Cornerstone, Square Chapel
Halifax, West Yorkshire

Archaeological Mitigation Report

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wessexarchaeology

Cornerstone, Square Chapel, Halifax
West Yorkshire

Archaeological Mitigation Report

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Summary

Wessex Archaeology was commissioned by Mouchel Advisory and Project Services on behalf of the Square Chapel Centre for the Arts (hereafter 'the Client') to undertake mitigation works in the form of a strip and record at the Square Chapel, Halifax, West Yorkshire. The works were required as a condition of planning consent. The Site had previously been subject to an archaeological evaluation (Wessex Archaeology 2013) which confirmed the presence of *in situ* graves on all sides of the chapel. A subsequent excavation to the immediate north of the Square Chapel (Williams 2016) excavated a further 203 graves. A Written Scheme of Investigation outlining how the requirements of the work would be met was produced by Wessex Archaeology (2015) and approved by WYAAS prior to work commencing.

Detailed analysis of 112 skeletons has provided valuable information about the lives of individuals in Halifax during the period of the Industrial Revolution. This evidence adds to an existing corpus of 207 skeletons excavated in 2014 and analysed by Caffell and Holst (Williams 2016), with the combined results representing a significant osteological dataset relating to the population of Halifax dating from around 1772 until at least 1885.

The conclusions of the previous work have largely been supported and expanded upon: the skeletons recovered from the Square Chapel represent a reasonably healthy population with low rates of osteoarthritis, and infection, who are likely to have avoided the worst overcrowding of the period. Non-adults, however, suffered a high rate of metabolic disease. High rates of sinusitis and pulmonary conditions (and a possible case of tuberculoid meningitis) may have been promoted by air pollution. Rates for all dental pathologies among the adults were higher than the averages for the period. Rates of ante-mortem tooth loss were particularly high. A diet rich in sugar and other cariogenic foods combined with poor oral hygiene is likely.

Trauma and degenerative joint disease were common among the adults from this group, with evidence for differences in activities between men and women. Specific activities have not been identified.

Environmental sampling was not informative in this case, with a low level of gut parasites observed from some grave fills but little else recorded. Excluding the human bone and coffin furniture, the artefacts recovered from the Site are of 17th- and 18th-century date and likely derive from the manuring of agricultural fields prior to the construction of the chapel.

Two families were traced using information from depositum plates. The contrasting lives of these two families highlight both the inequalities of the Industrial Revolution and the egalitarian nature of religious practice of the period, particularly of Non Conformism. Members of two families, one living in back-to-back housing and operating a grocery in a notorious slum, and the other occupying a grand townhouse with servants and producing both a Mayor of Halifax and a Speaker of the House of Commons, shared the same spaces at the Square Chapel in life and in death.

The foundations of the early 19th-century former Sunday school were also recorded and were consistent with our existing understanding of the development of the Site.

Dental calculus and isotope analysis is underway and a synthesis of these results with those from previous excavation is forthcoming.

The archive is currently held at the offices of Wessex Archaeology in Sheffield, under the project code 100243 and will be transferred to West Yorkshire Archive Service (Calderdale Office) in due course under accession number 2013:11. An OASIS record, wessexar1-277430, has been completed for this work and will be finalised at the time of deposition.

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Acknowledgements

Wessex Archaeology was commissioned by Mouchel Advisory and Project Services on behalf of the Square Chapel Centre for the Arts and is grateful to them in this regard. Wessex Archaeology would also like to thank West Yorkshire Archaeology Advisory Service (WYAAS), the archaeological advisor to Calderdale Council, for their input into the project.

The fieldwork was directed by Phil Weston and Andy Swann, with the assistance of Callum Bruce, Alex Cassels, Adam Fraser, Jack Laverick, Ciaran O'Neill, Dora Olah, Andy Reid, Richard Smith and Matt Tooke, and University of Sheffield students Kelsey, Jess and Leayla. Fieldwork occurred between 29th September 2015 and 20th November 2015.

The report was compiled by Ashley Tuck, Angela Boyle and Alex Cassels. Human remains were analysed by Angela Boyle and coffin fittings were assessed by Diana Mahoney Swales. Other finds were assessed by Lorraine Mepham. The environmental samples were assessed and processed by Ellen Simmons. Genealogical research was by Ashley Tuck. The illustrations were prepared by Alix Sperr. The report was edited by Patrick Daniel. The project was managed for Wessex Archaeology by Andy Norton.

Angela Boyle and Wessex Archaeology would like to extend sincere thanks to Malin Holst and her team at York Osteoarchaeology who carried out the osteological analysis of the assemblage excavated by ASWYAS and made the results of their osteological analysis readily available, along with copies of their recording forms. Wessex Archaeology would also like to thank ASWYAS for supply a draft copy of the report from their excavations, which was used in the production of this text.

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1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology was commissioned by Mouchel Advisory and Project Services on behalf of the Square Chapel Centre for the Arts (hereafter 'the Client') to undertake mitigation works in the form of a strip and record at the Square Chapel, Halifax, West Yorkshire, National Grid Reference 409621 425037 (hereafter 'the Site').

1.1.2 Calderdale Council had granted planning permission for an extension to the Arts Centre (Square Chapel), including alterations to the Piece Hall and formation of new access and parking area. The consent included a condition requiring archaeological works (planning ref: 09/00287/FUL, condition 2).

1.1.3 The Site had previously been subject to an archaeological evaluation (Wessex Archaeology 2013) which confirmed the presence of *in situ* graves on all sides of the chapel. A subsequent excavation to the immediate north of the Square Chapel in 2014 (Williams 2016) excavated 203 further graves.

1.1.4 Wessex Archaeology produced a Written Scheme of Investigation (WSI, Wessex Archaeology 2015) outlining how the requirements of the work would be met. The WSI was approved by WYAAS prior to work commencing.

1.2 Site location and topography

1.2.1 The Site was located in the town of Halifax in the Metropolitan Borough of Calderdale. The Site included the former Square Chapel and was bounded to the west by Square Road and to the south by the road 'Blackledge'. To the north of the Site is the ruined 1855 Congregational Chapel and to the north-west is the Piece Hall. The excavation area was situated immediately adjacent to the western wall of the Square Chapel and was previously in use as a car park covered with concrete and tarmac.

1.2.2 The Site sloped from the east at 130 m above Ordnance Datum (aOD) to 120 m aOD in the west. The underlying geology comprises sandstone of the Rough Rock formation with no recorded superficial deposits (BGS 2015).

2 ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

2.1.1 The following information is summarised from existing documents and derives ultimately from material supplied by WYAAS in 2012 ahead of the initial scheme of evaluation. Additional information is drawn from Sutcliffe (2009) and Williams (2016).

2.2 Early use of the Site

2.2.1 Excavations in 2014 (Williams 2016) discovered a single sherd of Romano-British pottery and a small amount of medieval pottery on the Site. This material was residual and indicates background activity in the area, which sits close to the medieval core of Halifax.

2.2.2 The Site is assumed to have been used for agricultural activity until its development as the Square Chapel.

2.3 Square Chapel

2.3.1 The Grade II* listed Square Chapel was constructed in 1772 as a Congregational Church. The chapel was the first major brick building in Halifax and had a roof span of 60 feet (18.28 m) and was considered an exceptional building at the time. When first constructed, the building was open to the roof, with a gallery above.

2.3.2 By 1825 the west end of the Square Chapel had been extended, probably for use as a vestry and/or school room. By the mid-19th century, the Square Chapel was no longer large enough to accommodate the congregation and in 1857 a new church was constructed on the adjacent plot to the north. The steeple of the now ruined Square Congregational Church is a Grade II Listed building.

2.3.3 With the construction of the new church, the Square Chapel was converted to a Sunday school. A floor was inserted at gallery level and the ground floor was subdivided into a series of smaller rooms. The 19th-century extensions to the west of the building have been demolished, returning the building to its original footprint.

2.4 Burial ground

2.4.1 The 1850 first edition Ordnance Survey map depicts a burial ground on the south side of the Square Chapel, with one shown to east of the chapel on the subsequent 1870 and 1907 editions. By the time of the Ordnance Survey map of 1933 the 'Burial Ground' label is shown between the chapel and the 1857 church to the north.

2.4.2 Square Road was widened in the 1960s which resulted in the loss of a section of the graveyard. The gravestones were reused as paving to the front and sides of the Square Chapel. It is unclear where these gravestones were moved from, but it is likely that they were associated with burials around the chapel itself as some of the gravestones pre-date the construction of the adjacent church.

2.5 Halifax

2.5.1 During the life of the burial ground, Halifax was transformed by industrial expansion, although in contrast to other centres such as Leeds, the Industrial Revolution in Halifax was limited by topographical constraints, set within a steep Pennine river valley. Halifax' relative distance from the coal-bearing geologies of West and South Yorkshire, led to a diverse economy more reliant on water than coal power (Williams 2016, Hargreaves 2003, Smail 1994). As a result, Halifax was cleaner and more genteel than some of its neighbours. Halifax was home to a diverse population including the affluent middle classes and the very poor, with many people exempt from taxation due to poverty (*ibid.*). It is from this diverse population that the people interred at the Square Chapel were drawn, with records demonstrating that both the poor and the *nouveaux riches* were drawn to the institution (Williams 2016).

2.6 Previous work

2.6.1 According to Calderdale Council, the graves of both the Square Chapel and the adjacent 1857 church were cleared by hand in 1978 (WYAAS 2012). However, in 2008, when a new gated access and entrance steps were added to the east side of the chapel, a brick-lined shaft grave containing four skeletons was discovered (*ibid.)*.

2.6.2 The Site had previously been the subject of an evaluation (Wessex Archaeology 2013), which confirmed the existence of archaeologically significant inhumations. These were encountered below 124.31 m aOD on all sides of the chapel. During the evaluation, four brick vaults and eight articulated burials were seen from 41 identified grave cuts. Six possible modern exhumation cuts were recorded, potentially relating to activity undertaken in 1978. In addition, the remains of 19th-century housing fronting Blackledge were recorded.

2.6.3 Further excavation by ASWYAS in 2014 (Williams 2016) on an adjacent access road revealed more graves to the north of the chapel. The human bone from the ASWYAS excavation was reported on separately by York Osteoarchaeology (Keefe and Holst 2015). In summary, it was found that the group comprised a slightly higher proportion of females than males, the majority of who reached mature adulthood (upwards of 45 years). A third of the group was made up of non-adults, with a high proportion of infants and young juveniles. Nonetheless, neonates and infants were under-represented. Coffin fittings from the ASWYAS excavations were reported on by Diana Mahoney Swales (Swales 2016).

3 METHODOLOGY

3.1 Introduction

3.1.1 All work was carried out in accordance with the approved WSI (Wessex Archaeology 2015), best practice and industry standards and guidelines (CIfA 2014a and b). This section summarises the methodology as defined in the WSI.

3.2 Aims and objectives

3.2.1 The specific aims of the project were:

- *to allow the preservation by record of archaeological deposits in advance of development or other potentially disruptive works; including*
- *to ensure their preservation by record to the highest possible standard;*
- *to confirm the approximate date or date range of the remains, by means of artefactual or other evidence;*
- *to determine or confirm the approximate extent of any remains; and*
- *to determine the degree of complexity of the horizontal and/or vertical stratigraphy present*
- *to record the remains of the Sunday school;*
- *to fully investigate and record all burials, graves and grave structures within the Square Chapel*
- *to identify the presence or absence of burials within the Square Chapel;*
- *to confirm the dates and duration of the use of this part of the Square Chapel burial ground;*

- *to analyse all the skeletons and disarticulated remains (where feasible) lifted during the excavation in order to identify age, sex, evidence for disease or injuries present on the skeletal remains;*
- *to study any coffin fittings and name plates in order to compare them to the burials;*
- *to gain a better understanding of burial practices in an 18th/19th century parish in West Yorkshire during the process of industrialisation through the study of documentary evidence, osteological evidence, coffin fittings and grave goods;*
- *to study the extent to which earlier burials were respected by later burials;*
- *to record, lift and analyse the skeletons which were exposed but not excavated previously during the evaluation at the Square Chapel;*
- *to compare the osteological and historical evidence from the Square Chapel to other published early modern cemetery excavations of a contemporary date to place the material in a regional/national context; and*
- *to prepare a report on the result of the work.*

3.2.2 The aims of the osteological analysis were as follows:

- *to determine the age, sex and stature of the articulated skeletons;*
- *to record all evidence for skeletal and dental pathology;*
- *to record the presence of cranial and post-cranial non-metric traits;*
- *to undertake metric analysis;*
- *to provide an inventory of the disarticulated material; and,*
- *to recover data on dental health.*

3.3 Fieldwork methodology

3.3.1 An area measuring *c.*400 m^2 was excavated under the supervision of a suitably qualified archaeologist. Machine excavation continued to the impact level of the proposed works or to the upper archaeological horizon, whichever was reached first, in successive level spits of a maximum of 0.2 m thickness. Mechanical excavation was carried out by a tracked mechanical excavator and operator provided by the client under the supervision of Wessex Archaeology staff. The excavator was fitted with a toothless ditching bucket and worked systematically in a continuous direction. Hardstanding was broken out by a mechanical breaker.

3.3.2 All archaeological structures and human remains were recorded and only removed following consultation with WYAAS. There was a presumption for all skeletal remains to remain *in situ* should the engineering designs permit.

3.3.3 All original features were documented and interpreted in terms of their function. The work recorded the complete exposed stratigraphic sequence, investigating and recording all relationships between features.

3.3.4 No pre-modern non-funerary cut features were encountered. Built structures were investigated sufficiently to establish their form, phasing and construction techniques.

3.4 Human remains

3.4.1 In the first instance, *in situ* human remains were left, covered and protected until the Client and WYAAS were informed. Removal of human remains was subject to faculty and Ministry of Justice approval, and further agreement with the Client and WYAAS. Disarticulated human remains were collected and analysed by an archaeosteologist. All work was undertaken in accordance with guidance issued by English Heritage and the Church of England (2005).

3.4.2 Skeletons, articulated partial skeletons and long bones were excavated, photographed and fully recorded before lifting. They were transported carefully in suitable containers. The final deposition of human remains was subject to the requirements of the Ministry of Justice, and resulted in re-interment of the remains at the Square Chapel in November 2016. Associated coffin fittings were also reburied.

3.4.3 All skeletal material was examined in accordance with national guidelines (Brickley and McKinley 2004; Mays *et al.* 2004). All bones were identified and the part of the bone element that was present was recorded along with surface preservation, completeness and degree of fragmentation. Information on age and sex was recorded along with evidence for skeletal lesions and dental pathology. Pathological lesions were described by reference to a range of standard texts (eg. Hillson 1996; Aufderheide and Rodriguez-martin 1998; Ortner 2003). Metric measurements were taken and a range of non-metric traits were recorded.

3.5 Recording

3.5.1 The Site was recorded according to the normal principles of stratigraphic excavation, following best practice and using Wessex Archaeology's *pro forma* recording system. Section drawings were made of all excavated contexts, typically at 1:10, and plans drawn typically at 1:20. The Site as excavated was accurately surveyed using Leica GNSS equipment and tied into the OS National Grid. Black and white record photography was supplemented by colour digital photography at a minimum resolution of 10 megapixels. Digital photography followed Historic England guidance (2015).

3.6 Finds

3.6.1 Finds were treated in accordance with the relevant guidance (CIfA 2014b, Museums and Galleries Commission 1992, Walker 2001). All artefacts from excavated contexts were retained, except those from features or deposits of obviously modern date. A metal detector was used to enhance artefact recovery. As a minimum, all retained artefacts were washed, weighed, counted and identified. Any artefacts requiring conservation or specific storage conditions were dealt with immediately in line with *First Aid for Finds* (Watkinson and Neal 1998) and in consultation with the designated conservator.

3.7 Environmental

3.7.1 Environmental sampling followed English Heritage guidelines (2011). Samples were taken from well-sealed and dated or datable archaeological features for plant macrofossils (charred and/or waterlogged and wood charcoal), small animal bones and small artefacts.

3.7.2 Grave fill was sampled around the neck, stomach and abdomen to recover calcified soft tissues, calcified masses (gall stones, etc.) and foetal remains.

3.7.3 Full details of the palaeo-environmental methodology are given in section 7 below.

4 ARCHAEOLOGICAL RESULTS

4.1 Introduction

4.1.1 The following section provides a summary of the information held in the Site archive, with a full list of context numbers and context descriptions contained in Appendix 1. Details of grave groups can be found in Appendix 2. The Site location and general plan can be seen on Figure 1, with Figures 2-4 comprising more detailed plans.

4.2 General stratigraphy

4.2.1 A general layer of demolition rubble overburden (001) comprising dark black/grey loam with ash, stone and brick rubble was recorded sealing the entire excavation area. This material may have been derived from the demolition of the former Sunday school extension in the 1970s.

4.2.2 The undisturbed natural geological substrate underlying the Site (019) was orange sand and sandstone fragments representing the modified upper horizon of the bedrock.

4.2.3 No unmodified soils were seen during this phase of fieldwork.

4.3 Graves

Introduction

4.3.1 Graves dominated the archaeology of the Site (Figures 2 and 3). A full description of the graves can be found in Appendix 2 supplemented by the context descriptions in Appendix 1.

4.3.2 Inscribed dates span most of the life of the burial ground with dates from depositum plates (described later) ranging from the 1840s to 1885 and ledger stones reused as flooring in the former Sunday school ranging from 1776 to 1855. The chapel was built in 1772 (Sutcliffe 2009) with burials recorded from 1771 (Williams 2016). Reliable recording of burials ceased in 1837, but gravestone inscriptions indicate a last known burial date of 1895 (*ibid.*).

4.3.3 The area investigated by this phase of work comprised three columns of graves parallel to the west wall of the chapel. These columns ran approximately from north to south. The number of rows was approximately 30, although a combination of irregularly placed grave cuts and unused plots does not allow for a definitive count. Graves likely extend west, north and south-east of the excavated area. The excavated area was bordered to the south by the road 'Blackledge' and it is thought that this formed the limit of the historic graveyard. To the east, the Square Chapel itself bordered the northern and central parts of the excavated area, although further inhumations are thought to exist underneath the structure (Sutcliffe 2009).

4.3.4 The regular arrangement of the graves suggests that the graveyard was well managed. The arrangement of graves is consistent with previous work (Williams 2016).

4.3.5 All graves were aligned west–east with heads to the west and bodies extended and supine as is typical of Christian burial.

4.3.6 Paired child inhumations were sometimes seen occupying an adult-sized grave plot, as with 058 and 061 in group 1000. It is possible that these burials were made at the same time (one such case was described in Williams 2016), but more likely that a subsequent child burial was made next to an existing child inhumation. Other cases of apparent

multiple burials within a single cut are likely the result of redeposition. As discussed in the osteology report below, the continual re-excavation of graves is likely to have led to the redeposition of burials as partially articulated skeletons and charnel (*ie,* disarticulated bone).

Groups

4.3.7 A group number was assigned to each excavated grave plot. It is likely that some skeletons within each group may have familial ties.

Grave cuts

4.3.8 The 44 excavated grave groups were sub-rectangular to oval in plan, though some had been truncated by later foundations. The maximum length of each grave group ranged from 0.8 m to 2.9 m with an average maximum length of 2.01 m. Widths ranged from 0.48 m to 1.5 m, although all but one grave group had a maximum width of 1 m or less. The average maximum width of the excavated grave groups was 0.71 m. The depths of individual cuts (correlating approximately with individual interments) were often notional, with a separate cut number assigned to each inhumation whether it was possible to distinguish the limits of the cut or not. Inhumations were stacked closely on top of each, an arrangement which maximised use of the space available in the graveyard.

4.3.9 A maximum of eight separate interments was seen in a single grave plot, although most groups were not fully excavated, with excavation typically halting after five or fewer inhumations had been removed. Of the plots that were fully excavated the number of interments ranged from one to eight.

Grave fills

4.3.10 Graves were typically backfilled with a redeposited mixture of natural sand and the former agricultural soils that presumably once sealed the Site. That is, graves were backfilled with the mixed arisings derived from their excavation. As a typical example, grave fill 1003 comprised mid grey and yellowish-brown sandy clay with occasional sandstone inclusions and charnel bone.

4.3.11 The grave plots were repeatedly re-opened for new burials, and this led to the common inclusion of disarticulated human bone in grave fills. Domestic pottery and other finds recovered from grave fills likely originated from manuring activity pre-dating the construction of the chapel. This is consistent with the 17th and 18th-century date of such material. Grave fills were generally fairly homogeneous across the Site, with immaterial minor differences in description.

Stratigraphy

4.3.12 Within each group, the stratigraphic sequence is generally very simple, with older inhumations situated below later inhumations. It was not possible to determine stratigraphic relationships between grave plots. In some cases the plots were well ordered and the cuts did not overlap, giving no stratigraphic relationship. Where the cuts did overlap, the repeatedly disturbed backfill of one grave was found to be very similar in character to that of its neighbour. These cases are shown with dashed lines on Figure 2. Most grave plots would have been repeatedly re-excavated for each new interment, destroying evidence of the previous cut and encouraging intermingling of fill and charnel between neighbouring graves.

4.3.13 Some groups are recorded as having been bottomed to natural sand/sandstone geology (019) whereas other groups were excavated only to the level required by the contractors. In some cases (*eg,* group 1000), it was clear that further inhumations were present below

the level of excavation. In other cases the presence or absence of deeper inhumations *in situ* was not established.

Coffins

4.3.14 Coffins ranged from substantially complete to badly degraded, with little beyond fragments of wood surviving. The coffins and coffin fragments were not recovered from site and no specialist analysis was attempted. Coffin fittings were recovered and analysed by a specialist as described below.

Preservation

4.3.15 Deeper remains appear to have survived less well than shallower remains, with both skeletons and coffins highly degraded or absent at lower levels.

4.3.16 Skeletons were also occasionally missing from the upper inhumations in each group, as detailed in Appendix 2. This may be due to grave clearance works in the 1970s.

4.3.17 A lead-lined coffin in group 1022 contained well-preserved human remains and it was necessary for this inhumation to be removed by environmental health officers. Another inhumation in this group was also removed at the same time. A thorough archaeological recording of group 1022 was not possible.

Brick shaft graves

4.3.18 Three brick shaft graves were recorded (Plate 1), of which one (group 1027) is preserved *in situ* and was not opened. The other two brick shaft graves (groups 1019 and 1022) each comprised two vaults built vertically above the other, with further unseen vaults probably present below the two excavated vaults of group 1019. Undisturbed natural (019) was seen below the lower vault of group 1022. The brick shaft graves all comprised handmade red brick with lime mortar and had sandstone flag bases and caps. One of the vaults may have comprised two or more skins due to the presence of headers, but the other observed vaults were single skin structures. One vault was recorded as being whitewashed inside. Full details of these brick shaft graves can be found in Appendix 2.

4.3.19 Brick shaft grave 1027, which was preserved *in situ* and not opened, did not follow the regular plan of the other grave cuts. It may have been a later addition to the graveyard, as was the case with similar structures previously excavated (Williams 2016).

4.4 Former Sunday school foundations

4.4.1 By 1825 an extension had been built on the west end of the Square Chapel for use as a Sunday school (Sutcliffe 2009). This western extension to the building was demolished in the 1970s (*ibid.*), and the foundations were encountered during fieldwork (Figure 4, Plate 2).

4.4.2 Red brick walls of one, two or three skins comprised handmade red bricks bonded with lime mortar arranged generally in stretcher bond but with some headers present as noggins (002, 003, 004 and 005).

4.4.3 Sandstone walls generally had two neat faces with a rubble core. Grey lime mortar (possibly coloured by sand derived from the stones) was present in some walls (006, 007, 012, and 020). One stone wall, similar to the others in most regards, was not mortared, with dry joints (013). One lime mortared sandstone wall was seen to be set on a brick foundation (024), and it is possible that this was the case for more of the structures.

4.4.4 Two handmade brick and lime mortar inspection chambers were noted (008 and 018). Culvert drains comprising brick walls with sandstone capping were present (021, 022).

4.4.5 Inscribed ledger stones had been reused as surfaces (015, 017). Each individual stone was assigned its own context number in the range 1249–1261, and the inscriptions are transcribed in Appendix 3. An additional fragment of stone surface comprised flagstones which were not former ledger stones (011).

4.4.6 The archaeologically observed remains of the former Sunday school are consistent with our existing understanding of the structure.

4.5 Demolition and post-demolition features

4.5.1 A handful of demolition and post-demolition features dating to the later 20th and 21st centuries are shown alongside the former Sunday school features on Figure 4. A small pit, 009, was 0.6 m in diameter and 0.15 m deep and likely relates to demolition activity. An area of disturbance was present, 8.5 m by 4.5 m by 1 m deep, caused by the removal of former poured concrete stairs (014). A 21st-century drain was present (016).

5 HUMAN BONE

5.1 Introduction

5.1.1 Human bone recovered during previous excavations to the north of the Square Chapel (Williams 2016) was reported on separately by York Osteoarchaeology (Keefe and Holst 2015). In summary, it was found that the group comprised a slightly higher proportion of females than males, the majority of whom reached mature adulthood (upwards of 45 years). A third of the group was made up of non-adults, with a high proportion of infants and young juveniles. Neonates and infants, however, were under-represented. Data on age and sex has been combined with the results of this phase to facilitate discussion. Other aspects of the first phase of osteological analysis are referred to throughout but it is beyond the scope of this report to attempt a detailed synthesis.

5.1.2 In keeping with the pattern observed in the part of the cemetery to the north of the Chapel, all burials were supine and extended, on a west-east alignment. Six depositum plates were recovered with five dates ranging from the 1840s to 1885 (see Coffin Fittings below, and Appendix 8). Only four individual skeletons could be identified with these inscriptions: William Ibbetson, who died in December 1848, aged 80 years (group 1019, skeleton 1506); Thomas Ibbetson who died in November 1853, aged 54 years; Rachel Ibbotson, who died in 1881 aged in her 80s (group 1019, skeleton 1124); and Emma Briggs, who died aged 6 years (group 1025, skeleton 1356). William was the father of Thomas who married Rachel.

5.1.3 Two burials (group 1022, skeletons 1240, 1242) were exhumed by environmental health operatives from Calderdale Council for reasons of health and safety, one grave (group 1024, skeleton 1285) did not contain any human bone, and further burials were not excavated as they lay beyond the limit of development. The total number of skeletons submitted for osteological analysis was 108. Additional skeletons were identified during analysis, while some were discounted as they were clearly disarticulated deposits, resulting in a final total of 112 skeletons for this phase.

5.1.4 The assemblage comprised a total of 87 adults and 25 non-adults. There were more males than females in the burial population (35 males or probable males, 40.23%; 24 females or probable females, 27.59%) although it was not possible to determine the sex of

28 adult skeletons (32.18%). There were 25 non-adult skeletons in the assemblage, the vast majority being assigned to the younger juvenile category (11 skeletons, 44%).

5.1.5 Overall, the skeletons from this phase were incomplete, moderately fragmented and with generally poor preservation of surface details. Nonetheless, a small number of skeletons were more than 90% complete with minimal fragmentation and excellent preservation of surface detail. This accords well with the result of the first phase of osteological analysis (Keefe and Holst 2015, 20). Stature for both males and females was lower than would be expected for the period. Osteoarthritis was uncommon though there was considerable evidence for degenerative joint disease. Evidence for childhood stress was recovered in the form of cribra orbitalia, scurvy and dental enamel hypoplasia. Osteomalacia and osteoporosis were seen among the adult group. Trauma was also identified in the form of healed fractures. Limited evidence for maxillary sinustitis and respiratory infections was recovered. A single skeleton had been autopsied as evidenced by both a craniotomy and a partial laminectomy. Dental health was poor and the rate of ante-mortem tooth loss (AMTL) was high. This is consistent with consumption of a diet high in refined sugars and processed carbohydrates combined with a lack of dental care.

5.1.6 The recording forms, recording methodology, and report structure are compatible with the first phase of osteological analysis in order to facilitate comparison and possible synthesis of the combined data in the future.

5.1.7 The results of this phase of analysis have been compared in detail with data from the first phase of excavation (Keefe and Holst 2015). The comparative assemblages utilised in the latter report (*op. cit.,* 3) have also been referred to here. These include three sites in Yorkshire: 60 skeletons who appeared to consist of the industrialised urban poor from Rotherham Minster, South Yorkshire (Keefe and Holst 2011); 28 skeletons from the Methodist Ebenezer Chapel in Victoria Gate, Leeds, West Yorkshire (Caffell and Holst 2014) who were believed to represent some of the poorest people in Leeds. Comparative assemblages from further afield include St Martin's-in-the-Bull Ring, Birmingham (Brickley *et al.* 2006).

5.1.8 The osteological and palaeopathological data for the articulated skeletons is summarised in Appendix 4. A detailed skeletal catalogue forms Appendix 5. Data relating to the disarticulated bone is presented in Appendix 6.

5.2 Surface preservation

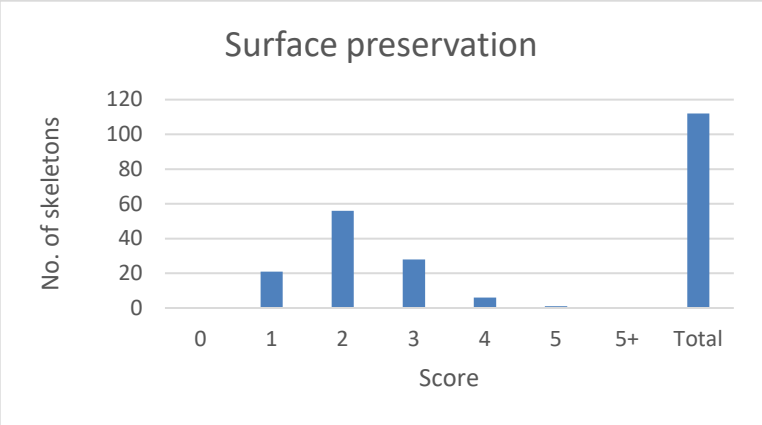
5.2.1 Surface preservation was assessed after the scoring criteria of McKinley (2004, 16) and details appear below (see Table 1).

Table 1: Scoring criteria for skeletal condition (surface preservation)

Score	Scoring criteria
0	Surface morphology clearly visible with fresh appearance to bone and no modification
1	Slight and patchy surface erosion
2	More extensive erosion of surface
3	Most of the bone surface affected by some degree of erosion, general morphology maintained but detail of parts of surface masked by erosive action
4	All of bone surface affected by erosive action; general profile maintained and depth of modification not visible across the whole surface
5	Heavy erosion across whole surface, completely masking normal surface morphology with some modification of profile
5+	As for grade 5 with extensive penetrating erosion resulting in modification of profile (includes near destroyed bone)

5.2.2 Assessment of preservation considers the severity of the bone's surface erosion and of post-mortem breakage but does not consider completeness. Surface preservation can have an impact on both the quality and the quantity of information that can be recovered and is shown in Figure 5.

Figure 5: Surface preservation of articulated human bone

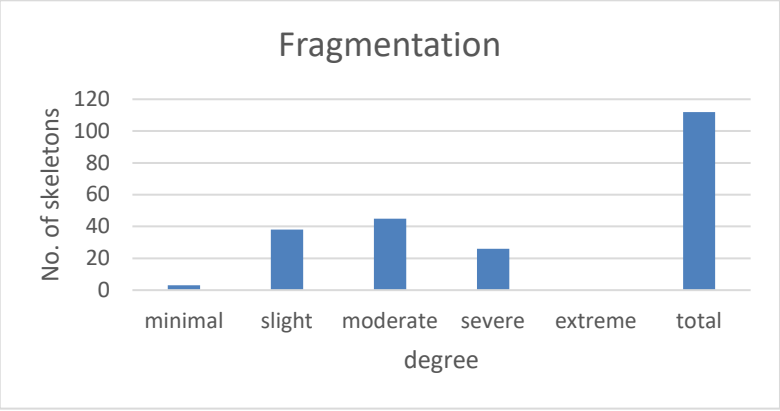


5.2.3 None of the skeletons were assigned to grade 0. The vast majority were scored as grade 2 (56, 50%) or 3 (28, 25%) where surface erosion is significant. A total of 21 skeletons were very well preserved (grade 1, 18.75%). Six skeletons were poorly preserved (grade 4, 5.4%), and a single example was extremely poorly preserved (grade 5, 0.89%). Surface preservation was often variable throughout an individual skeleton, so the condition of the majority of the bones was taken as the preservation grade for the entire skeleton.

5.3 Fragmentation

5.3.1 Five categories were used for scoring the degree of fragmentation, ranging from minimal (little or no fragmentation) through to extreme (extensive fragmentation with bones in multiple small fragments). A total of 3 skeletons had suffered minimal fragmentation, 38 were slightly fragmented, 45 were moderately preserved and 26 had suffered extreme fragmentation (Figure 6).

Figure 6: Fragmentation of articulated human bone

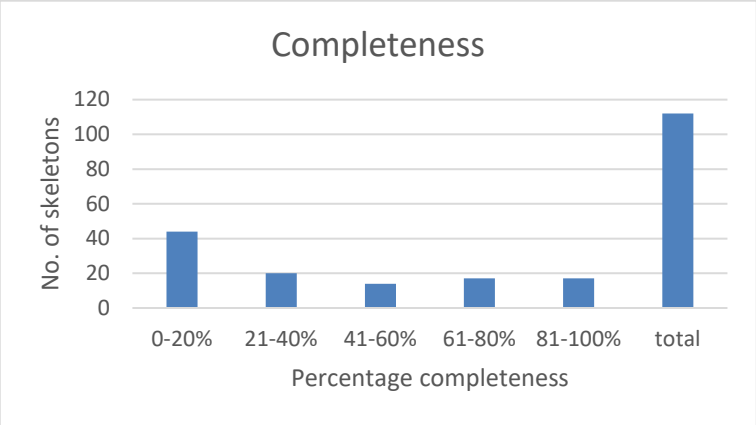


5.4 Completeness

5.4.1 Completeness of individual skeletons (Figure 7) was expressed as a percentage: 0–20%, 21–40%, 41–60%, 61–80% and 81–100%. A total of 44 skeletons (39.29%) were less

than 20% complete and a further 20 were 21–40% complete with 14 (12.5%) in the 41–60% category. The remaining more complete categories were represented by 17 skeletons each (15.18%). A good indicator of the general degree of fragmentation is that stature could only be calculate for a total of 33 adults.

Figure 7: Completeness of human skeletons



5.4.2 Overall, the skeletons from the Square Chapel were incomplete, moderately fragmented and with generally poor preservation of surface details. Nonetheless, a small number of skeletons were more than 90% complete with minimal fragmentation and excellent preservation of surface detail. This agrees with the result of the earlier phase of osteological analysis (Keefe and Holst 2015, 20). Many of the skeletons were stained green as a result of proximity to coffin fittings (Plate 3) and in some cases corrosion products were attached to individual bones. Several skeletons had preserved hair (064, 1150, 1175, 1266, 1276, 1347, 1550), which was retained for scientific analysis.

Plate 3 Staining on right ilium of skeleton 1135 (group 1001)

5.5 Minimum number of individuals (MNI)

5.5.1 Calculation of the minimum number of individuals is carried out in order to determine how many individuals are represented by the combined articulated and disarticulated material without taking account of the number of graves defined by archaeological means. The MNI is calculated by counting all long bone ends and larger skeletal elements. The larger of the totals is the MNI. This is normally lower than the actual number of interred burials, but rather it represents the minimum number of individuals which can be proved to be present osteologically.

5.5.2 The articulated and disarticulated remains from the excavation represent a minimum of at least 74 individuals: 57 adults represented by the right mandible and right orbital rim of the frontal bone and 17 non-adults, all represented by the petrous portion of the left temporal. The fact that the MNI is lower than the number of articulated skeletons which were excavated is a consequence of the partial nature of many of the skeletons.

5.6 Assessment of age

5.6.1 Age at death of adult skeletons (Table 2) was determined by reference to standard ageing techniques comprising auricular surface degeneration (Lovejoy *et al.* 1985), pubic symphysis degeneration (Brooks and Suchey 1990) and dental attrition (Miles 1962; Brothwell 1981). Very few adult pubic symphyses or sternal rib ends (Işcan *et al.* 1984; Işcan *et al.* 1986) survived so these methods were of limited value. Age estimation of non-adult skeletons was based on stages of dental development (Moorrees *et al.* 1963a, 1963b), dental eruption (Ubelaker 1989), measurements of long bones and other relevant skeletal elements (Scheuer and Black 2000).

5.6.2 Non-adult age categories comprised foetus (F – below 38-40 weeks in utero), neonate (N – birth to 1 month), infant (I – 1 to 12 months), younger juvenile (YJ – 1 to 6 years), older juvenile (OJ – 7 to 12 years) and adolescent (A – 13 to 17 years). Adults were assigned to one of the following categories: young adult (YA – 18 to 25 years), prime adult (PA – 26 to 35 years), mature adult (MA – 36 to 45 years), older adult (OA – 45+ years). A category of adult (A) was assigned to adult skeletons who could not be more precisely aged than 18 years or older. A category of non-adult was assigned to skeletons who could not be more precisely aged than less than 18 years (NA).

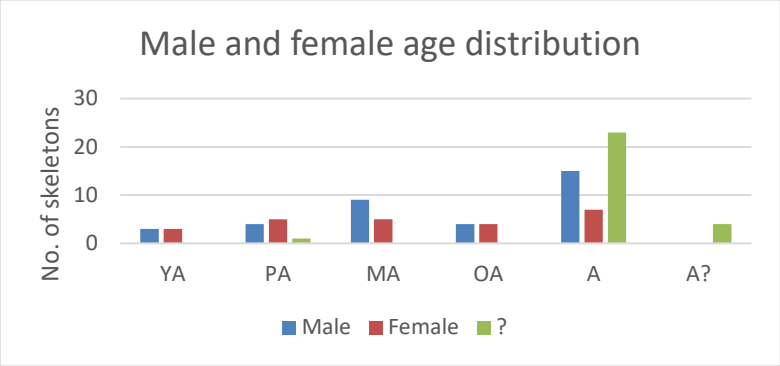
Table 2: Adult age and sex distribution

Age group	Male	%	Female	%	Un-sexed	%	Indeterminate	%	Total	%
YA	3	2.68	3	3.45	0	0	0	0	6	6.89
PA	4	3.57	5	4.46	1	0.89	0	0	10	8.93
MA	9	8.04	5	4.46	0	0	0	0	14	12.5
OA	4	3.57	4	3.57	0	0	0	0	8	7.14
A	15	13.39	7	6.25	23	20.54	0	0	45	40.18
A?	0	0	0	0	4	3.57	0	0	4	3.57
Total	35	31.25	24	21.43	28	25	0	0	87	77.68

Key: ya = young adult (18-25 years); pa = prime adult (26-35 years); mature adult (36-45 years); oa = older adult (45+ years); a = adult (18+ years); a? (?18+ years).

5.6.3 The assemblage comprised 87 (77.68%) adults and 25 (22.32%) non-adults (Figure 8). The proportion of adults from the earlier phase of analysis was slightly lower at 65% with 35% of non-adults. A total of 49 skeletons (56.32%) could only be assigned to the broad adult category (18+ years). A single skeleton was assigned to the non-adult category (less than 18 years). The number of males and females reaching older adulthood (45+ years) was exactly the same (four males, four females). The most common adult age category was mature adult (36–45 years) with nine males and five females, followed by prime adult (26–35 years) with four males and three females. The young adult category (18–25 years) comprised three males and three females.

Figure 8: Adult male and female age distribution

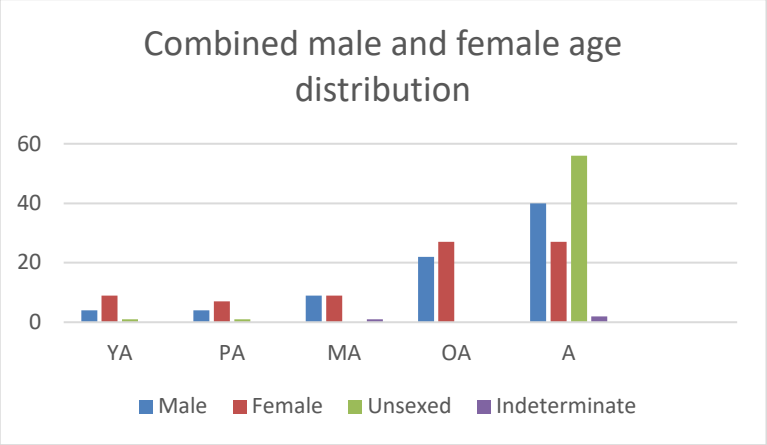


5.6.4 The combined data from both phases of osteological analysis appear below (Table 3 and Figure 9). The numbers of males and females in the population is equal although there are 58 adult skeletons for whom sex could not be determined due to the absence of sexually diagnostic elements.

Table 3: Combined adult age and sex distribution

Age group	Male	%	Female	%	Un-sexed	%	Indeterminate	%	Total	%
YA	4	1.83	9	4.12	1	0.46	0	0.00	14	6.39
PA	4	1.83	7	3.19	1	0.46	0	0.00	12	5.48
MA	9	4.12	9	4.12	0	0.00	1	0.46	19	8.68
OA	22	10.05	27	12.33	0	0.00	0	0.00	49	22.37
A	40	18.26	27	12.33	56	25.57	2	0.91	125	57.08
Total	**79**	**36.07**	**79**	**36.07**	**58**	**26.48**	**3**	**1.37**	**219**	

Figure 9: Combined male and female age distribution



5.6.5 The combined data further shows that older adults, both male and female are the best represented, with the caveat that 125 skeletons could only be assigned to the broad adult category (aged upwards of 18 years).

