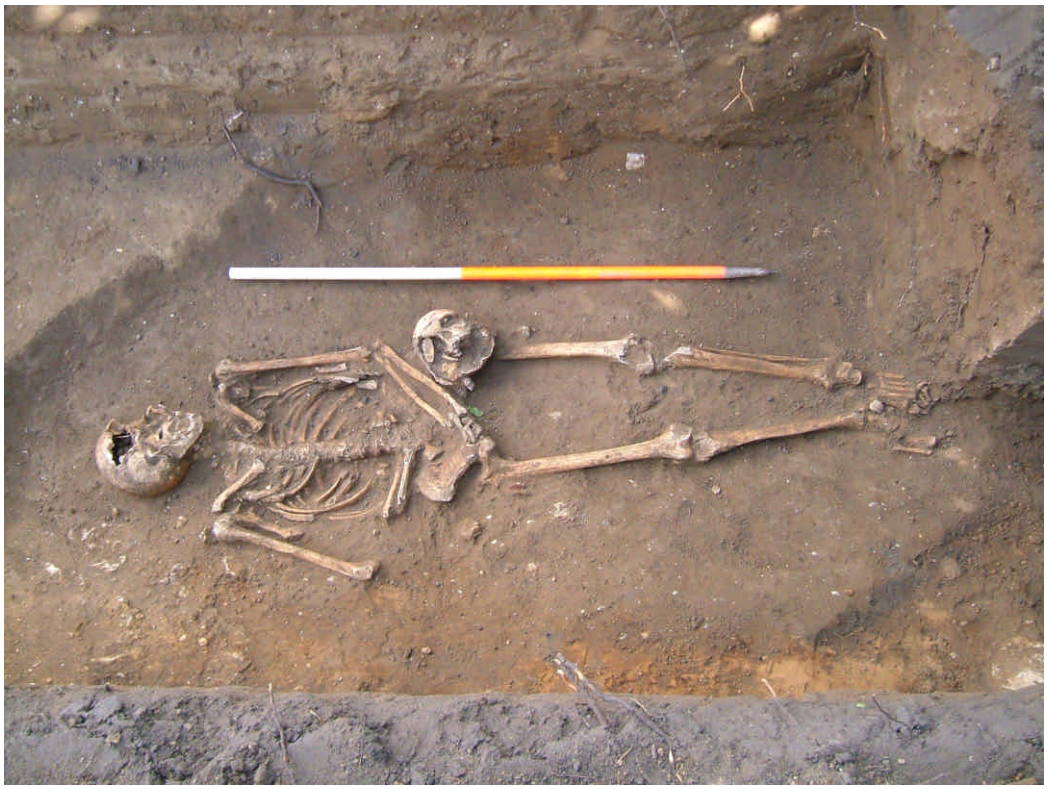

Plate 5. Skeleton 2005. Facing North

Plate 6. Structure 1007. Facing North

APPENDIX 1

Land to the North of 25 and 27 Welton Road, Brough 02.08.06

Context Listing

Context	Description	
Trench 1		
1001	Deposit	10YR 5/3; silty loam, topsoil
1002	Deposit	10YR 6/3, silty sandy clay, subsoil
1003	Deposit	10YR 6/3, silty sand; fill of Cut 1011
1004	Deposit	10YR 4/3, silty sand, fill of Cut 1006
1005	Skeleton	Inhumation within Cut 1006
1006	Cut	Grave cut, filled by Deposit 1004, Skeleton 1005
1007	Structure	Stone structure
1008	Deposit	10YR 6/3, silty sand, fill of Cut 1010
1009	Skeleton	Inhumation within Cut 1010
1010	Cut	Grave cut, filled by Deposit 1008, Skeleton 1009
1011	Cut	Pit cut, filled by Deposit 1003
1012	Deposit	10YR 5/3, silty sand, fill of Cut 1013
1013	Cut	Pit cut, filled by Deposit 1012
1014	Deposit	10YR 4/3, clay, bonding of Structure 1007
1015	Deposit	10YR 7/1, concrete, bonding material of Structure 1007
1016	Deposit	Stone rubble, part of Structure 1007
1017	Deposit	Stone rubble, part of Structure 1007
1018	Deposit	10YR 5/2, silty sand, fill of Cut 1019
1019	Cut	Ditch, filled by Deposit 1018
Trench 2		
2001	Deposit	10YR 5/3; silty loam, topsoil
2002	Deposit	10YR 6/3, silty sandy clay, subsoil
2003	Deposit	10YR 5/2, silty sand, fill of Cut 2008
2004	Deposit	10YR 4/3, silty sand, fill of Cut 2006
2005	Skeleton	Inhumation within Cut 2006
2006	Cut	Grave cut, filled by Deposit 2004, Skeleton 2005
2007	Skeleton	Inhumation
2008	Cut	Ditch cut, filled by Deposit 2003

APPENDIX 2

Finds Catalogue

25-27 Welton Road, Brough 02.08.06

Context	Type	S.Find	Total	Description	Weight (g)	Fabric Type	Vessel Type	Spot date
1002	Pottery		16	4 rim sherds	46	East Yorkshire grey ware	1 lid seated jar	2nd-3rd century AD
						East Yorkshire grey ware	1 upright jar	
						Calcitte gritted coarse ware	1 upright jar	
						East Yorkshire grey ware	1 pie dish	
				9 body sherds	550	East Yorkshire grey ware	6 jars	
						Ebor ware Type 1 & 2	2 ?	
				3 base sherds	195	East Yorkshire grey ware	4 jars	
	CBM		1	fragment	21			
	Shell		1	Oyster	51			
1003	Pottery		2	1 rim sherd	12	Lower Rhineland WRWP2	Beaker	2nd century AD
				1 body sherd	270	Peacock & Williams Class 7	Amphora	
1004	Pottery		13	2 rim sherds	82	Samian - Southern Gaul	1	1st-3rd century AD
						East Yorkshire grey ware	1 pie dish	
				9 body sherds	119	Rusticated	1 jar	
						Samian - Central Gaul	1	
						East Yorkshire grey ware	6 jars	
						?	1 poppy headed jar	
				2 base sherds	36	Samian - Central Gaul	1	
						Coarse ware	1	

	Animal Bone		3	fragments	29			
	Shell		4	Oyster shells	82			
1012	Iron	1	31	Coffin fitting				
	Iron	2	29	Coffin fitting				
	Iron	3	29	Pipe fragment				
1013	Cement				3200			
1018	Pottery		13	3 rim sherds	120	East Yorkshire grey ware	1 inverted jar	2nd century AD
						East Yorkshire grey ware	1 seated lid jar	
						East Yorkshire grey ware	1 pie dish	
				5 body sherds	90	East Yorkshire grey ware	1 jar	
						Calcitte gritted coarse ware	1 jar	
						Coarse ware	1 jar	
						Ebor ware	2	
				4 base sherds	188	East Yorkshire grey ware	4 jars	
						Calcitte gritted coarse ware	1 jar	
	Animal Bone		4	fragments	82			
	Shell		4	Oyster	53			
	Stone	4	1	Whetstone fragment	93			
2003	Pottery		3	1 rim sherd	33	East Yorkshire grey ware	1 pie dish	1st-3rd century AD
				2 body sherds	13	East Yorkshire grey ware		
2004	Pottery		50	4 rim sherds	46	East Yorkshire grey ware	4 jars	1st-3rd century AD
				40 body sherds	550	Samian - very abraded	1	
						Peacock & Williams Class 7	Amphora	
						Imitation Black Burnished	1	

		Calcitte gritted coarse ware	4 jars
		East Yorkshire grey ware	32
		?	1
7 base sherds	195	East Yorkshire grey ware	5
		Coarse ware	1
		Ebor - white slipped	1

The majority of the pottery assemblage is heavily abraded and represents residual material, disturbed by the cutting of the graves.
Only two sherds of pot are from the same vessel, all the rim shreds represent different forms and are consistent with a late 1st to 3rd century A.D. date.