5.6.6 The London Bills of Mortality for 1800 to 1840 indicate that most adults died in their thirties, forties and fifties although a small number lived well beyond this into their eighties (Roberts and Cox 2003, 304). At least one adult female from this group lived

approximately until she was 88 years old although records suggest this may be slightly inaccurate (Rachel Ibbotson, skeleton 1124, group 1019). This skeleton was analysed without prior knowledge of her recorded age and was placed in the older adult category (aged upwards of 45 years). It is noteworthy that she appears to have suffered from osteoporosis which produced a codfish vertebra and led to a marked kyphosis of the spine. Skeleton 1506 (group 1019) was William Ibbetson who died aged 80 years. The skeleton was identified as an adult male, but due to the level of completeness and absence of suitable age indicators it was only possible to determine that he was an adult aged upwards of 18 years. Skeleton 1504 (group 1019) was Thomas Ibbetson who died aged 54 years. He was identified as a male but again could only be placed into the broad adult category.

5.6.7 It was noted during analysis here, as it was during the previous excavation (Keefe and Holst 2015, 27) that age estimates for this group based on dental wear were not valid. Older adults had relatively little wear and often this could not be scored at all due to the high prevalence of ante-mortem tooth loss.

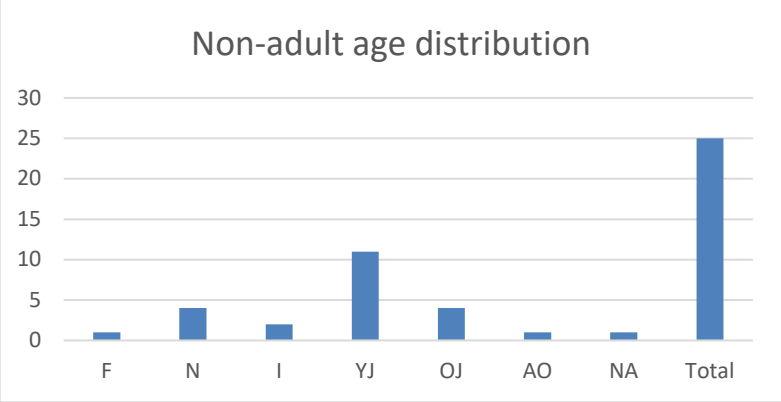
5.6.8 The most commonly represented group among the non-adults was the younger juvenile category (11, 44%), followed by neonates (5, 20%), older juveniles (4, 16%) and infants (2, 8%). The foetus and adolescent categories had a single skeleton each (Table 4, Figure 10). One skeleton could only be assigned to the broad non-adult category. Skeleton 1356 (group 1025) was Emma Briggs who died at the age of six years. Her date of death is unclear from the depositum plate. She was placed into the older juvenile category (6-8 years).

Table 4: Non-adult age distribution

Age	F	N	I	YJ	OJ	AO	NA	Total
number	1	5	2	11	4	1	1	25
%	0.89	4.46	1.79	9.82	3.57	0.89	0.89	22.32

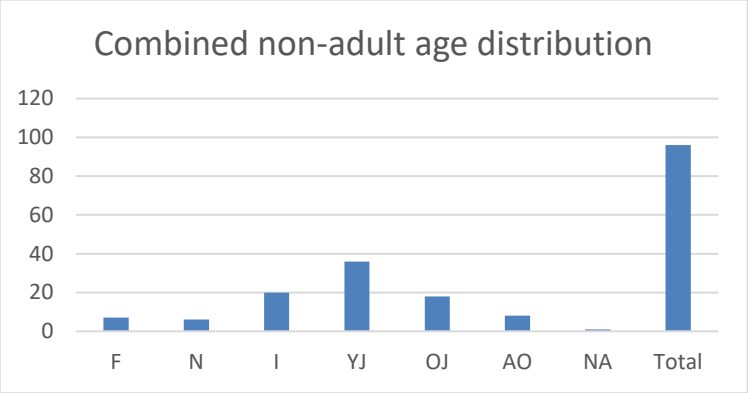
F= foetus (less than 40 weeks in utero); N = neonate (birth – 1 month); I = infant (1-12 months); YJ = younger juvenile (1-6 years); older juvenile (7-12 years; adolescent (13-17 years); NA = non-adult (less than 18 years).

Figure 10: Non-adult age distribution



5.6.9 If the figures for both phases are combined (219 adults, 96 adults, Figure 11) then non-adults account for just over 30% of the cemetery population. The young juvenile category still accounts for the majority of non-adult deaths (37.5%), followed by infants (20.83%), older juveniles (18.75%), adolescents (8.33%), foetuses (7.29%) with neonates still the minority group although the numbers increase from 1.4% to 6.25%.

Figure 11: Combined non-adult age distribution



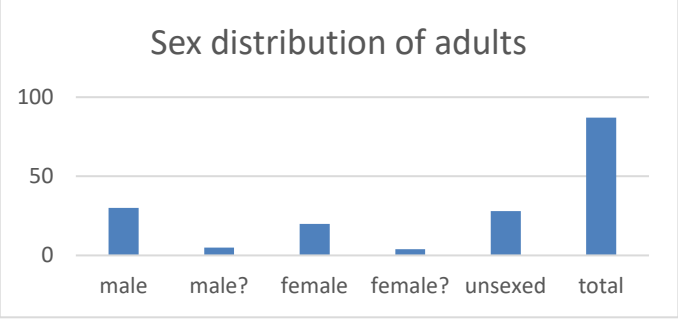
5.6.10 The London Bills of Mortality suggest that approximately 50% of the population died before the age of 20 years from the early 18th- through to the mid-19th century. At St Martin's-in-the-Bull Ring, Birmingham, the proportion of excavated non-adults was 30.3% which was 23% lower than that indicated by the burial registers (Brickley *et al.* 2006). Non-adults at the General Baptist burial ground in Priory Yard, Norwich accounted for 38.1% of all burials (Caffell and Clarke 2011, 254).

5.6.11 The Bills of Mortality further indicate that from 1728 to 1800 more than 30% of all deaths were of individuals aged two years and under, whereas after 1800 the mortality rate of very young children decreased to around 25% (Roberts and Cox 2003, 303). It may be that the low rate of neonatal death is linked to good maternal health (Lewis 2007, 84). Keefe and Holst (2015, 25) suggested that the sharp rise in death shortly after birth could be linked to inadequate levels of care or nutrition. It was further argued (Lewis 2007, 87; Keefe and Holst 2015, 25) that increasing numbers of deaths in the young juvenile category could relate to the practice of sending children to work as apprentices at a younger age than the traditional seven years. In the London Bills of Mortality from 1800 to 1840, only 3–5% of all deaths were in the young juvenile category (Roberts and Cox 2003, 304).

5.7 Sex determination

5.7.1 Sex determination (Figure 12) was carried out using standard osteological techniques for assessment of the pelvis and the skull (Buikstra and Ubelaker 1994). Greater weight is assigned to the pelvis as its shape is directly linked to biological sex whereas skull shape can be affected by factors such as the age of the individual (Walker 1995). Metric measurements were used to supplement assessment of the skull and pelvis (Bass 1987).

Figure 12: Sex distribution of adults



5.7.2 There is an apparent predominance in the assemblage of males (35, 40.23%) over females (24, 27.58%), although it should be borne in mind that the sex of 28 adult skeletons could not be determined. When the data from both phases of excavation are combined, the numbers of males and females are equal.

5.8 Metric analysis

Stature

5.8.1 Stature was calculated using the regression formula developed by reference to adults of known stature (Trotter 1970). As a consequence of the degree of fragmentation and incompleteness it was only possible to estimate stature for a total of 33 (37.9%) of the adult skeletons: 18 males (20.69%), 13 females (14.94%) and 2 unsexed adults (2.29%). The data is presented in Table 5.

Table 5: Stature

Sex	Number		Mean	Range	
	(n)	(%)		Min.	Max.
Male	18	20.69	170.03	154.85	191.97
Female	13	14.94	156.18	149.3	165.37
Unsexed	2	2.29	173.82	169.05	178.6

5.8.2 Males ranged in height from 154.85 cm (5’ 1”) to 191.97 cm (6’ 3”) with a mean stature of 170.03 cm (5’ 5½”). The males from the 2015 phase ranged in height from 163.4 cm (5’ 4½”) to 176.13 cm (5’ 9½”). The mean stature was 169.17cm, or 5’ 6½” (Keefe and Holst 2015, 29). This was considerably shorter than the mean stature of 175.8 cm observed in the upper class males from St George’s Crypt in Leeds (Caffell and Holst 2009) and slightly shorter than the mean stature of males from St Martin’s-in-the-Bull Ring, Birmingham (171.8 cm, Brickley *et al.* 2006). However, the combined male mean stature from Halifax sits within the lower end of the range of means (168–174 cm) given for post-medieval sites by Roberts and Cox (2003).

5.8.3 Females ranged in height from 149.3 cm (4’ 9”) to 165.37 cm (5’ 4”) with a mean of 156.18 cm (5’ 1”). The females from the 2015 phase ranged in height from 151.0 cm (4’ 11½”) to 173.3 cm (5’ 8”), with a mean stature of 158.67 cm (5’ 2½”). This was comparable to the female mean stature seen at St George’s Crypt (158.0 cm, Caffell and Holst 2009) and St Martin’s-in-the-Bull Ring (159.1 cm, Brickley *et al.* 2006) and fell within the range of means (156–164 cm) given by Roberts and Cox (2003) for the post-medieval period.

Platymeric and platycnemic indices

5.8.4 Leg measurements taken from the femora and tibiae are used to calculate the shape and robusticity of the femoral shaft (platymeric index) and the tibial shaft (platycnemic index). The majority of the femora (52, 56.525%) fell into the eurymeric (rounded) range with 36 (39.13%) platymeric (broad and flat) and 4 (4.35%) stenomeric (very rounded). The mean meric index was higher for males than females on both the right and left side. The majority from the 2015 phase fell within the platymeric index (Keefe and Holst 2015, 29) (Tables 6 and 7).

Table 6: Meric index – range and mean

Sex	**Right**			**Left**		
	Mean	**Range**		**Mean**	**Range**	
		Min.	**Max.**		**Min.**	**Max.**
Male	87.94	77.00	116.3	89.59	78.44	121.2

Female	84.93	67.19	115.17	80.31	72.15	105.15
Un-sexed	77.18	66.32	91.96	88.65	83.19	93.24
Total	83.35	70.17	107.81	86.18	77.93	106.53

Table 7: Meric index – number of femora in each category

	Male		Female		Unsexed		Total	
	Right	Left	Right	Left	Right	Left	Right	Left
Platymeric	9	7	7	7	4	2	20	16
Eurymeric	16	16	6	6	5	3	27	25
Stenomeric	1	1	1	1	0	0	2	2
Total	26	24	14	14	9	5	49	43

5.8.5 The majority of tibiae were eurycnemic or broad (61, 75.31%) with 15 (18.52%) mesocnemic or average and 5 (6.17%) platycnemic or flattened (Tables 8 and 9).

Table 8: Cnemic index – range and mean

Sex	Right			Left		
	Mean	Range		Mean	Range	
		Min.	Max.		Min.	Max.
Male	74.06	61.1	91.34	74.66	60.59	85.98
Female	76.16	66.62	88.77	74.36	63.42	84.4
Un-sexed	73.12	60.21	85.3	73.54	64.07	83.32
Total	75.11	62.64	88.47	74.19	62.69	84.57

Table 9: Cnemic index – number of tibiae in each category

	Male		Female		Unsexed		Total	
	Right	Left	Right	Left	Right	Left	Right	Left
Platycnemic	2	2	0	0	1	0	3	2
Mesocnemic	3	5	1	2	1	3	5	10
Eurycnemic	16	17	12	12	3	4	28	33
Total	21	24	13	14	5	7	36	45

Cranial indices

5.8.6 The cranial index is used to describe the shape of the cranium of adult skeletons. It was possible to calculate the index for 21 (24.14%) adult crania, 11 males and 10 females. The majority were mesocranic (n = 12, 57.14%), six were dolichocranic (28.57%), two were brachycranic (9.53%) and one was hyperbrachycranic (4.76%).

5.8.7 The cranial breadth-height index expresses the relationship between the breadth and height of a skull as a percentage. It was possible to calculate the index for 16 individuals (18.39%). The majority of individuals (n=9, 5 males, 4 females) had high skulls (acrocranic), a further 5 (3 males, 2 females) had average or medium skulls (metrocranic), while two females had low skulls (tapeinocranic). The mean index for males was in the acrocranic range while that for females was in the metriocranic range.

5.8.8 The fronto-parietal index expresses the relationship between the minimum breadth of the frontal bone and the maximum cranial breadth. It was possible to calculate the index for 21 individuals. The majority of skulls (14, 7 males, 7 females) were eurymetopic, four were metriometopic and three were stenometopic. The mean index for both males and females was broad.

5.8.9 Both the mean male and female nasal index fell into the platyrrhinic (broad or wide) range. Both male and female orbital indices were mostly hypsichonic (20/25). Other indices could not be meaningfully discussed as there were too few measurements available.

5.9 Non-metric traits

5.9.1 Non-metric traits occur in a minority of skeletons and are believed to suggest hereditary affiliation (Saunders 1989). Other factors such as mechanical stress (Kennedy 1989) and environment (Trinkhaus 1978) have also been implicated. A total of 30 cranial and 30 post-cranial traits are routinely recorded (Berry and Berry 1967; Finnegan 1978; Buikstra and Ubelaker 1994).

Cranial non-metric traits

5.9.2 It was possible to observe the presence or absence of non-metric traits in 66 (75.86%) of the adult skeletons. Frequencies are presented in Tables 10 and 11. Due to the incomplete nature of many of the adult skeletons, the number of individuals for which each trait could be observed was often far fewer than the total number of adult skeletons present.

Table 10: Midline cranial non-metric traits (adults)

Midline traits	Trait present	Part present	%
Ossicle at lambda	7	50	14
Ossicle at bregma	0	54	0
Metopic suture	4	59	6.78
Palatine torus	0	36	0
Precondylar tubercle	1	37	2.7

Table 11: Paired cranial traits (adults)

Paired traits	Right			Left		
	Trait present	Part present	%	Trait present	Part present	%
Highest nuchal line	0	47	0	0	47	0
Lambdoid ossicle	30	49	61.22	28	50	56
Coronal ossicle	34	51	66.66	31	50	62
Ossicle at asterion	2	34	5.88	2	39	51.28
Ossicle at parietal notch	1	32	3.13	1	36	2.77
Ossicle at pterion	1	29	3.45	4	30	13.33
Parietal foramen	20	53	3.77	15	53	28.3
Auditory torus	1	53	1.89	1	50	2
Foramen of Huschke	1	28	3.57	0	29	0
Mastoid foramen extrasutural	8	45	17.77	6	45	13.33
Sutural mastoid foramen	2	45	4.44	3	45	6.66
Open posterior condylar canal	1	33	3.03	1	32	3.13
Double condylar facet	2	36	5.55	3	37	8.11
Double anterior condylar canal	0	32	0	0	33	0
Foramen ovale incomplete	0	30	0	0	30	0
Open foramen spinosum	3	30	10	2	29	6.89
Accessory lesser palatine foramen	1	23	4.35	0	25	0
Maxillary torus	0	39	0	0	38	0
Mandibular torus	1	47	2.13	2	50	25
Zygomatic facial foramen absent	8	38	21.1	8	40	20
Accessory infraorbital foramen	3	30	10	3	28	10.71
Accessory supraorbital foramen	3	36	8.33	1	42	2.38
Bridging of supraorbital notch	8	43	18.6	9	43	20.93
Anterior ethmoid foramen extrasutural	2	15	13.33	1	14	7.14
Posterior ethmoid foramen extrasutural	2	16	12.5	1	14	7.14

5.9.3 Ossicles in the coronal suture were most common followed by ossicles in the lambdoid suture with the left suture being more commonly affected than the right. Only 14% had an ossicle at lambda which contrasts with the 25% from the 2015 phase of analysis (Keefe and Holst 2015, 33).

Post-cranial non-metric traits

5.9.4 Frequencies for post-cranial traits are presented in Tables 12 and 13. Due to the incomplete nature of many of the adult skeletons, the number of individuals for which each trait could be observed was often far fewer than the total number of adult skeletons present. The most common traits were double anterior calcaneal facets and transverse foramen bipartite.

Table 12: Post-cranial midline traits (adults)

Midline traits	Trait present	Part present	%
Sternal foramen	1	16	6.25

Table 13: Paired post-cranial traits (adults)

Paired traits	Right			Left		
	Trait present	Part present	%	Trait present	Part present	%
Lateral atlas bridging	0	20	0	0	20	0
Posterior atlas bridging	3	24	12.5	2	23	8.69
Transverse foramen bipartite	2	23	8.69	6	22	27.27
Suprascapular foramen	3	22	13.63	1	18	5.55
Accessory acromial facet	0	11	0	0	14	0
Circumflex sulcus	1	24	4.16	0	29	0
Supracondyloid process	1	41	2.44	1	49	2.04
Septal aperture	1	39	2.56	1	45	2.22
Accessory sacral facet	0	18	0	0	16	0
Acetabular crease	0	37	0	0	36	0
Allen's fossa	0	29	0	0	28	0
Poirier's facet	0	28	0	1	28	3.57
Plaque	3	28	10.71	2	28	7.14
Hypotrochanteric fossa	0	36	0	0	32	0
Exostosis in trochanteric fossa	0	33	0	0	30	0
Third trochanter	0	35	0	1	32	3.13
Emarginate patella	0	13	0	0	17	0
Vastus notch	1	13	7.69	1	17	5.88
Vastus fossa	0	13	0	0	17	0
Medial tibia squatting facet	0	21	0	0	27	0
Lateral tibia squatting facet	0	22	0	1	29	3.45
Peroneal tubercle	1	13	7.69	1	15	6.66
Double anterior calcaneal facet	12	22	54.54	14	25	56
Absent anterior calcaneal facet	1	22	4.55	1	25	4
Medial talar facet	0	25	0	0	22	0
Lateral talar extension	0	25	0	0	27	0
Os trigonum	0	25	0	0	26	0

5.10 Pathological analysis

5.10.1 All skeletons and disarticulated bones were examined macroscopically for evidence of pathological change. In most cases it is not possible to determine cause of death from skeletal remains. Exceptions to this include chronic, or long-standing conditions, and

traumatic events. Low levels of completeness, high fragmentation and poor surface preservation have a significant bearing on the information that can be recovered.

Congenital conditions

5.10.2 Congenital anomalies or malformations are produced by pathological changes in the normal development during intrauterine life. These anomalies can be observed at birth or years later, and may be hereditary or acquired between fertilisation and birth (Aufderheide and Rodriguez-Martin 1998, 51)

Transitional vertebrae and additional or absent vertebrae

5.10.3 Transitional vertebrae are those that incorporate the morphological characteristics of parts of adjacent vertebrae (Aufderheide and Rodriguez-Martin 1998, 65). The development of a cervical rib is a common congenital condition which normally affects the seventh vertebra (*op cit.* 68). Skeleton 1357 (group 1025), a prime adult female has a cervical rib on the right side of her 7th cervical vertebra. A complete rib extends from the right lateral body and attaches to the transverse process; the rib forms the anterior margin of the right transverse foramen. Two comparable examples were found during the earlier phase of osteological analysis (Keefe and Holst 2015, 39). Skeleton 20 was a young adult female while skeleton 57 was an older adult female.

Block vertebrae

5.10.4 A single skeleton had fused cervical vertebrae with a likely developmental cause. The fifth and sixth vertebral bodies of skeleton 1165 (group 1007) were fused. The integrity of the apophyseal facets is unaffected. Six examples were found in the earlier phase of excavation (Keefe and Holst 2015, 42).

Anomalies of the manubrium and sternum

5.10.5 Skeleton 1357 (already mentioned above) had a fused manubrium and sternum. Smooth well remodelled bone was evident on the central portion of the anterior and posterior surfaces. Two skeletons from the earlier excavation with fusion of the manubrium and sternum were found in the same grave and it was suggested that they may have shared a familial link (Keefe and Holst 2015, 44). The manubrium can become partly or completely fused to the sternum because of a failure of the cartilaginous manubrio-mesosternal joint to develop (Barnes 1994).

Metabolic disease

5.10.6 An adequate supply of nutrients is required during childhood to support normal growth and development. Several conditions are associated with a lack of specific nutrients. Scurvy is caused by a lack of vitamin C which is found in fresh fruit, vegetables and marine fish. The cause of rickets is a lack of vitamin D which the body produces during exposure to sunlight. Diagnoses of these deficiencies are not straightforward as most sufferers would tend to be deficient in more than one nutrient. Furthermore, many of the changes that develop in childhood would have been largely remodelled by the time an individual reached adulthood (Ortner 2003; Lewis 2007).

Cribra orbitalia and anaemia

5.10.7 There is disagreement over the classification of cribra orbitalia as a metabolic disease. For example, Walker (2012, 259) considers porotic hyperostosis of the ectocranial vault and orbital roofs (cribra orbitalia) as a non-specific indicator of disease and places it within the group of miscellaneous conditions. It can be caused by a number of pathological conditions, including inflammation, haemorrhage, iron deficiency anaemia, parasitic anaemia, rickets, scurvy and certain genetic and neoplastic diseases (Ortner 2003, 89).

Some recent work has suggested that cribra orbitalia can occur as a result of megaloblastic anaemia, where a diet which is deficient in vitamin B12 is caused by gastro-intestinal disease or by maternal depletion (Walker *et al.* 2009).

5.10.8 A total of 40 adults and 11 non-adults could be assessed for the prevalence of cribra orbitalia (Table 14), using the descriptive classification of Stuart-Macadam (1992). Only nine individuals were affected. All were non-adults with the exception of skeletons 1283 and 1392, an older adult male and a young adult male.

Table 14: Prevalence of cribra orbitalia

Sex	Right orbit			Left orbit			Individuals		
	A	P	%	A	P	%	A	P	%
Males	2	19	10.53	0	19	0.00	2	19	10.53
Females	0	18	0.00	0	17	0.00	0	21	0.00
Unsexed adults	0	1	0.00	0	2	0.00	0	2	0.00
Non-adults	5	9	55.55	5	9	55.55	7	11	63.64
Total	7	47	14.89	5	47	10.87	9	51	17.65

5.10.9 Cribra orbitalia was observed in almost half of the non-adults (11/25, 44%), affecting 55.5% of both left and right orbits (5/9). This frequency is higher than seen in the 2015 phase of analysis (Keefe and Holst 2015, 46). The frequency for adults, however, is much lower with only two adult males being affected (2/40, 5%). The crude prevalence rate of cribra orbitalia calculated by Roberts and Cox (2003, 307) for the post-medieval period was 8.95%.

Scurvy

5.10.10 Scurvy is caused by a lengthy period of vitamin C deficiency. Humans are unable to synthesis Vitamin C so it has to be acquired from the diet. It is found in fresh fruit, vegetables and marine fish, although much of it will be destroyed during cooking. Vitamin C is involved in the synthesis of collagen which is the main structural protein of the body. A resulting general weakness of connective tissue and a weakness in blood vessel walls leads to haemorrhage which is the main lesion in scurvy. If haemorrhage occurs adjacent to bone it may provoke an osteological response. If consumption of vitamin C is stopped completely, the first symptoms of scurvy will appear after one to three months (Aufderheide and Rodriguez-Martin 1998, 310-14). Children and infants are more likely to develop scurvy than adults and the skeletal changes are usually most severe in infants. Lewis (2007) suggests that the highest occurrence is among children aged six months to two years while Ortner (2003, 384) reported that the highest prevalence of scurvy occurs among infants between eight to ten months of age.

5.10.11 Pathological changes believed to be consistent with scurvy have been identified as abnormal bony porosity and deposition of new bone on existing cortex (Ortner *et al.* 1999, Ortner *et al.* 2001). Typical locations for the lesions include the superior, lateral and inferior orbital walls, the greater wings of the sphenoid, the posterior surface of the maxilla, the medial surface of the zygomatic and the medial surface of the coronoid of the mandible. Other locations are the ectocranial surface of the skull vault, the infra-orbital foramen on the maxilla, the infra- and supra-spinous fossae of the scapula and the metaphyses of the long bones.

5.10.12 Four infants from the earlier phase of analysis (Keefe and Holst 2015, 47) displayed skeletal changes which are frequently linked to scurvy (Ortner 2003, 384-387). Skeleton 44 from the 2015 phase was diagnosed with both scurvy and rickets. Features comprised endocranial and ectocranial lesions on the cranium, new bone formation around the

metaphyses (growth plates of the long bones) and flared sternal rib ends. It is possible that one or more of the non-adults reported on below suffered from both scurvy and rickets.

5.10.13 Unfortunately, many of the skeletons reported on here were very fragmentary and often missing many post-cranial elements. Neither new bone formation around the metaphyses nor flared sternal rib ends were seen in any of the non-adult skeletons although one had new bone deposition on the caudal surface of a rib.

5.10.14 A total of 15 non-adult skeletons (15/25, 60%) had ectocranial and/or endocranial lesions although in only four cases were post-cranial elements involved (1620, 1361, 1611b, 1185). This figure is much higher than the 5.6% from the earlier phase (Keefe and Holst 2015, 48) although there was a much higher prevalence rate of 15.4% from the rural cemetery at Fewston (2/13 non-adults, Caffell and Holst 2010).

5.10.15 Seven of the skeletons (1361, 1235, 1228, 1185, 1620, 1611b, 1025), who were variously aged as foetus, neonate and infant of 3 to 4 months, would appear to be too young for scurvy to have manifested skeletally. Ortner (2003, 384) has suggested that unless the mother of an infant was also suffering from scurvy, ascorbic acid will pass freely from the mother to the developing foetus and even if there is no intake of vitamin C after birth it will take a few months for the skeletal lesions to appear. However, sufferers of scurvy aged less than 3 months at time of death have been identified at Rotherham Minster (Keefe and Holst 2011).

5.10.16 Skeleton 065 (group 1000), was a young child aged 1 to 2 years. The ectocranial surface of the squamous portion of the right temporal has porous and irregular new bone deposition across its full extent. The left and right orbits are filled by porous and irregular new bone. The endocranial surface of the central portion of the right parietal had diffuse deposits of porous and irregular new bone which is grey in colour. The full extent measured 57.34 mm by 32.98 mm.

5.10.17 Skeleton 095 (group 1001), aged 2 to 4 years on the basis of dental eruption and development appeared approximately 1.5 years when a single long bone measurement was used. It is likely that skeletal growth was stunted as a consequence of vitamin deficiency. Grey and porous periosteal new bone was present on the ectocranial surface of the right temporal, covering the mastoid process and encircling the external auditory meatus. The deposit measured 25.69 mm by 20.57 mm. A similar deposit was present on the endocranial surface of the right pars basilaris and measured 17.78 mm by 4.96 mm. The medial surfaces of the right and left mandibular rami were also affected. There was generalised porosity of the alveolar bone in the region of the sockets for the maxillary deciduous molars and the permanent first molars.

5.10.18 Skeleton 1135 (group 1001) was aged 1 to 2 years on the basis of dental development and long bone length. Porous, grey, woven new bone was seen on the right side of the palate, the right maxilla around the sockets for maxillary dentition, the lateral and medial surfaces of the mandible, within the right orbit, the ectocranial surface of the left temporal bone above the external auditory meatus and at the zygomatic root. The deposit on the temporal bone measured 13.12 mm by 9.36 mm. There was also increased porosity in and around the right radial tuberosity and the lateral surface of the right ischium.

5.10.19 Skeleton 1189 (group 1011) was a young child aged 2 years +/- 8 months. An area of increased porosity was present on the right side of the palate, the right maxilla and the ectocranial surface of the right temporal, posterior to the root of the zygomatic arch,

measuring 15.63 mm by 14.32 mm. There was also increased porosity at the tips of the left and right mastoid processes.

5.10.20 Porous new bone deposition was seen on the endocranial surface of the left pars lateralis of skeleton 1272 (group 1016); a young child aged 5 years +/- 16 months.

5.10.21 Skeleton 1349 (group 1025) was an older child aged 8 years +/- 24 months on the basis of dental eruption and development. Lesions comprised diffuse porosity and irregular new bone deposition on the lateral side of the left frontal close to the coronal suture on the endocranial surface. The left greater wing of the sphenoid had a porous appearance with some destruction on the ectocranial surface. Porosity was also seen on the ectocranial and endocranial surfaces of the left squamous portion of the temporal. Bilateral cribra orbitalia was also present.

5.10.22 Skeleton 1443 (group 1036) was a young child aged 1 to 2 years. Porous and irregular new bone deposition was seen on the anterior surface of the proximal shaft of the right humerus. There was increased porosity on the base of the nasal aperture on the left side. Irregular grey and woven new bone deposition was present on the lateral and medial surfaces of the right mandibular ramus. Similar deposits were seen on both surfaces of the right squama, the pars basilaris and the pars lateralis.

5.10.23 Skeleton 1235 (group 1018) was a neonate aged approximately 40 weeks. Porous and irregular new bone deposition was present on the left and right orbits, left and right petrous pyramids, left and right mandibular rami, the greater wings of the sphenoid, the occipital and left and right parietals (both ectocranial and endocranial surfaces were affected).

5.10.24 Skeleton 1228 (group 1021) was a neonate aged 38 to 40 weeks. Areas of diffuse porosity were present on the frontal, left and right temporal, left greater wing of sphenoid, left and right parietals, occipital; right scapula, left and right clavicles, left and right radius, left ulna and left tibia. All skull lesions were on the ectocranial surface.

5.10.25 Skeleton 1408 (group 1025), was placed in the infant category (3 to 4 months) on basis of dental development and fusion of petro-mastoid and squamo-tympanic ring, however, measurements of the mandible indicated an age range of only 38-40 weeks. It is likely that skeletal growth was stunted as a consequence of vitamin deficiency. Porous and irregular new bone deposition on left mandibular ramus. Both medial and lateral surfaces were affected and it was more severe on medial surface where both condyle and coronoid process are affected. Extends throughout alveolar bone. Other elements affected comprise left orbit and ectocranial surface of frontal bone. All surfaces of the maxilla are affected Other elements affected comprised the left orbit, the ectocranial surface of the frontal bone, the nasal aperture and the nasal floor, the right greater wing of the sphenoid, the ecto- and endocranial surfaces of the occipital and the left and right temporal bones in their entirety.

5.10.26 Skeleton 1361 (group 1032) was a foetus aged 32 to 34 weeks. Porous and irregular new bone deposits were present on the shafts of the humeri, radii, ulnae, femoral, tibiae, both surfaces of right ilium, the right scapula, the right pars lateralis, the ectocranial surface of right frontal, the right orbit, the right side of the mandible, left greater wing of the sphenoid, the ectocranial and endocranial surfaces of right petrous and the right squamous.

5.10.27 Skeleton 1620 (group 1010) was a neonate aged approximately 40 weeks. Irregular and porous grey woven new bone was present on the pars basilaris, the left and right zygomatics, the side of the left pars squama, the inferior surface of the right greater wing

of the sphenoid, both surfaces of the occipital, within the left orbit, the ectocranial surface of the frontal and the left and right parietals. Post-cranial elements were also affected: the left scapula on the anterior and posterior surface of the blade on the lateral side, the posterior spine and the acromion; the posterior surface of the left humerus, the anterior and lateral surfaces of the right ulna, and the caudal surfaces of the left and right surfaces.

5.10.28 Skeleton 1611b was a neonate age 36 to 38 weeks. Irregular and porous new bone deposition was patchy on the anterior and posterior surfaces of the left and right humeral shafts; the entire caudal surface of a second right rib was affected. Lesions were severe on the right half of the mandible. The entire lateral surface was affected while it was more diffuse on the medial surface.

Rickets

5.10.29 Vitamin D deficiency causes rickets and osteomalacia in children and osteomalacia in adults (Lewis 2007, 119). No conclusive evidence of rickets was identified among the non-adults although it is possible that some of those described above may have suffered from both scurvy and rickets. Poor surface preservation, high fragmentation and a low level of completeness have all impacted on the amount of recoverable data.

5.10.30 The condition is caused by disturbance to the development and mineralisation of the growth plates (Walker 2012, 186). Osteomalacia produces similar pathological changes but occurs in mature cortical and trabecular bone (Resnick 2002, 1901). The chief cause is a lack of exposure to sunlight, which prevents sufficient intake of vitamin D. Macroscopic features include porosity in the cranial vault, orbital roofs, ribs and metaphyses with deformation of the long bones and roughening of the bone underlying the growth plates (Mays *et al.* 2006, 364). In individuals affected by osteomalacia the skeleton may display evidence of pseudo-fractures or true fractures in specific locations on the pubic ramus, femoral neck (and sub-trochanteric area) and lateral border of the scapula (Brickley *et al.* 2007, 67).

5.10.31 One adult skeleton had evidence of possible residual rickets. The left and right tibiae of skeleton 1165 (group 1007), an adult male aged 26 to 35 years, were bowed medio-laterally. Skeleton 1211 (group 1013), an older adult female aged upwards of 45 years exhibited slight medio-lateral bowing of the left and right tibia and the right fibula. Scoliosis affected the thoracic vertebrae. There was a mild curvature to the right in the superior section and to the left in the inferior section. The spinous processes of the first and second thoracic vertebrae were deviated to the right side. There were also two possible compression fractures affecting the fourth and fifth thoracic vertebrae with slight wedging of the bodies on the right side. The apophyseal facets of the second to the fourth lumbar vertebrae were fused, although the vertebral bodies were unaffected. It is possible that skeleton 1211 and skeleton 1314 suffered from both osteomalacia and osteoporosis.

Osteoporosis

5.10.32 Osteoporosis represents a condition of reduction of total bone mass per unit volume while retaining a normal ratio of bone mineral to bone matrix. There is an increasing clinical tendency to use the term to refer to that form of age-related bone loss without obvious aetiology. (Aufderheide and Rodriguez-Martin 1998, 314) which in the main affects post-menopausal women.

5.10.33 Skeleton 1314 (group 1016) was an older adult female aged upwards of 45 years. Fragmentation was high and the skeleton was only 21–40% complete (skull, mandible, long bones, selected bones of feet). The mandible was completely edentulous and all 16

sockets had been completely resorbed. The surviving cranial sutures were completely obliterated. Degenerative joint disease was seen in the left hip joint with moderately severe porosity in the left femur head. The left acetabulum exhibited moderate porosity, contour change and sub-chondral defects.

5.10.34 The process of trabecular thinning and loss in vertebral bodies which occurs as a consequence of osteoporosis also affects the trabecular bone in the metaphyseal areas of the long tubular bones (Aufderheide and Rodriguez-Martin 1998, 315). There was marked reduction of density in the left and right femur, right tibia and fibula, left and right humerus, left and right ulna, and right radius, with thinning of the cortical bone and enlargement of the medullary cavity and thinning of the trabecular bone.

5.10.35 The left femur shaft had two thin transverse fractures lines. The first was located 6.26 mm above the nutrient foramen on the medial side of the posterior surface. The fracture edges were ragged and irregular with associated mild swelling. A small callus measured survived. The second fracture line was 12 mm below the first. The swelling associated with the second fracture was associated with periostitis which comprised striated lamellar bone and was therefore in a healing stage. This bone also exhibited periosteal reactions running the length of the linea aspera and the pectineal line (attachment for the adductor magnus and the gluteus maximus). It was most severe around the gluteal tuberosity. On the anterior surface the intertrochanteric line had a similar appearance (attachment for the ilio-femoral vastus medialis).

5.10.36 The right femur had a fracture line in the same location as the second described above. It was slightly shorter, more curved with a smaller callus (Plate 4).

Plate 4: Skeleton 1314 (group 1016), fracture lines on right femur

5.10.37 The right ulna had a fracture line running horizontally immediately below the nutrient foramen on the medial side. Healed periostitis and slight callus were noted.

5.10.38 Skeleton 1124 (group 1019), was identified as an older adult female aged upwards of 45 years. This skeleton is also 21–40% complete although there was less fragmentation. She had suffered probable collapse of the first lumbar vertebra (codfish vertebra, Plate 5) with a resulting marked kyphosis of the seventh through to the twelfth thoracic vertebrae. The anterior body thickness of the collapsed vertebra was 12.37 mm while the posterior thickness was 21.60 mm. There was marked reduction of density in the surviving long bones, with thinning of the cortical bone and enlargement of the medullary cavity and thinning of the trabecular bone.

Plate 5: Skeleton 1124 (Rachel Ibbotson, group 1019), fourth lumbar vertebra, codfish vertebra

5.10.39 This skeleton was identified during excavation as Rachel Ibbotson, aged around 88. All dentition had been lost ante-mortem (32/32) and the sockets were completely resorbed. Auricular surface ageing was 50 to 60 years, sternal rib ends were phase 7 (59.2-71.2 years) and cranial sutures were obliterated. She was placed in the older adult category (aged upwards of 45 years).

5.11 Trauma

5.11.1 Most of the evidence for trauma in archaeological populations is focussed on fractures to bone (Roberts and Manchester 2005, 84–85) with the caveat that old and well-healed fractures can be difficult to identify. A total of 19 adults (21.84%) had 29 ante-mortem fractures. The prevalence of adult fractures in different bones is presented in Table 15. The majority were sustained by males, with rib fractures the most common (6/29, 20.69%). In the earlier phase of work 18.2% of all adults had ante-mortem fractures with the total number of bones fractured being 45. Males were more commonly affected than females (13/11).

Table 15: Ante-mortem fracture prevalence (bone elements)

Bone	Male			Female			Unsexed			Total		
	A	P	%	A	P	%	A	P	%	A	P	%
Parietal	1	62	16.13	1	44	2.27	0	26	0.00	2	132	1.52
nasal	2	42	4.77	0	38	0.00	0	6	0.00	2	86	2.33
TV4	0	10	0.00	1	10	10.00	0	0	0.00	1	20	5
TV5	0	11	0.00	1	10	10.00	0	0	0.00	1	21	4.76
TV6	0	11	0.00	0	11	0.00	1	2	50.00	1	24	4.17
LV1	0	14	0.00	1	11	9.09	0	2	0.00	1	27	3.7
LV5	1	17	5.88	0	9	0.00	0	2	0.00	1	28	3.57
Ribs	6	282	2.13	1	205	0.49	0	32	0.00	7	519	1.35
Sternum	1	9	11.11	0	29	0.00	0	2	0.00	1	40	2.5
Clavicle	2	46	4.35	0	34	0.00	0	8	0.00	2	88	2.27
Humerus	1	56	1.79	1	45	2.22	0	27	0.00	2	128	1.56
Ulna	1	53	1.89	0	41	0.00	0	16	0.00	1	110	0.91
Radius	0	53	0.00	0	37	0.00	1	17	5.88	1	107	0.93
1st metacarpal	1	26	3.85	0	16	0.00	0	4	0.00	1	46	2.17
Femur	1	62	1.61	0	41	0.00	1	40	2.50	2	143	1.39
Tibia	1	58	1.72	0	36	0.00	0	30	0.00	1	124	0.81
Fibula	1	54	1.85	0	33	0.00	1	17	5.88	2	104	1.92
Total	19	866	2.19	6	650	0.92	4	231	1.73	29	1747	1.66

Key: A=affected; P=number of bones possible to observe

5.11.2 The 2015 phase of osteological analysis found that fractures of the thoracic vertebrae, spondylolysis and os acromiale were the most common fractures (Keefe and Holst 2015,

51). Neither of the latter two were seen in this assemblage although there were three fractures to thoracic vertebrae. Roberts and Cox (2003, 302) report that on average the ribs (4.2%), femur (1.3%) and humerus (1.1%) were the bones most frequently fractured in the post-medieval period. The fibula (0.8%), vertebrae (0.3%) and the bones of the hand were also commonly affected (*ibid.*).

Ante-mortem limb fractures

5.11.3 Skeleton 1227 (group 1021), a female aged upwards of 18 years had a healed fracture of the right humerus (Plate 6). The bone was angulated in an anterior direction. Skeleton 1283, an adult male aged upwards of 45 years, had a healed neck fracture of the right humerus. Union of the broken ends is poor and there is a collar of bone surviving around the circumference of the shaft. The humeral head is displaced in a posterior and lateral direction. There is a large osteophyte on the lateral side of humeral shaft which projects 10.96 mm. The right glenoid does not survive although there is evidence of degenerative joint disease (mild porosity on the humeral head).

Plate 6: Skeleton 1227 (group 1021), healed fracture of neck of right humerus

5.11.4 Skeleton 1171, an adult male aged 36 to 45 years had a possible healed fracture of the right distal ulna, indicated by slight traces of callus located on the medial side of the anterior surface. Skeleton 1154, an unsexed adult aged upwards of 18 years, had a healed midshaft fracture of the right radius. The shaft is angled in a medial direction and slightly thickened.

5.11.5 Skeleton 1169, an unsexed adult aged upwards of 18 years, had a healed fracture of the neck of the right femur (Plate 7). The femur head is displaced anteriorly and there is callus present on the anterior surface of the femoral neck. Skeleton 1197, an adult male aged upwards of 18 years, had a healed surgical neck fracture of the left femur. There is displacement of the femoral head in a distal direction. The superior margin of the femoral head is only slightly above the horizontal plane of the greater trochanter. Prolific production of callus has obscured the greater and lesser trochanters. There is no evidence of infection. A surviving fragment of left acetabulum has mild porosity and new bone deposition.