APPENDIX 3

Land to the North of 25 and 27 Welton Road, Brough 02.08.06

Drawing Archive Listing

Drawing	Scale	Type	Description
1	1:10	Plan	Inhumation 1005
2	1:10	Plan	Grave cut 1006
3	1:10	Plan	Inhumation 2005
4	1:20	Plan	Stone structure 1007
5	1:100	Plan	Overall plan of watching brief area
6	1:20	Section	East facing section showing 1010 and 1011
7	1:20	Section	West facing section showing 1013
8	1:20	Section	West facing section showing 2007
9	1:20	Section	South facing section showing 1019

APPENDIX 4

Land to the North of 25 and 27 Welton Road, Brough 02.08.06

Photographic Archive Listing

Digital Camera

Frame	Description	Scale	Facing
1	View of house stripping	N/A	North east
2	View of house stripping	N/A	North west
3	Overall view of site	N/A	South west
4	Excavations of house footings	N/A	North
5	Excavations of house footings	N/A	North west
6	View of structure 1007	1x1m	East
7	View of structure 1007	1x1m	North
8	View of structure 1007	1x1m	South
9	View of southern house plot	N/A	South
10	View of western foundation trench	N/A	South
11	View of northern foundation trench	N/A	West
12	Overall post-ex view of site	N/A	West
13	Overall post-ex view of site	N/A	South
14	View of foundation trench	2x1m	South
15	Inhumation 1005	1x1m	North
16	Inhumation 1005	1x1m	South
17	Inhumation 1005	1x1m	South
18	Inhumation 1005	1x1m	South
19	Inhumation 1005	1x1m	South
20	Inhumation 1005	1x1m	South
21	Inhumation 1005	1x1m	South
22	Inhumation 1005	1x1m	South
23	View of grave cut 1006	1x1m	North
24	View of grave cut 1006	1x1m	South
25	View of grave cut 1006	1x1m	West
26	Inhumation 2005	2x1m	South
27	Inhumation 2005	2x1m	South
28	Inhumation 2005	2x1m	West
29	Inhumation 2005	2x1m	West
30	Inhumation 2005	2x1m	East
31	Inhumation 2005	2x1m	North
32	Inhumation 2005	2x1m	North
33	Inhumation 2005	2x1m	North
34	Inhumation 2005	2x1m	North
35	Inhumation 2005	2x1m	West
36	Inhumation 2005	2x1m	West
37	Inhumation 2005	2x1m	West
38	Inhumation 2005	2x1m	West
39	Inhumation 2005	2x1m	West
40	Infant burial 1009 and Pit 1011	1x1m	West
41	Infant burial 1009	N/A	North
42	Infant burial 1009	N/A	North
43	View of structure 1007	1x1m	West
44	View of structure 1007	1x1m	East
45	Southern excavations of garage plot	2x1m	East
46	Northern excavations of garage plot	2x1m	South east

APPENDIX 5

Land to the North of 25 and 27 Welton Road, Brough 02.08.06

Sample Listing

No.	Context	Description	Type	No. of tubs
1	1015	Bonding material	GBA	1

APPENDIX 6

Osteological Analysis
Land North of 25 & 27 Welton Road
Brough
East Yorkshire

Site Code: 02.08.06
NGR: SE 9393 2700

Report No 1807
October 2007

Prepared for

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Summary

York Osteoarchaeology Ltd was commissioned by MAP Archaeological Consultancy Ltd to carry out the osteological analysis of four skeletons. The skeletal remains were recovered during archaeological investigations in September 2006 on land north of 25 and 27 Welton Road, Brough, East Yorkshire (NGR SE 9393 2700) during the excavation of foundation trenches for a bungalow and garage.

Based on pottery recovered from the graves, the skeletons are thought to date to the Romano-British period. One skeleton was possibly buried in a prone position, while another skeleton was buried supine and extended. Two of the burials were too disturbed for their position and orientation to be ascertained.

Osteological analysis revealed that the cemetery contained a mature male adult, a young adult, who was probably male, a five to six year old juvenile and a neonate. The mature adult male was riddled with pathology: he had osteoarthritis, degenerative joint disease, inflammation of the shins, fractured ribs and a fractured collar bone, a small benign tumour and a blood clot that had become bony. Pronounced muscle attachment sites suggested a life of rigorous physical activity. The younger male showed evidence for congenital anomalies of the spine that might have caused a slight limp. Both males had lesions in the eye orbits indicative of iron deficiency anaemia during childhood.

The juvenile showed lines on the teeth, suggesting that it had suffered from physical stress, caused by malnutrition or disease in the last two or three years of its life.

Acknowledgements

York Osteoarchaeology Ltd would like to thank Paula Ware and Sophie Langford of MAP Archaeological Consultancy Ltd for their help and support.

1.0 INTRODUCTION

In October 2007 York Osteoarchaeology Ltd was commissioned by MAP Archaeological Consultancy Ltd to carry out the osteological analysis of four skeletons. The skeletal remains had been excavated in September 2006 during an archaeological investigation on land north of 25 and 27 Welton Road, Brough, East Yorkshire (NGR SE 9393 2700) during the foundation excavations for a house and garage.

The skeletons were thought to date to the Romano-British period. They were found close to a Roman road immediately to the north of the Roman fort of Petuaria and 2km to the south of a Roman villa at Brough.

One of the adults was buried in a prone position, with the legs bent upwards at the knees. This individual lay with the head to the east and the feet to the west. The second adult lay in a supine extended position, with the head to the west and the feet to the east. The positions of two children could not be identified, as these were disturbed. However, it is likely that Skeleton 2007 shared a grave with one of the adults, Skeleton 2005. No grave goods were recovered with any of the burials, but residual pottery sherds and animal bones were found in the grave fills.

1.1 AIMS AND OBJECTIVES

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

1.2 METHODOLOGY

The skeletons were analysed in detail, assessing the preservation and completeness, calculating the minimum number of individuals present as well as determining the age, sex and stature of the individuals (Appendix A). All pathological lesions were recorded and described.

2.0 OSTEOLOGICAL ANALYSIS

Osteological analysis is concerned with the determination of the identity of a skeleton, by estimating its age, sex and stature. Robusticity and non-metric traits can provide further information on the appearance and familial affinities of the individual studied. This information is essential in order to determine the prevalence of disease types and age-related changes. It is crucial for identifying gender dimorphism in occupation, lifestyle and diet, as well as the role of different age groups in society.

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 was assessed using a grading system of five categories: very poor, poor, moderate, good and excellent. Excellent preservation implied no bone surface erosion and very few or no breaks, whereas very poor preservation indicated complete or almost complete loss of the bone surface due to erosion and severe fragmentation.

Skeletons 1009 and 2005 were well-preserved, with slight surface erosion and minimal fragmentation (Table 1). Skeleton 1005 was in an excellent condition, but Skeleton 2007 had suffered slightly more damage, with severe erosion of the bone surface and greater fragmentation.