Plate 7: Skeleton 1197 (group 1012), healed fracture of neck of right femur

5.11.6 Skeleton 1332, an adult male aged upwards of 18 years, had a healed fracture of the right distal tibia. There is swelling of the shaft with porous new bone and callus surviving. Skeleton 1332 also had a healed fracture of the right distal fibula with poor apposition of ends and callus surviving. It is likely that the fracture to the tibia and the fibula were the result of a single traumatic event. Skeleton 1154, an unsexed adult aged upwards of 18 years, had a possible healed fracture of the right distal fibula. The shaft is thickened and slightly irregular in appearance.

5.11.7 Skeleton 1400, an adult male aged 36 to 45 years, had a healed fracture of the right clavicle at the medial end. There is poor apposition of the fractured portions with marked shortening in comparison to the left clavicle. At the lateral end of the break the bone is angulated downwards in a distal and posterior direction. The joint surfaces are normal and there is no sign of infection or swelling of the shaft. Skeleton 1472, an adult male aged upwards of 18 years, had a healed fracture at the midshaft of the right clavicle. There is swelling on the proximal surface of the shaft.

5.11.8 Skeleton 1268 (group 1015), an adult male aged 36 to 45 years, had a possible healed fracture on left side of the anterior surface of the sternum. The fracture line runs from the articulation for the xiphoid to the proximal rim of the left costal notch.

5.11.9 Skeleton 1131, an adult male aged upwards of 18 years, had a probable healed fracture of the right first metacarpal. There is shortening of the shaft which is angled in a palmar direction. The proximal articulation is enlarged and both osteophytes and porosity were noted.

Ante-mortem fractures to the vertebrae

5.11.10 Five vertebral crush fractures were identified in four skeletons (1124, 1211, 1294, and 1447). Skeleton 1211, an older female aged upwards of 45 years had compression fractures of the fourth and fifth thoracic vertebrae.

5.11.11 Skeleton 1294 suffered a compression fracture of the body of the sixth thoracic vertebra. There was slight post-mortem damage to bone but clear compression on right side and probably anteriorly. The vertebral body is wedge-shaped. The bodies of the seventh and eighth thoracic vertebrae are fused on left side and anteriorly. This has caused a slight scoliosis to the left side with an increase in the disc shape between the vertebrae on the right side. The vertebral facets are not fused. The scoliosis is likely to have occurred as a result of the compression fracture. Skeleton 1124, an older adult female aged upwards of 45 years had a compression fracture of the first lumbar vertebra. The anterior body thickness is 12.37 mm while the posterior thickness is 21.60 mm. There is a marked

kyphosis affecting the seventh through to the twelfth thoracic vertebra. Skeleton 1447, an older adult male aged upwards of 45 years, had a compression fracture of the fifth lumbar vertebra with marked wedging on the right side.

Ante-mortem fractures to the ribs

5.11.12 A total of four adults had seven rib fractures (1332, 1232, 1124, and 1533). All had one fracture apart from skeleton 1533 with four.

5.11.13 Skeleton 1332, an adult male, aged upwards of 18 years, had a poorly healed midshaft fracture of a probable fourth rib with surviving callus. Skeleton 1232, an adult male aged 36 to 45 years, had a well-healed fracture of a left seventh or eighth rib, close to the sternal end. Slight callus survived on both the cranial and caudal surfaces. Skeleton 1124, an older adult female aged upwards of 45 years, had a healed fracture of the left twelfth rib. It was located at the angle of the rib and there was surviving callus. Skeleton 1533 (group 1042), an adult male aged 36 to 45 years, had four healed rib fractures, all located at midshaft, left second, right third, sixth and seventh. The latter had surviving callus and healed periostitis on the caudal surface.

Ante-mortem cranial trauma

5.11.14 Skeleton 1150, an adult female aged upwards of 18 years had a depressed linear fracture located at the posterior portion of the sagittal suture. Skeleton 1400, and adult male aged 36 to 45 years, had a depressed fracture on right parietal. It was a linear depression extending from the sagittal suture, running downwards diagonally in a posterior direction.

5.11.15 Skeleton 1470 (group 1039), an adult male aged 36 to 45 years had a healed nasal fracture. The fracture line runs horizontally from left to right approximately 13 mm below the glabella. There is marked deviation of the bone below the fracture line towards the right. Three comminuted fragments have fused together (Plate 8).

5.11.16 In general, low velocity injuries affect a broad area and generate a linear fracture while the energy of high velocity impacts is often focussed on smaller areas causing depressed fractures (Stewart 1979).

Plate 8: Skeleton 1470 (group 1039), healed nasal fracture

5.12 Infectious disease

5.12.1 Infections to which the body has developed at least sufficient immunity to prolong its co-existence as a chronic infection are the most likely to generate obvious skeletal lesions (Aufderheide and Rodriguez-Martin 1998, 118). The initial bony response to infection is the production of disorganised, woven bone which during the healing process is remodelled and transformed into lamellar bone. Therefore, woven bone is indicative of an infection that was active at the time of death, whereas the presence of lamellar bone

indicates that an infection has healed or is in the process of healing. In cases where both are present, it is likely that an infection is longstanding or recurring. Much of the evidence for infection is non-specific, in other words it is not possible to diagnose a specific condition.

Maxillary sinusitis

5.12.2 Maxillary sinusitis (Table 16) is one of the most common non-specific infections in past and modern populations. Dental abscesses, poor ventilation, air pollution and allergies have all been linked to the condition, which, unless treated, chronic sinusitis can persist for years; skeletal changes can start to manifest after only a few weeks (Lewis *et al.* 1994, 498). Four skeletons (1150, 1276, 1197, and 1283) exhibited the changes characteristic of sinusitis in a single sinus. Sinuses were not systematically investigated. Only those that were broken or readily visible were investigated. It is highly likely that this impacted the prevalence rate. In the case of skeleton 1150 and 1197, both sinuses were visible and only one was affected. In the other two cases, only one sinus could be observed.

Table 16: Prevalence of maxillary sinusitis in adults (sinuses and individuals)

Sex	Right maxilla			Left maxilla			Individuals		
	A	P	%	A	P	%	A	P	%
Males	0	9	0	2	13	15.38	2	13	15.38
Females	1	7	14.29	1	8	12.5	2	8	25
Unsexed	0	0	0	0	1	0	0	1	0
Total	1	16	6.25	3	22	13.63	4	22	18.18

Key: A = number of sinuses/individuals with maxillary sinusitis; P = number of sinuses/individuals possible to observe.

5.12.3 Skeleton 1150, an adult aged upwards of 18 years, had spicules of new bone on the right side. The left was unaffected. Skeleton 1276, an older adult female aged upwards of 45 years, had small spicules of bone in the left maxillary sinus. The right sinus was not visible although there was a small circular perforation on the right side of the palate with associated periostitis. Skeleton 1197, an adult male aged upwards of 18 years, had globules of new bone present in the left sinus. The right was unaffected. Skeleton 1283, an older male aged upwards of 45 years had spicules of new bone in the left sinus. The right was not observed.

5.12.4 A total of 30 adults from the earlier phase of excavation had sinusitis (Keefe and Holst 2015, 65) and it was noted that the frequency was 10 times higher than the 6.9% reported for the post-medieval period (Roberts and Cox 2003, 400).

Respiratory infections

5.12.5 Lung infections can lead to deposits of new bone on the visceral surfaces of the ribs (Roberts and Manchester 2005) and in a high percentage of individuals these lesions have been associated with tuberculosis (Santos and Roberts 2006, Matos and Santos 2006, Mays *et al.* 2002, Santos and Roberts 2001).

5.12.6 Skeleton 1303 (group 1026), an adult female aged upwards of 18 years, had active periosteal lesions on the visceral surfaces of the heads and necks of the left fourth to ninth ribs (Plate 9). The lesions comprise thick deposits of pitted lamellar bone which are covered by thin layers of finely pitted grey woven bone. There were no surviving right ribs so it is not possible to determine if the condition was bilateral. There were also endocranial lesions present on the skull which follow the line of the coronal suture and are partly masked by post-mortem erosion. The lesions comprise a mixed deposit of pitted and capillary style impressions within a layer of light grey new bone (Walker 2012, 273, fig. 437). These lesions may equate to Lewis's Type I and Type III lesions indicating non-

specific haemorrhage or infection at time of death (Lewis 2004). A possible causative link between the rib and endocranial lesions is tuberculoid meningitis.

Plate 9: Skeleton 1303b (group 1026), periosteal lesions on sixth left rib

5.12.7 Skeleton 1611a, an adult male aged 36 to 45 years, had deposits of grey woven bone on the visceral surfaces of three rib shaft fragments.

Endocranial new bone formation

5.12.8 Bone formation on the endocranial (internal) surface of the cranium is much more common in infants and children than they are in adults. It has been linked to inflammation or haemorrhage of the meningeal blood vessels, although likely causes are presently unclear. A number of possible causes for the lesions in children have been identified and these include tuberculosis, chronic meningitis, trauma, anaemia, neoplastic disease, metabolic diseases (scurvy and rickets) and venous drainage disorders (Lewis 2004, Lewis 2007).

5.12.9 Non-adults with endocranial lesions are discussed above. Adult skeleton 1303a is discussed above.

Periosteal reactions

5.12.10 Periosteal new bone forms the protective layer of periosteum which encases the bones. It can be found in individuals with a range of conditions including infection, trauma, scurvy, venous stasis, secondary hypertrophic osteoarthropathy and neoplastic disease (Resnick 2002, 4884; Ortner 2003, 88). Often the lesions are not diagnostic and in such cases should be described as 'periosteal lesions' (Walker 2012, 34). Grey, disorganised woven bone is an initial response and it is later converted into more organised and dense lamellar bone.

5.12.11 A total of 10 adults (11.49%) and two non-adults (8%) had periosteal reactions on at least one of their skeletal elements. In the 2015 phase of excavation, 33 of the adults (25%, 33/132) had periosteal reactions on at least one of their skeletal elements. The crude prevalence rate quoted by Roberts and Cox (2003, 344) was 26.26%. It is quite likely that poor surface preservation has contributed to the low rate of periostitis observed during this phase of work.

5.12.12 Skeleton 1131, an adult male aged upwards of 18 years, had a femoral haematoma with marked swelling on the lateral side. Striated lamellar bone covers the area of swelling. Skeleton 1202, an adult male of 26 to 35 years had periostitis on the posterior surface of the left and right tibiae which followed the direction of the soleal line. Skeleton 1146, an adult female aged 26 to 35 years, had three areas of healed periostitis and three patches of active periostitis on the anterior, medial and posterior surfaces of the left distal femur. Skeleton 1171, an adult male aged 36 to 45 years, had two areas of healed periostitis on the right radius; one on the right ulna, and one on the right femur. Skeleton 1381, an adult male aged upwards of 18 years had healed periostitis on the right tibia and fibula. Skeleton 1247, an adult male aged 26 to 35 years, had mild healed periostitis associated with a haematoma, located on medial side immediately below the midshaft of the left

femur. Skeleton 1357, an adult female aged 26 to 35 years, had active periostitis on the anterior surface of the distal third of the left radius, immediately above the distal articulation. Skeleton 1290, an adult male aged 26 to 35 years, had two areas of active periostitis on the left radius, on the medial side of the midshaft, posterior to the interosseous crest, and just below the midshaft on the lateral side. Skeleton 1470, an adult male aged 36 to 45 years, had a haematoma located at the midshaft of the right femur which was associated with healed periostitis. Skeleton 1533, an older adult male aged upwards of 45 years, had healed periostitis on the tibiae. The distal end, anterior, medial and posterior surfaces were affected. It was slightly more diffuse on the right tibia. Skeleton 1482, an older child aged 10 to 12 years, had active periostitis on the posterior surface of the right femur, immediately below the nutrient foramen. Skeleton 1365, a young child aged 5 to 7 years, exhibited active periostitis which encircled the proximal end of the left ulna. It extended up to 41.91 mm from the proximal end; there was a possible circular lytic defect on the medial side (max. diameter 2 mm). The periosteal new bone was slightly darker and thicker around this defect.

5.13 Joint disease

5.13.1 Many conditions with different causes are encompassed by the term joint disease. However, all affect the articular joints of the skeleton. Joint disease is influenced by a range of factors which include physical activity, occupation, workload and advancing age. Only degenerative joint disease and osteoarthritis have been identified in this assemblage. The frequency of osteoarthritis is lower than would be expected in such a group.

Degenerative joint disease

5.13.2 Degenerative joint disease (DJD) is the most common type and it is characterised by bone formation (osteophtyes) and bone resorption (porosity) at and around the articular surfaces of the joints. The condition can cause discomfort and disability in its advanced stages (Rogers 2000).

Extra-spinal degenerative joint disease

5.13.3 Overall 13.07% of extra-spinal joints exhibited some degree of degenerative joint disease (DJD). The hip was the most commonly affected joint and males were affected more than females. In the earlier phase of excavation the manubrio-clavicular joint was the most affected, followed by the hip and again males were more commonly affected than males. Among the present assemblage the manubrium of only 11 adult skeletons survived and this probably accounts for the disparity as almost half of the medial clavicles exhibited some degree of joint disease. The next most commonly affected joint was the shoulder. The knee joint was not commonly affected nor was the ankle. The hip was also the joint most commonly affected by extra-spinal osteoarthritis, followed by the wrist and the knee (all Table 17).

5.13.4 It has been suggested that more than 50% of those over 60 years of age may suffer from some degeneration of the hips which is unsurprising as along with the knees they are the major weight bearing joints of the lower limbs (Aufderheide and Rodriguez-Martin 1998).

Table 17: Prevalence of degenerative joint disease in the extra-spinal joints (joints affected)

Joint	Bone	Male			Female			Unsexed			Total		
		With DJD	N	%	With DJD	N	%	With DJD	N	%	With DJD	N	%
Jaw	TMJ	4	30	13.33	4	16	25.00	1	4	25.00	9	50	18.00
	Mandible	4	27	14.81	4	15	26.66	1	4	25.00	9	46	19.57
Manubrio-clavicular	Manubrium	1	3	33.33	2	8	25.00	0	0	0.00	3	11	27.27
	Medial clavicle	12	22	54.55	6	20	30	2	2	100.00	20	44	45.45
Shoulder	Lateral clavicle	8	12	66.66	1	13	7.69	2	3	66.66	11	28	39.29
	Glenoid	13	27	48.15	5	23	21.73	1	5	20.00	19	55	34.55
	Proximal humerus	12	24	50.00	12	24	50.00	1	2	50.00	25	50	50.00
Elbow	Distal humerus	2	32	6.25	2	24	8.33	0	6	0.00	4	62	6.45
	Proximal radius	4	23	17.39	3	21	14.29	0	1	0.00	7	45	15.55
	Proximal ulna	4	30	13.33	3	21	14.29	0	6	0.00	7	57	12.28
Wrist	Distal radius	2	28	7.14	0	18	0.00	0	0	0.00	2	46	4.35
	Distal ulna	6	24	25.00	0	15	0.00	0	1	0.00	6	40	15.00
	Scaphoid	3	13	23.08	0	6	0.00	0	0	0.00	3	19	15.79
	Lunate	2	13	15.38	1	10	10.00	0	0	0.00	3	23	13.04
Hand		16	156	10.26	1	88	1.14	4	7	57.14	21	251	8.37
Fingers		12	379	3.17	0	238	0.00	0	5	0.00	12	622	19.29
Hip	Acetabulum	28	43	65.12	9	24	37.5	4	7	57.14	41	74	55.40
	Proximal femur	29	50	58.00	15	29	51.73	10	12	83.33	54	91	59.34
Knee	Distal femur	3	34	8.82	2	25	8.00	2	5	40.00	7	64	10.94
	Patella	4	14	28.57	2	11	18.18	1	4	25.00	7	29	24.14
	Proximal tibia	2	27	7.41	3	18	16.66	0	1	0.00	5	46	10.87
	Proximal fibula	1	11	9.09	1	4	25.00	0	0	0.00	2	15	13.33
Ankle	Distal tibia	0	31	0.00	0	24	0.00	0	5	0.00	0	60	0.00
	Distal fibula	7	22	31.82	2	16	12.5	1	3	33.33	10	41	24.39
	Talus	4	27	14.81	3	18	16.66	0	5	0.00	7	50	14.00
Foot		13	176	7.39	11	128	8.59	2	32	66.66	26	336	7.74
Toes		4	118	3.39	0	99	0.00	1	15	6.66	5	232	2.16
Total		**200**	**1396**	**14.33**	**92**	**956**	**9.62**	**35**	**135**	**25.93**	**325**	**2487**	**13.07**

Key: TMJ = tempero-mandibular joint; P = proximal; D = distal; M = medial; Hand = proximal metacarpals, triquetral, pisiform; hamate, trapezium, capitate, trapezoid; Fingers = distal metacarpals and phalanges; Foot = calcaneus, cuboid, navicular, medial, lateral and intermediate cuneiforms and proximal metatarsals; Toes = distal metatarsals and phalanges.

Spinal degenerative joint disease

Vertebral bodies

5.13.5 Although 53 adults had one or more vertebral bodies preserved, only 3 had complete spines comprising the bodies of 6 cervical vertebrae (the first cervical vertebra has been excluded as it does not have a body) 12 thoracic vertebrae, 5 lumbar vertebrae and the body of the first sacral vertebra. Most spines were very poorly preserved. In total, 545 vertebral bodies were present, providing an average of 6.26 vertebral bodies per adult skeleton (less than a quarter of the expected 24) which accords very well with the 6.5% from the 2015 phase of osteological analysis (Keefe and Holst 2015). Cervical vertebrae were the best preserved with 1.69 per skeleton, followed by lumbar with 1.28 per skeleton, thoracic with 0.89 per skeleton and sacral with 0.24 per skeleton (24.4%) of the expected total.

5.13.6 The prevalence rate of DJD of the vertebral bodies (Table 18) was 26.79% with 23 out of 51 adults exhibiting some degree of degeneration. The most commonly affected vertebrae were the lumbar (30.32%) followed by the sacral (30.00%), cervical (29.25%) and thoracic (24.01%). Unsurprisingly, older adults were most commonly affected, the prevalence rate being 64.82%. The male and female rates were almost identical at 64.39% and 65.29% respectively. Overall, degenerative changes to the vertebral bodies increased with age, although there were interesting differences between males and females. Both prime and mature adult males exhibited a far higher prevalence rate than females of the same category and the prevalence rate for prime adult males was actually higher than that for mature adult males (31.03% and 23.45%). Presumably this was linked to work-based activities.

Vertebral articulations

5.13.7 Overall, 15.66% (178/1137) of vertebral apophyseal facets (joints between the vertebrae) were affected by DJD with the highest prevalence seen in the sacral facets (22.50%) followed by the thoracic (16.09%), cervical (15.19%) then lumbar facets (15.06%), although the latter three all had very similar frequencies.

5.13.8 The prevalence of DJD of the vertebral bodies (Table 19) increases with age among the females. In males, however, the prevalence rate is not directly linked to increasing age: the highest rate is among the mature adult males (25.82%) followed by the older adults (19.12%), prime adults (7.14%) and the young adults (4.96%). Plate 10 shows the seventh cervical vertebra of skeleton 1190, an older adult male, aged upwards of 45 years, with moderate osteophytes and severe porosity.

Plate 10: Skeleton 1190 (group 1010), the superior surface of the seventh cervical vertebra

Table 18: Prevalence of DJD of the vertebral bodies (individual surfaces are scored separately)

Sex	Age	CV			TV			LV			S			Total		
		With DJD	N	%	With DJD	N	%	With DJD	N	%	With DJD	N	%	With DJD	N	%
M	YA	0	8	0	0	36	0	1	20	10	0	2	0.00	1	66	0
	PA	9	31	29.03	8	18	44.44	1	9	11.11	0	0	0.00	18	58	31.03
	MA	17	60	28.33	18	116	15.52	17	44	38.64	1	6	16.67	53	226	23.45
	OA	21	38	55.26	42	68	61.76	20	24	83.33	2	2	100	85	132	64.39
	A	7	24	29.17	6	36	16.67	7	21	33.33	2	3	66.67	22	84	26.19
	Total	**54**	**161**	**32.91**	**74**	**274**	**27.01**	**46**	**118**	**38.98**	**5**	**13**	**38.46**	**179**	**566**	**31.63**
F	YA	0	15	0.00	0	24	0.00	1	20	5	0	1	0.00	1	60	1.67
	PA	0	33	0.00	5	108	4.63	0	32	0.00	0	2	0.00	5	175	2.86
	MA	2	25	8.00	6	51	11.77	2	9	22.22	0	1	0.00	10	86	11.63
	OA	17	35	48.57	43	60	71.67	18	24	75	1	2	50.00	79	121	65.29
	A	9	14	64.29	0	2	0.00	0	3	0.00	0	0	0.00	9	19	47.37
	Total	**28**	**122**	**22.95**	**54**	**245**	**22.04**	**21**	**88**	**23.86**	**1**	**6**	**16.66**	**104**	**461**	**22.56**
U	YA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
	PA	0	0	0.00	0	4	0.00	0	0	0.00	0	0	0.00	0	4	0
	MA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
	OA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
	A	4	11	36.36	5	31	16.13	0	15	0.00	0	1	0.00	9	58	15.52
	Total	**4**	**11**	**36.36**	**5**	**35**	**14.29**	**0**	**15**	**0.00**	**0**	**1**	**0.00**	**9**	**62**	**14.52**
Total	YA	0	23	0.00	0	60	0.00	2	40	5.00	0	3	0.00	2	126	1.59
	PA	9	64	14.06	13	130	10.00	1	41	2.44	0	2	0.00	23	237	9.70
	MA	19	85	22.35	24	167	14.37	19	53	35.85	1	7	14.29	63	312	20.19
	OA	38	73	52.05	85	128	66.41	38	48	79.17	3	4	75.00	164	253	64.82
	A	20	49	40.82	11	69	15.94	7	39	17.95	2	4	50.00	40	161	24.84
	Total	**86**	**294**	**29.25**	**133**	**554**	**24.01**	**67**	**221**	**30.32**	**6**	**20**	**30.00**	**292**	**1089**	**26.79**

Table 19: Prevalence of DJD of the vertebral articulations (individual surfaces are scored separately)

Sex	Age group	CV			TV			LV			S			Total		
		With DJD	N	%	With DJD	N	%	With DJD	N	%	With DJD	N	%	With DJD	N	%
M	YA	11	132	8.33	6	149	4.03	2	94	2.13	0	8	0.00	19	383	4.96
	PA	5	58	8.62	3	39	7.69	1	27	3.70	0	2	0.00	9	126	7.14
	MA	18	120	15.00	59	212	27.83	34	106	32.08	2	9	22.22	113	447	25.28
	OA	25	79	31.6	19	115	16.52	4	55	7.27	0	2	0.00	48	251	19.12
	A	4	29	138.00	16	54	29.63	17	37	45.95	1	3	33.33	38	123	30.89
	Total	**63**	**418**	**15.07**	**103**	**569**	**18.10**	**58**	**319**	**18.18**	**3**	**24**	**12.5**	**227**	**1330**	**17.07**
F	YA	0	25	0.00	0	2	0.00	0	18	0.00	0	4	0.00	0	47	0
	PA	0	74	0.00	5	184	2.72	0	82	0.00	0	2	0.00	5	342	1.46
	MA	4	60	6.67	2	91	2.19	3	27	11.11	2	4	50.00	11	182	6.04
	OA	24	66	36.4	29	101	28.71	15	44	34.09	4	6	66.67	72	217	33.18
	A	6	23	26.09	11	15	75.33	0	7	0.00	0	0	0.00	17	45	37.78
	Total	**34**	**248**	**13.71**	**47**	**393**	**11.96**	**18**	**178**	**10.11**	**6**	**16**	**37.5**	**105**	**833**	**12.61**
U	YA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
	PA	0	0	0.00	3	9	33.33	1	3	33.33	0	0	0.00	4	12	33.33
	MA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
	OA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
	A	8	25	32.00	12	54	22.22	0	18	0.00	0	0	0.00	20	97	20.62
	Total	**8**	**25**	**32.00**	**15**	**63**	**23.81**	**2**	**21**	**9.52**	**0**	**0**	**0.00**	**24**	**109**	**22.02**
Total	YA	11	157	7.01	6	151	3.97	2	112	1.79	0	12	0.00	19	420	4.52
	PA	5	132	3.79	11	232	4.74	2	112	1.79	0	4	0.00	18	480	3.75
	MA	22	180	12.22	61	303	20.13	37	113	32.74	4	13	30.77	124	609	20.36
	OA	49	145	33.79	48	216	22.22	19	99	19.19	4	8	50.00	120	468	25.64
	A	18	77	23.38	39	1023	3.81	17	62	27.42	1	3	33.33	75	265	28.30
	Total	**105**	**691**	**15.19**	**165**	**1025**	**16.09**	**78**	**518**	**15.06**	**9**	**40**	**22.50**	**356**	**2274**	**15.66**

Osteoarthritis

5.13.9 Osteoarthritis (OA) is a degenerative joint disease of the synovial joints which is characterised by the deterioration of the joint cartilage, leading to the exposure of the underlying bony joint surface. The resulting bone-on-bone contact can produce polishing of the bone which is known as eburnation and is characteristic of the condition. Other features include osteophtyes on the surface or around the margin, porosity on the surface and the development of cysts (Rogers 2000). OA was recorded as present when at least three of the features were present (*eg* marginal osteophtyes, central osteophtyes, cyst or porosity. Eburnation was always considered to be indicative of OA even if occurring alone (Roberts and Manchester 2005).

Osteoarthritis of the spine

5.13.10 The total number of adult skeletons with apophyseal facets was 51. If all facets were present then each skeleton would have 98 facets, however, the number of facets per skeleton was only 20.1. A total of six (6/51, 11.76%) adult skeletons were affected by spinal osteoarthritis: one adult male aged upwards of 18 years (1197, group 1012), two prime adult females (1146 and 1172, both group 1008), two older adult males (1447, group 1005; 1190, group 1010) and one older adult female (1124, group 1019).

Extra-spinal osteoarthritis

5.13.11 A total of 10 adults (11.49%) had developed OA of their extra-spinal joints (Table 21). Overall, the incidence of OA was very low with only 1.13% of all joints surfaces affected (28/2487). The frequency rate for the earlier phase of work was 0.7% (29/4375)

Table 20: Prevalence of osteoarthritis in the spine

Sex	Age group	CV			TV			LV			S			Total		
		With OA	N	%	With OA	N	%	With OA	N	%	With OA	N	%	With OA	N	%
M	YA	0	132	0.00	0	149	0.00	0	94	0.00	0	8	0.00	0	383	0.00
	PA	0	58	0.00	0	39	0.00	0	27	0.00	0	2	0.00	0	126	0.00
	MA	0	120	0.00	0	212	0.00	0	106	0.00	0	9	0.00	0	447	0.00
	OA	15	79	18.98	0	115	0.00	0	55	0.00	0	2	0.00	15	251	5.98
	A	2	29	6.89	0	54	0.00	0	37	0.00	0	3	0.00	2	123	1.63
	Total	**17**	**418**	**4.06**	**0**	**569**	**0.00**	**0**	**319**	**0.00**	**0**	**24**	**0.00**	**17**	**1330**	**1.28**
F	YA	0	25	0.00	0	2	0.00	0	18	0.00	0	4	0.00	0	47	0.00
	PA	0	74	0.00	2	184	0.00	2	82	2.44	0	2	0.00	4	342	0.58
	MA	0	60	0.00	0	91	0.00	0	27	0.00	0	4	0.00	0	182	0.00
	OA	17	66	6.85	1	101	0.00	0	44	0.00	0	6	0.00	18	217	8.29
	A	0	23	0.00	0	15	0.00	0	7	0.00	0	0	0.00	0	45	0.00
	Total	**17**	**248**	**6.85**	**3**	**393**	**0.76**	**2**	**178**	**1.12**	**0**	**16**	**0.00**	**22**	**833**	**2.40**
U	YA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
	PA	0	0	0.00	0	9	0.00	0	3	0.00	0	0	0.00	0	12	0.00
	MA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
	OA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
	A	0	25	0.00	0	54	0.00	0	18	0.00	0	0	0.00	0	97	0.00
	Total	**0**	**25**	**0.00**	**0**	**63**	**0.00**	**0**	**21**	**0.00**	**0**	**0**	**0.00**	**0**	**109**	**0.00**
Total	YA	0	157	0.00	0	151	0.00	0	112	0.00	0	12	0.00	0	420	0.00
	PA	0	132	0.00	2	232	0.86	2	112	1.78	0	4	0.00	4	480	0.83
	MA	0	180	0.00	0	303	0.00	0	113	0.00	0	13	0.00	0	609	0.00
	OA	32	145	22.07	1	216	0.46	0	99	0.00	0	8	0.00	33	468	3.21
	A	2	77	2.59	0	123	0.00	0	62	0.00	0	3	0.00	2	265	0.75
	Total	**34**	**691**	**5.91**	**3**	**1025**	**0.29**	**2**	**518**	**0.38**	**0**	**40**	**0.00**	**39**	**2274**	**1.72**

Table 21: Prevalence of osteoarthritis in the extra-spinal joints (joints affected)

Joint	Bone	Male			Female			Unsexed			Total		
		With OA	N	%	With OA	N	%	With OA	N	%	With OA	N	%
Jaw	TMJ	0	30	0	0	16	0	0	4	0	0	50	0
	Mandible	0	27	0	0	15	0	0	4	0	0	46	0
Manubrio-clavicular	Manubrium	0	3	0	0	8	0	0	0	0	0	11	0
	Medial clavicle	0	22	0	0	20	0	0	2	0	0	44	0
Shoulder	Lateral clavicle	0	12	0	0	13	0	0	3	0	0	28	0
	Glenoid	0	27	0	0	23	0	0	5	0	0	55	0
	Proximal humerus	0	24	0	1	24	4.17	0	2		1	50	2
Elbow	Distal humerus	0	32	0	0	24	0	0	6	0	0	62	0
	Proximal radius	0	23	0	0	21	0	0	1	0	0	45	0
	Proximal ulna	0	30	0	0	21	0	0	6	0	0	57	0
Wrist	Distal radius	0	28	0	0	18	0	0	0	0	0	46	0
	Distal ulna	0	24	0	0	15	0	0	1	0	0	40	0
	Scaphoid	1	13	7.69	0	6	0	0	0	0	1	19	5.26
	Lunate	0	13	0	0	10	0	0	0	0	0	23	0
Hand		2	156	1.28	0	88	0	0	7	0	2	251	0.79
Fingers		5	379	1.32	0	238	0	0	5	0	5	622	0.8
Hip	Acetabulum	2	43	4.65	2	24	8.33	2	7	2.86	6	74	8.11
	Proximal femur	4	50	8	2	29	6.89	3	12	25	9	91	9.89
Knee	Distal femur	0	34	0	0	25	0	0	5	1	1	64	1.56
	Patella	0	14	0	1	11		0	4	0	1	29	3.45
	Proximal tibia	0	27	0	0	18	0	0	1	0	0	46	0
	Proximal fibula	0	11	0	0	4	0	0	0	0	0	15	0
Ankle	Distal fibula	0	31	0	0	24	0	0	5	0	0	60	0
	Distal tibia	0	22	0	0	16	0	0	3	0	0	41	0
	Talus	0	27	0	1	18		0	5	0	1	50	0
Foot		0	176	0	0	128	0	1	32	0	1	336	0.29
Toes		0	118	0	0	99	0	0	15	0	0	232	0.00
Total		**14**	**1396**	**1.00**	**7**	**956**	**0.73**	**6**	**135**	**4.44**	**28**	**2487**	**1.13**

Key: TMJ = tempero-mandibular joint; P = proximal; D = distal; M = medial; Hand = proximal metacarpals, triquetral, pisiform; hamate, trapezium, capitate, trapezoid; Fingers = distal metacarpals and phalanges; Foot = calcaneus, cuboid, navicular, medial, lateral and intermediate cuneiforms and proximal metatarsals; Toes = distal metatarsals and phalanges.

Schmorl's nodes

5.13.12 Schmorl's nodes (Table 22) appear as indentations in the upper and lower surfaces of the vertebral bodies caused by the pressure of herniated vertebral discs (Aufderheide and Rodriguez-Martin 1998, 97). Schmorl's nodes were observed in 11.74% of the vertebral bodies and were most common in the thoracic vertebrae (16.97%) followed by the lumbar (14.48%). A total of two cervical bodies were affected.

5.13.13 The prevalence rate for both males and females was slightly higher for the mature adult category than for the older adult category.

Table 22: Prevalence of Schmorl's nodes (vertebral bodies)

Sex	Age group	CV			TV			LV			S			Total		
		With SN	N	%	With SN	N	%	With SN	N	%	With SN	N	%	With SN	N	%
M	YA	0	8	0.00	5	36	13.88	0	20	0.00	0	2	0.00	5	66	7.58
	PA	1	31	3.23	5	18	27.77	0	9	0.00	0	0	0.00	6	58	10.34
	MA	0	60	0.00	25	116	21.55	2	44	4.55	0	6	0.00	27	226	11.95
	OA	0	38	0.00	11	68	16.18	2	24	8.33	0	2	0.00	13	132	9.85
	A	0	24	0.00	20	36	55.56	9	21	42.86	0	3	0.00	29	84	34.5
	Total	**1**	**161**	**0.62**	**66**	**274**	**24.08**	**13**	**118**	**11.01**	**0**	**13**	**0.00**	**80**	**566**	**14.13**
F	YA	0	15	0.00	0	24	0.00	0	20	0.00	0	1	0.00	0	60	0.00
	PA	0	33	0.00	0	108	0.00	0	32	0.00	0	2	0.00	0	175	0.00
	MA	0	25	0.00	5	51	9.8	7	9	77.78	0	1	0.00	12	86	14
	OA	0	35	0.00	11	60	18.33	5	24	20.83	0	2	0.00	16	121	13.2
	A	0	14	0.00	0	2	0.00	0	3	0.00	0	0	0.00	0	19	0.00
	Total	**0**	**122**	**0.00**	**16**	**245**	**6.53**	**12**	**88**	**13.64**	**0**	**6**	**0.00**	**28**	**461**	**6.07**
U	YA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
	PA	0	0	0.00	0	4	0.00	0	0	0.00	0	0	0.00	0	4	0.00
	MA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
	OA	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
	A	1	11	9.09	12	31	38.71	7	15	46.67	0	1	0.00	20	58	34.5
	Total	**1**	**11**	**9.09**	**12**	**35**	**34.29**	**7**	**15**	**46.66**	**0**	**1**	**0.00**	**20**	**62**	**32.26**
Total	YA	0	23	0.00	5	60	8.33	0	40	0.00	0	3	0.00	5	126	3.97
	PA	1	64	1.56	5	130	3.85	0	41	0.00	0	2	0.00	6	237	2.53
	MA	0	85	0.00	30	167	17.96	9	53	16.98	0	7	0.00	39	312	12.5
	OA	0	73	0.00	22	128	17.19	7	48	14.58	0	4	0.00	29	253	11.46
	A	1	49	0.00	32	69	46.38	16	39	41.03	0	4	0.00	49	161	30.43
	Total	**2**	**294**	**0.68**	**94**	**554**	**16.97**	**32**	**221**	**14.48**	**0**	**20**	**0.00**	**128**	**1089**	**11.74**

Key: N = number of surfaces present

Neoplastic conditions

Ivory/button osteomas

5.13.14 Button osteomas are benign tumours which are usually located on the outer table of the skull and are formed of mature lamellar bone (Aufderheide and Rodriguez-Martin 1998, 375). Skeleton 1144, an adult female aged upwards of 18 years, had a button osteoma which was located on the frontal bone at the midline. It had a maximum diameter of 13 mm. The frontal and parietal bones are the most common location (Ortner 2003, 506). Three cases were observed in the 2015 phase (Keefe and Holst 2015, 90).

Miscellaneous

Scoliosis

5.13.15 Scoliosis is the lateral curvature of the spine with rotation of the vertebrae and the spinous processes towards the concavity of the curvature. Scoliosis usually has a double curve, permitting the head to be located in the mid-sagittal plane (Aufderheide and Rodriguez-Martin 1998, 66). Palaeopathological diagnosis is difficult unless the spine is complete and well preserved.

5.13.16 Skeleton 1211 is an older adult female (45+ years). The spine is complete. Mild scoliosis is present with curvature to the right in the superior section and to the left in the inferior section. The spinous processes of the first and second thoracic vertebrae are deviated to the right side. There is slight wedging of the bodies of the fourth and fifth thoracic vertebrae on the right side. The right rib facet on the fifth thoracic vertebra is rudimentary. The left and right superior and inferior processes of the second, third and fourth lumbar vertebrae are fused although the bodies are unaffected. Slight medial bowing of left and right tibia and right fibula is suggestive of rickets during childhood which may be the cause of the scoliosis.

5.13.17 Skeleton 1294 is an adult of uncertain sex aged upwards of 18 years. There was evidence of a slight lateral curvature in the thoracic body; however, this is likely to have been linked to a compression fracture of the sixth thoracic vertebra (see above).

Kyphosis

5.13.18 Skeleton 1124, older adult female aged upwards of 45 years had a compression fracture of the first lumbar vertebra which had resulted in a marked kyphosis affecting the seventh though to the twelfth thoracic vertebrae. The anterior body thickness of the first lumbar vertebrae was 12.37 mm, compared to a posterior thickness of 21.60 mm. This individual also had a healed fracture of the left twelfth rib, located at the angle of the rib. Callus was present on both rib surfaces. This individual may have suffered from osteomalacia or osteoporosis, or possibly both.

Femoral abnormality

5.13.19 Skeleton 1472 was an adult male aged upwards of 18 years. Both femoral heads were displaced in an inferior direction. Both have DJD (osteophtyes and porosity). There is some flattening of the right femoral head and both femora have shortened surgical necks. Possible diagnoses include developmental dysplasia, Perthes disease or slipped femoral capital epiphyses (Walker 2012, 26-29).

Fusion of sacrum and pelvis

5.13.20 Two males and one female exhibited some degree of sacro-iliac fusion. Skeleton 1300, an adult female aged 36 to 45 years, had partial bilateral sacro-iliac ankylosis. Both the pelvis and the sacrum were highly fragmented. Skeleton 1283, an older adult male aged

upwards of 45 years, also had bilateral sacro-iliac ankylosis. Again preservation was poor. Skeleton 1244, an adult male aged upwards of 18 years, also had bilateral sacro-iliac ankylosis. The joint space was visible on the right side. In each case the point of ankylosis was smooth and well remodelled. Potential causes include DJD and developmental anomalies.

Autopsy

5.13.21 Skeleton 1202 (group 1004), an adult male aged 26 to 35 years, exhibited evidence for autopsy in the form of a craniotomy and a partial laminectomy involving the seventh cervical, first, second and third thoracic vertebrae. Skeleton 185 from the earlier phase had also undergone a craniotomy (Keefe and Holst 2015, 97–98). Roberts and Cox (2003, 315) reported a crude prevalence rate of 1.62% for the post-medieval period. Skeleton 1202 was 81–100% complete with only slight fragmentation. Although the manubrium and sternum were absent, ribs survived and there was no evidence for a thoracotomy.

5.13.22 There are transverse cuts around the whole circumference of the skull, through the frontal, the lower portion of the parietals and the occipital, just below the lambda, thus the upper part of the vault is completely separate and can be detached from the rest of the skull. The upper portion has suffered considerable post-mortem deformation and cannot be 'refitted' to the lower portion of the skull. The seventh cervical vertebra has at least six vertical cuts on the left side of the spinous process. The first thoracic vertebrae had a minimum of nine cuts in the same location; the second thoracic had a minimum of three while the third thoracic had only one. It is possible that the individual had undergone an autopsy to determine cause of death, however, the numerous cuts to the vertebrae might suggest that the body was used for dissection practice which for some reason was halted.

5.13.23 A possible lytic lesion located on the endocranial surface just to the right of the crista gali was tentatively identified although there is considerable post-mortem erosion.

5.14 Dental health

5.14.1 A total of 55 (55/87, 63.22%) adults had teeth and/or jaws surviving. All were examined macroscopically for evidence of pathological changes. The majority were unfortunately in the broad adult category (see Table 23) which is the same as in the 2015 phase (Keefe and Holst 2015, 101). A total of 1038 adult sockets were available for observation. The number of adult teeth present was 485. Eighteen non-adult skeletons had surviving dentition (18/25, 72%).

Table 23: Age and sex composition of adults with surviving teeth and/or jaws

Age group	Male		Female		Unsexed		Total	
	n	%	n	%	N	%	n	%
YA	2	3.64	2	3.64	0	0	4	7.27
PA	3	5.45	4	7.27	1	1.82	8	14.55
MA	6	10.9	4	7.27	0	0	10	18.18
OA	4	7.27	3	5.45	0	0	7	12.73
A	11	20	4	7.27	11	20	26	47.27
Total	**26**	**47.27**	**17**	**30.9**	**12**	**21.83**	**55**	**100**

Calculus

5.14.2 Plaque which is not removed effectively from the teeth can mineralise and form calculus on the tooth crowns or roots where they are exposed (Plate 11). Calculus is a common feature of archaeological populations of all periods although poor preservation and cleaning after excavation can have an impact on its survival. A total of 32 adults with surviving dentition were affected (Table 24). Calculus was present on 161 teeth (33.26%) and in most cases comprised flecks or slight deposits. A small number of teeth had

medium deposits and very few could be scored as heavy. In the earlier phase 46.5% of teeth were affected. Roberts and Cox (2003) report a decrease in the prevalence of calculus during the post-medieval period (down to 21% compared with 59% in the medieval period). The adult skeletons from this cemetery do not conform to this pattern. Calculus was also observed among the non-adults.

Table 24: Dental calculus (teeth affected)

Age	Male teeth			Female teeth			Unsexed teeth			Total teeth		
	Calculus	Total	%	Calculus	Total	%	Calculus	Total	%	Calculus	Total	%
YA	3	26	11.54	0	26	0	0	0	0	3	52	5.77
PA	8	47	17.02	6	49	12.24	26	28	92.86	40	124	32.26
MA	35	76	46.05	13	19	68.42	0	0	0	48	95	50.52
OA	0	16	0	9	12	75	0	0	0	9	28	32.14
A	25	67	37.31	13	41	31.71	23	78	43.89	61	186	32.79
Total	**71**	**232**	**30.6**	**41**	**147**	**27.89**	**49**	**106**	**46.23**	**161**	**485**	**33.26**

Plate 11: Skeleton 1144 (group 1005), calculus deposits

Dental caries

5.14.3 Dental caries (Table 25) are cavities that result from the demineralisation of teeth when they are attacked by acids that develop when bacteria ferment food sugars, especially sucrose. Forty-four of the adults with surviving dentition had cavities (see Plate 12 below for an extreme example). A total of 105 teeth (21.69%) were affected. This prevalence rate is higher than that found in the 2015 phase of osteological analysis (Keefe and Holst 2015, 104; 252/1279, 19.7%) and considerably higher than the average for the period (Roberts and Cox 2003; 11.2%).

Table 25: Dental caries (permanent teeth)

Age	Male teeth			Female teeth			Unsexed teeth			Total teeth		
	Caries	Total	%	Caries	Total	%	Caries	Total	%	Caries	Total	%
YA	1	26	3.85	2	26	7.69	0	0	0..00	3	52	57.69
PA	9	47	19.15	16	49	32.65	1	28	3.57	26	124	20.97
MA	17	76	22.37	10	19	52.63	0	0	0.00	27	95	28.42
OA	9	16	56.25	0	12	0	0	0	0.00	9	28	32.14
A	20	67	29.85	2	41	4.88	18	78	23.08	40	186	21.51
Total	**56**	**232**	**24.14**	**30**	**147**	**20.41**	**19**	**106**	**17.92**	**105**	**485**	**21.69**

Plate 12: Skeleton 1482 (group 1005), dental caries

Dental abscesses

5.14.4 Dental abscesses (Table 26) occur when bacteria enter the pulp cavity of a tooth causing inflammation and a build-up of pus at the apex of the root. This culminates in the formation of a hole in the surrounding bone which allows the pus to drain out and relieve the pressure. Causes include dental caries, extreme wear, periodontal disease and trauma. A total of 32 tooth positions were affected by dental abscesses (32/1196, 2.68%). This is slightly less than the prevalence rate observed in the 2015 phase (3.2%, 66/2068) and slightly higher than the 2.2% reported for the post-medieval period (Roberts and Cox 2003). A total of 22 adults were affected with slightly more males than females.

Table 26: Dental abscess (tooth positions)

Age group	Male teeth			Female teeth			Unsexed teeth			Total teeth		
	Abscess	Total	%	Abscess	Total	%	Abscess	Total	%	Abscess	Total	%
YA	1	50	2	0	33	0	0	0	0	1	83	1.14
PA	0	61	0	4	92	4,35	0	32	0	4	185	2.16
MA	4	173	2.31	4	121	3.31	0	0	0	8	294	2.72
OA	4	102	3.92	1	61	1.64	0	0	0	5	163	3.07
A	11	202	5.45	1	90	1.11	2	179	1.12	14	471	2.97
Total	**20**	**588**	**3.40**	**10**	**387**	**2.58**	**2**	**211**	**0.95**	**32**	**1196**	**2.68**

Ante-mortem tooth loss (AMTL)

5.14.5 Causes of ante-mortem tooth loss (AMTL, Table 27) include dental caries, pulp exposure due to heavy wear or periodontal disease. A total of 52 adults exhibited some degree of AMTL, the prevalence rate being 48.02% (582/1213). This is higher than the prevalence rate observed in the earlier phase (32.3%, 667/2068) and considerably higher than the 23.4% average reported for the period (Roberts and Cox 2003).

Table 27: Teeth lost ante-mortem (tooth positions affected)

Age group	Male teeth			Female teeth			Unsexed teeth			Total teeth		
	AMTL	Total	%	AMTL	Total	%	AMTL	Total	%	AMTL	Total	%
YA	1	50	2	4	33	12.12	0	0	0	5	83	6.02
PA	20	75	26.67	31	92	33.7	3	32	9.38	54	199	27.13
MA	70	173	40.46	92	121	76.03	0	0	0	162	294	55.10
OA	79	102	77.45	41	61	67.21	0	0	0	120	163	73.61
A	108	204	52.94	54	90	60	79	180	43.89	241	474	50.84
Total	**278**	**604**	**46.03**	**222**	**397**	**55.92**	**82**	**212**	**38.68**	**582**	**1213**	**48.02**

Dental enamel hypoplasia (DEH)

5.14.6 Dental enamel hypoplasia (DEH, Table 28) is the presence of lines, grooves or pits on the surface of the tooth crown. They occur when crown formation is interrupted during periods of illness or malnutrition. Sixteen adults were affected by DEH and 12.19% of teeth were affected (59/485).

5.14.7 Prevalence among the non-adults was slightly higher at 14.08% (29/206). Five non-adult skeletons were affected.

Table 28: Teeth with dental enamel hypoplasia (DEH)

Age	Male teeth			Female teeth			Unsexed teeth			Total teeth		
	DEH	Total	%	DEH	Total	%	DEH	Total	%	DEH	Total	%
YA	0	26	0	0	26	0	0	0	0	0	52	0.00
PA	17	47	36.17	3	49	6.12	0	28	0	20	124	16.13
MA	8	76	10.53	4	19	21.05	0	0	0	12	95	12.63
OA	2	16	12.50	0	12	0	0	0	0	2	28	7.14
A	9	67	13.43	0	41	0	16	78	20.51	25	186	13.44
Total	**36**	**232**	**15.52**	**7**	**147**	**4.76**	**16**	**106**	**15.09**	**59**	**485**	**12.19**

Dental trauma

Enamel chips

5.14.8 Enamel chips were observed in 2.47% of observable teeth (12/485). Eight skeletons were affected and two were non-adults (skeletons 64 and 1189). No dental fractures were observed.

Dental anomalies

5.14.9 Skeleton 1202, an adult male aged 26-35 years, had an overbite which was slightly asymmetrical and more marked on the right side. There was no DJD of the TMJ. The mandibular central incisors were slightly rotated.

Crowding and rotation

5.14.10 Crowding combined with rotation was observed in the mandibular dentition of five adults and one non-adult. The deciduous maxillary dentition of a single non-adult was affected. In all cases incisors and canines were affected.

5.14.11 Skeleton 1144, an adult female aged upwards of 18 years, had microdontia and rotation of the mandibular left second incisor.

Unusual wear patterns

5.14.12 Two adult male skeletons exhibited probable pipe facets. Skeleton 1268 (group 1015), a mature adult male aged 36 to 45 years, had facets on the right side of the dentition, on the mesial sides of the canines and the distal sides of the second incisors. The resulting near-circular gap had a maximum diameter of 6.62 mm. Skeleton 1470 (group 1039), a mature adult male aged 36 to 45 years, had facets on the left maxillary second incisor, canine and mandibular canine, creating a circular gap measuring 5.68 mm in diameter (Plate 13). There was also crowding and rotation of the mandibular incisors and canines. This man also had a healed fracture of the nasal bone.

Plate 13: Skeleton 1470 (group 1039), probable pipe facets

5.14.13 Skeleton 1329, an adult male aged 36 to 45 years, had a large gap between the left mandibular premolars. The second premolar and first molar had migrated in an anterior direction. Extreme wear of all left mandibular dentition sloped down from lingual to buccal. Skeleton 1347, an adult female aged upwards of 18 years, displayed extreme wear of the maxillary left first premolar which sloped down from buccal to lingual.

6 ARTEFACTUAL DATA

6.1 Coffin fittings

Introduction

6.1.1 A macroscopic analysis was performed of the metal fixtures and fittings present on, or derived from, coffins. Analysis of artefacts recovered from grave cuts is also covered in this section.

Context

6.1.2 A common feature of funerals in Britain since the 17th century has been the upholstered coffin adorned with decorative metal plates (breast plates, lid motifs and escutcheons) on the lid and side panels. These decorative plates were typically accompanied by three to four sets of grips (handles) and their associated grip plates (Springate 2015, 16). Three handles would be present on each side of the coffin and occasionally a further handle would be attached to the head and foot (Springate 2015, 16). Throughout the 18th century an increase in the complexity of the design of these fixtures is observed, facilitated by the development of mechanised techniques for punching patterns into sheet iron. An example of these developments is the die-sinking process patented by Thomas Pickering, a Southwark-based tin-plate manufacturer, in 1769 (Litten 1991, 106; Springate 2015, 52). Such processes enabled even more elaborate designs to be mass produced, reducing their cost and increasing their accessibility for common burial.

6.1.3 Increasingly, what were essentially practical components of the coffin began to take on more elaborate decorative functions. Upholstery pins were arranged in more complex patterns and the grips (handles), originally just a means to carry the coffin, became more decorative. The taxonomy of coffin fittings recovered from the crypts at Christ Church Spitalfields, London (Reeve and Adams 1993) is a useful catalogue from which to ascertain the styles characterising the period.

Methodology

6.1.4 Visual analysis of the coffin furniture was undertaken to identify any recognisable characteristics surviving on the breast plates, grips and grip plates. The presence of shroud pins and materials used in the construction and decoration of the coffin was also recorded. When the design of a coffin fitting was discernible, comparisons were made with

the Christ Church Spitalfield's (CCS) catalogue (Reeve and Adams 1993, Microfiche 2 and 3). Comparisons were also made with other contemporary sites, including material recovered from South and West Yorkshire and earlier phases of archaeological investigation on the Site (Swales 2016). Any new styles observed in the assemblage were documented and allocated a distinct identifying type number with the prefix SCH (Square Chapel, Halifax). The details of the materials and their context are included in Appendix 7.

Assemblage composition and preservation

6.1.5 In total, 876 iron, tin-plated iron and copper alloy artefacts were analysed. A summary of the material recovered is provided in Table 29.

6.1.6 Overall, the iron materials were heavily corroded and blistered, rendering the patterns on more elaborate grip types unobservable. The iron grip plates and breast plates had undergone significant fragmentation, with many degraded into fragments less than 10 mm in diameter.

6.1.7 The plain iron grips had survived well, as had the copper alloy artefacts.

Table 29: Summary of the metal artefacts recovered from the Square Chapel burials

Grip	Grip plate	Breast plate	Unid. Plate fragments	Upholstery studs	Shroud pins	Buttons	Iron nails	Additional artefacts
177	**106**	**6**	**Approx. 488**	**1**	**4**	**6**	**68**	**71**

Grips and grip plates

6.1.8 A total of 177 grips were recovered, 106 of which exhibited evidence for the associated grip plate.

6.1.9 The majority of the handles were iron and of mobile bail form (Springate 2015, 16–17). Two iron grip types within the Square Chapel burials were consistent with examples from the Christ Church Spitalfield (CCS) catalogue. The majority of plain designs were comparable with grip type 2a (32 instances). It was not possible to classify 17 plain grips beyond type 2 (1763–1837) and there was a single type 2b (Reeve and Adams 1993: Microfiche 3). Of the 34 grips with a determinable pattern, four exhibited the double headed winged cherub motif characteristic of CCS grip type 4 (1783–1822). It is possible that a further six grips were of the same design, but in these instances the outline shape resembles CCS 4, 5 or 6, but it is not possible to confidently assign the design to either one. Grip type CCS 4 typically has a plain reverse surface. However, the cherub design grips recovered from context 40 have a sunburst pattern on the reverse surface (SCH 1) (Plate 14).

6.1.10 Plate 15 shows an iron decorative grip type (SCH 2), which is not present in either the Christ Church Spitalfield's catalogue or in any known archaeological reports. SCH 2 is distinctive flat grip with a six petal flower motif in centre. The drop handle is square, with concave sections removed from the outer corners. This grip is accompanied by large octahedron shaped brackets. The three examples of this grip type were painted black.

6.1.11 A single iron grip (SCH 3; Plate 16) has similar features to both SCH 2 and the Christ Church Spitalfield's grip type 8, but the loss of detail post-deposition prevents any further interpretation.

6.1.12 There are four articulated grip and grip plate combinations in this Square Chapel assemblage.

6.1.13 SCH 4 (Plate 17) and 5 (Plate 18) are both large, plain trapezoidal copper alloy plates only 1 mm thick. SCH 4 is characterised by flat, straight-edged grips 97 mm in length with a right angle between the horizontal bar and inner edge of the vertical bars and cube-shaped brackets. Grip plate SCH 4 has a maximum superior length of 193 mm, maximum inferior border length of 154 mm and height of 87 mm. SCH 5 also exhibits a plain, flat, straight-edged grip but is slightly longer (109 mm). The outer angle of the vertical sides relative to the horizontal bar of the grip is slightly greater than 90 degrees, and the vertical sides are wider at the site of attachment than adjacent to the horizontal bar. The grip plate has a maximum superior length of 186 mm, maximum inferior border length of 173 mm and the same height as SCH 4. Six instances of SCH 4 and five of SCH 5 were recovered from context (1626) suggesting a single coffin origin for both these grips and grip plates.

6.1.14 SCH 6 (Plates 19–21) is a drop handle with a floral design reflecting a wreath and an accompanying punch patterned circular grip plate. The floral design of a central six petal flower and leaves radiating along the remainder of the grip is only present on the facing surface (Plate 19), whereas the reverse is plain with a central groove running the full extent of the ring (Plate 20). The outer and inner diameters of the ring are 105 mm and 66 mm respectively, with a thickness of 10.5 to 11.5 mm depending on the relief of the design. The design on the grip plate is difficult to determine. The inferior surface of the cube-shaped bracket is decorated with a flower motif (Plate 21).

6.1.15 SCH 7 (Plates 22 and 23) is a plain, shield shaped, copper alloy grip plate with a grip displaying a flower and central seed motif. The grip plate had a maximum length of 20.5 mm and maximum height of 150 mm. The grips were 120 mm long with a body width of 30 mm. Only two instances of this grip and grip plate combination were recovered, both of which were adhered to the wood of the coffin (0079) within which skeleton 1124 was found.

6.1.16 All of the iron grip plates were too corroded and fragmented for identification. A large number of the grips and grip plates exhibit surviving fragments of a silvered effect indicating the iron plate was tin-dipped (Mytum 2004, 38), and others were painted black. Fifteen punch patterned iron grip plates possessed the same border design as the cherub design (BBM 3) recorded at St. George's church, Bloomsbury (Boston *et al.* 2009, 161).

Upholstery, upholstery studs and coffin lace

6.1.17 In the 11 instances of surviving upholstery, the fabric was brown velvet. No copper alloy (brass) upholstery studs or coffin lace were recovered, which contrasts with the burials found during an earlier phase of excavation within the burial ground (Swales 2015).

Lid motifs and depositum plates

6.1.18 Fragments of iron and silvered iron plate, either plain or exhibiting small traces of an elaborate punched pattern design, were recovered from 43 contexts (Appendix 8). Due to the high degree of fragmentation and corrosion of the plates only ambiguous fragments of patterns can be observed. One depositum plate fragment displayed the punched impression of an urn (1161), and a second (1210) a rose. The urn motif has been found on three lid motifs in other areas (Swales 2015), suggesting this to be a popular image for the contributing population. The urn is often interpreted as a symbol of mourning (Boston *et al*. 2009, 152), whereas the rose is associated with love in many cultures.

6.1.19 Six depositum plates with biographical information were recovered during this phase of archaeological investigation (Plates 24–29)

William Ibbetson/DIED/19th Decr 1848/Aged 80 years

Thomas Ibbetson/DIED/24th November 1853/ AGED 54 YEARS

Baxter/--ED/184-/-EARS

Emma Briggs/DIED/April 25th 18--/Aged 6---

Rachel Ibbotson/BORN/10th November 1797/DIED/21st April 1885

MARY ANNE WHITLEY/DIED/JAN 14th 1872/AGED/49 YEARS

6.1.20 Four of the depositum plates are shield-shaped. Three are consistent with Type 2 shield design recorded at Saint Martin's, Birmingham (Hancox 2006, 159) and the fourth is a more elongated shield design. Thomas Ibbetson and Mary Anne Whitely were provisioned with a rectangular plate. The biographical data written on these five shield-shaped plates is applied by a combination of etching italicised script and painting the etched letters black. The use of cream and black paint to provide biographical data is a known feature of late 18th–early 19th-century burial throughout Britain (Mytum 2004, 38).

Coffin construction and structure

6.1.21 Iron nails of varying sizes were encountered in 32 contexts (Appendix 9). However, in many instances only a single nail was recovered and the greatest number recovered from a single context was six, suggesting either the nails remained within the coffin wood or they were not a significant component in the construction of these coffins.

Additional objects

6.1.22 Copper alloy pins were recovered from three contexts. These pins, commonly referred to as shroud pins, may have been used to secure a shroud, but may also have secured clothes or head dresses. It was standard practice for the deceased to be clothed in textiles provided by the undertaker, not their own clothes (Litten 1991) However, at Christ Church, Spitalfield's sixteen individuals were recorded with their own garments, sometimes under a shroud (Reeve and Adams 1993). An adult burial from the Cross Bones Burial Ground, Southwark was buried in a shirt, pair of trousers and boots (Brickley and Miles 1999, 27). Furthermore, buttons were found in graves at Sheffield Cathedral (Swales 2007). These examples suggest that the burial in normal clothes was occurring, but not necessarily frequently.

6.1.23 The burial of individuals in 'day clothes' may be indicated at Square Chapel by the presence of two copper alloy buttons and the end of a belt strap (Plates 30 and 31). Three plastic buttons from grave 1113 and a fourth plastic button found with skeleton 1190 may also represent 'day clothes'. Personal adornments in the form of a copper alloy ring found with skeleton 1175 and possible strap fitting or item of jewellery with a clasp (Plate 32) from context (1467) were also recovered, as well as a necklace of 33 black glass faceted beads with skeleton 1172. Fourteen tiny red/brown glass beads from grave fill 1304 may be from an item of jewellery, or may represent clothing adornment.

Discussion

6.1.24 The coffin hardware assemblage includes elements characteristic of burials between 1763 and 1872 throughout Britain. However, unlike the coffin furnishing designs found during the earlier phase of excavation, which are strongly comparable with upper middle class burials from the crypts of Christ Church Spitalfield's and St Martin's, Birmingham; vault burials at Kingston upon Thames and a range of burials from Nonconformist and Anglican sites (Swales 2015), there are fewer comparable fixtures and a greater number of grips and grip plates unique to this assemblage.

Further research

6.1.25 The Square Chapel assemblage provides an important comparative site for the analysis and interpretation of burial archaeology in post-medieval Britain outside of London. Even though the iron fittings are often too fragmentary and corroded to identify diagnostic features, the distribution of iron and copper alloy furnishings relative to burial location, burial type, grave construction, age, sex and health of the related interment can provide valuable information regarding socio-economic and cultural status and religious beliefs.

6.1.26 An important area of future research is to compare the records of the un-matched grips and grip plates, lid motifs and breast plate designs to the trade catalogues, such as those held at the National Funeral Museum and the Victoria and Albert Museum, to identify the extent to which choice was dictated by the catalogues.

6.2 Other finds

6.2.1 Apart from human remains, coffin furniture and other associated funerary-related artefacts, a small quantity of other finds was recovered. Despite the fact that most came from grave contexts, all these finds are likely to represent incidental finds of domestic refuse, subsequently incorporated in grave fills (and as such with some at least pre-dating the construction and use of the chapel). This interpretation is supported by the condition of the assemblage, which is notably fragmentary (mean pottery sherd weight, for example, is just 12 g). All finds are of post-medieval/modern date.

6.2.2 All finds have been quantified by material type within each context, and the results are presented in Table 30.

Table 30: All finds by context (number / weight in grammes)

Context	Clay Pipe	Glass	Pottery	Other Finds
0001	1 /2		7/305	1 slate pencil
0040			1/12	
1101	6/16		2/5	
1109	2/2	2/9	4/94	
1113	1 /4		2/19	
1142		1/8		
1147			2/23	
1161	10/24		12/28	
1166	5/8		9/51	
1170		2/2	4/24	
1179			2/48	
1191	2/4		1 /2	
1198	4/7		6/60	
1206			4/90	
1208	1/7		7/160	5 animal bone
1210	1/1		12/97	
1214	1/1			
1229	1/1		5/47	
1248	1 /3		3/34	
1267		1/1	2/11	

1295			1/119	
1298	1 /3		1 /4	
1311	3/10			
1325		1/1	1/11	
1331	1 /2			
1341		1/31		
1378	8/14	3/5	6/32	
1388	4/5		5/48	
1412	6/13	1/1	6/77	
1467	6/20	3/2	8/36	
1483			1/11	
1625		1/32		
Total	**65/147**	**16/92**	**114/1448**	

Pottery

6.2.3 The pottery includes a number of ware types, all within the expected range for the region. Coarsewares are most common; these comprise mainly brown- and black-glazed redwares, but also include a few sherds of Midlands Purple and Midlands Yellow wares. These represent utilitarian kitchen/dairy wares, and everyday tablewares pre-dating the 18th century. One sherd from a Staffordshire-type slipware cup (backfill in grave 1180) is of 17th or 18th-century date. All other wares - porcelain, English stonewares (mainly of Nottinghamshire type), white saltglaze, and refined wares (creamware, pearlware, whiteware and yellow ware) - are of 18th-century date or later. Most of these wares represent tea- or tablewares, with some kitchen wares and at least one chamber pot (in white salt glaze).

Clay tobacco pipe

6.2.4 The clay pipe consists mostly of plain stem fragments. These are not generally closely datable, but a few fragments have the wider diameter and stem bore characteristic of 17th-century pipes (backfills in graves 1310 and 1195). More diagnostic fragments are limited to an incomplete bowl and heel from a second pipe, both 17th-century (backfill in grave 1466); an incomplete bowl of early–mid-17th-century date (backfill in grave 1207; White 2004, fig. 6.2, 8); an incomplete late 18th or 19th-century spurred pipe with moulded decoration (backfill in grave 1310); and a decorated bowl fragment, also 19th-century (backfill in grave 1162).

Glass

6.2.5 The glass is divided between vessel and window fragments. Vessel fragments comprise two green beverage bottles (one definitely a wine bottle) of 19th-century date (backfills in graves 1338 and 1622) and a clear fragment from a vessel of unknown form (backfill in grave 1141).

6.2.6 All other fragments are from window glass, all probably of 18th-century or later date.

Other finds

6.2.7 Other finds comprise a few animal bones (immature sheep jaw and tooth) and a slate pencil.

7 ENVIRONMENTAL EVIDENCE

7.1 Introduction

7.1.1 Thirty-two bulk samples, of between 100 ml and 1 l in volume, were taken from the stomach area of skeletal burials provisionally dated to the post-medieval period. The samples were taken primarily in order to evaluate the presence and preservation of nematode gut parasite eggs, as well as other palaeo-environmental remains. The samples were processed for the recovery and assessment of nematode gut parasite eggs as well as charred plant remains and wood charcoal.

7.2 Methodology

Nematode gut parasite eggs

7.2.1 A small sub-sample of each bulk sample was processed for the recovery of nematode gut parasite eggs broadly following the 'squash' technique outlined in Dainton (1992). Small lumps of sediment, around 3 mm in diameter, were taken from three separate points within the sample in order to account for heterogeneity. The sediment was homogenised in distilled water by shaking. Once the coarse particles had settled, a drop of the supernatant was removed using a Pasteur pipette, placed on a microscope slide and covered with a cover slip.

7.2.2 A preliminary assessment of the samples was made by rapidly scanning the slides using a high power microscope (magnification x60) and recording the abundance of nematode gut parasite eggs. This data is recorded in Appendix 9.

Charred plant remains and wood charcoal

7.2.3 The bulk samples were processed for the recovery of charred plant remains, wood charcoal and bone by standard flotation methods using a water separation machine. Floating material was collected in a 300 µm mesh, and the remaining heavy residue retained in a 1 mm mesh. The flot and heavy residue were air dried. The residue was scanned for metallurgical debris, using a large magnet. The > 4 mm fraction of the heavy residue was fully sorted for organic remains and artefacts. The 2–4 mm fraction of the heavy residue was sorted for charred plant remains and wood charcoal only. All sorted and unsorted fractions of the heavy residue were retained so that they could be examined by an osteological specialist if necessary.

7.2.4 The samples were assessed in accordance with English Heritage guidelines for environmental archaeology assessments (Jones 2011). The main aim of this assessment was to determine the concentration, diversity, state of preservation and suitability for use in radiocarbon dating, of any archaeobotanical material present within the samples. A further aim was to evaluate the potential of this material to provide evidence for the economy of the Site or for the nature of the local environment.

7.2.5 A preliminary assessment of the samples was made by scanning the flots using a stereo-binocular microscope (magnification x10 to x65) and recording the abundance of the main classes of material present. This data is recorded in Appendix 9.

7.3 Interpretation

Nematode gut parasite eggs

7.3.1 Nematode gut parasite eggs were found to be abundant in only two of the samples. Sample 9 from context 1210, skeleton 1211, contained over 100 *Ascaris* eggs and sample 14 from context 1273, skeleton 1246, contained over 100 *Trichuris* eggs. A moderate abundance of between 50 and 100 *Trichuris* eggs were also noted as present in sample

26 from context 1448, skeleton 1447. Nematode gut parasite eggs were either absent or present in low concentrations in the remaining samples.

7.3.2 No further analysis of the majority of the samples for nematode gut parasite eggs is necessary due to the low concentrations of eggs present. Sample 9 from skeleton 1211, sample 14 from skeleton 1246 and possibly sample 26 from skeleton 1447 may however be suitable for further investigation.

Charred plant remains

7.3.3 Intrusive roots were present in low concentrations in the majority of samples.

7.3.4 No charred plant remains were noted as present.

7.3.5 No analysis of charred plant remains is necessary due to the paucity of material present.

Wood charcoal

7.3.6 Wood charcoal was generally quite poorly preserved. Many of the fragments were affected by vitrification, whereby charcoal takes on a glassy appearance resulting in anatomical features becoming fused and difficult to identify.

7.3.7 Wood charcoal fragments greater than 2 mm in size were either absent or present in low concentrations in all of the samples. Sample 24 from context 1416, skeleton 1415 contained the highest concentration of wood charcoal, with seventeen fragments greater than 2 mm in size being present.

7.3.8 No analysis of the wood charcoal assemblage is necessary due to the low density and poor preservation of the material present.

Other material

7.3.9 Hair, which presumably represents human hair, was noted as being present in sample 9 from context 1210, skeleton 1211; sample 13 from context 1262, skeleton 1215; sample 15 from context 1298, skeleton 1300; and sample 19 from context 1346, skeleton 1347.

8 GENEALOGICAL RESEARCH

8.1 Introduction

8.1.1 Six depositum plates were recovered during excavation (see Appendix 8) and an attempt was made to trace these individuals. Parish registers, census data, trade directories, historic maps and internet searches were consulted.

8.2 William Ibbetson

8.2.1 The depositum plate for William Ibbetson accompanied skeleton 1506, which occupied a brick shaft grave, one of only three seen. As such, William Ibbetson’s grave can be considered to be higher status than the majority of interments in the burial ground. The depositum plate states that he died on the 19th December 1848, aged 80. The date of death is corroborated in the parish register with no further detail. William Ibbetson's will went to probate at the Prerogative Court of York in 1849, suggesting that he left something worth formalising when he passed.

8.2.2 A search for his birth in 1768 revealed a William Ibbotson, although the handwriting of the original record is somewhat ambiguous and could have been intended to represent Ibbetson. The birth of William Ibbotson was entered in the Nonconformist parish register

for Halifax on the 21st of February 1768, with his father listed as Thomas and a record of 'Independent' entered under denomination. This is consistent with his later burial at the Nonconformist Square Chapel and suggests a life of religious Nonconformity.

8.2.3 The 1841 census reveals one William Ibbotson in Halifax born in 1768. This William Ibbotson was of independent means (perhaps related to his advanced age of 73) and lived on Upper Brunswick Street, a road which has since disappeared but which was situated between Hopwood Lane and Lister Lane to the west of the city centre. Historic maps show Upper Brunswick Street to have comprised back-to-back housing. William Ibbetson's lowly accommodation in 1841, seven years before his death, is somewhat at odds with the proving of his will in court.

8.3 Thomas Ibbetson

8.3.1 A depositum plate was also recovered for Thomas Ibbetson (skeleton 1504). Thomas was buried directly on top of his father William in the same brick vault. The plate states that Thomas died on the 24th November 1853 aged 54 years. This Thomas appears to be listed on the 1841 census at the same property as William. Also present in the household is Thomas' wife Rachel, with Thomas listed as a grocer and Rachel given as of independent means. Thomas and Rachel appear to have been childless. The ages of these two younger Ibbetsons are recorded as 40, with dates of birth in 1801, although this appears to be inaccurate.

8.3.2 By the 1851 census, William has passed and Thomas is recorded as an annuitant, perhaps as a result of his father's will. In 1851 more correct ages are given for the couple, with Thomas 52 years old (born in 1799) and Rachel a year older. By 1851 the couple had moved, now occupying a similar property as before on Back Gerard Street in the same area.

8.3.3 Thomas Ibbetson's baptism is recorded in the Nonconformist register for Halifax at Square Chapel on 17th January 1799 following his birth on the 3rd January. Under the spelling Ibbitson, his father is listed as William and his mother Elizabeth.

8.3.4 Thomas Ibbetson married Rachel Robinson on 8th November 1821 in Halifax when Thomas was 22 years of age. Despite their apparent Nonconformity, the marriage took place at St. John's, now more commonly known as Halifax Minster. Thomas is again listed as a grocer.

8.3.5 In 1822 the *History, Directory and Gazetteer of Yorkshire, Vol 1: West Riding* lists Thomas Ibbetson as a grocer on Fleet Street. Fleet Street was formerly part of 'The City' in the Cross Field area, a maze of back-to-back houses, courtyards, dimly lit shops and narrow streets that was removed during slum clearances in the 1920s. Thomas would have been 23 in 1822.

8.3.6 No entry for Thomas Ibbetson under any spelling could be found in Pigot and Co.'s Directory of 1841, the same year the census records Thomas as a grocer.

8.3.7 At his death in 1853, Thomas Ibbetson's will again troubled the court in York, and he was sufficiently wealthy, presumably as a result of his father's will, to incur death duty. The death duty register shows his wife Rachel as the administratrix of Thomas' estate. An attempt was made to access the appropriate death duty record (thought to be folio 284) at the National Archive, Kew, but these records have not yet been digitised. It is difficult to reconcile Thomas' apparent wealth with his housing status. Perhaps Thomas Ibbetson

represents that stereotype of a true thrifty Yorkshireman, hewn from the Nonconformist tradition.

8.3.8 The identity of Thomas' mother Elizabeth is less certain. There are two possible marriages of a William Ibbetson to an Elizabeth. The first, on 18th July 1784 (when Thomas' father was 16) was to a Betty Saville. This William Ibbetson was a coal miner from Overden on the northern outskirts of the town. The second possible marriage was on 14th July 1796 (Thomas' father would have been 24) to an Elisabeth Marsden. The William Ibbetson who married Miss Marsden was a breeches maker from Halifax. Both marriages took place at Halifax Minster, just like Thomas' marriage. Thomas' mother Elizabeth was not present with the rest of the family at the date of the first census in 1841. An Elizabeth Ibbotson of Southowram was buried at Halifax Minster on 31st August 1818 but this is not certainly the woman from the family recorded on the depositum plates. No other deaths for an Elizabeth Ibbotson are recorded in Halifax between 1784 and 1841, but her burial outside of the parish or her absence for some other reason are possibilities.

8.3.9 If Thomas' mother Elizabeth was indeed the Betty Saville who married in 1784, one possibility for a re-marriage of William Ibbotson exists. On 15th August 1796, just a few weeks after the marriage of William Ibbotson and Elisabeth Marsden, another William Ibbotson (or possibly the same one) married Nelly Walker, a widow of Northowram, at Halifax Minster. This William Ibbotson was a weaver.

8.4 Rachel Ibbotson

8.4.1 The depositum plate for Rachel Ibbotson (skeleton 1124) was also recovered. In death Rachel occupied a brick vault built for her on top of the vault containing her husband and father-in-law. The depositum plate gives Rachel's birth date as the 10th November 1797 (one year out from the census of 1851 and four years older than the date given in 1841). Her death occurred on 21st April 1885, late in the chronology of the Square Chapel burial ground. It is likely that she was buried here at this late date due to the family connection. Once again, Rachel's death attracted death duties, which is consistent with the picture of affluence we read from her higher status brick shaft grave.

8.4.2 There are two possibilities for Rachael Ibbotson's birth, both recorded from the Wesleyan Methodist community in Brighouse, which is consistent with her origin in Rastrick as shown on her marriage certificate. Rastrick today forms part of the town of Brighouse, although the two were formerly separate entities. Both the centre of Brighouse and Rastrick lie less than 5 miles from the Square Chapel.

8.4.3 The most likely option is a Racheal Robinson born on the same date as that shown on the depositum plate, 10th November 1797. These are the only two instances of this date that occur. This Racheal Robinson was baptised exactly two months after her birth, 10th December 1797, and her parents were John and Elizabeth.

8.4.4 A second option for the birth of Rachel Ibbotson is a Rachell Robinson baptised in the same Wesleyan community four years later. Rachell Robinson was born on 1st December 1801 to James and Ann and baptised on 4th January 1802. These dates are consistent with Rachel Ibbetson's entry on the census of 1841.

8.4.5 Throughout her life, Rachel Ibbotson gave various dates for her birth. It is possible that she was unaware of her true date of birth. She may have falsified her details to appear younger or older than she actually was, with an apparent pattern of giving younger ages earlier in her life and older ages later in her life. It is also possible that the parish register

was consulted on one or more occasions and that information for the wrong Rachel Robinson was substituted.

8.4.6 A marriage of Rachel Robinson was recorded at Halifax Minster to a Richard Holt Junior, a cloth drawer, on 1st May 1820. This marriage occurred a year before the marriage of Rachel and Thomas Ibbetson, and although it is possible that this represents a first marriage for Rachel Ibbotson, it is more likely that this may be the marriage of the other Rachel Robinson.

8.4.7 A marriage of a Rachel Ibbotson is listed in 1863, although it seems unlikely that this is the woman from the depositum plate given her age of around 66 and her continued use of the surname Ibbotson.

8.4.8 Between her husband's death in 1853 and her own death in 1885, Rachel Ibbotson is recorded on three censuses. In 1861 the widowed Rachel Ibbotson was listed as a "Fund Holder" and an age of 63 and date of birth of 1798 are given. Emma Greaves, an unmarried 28 year old woollen weaver born in 1823, was lodging with Rachel. The two women lived at 71 Gerrard Street in the same area Rachel had inhabited with her husband. 71 Gerard Street appears to have been a slightly larger terraced property, although back-to-back housing was also present on the same road.

8.4.9 In 1871 the occupation field is blank for most of the relevant census record. Rachel Ibbotson is listed as 73 years of age, again born in 1798. Hannah Holdsworth, 34 (born 1837) was now Rachel's boarder. Rachel had moved a few metres from Gerard Street to Back Gerard Street, likely living in similar circumstances as before.

8.4.10 A final census entry from 1881 reveals little to have changed except for the passage of ten years. Rachel is given as 85 years of age with a birth date of 1796, the oldest yet, and Hannah is still boarding with her. The two women are listed as a house keeper and worsted and woollen weaver respectively.

8.4.11 As noted in the osteology section above, Rachel Ibbotson (skeleton 1124) had suffered fractured vertebrae and ribs during her life, and had had lost all of her teeth before death.

8.5 Summary of the Ibbetson family

8.5.1 The Ibbetsons were drawn from Nonconformist stock, participating in life at the Square Chapel from at least the baptism of Thomas in 1799 until the death of the last of their line in 1885. Marriages appear to have been universally undertaken at the main church in the town, St. John's (Halifax Minster), despite the family's Nonconformity.

8.5.2 The family's financial situation is a source of some curiosity. Thomas worked for most of his life as a grocer in 'The City', a poverty-stricken part of Halifax. His position as a grocer would have been free of the worst excesses of manual labour and the dangers of many other types of work undertaken during the Industrial Revolution. However, the location of his shop, at least in 1822, carried with it low status. It is not possible to relate any occupation reliably to either William or Rachel, although several manual working-class positions are possible for William. William's death appears to have involved some form of fund, which was either inherited by, or set up for, his son Thomas. On the strength of this fund Thomas was apparently able to give up his job as a grocer, and on Thomas' death this financial security appears to have passed to his wife. The fund either ran out, or Rachel became less willing to reveal her status, around 1871. However, Rachel appears to have occupied a position of relative stability in a larger house than many of her immediate neighbours, supported by a female lodger. The continued presence of the

same boarder, Hannah Holdsworth, between at least 1871 and 1881 suggests some level of friendship between the two women.

8.5.3 In contrast to their apparent financial security, the Ibbetson family occupied a series of back-to-back houses, with Rachel moving to slightly larger terraced accommodation only after the death of both men. No address is given more than once, suggesting that the family were serial renters. Presumably they felt the accommodation was adequate for their needs, and their housing status may speak more of their roots than of their means. Their apparent frugality is consistent with a Nonconformist Yorkshire ethic of godliness and moderation. The relative richness of the Ibbetson plot may speak of a family struggling to grow beyond their lowly roots.

8.6 Baxter

8.6.1 A partially preserved depositum plate in the name of Baxter gives a date of death in the 1840s, although the final digit of the year is missing. This depositum plate was unstratified and is therefore not associated with any specific skeleton.

8.6.2 A total of 13 Baxters died in Halifax in the 1840s. Three of these were buried at Holy Trinity and one was buried at Halifax Minster and these four can therefore be ruled out. The burial place of the remaining nine (two Williams, Mary, Wilhelmina, Ann, Jane, Sarah, Alice and Harriet) were not recorded in the parish registers. No deaths of people with the forename Baxter are recorded in Halifax in the 1840s.

8.6.3 The nine burials this depositum plate could represent expand to around 32 options on the census of 1841. It is possible that none of these 32 options represent the individual associated with the depositum plate, especially given that some of the possible names (Wilhelmina, Sarah and Alice Baxter) do not appear on the 1841 census for Halifax at all. Comparison with records of ledger stone inscriptions may be an appropriate route forwards.

8.7 Emma Briggs

8.7.1 The depositum plate for Emma Briggs (skeleton 1356) states that she died on April 25th in the 19th century, although the exact year of her death is missing. She was a child of 6 when she died. Eight inhumations (the maximum number seen) were present in the plot containing Emma Brigg's body, with Emma forming one of the middle burials.

8.7.2 Emma Briggs is a common name and there are many burial records under that name in 19th-century Halifax. None of the available records list the day and month of death. This individual cannot be identified further following this approach. Comparison with records of ledger stone inscriptions may be appropriate.

8.8 Mary Anne Whitley

8.8.1 The depositum plate for Mary Anne Whitley gives her date of death as 14th January 1872. The depositum plate was originally read as "aged 19 years"; however, comparison with death records suggests that this should be 49 years, which is reasonable given reappraisal of the plate. This gives Mary Anne Whitley's date of birth as 1823. Mary Anne's estate attracted death duty.

8.8.2 The only exact match on the census of 1871 is a Mary A Whitley born in 1823. This Mary A Whitley lived on Park Road, which is shown on the OS town plan of 1890 much as it is today, but is undeveloped on maps from the 1850s. The west side of Park Road was occupied by the formal gardens of the People's Park. Housing on the east side of Park

Road comprised large architecturally impressive semi-detached three-storey properties four bays wide and of considerable depth.

8.8.3 Mary A Whitley lived in a household of seven family members and four servants. Nathan Whitley, Mary's younger brother, is listed as the head of the family alongside five of Nathan's children. Marital status and occupation are blank on the transcribed version of the census, but examination of the original revealed that Nathan was listed as a card maker from Huddersfield. Mary's place of birth is difficult to read, but may be Halifax.

8.8.4 No match occurs on the 1861 census. It is possible that at this time, the family lived outside the parish, perhaps returning to Halifax at the time of the construction of the properties on Park Road.

8.8.5 In 1851 Mary Anne Whitley lived at 11 Winding Road, Halifax, an area of mixed housing and industrial activity on the north-east outskirts of the medieval core of the town. Mary Anne, 28, an annuitant, is listed as the head of the household, with her younger brothers John, Nathan and Samuel (the youngest at 14) also present. Two servants and a visitor, 26 year old Emma Thomson of Huddersfield, also an annuitant, were present in the house on the night of the census. John Whitley is listed as a card maker employing 52 men, with Nathan again also a card maker. The appearance of both Mary Anne and Nathan Whitley make it almost certain that this is the same woman who twenty years later lived on Park Road.

8.8.6 Again, no match could be found on the 1841 census, suggesting that Mary Anne may have resided outside the parish at this time.

8.8.7 Five possible births with appropriate names are listed in the local area in 1823. Two of these are Baptist births from Rishworth, about 6 miles from the Square Chapel. The other three are from Halifax. It is not possible to securely identify any of these with the woman of Winding Road and Park Road.

8.8.8 A large number of possible marriages for Mary Whitley are recorded. However, given Mary Anne Whitley's apparent single status in both 1851 and 1871, it is unlikely that these relate to that woman.

8.8.9 Searches for genealogical data for Nathan Whitley in Halifax have provided no further information about Mary Anne Whitley. Searches of the 1841 and 1861 census across Yorkshire and Lancashire were unfruitful.