Table 1 Summary of osteological and palaeopathological results

Skeleton No	Preservation	Completeness	Age	Sex	Stature (cm)	Pathology
1005	Excellent	80%	Young adult	Male?	-	Spinal congenital anomaly, sacral congenital anomaly, Schmorl's nodes, DJD in hips, bone excavations, *coxa vara, cribra orbitalia*
1009	Good	30%	Neonate	-	-	-
2005	Good	90%	46+	Male		Spinal DJD and OA, Schmorl's nodes, DJD in shoulders, hips, OA in left hip and proximal femur, *enthesopathies*, bone excavations, *coxa vara*, periosteal inflammatory lesions on tibiae, ossified haematoma on left femur, *cribra orbitalia*, fractured left clavicle, 2 fractured ribs, button osteoma
2007	Moderate	55%	5-6 years	-	-	Bone excavations, endocranial depressed lesions

The completeness of the skeletons was varied, ranging from 30% to 90% (see Table 1). The two children were the least complete, probably due to the disarticulated nature of the burials.

2.2 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 bone part most commonly found was the left humerus, which gave an MNI of four individuals: two adults, one juvenile and one neonate.

2.3 ASSESSMENT OF AGE

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b) and Cox (2000). Age estimation relies on the presence of the pelvis and uses different stages of bone development and degeneration in order to calculate the age of an individual. Age is split into a number of categories, from foetus (up to 40 weeks in *utero*), neonate (around the time of birth), infant (newborn to one year), juvenile (1-12 years), adolescent (13-17 years), young adult (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years), mature adult (ma; 46+) to adult (an individual whose age could not be determined more accurately than that they were eighteen or over).

Age estimation of the skeletons was based on as many criteria as possible. Two of the four skeletons were adults (see Table 1), the oldest of which (Skeleton 2005) was at least 46 years old, but probably much older, based on dental wear and hip joint degeneration. The second adult (Skeleton 1005) was aged between 20 and 25 years according to the dental wear and morphology of the anterior hip joints, but much older when examining the posterior hip joints. It is possible, however, that a congenital anomaly in the lower spine (described below) caused a slight limp that led to secondary degenerative joint disease in his hips much earlier than would be expected in a healthy adult. These joints were therefore ignored for the age estimation, which was based on the remaining ageing criteria.

Based on the long bone length, the skeletal and dental development, Skeleton 2007 was aged between five and six years old. Skeleton 1009 was extremely young, somewhere between late stage foetus and about 1 month old. The age estimate was based on long bone measurements and skeletal development (no teeth were present).

2.4 SEX DETERMINATION

Sex determination was carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex in both males and females relies on the preservation of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood.

Determining the sex of Skeleton 1005 was difficult, and it was only tentatively identified as a possible male. The pelvis is the most reliable indicator of biological sex, but unfortunately, both the skull and the pelvis exhibited skeletal criteria that pointed to both a male and a female, although the male or undetermined traits predominated. However, the sacrum was extremely curved, suggesting a male. The long bone measurements were also mixed; some bones were as robust as would be expected in a male skeleton, while others were more delicate, as in a female. It is clear, though, that the bones all belonged to the same skeleton.

The sex determination of Skeleton 2005 was based on the skull, pelvis and long bone robusticity and was clearly male.

2.5 METRIC ANALYSIS

Stature depends on two main factors, heredity and environment. However, stature 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. The bone is measured on an osteometric board, and stature is then calculated using a regression formula developed upon individuals of known stature.

The living height of the two adults could be established. Stature was calculated from the right femur and tibia for both skeletons. This gave a height of 161.1cm (±2.99cm) for Skeleton 1005 and of 168.5cm (±2.99cm) for Skeleton 2005. The stature of both skeletons was lower than the mean stature for Roman males calculated by Caffell (1997), which was 169.03cm.

Leg measurements were obtained from the femora and tibiae and used to calculate robusticity indices. The *platymeria* index is a method of calculating the shape and robusticity of the femoral shaft. All four adult femora were *platymeric* (broad and flat). The *platycnemia* index of the tibiae was calculated in order to establish the degree of tibial shaft flatness. The left tibia of Skeleton 1005 and the right tibia of Skeleton 2005 was *eurycnemic* (of average dimensions), while the left tibia of Skeleton 2005 was flatter (*mesocnemic*). The right tibia of Skeleton 1005 was *platycnemic* (very flat).

The cranium of Skeleton 2005 was sufficiently intact for limited measurements to be taken. The cranial index is calculated to describe the shape of the cranial vault. The cranial index was 80.8, which placed it in the *brachycrany* range, i.e. the cranium was broad or round.

2.6 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. The majority of non-metric traits were observed on the skull. These were anomalies that would not have affected the individual.

No traits were noted in the neonate (Skeleton 1009). Numerous cranial non-metric traits were noted in the remaining skeletons. These included *an ossicle in lambdoid* (an additional bone in the suture at the back of the head) and *parietal foramen* (a small hole in the bones of the sides of the skull) in Skeletons 2005 and 2007. *Extrasutural and sutural mastoid foramen* (a small hole near the ear bone), *ossicle at parietal notch* (small bone in the suture behind the ear) and a *precondylar tubercle* (a small lump at the base of the skull) were observed in Skeleton 2005. Skeleton 1005 had *absent zygomaticofacial foramen* (cheek bones devoid of small holes), and *bridging of supraorbital notch* (a small bony bridge at the anterior margin of the eye orbit). None of these traits would have had any affect on the individuals.

Post-cranial traits were not observed in juvenile Skeleton 2007. Traits noted in Skeleton 1005 included an *emarginated patella* (appears as if a bite was taken out of the medial side of the knee cap), *peroneal tubercle* (a small lump on the side of the heel bone). The following traits were noted in both adult skeletons: *double*

anterior calcaneal facets (a divided anterior joint surface of the heel bone) and *double inferior talar facet* (the same on the matching ankle bone). Skeleton 2005 also had post-cranial non-metric traits: *circumflex sulcus* (a groove on the medial side of the shoulder blade), *Poirier's facet* (an extension of the femoral joint surface) *exostosis in both trochanteric fossae* (small spicules of bone in the hip region).

2.7 CONCLUSION

Osteological analysis of the four skeletons from Brough established that the cemetery group consisted of two adults, one of whom was a mature male, while the other was a young adult of ambiguous sex, though probably also male. A juvenile and a neonate were also found. The adults were short for the Roman period. The fact that Skeleton 2005 and 2007 shared a grave as well as some cranial non-metric traits may suggest that these individuals shared a family link.

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.

3.1 CONGENITAL CONDITIONS

Heredity and environment can predispose an individual to congenital anomalies, and these are commonly observed in archaeological populations. Individual anomalies, however, tend to occur in one, rather than in a number of skeletons (Turkel 1989), and can vary in prevalence between populations. Most congenital conditions observed in skeletons are simple anomalies that do not affect the person exhibiting the defect.

Skeleton 1005 had several congenital anomalies of the lower spine. The individual had supernumerary vertebrae; there were six instead of five lumbar vertebrae. The sixth lumbar vertebra showed unilateral sacralisation (looking partly like the sacrum) (Plate 1). This is one of the most common developmental anomalies affecting the spine, with sacralisation or lumbarisation occurring in 3-5% of the population (Aufderheide and Rodríguez-Martín 1998, 65). Unilateral sacralisation, as occurred here, can lead to the development of scoliosis (curvature of the spine) later in life (*ibid.*). It is possible that this individual walked with a limp and the degenerative joint disease (DJD) in the joints of the hip and sacrum was thus a secondary complication of the congenital anomaly, particularly as it is unusual to observe DJD in such a young adult.