8.8.10 Mary Anne Whitley's body (skeleton 1240) was buried in a lead-lined coffin and it was necessary for environmental health officers to remove the remains prior to their archaeological assessment.

8.9 Mary Anne Whitley's family

8.9.1 One of the children in the household in 1871 is John Henry Whitley. John Henry was the son of Nathan Whitley and therefore Mary Anne's nephew. Aged 5 years old with a date of birth in 1866, John Henry Whitley went on to become the Liberal Member of Parliament for Halifax from 1900 until 1928. From 1921 to 1928, John Henry was the Speaker of the House of Commons. During the First World War, he helped establish the Joint Industrial Council, a statutory council of employers and trade unions known to this day as the "Whitley Council." In 1931 the Royal Commission on Labour in India which he chaired surprised many by concurring with the criticisms of Mahatma Gandhi. He declined the

offer of a knighthood and served as an early governor of the BBC. John Henry Whitley was buried at the Lister Lane cemetery close to Park Road in 1935.

8.9.2 Nathan Whitley was the mayor of Halifax from 1876–7 and again from 1881–3 and was also buried at Lister Road. Nathan's younger brother Samuel Whitley owned a cotton spinning business, S. Whitley and Co. at Hanson Lane Mills, Skircoat. Nathan Whitley was a partner in the business and took over after Samuel's death in 1884.

8.9.3 In 1883 the Huddersfield Examiner twice records attempts to sell the lease of Brighouse Mill, which was formerly held by Nathan Whitely (Brooke nd). It is not certain that this is the same Nathan Whitely as at least one other mill owner by the same name was operating in Huddersfield at that time. One of these advertisements advises that Nathan had held the lease for 20 years. This places the beginning of the lease at about the time of Mary Anne's death. If this Nathan Whitely can be identified with the Nathan Whitley of Park Road, the occupation of the mill may therefore relate to investment of Mary Anne's estate.

8.10 Summary of Mary Anne Whitley

8.10.1 Mary Anne Whitley was a member of a rich industrialist family. She was the sister of the future mayor of Halifax and the aunt of the future speaker of the House of Commons, John Henry Whitley, with whom she shared a house when he was five years old (her death occurred when John Henry was six). Mary Anne appears to have lived most of her life in large houses with servants, with both the size of the house and the number of servants apparently increasing over time. She appears to have been independently wealthy and presumably chose to live with her brothers, over whom she may have had some maternal influence. In 1851, aged 28, she is listed as the head of the household with John (employing 52 men), Nathan (the future mayor) and a 14 year old Samuel (Nathan was initially a partner in Samuel's firm) under her care.

8.10.2 Mary Anne Whitley appears to have remained unmarried throughout her life. The presence of a wealthy female visitor from a neighbouring town in Mary Anne's house during the census of 1851 suggests that she may have been well connected socially.

8.10.3 There is no evidence either in support or against Mary Anne's participation in life at the Square Chapel and the depth of any Nonconformist conviction is unknown. Other members of her family were buried at the Lister Lane cemetery close to their house.

8.10.4 **Summary**

8.10.5 Of the six depositum plates, genealogical research led to identification of four individuals. Three of these were from the Ibbetson family, including grocer Thomas, who lived in back-to-back housing and who kept a shop in a notorious slum. The other was Mary Anne Whitley, a member of a family of rich industrialists who lived in a grand townhouse with servants.

8.10.6 In 1871, the two families lived a few hundred metres apart to the west of the town centre. The contrast between them highlights the differences in the population of Halifax during the Industrial Revolution. Although the Ibbetsons appear to have had some degree of independent wealth, they lived in much more modest conditions that the Whitleys, occupying worker's housing and presumably sharing their daily lives with the poorest of society. At the Square Chapel, however, Ibbetsons and Whitleys likely sat in the same room and were buried in the same ground, equal under God.

8.10.7 Depositum plates are non-essential funerary items that may chiefly have been of interest to those with a degree of disposable wealth. It is perhaps not surprising to find three or four annuitants among the population buried with depositum plates. Any study of depositum plates is by design limited to a self-selected sector of the population, to the exclusion of the poorest in the community.

8.10.8 The baptism and burial of Thomas Ibbetson at the Square Chapel along with the late date of interment for Rachel Ibbetson suggests the participation of the Ibbetson family throughout the life of the institution. As far as records allow, the Ibbetson family appear to have been firmly situated in the Nonconformist tradition. The religious life of Mary Anne Whitley is unknown.

9 DISCUSSION

9.1 Osteological analysis

9.1.1 Detailed osteological analysis of 112 skeletons from the cemetery associated with the Non-Conformist Square Chapel, Halifax has provided valuable information about the lives of individuals in this town during the period of the Industrial Revolution when the city saw marked expansion. However, as noted above, the situation in Halifax was 'cleaner' and slightly more genteel contrasted with other urban centres such as Leeds. There is evidence to suggest that the people buried at the Square Chapel came from a diverse population which included the very poor and the wealthy middle classes (Williams 2016). A total of 207 skeletons were identified during the first phase of osteological analysis (Keefe and Holst 2015) and where possible the resulting osteological data has been compared with the assemblage considered here. The combined dataset numbers 219 individuals which is a sizeable osteological resource.

9.1.2 Osteological analysis has revealed that most skeletons were poorly preserved with poor surface preservation and moderate to heavy fragmentation. Adults made up 78% of the assemblage with a slightly higher proportion of males than females. The opposite was the case among the group from the previous phase of work. When the data from both phases is combined the numbers of males and females are identical. Furthermore, the combined data indicates that older adults were in the majority. In broad terms, therefore, adult mortality increased with increasing age. Only 22% of the total assemblage were non-adults. The pattern seen in the first phase is repeated here. The youngest age groups (foetuses and neonates) are under-represented while younger juveniles account for 44% of the non-adult population. Either foetuses were interred elsewhere or they had a lower mortality which may have been linked to good maternal health.

9.1.3 Both males and females were shorter than the average for the post-medieval period. Shorter stature is linked to poor nutrition although a genetic predisposition cannot be discounted. There was considerable evidence for nutritional deficiencies among the non-adults in the form of probable scurvy, possible rickets, cribra orbitalia and dental enamel hypoplasia. The fact that the neonatal death rates were low suggest that maternal health was good, but in the infant stage environmental factors came into play with exposure to childhood diseases. Choosing to bottle feed infants may also have had an impact on nutrition levels.

9.1.4 A very small number of mild congenital defects were observed within the adult group and these comprised a cervical rib and possible block vertebra. There was considerable evidence for childhood stress as evidenced by probable scurvy and rickets, cribra orbitalia and dental enamel hypoplasia (DEH). Osteomalacia and osteoporosis affected a small number of adults. Traumatic injuries in the form of healed fractures were relatively

common in both adult males and females, although there was no evidence for os acromiale or spondylolysis as there was in the earlier phase (Keefe and Holst 2015, 100). There was some evidence for non-specific inflammation in the form of periosteal reactions. Maxillary sinusitis, however, was very uncommon, and there was limited evidence for pulmonary infections which in one case could be linked to tuberculoid meningitis. This is in marked contrast with the results from the first phase where two thirds of the adults exhibited chronic sinusitis. Five adults (8.8%) from the first phase had new bone formation on the visceral (lung) surfaces of their ribs. In common with the findings from the earlier work, osteoarthritis was very uncommon. Degenerative joint disease was common but did not follow the patterns observed with osteo-arthritis. Activities seem to have differed in males and females and this was evidenced by different skeletal lesions including those linked to trauma, osteoarthritis and degenerative joint disease. Fused or partially fused sacro-iliac joints were observed. Some may have had a genetic origin while others may have been traumatic or age related.

9.1.5 The dentition of 55 adults and 18 non-adults were examined. Deposits of calculus (or mineralised plaque), were seen in almost a third of the adult teeth. This prevalence rate is lower than the nearly 50% recorded during the first phase of osteological analysis, but is still considerably higher than that reported for the post-medieval period (Roberts and Cox 2003, 327). This may suggest that dental health among this population was below average for the period. The prevalence rate of tooth decay or caries and abscess was also higher among the adults. Non-adult dentitions were also affected by decay. Rates of ante-mortem tooth loss were particularly high. No evidence for direct dental intervention was identified although it is quite possible that teeth were extracted. Dental hygiene was certainly poor. At least two men smoked pipes on a regular basis, as evidence by the characteristic wear patterns on their teeth. Dental anomalies were also observed. These included absent or impacted teeth, dental crowding, rotation and unusual wear patterns.

9.2 Coffin fittings

9.2.1 The coffin hardware assemblage includes elements characteristic of burials between 1763 and 1872 throughout Britain. However, unlike the coffin furnishing designs found during the earlier phase of excavation, which are strongly comparable will upper middle class burials, there are fewer comparable fixtures and a greater number of grips and grip plates unique to this assemblage.

9.2.2 It is possible that the differences in coffin fittings between the two phases of excavation indicate that different areas of the burial ground were used by different sectors of society. However, given the small sample size of coffin hardware, the assemblage is best viewed as a whole, with a variety of different types of grips, plates *etc.* used. A future synthetic report could address these issues in greater depth.

9.3 Future work

9.3.1 The assemblage reported on here was reburied in November 2016. However, samples were collected during analysis and have been submitted to the University of York for isotope analysis and a study of dental calculus. This project commenced with samples from the previous phase of work. Analysis of lead isotopes may determine whether individuals were exposed to high levels of lead. Lead exposure has been linked with the development of rickets and dental caries. Analysis of incremental dentine samples may provide useful information relating to the age of weaning and diet. Analysis of dental calculus may reveal pathogen DNA fossilised within the tartar concretions, and it may be possible to find traces of occupational debris such as flax or wool fibres cemented into the calculus. It is hoped that an opportunity will arise to fully integrate the osteological data from both phases of work.

9.3.2 Further analysis of the records of the coffin furniture has been recommended, including comparison with trade catalogues.

9.3.3 As specified in the Written Scheme of Investigation for this phase of work (Wessex Archaeology 2015), it will be necessary to produce a future synthetic report covering the results from all phases of excavation. This future report will pull together the archaeological, osteological, artefactual and other information generated by work to date following a specification which has yet to be produced.

9.3.4 The WSI recommends the future preparation of a note for a suitable journal. The future production of a popular booklet is also anticipated by the WSI.

9.4 Conclusions

9.4.1 Within the area excavated during these works, the aims of the project have been met. The design of the excavation was constrained following the proposed impact of the forthcoming development. A limit was placed on the extent of the excavation both in plan and vertically. For this reason, the aims, which were stated quite broadly, can only be said to have been fulfilled with the caveat that they apply to the area investigated and not to the Square Chapel site as a whole.

9.4.2 Detailed analysis of 112 skeletons has provided valuable information about the lives of individuals in Halifax during the period of the Industrial Revolution. This evidence adds to an existing corpus of 207 skeletons excavated in 2014 (Williams 2016), with the combined results representing a significant osteological dataset relating to the population of Halifax dating from around 1772 until at least 1885.

9.4.3 The conclusions of the previous work have largely been supported and expanded upon: the skeletons recovered from the Square Chapel represent a reasonably healthy population with low rates of osteoarthritis, and infection, who are likely to have avoided the worst overcrowding of the period. Non-adults, however, suffered a high rate of metabolic disease. High rates of sinusitis and pulmonary conditions (and a possible case of tuberculoid meningitis) may have been promoted by air pollution. Rates for all dental pathologies among the adults were higher than the averages for the period. Rates of ante-mortem tooth loss were particularly high. A diet rich in sugar and other cariogenic foods combined with poor oral hygiene is likely.

9.4.4 Trauma and degenerative joint disease were common among the adults from this group, with evidence for differences in activities between men and women. Specific activities have not been identified.

9.4.5 Environmental sampling was not informative in this case, with a low level of gut parasites observed from some grave fills but little else recorded. Excluding the human bone and coffin furniture, the artefacts recovered from the Site are of 17th and 18th-century date and likely derive from the manuring of agricultural fields prior to the construction of the chapel.

9.4.6 Two families were traced using information from depositum plates. The contrasting lives of these two families highlight both the inequalities of the Industrial Revolution and the egalitarian nature of religious practice of the period, particularly of Non Conformism. Members of two families, one living in back-to-back housing and operating a grocery in a notorious slum, and the other occupying a grand townhouse with servants and producing both a Mayor of Halifax and a Speaker of the House of Commons, shared the same spaces at the Square Chapel in life and in death.

9.4.7 The foundations of the early 19th-century former Sunday school were also recorded and were consistent with our existing understanding of the development of the Site.

9.4.8 Dental calculus and isotope analysis is underway and a synthesis of these results with those from previous excavation is recommended.

10 STORAGE AND CURATION

10.1 Museum

10.1.1 As specified in the WSI (Wessex Archaeology 2015), a copy of the digital photography from the Site will be submitted to WYAAS along with this report.

10.1.2 It is recommended that the project archive resulting from the excavation be deposited with the Calderdale Office of the West Yorkshire Archive Service in Halifax. Deposition of any finds with the Museum will only be carried out with the full agreement of the landowner. The Museum has agreed in principle to accept the project archive on completion of the project, under accession code 2013.11.

10.2 Archive

10.2.1 The complete Site archive, which will include paper records, photographic records, and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material by the West Yorkshire Archive Service: Calderdale Office and in general following nationally recommended guidelines (SMA 1995; Walker 2001, CIfA 2014c; Brown 2011; ADS 2013).

10.2.2 All archive elements will be marked with the site/accession code (2013.11), and a full index will be prepared.

10.3 Discard policy

10.3.1 Wessex Archaeology follows the guidelines set out in Selection, Retention and Dispersal (SMA 1993), which allows for the discard of selected artefact and ecofact categories which are not considered to warrant any future analysis. Any discard of artefacts will be fully documented in the project archive.

10.3.2 The discard of environmental remains and samples follows nationally recommended guidelines (SMA 1993; 1995; CIfA 2014c).

10.4 Security copy

In line with current best practice (*eg*, Brown 2011); on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

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1 APPENDICES

1.1 Appendix 1: Context descriptions

Context	Context Type	Description
1	Modern overburden	Dark black grey loam with ash, stone and brick rubble. Demolition rubble overburden covering entire site.
2	Wall	North-south stretcher bond 2 skin red brick wall with lime mortar
3	Wall	North-south stretcher bond 3 skin red brick wall with lime mortar
4	Wall	East-west stretcher bond 3 skin red brick wall with lime mortar
5	Wall	East-west stretcher bond 1 skin red brick wall with lime mortar
6	Wall	East-west stone wall including possible re-used ledger stone. Greyish lime mortar
7	Wall	North-south stone wall with greyish lime mortar
8	Structure	Manhole. Stretcher bond. Lime mortar
9	Cut	Small pit 0.9m diameter and 0.15m deep
10	Fill	Pale yellow-grey sandy loam with charcoal and mortar
11	Surface	Small area of laid flags. Not inscribed stones. 0.5m by 0.8m
12	Wall	Flag like stones forming small structure. Lime mortared. Two rows with rubble core - a wall? 0.6m wide and 0.2m high.3 m long.
13	Wall	Dry stone wall, not fully investigated, 2 courses seen.
14	Structure	Concrete stairs and associated cut outside Square Chapel. 8.5m by 4.5m by 1m deep
15	Surface	Re-used inscribed ledgers used as surface. 2.5m by 2m. No mortar
16	Drain	21st century drain with plastic waterpipe. Sand backfill.
17	Surface	Re-used inscribed ledger stones used as a surface.
18	Structure	Brick manhole. Stretcher bond. Lime mortar.
19	Natural	Orange sand and sandstone
20	Wall	Stone wall, double faced with rubble core. Lime mortar.
21	Drain	Stone drain 9m long, 0.5m wide and 0.5m deep
22	Drain	Brick lined stone capped drain
24	Wall	Stone wall, double faced with rubble core. Stands on brick foundation. Lime mortared.
25	Structure	Brick vault. Stone flagstones top and bottom. Lime mortared. White washed inside. Removed by environmental health. Sat above second vault, 1241.
26	Grave Cut	Cut of grave. 2.10 x 0.65 x 0.80 (lxwxd)
27	Fill	Fill, mixed dark brown greys and orange sandy loam. Top fill redeposited 001, lower bone frags
28	Grave Cut	Cut of grave. 1.90 x 0.60 x 1.15 (lxwxd)
29	Fill	Fill, dark brown and dirty yellow sandy loam, sandy clay with ash rubble, sandstone frags
30	Grave Cut	Cut of grave containing SK1131. 2.0 x 0.60 x 1.00 (lxwxd)
31	Fill	Fill of 030 with some modern backfill
34	Grave Cut	Cut of grave of SK064. Upper fill modern evidence that upper burial was exhumed. 1.78 x 0.70 (lxw)
35	Fill	Back fill of grave 034. Mixed black, mid yellowish-brown. Friable with occasional stone flags <50mm
36	Grave Cut	Base cut of 1001. 3 children removed from upper portion of group. Excavation abandoned
37	Fill	Fill of 036. Mid grey yellowish brown. Soft, sandy clay with occasional stone frags <60mm
40	Fill	Fill, some dark brown/black (disturbed) some mid brown/grey sandy loam and clay material
41	Grave Cut	Cut of grave. 2.40 x 0.80 x 0.30 (lxwxd)
48	Grave Cut	Cut of grave. 1.90 x 0.60 x 0.30 (lxwxd)
49	Fill	Fill, mid grey Yellowish brown clayey sand
58	Grave Cut	Cut of child grave SK064. Ill-defined cut
60	Fill	Fill of grave 058. Mid to light grey-brown, soft to friable. Occasional stone 058
61	Grave Cut	Cut of child grave. Ill-defined cut. 1.0 x 0.25 x 0.25 (lxwxd)
62	Timber	Fragments remaining of base of coffin of Sk065. 1.0 x 0.30 x 0.30 (lxwxd)
63	Fill	Fill of grave 061. Mid to light grey-brown. Soft, friable. Occasional stone frags <50 mm
64	Human skeleton	Remains of small child. Bone in poor condition, highly frag. Lower limbs/feet truncated
65	Human skeleton	Small child skeleton in poor condition. Remains slumped to right into coffin below.
72	Grave Cut	Cut of adult sized grave. No skeleton present. 1.70 x 0.85 x 0.80 (lxwxd)
73	Fill	Fill of cut 072. Mid greyish-brown sandy silt with occasional sandstone inclusions.
78	Grave Cut	Vault construction cut. Cut of grave. 2.60 x 1.00 x 0.50 (lxwxd)
79	Fill	Fill, dirty brown grey sandy loam with sandstone and ash
90	Grave Cut	Cut of child grave 091, contains highly degraded coffin

91	Timber	Highly degraded remains of a timber coffin, no occupant just a stain
92	Fill	Fill of cut 090. Mid grey, yellowish brown. Soft, clayey sand with occasional stone frags <50mm
93	Grave Cut	Grave cut as defined by coffin 094. 0.88 x 0.28 x 0.07 (lxwxd)
94	Timber	Highly degraded timber coffin containing SK095
95	Human skeleton	Remains of a child, or children. A mixture of SK095 and missing remains from gave 090
96	Fill	Fill of grave 093. Mid grey, yellowish brown. Soft, friable with occasional stone frags <50
97	Grave Cut	Cut of empty adult sized grave. 1.8 x 0.73 x 1.33 (lxwxd)
98	Fill	Fill of cut 097. Orangey-grey sandy clay with sandstone inclusions.
99	Grave Cut	Cut. 2.1 x 0.7 x 0.35 (lxwxd)
1101	Fill	Fill of grave cut 099
1102	Grave Cut	Cut of empty adult sized grave. 1.95 x 0.55 x 1.40 (lxwxd)
1103	Fill	Fill of cut 1102. Mid grey and yellowish-brown sandy clay with occasional sandstone inclusions
1108	Grave Cut	Cut for 1139 and SK1140. 2.0 x 0.65 x 0.45 (lxwxd)
1109	Fill	Fill for SK1140. Dark brown silty sand with <5% sub-angular stones
1110	Grave Cut	Cut of grave.2.0 x 0.55 x 1.10 (lxwxd)
1111	Fill	Fill Greyish yellow-brown sandy clay with occasional stone frags
1112	Grave Cut	Cut of grave. 1.54 x 0.43 x 0.68 (lxwxd)
1113	Fill	Fill, dark grey patches of greenish black sandy clay with mall rounded frags of sandstone and flecks of wood.
1116	Human skeleton	Poor condition partly exhumed (70s?), skull crushed. V deep grave cut maybe earlier burial below
1117	Structure	Lead lined coffin in brick vault 1025. 1.80 x 0.40 x 0.28 (lxwxd)
1118	Timber	Highly degraded coffin
1119	Grave Cut	Cut of vault.2.36 x 1.00 (lxw)
1120	Fill	Fill, dirty mid brown/yellow sandy loam with sandstone and brick. Construction trench fill
1121	Structure	Block lined vault, stone capped holds coffin [1123]
1123	Timber	Intact wooden coffin. Intact coffin plate for Rachel Ibbottson
1124	Human skeleton	Rachel Ibbotson. Bones in good condition, some hair remains on skull.
1125	Human skeleton	Partial skeleton. Only femurs recovered. In decayed coffin 1126
1126	Timber	Heavily degraded coffin. Cut of grave. 1.80 x 0.45 x 0.25 (lxwxd)
1127	Grave Cut	Cut of brick-lined and stone-capped vault
1128	Fill	Fill of grave of SK1220. Dark brown-grey sandy loam.
1129	Fill	Brick-lined and stone-capped vault. 2.18 x 0.80 (lxw)
1130	Timber	Coffin for SK1131
1131	Human skeleton	Skeleton slumped down in middle. Long bones next to coffin walls. Some remains of lid on top
1133	Grave Cut	Cut of grave of child SK1135. 0.98 x 0.23 x 0.10 (lxwxd)
1134	Timber	Highly degraded remains of a timber coffin and possible lead tin stain. 0.98 x 0.23 x 0.10 (lxwxd)
1135	Human skeleton	Skeleton of child in coffin 1134, grave 1133
1136	Fill	Fill of 1133. Mid grey, yellowish brown. Soft, clayey sand with occasional stone frags<30mm.
1137	Timber	Coffin with good preservation of lid and evidence of nameplate and lid designs
1138	Human skeleton	Feet higher than head. Torso slumped. Only cranium of skull remaining
1139	Timber	Coffin, corroded nameplate. Only frags remaining of timber coffin. 1.9 x 0.55 x 0.35 (lxwxd)
1140	Human skeleton	Undisturbed but ribs, pelvis, hands and feet bones missing (apart from 2 ankle bones in left f)
1141	Grave Cut	Cut of grave. 1.86 x 0.76 x 0.36 (lxwxd)
1142	Fill	Fill, mid brownish grey clay sand with rare sub-angular stones.
1143	Timber	Degraded coffin surviving as dark stain around SK1185
1144	Human skeleton	Minimal disturbance, good condition. Right arm missing or collapsed into adjacent grave
1145	Timber	Highly degraded coffin leaving rusted frags of name plate
1146	Human skeleton	Skeleton very disturbed/destroyed by wall. Collapsed onto SK1146, and SK1172
1147	Fill	Fill. Dark orangish brown silty sand, <5% sub angular stones<0.05mm. 1.90 x 0.8 x 0.4 (lxwxd)
1148	Grave Cut	Cut for 1149, SK1150. 1.9 x 0.5 x 0.4 (lxwxd)
1149	Timber	Timber coffin only frags remaining. No nameplate found for SK1150. 1.90 x 0.5 x 0.4 (lxwxd)
1150	Human skeleton	Lower legs both poorly preserved.
1151	Fill	Fill of grave. Mid grey brown silty sand with 2% small rounded stones

1152	Grave Cut	Cut of grave. 1.70 x 0.45 x 0.35 (lxwxd)
1153	Timber	Poorly preserved coffin which has collapsed into the grave below. 2nd coffin in the stack from top
1154	Human skeleton	Head leaning against side of coffin resulting in damage the skull. Corroded name plate over ribs
1155	Timber	Highly degraded coffin only flecks of wood visible
1156	Human skeleton	Remains of adult in very poor condition, very disturbed
1157	Grave Cut	Cut of grave. 2.27 x 0.61 x 1.40 (lxwxd)
1158	Timber	Highly degraded no more than a stain
1159	Human skeleton	very poor condition but undisturbed
1160	Fill	Fill of grave. Mid greyish yellow-brown
1161	Fill	Fill, mid greyish brown sandy silt with 5% sub-angular stones <0.5mm
1162	Grave Cut	Cut for grave. 1.90 x 0.64 x 0.45 (lxwxd)
1163	Grave Cut	Cut to grave. 2.07 x 0.6 x 0.32 (lxwxd)
1164	Timber	Highly degraded coffin leaving only handles
1165	Human skeleton	Skel in fair to good condition but slumped into grave below
1166	Fill	Fill, dark grey brown with highly degraded shroud pins (not saved)
1167	Grave Cut	Cut for grave. Second burial down in group. 1.9 x 0.8 x 0.67 (lxwxd)
1168	Timber	Highly degraded coffin leaving handles
1169	Human skeleton	Skeleton in fair condition
1170	Fill	Fill, very dark grey brown sandy clay with occasional sandstone frags <80mm
1171	Human skeleton	Very disturbed. Skeleton has been mixed with SK1146, and SK1172
1172	Human skeleton	Very disturbed. Skeleton has been mixed with SK1146, and SK1171
1173	Timber	Sides of coffin are in good condition but the rest has rotted away leaving frags of nameplate
1174	Human skeleton	Good condition. Upper burial of group, some ribs mixed with SK1174, SK1175
1175	Human skeleton	In fair condition. Could be mixed with SK1174, SK1176
1176	Human skeleton	In fair condition. Hands mixed with SK1174, SK1176
1177	Grave Cut	Cut of grave. Grave cut. Third grave down in stack. 2.0 x 0.60 x 0.90 (lxwxd)
1178	Fill	Fill, reddish brown sand with 3% mid-small stones
1179	Fill	Fill of grave. Grey orange silty sand with 1% medium rounded stones
1180	Grave Cut	Grave cut. Third grave down in stack. 1.9 x 0.60 x 0.50 (lxwxd)
1181	Timber	Coffin has slumped down into coffin below. 1.7 x 0.4 x 0.25 (lxwxd)
1182	Human skeleton	Degraded human skeleton
1183	Timber	Highly degraded coffin leaving iron handles and pewter plating SK1174
1184	Timber	Highly degraded coffin leaving pewter plating and iron handles. SK1175 and SK1176
1185	Human skeleton	No disturbance, poor condition. Neonate remains, possible death in child birth
1186	Grave Cut	Cut for grave for child burial. 0.85 x 0.25 x 0.12 (lxwxd)
1187	Fill	Fill, mid greyish brown clay sand and rare sub-angular, medium and coarse gravel
1188	Timber	Heavily degraded. Lid on top of bones, sides caved in, corroded possible metal plate on lid.
1189	Human skeleton	Child burial at top of stack/group
1190	Human skeleton	Good condition. Fully articulated.
1191	Fill	Grave fill. Grey orange clayey sand with 20%of small stones
1192	Grave Cut	Grave cut. 0.92 x 0.30 x 0.20 (lxwxd)
1193	Timber	Coffin, highly degraded
1194	Human skeleton	Frag remains of skeleton in very poor condition. Possible truncated during cutting of grave 1180
1195	Grave Cut	Cut of grave. 2.20 x 0.70 x 0.60 (lxwxd)
1196	Timber	Highly degraded coffin leaving handle
1197	Human skeleton	In fair condition.
1198	Fill	Fill, very dark grey brown sandy clay with occasional stone frags <100mm
1199	Grave Cut	Cut of grave. 1.9 x 0.8 x 0.30 (lxwxd)
1200	Fill	Fill of grave. Light grey, patches of darker grey, sandy clay with frequent small round pebbles.
1201	Timber	Coffin, few remains, frags of wood, furnishings, handles, nails. 1.78 x 0.4 x 0.25 (lxwxd)
1202	Human skeleton	SK good condition but slumped to left. Evidence of autopsy performed on skull
1203	Grave Cut	Cut of grave. 1.90 x 0.55 x 0.75 (lxwxd)
1204	Timber	Highly degraded coffin no visible signs left
1205	Human skeleton	Disturbed skeleton possibly same as SK1189?
1206	Fill	Fill, dark grey brown sandy clay with occasional sandstone frags <80
1207	Grave Cut	Cut of grave. 2.30 x 1.0 x 1.60 (lxwxd)
1208	Fill	Fill, mixed mainly dirty mid brown sandy loam with ash, stone and coal
1209	Grave Cut	Cut of grave. 2.00 x 0.60 x 0.90 (lxwxd)
1210	Fill	Fill, yellow sand silt and occasional small stones
1211	Human skeleton	Fair condition, soft bones

1212	Timber	Heavily degraded coffin. Decoration still visible
1213	Grave Cut	Cut of grave. 2.20 x 0.70 x 0.70 (lxwxd)
1214	Fill	Fill, dirty brown/grey sandy loam with sandstone
1215	Human skeleton	Skeleton in moderate condition but slumped in grave
1216	Timber	Heavily degraded coffin, some wood remaining
1217	Fill	Fill, grey, some greenish-black patches sandy clay with frags of sandstone, rusted metal
1218	Timber	Highly degraded coffin. Possibly used for SK1171 and SK1172.
1219	Grave Cut	Grave cut. 1.54 x 0.49 x 0.68 (lxwxd)
1220	Human skeleton	Displaced human bones within disturbed grave.
1221	Grave Cut	Cut of grave. Upper grave cut. Only tibia and fibula of skeleton remaining. 2.0 x 0.60 x 0.4 (lxwxd)
1222	Timber	Heavily degraded coffin small portion of low southern side remaining
1223	Fill	Fill, dark grey brown
1224	Grave Cut	Cut of grave. 1.51 x 0.46 x 0.38 (lxwxd)
1225	Fill	Fill, mid grey brown clayey sand with frequent small irregular shaped pebbles
1226	Timber	Highly degraded coffin leaving only one handle. Cut of grave. 1.51 x 0.46 x 0.38 (lxwxd)
1227	Human skeleton	Very little remains and very damage. Possible mother and neonate burial SK1227 and SK1228
1228	Human skeleton	Infant remains. Found around right elbow of SK1227. Little remains, damaged
1229	Fill	Fill, md greyish brown sandy clay with 5%sub-angular stone <0.05mm
1230	Grave Cut	Cut of grave. 1.90 x 0.70 x 0.30 (lxwxd)
1231	Timber	Highly corroded coffin. 1.80 x 0.60 x 0.30 (lxwxd)
1232	Human skeleton	Very good condition. Lifted in rain.
1235	Human skeleton	In poor condition very disturbed infant burial
1236	Timber	Highly degraded wooden coffin. 1.40 x 0.20 x 0.10 (lxwxd)
1237	Grave Cut	Cut of child's grave.0.40 x 0.20 x 0.10 (lxwxd)
1238	Fill	Fill, yellowish brown sand with >10% charcoal, <60mm sandstone frags, CBM >20%
1239	Timber	Highly degraded and waterlogged wooden coffin. 1.60 x 0.58 x 0.35 (lxwxd)
1240	Human skeleton	Skeleton removed by environmental health. Skeleton has been previously exposed, perhaps during 1970s graveyard clearance. Mary Anne Whitley
1241	Structure	Brick lined vault. Flag top. Remains of structure are machined out.2.30 x 0.92 x 0.75 (lxwxd)
1242	Human skeleton	Skeleton removed by enviro officer from Calderdale MSC. No records
1243	Structure	Lead lined coffin. Removed by enviro officer from Calderdale MSC 1.90 x 0.50 x 0.80 (lxwxd)
1244	Human skeleton	Adult skeleton in poor condition, undisturbed
1245	Grave Cut	Cut of grave. 2.20 x 0.50 x 0.70 (lxwxd)
1246	Timber	Heavily degraded coffin
1247	Human skeleton	Condition of bones fair
1248	Fill	Fill, dark grey brown clayey sand with small sandstone <80mm
1249	Surface	Inscribed ledger stone, part of surface 015/017
1250	Surface	Inscribed ledger stone, part of surface 015/017
1251	Surface	Inscribed ledger stone, part of surface 015/017
1252	Surface	Inscribed ledger stone, part of surface 015/017
1253	Surface	Inscribed ledger stone, part of surface 015/017
1254	Surface	Inscribed ledger stone, part of surface 015/017
1255	Surface	Inscribed ledger stone, part of surface 015/017
1256	Surface	Inscribed ledger stone, part of surface 015/017
1257	Surface	Inscribed ledger stone, part of surface 015/017
1258	Surface	Inscribed ledger stone, part of surface 015/017
1259	Surface	Inscribed ledger stone, part of surface 015/017
1260	Surface	Inscribed ledger stone, part of surface 015/017
1261	Surface	Inscribed ledger stone, part of surface 015/017
1262	Fill	Fill, mid dirty brown sandy loam with sandstone frags and some small slabs
1263	Grave Cut	Cut of grave. 2.10 x 0.56 x 0.20 (lxwxd)
1264	Grave Cut	Cut of grave. 2.0 x 0.60 x 0.85 (lxwxd)
1265	Timber	Heavily degraded leaving only handles
1266	Human skeleton	In poor condition
1267	Fill	Fill, dark grey brown clay clayey sand
1268	Human skeleton	Condition good, with some disturbance. Right foot missing, skeleton partly slumped
1269	Fill	Fill, mid greyish brown sandy clay with 5% sub-angular stone <0.05mm
1270	Grave Cut	Cut of grave. 1.00 x 0.50 x 0.60 (lxwxd)
1271	Timber	Highly degraded coffin. 0.80 x 0.30 x 0.60 (lxwxd)
1272	Human skeleton	Infant skeleton in poor condition. Possible crushed into grave of SK1276

1273	Fill	Fill, mid greyish brown sandy clay with 5% sub-angular stone <0.05mm
1274	Grave Cut	Cut of grave. 2.00 x 0.50 x 0.70 (lxwxd)
1275	Timber	Highly degraded coffin. Cut of grave. 1.55 x 0.45 x 0.40 (lxwxd)
1276	Human skeleton	Child burial in fair condition
1279	Timber	Highly degraded coffin. 1.80 x 0.40 x 0.25 (lxwxd)
1280	Grave Cut	Cut of grave. 1.51 x 0.46 x 0.38 (lxwxd)
1281	Fill	Fill, light grey with patches of darker grey sandy clay with occasional small irregular shaped pebbles
1282	Timber	Highly degraded coffin leaving rusted metal from nameplate
1283	Human skeleton	Good condition, partial disturbance
1284	Fill	Fill, dirty mid brown sandy loam with sandstone
1285	Human skeleton	completely decayed
1286	Timber	Highly degraded coffin. Third coffin in series of three
1287	Grave Cut	Cut of grave. 1.60 x 0.50 x 0.40 (lxwxd)
1288	Grave Cut	Grave cut for SK1290. Truncated and disturbed by modern building. 0.80 x 0.40 x 0.20 (lxwxd)
1289	Timber	Highly degraded coffin, minimal wood with handle remaining. 0.7 x 0.4 x 0.3. (lxwxd)
1290	Human skeleton	Torso truncated. Condition: highly disturbed
1291	Fill	Dark grey brown clay sand with sandstone and charnel bone
1292	Grave Cut	Grave cut below grave cut 1288. 0.8 x 0.5 x 0.3 (lxwxd)
1293	Timber	Highly eroded coffin with handles containing skeleton 1294
1294	Human skeleton	Partial skeleton consisting of thorax and upper arms. Truncated by foundations.
1295	Fill	Dark grey brown clay sand with sandstone, coffin handle and pot
1296	Timber	Highly degraded wooden coffin. 1.78 x 0.45 x 0.25 (lxwxd)
1297	Grave Cut	Cut of grave. 2.40 x 0.65 x 0.50 (lxwxd)
1298	Fill	Fill, mid dirty brown sandy loam with sandstone, brick frags and frags of charcoal
1299	Timber	Highly degraded wooden coffin leaving some iron fittings
1300	Human skeleton	Good condition, disturbed. Chest cavity crushed, feet bones missing
1301	Grave Cut	Grave cut below grave 1291. Truncated by drainage. 0.8 x 0.5 x 0.35 (lxwxd)
1302	Timber	Highly degraded coffin with handle
1303	Human skeleton	Upper part of skeleton; thorax, skull, upper arms. Very disturbed.
1304	Fill	Dark brown grey clay sand with sandstone and beads
1305	Grave Cut	Cut of empty grave. Earliest cut in group 1028. 1.64 x 0.50 (lxw)
1306	Fill	Fill of cut 1305. Mid grey-brown sandy clay with occasional sandstone inclusions.
1307	Grave Cut	Cut of empty child-sized grave. 0.82 x 0.28 x 1.3m (lxwxd)
1308	Fill	Fill of cut 1307. Mid grey-brown sandy clay with occasional sandstone inclusions.
1309	Timber	Degraded wooden coffin. Skeleton destroyed by waterlogging. 0.77 x 0.24 x 0.25 (lxwxt)
1310	Grave Cut	Cut of grave. 1.74 x 0.64 x 0.84 (lxwxd)
1311	Fill	Fill, light grey some patches of darker grey sandy clay and v occasional irregular-shaped pebbles
1312	Timber	Large segments of this coffin are preserved
1313	Human skeleton	Infant skeleton? In very poor condition and waterlogged. Remains of a child and adult within same coffin
1314	Human skeleton	Poor to fair condition and disturbed. Skeleton has sunk in grave
1315	Timber	Heavily degraded coffin leaving iron handles only. Cut of grave. 1.80 x 0.40 x 0.40 (lxwxd)
1316	Fill	Fill, yellowish grey sandy clay with >3% ash, 1% brick, 5% stones and >5% CBM
1317	Grave Cut	Cut of grave. 1.90 x 0.60 x 0.60 (lxwxd)
1318	Grave Cut	Cut of grave. 2.05 x 0.65 (lxw)
1319	Timber	Highly degraded remains of timber coffin. 1.85 x 0.55 x 0.25 (lxwxd)
1320	Human skeleton	Poor condition. Third burial in group and slumped to the right possible bones in grave below SK1373
1321	Fill	Fill, mid grey brown clayey sand with occasional sub-rounded stones <60mm
1322	Grave Cut	Upper grave cut in Group 1029. 2.06 x 0.56 0.20 (lxwxd)
1323	Timber	Highly eroded coffin. Timber entirely rotten away. 1.86 x 0.47 x 0.30 (lxwxd)
1324	Human skeleton	Human skeleton destroyed by waterlogging. Only small fragments remaining.
1325	Fill	Fill of cut 1322. Dark grey-brown sandy clay with occasional sandstone inclusions.
1326	Fill	Fill, dirty mid brown sandy loam with sandstone frags and slabs, brick and charcoal
1327	Timber	Highly degraded wooden coffin. 1.80 x 0.45 x 0.25 (lxwxd)
1328	Grave Cut	Cut of grave. 2.40 x 0.65 x 0.30 (lxwxd)
1329	Human skeleton	Third burial in group
1330	Fill	Fill, mid dirty brown sandy loam with sandstone, brick frags
1331	Timber	Highly degraded wooden coffin
1332	Human skeleton	In good condition
1333	Grave Cut	Cut of grave. 2.40 x 0.65 x 0.30 (lxwxd)
1334	Grave Cut	Cut of grave. 1.0 x 0.26 x 0.34 (lxwxd)

1335	Timber	Highly degraded coffin
1336	Fill	Fill, dark grey brown clayey sand and occasional sandstone frags <50mm
1337	Human skeleton	V disturbed and in poor condition, waterlogged. Adult
1338	Grave Cut	Cut of grave for SK1340. 1.95 x 0.48 x 0.6 (lxwxd)
1339	Timber	Coffin of SK1340. Timber warped but in good condition. 1.95 x 0.48 (lxw)
1340	Human skeleton	Fairly complete skeleton sunken into grave below. Longbones and most of skull intact.
1341	Fill	Fill of cut 1338. Mid grey-brown sandy clay with inclusions of sandstone, glass and pottery.
1342	Grave Cut	Basal cut of Group 1029. 0.75 x 0.25 x 0.47 (lxwxd)
1343	Timber	Highly degraded coffin, timber entirely rotten and infant skeleton also gone. 0.70 x 0.20 (lxw)
1344	Fill	Fill of cut 1342. Dark grey-brown sandy clay with occasional sandstone inclusions.
1345	Grave Cut	Cut of grave for SK 1347. Cuts into group 1013. 2.10 x 0.80 x 1.00+ (lxwxd)
1346	Fill	Fill of cut 1345. Yellow-grey sandy clay with inclusions of ash, CBM and sandstone.
1347	Human skeleton	Poorly preserved skeleton Skull in good condition. Longbones intact but degraded.
1348	Timber	Highly degraded timber coffin. Metal fittings intact. 2.10 x 0.80 x 0.20 (lxwxt)
1349	Human skeleton	Possible infant/youth/skull. Possible 2/3 skeletons buried with or without coffins
1350	Timber	Remains of wooden coffin
1351	Human skeleton	Skull lying on another skull Not directly associated with any of the other Skeletons
1352	Grave Cut	Cut of grave for SK1354. 1.98 x 0.48 x 0.9 (lxwxd)
1353	Timber	Coffin of SK1354. Fairly well preserved. 1.98 x 0.48 x 025 lxw)
1354	Human skeleton	Poorly preserved skeleton. Skull and longbones fragmentary.
1355	Fill	Fill of cut 1352. Mid grey-brown sandy clay with occasional sandstone inclusions.
1356	Human skeleton	Good condition. Possibly associated with nameplate: Emma Briggs died age 6
1357	Human skeleton	Good condition. Could be confusion between SK1356 and SK1384
1358	Timber	Highly degraded wooden coffin
1359	Grave Cut	Cut of grave for SK1361. 0.60 x 0.20 x 0.40 (lxwxd)
1360	Timber	Highly degraded child-sized coffin. Timber entirely gone. 0.50 x 0.18 x 0.20 (lxwxt)
1361	Human skeleton	Degraded and disturbed infant skeleton.
1362	Fill	Fill of cut 1359. Dark grey and brown sandy clay with occasional sandstone inclusions.
1363	Fill	Fill, dirty mid brown sandy loam, some clay with sandstone frags and flags, brick
1364	Fill	Fill, dirty mid brown sandy loam with sandstone frags
1365	Fill	Fill, dirty mid brown sandy loam with sandstone frags
1366	Grave Cut	Cut of grave. 2.20 x 0.75 x 1.00 (lxwxd)
1367	Grave Cut	Cut of grave. 2.20 x 0.50 x 1.00 (lxwxd)
1368	Grave Cut	Cut of grave. 2.20 x 0.60 x 1.20 (lxwxd)
1369	Timber	Highly degraded coffin some decayed wood remaining
1370	Timber	Highly degraded wooden coffin
1371	Grave Cut	Cut of grave. 1.4 x 0.45 x 1.1 (lxwxd)
1372	Timber	Highly degraded child's coffin. 1.30 x 0.35 x 0.25 (lxwxd)
1373	Human skeleton	Very disturbed. Child burial with few bones remaining, skull in fragments
1374	Fill	Fill, mid grey brown clayey sand with 5% sub-rounded stones <60mm
1375	Grave Cut	Cut of grave for SK1377. 2.00 x 0.70 x 0.90 (lxwxd)
1376	Timber	Coffin of SK 1377. Timber almost totally decayed. 1.76 x 0.47 x 0.25 (lxwxt)
1377	Human skeleton	Well preserved skeleton. Skull, ribs, longbones, pelvis and most hand/foot bones intact.
1378	Fill	Fill of cut 1375. Dark grey-brown sandy clay with occasional sandstone inclusions.
1379	Grave Cut	Cut of grave. 2.00 x 0.60 x 0.90 (lxwxd)
1380	Fill	Fill, mid grey-brown clayey sand occasional sandstone frags <60mm
1381	Human skeleton	Fair condition partly collapsed in to grave below SK1486
1382	Human skeleton	Heavily degraded leaving iron fittings
1383	Fill	Fill, dark mid brown sandy loam with sandstone frags
1384	Human skeleton	Good condition. Associated with infant SK1408
1385	Timber	Wooden coffin
1386	Grave Cut	Cut of grave. 1.75 x 0.50 (lxw)
1387	Grave Cut	Cut of empty grave. 1.58 x 0.66 x 0.49 (lxwxd) Grave possibly disturbed in 1970s exhumations.
1388	Fill	Fill of 1387. Dark to mid grey sandy clay. Contains fragments of degraded human bone.
1389	Timber	Highly degraded coffin almost totally rotten away. 1.58 x 0.66 (lxw)
1390	Grave Cut	Cut of grave for SK1392. 2.00 x 0.70 x 1.10 (lxwxd)
1391	Timber	Coffin of SK1392. Timber almost entirely decayed. 1.78 x 0.45 x 0.28 (lxwxt)
1392	Human skeleton	Well preserved skeleton. Thoracic vertebrae and right forearm sunk into (1526).
1393	Fill	Fill of cut 1390. Mid to dark grey-yellowish brown sandy clay with sandstone inclusions.
1394	Grave Cut	Cut of grave. Fourth burial down. 1.74 x 0.46 x 1.1 (lxwxd)

1395	Timber	Heavily degraded coffin
1396	Human skeleton	In poor condition ground and bones waterlogged and fragmented
1397	Fill	Fill, mid greyish brown clayey sand with 5% sub-rounded stones <60mm
1398	Grave Cut	Cut of grave for SK1400. 1.89 x 0.69 x 0.76 (lxwxd)
1399	Timber	Coffin of SK1400. Timber and coffin fittings intact. 1.89 x 0.69 x 0.76 (lxw)
1400	Human skeleton	Very well preserved skeleton with almost all bones intact.
1401	Fill	Fill of cut 1398. Dark greenish-black sandy clay with occasional sandstone inclusions.
1402	Grave Cut	Cut of empty juvenile grave. 0.70 x 0.32 x 1.2 (lxwxd)
1403	Timber	Coffin for juvenile skeleton. No remains preserved within. 0.65 x 0.27 (lxw)
1404	Fill	Fill of cut 1402. Mid greyish-brown sandy silt with occasional sandstone inclusions.
1405	Grave Cut	Cut of empty adult grave. 1.62 x 0.55 x 0.30 (lxwxd)
1406	Timber	Coffin for adult skeleton. No remains preserved within. 1.40 x 0.50 x 0.30 (lxwxt)
1407	Fill	Fill of cut 1405. Mid greyish-brown sandy silt with occasional sandstone inclusions.
1408	Human skeleton	Very wet conditions leading to displacement and scattering of bones
1409	Grave Cut	Cut of grave for SK1411. 2.0 x 0.80 x 0.97 (lxwxd) Upper cut in group 1035.
1410	Timber	Highly degraded coffin. Timber almost entirely gone 1.75 x 0.45 x 0.25 (lxwxt)
1411	Human skeleton	Highly disturbed skeleton. Only skull and some longbones remaining.
1412	Fill	Fill of cut 1409. Dark grey-brown sandy clay with occasional sandstone inclusions.
1413	Grave Cut	Cut of grave for SK1415. 2.0 x 0.80 x 0.97 (lxwxd)
1414	Timber	Highly degraded coffin. Timber almost entirely gone. 1.78 x 0.50 x 0.28 (lxwxt)
1415	Human skeleton	Disturbed but moderately well preserved skeleton. Longbones and skull intact.
1416	Fill	Fill of cut 1413. Dark brown and grey sandy clay with occasional sandstone inclusions.
1417	Fill	Fill, dirty mid brown sandy loam with sandstone frags
1418	Timber	Highly degraded coffin leaving frags of wood and iron (FE) fittings
1419	Human skeleton	Good condition. Adult burial 7th in group
1420	Grave Cut	Cut of grave. 2.0 x 0.60 (lxw)
1421	Timber	Highly degraded coffin. Very little remaining and no bone within. 1.78 x 0.40 x 0.30 (lxwxt)
1422	Grave Cut	Basal cut in group/stack. 2.05 x 0.62 x 1.4 (lxwxd)
1423	Timber	Coffin. Below water table. Very degraded. No bone survives.
1424	Fill	Fill, mid grey-yellowish brown, clayey silt with sandstone frags <60mm
1425	Grave Cut	Cut for grave. 1.12 x 0.30 x 0.85 (lxwxd)
1426	Timber	Totally degraded empty coffin possible for child as very short and narrow. Site underwater
1427	Fill	Fill, dark greyish brown clayey sand with 5% sub-rectangular stones <60mm
1428	Grave Cut	Cut of an empty grave. 1.45 x 0.70 x 0.55 (lxwxd)
1429	Timber	Timber coffin. No skeleton within, likely destroyed by waterlogging. 1.20 x 0.50 (lxw)
1430	Fill	Fill of cut 1428. Mid greyish-brown sandy silt with occasional sandstone inclusions.
1431	Grave Cut	Cut of an empty grave. 1.45 x 0.70 x 0.55 (lxwxd)
1432	Timber	Highly degraded coffin. No skeleton remaining within. 1.45 x 0.70 x 0.45 (lxwxt)
1433	Fill	Fill of cut 1431. Mid greyish-brown sandy silt with occasional sandstone inclusions.
1434	Timber	Coffin in basal cut of Group 1028. Degraded bone within. 1.48 x 0.38 x 0.25 (lxwxt)
1435	Human skeleton	Fill of charnel pit.
1436	Cut	Small sub rectangular charnel pit containing skulls and longbones likely disturbed by grave 1420
1437	Grave Cut	Cut of grave. 1.70 x 0.50 x 0.40 (lxwxd)
1438	Fill	Fill, yellow grey sandy clay with ash, brick, stones and CBM
1439	Human skeleton	Extremely poor condition, disturbed and waterlogged
1440	Timber	Highly degraded wooden coffin. 1.15 x 0.45 x 0.20 (lxwxd)
1441	Grave Cut	Cut of grave for SK1443 cut into larger adult grave [1467]. 0.60 x 0.20 (lxw)
1442	Timber	Coffin of SK1443. Highly degraded child sized with little remaining. 0.50 x 0.20 (lxw)
1443	Human skeleton	Poorly preserved infant skeleton. Only fragments of bone remaining.
1444	Fill	Fill of cut 1441. Yellowish brown sandy clay loam with occasional sandstone inclusions.
1445	Grave Cut	Cut of grave. 2.1 x 0.6 (lxw)
1446	Timber	Highly degraded coffin timber leaving only handles. 1.7 x 0.45 x 0.28 (lxwxd)
1447	Human skeleton	Good condition
1448	Fill	Fill dark grey brown clayey sand with sandstone <1cm
1449	Human skeleton	Very poorly preserved human remains found below water table.
1450	Grave Cut	Cut of grave for SK1452. Latest cut of group 1039. 1.70 x 0.50 x 0.60 (lxwxd)
1451	Timber	Coffin of SK1452. 1.65 x 0.45 (lxw)
1452	Human skeleton	Highly disturbed skeleton. Only longbones and fragments remaining.
1453	Fill	Fill of cut 1450. Light brownish-orange sandy silt with sandstone inclusions.
1454	Grave Cut	Cut for grave. Fifth burial down in group. 1.32 x 0.38 (lxw)
1455	Timber	Heavily degraded coffin slumped towards grave with SK1456. 1.32 x 0.38 (lxw)
1456	Human skeleton	Very disturbed and only 1 piece of femur bone remains

1457	Fill	Fill, dark greyish brown clayey sand with 5% sub-rectangular stone <100mm
1462	Grave Cut	Cut of grave for SK1464. 1.83 x 0.54 x 0.98 (lxwxd)
1463	Timber	Coffin of SK1464. Well preserved but fragmented. 1.83 x 0.54 (lxw)
1464	Human skeleton	Skeleton undisturbed but poorly preserved. Most bones present but degraded.
1465	Fill	Fill of cut 1462. Dark grey-green sandy clay. Sandstone and charnel bone inclusions.
1466	Grave Cut	Cut of grave for 1492. 1.85 x 0.75 x 0.60 (lxwxd)
1467	Fill	Fill of cut 1466. Dark greyish brown sandy clay loam with sandstone inclusions.
1468	Grave Cut	Cut of grave for 1470. 1.65 x 0.45 x 0.80 (lxwxd)
1469	Timber	Coffin of SK1470. 1.65 x 0.45 (lxw)
1470	Human skeleton	Well preserved skeleton slightly disturbed by burial of SK1452.
1471	Fill	Fill of cut 1468. Mid orangish-brown sandy silt with occasional sandstone inclusions.
1472	Human skeleton	Adult. Head and feet at correct burial level remainder of body sunk in the grave below
1473	Fill	Fill of 1474, possible disturbance. Mixed dirty brown. Sandy loam with occasional sandstone frags, broken slabs
1474	Grave Cut	Cut of grave for SK1472. 1.90 x 0.40 x 0.75 (lxwxd)
1475	Timber	Highly degraded coffin some iron fittings recovered. 1.70 x 0.45 x 0.25 (lxwxd)
1476	Fill	Fill of 1479. Indistinct from grave fill above (1473)
1477	Timber	Unexcavated coffin. 1.4 x 0.4 x 0.4 (lxwxd)
1478	Human skeleton	Completely degraded
1479	Grave Cut	Cut of grave for SK1478. Indistinct
1480	Grave Cut	Cut of grave. 1.7 x 0.48 x 1. (lxwxd)
1481	Timber	Highly degraded coffin leaving just handles. 1.6 x 0.3 x 0.20 (lxwxd)
1482	Human skeleton	Skeleton in very good condition
1483	Fill	Fill dark grey brown clayey sand with occasional sandstone frags <60mm
1484	Grave Cut	Cut for grave. 2.00 x 0.60 x 0.70 (lxwxd)
1485	Timber	Heavily degraded coffin leaving iron fittings
1486	Human skeleton	Heavily decomposed bones below water table. Bones in frags and or missing
1487	Fill	Fill, mid grey-yellowish brown clayey silt with occasional sandstone frags <60mm
1488	Fill	Fill, dirty mid brown sandy loam with sandstone frags
1489	Timber	Remains of truncated decayed wooden coffin
1490	Human skeleton	Skeleton in poor condition. Very little remaining
1491	Grave Cut	Cut for grave. 1.20 x 0.20 (lxd)
1492	Human skeleton	Heavily disturbed skeleton. Only right tibia and fibula remaining in-situ.
1493	Grave Cut	Cut of grave. 1.80 x 0.50 x 1.15 (lxwxd)
1494	Timber	Highly degraded wooden coffin. 1.80 x 0.50 x 1.15 (lxwxd)
1495	Human skeleton	highly disturbed sixth burial down in group
1496	Fill	Fill, dark grey brown sandy clay waterlogged with occasional large stone slabs irregular shaped
1497	Grave Cut	Cut of child's grave 0.91 x 0.32 x 0.97 (lxwxd)
1498	Timber	Highly degraded coffin for 1 adult and 1 child. 0.76 x 0.25 x 0.97 (lxwxd)
1499	Fill	Fill, orangey/grey sandy clay with occasional large stone slabs with irregular shaped
1500	Timber	Coffin of SK1492. Only visible as staining and coffin nails. 0.30+ x 0.20 (wxl)
1501	Grave Cut	Cut for brick lined vault. 2.15 x 1.00 x 1.25 (lxwxd)
1502	Structure	Brick vault with lime mortar and close jointing
1503	Timber	Degraded wooden coffin has a number of copper handles and fitting plates
1504	Human skeleton	Thomas Ibbetson. Skeleton in good condition husband of Rachael SK1124
1505	Timber	Highly degraded wooden coffin, not visible but indicated by broken coffin plate
1506	Human skeleton	Condition is good. Mature human skeleton buried directly under 1503 T. Ibbotson
1507	Grave Cut	Cut of grave for SK1519. Earliest burial in group 1039. 1.70 x 0.50 x 0.90 (lxwxd)
1508	Timber	Coffin of SK1509. Very poorly preserved. 1.70 x 0.50 (lxw)
1509	Human skeleton	Poorly preserved skeleton.
1510	Fill	Fill of cut 1507. Mid orangish-brown silty sand similar to natural.
1511	Grave Cut	Cut of grave for SK1513. Latest burial in group 1043.
1512	Timber	Coffin of SK1513.
1513	Human skeleton	Moderately well preserved human skeleton.
1514	Fill	Fill of cut 1511. Dark greyish-brown sandy clay with occasional sandstone inclusions.
1515	Grave Cut	Cut of grave. 1.90 x 0.60 x 0.35 (lxwxd)
1516	Fill	Fill Yellowish brown sandy clay with stone, CBM, brick
1517	Human skeleton	Good preservation. Some slumping
1518	Timber	Handles and fittings present. 1.65 x 0.45 x 0.20 (lxwxd)
1519	Grave Cut	Cut. Fifth grave down. Highly degraded coffin. 1.15x 0.35 x 0.70lxwxt)
1520	Timber	large fragments of coffin intact and in-situ
1521	Human skeleton	Infant/child skeleton poorly preserved
1522	Fill	Fill, blackish brown sandy clay loam. Highly degraded coffin. Timber almost entirely gone. Highly degraded coffin. Timber almost entirely gone.

1523	Grave Cut	Cut of grave for SK1525. 1.70 x 0.35 x 1.00 (lxwxd)
1524	Timber	Highly degraded coffin. Timber almost entirely gone. 1.60 x 0.30 x 0.28 (lxwxt)
1525	Human skeleton	Well preserved skeleton. Most bones intact.
1526	Fill	Fill of cut 1523. Dark grey-brown sandy clay.
1527	Timber	Highly degraded coffin with very little timber remaining. 1.60 x 0.62 (lxw)
1528	Fill	Fill of cut 1539. Dirty mid brown sandy loam with sandstone and brick inclusions.
1529	Timber	Coffin of SK1530. Timber soft and decayed but intact. 1.75 x 0.43 x 0.25 (lxwxt)
1530	Human skeleton	Poorly preserved skeleton. Skull and longbones intact.
1531	Grave Cut	Cut of grave for SK1533. 2.00 x 0.80 x 0.30 (lxwxd)
1532	Timber	Coffin of SK1533. Highly degraded coffin with little timber remaining. 2.00 x 0.80 x 0.20 (lxwxt)
1533	Human skeleton	Very well preserved skeleton.
1534	Fill	Fill of cut 1531. Light greyish-brown sandy silt with occasional sandstone inclusions.
1535	Human skeleton	Torso truncated by wall foundation. Skull missing. Space left for skull inadequate for adult skull.
1536	Timber	Coffin truncated by modern foundation wall. Highly degraded. 0.40 x 0.55m (lxw)
1537	Grave Cut	Cut of grave for SK1535. Truncated by modern wall. Fourth cut down in stacked group 1026
1538	Fill	Fill of cut 1537. Greyish brown sandy clay loam with occasional sandstone frags.
1539	Grave Cut	Cut of grave for SK1530. 2.00 x .0.65 x 1.60 (lxwxd)
1540	Grave Cut	Cut of grave. Very shallow. Possibly [1515] destroyed [1540]. 1.90 x 0.60 x 0.15 (lxwxd)
1541	Fill	Fill, yellow grey sandy clay with CBM 1%. Stones 5%
1542	Human skeleton	Poor condition. Only right leg and lower arm left the rest is mixed with SK1517
1543	Timber	Highly degraded no visible remains
1544	Grave Cut	Cut of grave for SK1546. 1.90 x 0.66 (lxw)
1545	Timber	Coffin of SK1546. Timber coffin. 1.90 x 0.66 (lxw)
1546	Human skeleton	Averagely preserved skeleton. Leg bones and vertebrae possibly left in unexcavated.
1547	Fill	Fill of cut 1544. Dark greyish-brown sandy clay with occasional sandstone inclusions.
1548	Grave Cut	Cut of grave for SK1550. Earliest cut in group 1032. 1.72 x 0.35 x 1.05 (lxwxd)
1549	Timber	Highly degraded coffin. Timber almost entirely gone. 1.59 x 0.28 (lxw)
1550	Human skeleton	Fairly well preserved skeleton. Ribs and vertebrae absent.
1551	Fill	Fill of cut 1548. Dark grey-brown sandy clay with occasional sandstone inclusions.
1552	Timber	Poorly preserved coffin with no surviving skeleton within. 1.60 x 0.70 x 0.28 (lxwxt)
1553	Grave Cut	Cut of grave.
1554	Timber	Heavily degraded coffin slumped towards the south
1555	Human skeleton	Poor condition of bone and disturbed
1556	Fill	Fill, dirty mid brown sandy loam with sandstone and brick frags
1557	Grave Cut	Cut of grave. 0.95 x 0.35 x 1.23 (lxwxd)
1558	Timber	Heavily degraded wooden coffin. Made for a smaller than average adult
1559	Fill	Fill, orangey grey sandy clay with numerous large irregular shaped stones. Waterlogged
1600	Grave Cut	Cut truncated by modern foundation. Skeleton not found in grave. 0.34+ x 0.50+ x 1.20 (lxwxd)
1601	Timber	Coffin in basal cut of group 1026. No bones visible within fill. 0.34+ x 0.50+ x 1.20 (lxwxd)
1602	Fill	Fill. Dark grey sandy clay loam with occasional sandstone frags.
1603	Grave Cut	Cut of grave. 1.72 x 0.48 (lxw)
1604	Timber	Highly degraded coffin, all traces of skeleton gone
1605	Fill	Fill dark grey brown clayey sand with clayey sand <30mm
1609	Grave Cut	Cut of grave. 1.90 x 0.60 x 1.60 (lxwxd)
1610	Human skeleton	Very poor condition of bones, high water content, deep grave
1611	Timber	Heavily degraded coffin, very narrow. Base good. 1.65 x 0.36 x 0.15 (lxwxd)
1612	Fill	Fill, mid dirty brown sandy loam with sandstone
1613	Grave Cut	Grave cut for SK1615. 1.80 x 0.60 (lxw)
1614	Timber	Coffin of SK1615. Highly degraded coffin. Timber almost entirely gone. (no measurements taken)
1615	Human skeleton	Extremely poorly preserved skeleton. Only small section of skull remaining.
1616	Fill	Fill of cut 1613. Dark grey-brown sandy clay with occasional sandstone inclusions.
1617	Grave Cut	Cut of grave. 1.90 x 0.50 x 0.25 (lxwxd)
1618	Fill	Fill, brownish grey sand clay with brick, stone, CBM
1619	Human skeleton	Poor to moderate condition. Infant buried in pelvis of SK1619 presumed to be mother and child
1620	Human skeleton	Infant buried in lower abdomen of mother. Skull in small pieces to east near pelvis and long bones. Child likely engaged in birth canal.
1621	Timber	Heavily degraded coffin leaving iron handles
1622	Grave Cut	Cut of grave for SK1624. Earliest cut in group 1033. 1.69 x 0.44 x 1.15 (lxwxd)

1623	Timber	Coffin of SK1624. Timber well preserved and some decoration visible. 1.69 x 0.44 (lxw)
1624	Human skeleton	Poorly preserved sub-adult skeleton. Poorly preserved and disturbed.
1625	Fill	Fill of cut 1622. Orangey-grey sandy clay with varied stony inclusions.
1626	Fill	Fill in vault 1502, around coffin 1503, 1505. Dirty yellow silty sandy loam with timber, brick frags
1627	Grave Cut	Cut of empty child's grave containing only coffin and no skeleton. 0.80 x 0.39 x 1.10 (lxwxd)
1628	Timber	Well preserved juvenile coffin with no surviving skeleton within. 0.80 x 0.39 (lxw)
1629	Fill	Fill of 1627. Mid blackish-brown sandy silt with occasional sandstone inclusions.

1.2 Appendix 2: Descriptions of grave groups

1.2.1 Dimensions of grave plots and total numbers of interments are given below. Descriptions and tabulated data for each group/grave plot follow.

Group	Max Length (m)	Max Width (m)	Total depth (m)	Total Number of Interments
1000	1.9	0.7		4 excavated, 1 or more unexcavated
1001	1.9	0.7		2 excavated
1002	2	0.6		1 excavated
1003	2.1	0.7		4
1004	2.2	0.65		3 excavated
1005	2.9	0.76		5
1006	2.27	0.65		3
1007	2.07	0.8		2 excavated
1008	1.56	0.49		5
1009	2	0.7		3
1010	2.1	0.85		5
1011	2.05	0.65		5
1012	2.2	0.7		1 excavated
1013	2.2	0.8		5
1014	2.2	0.6		5 excavated
1015	1.9	0.6		1 excavated
1016	2.1	0.9		5 excavated
1017	2.3	1		1
1018	2.71	1.5		4 excavated
1019	2.6	1		3 excavated
1020	1.9	0.6		1
1021	1.86	0.64		6
1022	2.3	0.92		2
1023	2.1	0.65		1 excavated
1024	2.2	0.7		4
1025	2.4	0.8		8
1026	0.8	0.5		6
1027	2.18	0.8		2
1028	1.64	0.5		2 excavated
1029	2.06	0.56		2
1030	1.98	0.48		5
1031	2.1	0.8		4
1032	2	0.7		2
1033	1.96	0.72		3
1034	1.62	0.55		1
1035	2	0.8		2
1036	1.95	0.55		2 excavated
1037	1.45	0.7		3
1038	1.78	0.75		2
1039	1.7	0.5		1
1040	1.7	0.85		1 excavated
1041	1.8	0.73		2 excavated
1042	2	0.8		4 excavated
1043	1.9	0.66		2 excavated

Group 1000

1.2.2 Group 1000 was situated in the central column of graves, in the north of the excavated area (Figure 2). A further inhumation (skeleton 1478) was seen below the lowest removed inhumation (skeleton 1472). It was not necessary to remove 1478 to fulfil the aims of the excavation, and 1478 was left *in situ*.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	034	none	none	035
	058/061	059/062	064/065	060/063
	1474	1475	1472	1473
Lowest	1479 (unexcavated)	1477 (unexcavated)	1478 (unexcavated)	1476 (unexcavated)

Group 1001

1.2.3 Group 1001 was situated in the east column of graves, in the north of the excavated area (Figure 2). Two child inhumations were removed from above an adult inhumation. A further uninvestigated grave cut, 036, was present below the lowest removed inhumation (skeleton 1135) but it was not necessary to investigate cut 036 to fulfil the design of the excavation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	090/093	091/094	095	092/096
	1133	1134	1135	1136
Lowest	036 (unexcavated)			037 (unexcavated)

Group 1002

1.2.4 Group 1002 was situated in the west column of graves, in the north of the excavated area (Figure 2). One inhumation (skeleton 1131) was removed, but no deeper excavation was attempted as it was not necessary to do so to meet the design of the excavation. It was not determined whether further inhumations exist below the removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	030	1130	1131	031
	unexcavated			unexcavated

Group 1003

1.2.5 Group 1003 was situated in the west column of graves in the centre of the excavated area (Figure 2). Four inhumations were removed, with clean natural (019) seen underneath the lowest inhumation (skeleton 1194).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	099	1137	1138	1101
	1152	1153	1154	1151
	1180	1181	1182	1179
Lowest	1192	1193	1194	1191
				natural 019

Group 1004

1.2.6 Group 1004 was situated in the central column of graves in the centre of the excavated area (Figure 2). Three inhumations were removed. It was not determined if further inhumations exist below the removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1108	1139	1140	1109
	1148	1149	1150	1147
Lowest	1199	1201	1202	1200
	unexcavated			unexcavated

Group 1005

1.2.7 Group 1005 was situated in the central column of graves in the centre of the excavated area (Figure 2). Five skeletons were removed, two sharing one grave cut, with clean natural (019) seen underneath the lowest grave cut (no skeletal remains were recovered from the lowest grave cut, 1603).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1141	1143	1144/1185	1142
	1445	1446	1447	1448
	1480	1481	1482	1483

Lowest	1603	1604	none	1605
				natural 019

Group 1006

1.2.8 Group 1006 was situated in the west column of graves in the centre of the excavated area (Figure 2). Two skeletons were removed, with clean natural (019) seen underneath the lowest grave cut (no skeletal remains were recovered from the lowest grave cut, 1422).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1110	1155	1156	1111
	1157	1158	1159	1160
Lowest	1422	1423	none	1424
				natural 019

Group 1007

1.2.9 Group 1007 was situated in the east column of graves in the south of the excavated area (Figure 2). Two inhumations were removed. It was not determined if further inhumations exist below the removed inhumations.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1163	1164	1165	1166
Lowest	1167	1168	1169	1170
	unexcavated			unexcavated

Group 1008

1.2.10 Group 1008 was situated in the central column of graves in the centre of the excavated area (Figure 2). Five inhumations were removed, with two of them sharing a grave cut. Clean natural (019) was seen underneath the lowest inhumation (skeleton 1521).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1112	1145	1146	1217
	1219	1218	1171/1172	1113
	1491	1489	1490	1488
Lowest	1519	1520	1521	1522
				natural 019

Group 1009

1.2.11 Group 1009 was situated in the central column of graves in the centre of the excavated area (Figure 2). A single grave cut (1177) was assigned to group 1009, from which three skeletons were recovered. Skeleton 1174 appeared to have been inhumed after skeletons 1176 and 1175, although no stratigraphic sequence could be determined between 1176 and 1175. Clean natural (019) was seen beneath the grave cut (1177).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1177	1183	1174	1178
Lowest		1184	1176/1175	none
				natural 019

Group 1010

1.2.12 Group 1010 was situated in the central column of graves in the south of the excavated area (Figure 2). Five inhumations were removed, with two sharing a grave cut. Clean natural was seen below the lowest cut (1617).

Vertical Position	Cut	Coffin	Skeleton	Deposit

Highest	1162	1173	1190	1161
	1515	1518	1517	1516
	1540	1543	1542	1541
Lowest	1617	1621	1619/1620	1618
				natural 019

Group 1011

1.2.13 Group 1011 was situated in the west column of graves in the south of the excavated area (Figure 2). Group 1011 was unusually long, extending from the west column of graves east into the central column. The maximum recorded length from Group 1011 was 2.05 m. Five inhumations were removed, with no skeletal material surviving from the lowest. It was not determined if further inhumations exist below the removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1186	1188	1189	1187
	1203	1204	1205	1206
	1318	1319	1320	1321
	1371	1372	1373	1374
Lowest	1425	1426	none	1427
	unexcavated			unexcavated

Group 1012

1.2.14 Group 1012 was situated in the east column of graves in the south of the excavated area (Figure 2). One inhumation was removed. It was not determined if further inhumations exist below the removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1195	1196	1197	1198
	unexcavated			unexcavated

Group 1013

1.2.15 Group 1013 was situated in the west column of graves in the south of the excavated area (Figure 2). Five inhumations were removed. Clean natural (019) was seen below the lowest grave cut (1609).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1209	1212	1211	1210
	1379	1382	1381	1380
	1484	1485	1486	1487
	1553	1554	1555	1556
Lowest	1609	1610	1611	1612
				natural 019

Group 1014

1.2.16 Group 1014 was situated in the west column of graves in the south of the excavated area (Figure 2). Five inhumations were removed, although no skeletal material survived in the upper cut (1221). It is possible that these remains were removed on a previous occasion, possible in the 1970s. It was not determined if further inhumations exist below the lowest removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1221	1222	none	1223
	1245	1246	1247	1248
	1264	1265	1266	1267
	1394	1395	1396	1397
Lowest	1454	1455	1456	1457

	unexcavated			unexcavated

Group 1015

1.2.17 Group 1015 was situated in the west column of graves in the south of the excavated area (Figure 2). One inhumation was removed. It was not determined if further inhumations exist below the lowest removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	048	1296	1168	049
	unexcavated			unexcavated

Group 1016

1.2.18 Group 1016 was situated in the west column of graves in the south of the excavated area (Figure 2). Five inhumations were removed. It was not determined if further unexcavated inhumations remain beneath the lowest removed inhumation (cut 1437).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1230	1231	1232	1229
	1270	1271	1272	1269
	1274	1275	1276	1273
	1317	1314	1315	1316
Lowest	1437	1440	1439	1438
	unexcavated			unexcavated

Group 1017

1.2.19 Group 1017 was situated in the south-west corner of the excavated area (Figure 2). This grave was probably cleared in the 1970s and no skeletal remains were seen. The entire Group was 1.6 m deep, with clean natural seen below.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1207	1239	none	1208
				natural 019

Group 1018

1.2.20 Group 1018 was situated in the central column of graves in the north of the excavated area (Figure 2). Four inhumations were removed. It was not determined if further inhumations exist below the lowest removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1237	1236	1235	1238
	1297 = 1233	1299	1300	1298 = 1234
	1328	1327	1329	1326
Lowest	1333	1331	1332	1330
	unexcavated			unexcavated

Group 1019

1.2.21 Group 1019 was situated in the east column of graves in the centre of the excavated area (Figure 2). Group 1019 was unusual in being a brick shaft grave and comprised two brick and stone vaults constructed one on top of the other (1502 and 1121).

1.2.22 The lower vault, 1502, comprised a single skin of handmade red brick stretchers bonded with lime mortar arranged in a traditional ‘coffin’ shape. Vault 1502 sat within construction cut 1501, which was not bottomed. It is likely that further inhumations and possibly a further vault exist below the maximum depth excavated (0.9 m). At a depth of 0.9 m below

ground level, hollow-sounding sandstone flags formed a base to vault 1502. Sat on this base was coffin 1505 containing William Ibbetson, skeleton 1506, and on top of coffin 1505 lay coffin 1503, containing Thomas Ibbetson, skeleton 1504. Backfilled material overlying these two coffins was assigned context number 1626.

1.2.23 Overlying vault 1502 was vault 1121, which was similar to the elder vault although the lime mortar used was noted as being greyish and the vault was described as poorly constructed. Vault 1121 contained remains identified from the depositum plate as those of Rachel Ibbotson (skeleton 1124) within coffin 1123. Deposit 079 was the backfill of Rachel Ibbotson's grave. Cut number 078 was used for this phase of burial.

Vertical Position	Cut	Brick Vault	Coffin	Skeleton	Deposit
Highest	078	1121	1123	1123	079
	1501	1502	1503	1504	1626
Lowest			1505	1506	none
	unexcavated	unexcavated			unexcavated

Group 1020

1.2.24 Group 1020 was situated in the northeast corner of the excavated area (Figure 2). One inhumation was removed with clean natural seen underneath.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	028	1118	1116	029
Lowest				natural 019

Group 1021

1.2.25 Group 1021 was situated in the west column of graves in the centre of the excavated area (Figure 2). Five skeletons were removed from four grave cuts, with two cuts apparently containing two skeletons and the lowest cut containing no surviving skeletal remains. Clean natural 019 was seen beneath the lowest cut (1557).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1224	1226	1227/1228	1225
	1280	1282	1283	1281
	1310	1312	1313/1337	1311
	1557	1558	None	1559
Lowest				Natural 019

Group 1022

1.2.26 Group 1022 was situated in the northwest corner of the excavated area (Figure 2). Group 1022 was unusual in consisting of two brick and stone vaults built on top of each other.

1.2.27 Construction cut 1119 cut through the natural geology (019) and contained the earliest vault, 1241. Vault 1241 was 'coffin' shaped in plan and consisted of handmade red brick bonded with lime mortar in a bond including both stretchers and headers, suggesting that the vault was at least two skins thick, although this was not confirmed. Vault 1241 had a sandstone flag base and top and contained coffin 1243 and skeleton 1242.

1.2.28 Vault 025 was built directly on top of vault 1241. Vault 025 resembled vault 1241 although no headers were recorded from vault 025. Vault 025 was white-washed inside and contained lead-lined coffin 1117 with skeleton 1240. Deposit 1120 was the backfill overlying this. Skeleton 1240 was the body of Mary Anne Whitley, the aunt of John Henry Whitley, a Speaker of the House of Commons.

1.2.29 Human remains were well preserved in this group, probably due to the presence of the lead lined coffin, and the entire group had to be removed by environmental health officers. A thorough archaeological recording was not possible.

Vertical Position	Cut	Brick Vault	Coffin	Skeleton	Deposit
Highest	1119	025	1117	1240	1120
Lowest		1241	1243	1242	none?
					natural 019

Group 1023

1.2.30 Group 1023 was situated in the central column of graves at the northern limit of the excavated area (Figure 2). One inhumation was removed. It was not determined if further inhumations exist below the lowest removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	026	1126	1125	027
Lowest	unexcavated			unexcavated

Group 1024

1.2.31 Group 1024 was situated in the west column of graves in the north of the excavated area (Figure 2). The highest coffin, 1216, was higher than the other inhumations on site, and was exposed during machining. Four inhumations were removed although no surviving skeletal remains were present in the lowest, cut 1334. Clean natural was seen below the lowest grave cut (1334).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1213	1216	1244	1214
	1263	1279	1215	1262
	1287	1286	1285	1284
Lowest	1334	1335	none	1336
				natural 019

Group 1025

1.2.32 Group 1025 was situated in the central and eastern columns in the north of the excavated area (Figure 2). Group 1025 occupied the space of two normal graves laid head to foot. The contents of the graves had become mixed and identification of body parts with skeletons was not always possible in the field. A length of 2.2 m was regularly recorded for the grave cuts. A provisional stratigraphy is indicated in the table below but should be treated with caution due to the highly mixed nature of the deposits. Approximately seven sets of skeletal remains were removed from approximately seven graves, although two skeletons appeared to share a grave cut and the lowest grave cut did not contain surviving skeletal remains. Clean natural (019) was present below the lowest grave cut (1436).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	041	1350	1349	040
	1366	1358	1351	1364
	1367	1369	1356	1363
	1368	1370	1357	1365
	1386	1385	1384/1408	1383
	1420	1418	1419	1417
Lowest	1436	none	none	1435
				natural 019

Group 1026

1.2.33 Group 1026 was situated in the east column of graves in the centre of the excavated area (Figure 2). It was truncated to the south and east by foundations associated with the former Sunday school. Five inhumations were removed, four of which included surviving skeletal material. Clean natural (019) was seen below the lowest cut (1600).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1288	1289	1290	1291
	1292	1293	1294	1295
	1301	1302	1303	1304
	1537	1536	1535	1538
Lowest	1600	1601	none	1602
				natural 019

Group 1027

1.2.34 Group 1027 was situated between the central and east columns in the north of the excavated area (Figure 2). Group 1027 was preserved *in situ,* and consists of a large brick and stone vault (1229). The vault was exposed in plan, revealing the sandstone cap stones and some parts of the upper course of handmade red bricks bonded with lime mortar. Context numbers 1220 and 1127 were assigned to the coffin and skeleton presumed to lie within the vault, but these were not seen during excavations. The backfill covering the vault was deposit 1128.

Group 1028

1.2.35 Group 1028 was situated in the west column of graves in the centre of the excavated area (Figure 2). Two inhumations were removed although neither contained surviving skeletal remains. Clean natural was seen below the lowest grave cut (1305).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1307	1309	none	1308
Lowest	1305	1434	none	1306
				natural 019

Group 1029

1.2.36 Group 1029 was situated in the west column of graves in the north of the excavated area (Figure 2). Two inhumations, one of which contained surviving skeletal remains, were removed, with clean natural seen below the lowest (cut 1342).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1322	1323	1324	1325
Lowest	1342	1343	none	1344
				natural 019

Group 1030

1.2.37 Group 1030 was situated in the west column of graves in the south of the excavated area (Figure 2). Two inhumations were removed. It is possible that further inhumations survive at lower levels.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1338	1339	1340	1341
Lowest	1352	1353	1354	1355
	unexcavated			unexcavated

Group 1031

1.2.38 Group 1031 was situated in the west column of graves in the south of the excavated area (Figure 2). Two inhumations were removed and clean natural (019) was seen below the lowest grave cut (1539).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1345	1348	1347	1346
Lowest	1539	1529	1530	1528
				natural 019

Group 1032

1.2.39 Group 1032 was situated in the central column of graves in the centre of the excavated area (Figure 2). Five inhumations were removed, with clean natural (019) seen below the lowest (cut 1549).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1359	1360	1361	1362
	1375	1376	1377	1378
	1390	1391	1392	1393
	1523	1524	1525	1526
Lowest	1549	1550	1550	1550
				natural 019

Group 1033

1.2.40 Group 1033 was situated in the west column of graves in the centre of the excavated area (Figure 2). Four inhumations were excavated, with no skeletal remains surviving in the upper inhumation. Clean natural (019) was seen below the lowest inhumation (cut 1622).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1387	1389	none	1388
	1398	1399	1400	1401
	1462	1463	1464	1465
Lowest	1622	1623	1624	1625
				natural 019

Group 1034

1.2.41 Group 1034 was situated in the west column of graves in the centre of the excavated area (Figure 2). No human remains were present; they were probably destroyed by intermittent waterlogging. Clean natural (019) was seen below the lower of the two inhumations (cut 1402).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1405	1406	None	1407
Lowest	1402	1403	None	1404
				natural 019

Group 1035

1.2.42 Group 1035 was situated in the central column of graves in the centre of the excavated area (Figure 2). Clean natural was seen below the lowest (cut 1613) of the three removed inhumations.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1409	1410	1411	1412
	1413	1414	1415	1416
Lowest	1613	1614	1615	1616
				natural 019

Group 1036

1.2.43 Group 1036 was situated in the west column of graves in the centre of the excavated area (Figure 2) and consisted of a single inhumation from which no bone survived. Clean natural was seen below this (cut 1102).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1102	1421	none	1103
				natural 019

Group 1037

1.2.44 Group 1037 was situated in the west column of graves in the north of the excavated area (Figure 2). No human remains survived, possibly due to intermittently waterlogged conditions.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1431	1432	none	1433
Lowest	1428	1429	none	1430
				natural 019

Group 1038

1.2.45 Group 1038 was situated in the east column of graves in the south of the excavated area (Figure 2). Two inhumations were removed. It was not determined if further inhumations exist below the lowest removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1441	1442	1443	1444
Lowest	1466	1500	1492	1467
	unexcavated			unexcavated

Group 1039

1.2.46 Group 1039 was situated in the central column of graves in the north of the excavated area (Figure 2). Three inhumations were removed, with undisturbed natural geology (019) seen below the lowest inhumation (cut 1507).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1450	1451	1452	1453
	1468	1469	1470	1471
Lowest	1507	1508	1509	1510
				natural 019

Group 1040

1.2.47 Group 1040 was situated in the central column of graves in the centre of the excavated area (Figure 2). Two inhumations were excavated, although no articulated bone survived from either. Clean natural (019) was seen below the lowest inhumation (cut 1497).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	072	1552	none	073
	1497	1498	none	1499
Lowest				natural 019

Group 1041

1.2.48 Group 1032 was situated in the west column of graves in the centre of the excavated area (Figure 2) and consisted of a single grave, from which no human remains survived. Clean natural (019) was present below the single inhumation (cut 097).

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	097	1527	None	098
				natural 019

Group 1042

1.2.49 Group 1042 was situated in the east column of graves in the north of the excavated area (Figure 2). A single grave was exhumed; it was not determined if further inhumations exist below this.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1531	1532	1533	1534
	unexcavated			unexcavated

Group 1043

1.2.50 Group 1032 was situated in the east column of graves in the centre of the excavated area (Figure 2). Two inhumations were removed. It was not determined if further inhumations exist below the lowest removed inhumation.