Plate 1 Partial sacralisation of the sixth lumbar vertebra of SK 1005

Furthermore, the man's 12th thoracic vertebra was partly lumbarised (had taken on the appearance of a lumbar vertebra) and the 11th thoracic vertebra was in appearance like the 12th thoracic vertebra. The anomalies only affected the right side of the vertebrae, while the left sides were normal in appearance.

Both adult males had short and horizontal femoral necks. This condition (coxa vara) is not present at birth, but develops slowly due to a congenital ossification defect of the femoral neck (Salter 1999). In severe cases, the muscles of the hip cannot hold the pelvis level during walking, and the individual will have a lurching (although painless) type of limp (*ibid*). However, in neither individual was the condition severe.

3.2 METABOLIC CONDITIONS

Both male adults suffered from fine pitting in the left eye orbits, termed *cribra orbitalia* (see Table 1). The lesions were mild in both skeletons. The condition tends to develop during childhood and often recedes during adolescence or early adulthood. It is thought to be related to iron deficiency anaemia, which was one of the most common metabolic conditions in the past. Symptoms of iron deficiency anaemia include gastro-intestinal disturbance, shortness of breath, fatigue, pallor and palpitations (Roberts and Manchester 1995, 167).

The causes of iron deficiency anaemia are complex, as factors affecting the development of anaemia include environment, hygiene, and diet (Stuart-Macadam 1992, 160). All of these factors can affect the pathogen load (bacteria) in a population, which often contributes to a high prevalence of iron deficiency (*ibid*). In single individuals, other causes of iron deficiency include severe blood loss following injury and destruction of red blood cells (Kent 1992, 2), cancer and parasitic gut infection (Roberts and Manchester 1995, 166).

3.3 DEGENERATIVE 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 disease and osteoarthritis. Alternatively, joint changes may have inflammatory causes in the *spondyloarthropathies*, such as sceptic 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.

3.3.1 DJD

The most common type of joint disease observed tends to be degenerative joint disease (DJD). DJD is 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 2001).

Skeleton 1005, despite his young age, suffered from both DJD of the sacro-iliac joints (joints between the sacrum and hips, as discussed above). It is possible that this was a secondary complication resulting from the sacralisation of the sixth lumbar vertebra, which was unilateral. This can cause spinal deformities leading to strain on the hips.

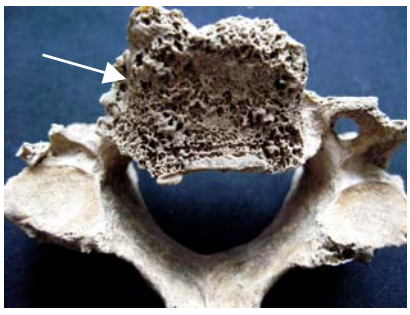

Plate 2 Cervical vertebra of SK 2005 with DJD

All of the vertebrae of Skeleton 2005 with the exception of the seventh cervical vertebra exhibited evidence for mild to severe DJD on the vertebral bodies (Plate 2). Two cervical, three thoracic and one lumbar vertebra also had slight to severe DJD on the vertebral articular facets. Both porosity and

osteophyte formation were widespread. These changes were probably linked to the mature age of the individual, but could also have been worsened by a compression fracture of the eighth thoracic vertebra, which may have altered the forces acting on the joints.

Degenerative changes were seen in several non-spinal joints of Skeleton 2005, most of which had porosity at the joint surface. These included both shoulders (lateral clavicles and right glenoid) and the right hip.

3.3.2 Osteoarthritis

Osteoarthritis is a degenerative joint disease characterised by the deterioration of the joint cartilage, leading to exposure of the underlying bony joint surface. The resulting bone to bone contact can produce polishing of the bone termed 'eburnation', which is the most apparent expression of osteoarthritis. Osteoarthritis can be the result of mechanical stress and other factors, including lifestyle, food acquisition and preparation, social status, sex and general health (Larsen 1997, 179).

Skeleton 2005 also suffered from spinal osteoarthritis in the form of eburnation, osteophytes and porosity in three of the vertebral apophyseal joints in the neck and central spine. Much more severe OA was noted in the left hip joint (Plate 2), where porosity, osteophyte formation, cysts and eburnation were so severe that the femoral joint could hardly be moved inside the hip socket. This would have led to severe walking difficulties. The fact that eburnation was present, does, however suggest that the joint was still being used.

Plate 3 Femoral ball joint of SK 205 with severe osteoarthritis

3.3.3 Schmorl's Nodes

A different condition which affects the spine is Schmorl's nodes. Schmorl's nodes are indentations in the upper and lower surfaces of the vertebral bodies, most commonly in the lower thoracic vertebrae (Hilton *et al.* 1976). Schmorl's nodes can result from damage to the intervertebral discs, which then impinge onto the vertebral body surface (Rogers 2001), and may cause necrosis (death) of the surrounding tissue. Rupture of the discs only occurs if sufficient axial compressive forces are causing pressure on the central part of the discs; frequent lifting or carrying of heavy loads can cause this. Schmorl's nodes were observed in the lower thoracic and lumbar spines of the two males, Skeletons 1005 and 2005.

3.4 TRAUMA

Despite the small size of the group, trauma was widespread. Skeleton 2005 had several fractures, including an oblique fracture of the central shaft of the left clavicle (collar bone). The fractured ends had overlapped considerably, causing shortening of the bone by almost 3cm (Plate 3). The clavicle was slightly kinked instead of the usual smooth bend. Clavicle fractures are amongst the most common fractures in modern patients (Dandy and Edwards 1998, 181). Many are caused by landing on an outstretched hand or by direct impact against a bone, as is caused by being thrown off a horse and landing on the ground. The clavicle fracture

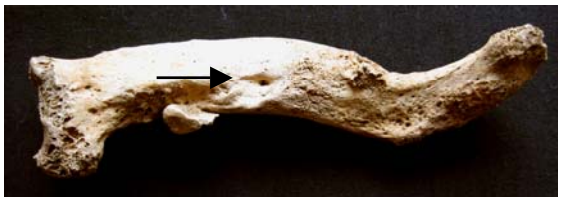

Plate 4 Well-healed clavicle fracture of SK 2005

was well-healed, and as clavicles take around six weeks to heal (*ibid*, 182), this injury was at least this old. The fracture site was smooth on the superior surface, but very irregular in appearance on the inferior surface.

A single compression fracture was observed in the eighth thoracic vertebra of Skeleton 2005, which may have been caused at the same time as the clavicular fracture, or may have been the result of a different accident. Compression injuries are caused by vertical force, such as falling and landing on the feet or bottom (Dandy and Edwards 1998, 155). The fracture caused slight compression of the anterior vertebral body.

The same individual also suffered from two rib fractures. The fractured rib fragments could not be matched to any of the ribs and therefore siding was not possible, but it was clear that they derived from a central and a lower rib shaft. Both fractures were well-healed and could have occurred at the same occasion. The external surface of the ribs was smooth, while the internal (lung) surface was thickened and slightly irregular. The rib fractures were located at the shafts of the ribs, suggesting a side impact. Isolated cracks can heal quickly and are often treated in the same way as severe bruises (Dandy and Edwards 1998, 159).