Vertical Position	Cut	Coffin	Skeleton	Deposit
Highest	1511	1512	1513	1514
Lowest	1544	1545	1546	1547
	unexcavated			unexcavated

1.3 Appendix 3: Ledger stone inscriptions

1.3.1 See Berron (nd) for a catalogue of above-ground ledger stones.

1.3.2 The following ledger stones were recorded from surfaces associated with the foundations of the former Sunday school. These inscriptions are transcribed from the on-site context sheets as recorded in the field.

Context 1249:

HERE lieth the Body
of Widow Green the
Mother of Thomas Green
of Halifax who died July
26th 1776. Also lieth Lilly
Green Daughter of the said
Thomas Green died ___
20th 1777 Aged __ Years and 4
Months. And John Green
son of the said Thomas Green
died November 14th 1782 Aged
4 Years. Also James Green
son of the said Thomas Green
died October 5th 1785
6 Years and 10 Months.
OUR Threads are more finely spun
The Morning of the Day (is) done
There uncler___ ___ in ___ life
Are ___ ___ in to Paradise
ALSO Sarah Green the
Wife of Thomas Green
died January 24th 1786
ALSO Joseph Green Son of
the said Thomas Green
died June 27th 178_
Thomas Green died July
the 11th 1795 Aged 15 Years
Near this place in the Remains
of Mary Green Daughter of the
above Thomas Green who de-
parted this life the 11th December
1809 aged 19 years
In life respected and in death lamented
Tho.s Green died Dec.r 12 aged 5 Years

Context 1250:

Here lie the Bodies of
4 children of Samuel Crosley

Context 1251:

In MEMORY OF
Ch_h_n Joseph
and Harriett Brier
___ Aged 3 Years
___ Aged 13 Years
___ Aged 15 Weeks
___ Aged 15 Months
___

Context 1252:

HERE lieth the Body
of Jane Green the
Daughter of the
above Thomas Green
who Departed this
Life June 3rd 1(8)18
___20 ___
Also June___
of the___

Context 1253:

IN MEMORY OF
JOHN HARGREAVES who
died at Manchester
Nov.r 16th 1801. Aged
20 Years
Also James Hargreaves
Father of the above
John Hargreaves who
1811 Aged ___

Context 1254:

___ died August ___
1810 Aged 60 Years
ALSO of the ___
___ John ___
___

Context 1255:
Son of _ally
Aged 2 Months.
ALSO the above named
Hari(ette) Brier who
died June 15th 1851
Aged 32 Years
___ Children do
___ dead but ___ping home
___
___
ALSO the above named
Joseph Brier who died
___ of November
___ Years

Context 1256:

died June
19 Years
Also WILLIAM HAR-
GREAVES. Son of the above
JAMES HARGREAVES who
died July 1 ^{h} 1811. Aged
25 Years
Also CHARLOTTE HAR-
GREAVES Wife of the above
JAMES HARGREAVES, who
died Nov.^{r} 18th 1855 Aged
75 Years
Also Four Children of
ISAM HARGREAVES who
died in their infancy.
Also Isaac, Son of the
Above J. and C. Hargreaves
Who died 19th October
18_1 . 1 . aged 36 Years.
Also ELIZABETH,
Wife of the above ISAAC
HARGREAVES who died
Aged 67 Years

Context 1257:

IN MEMORY OF
HANNAH PRIESTLEY
Wife of James Priestley
Of 0___ who died
May 1st 18(5)5, Aged 80
Years
ALSO the above James
Priestley who departed
This Life Nov.^{r} 1 _ 1854
aged 81 Years

Context 1258:

___
(21) 1 _ 1 _
(A)LSO Mary
___ who departed
21___

Context 1259:

Here lieth the
Body of Joshu(a)
Milner

Context 1260:

IN MEMORY OF
HANNAH
Daughter of Joshua
And Hannah Cr___
of HALIFAX who died
February 1st 1851
Aged 21 Years
___ Mary Cr___
___ July 1 ___
Aged (21)

Context 1261:

In Memory
of Four Children of
John Whiteley's
Betty Died 13 Months
Isaac Died Oct.^{r} 8th
1790 Aged 21 Months
& 15 Days John Died
July 2nd 1791 Aged ___
Months & 17 Days
Tho.^{s} Died March 19th
1795. Aged 18 Months
Also J(oh)n Whiteley

1.4 Appendix 4: Summary of osteological and palaeopathological analysis

Group no.	Sk No.	Pres.	Comp.	Frag.	Age range	Age category	Sex	Stature (cm)	Dental pathology	Skeletal pathology
1000	064	1	61-80%	slight	2 y +/- 6 m	younger juvenile	n/a	n/a	calculus, caries, enamel chipping	2 lytic lesions on left auricular surface
1000	065	1	41-60%	severe	18 m +/- 6 m	younger juvenile	n/a	n/a	none	Metabolic: ectocranial surface of squamous portion of right temporal has porous and irregular new bone deposition across its full extent; left and right orbits are filled by porous and irregular new bone; endocranial surface of central portion of right parietal has diffuse deposits of porous and irregular new bone which is grey in colour
1000	1472	2	61-80%	slight	18+ y	adult	male	n/d	AMTL, calculus, caries, DEH, medium periodontal disease	DJD: left and right acetabula; left and right proximal and distal femora;, left and right 1st proximal metatarsals; mild porosity and osteophytes on left and right radial tuberosities. Trauma: right clavicle has a healed fracture of midshaft with visible swelling of shaft on superior surface. Left and right acetabula appear too large for femoral heads, otherwise normal. Left and right femoral heads are displaced in an inferior direction, both have osteophtyes and porosity, some flattening of right femoral head, both femora have shortened surgical necks.
1000	1473	1	21-40%	moderate	1.5-2 y	younger juvenile	n/a	n/a	no surviving dentition	Metabolic: grey, porous new woven bone deposits on endocranial surface of occipital in centre; ectocranial surface of right temporal; more diffuse lesions on endocranial surface of left and right parietals; Miscellaneous: active cribra orbitalia type 4 in right orbit, left is missing.
1001	95	0	21-40%	moderate	3 y +/- 12 m	younger juvenile	n/a	n/a	caries, abscess	Metabolic: grey and porous woven new bone on ectocranial surface of right temporal, located on mastoid process and encircling external auditory meatus, measurement 25.69 mm (A-P) x 20.57 mm (P-D); a similar deposit is present on the endocranial surface of the right pars basilaris, measurement 17.78 mm (A-P) x 4.96 mm (M-L); medial surfaces of the right and left mandibular rami are also affected; generalised porosity of the alveolar bone in the region of the sockets for the maxillary deciduous molars and the 1st permanent molars.
1001	1135	0	61-80%	moderate	18 m +/- 6 m	younger juvenile	n/a	n/a	none	Increased porosity in and around right radial tuberosity; right ischium porosity and irregular trabecular bone on right ischium covers two thirds of lateral surface. Porous, grey, woven new bone on right palate, also present on right maxilla in region of sockets for maxillary dentition, encircles infra-orbital foramen. Also present on lateral and medial surfaces of mandible, within right orbit, ectocranial surface of left temporal bone above external auditory meatus and at zygomatic root, measures 13.12 mm (A-P) x 9.36 mm (M-L). Active.

1002	1131	2	41-60%	severe	18+ y	adult	male	n/d	AMTL, abscess	SDJD: mild marginal osteophytes on anterior surface of odontoid peg. DJD: left 1st metacarpal has mild marginal osteophytes on proximal articulation; 3 lytic lesions on right lunate, 2 on left scaphoid; left humeral head has mild porosity; mild porosity and marginal osteophytes on left acetabulum. Trauma: probable healed fracture of right 1st metacarpal, shortening of shaft and angulation in palmar direction, osteophytes and porosity with enlargement of proximal articulation; femoral haematoma, marked swelling is mainly on lateral side, striated lamellar bone covers area of swelling. Non-specific infection: irregular areas of trabecular bone exposed on anterior surfaces of left and right petrous, measurements 13.73 mm (A-P) x 3.73 mm (M-L) for left and 12.92 mm (A-P) x 5.87 mm (M-L) for right.
1003	1138	2	21-40	severe	18+ y	adult	?	n/d	none	DJD: right acetabulum, mild porosity in posterior half, max. diameter 5.40 mm. OA: left hip joint: both anterior acetabulum and femoral head have severe porosity and sub-chondral defects, mild eburnation, both bones are very fragmented.
1003	1154	2	41-60%	moderate	18+ y	adult	?	n/d	no surviving dentition	OA: right foot: eburnation on right cuboid, articulation for 4th metatarsal, eburnation is linear and measures 7.20 x 2.04 mm, small irregular area of porosity and osteophytes around margin of articulation, proximal end of 4th metatarsal is poorly preserved; facet for 3rd metatarsal has moderate osteophytes and is enlarged, there are two lytic lesions on dorsal shaft immediately above proximal articulation, mild porosity affects distal articulation. Small area of eburnation on right lateral cuneiform, located on articulation for navicular, measures 3.10 x 0.65 mm. Left 3rd metatarsal: articulation for mt4 has moderate osteophytes, 2 lytic lesions and porosity, the articulation is enlarged and appears to have grooving running in a P-D direction, no visible eburnation. Trauma: possible healed fracture of right distal fibula, shaft is thickened when compared to the right fibula, slightly irregular in appearance. Possible healed midshaft fracture of right radius, shaft is angulated in medial direction and slightly thickened.
1003	1182	2	0-20%	severe	18+ y	adult	?	n/d	no surviving dentition	none
1004	1140	1	81-100%	slight	45+ y	older adult	male	187.5	AMTL, caries, DEH, considerable periodontal disease	DJD: left talus, calcaneus and navicular (porosity and mild marginal osteophytes); right and left distal fibulae (mild osteophtyes); left acromial facet (mild porosity).
1004	1150	1	41-60%	moderate	18+ y	adult	female	n/d	AMTL	SDJD: 4 cervical and 5 thoracic vertebrae. DJD: left proximal radius (mild porosity), left acetabulum (mild porosity), right and left proximal femur (mild central osteophytes and porosity). Non-

										specific infection: unilateral maxillary sinusitis: spicules of new bone on right side only, left unaffected. Trauma: possible depressed fracture around posterior portion of sagittal suture, linear and running towards lambda.
1004	1202	3	81-100%	slight	26-35 y	prime adult	male	174.6	AMTL, calculus, caries, DEH, abscess, slight periodontal disease	SDJD: 2 TV and 1 LV (mild porosity). DJD: right proximal humerus (cyst); right acetabulum (mild porosity); right 1st distal metacarpal; right distal 3rd phalanx; 4th and 5th metatarsals proximal articulation. Non-specific infection: periostitis left and right tibiae follows direction of soleal line. Craniotomy and laminectomy (CV7, TV1 and TV2).
1005	1144	1	81-100%	slight	18+ y	adult	female	158.8	AMTL, calculus, caries, abscess, moderate periodontal disease	DJD: left navicular (mild porosity); 1st left proximal phalange (mild porosity and circular plaque of new bone, max. diameter 7.77 mm); left and right proximal tibiae (mild marginal osteophtyes); left and right proximal humerus (mild porosity); left patella posterior surface (mild marginal osteophtyes). Small bony exostosis on roof of right orbit close to midline, max. diameter 10.51 mm, height 3 mm. Neoplasm: button osteoma on frontal at midline, max. diameter 13 mm
1005	1185	1	0-20%	moderate	36-40 w	neonate	n/a	n/a	no surviving dentition	Increased porosity on proximal half of right humerus, anterior and medial surfaces
1005	1447	0	81-100%	slight	45+ y	older adult	male	180.7	AMTL	Spinous process of TV1 deviated towards right side; spinous process of TV2 deviated towards left side. Spinal OA: CV3-6 have osteophytes, porosity and eburnation; right rib facet of TV1 has mild osteophytes, porosity and eburnation; SDJD affects 5 cervical, 6 thoracic and 2 lumbar vertebrae. TV9-10 have severe osteopyhtes on right side; DJD: right medial clavicle (mild porosity). Trauma: LV5 has compression fracture with wedging of vertebral body on right side
1005	1482	1	81-100%	slight	10-12 y	older juvenile	n/a	n/a	calculus, caries, DEH, abscess, slight periodontal disease	Non-specific infection: active periostitis on posterior surface of right femur, immediately below nutrient foramen, measures 15.01 mm (P-D) x 12.30 mm (M-L). Miscellaneous: bilateral cribra orbitalia, type 4 on right, type 3 on left, active.
1006	1156	2	0-20%	severe	18+ y?	adult?	?	n/d	none	none
1006	1159	1	0-25%	severe	18+ y	adult	?	n/d	calculus, DEH, moderate periodontal disease	none

1007	1165	0	61-80%	slight	26-35 y	prime adult	male	177.9	no surviving dentition	SDJD: 7 CV, 5 TV, 1 LV (Schmorl's nodes, osteophtyes, porosity). DJD: right and left shoulder (moderate osteophytes and porosity); right and left elbow (cysts and porosity), left acetabulum (moderate osteophtyes, porosity and cysts). Circular defect immediately below right mandibular condyle on posterior surface, exposed trabecular bone, sharp-walled. Congenital: bodies of CV5 and 6 are fused, integrity of apophyseal facets is unaffected. Possible block vertebrae. Metabolic: possible residual rickets, left and right tibiae are bowed in medial direction.
1007	1169	0	21-40%	moderate	18+ y	adult	?	n/d	no surviving dentition	OA: right hip (porosity and eburnation affect right acetabulum and right proximal femur); left knee (porosity and eburnation of left distal femur, no left tibia or patella surviving); left lateral condyle has moderate porosity combined with severe eburnation and multiple grooves running in vertical direction from proximal to distal. Trauma: healed fracture of neck of right femur, femur head is displaced in anterior direction, callus present on anterior surface of neck of femur. DJD: severe porosity and osteophytes affect proximal end of left 1st metacarpal, proximal articulation is enlarged.
1008	1146	0	81-100%	minimal	26-35 y	prime adult	female	151.7	AMTL, caries, moderate periodontal disease	SDJD: 1 LV. DJD: left shoulder (mild cysts), right and left elbow (mild cysts). Non-specific infection: three areas of healed periostitis and three patches of active periostitis on left distal femur, anterior, medial and posterior surfaces.
1008	1171	0	41-60%	slight	36-45 y	mature adult	male	172.4	AMTL, calculus, caries, abscess, moderate periodontal disease	DJD: right proximal humerus (mild marginal osteophtyes); left 2nd metacarpal (mild porosity). Non-specific infection: two areas of periostitis on right radius; one on right ulna; one on right femur. Trauma: possible healed fracture of right distal ulna, slight traces of callus.
1008	1172	2	41-60%	moderate	26-35 y	prime adult	female	n/d	AMTL, caries, DEH, moderate periodontal disease	DJD: right proximal femur (mild porosity). Spinal OA: TV8 (inferior right process); TV9 (superior right process). Miscellaneous: increased porosity on palatal surface of maxilla (left and right).
1008	1490	2	0-20%	severe	18+ y	adult	female?	n/d	no surviving dentition	none
1008	1521	3	0-20%	severe	3.5-5.5 y	younger juvenile	n/a	n/a	none	none
1009	1174	1	61-80%	slight	40-44 y	mature adult	female	n/d	AMTL	SDJD: 2 LV (mild osteophytes). DJD: right and left acetabulum (mild porosity and marginal osteophtyes).

1009	1175	1	61-80%	slight	26-35 y	prime adult	female	154.5	AMTL, caries, DEH, abscess slight periodontal disease	SDJD: 2 TV (mild porosity and osteophytes). DJD: left lunate (mild marginal osteophytes)
1009	1176	0	41-60%	slight	36-45 y	mature adult	male	172	AMTL, calculus, caries, moderate periodontal disease	SDJD: 7CV, 10 TV, 5 LV (mild osteophytes and porosity). DJD: sternum; right mandibular condyle, left and right clavicle, right scapula, left and right distal radius, right proximal and distal ulna, right acetabulum, right distal femur (mild osteophytes and porosity).
1010	1190	1	0-20%	moderate	45+ y	older adult	male?	n/d	AMTL, caries. abscess, considerable periodontal disease	SDJD: 6 cervical vertebrae, 12 thoracic vertebrae, 4 lumbar vertebrae. Spinal OA: apophyseal joints of 5 cervical vertebrae, facet for odontoid process on CV1 has mild osteophytes and a small area of eburnation, 8.19 mm (M-L) x 8.76 mm (P-D). OA: left and right wrist and hand. DJD: right acetabulum.
1010	1517	0	81-100	slight	36-45 y	mature adult	female	149.4	AMTL, calculus, caries, DEH, moderate periodontal disease	SDJD: 3 thoracic vertebrae (mild porosity). DJD: left pelvis and left proximal femur (mild osteophytes and porosity).
1010	1542	1	0-20%	slight	18+ y	adult	male	149.9	no surviving dentition	DJD: right acetabulum (mild marginal osteophtyes, cysts and porosity); right distal ulna (mild osteophytes).
1010	1619	1	81-100%	slight	26-35 y	prime adult	female	149.3	AMTL, calculus, caries, moderate periodontal disease	DJD: right proximal femur (mild porosity).
1010	1620	1	0-20%	severe	40 w	neonate	n/a	n/a	no surviving dentition	Metabolic: deposits of irregular and porous grey woven new bone deposits. Skull: Pars basilaris, left and right zygomatics, lateral surface of left pars squama, right greater wing of sphenoid inferior surface, endocranial surface of occipital, porosity on ectocranial surface of occipital, left orbit and Ectocranial surface of frontal, Ectocranial surfaces of left and right parietals. Post-cranial: left scapula trabecular bone present on anterior and posterior surface of blade lateral side, posterior spine and acromion also affected. Left humerus, posterior surface. Right ulna, anterior and lateral surfaces. Left and right ribs, caudal surfaces.

1011	1189	1	0-20%	severe	2 y +/- 8 m	younger juvenile	n/a	n/a	DEH	Metabolic: area of increased porosity on right side of palate and on right maxilla, on ectocranial surface of right temporal, posterior to root of zygomatic, lesion appears erosive, 15.63 mm (A-P) x 14.32 mm (P-D), also increased porosity at tips of mastoid processes.
1011	1205	2	0-20%	severe	18+ y	adult	male?	n/d	no surviving dentition	none
1011	1320	2	21-40%	moderate	18+ y	adult	?	n/d	AMTL, calculus, caries, DEH, moderate periodontal disease	DJD: left proximal femur (mild porosity)
1012	1197	1	41-60%	moderate	18+ y	adult	male	n/d	AMTL, calculus, caries, DEH, abscess, considerable periodontal disease	Spinal OA: 2 cervical vertebrae. DJD: left and right TMJ (mild porosity). Maxillary sinusitis: globules of new bone visible in left sinus, right unaffected. Trauma: left femur has healed surgical neck fracture, displacement of femoral head in distal direction, superior margin of the femoral head is only slightly above the horizontal plane of the greater trochanter, prolific production of callus which has obscured the greater and lesser trochanters, no evidence of infection. Surviving fragment of left acetabulum has mild porosity and new bone deposition.
1013	1211	1	81-100%	moderate	45+ y	older adult	female	158.7	AMTL, calculus, caries, DEH, abscess, considerable periodontal disease	SDJD: 6 cervical vertebrae, 12 thoracic vertebrae, 5 lumbar vertebrae (osteophtyes, Schmorl's nodes, porosity). CV5 has deposit of irregular new bone covering one third of inferior body, also inferior body of CV6 and inferior body of CV7. Scoliosis in thoracic vertebrae, curvature to the right in the superior section and to the left in the inferior section, curvature is not marked. Spinous process of TV1 and TV2 are deviated to the right side. Fusion of superior and inferior facets of LV2-4, vertebral bodies are not affected. OA: posterior surface of left patella. DJD: left and right feet, right hand, right scapula. Metabolic: slight medial bowing of left and right tibia, right fibula, possible residual rickets. Trauma: slight wedging of TV4 and 5 on right side, possible compression fractures.
1013	1381	1	61-80%	moderate	18+ y	adult	male	170.9	AMTL, calculus, caries, abscess, considerable periodontal disease	DJD: right distal fibula; left medial cuneiform. OA: right hip joint. Non-specific infection: healed periostitis on right tibia and fibula
1013	1486	1	0-20%	severe	18+ y	adult	?	n/d	no surviving	DJD: mild osteophytes on upper rim of left patella

									dentition	
1013	1555	3	0-20%	moderate	18+ y	adult	?	n/d	no surviving dentition	DJD: moderate osteophytes and porosity around rim of right radial tuberosity
1013	1611	2	0-20%	severe	?18+ y	?adult	?	n/d	none	none
1014	1247	2	41-60%	moderate	26-35 y	prime adult	male	n/d	AMTL, caries, DEH, dental trauma, moderate periodontal disease	Non-specific infection: mild healed periostitis associated with haematoma, located on medial side immediately below midshaft of the right femur. DJD: proximal femora (mild porosity and central osteophtyes); OA: left and right femora
1014	1266	2	21-40%	moderate	18+ y	adult	male?	n/d	AMTL, caries, calculus, moderate periodontal disease	DJD: 3 thoracic vertebrae, 1 lumbar vertebra
1014	1396	2	0-20%	severe	18+ y	adult	male?	n/d	calculus, caries, DEH	none
1014	1456	2	0-20%	moderate	?18+ y	?adult	?	n/d	none	none
1015	1268	0	81-100%	slight	40-44 y	mature adult	male	169.2	AMTL, caries, moderate periodontal disease	SDJD: 1 thoracic vertebra, 1 lumbar vertebra (mild osteophtyes). DJD: left lateral clavicle (mild porosity), right and left acetabulum (mild porosity), left auricular surface (mild osteophytes). Trauma: possible healed fracture on left side of sternum, anterior surface, fracture line runs from articulation for xiphoid to proximal rim of left costal notch; slight thickening of shaft of right 1st metacarpal on medial side
1016	1232	1	81-100%	minimal	36-45 y	mature adult	male	143.5	AMTL, calculus, caries, DEH, abscess, moderate periodontal disease	SDJD: 6 cervical vertebrae, 8 thoracic vertebrae, 4 lumbar vertebrae, S1; DJD: clavicles, left and right shoulders, left and right elbows, right wrist, left and right hip, left and right ankle. OA: left hand (3rd, 4th, 5th metacarpals); Trauma: healed rib fracture, left 7 or 8, close to sternal end, slight callus surviving on cranial and caudal surfaces, good apposition of ends.
1016	1272	3	0-20%	severe	5 y +/- 16 m	younger juvenile	n/a	n/a	none	Metabolic?: left pars lateralis has porous new bone deposition on endocranial surface.
1016	1276	2	81-100%	moderate	45 + y	older adult	female	154.5	AMTL, calculus, considerab	SDJD: 2 cervical vertebrae. 8 thoracic vertebrae, 5 lumbar vertebrae, S1. DJD: left medial and lateral clavicle, left knee' OA: left shoulder, left and right hip, left foot.

									le periodontal disease	Maxillary sinusitis: small spicules of bone visible in left maxillary sinusitis, right not visible, although right side of palate has circular perforation with associated periostitis
1016	1314	3	21-40%	severe	45+ y	older adult	female	n/d	AMTL	DJD: left proximal femur (porosity), left talus (porosity), right navicular (marginal osteophtyes). Metabolic: senile osteoporosis, pseudo fractures of all surviving long bones and associated periostitis.
1016	1439	2	0-20%	severe	18+ y	adult	?	n/d	no surviving dentition	none
1018	1235	0	61-80%	moderate	40 w	neonate	n/a	n/a	none	Metabolic: ectocranial and endocranial lesions affect left and right orbits, left and right petrous, left and right mandibular rami, greater wings of sphenoid, occipital, left and right parietals
1018	1300	1	81-100%	slight	40-44 y	mature adult	female	156.9	AMTL, calculus, caries, considerable periodontal disease	SDJD: 6 cervical vertebrae, 7 thoracic vertebrae, 5 lumbar vertebrae, S1. DJD: right medial clavicle, right and left proximal humerus, right and left hip. Partial bilateral sacro-iliac ankylosis, posterior to auricular surfaces, sacrum is highly fragmented.
1018	1329	1	81-100%	slight	40-44 y	mature adult	male	175.2	AMTL, calculus, caries, abscess, moderate periodontal disease	SDJD: 2 cervical vertebrae, 10 thoracic vertebrae, 4 lumbar vertebrae. Spinous processes of TV5 and 7 are deviated towards right. DJD: left TMJ, left and right medial and lateral clavicles, left and right shoulder, left distal ulna, left and right hip, left auricular surface. Left proximal fibula. Trauma: small exostosis on posterior surface of left proximal fibula, projects 14.81 mm.
1018	1332	1	0-20%	slight	18+ y	adult	male	n/d	AMTL, abscess	SDJD: 2 thoracic vertebrae. DJD: right shoulder, right and left hip, right distal fibula. Trauma: healed fracture of right distal fibula, poor apposition of ends, surviving callus; right distal tibia has healed fracture, swelling of shaft with porous new bone and callus surviving, probable 4th rib has healed fracture at midshaft, callus surviving, poor apposition of ends.
1018	1495	1	21-40%	moderate	18+ y	adult	?	n/d	no surviving dentition	none
1019	1124	1	21-40%	moderate	45+ y	older adult	female	n/d	AMTL	SDJD: 6 cervical vertebrae, 8 thoracic vertebrae, 5 lumbar vertebrae. Spinal OA: 5 cervical vertebrae, 1 thoracic. DJD: left and right TMJ, left proximal femur, right auricular surface. Trauma: compression fracture of LV1 with resulting marked kyphosis of TV7-12, anterior body thickness is 12.37 mm, posterior thickness is 21.60 mm; healed fracture of left 12th rib, located at angle of rib, callus surviving, more on visceral surface. Metabolic: codfish vertebra leading to marked kyphosis of TV7-TV12. Possible osteomalacia and osteoporosis

1019	1504	1	41-60%	moderate	18+ y	adult	male	n/d	no surviving dentition	SDJD: 9 thoracic vertebrae, 3 lumbar vertebrae. DJD: left scapula, left hip, right proximal femur.
1019	1506	2	21-40%	slight	18+ y	adult	male	n/d	no surviving dentition	SDJD: 2 thoracic vertebrae, 5 lumbar, S1. DJD: right auricular surface and right proximal femur.
1020	1116	2	0-20%	severe	18+ y	adult	?	n/d	AMTL, caries	SDJD: 4 cervical vertebrae
1021	1227	1	0-20%	moderate	18+ y	adult	female	n/d	AMTL, DEH	SDJD: 3 cervical vertebrae. DJD: left and right proximal humerus, right 3rd proximal metacarpal. Trauma: healed midshaft fracture of right humerus, bone angulated in anterior direction. Small lytic defect on left side of floor of nasal cavity, max. diameter 7.54 mm.
1021	1228	1	21-40%	moderate	38-40 w	neonate	n/a	n/a	no surviving dentition	Metabolic: diffuse porosity on frontal, left and right temporal, left greater wing of sphenoid, left and right parietals, occipital; right scapula, left and right clavicles, left and right radius, left ulna and left tibia.
1021	1283	1	61-80%	moderate	45+ y	older adult	male	n/d	AMTL, calculus, abscess, moderate periodontal disease	SDJD: 5 cervical vertebrae, 12 thoracic vertebrae, 5 lumbar vertebrae, S1; anterior fusion of CV4 and 5. DJD: left scapula, right proximal humerus, right proximal radius, right distal ulna, left acetabulum. Trauma: right humerus has healed neck fracture, bone ends have united poorly, collar of bone surviving around circumference of shaft, humeral head is displaced in posterior and lateral direction, large osteophyte on lateral side of humeral shaft projecting 10.96 mm (right glenoid does not survive). Bilateral sacro-iliac ankylosis (sacrum is poorly preserved); Left and right 1st ribs have ossified thyroid cartilage projecting 26.77 mm and 31.31 mm; Non-specific infection: left maxillary sinusitis, right not seen
1021	1313	2	0-20%	severe	7 y +/- 24 m	older juvenile	n/a	n/a	none	none
1021	1337	2	0-20%	severe	18+ y	adult	?	n/d	AMTL, calculus, trauma	DJD: mild porosity on left proximal femur
1023	1125	1	0-20%	moderate	18+ y	adult	?	n/d	no surviving dentition	none
1024	1215	1	21-40%	moderate	18+ y	adult	male	n/d	AMTL, calculus, caries, moderate periodontal disease	DJD: right proximal femur (mild porosity).
1024	1244	1	41-60%	slight	18+ y	adult	male	157.1	AMTL, calculus, caries, abscess, moderate	SDJD: 3 lumbar, S1. DJD: right hip, left proximal femur, right talus and navicular, left 2nd metacarpal, proximal end. Bilateral sacro-iliac ankylosis, joint space visible on right side at anterior portion, left side badly damaged.

									periodontal disease	
1025	1349	0	0-20%	slight	8 y +/-24 m	older juvenile	n/a	n/a	caries, DEH	Metabolic?: ectocranial and endocranial lesions (diffuse porosity, irregular new bone deposition combined with some destruction). Irregular new bone deposition on lateral side of left frontal close to coronal suture, Left greater wing of sphenoid has porous appearance with some destruction on ectocranial surface, Ectocranial and endocranial surfaces of left squamous, greater wings of sphenoid also affected. Both orbits have porous appearance.
1025	1351	0	0-20%	moderate	3-5 y	younger juvenile	n/a	n/a	no surviving dentition	none
1025	1356	3	61-80%	slight	6-8 y	older juvenile	n/a	n/a	no surviving dentition	Circular lytic defect on posterior surface of right tibia, immediately below proximal articulation, max. diameter 1.84 mm (medial-lateral) a linear defect extends medially from it; not to be confused with post-mortem insect damage to right distal femur, left medial tibia and left fibula shaft.
1025	1357	0	81-100%	slight	26-35 y	prime adult	female	156.61	AMTL, calculus, caries, abscess, moderate periodontal disease	SDJD: 5 cervical vertebrae. Congenital: cervical rib on the right side of CV7, complete rib extends from the right lateral body and attaches to the transverse process, the rib forms the anterior margin of the right tranverse foramen. Non-specific infection: active periostitis on anterior surface of distal third of left radius, immediately above distal articulation, measures 20.05 mm (M-L) x 17.95 mm (P-D).
1025	1365	0	0-20%	minimal	5-7 y	younger juvenile	n/a	n/a	no surviving dentition	none
1025	1384	1	61-80%	slight	18-25 y	young adult	male	162.48	AMTL, calculus, caries, abscess	DJD: mild porosity in costal notches on left side of sternum.
1025	1408	1	0-20%	moderate	3-4 m	infant	n/a	n/a	none	Metabolic: Porous and irregular new bone deposition on left mandibular ramus, both medial and lateral surfaces are affected, more severe on medial surface where both condyle and coronoid process are affected. Extends throughout alveolar bone. Other elements affected comprise left orbit and ectocranial surface of frontal bone. All surfaces of the maxilla are affected. Here the bone is more grey in appearance. Nasal aperture and nasal floor. Diffuse and less severe on right greater wing of sphenoid. Ecto- and endocranial surfaces of occipital. Both ecto-and endocranial surfaces of left and right temporals in their entirety.
1025	1417	1	0-20%	moderate	18+ y	adult	?	n/d	no surviving dentition	SDJD: 4 thoracic vertebrae (Schmorl's nodes)

1025	1419	0	81-100%	slight	14-15 y	adolescent	n/a	n/a	AMTL, caries, DEH	none
1026	1290	1	0-20%	moderate	26-35 y	prime adult	male	n/d	AMTL, calculus, caries, slight periodontal disease	SDJD: left inferior process of CV7 has mild porosity. Left transverse foramen of CV7 is partially filled by new bone. Non-specific infection: two areas of active periostitis on left radius: at midshaft, medial side, posterior to interosseous crest, 19.35 mm (P-D) x 10.45 mm (M-L); just below midshaft, lateral side, 38.68 mm, (P-D) x 16.01 mm (M-L).
1026	1294	1	0-20%	slight	18+ y	adult	?	male 181 female 178.6	no surviving dentition	SDJD: 5 thoracic vertebrae. DJD: left and right clavicles, right proximal humerus. Trauma: compression fracture of body of TV6. Slight post-mortem damage to bone but clear compression on right side and probably anteriorly. Vertebral body is wedge-shaped. Bodies of TV7 and 8 are fused on left side and anteriorly. This has caused a slight scoliosis to the left side with an increase in the disc shape between the vertebrae. The vertebral facets are not fused. Fusion of sternum and xiphoid.
1026	1303	1	0-20%	moderate	18+ y	adult	female?	n/d	AMTL, caries, moderate periodontal disease	SDJD: 1 thoracic vertebra. DJD: left and right shoulders. Marked arterial grooving on endocranial surface of right parietal, measures 2.33 mm in diameter, 3 mm in depth. Two large arachnoid granulations, left and right parietals, max diameters 11.21-12.94 mm. TV2 has accessory articular facet located at midpoint of posterior surface of spinous process. Facet has mild porosity and osteophtyes. Spinous process is bent. TV1 and 3 do not survive. Endocranial lesions follow the line of the coronal suture. There is also some post-mortem erosion. The lesions comprise a mixed deposit of pitted and capillary style impressions within a layer of light? new bone (Walker 2012, 273, fig. 437). Lesions may equate to Type I and Type III lesions indicating non-specific haemorrhage or infection at time of death (Lewis 2004). Periosteal lesions on visceral surfaces of heads and necks of left ribs 4-9. The lesions comprise thick deposits of pitted lamellar bone which are covered by thin layers of finely pitted grey woven bone. There were no surviving right ribs so it is impossible to determine if the condition was bilateral or not. A possible causative link between the rib and endocranial lesions is tuberculoid meningitis.
1026	1304	1	0-20%	moderate	<1 y	infant	n/a	n/a	no surviving dentition	none
1026	1535	0	0-20%	slight	18+ y	adult	?	n/d	no surviving dentition	SDJD: superior right processes and inferior left and right processes of TV6-12 have mild porosity. Superior body of TV12 has Schmorl's nodes.
1028	1449	2	0-20%	moderate	18+ y	adult	?	n/d	no surviving dentition	none

1029	1324	4	0-20%	moderate	?18+ y	?adult	?	n/d	no surviving dentition	none
1030	1340	1	21-40%	moderate	18+ y	adult	female?	n/d	AMTL	Small bony exostosis on right distal tibia, medial surface, measures 25.62 (P-D) x (15.27 mm (A-P).
1030	1354	2	0-20%	severe	18+ y	adult	male	n/d	no surviving dentition	Very large arachnoid granulation on endocranial surface of left parietal, max. diameter 23.10 mm
1031	1347	2	41-60%	severe	18+ y	adult	?	n/d	AMTL, calculus, caries, moderate periodontal disease	none
1031	1530	2	0-25%	severe	18+ y	adult	?	n/d	no surviving dentition	none
1032	1361	1	61-80%	slight	32-34 w	foetus	n/a	n/a	no surviving dentition	Metabolic?: Porous and irregular new bone deposition on shafts of left and right humeri, right radius and ulna, left and right femora, right tibia, both surfaces of right ilium, right scapula, right pars lateralis, ectocranial surface of right frontal, right orbit, ectocranial and endocranial surfaces of right mandible, left greater wing of sphenoid, Ectocranial and endocranial surfaces of right petrous and right squamous.
1032	1377	0	61-80%	slight	18-25 y	young adult	female	161.6	AMTL, caries, DEH, abscess slight periodontal disease	SDJD: 1 lumbar vertebra.
1032	1392	1	61-80%	slight	18-25 y	young adult	male?	168.39	AMTL, caries, moderate periodontal disease	SDJD: 1 cervical, 3 thoracic, 1 lumbar; Miscellaneous: cribra orbitalia on right orbit only (type 1), healed.
1032	1525	1	61-80%	slight	18-25 y	young adult	female	n/d	AMTL, calculus, caries, abscess	none
1032	1550	1	41-60%	moderate	18+ y	adult	female?	n/d	no surviving dentition	DJD: left distal fibula (mild porosity)
1033	1400	0	81-100%	slight	36-45 y	mature adult	male	153.04	AMTL, dental	SDJD: 3 cervical vertebrae; 8 thoracic vertebrae; 1 lumbar vertebra. DJD: left and right radial tuberosities have mild

									trauma, moderate periodontal disease	osteophytes encircling rim. Right 1st proximal hand phalanx has a small circular lytic defect on the dorsal-lateral shaft, max. diam. 2.35 mm (M-L). Trauma: healed fracture of right clavicle at medial end, poor apposition of bone ends with marked shortening, at the lateral end of the break the bone is angulated downwards in distal and posterior direction, joint surfaces are normal, there is no sign of infection or swelling of shaft. Possible depressed fracture on right parietal: a linear depression extending from sagittal suture, running downwards diagonally in a posterior direction. Right tibia has marked entheseal change along the popliteal line.
1033	1464	1	41-60%	slight	36-45 y	mature adult	female	154.1	AMTL	SDJD: 3 thoracic vertebrae. DJD: left clavicle, right scapula, right lunate, right auricular surface, right proximal femur, left calcaneus. Extremely marked entheseal change on left tibia which run the length of the popliteal line and almost obscure the nutrient foramen.
1033	1624	1	0-20%	moderate	18+ y	adult	?	n/d	no surviving dentition	DJD: right TMJ
1035	1411	2	0-25%	moderate	36-45 y	mature adult	female	n/d	AMTL, caries, considerable periodontal disease	Miscellaneous: possible ectocranial lesions on frontal, left and right parietals in vicinity of coronal suture, obscured by post-mortem erosion.
1035	1415	3	21-40%	moderate	18+ y	adult	male	n/d	AMTL, calculus, caries, DEH, abscess, considerable periodontal disease	Spinal OA: anterior surface of odontoid peg has mild osteophytes and porosity, and moderate eburnation.
1035	1615	1	0-20%	severe	?	?	?	n/d	no surviving dentition	none
1036	1443	1	0-20%	moderate	1-2 y	Younger juvenile	n/a	n/a	none	Metabolic?: Porous and irregular new bone deposition on anterior surface of proximal shaft of right humerus. Left nasal floor is porous. Irregular new bone deposition on lateral and medial surfaces of right mandibular ramus. Right temporal has new bone deposition on endo- and ectocranial surfaces of squamous portion, sphenoid, pars basilaris, lateralis and parietals are also affected.
1038	1492	1	0-20%	severe	<18 y	non-adult	n/a	n/a	no surviving dentition	none

1039	1452	1	21-40%	slight	26-35 y	prime adult	?	n/d	AMTL, calculus, caries, DEH, abscess, slight periodontal disease	SDJD: 1 thoracic vertebra, 1 lumbar vertebra. DJD: left proximal femur
1039	1470	1	61-80%	slight	36-45 y	mature adult	male	169.6	AMTL, calculus, caries, moderate periodontal disease	SDJD: 5 thoracic and 4 lumbar vertebrae. DJD: left and right medial clavicle, left scapula, left and right acetabulum, left and right auricular surface. Trauma: haematoma located at midshaft of right femur on medial side, associated with healed periostitis, 86.07 mm (P-D) x 13.69 mm (A-P). Healed fracture of nasal bone: line of fracture is running horizontally across nasal bones, c 13 mm below glabella, there is marked deviation of bone below fracture line towards the right, 3 comminuted fragments have fused together.
1039	1509	1	21-40%	slight	18+ y	adult	?	n/d	no surviving dentition	DJD: right scapula, right distal femur, right distal fibula. Small irregular lytic defect immediately below right glenoid, max. length 6 mm (P-D). Left and right petrous each have an area of porosity on the anterior surface close to the squamous portion, left measures 5.74 mm (A-P), right measures 5.36 mm (A-P). Osteochondritis dissecans: right femur, medial epicondyle anterior surface, irregular erosive lesion, max. length 14.10 mm (P-D). Two smaller lesions on lateral epicondyle, measure 2.24 and 2.5 mm
1042	1533	0	61-80%	slight	40-44 y	mature adult	male	162.1	AMTL, abscess	SDJD: 2 cervical and 6 thoracic vertebrae. DJD: left and right clavicles, right auricular surface, left proximal femur, right proximal tibia. Left and right radial tuberosities have mild osteophytes on medial side. Moderate osteophytes on lateral side of calcaneus, proximal rim of facet for cuboid. Non-specific infection: left and right tibia, healed periostitis, distal end, anterior, medial and posterior surfaces are affected. Slightly more diffuse on right tibia, max. length 65.41 mm (P-D) from distal end. Left tibia, max. length 29.24 mm (P-D). Trauma: four healed rib fractures: midshaft of left 2, right 3, right 6 and 7. Callus and healed periostitis present on caudal surface of right 7.
1043	1513	1	0-20%	severe	18+ y	adult	?	n/d	no surviving dentition	SDJD: 2 thoracic and 4 lumbar vertebrae. DJD: right auricular surface and right proximal femur.
1043	1546	2	21-40%	moderate	18-25 y	young adult	male	n/d	caries, DEH, slight periodontal disease	DJD: right acetabulum and right auricular surface. Small circular lytic defect in base of right nasal aperture, trabecular bone visible, max. diameter 3.91 mm (M-L)
	1435	1	21-40%	moderate	18-25 y	young adult	female	n/d	no surviving dentition	None

	1611a	0	21-40%	moderate	40-44 y	mature adult	male	n/d	AMTL	DJD: right glenoid (mild porosity), left lateral clavicle (mild porosity). Non-specific infection: periostitis on visceral surfaces of three rib shaft fragments.

Key: y = years; m = months; w = weeks.