Single rib fractures are often caused by a direct blow to the chest, back or side, although in elderly patients ribs can break as a result of severe coughing fits (Dandy and Edwards 1998, 159). Alternatively, rib fractures have been observed following falls and compression of the chest. Broken ribs can be very painful and cause complications such as breathing problems, limitation of chest movement, perforation of the lung, liver or heart, *atelectasia* (failure of the lung to expand normally) and secondary infection or respiratory failure (Dandy and Edwards 1998).

Occasionally, it is possible to infer trauma to the soft tissue on the bones, in the form of ligamentous or muscular trauma. This is expressed through the formation of bony processes (*enthesopathies*) at the site of ligament attachments. Additionally, it is possible to observe bone defects at the site of muscle insertions, which are the result of constant micro-trauma and are usually activity-related (Hawkey and Merbs 1995, 334). All the skeletons with the exception of the neonate showed evidence for muscular trauma.

The juvenile (Skeleton 2007) exhibited bone excavations at the attachments sites of *soleus* on the tibiae, which plantar flexes the foot (pushes the foot downwards) and on the femora for *gluteus maximus* (involved in abduction and rotation of the thigh and extension of the thigh and trunk) (Stone and Stone 1990). Skeleton 1005 also had bone excavations at the latter site.

Skeleton 1005 had deep bone excavations at the clavicles for the costoclavicular ligament. Muscular trauma at this site is very common in skeletons from archaeological backgrounds. Furthermore, both humeri (upper arm bones) of Skeleton 1005 showed large bone excavations at the attachment sites for *pectoralis major* and *teres major* (Plate 5). These are muscles of the rotator cuff and are responsible for adducting and rotating the arms.

Plate 5 Right humerus of SK 1005 with bone excavations for *pectoralis* and *teres major*

The bones of Skeleton 2005 (mature adult male) were robust, with well-developed muscle attachment sites. This man showed evidence for widespread muscular trauma. He had bone excavations at the clavicle for the

deltoid muscle (abducts, flexes, extends and rotates the arm), at the left humerus for *supraspinatus* (abduction of arm) and *subscapularis* (medially rotates arm, assists in all other arm movements), at the scapulae for *teres major* (medially rotates, adducts and extends arm) and *infraspinatus* (laterally rotates arm, abducts arm, adducts arm) (Stone and Stone, 1990). All the muscles affected were part of the rotator cuff.

Skeleton 2005 also had numerous *enthesopathies*: at the left radius for biceps (supinates hand, flexes forearm), at the scapulae for *triceps* (extends forearm), at the calcanei (heel bones) for the Achilles' tendons (flexes the foot downwards), at the hips for *adductor magnus* (adducts hips at thigh, assists in lateral rotation and extension), on the femora for *gluteus maximus* (involved in abduction and rotation of the thigh and extending the thigh and trunk), on the left hip for *rectus femoris* (extends the leg at the knee joint and flexes the thigh at the hip joint) (Stone and Stone, 1990).

The muscular trauma of Skeleton 2005 suggested that this person placed considerable strain on the muscles of the rotator cuff, responsible for movements of the upper arm, which was probably activity-related. Further muscular trauma was noted at the muscles that extend and flex the forearm, and those muscles that move the thigh at the hip; this appeared to be related to a traumatic incident or occasions, rather than being activity-related.

Skeleton 2005 also showed evidence for a different type of soft tissue trauma. This was an ossified haematoma (blood clot that had become bone) on the lateral border of the left proximal femur. Haematomas can be the result of direct blunt force trauma, or tearing of muscle fibres, causing blood to collect and clot. If the muscle is exercised too soon following the injury, the blood clot may ossify, producing a bony lump at the site of the haematoma. Ossified haematomas tend to resolve after two years, suggesting that the injury was less than two years old.

3.5 NEOPLASTIC DISEASE

A button, or ivory, osteoma was observed on the frontal bone of Skeleton 2005. These are the most common type of neoplasm (new growth) seen in archaeological populations, usually affect males more than females, and are entirely benign and symptomless (Aufderheide and Rodríguez-Martín 1998).

3.6 CONCLUSION

The children's remains were almost devoid of pathological lesions, with the exception of limited muscular trauma observed on the five to six year old juvenile.

The male young adult (Skeleton 1005) also had little pathology, except for lesions in the eye orbits indicative or iron deficiency anaemia during childhood. He also had several congenital anomalies affecting the lower spine, sacrum and hip joints. The defects would have led to spinal malformations and probably caused secondary joint disease of the hips as a result. This young male showed evidence for muscular trauma affecting the upper arms and thighs, as well as spinal lesions, which together were indicative of physical strain.

The mature male adult showed extensive evidence for disease and trauma that he had experienced throughout life. Similarly to the younger male, he had also suffered from iron deficiency anaemia during childhood.

During adulthood, he was involved in physical activities that placed strain on the muscles of the rotator cuff, moving the upper arm.

This mature man had at least one, if not several accidents that caused fractures of the left collar bone, two ribs, a vertebra, and an ossified blood clot on the left thigh. It is also likely that one or several traumatic incidents had caused the trauma to those muscles that are responsible for flexing and extending the forearm, as well as moving the hip. The fractures had healed well, suggesting that they had occurred some time before death. However, it is likely that at least some of the degenerative joint disease and particularly the osteoarthritis observed in this individual were not merely age-related, but were secondary complications following the traumatic incidents. It is possible that the inflammation on his legs was related to the trauma, or it could be the result of other causes, such as trips, varicose veins or diabetes.

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. Skeleton 1009, the neonate, did not have any preserved teeth. A total of 41 permanent teeth were recovered, of which eight belonged to the juvenile. This child also had three deciduous (milk) teeth (Table 2).

Table 2 Summary of dental pathology

Skeleton No	Number of teeth present	Calculus	Caries	Abscesses	DEH	Infractions	Wear	Periodontitis
1005	29 teeth (3 lost PM)	21	-	-	-	-	Slight to moderate	Slight
2005	4 teeth present (8 lost AM, 4 lost PM) (no maxilla)	2	1	1	-	-	Moderate	Considerable
2007	3 deciduous teeth, 8 permanent teeth (no mandible)	2	1	-	3	-	Slight	-

A total of eight of the teeth from Skeleton 2005 had been lost ante-mortem. The causes of ante-mortem tooth loss (the loss of teeth during life) include periodontal disease. Once the tooth has been lost, the empty socket is filled in with bone. This skeleton lost an additional four teeth post-mortem, while Skeleton 1005 lost three teeth after death.

Dental wear tends to be more common and severe in archaeological populations than in modern teeth. Severity of the dental wear was assessed using a chart developed by Smith (1984): each tooth was scored using a grading system ranging from 1 (no wear) to 8 (severe attrition of the whole tooth crown). The wear of the surviving teeth in Skeleton 2005 was variable and irregular, probably as a result of extensive ante-mortem loss in both jaws. There was little to moderate wear on the teeth of Skeleton 1005, which corresponded with the man's young age. Skeleton 2007, the juvenile, also showed little wear, as was expected.

Calculus is commonly observed in archaeological populations whose dental hygiene was not as rigorous as it is today: calculus mineralises and forms concretions on the tooth crowns, along the line of the gums. Slight to moderate calculus was present on all 21 of the 29 teeth of Skeleton 1005 and on two of the teeth from Skeletons 2005 (Plate 6) and 2007.

Plate 6 Teeth of SK 2005 with calculus and caries

Skeletons 2005 and 2007 had dental caries, each in a molar (see Plate 6). Cavities are multifactoral in origin, but develop as a result of aggressive bacterial attack in the presence of sucrose (Hillson 1996, 282) and fermentable carbohydrates (Roberts and Manchester 1995, 47). Skeleton 2005 also had an abscess, which was well-healed at the time of death. Dental abscesses occur when bacteria enter the pulp cavity of a tooth causing inflammation and a build-up of pus at the apex of the root. Eventually, a hole forms in the surrounding bone allowing the pus to drain out and relieve the pressure. They can form as a result of dental caries, heavy wear of the teeth, damage to the teeth, or periodontal disease (Roberts and Manchester 1995), and heavy tooth wear seems to be the likely cause here.

Dental enamel hypoplasia (DEH) was only observed in three of the erupting permanent teeth of Skeleton 2007: there were grooves or lines on three of the anterior teeth. DEH is the manifestation of lines, grooves or pits on the crown surface of the teeth, which represent the cessation of crown formation. The defects are caused by periods of severe stress during the first to seventh year of childhood, including malnutrition or disease.

5.0 MORTUARY PRACTICE

The skeletons found at Brough were interred in a variety of positions and orientations. Skeletons 2005 (a mature adult male) and Skeleton 2007 (a 5-6 year old juvenile) may have shared a grave, although the juvenile was so disturbed that it was not possible to be certain whether this was the case. However, the head of the juvenile appeared to lie on the upper right thigh of the mature male. Skeleton 2005 was buried in a supine extended position with the head to the west and the feet to the east. Skeleton 1005 was buried in a single grave, to the north-west of the double grave. This individual was buried in a prone position with the legs bent backwards at the knees, so that they overlay his thighs. The head was found at the eastern end of the grave and the knees at the western end. The neonate, Skeleton 1009, was so disturbed that it was not possible to ascertain its position and orientation.

The direction of orientation varies considerably between different Roman cemeteries. At Trentholme Drive in York for example, burial ritual was extremely varied and included double burials (Wenham 1968). It has been argued that orderly burial became increasingly widespread towards the later Roman period, particularly in the fourth century AD (Clarke 1979, 352).

Many Roman cemeteries showed evidence for burial in family plots. This has been indicated by the presence of individuals of different ages and sexes in the same area, but also clusters of non-metric traits (which can suggest family relationships). Because of the relatively small excavation trench, which gave no real insight into the size of the cemetery or quantity of burials at the site, it was not possible to determine whether family groupings existed at Brough. Such family groupings have been most obvious in the large cemeteries, such as Cannington

in Somerset (Rahtz *et al* 2000, 63). However, the double burial might suggest that family groupings did exist in this cemetery and this is supported by some shared non-metric traits between the individuals buried there.

Considering that the skeletons at Brough were found widely distributed across the site, it is likely that more burials are present that were not disturbed during the development.

The fact that the human remains recovered lay close to the Roman road could indicate the presence of a cemetery site along the course of the Roman road, which was a popular location for cemeteries during the Roman period as Roman law forbade burial in Roman settlements (Watson 2003, 8).

Other archaeological excavations have been carried out in the local area, including at Melton Water Works near Brough (Holst 2004), at Welton Quarry and at the Melton A63 junction. The former two excavations produced exclusively Bronze Age burials, while the A63 junction excavation produced skeletal remains dating from the Bronze Age, the Iron Age and the Anglo-Saxon period (Caffell and Holst 2007). None of the remains dated to the Roman period and as a result, comparisons between the sites would be of no value.

6.0 DISCUSSION AND SUMMARY

The skeletal assemblage from Brough was in a good condition, with most skeletons being well preserved, but often incomplete. Osteological analysis showed that the small group of inhumed skeletons consisted of individuals of all ages, including a neonate, a five to six year old juvenile, a young male and a mature adult male. It is likely that these excavated graves formed part of a larger roadside cemetery.

The burials of the children were disturbed and their position and orientation could therefore not be determined. However, it appears that the older child shared a grave with the mature male and it is possible that these individuals were related, as suggested by some shared non-metric traits. Alternatively, they might have died at a similar time and were therefore interred together. Both adults also had one congenital anomaly in common; shortened femoral necks and may also have been related.

The neonate showed no evidence for pathology and it is possible that this baby died during birth or as a result of complications after the birth. The juvenile had suffered from malnutrition or disease some time prior to death, as suggested by lines of arrested growth on its teeth, which indicate that the child's resources were fighting for survival rather than advancing tooth growth. The child also showed evidence for muscular trauma as a result of repetitive activities, suggesting that it must have been physically active at least for some time prior to its death.

One of the adults from the site was a young adult, aged between 20 and 25 years, who was interred on the front, with the legs bent backwards at the knees. He was probably male, although the skeletal characteristics indicative of sex were ambiguous. This individual may also have been unusual in his appearance, perhaps not looking very masculine due to his ambiguous skull and pelvic sexual characteristics, coupled with his spinal congenital anomalies, which caused deformities. However, this person carried out activities, which placed strain on the muscles of the rotator cuff at the upper arm and on the spine, suggesting he was physically active. He also showed evidence for having suffered from iron deficiency anaemia during childhood. This man had healthy teeth with limited plaque formation.

In contrast, the other adult buried at the site had survived to a relatively old age, being at least 45 years old (but probably much older) at the time of death. However, this individual also showed many signs of disease, including several fractures, all of which were well-healed. He had suffered from a collar bone fracture, two rib fractures and a mild vertebral compression fracture, a blood clot on his thigh and widespread muscular trauma that might have been caused by one or several accidents. It is likely that the severe osteoarthritis in his left hip was secondary to an injury. The arthritis was so severe that the leg was almost immovable at the hip. It is likely that this man experienced a side impact or fall from a height that caused all of the injuries. This man also had degenerative disease and osteoarthritis in the spine. Pronounced muscle attachments attest to an active life, with activities involving use of the rotator cuff muscles, flexion and extension of the forearm and movement of the thigh. He suffered from inflammations of the shin, perhaps also secondary to his injuries, but more likely to be the result of varicose veins, diabetes, ulcers or similar conditions. This man lost many teeth during life and had suffered from a dental abscess.

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APPENDIX A: OSTEOLOGICAL AND PALAEOPATHOLOGICAL CATALOGUE

Skeleton Number	**1005**
Preservation	Excellent
Completeness	80%, all but left ulna, parts of skull, parts of left foot and hand
Age	Young adult, 20-25 years
Sex	Male?
Stature	161.05 ± 2.99cm
Non-Metric Traits	Absent zygomaticofacial foramen (bilateral), bridging of supraorbital notch (right), emarginate patella (bilateral), peroneal tubercle (right), double anterior calcaneal facets (right), medial talar facet (right)
Pathology	Schmorl's nodes, 6th lumbar vertebra, partial sacralisation of L6, partial lumbarization of T12, DJD in sacroiliac joints, bone excavations for teres major, pectoralis major, costoclavicular ligament, gluteus maximus, *cribra orbitalia*
Dental Health	29 teeth, 2 teeth lost post-mortem, wear 1-4, calculus 21/29 teeth, slight periodontitis

	Right Dentition								Left Dentition							
Present	P	P	P	P	P	P	P	PM	P	PM	P	P	P	P	P	PM
Calculus	Sd	Sa	Sl	-	-	Sb	-	-	-	-	-	-	-	Mb	Fa	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	1	3	4	2	2	2	3	-	4	-	2	2	2	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	P	P	P	P	P	P	P	P	P	P	P	P	P
Calculus	Sa	Ml	Ml	Sl	Sb	Sl	Fa	-	Fb	Fb	Sa	Sa	Ma	Sl	Sl	Sa
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	1	2	3	2	2	2	3	4	4	3	3	2	2	3	2	1

Skeleton Number	**1009**
Preservation	Good
Completeness	30%, parts of skull, left humerus, right scapula and clavicle, some ribs and vertebral fragments only
Age	Neonate
Sex	-
Stature	-
Non-Metric Traits	-
Pathology	-
Dental Health	No teeth

Skeleton Number	**2005**
Preservation	Good
Completeness	90%, all except patellae, parts of hands, scapulae, hips and facial part of cranium
Age	46+ years
Sex	Male
Stature	168.5 ± 2.99cm
Non-Metric Traits	Ossicles in lambdoid suture (bilateral), mastoid foramen extrasutural (bilateral), ossicle at parietal notch (right), sutural mastoid foramen (bilateral), precondylar tubercle, incomplete

	foramen ovale (bilateral), circumflex sulcus (bilateral), Poirier's facet (right), double anterior calcaneal facet (bilateral), double inferior talar facet (right)
Pathology	Compression fractures of T8 , spinal DJD, spinal osteoarthritis, Schmorl's nodes, DJD in lateral clavicles, left medial clavicle, right glenoid, right acetabulum, auricular surfaces, osteoarthritis in left hip rendering the joint almost immovable, periosteal inflammation on both tibial shafts, ossified haematoma on left proximal lateral femur, fractured and well-healed left clavicle, two fractured and healed rib shat fragments, *cribra orbitalia*, coxa vara, button osteoma on frontal, enthesopathies for Achilles tendons, adductor magnus, interosseous sacroiliac ligament, gluteus maximus, acetabular labrum, rectus femoris, biceps, triceps; bone excavations for supraspinatus, subscapularis, teres major, infraspinatus, deltoid, pectoralis major, costoclavicular ligament
Dental Health	4 teeth present, 8 teeth lost ante-mortem, 4 teeth lost post-mortem, 1-4 teeth with caries, 2/4 teeth with calculus, considerable periodontitis, wear 3-6, one abscess at lower right 1st molar

	Right Dentition								Left Dentition							
Present	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-
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	AM	PM	AM	PM	AM	AM	PM	PM	AM	AM	AM	AM	P	NP
Calculus	Sa	Sa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	Sd	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	3	6	-	-	-	-	-	-	-	-	-	-	-	-	5	-

Skeleton Number	**2007**
Preservation	Moderate
Completeness	55%, most of legs, upper skull, parts of humeri, ulnae, ribs, maxilla and feet
Age	5-6, juvenile
Sex	-
Stature	-
Non-Metric Traits	Ossicle at lambdoid (bilateral), parietal foramen
Pathology	Bone excavations for soleus and gluteus maximus, depressed lesions on the inner skull surface similar to arachnoid granulations
Dental Health	3 deciduous teeth, 1/3 with calculus, 1/3 with caries; 8 erupting permanent teeth, all from the maxilla, 3 of which have DEH lesions

	Right Dentition					Left Dentition				
Present	P	PM	P	PM	PM	PM	PM	PM	PM	P
Calculus	Sa	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-
Caries	Md	-	-	-	-	-	-	-	-	-
Wear	1	-	2	-	-	-	-	-	-	2
Maxilla	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**
Mandible	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**
Present	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-

Caries	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-

KEY:
Present - Tooth presence; am - ante-mortem tooth loss; pm - post-mortem tooth loss; p - tooth present; p (u) – tooth present but unerupted
- - jaw 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

APPENDIX 7

ABSTRACT:

This report concerns the assessment of 3 iron artefacts recovered during excavations by Map Archaeological Consultancy at Welton Road, Brough. Estimates and recommendations for further work are included.

INTRODUCTION

3 artefacts were delivered to the York Archaeological Trust Conservation Laboratory on 9th October, 2007 for assessment. The artefacts consist of 3 iron objects.

AIMS AND OBJECTIVES

This report aims to meet the requirements of MAP2 (English Heritage, 1991) to produce a stable site archive. This has involved X-radiography and an assessment of the condition, stability and packaging of the finds. Standard YAT procedures were followed; 3 metallic recorded finds were assessed and X-rayed on half a plate (x6865). An assessment of each find is presented in the table in the Appendix. First-aid treatment was not required.

The potential of the assemblage for further analysis and research is discussed, and recommendations made for investigative conservation and long term storage.

PROCEDURES

The iron finds were X-rayed using standard Y.A.T. procedures and equipment. One sheet of film was used, and each plate was given a reference number in the YAT conservation laboratory series. The X-ray number was written on each recorded find bag. Each image on the radiograph was labelled with its recorded finds number. The plate was packaged in an archival paper pocket.

The finds were examined under a binocular microscope at X20 magnification. The material identifications were checked and observations made about the condition and stability of the finds, and recorded in below.

CONDITION ASSESSMENT SUMMARY

The iron was corroded and in fair to good condition with thin and pitted cores as shown by the X-ray. Active corrosion was noted in some areas; dry storage is essential.

STATEMENT OF POTENTIAL

This report was written without seeing the site, and without the benefit of discussion with other members of the project team.

None of the objects showed specific indicators of preservation or evidence for dating.

RECOMMENDATIONS

Recommendations for further work are highlighted in bold in the table in the appendix.

Further Investigative Conservation

Investigation for research purposes RF1, a possible knife, is recommended for further investigation to aid in the identification of the object.
Further work only if requested Selected items could have corrosion removed fully for publication or display, quotes for the items selected can be arranged individually to suit your requirements.

Packing and Long Term Storage

Packaging on arrival at the lab The finds were well-packed in a suitable sealed container to provide the appropriate desiccated environment.
Long-Term Storage The finds are suitable for long term storage. All materials used are archive stable and acid-free. The metal finds are stored in a desiccated environment at less than 15%RH. The desiccated environment will need to be maintained.

RESOURCE REQUIREMENTS

Until the research design for the analysis phase is formulated, the exact cost of the work cannot be specified. The sums below give a general guide to the costs that are likely to be incurred and have been calculated at the current hourly rate.

Investigative conservation (see above)	*£66.00*
Materials	*£ 5.00*
Conservation report	*£33.00*
Administration	*£25.00*
ESTIMATED TOTAL COST (excluding V.A.T)	***£129.00***

(The above prices hold good for the current financial year and may be subject to negotiation in line with inflation. They are exclusive of V.A.T. The estimates do not allow for transport of the finds to and from York but do cover all necessary time and materials to complete the work, including a final report. Y.A.T. carries the necessary insurance to cover clients material whilst on Y.A.T. premises but this does not extend to transport.)

REFERENCE

English Heritage, Management of Archaeological Projects, 1991.

Appendix: Assessment table

SF no	Context	Assessment
1	1012	Labelled as Fe ?coffin fitting. Sand and silt over thin reddish brown corrosion products. Some spots of active corrosion. Damage to edges and one end broken showing metal core. Overall condition is fair. X-ray shows the metal core to be thin and uneven especially towards the edges. Object is tanged; possible knife. **Recommendations: two sections to determine shape and aid ID (estimate £66).**
2	1012	Labelled as Fe coffin fitting. Sand and silt over thin red/brown

		corrosion products. One area of active corrosion with associated cracking and flaking. Overall condition is fair. X-ray shows the metal core to be thin and pitted. Raised edgs and two round perforations visible. **Recommendations: no further action.**
3	1012	Labelled as Fe pipe frags. Sand and silt over thin red/brown corrosion products. Mineral preserved wood on interior surface. Pieces join. No active corrosion visible. Good overall condition. X-ray shows the metal core to be fairly even but thin with two rivets visible. **Recommendations: no further action.**

APPENDIX 8

Project Team Details

Land to the North of 25 and 27 Welton Road, Brough 02.08.06

Fieldwork
Charlie Morris

Post-excavation
Charlie Morris, Nigel Cavanagh *report*
Charles Rickaby Appendices
Dave Knight *CAD and illustrations*

Finds
Mark Stephens and Paula Ware *dating/analysis*
Charles Rickaby *processing*
Charles Rickaby *cataloging*

Skeletons
Charles Rickaby *processing*

SPECIFICATION FOR A PROGRAMME OF ARCHAEOLOGICAL OBSERVATION, INVESTIGATION AND RECORDING

Prepared by the Humber Sites and Monuments Record Office, for Mr Blacker.

Site Name:	Land to the north of 25 and 27 Welton Road, Brough
Development:	Erection of bungalow and detached garage
National Grid Reference:	SE 93930 27000 (point)
Planning Reference Number:	DC/05/05394/PLF/WESTES
SMR Casework Number:	SMR/PA/CONS/12539
Date of Issue:	5-Dec-05

This brief is valid for one year from the date of issue. After this period, the Humber Sites and Monuments Record Office should be re-consulted. This document should be read in conjunction with the ***Notes for archaeological contractors proposing to do work in the area covered by the Humber SMR*** *(dated January 1999): these notes are available from the Humber SMR.*

1 SUMMARY

1.1 This brief is for a programme of archaeological observation, investigation and recording to be carried out during groundworks associated with the construction of a bungalow and detached garage on land to the north of 25 and 27 Welton Road, Brough.

The brief should be used by archaeological contractors as a basis for submitting a costed tender for the work required.

2 SITE LOCATION

2.1 The development plot is located on land to the north of 25 and 27 Welton Road, Brough.. The site is bounded to the north by number 23 Welton Road, to the east by dwellings fronting onto Haven Avenue, to the south by 25 Welton Road and to the west by Brentwood Close.

3 PLANNING BACKGROUND

3.1 An application for full planning permission for this development was received by the East Riding of Yorkshire Council on 1st August 2005 (Application no. DC/05/05394/PLF/WESTES).

Planning permission was subsequently granted on 12th October 2005 subject to an archaeological condition (no. 6) to secure a programme of archaeological work; the condition stated that:

> "No development shall take place on the site until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the local Planning Authority (PPG 16 paragraph 30)".

4 ARCHAEOLOGICAL BACKGROUND

4.1 The site of the proposed development lies to the north of the Roman walled town at Brough and very close to the line of the Roman road that led northwards from the town towards York. This area has yielded large amounts of Romano-British material that provides evidence for extra-mural occupation of that date. A watching brief that took place during the construction of an extension to the north-west of the application site in 1997 identified the remains of a substantial Roman stone building, together with the remains of a newborn infant. Since the time of the last consultation at this site, a further watching brief has been undertaken during the construction of a garage and extension immediately to the north of the application site. Even though the raft foundations for these works only went to a depth of 0.70 metres, the remains of a Romano-British wall, a small pit and Romano-British pottery were recovered. It is likely therefore, that any groundworks in this area will encounter archaeological deposits of the Romano-British and later periods.

4.2 It is clear that the proposed new building work would involve below ground disturbance (e.g. for the excavation of new footings and any new services) – and that these are likely to extend to a sufficient depth to impact upon surviving archaeological remains. Hence, it is important that a programme of archaeological observation, investigation and recording is carried out during construction work so that any archaeological deposits that might be uncovered can be recorded.

5 METHODOLOGY

Should the contractor consider continued monitoring unnecessary at any stage in advance of the completion of all groundworks, they should consult with the SMR Office as a matter of priority.

5.1 The proposed scheme of works shall comprise the monitoring of any stripped topsoil, and the digging of foundations and service trenches: these should be undertaken under archaeological supervision, or provision should be made for an archaeologist to view the open trenches after machining but before they are infilled. This is to enable the identification and recording of any archaeological material that might be uncovered.

5.2 The developer's chosen archaeologist must be acceptable to the Local Planning Authority after consultation with the Sites and Monuments Record Office. Access to the site will be afforded to the developer's chosen archaeologist at all reasonable times.

5.3 Reasonable prior notice of the commencement of development is to be given to the archaeological contractor. A two-week period is suggested, where possible. The Sites and Monuments Record Office should be notified of the chosen contractor in advance of the programme of archaeological observation, investigation and recording.

5.4 On completion of the work, an ordered archive should be prepared by the archaeologist and deposited with a registered museum. The proposed recipient museum must be contacted at the beginning of the project. A copy of the Archive Index and the name of the recipient museum should be sent to the Sites and Monuments Record. Contractors should make an allowance for a minimum of one box in calculating estimates for the museum's storage grant.

5.5 With the exception of human remains, and finds of treasure (as defined under the 1996 Treasure Act) which should be reported to the coroner, all finds are the property of the landowner. However, it is generally expected that the finds will be deposited with the archive. A find's recovery and conservation strategy should be agreed with the developer in advance of the project

commencing. This should include contingency arrangements for artefacts of special significance. Any recording, marking and storage materials should be of archive quality, and recording systems must be compatible with the recipient museum. Copies of all recording forms and manuals should be submitted to the Archaeology Manager, prior to commencement of site works, if these have not been supplied previously.

5.6 Within six weeks of the completion of the work, a report will be produced by the archaeologist, and submitted to the developer, the Local Planning Authority and the SMR Office.

The final report should include the following (as appropriate):

- A non-technical summary
- Site code/project number
- Planning reference number and SMR casework number
- Dates for fieldwork/visits
- Grid reference
- A location plan, with scale
- A plan of the developer's plan, with scale, showing the areas monitored (i.e. house block, garage, service trenches etc.) and indicating the position of archaeological features in relation to the foundations etc.
- Section and plan drawings (where archaeological deposits are exposed), with ground level, Ordnance Datum and vertical and horizontal scales
- General site photographs (a minimum 35mm format), as well as photographs of any significant archaeological deposits or artefacts that are encountered
- A written description and analysis of the methods and results of the programme of archaeological observation, investigation and recording, in the context of the known archaeology of the area
- Specialist artefact and environmental reports, as necessary

5.7 The archaeological contractor should also supply a digital copy of the report in PDF format to the Humber Sites and Monuments Record Office.

5.8 Where a significant discovery is made, consideration should be given to the preparation of a short note for inclusion in a local journal.

5.9 All work shall be carried out in accordance with the developer's proposed timetable and shall not cause undue delay to the development unless otherwise agreed.

6 MONITORING

6.1 The work will be monitored under the auspices of the Sites and Monuments Record Office, who should be consulted before the commencement of site works.

7 HEALTH AND SAFETY

7.1 Health and safety will take priority over archaeological matters. All archaeologists undertaking fieldwork must comply with all Health and Safety Legislation. The archaeologist or archaeological organisation undertaking the work should ensure that they are adequately insured, to cover all eventualities, including risks to third parties.

Any queries relating to this brief should be addressed to, The Sites and Monuments Record, Humber Archaeology Partnership, The Old School, Northumberland Avenue, Hull, HU2 0LN (Tel: 01482 217466, Fax: 01482 581897).