1.5 Appendix 5: Articulated human bone catalogue

Introduction

1.5.1 There are a total of 112 skeletons in the catalogue. Two skeletons have been reclassified as disarticulated: skeleton 1194 (group 1003) is a small deposit of disarticulated bone, as is skeleton 1374 (group 1011). Skeleton 1215/1244 (group 1024) is a disarticulated deposit which has been re-associated with skeletons 1215 and 1244. Burials 1240 and 1242 (group 1022) were exhumed and not included in the osteological analysis. Burial 1220 (group 1027) was not excavated. Burial 1282 (group 1024) had no bone surviving.

1.5.2 A total of seven previously unrecognised skeletons were identified during osteological analysis. The relevant grave fill numbers have been assigned to these skeletons. Skeleton 1473 was mixed with skeleton 1472 (group 1000). Skeleton 1365 was mixed with skeleton 1356 (group 1025). Skeleton 1417 was mixed with skeleton 1419 (group 1025). Skeleton 1304 was mixed with skeleton 1303 (group 1026). Skeleton 1435 was originally identified as a disarticulated deposit. Skeletons 1611a and 1611b were originally identified as a disarticulated deposit. A complete disarticulated skull recovered with skeleton 1190 is also included.

Key for recording of dentition:

Presence/absence
P = tooth present
AM = ante-mortem tooth loss
PM = post-mortem tooth loss
UE = tooth present but unerupted
E = erupting
R = root only
B = broken

Caries
S = small
M = moderate
L = large
A = all surfaces
B = buccal
D = distal
M = mesial

Calculus
F = flecks
S = slight
M = moderate calculus
H = heavy calculus
A = all surfaces
B = buccal
D = distal
M = mesial
L = lingual
O = occlusal
L = lingual
O = occlusal

DEH – dental enamel hypoplasia
L = lines
G = grooves
P = pits

Wear
Graded from 1-8: slight to severe

Group 1000

1.5.3 This group comprises four burials (0064, 0065, 1472. 1473). A younger juvenile skeleton (1473) was mixed with skeleton 1472.

Skeleton Number	0064 (group 1000)
Preservation	3
Completeness	61-80%
Fragmentation	slight
Age	2 years +/-8 months
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	Two circular lytic lesions on left auricular surface are associated with exposed trabecular bone.
Dental health	AMTL (0/19), calculus (1/15), caries (2/15), DEH (0/15), abscess (0/19), tooth positions present (19/20). Crowns of right maxillary second deciduous incisor and left maxillary first deciduous incisor are chipped. Maxillary right second deciduous incisor and premolar have carious cavities. Slight calculus on mandibular left first incisor.

Right dentition									Left dentition							
Present			PM	P	P	PM	P	-	P	P	P	P	P	UE		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	So	-	MI	-	-	-	-	-	-	-		
Wear				1	1	-	1	-	1	1	1	1	1	1		
Maxilla			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Mandible			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Present			UE	P	P	P	PM	P	PM	PM	P	P	P	UE		
Calculus			-	Sbl	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			-	1	1	1	-	1	-	-	1	1	1	-		

Intrusive bone	Right pubis, infant.
Comments	Staining on left maxillary deciduous canine, distal third of left femur on medial surface, left 5th rib, left side of mandible, left and right parietals. Hair preserved on parietals. Copper alloy shroud pin attached to left parietal. Hair sampled.

Skeleton Number	0065 (group 1000)
Preservation	3
Completeness	41-60%
Fragmentation	Severe
Age	18 months +/- 6 months
Sex	n/a
Stature	n/a
Non-metric traits	none

Pathology	Metabolic: ectocranial surface of squamous portion of right temporal has porous and irregular new bone deposition across its full extent. Left and right orbits are filled by porous and irregular new bone. Endocranial surface of central portion of right parietal has diffuse deposits of porous and irregular new bone which is grey in colour, measuring 57.34 mm (A-P) x 32.98 mm (P-D).
Dental health	AMTL (0/17), calculus (0/6), caries (0/6), DEH (0/2), abscess (0/17), sockets present (17/20).

Right dentition									Left dentition							
Present				E	P	PM	PM	PM	-	-	-	-	-			
Calculus				-	-	-	-	-	-	-	-	-	-			
DEH				-	-	-	-	-	-	-	-	-	-			
Caries				-	-	-	-	-	-	-	-	-	-			
Wear				0	1	-	-	-	-	-	-	-	-			
Maxilla				**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**			
Mandible				**e**	**d**	**c**	**2**	**1**	**a**	**b**	**c**	**d**	**e**			
Present				E	P	PM	UE	UE	PM	PM	PM	PM	PM			
Calculus				-	-	-	-	-	-	-	-	-	-			
DEH				-	-	-	-	-	-	-	-	-	-			
Caries				-	-	-	-	-	-	-	-	-	-			
Wear				0	1	-	0	0	-	-	-	-	-			

Intrusive bone	Left orbit, adult
Comments	

Skeleton Number	1472 (group 1000)
Preservation	3
Completeness	61-80%
Fragmentation	Slight
Age	Adult (18+ years)
Sex	Male
Stature	n/d
Non-metric traits	Lambdoid ossicles (left and right), coronal ossicles (left and right), mastoid foramen extrasutural (left and right), bridging of supra-orbital notch (left and right).
Pathology	DJD: left and right acetabula, left and right proximal and distal femora, left and right 1st proximal metatarsals; mild porosity and osteophytes on left and right radial tuberosities. Trauma: right clavicle has a healed fracture of midshaft with visible swelling of shaft on superior surface. Left and right acetabula appear too large for femoral heads, otherwise normal. Left and right femoral heads are displaced in an inferior direction, both have osteophtyes and porosity, some flattening of right femoral head, both femora have shortened surgical necks. Possible developmental dysplasia (Disease in London p 26-29) or Perthes disease or slipped femoral capital epiphyses.
Dental health	Medium periodontal disease, AMTL (8/22), caries (3/7), calculus (6/7), DEH (1/7), abscess (0/22), tooth positions present (22/32), mandibular right canine has chipped crown.

Right dentition	Left dentition

Present	-	-	-	-	-	-	-	-	PM	PM	PM	PM	AM	AM	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	P	P	P	P	PM	PM	PM	P	P	AM	AM	AM	AM
Calculus	Sbl	-	-	-	Sb	Sb	Sb	-	-	-	Sb	Sb	-	-	-	-
DEH	-	-	-	-	-	-	-	L	-	-	-	-	-	-	-	-
Caries	Mm	-	-	-	La	-	-	-	-	-	Md	-	-	-	-	-
Wear	4	-	-	-	5	6	6	-	-	-	5	5	-	-	-	-
Intrusive bone	Right and left temporal bones (not a pair), adult.															
Comments																

Skeleton Number	1473 (group 1000)
Preservation	3
Completeness	21-40%
Fragmentation	Moderate
Age	Younger juvenile (1.5-2 years)
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	Metabolic: Grey, porous new woven bone deposition: endocranial surface of occipital in centre; ectocranial surface of right temporal, most of squama and mastoid process are missing, all remaining bone affected; more diffuse lesions on endocranial surface of left and right parietals. Miscellanrous: active cribra orbitalia type 4 in right orbit, left is missing.
Dental health	No dentition
Intrusive bone	
Comments	Mixed with bones of skeleton 1472

Group 1001

1.5.4 This group comprises two burials (0095, 1135).

Skeleton Number	0095 (group 1001)
Preservation	2
Completeness	21-40%
Fragmentation	moderate
Age	3 years +/- 12 months (dental eruption and development). A single long bone measurement suggests an age of 1.5 years.
Sex	n/a
Stature	n/a
Non-metric traits	None
Pathology	Metabolic: grey and porous woven new bone on ectocranial surface of right temporal, located on mastoid process and encircling external auditory meatus,

	measurement 25.69 mm (A-P) x 20.57 mm (P-D); a similar deposit is present on the endocranial surface of the right pars basilaris, measurement 17.78 mm (A-P) x 4.96 mm (M-L); medial surfaces of the right and left mandibular rami are also affected; generalised porosity of the alveolar bone in the region of the sockets for the maxillary deciduous molars and the 1st permanent molars.
Dental health	AMTL (0/20), calculus (0/14), caries (4/14), DEH (0/14), abscess (1/20), sockets present (20/20). Gross carious destruction of crown of maxillary right premolar with externally draining, smooth walled semi-circular abscess located at root tip, max. diameter 5.94 mm (M-L). Porosity of surrounding alveolar bone.

Right dentition									Left dentition							
Present		UE	UE	P	P	PM	PM	PM	PM	PM	PM	P	P	UE	UE	
Calculus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Caries		-	-	-	La	-	-	-	-	-	-	Lo	So	-	-	
Wear		-	-	2	-	-	-	-	-	-	-	2	2	-	-	
Maxilla		**7**	**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**	**7**	
Mandible		**7**	**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**	**7**	
Present		UE	UE	P	P	P	P	P	P	P	P	P	P	UE	UE	
Calculus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Caries		-	-	-	-	-	-	-	-	-	-	-	So	-	-	
Wear		-	-	2	1	1	1	1	1	1	1	1	2	-	-	

Intrusive bone	Left ulna, neonate.
Comments	Ageing indicators are contradictory. Right tibia length is 1.5 years (Maresh, Gindhart). Eruption and root development suggest 3 years +/- 12 months.

Skeleton Number	1135 (group 1001)
Preservation	2
Completeness	61-80%
Fragmentation	moderate
Age	18 months +/- 6 months based on dental development and eruption. Length of humerus (110.2 mm) is 1.5 years.
Sex	n/a
Stature	n/a
Non-metric traits	None
Pathology	Increased porosity in and around right radial tuberosity; right ischium porosity and irregular trabecular bone on right ischium covers two thirds of lateral surface. Porous, grey, woven new bone on right palate, also present on right maxilla in region of sockets for maxillary dentition, encircles infra-orbital foramen. Also present on lateral and medial surfaces of mandible, within right orbit, ectocranial surface of left temporal bone above external auditory meatus and at zygomatic root, measures 13.12 mm (A-P) x 9.36 mm (M-L). Active.
Dental health	AMTL (0/15), calculus (0/6), caries (0/6), DEH (0/6), abscess (0/15), sockets present (15/20).

Right dentition	Left dentition

Present			UE	E	P	PM	PM	PM	-	-	-	-	-	-		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			-	1	1	-	-	-	-	-	-	-	-	-		
Maxilla			**6**	**e**	**d**	**C**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Mandible			**6**	**e**	**d**	**C**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Present			UE	E	PM	PM	PM	PM	PM	PM	PM	P	E	UE		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			1	-	-	-	-	-	-	-	-	-	-	-		
Intrusive bone			Neonate pars basilaris													
Comments			Staining on right ilium immediately anterior to auricular surface and on right frontal.													

Group 1002

1.5.5 This group number was assigned to a single burial (1131).

Skeleton Number	1131 (group 1002)
Preservation	4
Completeness	41-60%
Fragmentation	severe
Age	Adult 18+ years
Sex	Male
Stature	n/d
Non-metric traits	Ossicle in lambdoid (left and right), double condylar facet (left and right), accessory supra-orbital foramen (left and right).
Pathology	SDJD: mild marginal osteophytes on anterior surface of odontoid peg. DJD: left 1st metacarpal has mild marginal osteophytes on proximal articulation. Three lytic lesions on right lunate, 2 on left scaphoid. Left humeral head has mild porosity; mild porosity and marginal osteophytes on left acetabulum. Trauma: probable healed fracture of right 1st metacarpal, shortening of shaft and angulation in palmar direction, osteophytes and porosity with enlargement of proximal articulation; femoral haematoma, marked swelling is mainly on lateral side, striated lamellar bone covers area of swelling. Non-specific infection: Irregular areas of trabecular bone exposed on anterior surfaces of left and right petrous, measurements 13.73 mm (A-P) x 3.73 mm (M-L) for left and 12.92 mm (A-P) x 5.87 mm (M-L) for right.
Dental health	AMTL (11/14), calculus (0/0), caries (0/0), DEH (0/0), abscess (2/14), sockets present (14/32). Socket for maxillary right canine has externally draining smooth-walled abscess with associated porosity of alveolar bone, measures 3.33 mm (M-L) x 10.50 mm (P-D). Socket for maxillary 1st premolar has small, circular, externally draining abscess with associated porosity of alveolar bone, measures 3 mm in diameter.

Right dentition									Left dentition							
Present	-	-	-	PM	PM	AM	-	-	-	-	-	-	-	-	-	-

Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bones	none															
Comments																

Group 1003

1.5.6 This group comprises three burials (1138, 1154, 1182, and 1194). Skeleton 1194 has been identified as a small deposit of disarticulated material, detailed in disarticulated human bone below.

Skeleton Number	1138 (group 1003)
Preservation	4
Completeness	21-40%
Fragmentation	Severe
Age	Adult 18+ years
Sex	indeterminate
Stature	n/d
Non-metric traits	Ossicle in lambdoid (left and right)
Pathology	DJD: right acetabulum, mild porosity in posterior half, max. diameter 5.40 mm. OA: left hip joint: both anterior acetabulum and femoral head have severe porosity and sub-chondral defects, mild eburnation, both bones are very fragmented.
Dental health	AMTL (0/1), calculus (0/1), caries (0/1), DEH (0/1), abscess (0/0), sockets present (0/32).

Right dentition									Left dentition							
Present																
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	None															

Comments	

Skeleton Number	1154 (group 1003)
Preservation	3
Completeness	41-60%
Fragmentation	moderate
Age	Adult 18+ years
Sex	indeterminate
Stature	169.05 +/4.00
Non-metric traits	Double anterior calcaneal facet (left and right)
Pathology	OA: right foot: eburnation on right cuboid, articulation for 4th metatarsal, eburnation is linear and measures 7.20 x 2.04 mm, small irregular area of porosity and osteophytes around margin of articulation, proximal end of 4th metatarsal is poorly preserved; facet for 3rd metatarsal has moderate osteophytes and is enlarged, there are two lytic lesions on dorsal shaft immediately above proximal articulation, mild porosity affects distal articulation. Small area of eburnation on right lateral cuneiform, located on articulation for navicular, measures 3.10 x 0.65 mm. Left 3rd metatarsal: articulation for mt4 has moderate osteophytes, 2 lytic lesions and porosity, the articulation is enlarged and appears to have grooving running in a P-D direction, no visible eburnation. Trauma: possible healed fracture of right distal fibula; shaft is thickened when compared to the right fibula, slightly irregular in appearance. Possible healed midshaft fracture of right radius, shaft is angulated in medial direction and slightly thickened.
Dental health	No dentition
Intrusive bone	None
Comments	Staining on left and right femora

Skeleton Number	1182 (group 1003)
Preservation	4
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ yrs)
Sex	?
Stature	n/d
Non-metric traits	None
Pathology	None
Dental health	No dentition
Intrusive bone	Right petrous fragment, adult
Comments	Area of diffuse green staining on left femur shaft fragment, not possible to determine precise location

Group 1004

1.5.7 This group comprises three burials (1140, 1150, and 1202).

Skeleton Number	1140 (group 1004)

Preservation	3															
Completeness	81-100%															
Fragmentation	Slight															
Age	Older adult (45+ years)															
Sex	male															
Stature	191.97 +/-3.94															
Non-metric traits	Ossicle in lambdoid (left and right), absent zygomaticofacial foramen (right), absent anterior calcaneal facet (left and right)															
Pathology	DJD: left talus, calcaneus and navicular (porosity and mild marginal osteophytes); right and left distal fibulae (mild osteophtyes); left acromial facet (mild porosity).															
Dental health	Considerable periodontal disease, all sockets present, AMTL (26/32), calculus (0/6), caries (4/6), DEH (2/6), abscess (0/32), sockets present (32/32).															
Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	P	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	Mb	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
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	AM	AM	AM	AM	P	P	P	AM	AM	P	AM	AM	P	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	L	-	-	L	-	-	-	-	-	-
Caries	-	-	-	-	-	Lm	Ld	-	-	Ld	-	-	-	-	-	-
Wear	-	-	-	-	3	3	3	-	-	3	-	-	-	-	-	-
Intrusive bone	Incomplete S1 and arch of LV5, adult.															
Comments	Staining on distal third of right fibula and right tibia, left and right parietals and frontal.															

Skeleton Number	1150 (group 1004)
Preservation	2 (right humerus and ribs noticeably poorer, 4)
Completeness	41-60%
Fragmentation	moderate
Age	Adult (18+ yrs)
Sex	female
Stature	n/d
Non-metric traits	Ossicle in lambdoid (right), mastoid foramen extra-sutural (right); mandibular left canine had double roots (socket not resorbed)
Pathology	SDJD: 4 cervical and 5 thoracic vertebrae. DJD: left proximal radius (mild porosity), left acetabulum (mild porosity), right and left proximal femur (mild central osteophytes and porosity. Non-specific infection: unilateral maxillary sinusitis: spicules of new bone on right side only, left unaffected. Trauma: possible depressed fracture around posterior portion of sagittal suture, linear and running towards lambda.
Dental health	AMTL (32/32), calculus (0/0), caries (0/0), DEH (0/0). 31 sockets completely resorbed.

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	Left 5th proximal foot phalange with healed fracture															
Comments	Staining on right side of mandible, alveolar bone; staining on parietals and frontal; dark hair present on left frontal															

Skeleton Number	1202 (group 1004)
Preservation	4
Completeness	81-100%
Fragmentation	Slight
Age	Prime adult (26-35 years). Dental attrition suggests young adult (18-25 years).
Sex	Male
Stature	175.79 +/- 4.57
Non-metric traits	Ossicle at lambda, ossicle in lambdoid (left and right), parietal foramen (right), ossicle in coronal (left and right), auditory torus (left), double condylar facet (left and right), bridging of supra-orbital notch (left and right), anterior and posterior ethmoid foramen extra-sutural (left), double atlas facet (left and right), transverse foramen bipartite (CV3, left), double anterior calcaneal facet (right), double inferior talar facet (left and right).
Pathology	SDJD: 2 TV and 1 LV (mild porosity). DJD: right proximal humerus (cyst); right acetabulum (mild porosity); right 1st distal metacarpal; right distal 3rd phalanx; 4th and 5th metatarsals proximal articulation. Non-specific infection: periostitis left and right tibiae follows direction of soleal line. Craniotomy and laminectomy (CV7, TV1 and TV2).
Dental health	Slight maxillary and mandibular periodontal disease, AMTL (2/29), calculus (8/22), caries (4/22), DEH (2/22), abscess (0/29), sockets present (29/32). Overbite which is slightly asymmetrical and more marked on right side, no DJD of TMJ; rotation of mandibular central incisors, no crowding.

Right dentition									Left dentition							
Present	P	P	P	P	P	P	PM	PM	P	P	PM	PM	P	P	P	CON
Calculus	Sd	Sl	Sl	Sl	Sl	-	-	-	-	-	-	-	-	-	Sl	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	So	-	-	-	-	-	-	-	-	-	-	-	-	-	So	-
Wear	3	3	3	3	3	3	-	-	3	3	-	-	3	3	3	-

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	CON	P	AM	P	P	P	P	P	PM	P	P	P	P	AM	P	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	Sb	-	Sld	-
DEH	-	-	-	-	-	-	L	L	-	-	-	-	-	-	-	-
Caries	-	-	-	Sm	Sd	-	-	-	-	-	-	-	-	-	-	-
Wear	-	3	-	3	3	3	3	4	-	3	3	3	3	-	3	-
Intrusive bone		Mandibular right 1st molar, deciduous mandibular left molar.														
Comments		Staining on right clavicle, right side of body of TV2, left and right parietal. 2nd mandibular molar and 2nd right rib sampled.														

Group 1005

1.5.8 This group comprises four burials (1144, 1185, 1447, and 1482).

Skeleton Number	1144 (group 1005)
Preservation	3
Completeness	81-100%
Fragmentation	slight
Age	Adult (18 + years)
Sex	female
Stature	154.81 +/- 3.55
Non-metric traits	Microdontia and rotation of mandibular left 2nd incisor.
Pathology	DJD: left navicular (mild porosity); 1st left proximal phalange (mild porosity and circular plaque of new bone, max. diameter 7.77 mm); left and right proximal tibiae (mild marginal osteophtyes); left and right proximal humerus (mild porosity); left patella posterior surface (mild marginal osteophtyes). Small bony exostosis on roof of right orbit close to midline, max. diameter 10.51 mm, height 3 mm. Neoplasm: button osteoma on frontal at midline, max. diameter 13 mm
Dental health	Moderate mandibular and maxillary periodontal disease, AMTL (13/32), calculus (13/17), caries (2/17), abscess (1/32), sockets present (32/32). Externally draining abscess associated with maxillary 2nd premolar, irregular in shape, socket is enlarged and tooth would have felt quite loose, increased porosity around edges of abscess and socket.

	Right dentition								Left dentition							
Present	AM	P	P	P	AM	AM	AM	AM	AM	P	P	AM	P	P	P	PM
Calculus	-	-	-	Slb	-	-	-	-	-	Slm	-	-	Mb	Hb	Hb Sll Sm Sd	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	Sd	-	-	-	-	-	-	-	-	-	Mm	-	-
Wear	-	3	3	3	-	-	-	-	-	3	2	-	3	3	3	-
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	AM	AM	AM	P	P	P	P	P	P	P	P	P	AM	AM	AM	AM
Calculus	-	-	-	Sl	Sl	Mb	Sb Ml	Mb Ml	Sb Ml	Sb Ml	Sb Ml	Sb Sl	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	3	3	2	2	3	3	2	3	3	-	-	-	-
Intrusive bone	Left humerus x 2, left distal radius, frontal, right tibia shaft, 2nd and 3rd right metacarpal, right rib fragment, left tibia, left fibula, CV1 and 2, left patella, right 1st, 2nd and 3rd metacarpals, right proximal phalanges 1-4, all adult.															
Comments	Green staining left and right pelvis, left scapula, left parietal. Maxillary left 1st molar and left medial clavicle sampled for isotope analysis. Heavy buccal calculus removed from maxillary left 1st molar for study.															

Skeleton Number	1185 (group 1005)
Preservation	3
Completeness	0-20%
Fragmentation	Moderate
Age	Neonate (36-40 weeks)
Sex	n/a
Stature	n/a
Non-metric traits	None
Pathology	Porosity on proximal half of right humerus, anterior and medial surfaces
Dental health	No dentition
Intrusive bone	None
Comments	

Skeleton Number	1447 (group 1005)
Preservation	2
Completeness	81-100%
Fragmentation	Slight
Age	older adult (45+years)
Sex	Male
Stature	180.37+/-3.94
Non-metric traits	Ossicle in lambdoid (left and right); ossicle in coronal (left and right); septal aperture (left); peroneal tubercle (left and right); double anterior calcaneal facet (left and right).
Pathology	Spinous process of TV1 deviated towards right side; spinous process of TV2 deviated towards left side; TV9-10 have severe osteophytes on right side; LV5 has compression fracture with wedging of vertebral body on right side Spinal OA: CV3-6 have osteophytes, porosity and eburnation; right rib facet of TV1 has mild osteophytes, porosity and eburnation; SDJD affects 5 cervical, 6 thoracic and 2 lumbar vertebrae. DJD: right medial clavicle (mild porosity). Trauma: LV5 has compression fracture with wedging of vertebral body on right side
Dental health	AMTL (30/30), calculus (0/0), caries (0/0), DEH (0/0), abscess (0/30), sockets present (0/30).

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	yes															
Comments	Staining on anterior surface of right proximal femur; staining on dorsal surfaces of right proximal 4th and 5th metatarsals															

Skeleton Number	1482 (group 1005)
Preservation	3
Completeness	81-100%
Fragmentation	Slight
Age	Older child (10-12 years), approaching PHV*. *PHV=peak height velocity 7s are almost fully erupted, roots are incomplete
Sex	n/a
Stature	n/a
Non-metric traits	Transverse foramen bipartite (CV6 left); crowding of mandibular incisors, slight rotation of mandibular canines away from midline
Pathology	Non-specific infection: active periostitis on posterior surface of right femur, immediately below nutrient foramen, measures 15.01 mm (P-D) x 12.30 mm (M-L). Metabolic: bilateral cribra orbitalia, 4 on right, 3 on left, active.
Dental health	Slight mandibular and maxillary periodontal disease. AMTL (0/25), calculus (2/20), caries (3/20), DEH (6/20), abscess (1/25), sockets present (25/25). Externally draining abscess affects maxillary right 1st molar; irregular in shape with sharp edges, exposure of distal root on buccal side, surrounding alveolar bone is porous.

Right dentition									Left dentition							
Present	UE	E	P	PM	PM	PM	PM	PM	-	-	-	P	PM	P	P	UE
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	La	-	-	-	-	-	-	-	-	-	-	La	-	-
Wear	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-
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	UE	E	P	P	P	P	P	P	P	P	P	P	P	P	E	UE
Calculus	-	-	-	-	-	-	-	Sl	Sl	-	-	-	-	-	-	-
DEH	-	-	-	-	-	L	L	L	L	L	L	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	Sm	-	-

Wear	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-
Intrusive bone	Adult hands, feet, left patella, CV1-2															
Comments	Iron coffin nail; staining on anterior surfaces of right and left femora, medial surface of right ilium, lateral surface of left ilium, superior rim of right acetabulum, anterior surface of left scapula, anterior surface of left clavicle, dorsal surface of right 3rd proximal phalange. Mandibular left 1st molar and right 2nd rib fragment sampled for isotope analysis															

Group 1006

1.5.9 This group comprises two burials (1156, 1159).

Skeleton Number	1156 (group 1006)
Preservation	4
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ years)?
Sex	indeterminate
Stature	n/d
Non-metric traits	none
Pathology	none
Dental health	No dentition
Intrusive bone	None
Comments	

Skeleton Number	1159 (group 1006)
Preservation	3
Completeness	0-25%
Fragmentation	Severe
Age	Adult (18+ years) check dental wear
Sex	?
Stature	n/d
Non-metric traits	Medial rotation of maxillary left canine which is slightly impacted, over-eruption of mandibular left canine CHECK
Pathology	None
Dental health	Moderate maxillary and mandibular periodontal disease. AMTL (0/21), calculus (7/19), caries (0/19), DEH (1/19), abscess (0/21). Crown of mandibular left 1st molar is chipped on its mesial side. Post-mortem damage to teeth which survive as roots only.

	Right dentition								Left dentition							
Present	-	-	-	-	-	-	-	-	PM	PM	P	P	P	P	P	R
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SL	SL
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	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	-	-	R	R	R	R	P	P	P	P	P	CON
Calculus	-	-	-	-	-	-	-	-	-	-	SBL	SBL	SBL	SBL	SL	-
DEH	-	-	-	-	-	-	-	-	-	-	L	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	3	3	4	3	-	-	-	-	-	-	2	2	2	4	4	-
Intrusive																
Comments	Mandibular left 1st molar and proximal third of right humerus sampled for isotope analysis.															

Group 1007

1.5.10 This group comprises two burials (1165, 1169).

Skeleton Number	1165 (group 1007)
Preservation	2
Completeness	61-80%
Fragmentation	Slight
Age	Prime adult (26-35 years)
Sex	male
Stature	178.96 +/- 4.57
Non-metric traits	Ossicle in lambdoid (left and right), ossicle in coronal (left and right), mastoid foramen extrasutural (left and right)
Pathology	SDJD: 7 CV, 5 TV, 1 LV (Schmorl's nodes, osteophtyes, porosity). DJD: right and left shoulder (moderate osteophytes and porosity); right and left elbow (cysts and porosity), left acetabulum (moderate osteophtyes, porosity and cysts). Circular defect immediately below right mandibular condyle on posterior surface, exposed trabecular bone, sharp-walled. Congenital: bodies of CV5 and 6 are fused; integrity of apophyseal facets is unaffected. Metabolic: possible residual rickets, left and right tibiae are bowed in medial direction.
Dental health	AMTL 14/14

Right dentition									Left dentition							
Present	-	-	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	CON?
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive	Left and right parietal, left petrous, right scapula, left trapezium, right temporal, left scapula, left scaphoid, all adult.
Comments	Staining on anterior bodies of CV7 and TV11, right side, left proximal humerus, lateral

	side, distal end of right ulna, medial side, left parietal,

Skeleton Number	1169 (group 1007)
Preservation	2
Completeness	21-40%
Fragmentation	moderate
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	none
Pathology	OA: right hip (porosity and eburnation affect right acetabulum and right proximal femur); left knee (porosity and eburnation of left distal femur, no left tibia or patella surviving); left lateral condyle has moderate porosity combined with severe eburnation and multiple grooves running in vertical direction from proximal to distal. Trauma: healed fracture of neck of right femur, femur head is displaced in anterior direction, callus present on anterior surface of neck of femur. DJD: severe porosity and osteophytes affect proximal end of left 1st metacarpal, proximal articulation is enlarged.
Dental health	No dentition
Intrusive bone	
Comments	

Group 1008

1.5.11 This group comprises five burials (1146, 1171, 1172, 1490, and 1521).

Skeleton Number	1146 (group 1008)
Preservation	1
Completeness	81-100%
Fragmentation	Minimal
Age	Prime adult (26-35 years)
Sex	female
Stature	153 +/- 3.55
Non-metric traits	Bridging of supra-orbital notch (right), transverse foramen bipartite (CV7, left)
Pathology	SDJD: 1 LV. DJD: left shoulder (mild cysts), right and left elbow (mild cysts). Non-specific infection: three areas of healed periostitis and three patches of active periostitis on left distal femur: anterior, medial and posterior surfaces.
Dental health	Moderate maxillary and mandibular periodontal disease. AMTL (12/28), calculus (0/16), caries (1/16), DEH (0/16), abscess (0/28), sockets present (28/28).

Right dentition									Left dentition							
Present	CON	P	AM	AM	P	P	P	P	P	R	P	4	AM	AM	P	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	4	-	-	5	5	5	5	5	-	5	5	-	-	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	CON	AM	AM	AM	AM	AM	AM	AM	AM	R	P	P	P	P	P	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	La	-	-
Wear	-	-	-	-	-	-	-	-	-	-	5	5	5	4	4	-
Intrusive bone	none															
Comments	Staining right distal ulna posterior surface, right proximal humerus posterior surface, articular facet of left intermediate cuneiform, right mandible lingual surface of anterior portion. Mandibular left 1st molar and 1st right rib sampled for isotope analysis.															

Skeleton Number	1171 (group 1008)
Preservation	1
Completeness	41-60%
Fragmentation	Slight
Age	Mature adult (36-45 years)
Sex	Male
Stature	168.1 +/- 3.94
Non-metric traits	Ossicle in lambdoid (left and right), parietal foramen (left and right), suprascapular foramen (left and right) suprascapular foramen, lateral squatting facet (left)
Pathology	DJD: right proximal humerus (mild marginal osteophtyes); left 2nd metacarpal (mild porosity). Non-specific infection: two areas of periostitis on right radius; one on right ulna; one on right femur. Trauma: possible healed fracture of right distal ulna, slight traces of callus.
Dental health	Moderate maxillary and mandibular periodontal disease, AMTL (11/28), calculus (2/9), caries (4/9), DEH (0/9), abscess (2/28), sockets present (28/28). Externally draining abscess at socket of maxillary right 1st premolar, smooth-walled and near circular, max. diameter 5.03 mm; externally draining abscess at socket of maxillary left 2nd incisor, irregular with sharp margins, max. diameter 5.03 mm.

Right dentition									Left dentition							
Present	CON	AM	P	P	AM	AM	AM	PM	PM	P	PM	AM	AM	AM	P	CON
Calculus	-	-	SBL	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	SM	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	CON	AM	AM	PM	P	PM	P	PM	PM	PM	P	P	P	AM	AM	CON
Calculus	-	-	-	-	-	-	-	-	-	-	SL	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	SM	-	-	-	-	-	SB	SBD	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive bones	none
Comments	Staining: right ilium posterior to auricular surface; left ilium anterior to sciatic notch; right humerus, lateral side of right humerus, lateral side of posterior surface in proximal third of bone; right ulna, medial edge, proximal third; right radius, distal end, lateral posterior, epiphysis and base of shaft; neck of left femur, anterior surface; right tibia, midshaft, medial surface; head of right femur, anterior surface and distal third of shaft on medial surface; right temporal and right zygomatic, Ectocranial surface. Patch of iron concretion immediately distal to fovea capita of left femur. Maxillary right 1st molar and left proximal radius sampled for isotope analysis.

Skeleton Number	1172 (group 1008)															
Preservation	3															
Completeness	41-60%															
Fragmentation	Moderate															
Age	Prime adult (26-35 years)															
Sex	female															
Stature	151.14 +/- 3.66															
Non-metric traits	Ossicle in lambdoid (left and right), parietal foramen (left and right), absent anterior calcaneal facet (left)															
Pathology	DJD: right proximal femur (mild porosity). Spinal OA: TV8 (inferior right process); TV9 (superior right process). Increased porosity on palatal surface of maxilla (left and right).															
Dental health	Moderate mandibular periodontal disease, AMTL (7/19), calculus (0/7), caries (2/7), DEH (1/7), sockets present (19/32).															
Right dentition									Left dentition							
Present	-	-	-	-	-	PM	PM	PM	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	PM	PM	P	AM	AM	P	P	P	P	P	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	LP	-	-	-	-	-	-
Caries	SBM	-	-	SD	-	-	-	-	-	-	-	-	-	-	-	-
Wear	4	-	-	4	-	-	3	3	3	3	3	-	-	-	-	-
Intrusive bone	Re-associated with skeleton 1146															
Comments	Staining on lateral surface of left ilium below iliac tubercle, underside of anterior mandible on left side															

Skeleton Number	1490 (group 1008)
Preservation	3
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ years)

Sex	Female?
Stature	n/d
Non-metric traits	none
Pathology	none
Dental health	No dentition
Intrusive bone	none
Comments	Staining on anterior surface of body of S3.

Skeleton Number	1521 (group 1008)															
Preservation	4															
Completeness	0-20%															
Fragmentation	severe															
Age	Younger child (3.5-5.5 years)															
Sex	n/a															
Stature	n/a															
Non-metric traits	none															
Pathology	none															
Dental health	Loose teeth only. AMTL (0/8), calculus (0/8), caries (0/8), DEH (0/8), sockets (0/24).															
Right dentition									Left dentition							
Present			UE	-	-	-	-	-	-	-	-	P	P	UE		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			-	-	-	-	-	-	-	-	-	1	1	-		
Maxilla			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Mandible			**6**	**e**	**d**	**c**	**b**	**1**	**1**	**b**	**c**	**d**	**e**	**6**		
Present			-	-	P	-	-	P	P	-	-	-	P	-		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			-	-	1	-	-	1	1	-	-	-	1	-		
Intrusive bone	none															
Comments																

Group 1009

1.5.12 This group comprises three burials (1174, 1175, and 1176).

Skeleton Number	1174 (group 1009)
Preservation	2
Completeness	61-80%
Fragmentation	Slight
Age	Mature adult (36-45 years)
Sex	female
Stature	n/d
Non-metric traits	Absent zygomaticofacial foramen (right), bridging of supraorbital notch (left and right), accessory infra-orbital foramen (left), anterior and posterior ethmoid foramen

	extrasutural (right), posterior atlas bridging (left and right), double anterior calcaneal facet (left).
Pathology	SDJD: 2 LV (mild osteophytes). DJD: right and left acetabulum (mild porosity and marginal osteophtyes.
Dental health	AMTL (32/32), calculus (0/0), caries (0/0), DEH (0/0), abscess (1/32), sockets present (0/32). Externally draining abscess associated with maxillary right 2nd or 3rd molar, large semi-circular perforation with sharp walls, max. diameter 14.47 mm (A-P).

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive bone	yes
Comments	Staining on neck of left femur, left acetabulum

Skeleton Number	1175 (group 1009)
Preservation	2
Completeness	61-80%
Fragmentation	Slight
Age	Prime adult (26-35 years)
Sex	Female
Stature	154.5 +/- 4.24 cm
Non-metric traits	Absent zygomaticofacial foramen (right)
Pathology	SDJD: 2 TV (mild porosity and osteophytes). DJD: left lunate (mild marginal osteophytes)
Dental health	Slight mandibular and maxillary periodontal disease. AMTL (8/29), calculus (0/14), caries (10/14), DEH (2/14), abscess (3/29). Maxillary right canine, 1st premolar and 2nd molar have externally draining abscesses; all are irregular ovals with sharp walls and increased porosity of alveolar bone.

Right dentition									Left dentition							
Present	CON	AM	AM	R	R	R	PM	PM	PM	PM	R	AM	R	AM	AM	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	LA	LA	LA	-	-	-	-	LA	-	LA	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	E	P	P	R	P	P	PM	P	P	PM	AM	PM	P	AM	AM	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	G	G	-	-	-	-	-	-	-	-	-	-
Caries	-	MB	SMO	LA	-	SM	-	-	-	-	-	-	-	-	-	-
Wear	1	3	3	-	2	2	-	2	2	-	-	-	-	-	-	-
Intrusive bone		Adult right femur and tibia, do not belong to 1174 or 1175														
Comments		Brown hair surviving on right parietal, sampled. Staining on left distal tibia medial surface, right proximal humerus anterior surface lateral side, right glenoid cavity, mental symphysis of mandible and right mandibular ramus														

Skeleton Number	1176 (group 1009)
Preservation	1
Completeness	61-80%
Fragmentation	slight
Age	Mature adult (36-45 years)
Sex	male
Stature	172 +/- 4.32 cm
Non-metric traits	Ossicle in lambdoid (left and right), ossicle in coronal (left and right), precondylar tubercle, transverse foramen bipartite (CV6, left and right)
Pathology	SDJD: 7CV, 10 TV, 5 LV (mild osteophytes and porosity). DJD: sternum; right mandibular condyle, left and right clavicle, right scapula, left and right distal radius, right proximal and distal ulna, right acetabulum, right distal femur (mild osteophytes and porosity).
Dental health	Moderate periodontal disease. AMTL (21/32), calculus (0/5), caries (3/5), DEH (0/5), abscess (1/32), sockets (32/32). Externally draining abscess associated with left mandibular 2nd premolar, smooth-walled irregular oval with porosity of alveolar bone.

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	R	PM	PM	PM	P	P	PM	PM	PM	P	P	AM	AM	AM
Calculus	-	-	-	-	-	-	MB	-	-	-	-	-	ML	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries			LA				LD					MM				
Wear	-	-	-	-	-	-	7	7	-	-	-	5	4	-	-	-
Intrusive bone		Hands and feet mixed with 1174 and 1175, Cv3, 2 lumbar arches, maxillary left 2nd incisor														
Comments		Staining on anterior surface of right distal tibia shaft and right distal fibula shaft, right proximal humerus anterior surface, anterior body of TV2														

Group 1010

1.5.13 The group comprises five burials (1190, 1517, 1542, 1619, and 1620).

Skeleton Number	1190 (group 1010)
Preservation	2
Completeness	0-20%
Fragmentation	Moderate
Age	Older adult (45+ years)
Sex	Male?
Stature	151.72 +/-3.66
Non-metric traits	Ossicle in lambdoid (left and right), ossicle at asterion (left), open foramen spinosum (left and right), absent zygomaticofacial foramen (left), transverse foramen bipartite (CV6, left).
Pathology	SDJD: 6 cervical vertebrae, 12 thoracic vertebrae, 4 lumbar vertebrae. Spinal OA: apophyseal joints of 5 cervical vertebrae, facet for odontoid process on CV1 has mild osteophytes and a small area of eburnation, 8.19 mm (M-L) x 8.76 mm (P-D). OA: left and right wrist and hand. DJD: right acetabulum.
Dental health	Considerable periodontal disease. AMTL (23/28), calculus (0/5), caries (5/5), DEH (0/5), abscess (4/28), sockets present (5/28). Externally draining abscesses associated with mandibular right 2nd premolar, maxillary right 2nd premolar, maxillary right 1st molar, maxillary left 1st premolar, all are smooth-walled and circular.

Right dentition									Left dentition							
Present	R	AM	R	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	LA	-	LA	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	R	R	R	-	-	-	-	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	LA	LA	LA	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive bone	yes
Comments	Iron coffin nail. Staining on right retro-auricular, anterior body of TV1 on right side, superior body of TV2, anterior body of TV3, anterior body of LV5, anterior surface of thyroid cartilage, endocranial surface of left occipital

Intrusive skull associated with 1190

Skeleton Number	1161 grave fill around 1190 (group 1010)

Preservation	2
Completeness	Skull only
Fragmentation	Severe
Age	Adult (18+ years)
Sex	Female
Stature	n/d
Non-metric traits	none
Pathology	none
Dental health	Considerable maxillary periodontal disease. AMTL (5/12), calculus (2/4), caries (4/4), DEH (0/4), abscess (4/12), tooth positions present (12/12). All surviving teeth have externally draining abscesses.

Right dentition									Left dentition							
Present	-	P	P	AM	R	-	-	-	AM	PM	PM	AM	R	AM	AM	AM
Calculus	-	Smd	Smd	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries		Ld	La	-	La	-	-	-	-	-	-	-	La	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive bone	
Comments	

Skeleton Number	1517 (group 1010)
Preservation	1
Completeness	41-60%
Fragmentation	Slight
Age	Mature adult (36-45 years)
Sex	Female
Stature	149.4 +/- 4.45 cm
Non-metric traits	Ossicle in coronal (left and right), ossicle at pterion (left), ossicle at parietal notch (left), accessory infraorbital foramen (left and right), accessory supraorbital foramen (right).
Pathology	SDJD: 3 thoracic vertebrae (mild porosity). DJD: left pelvis and left proximal femur (mild osteophytes and porosity).
Dental health	Moderate mandibular periodontal disease. AMTL (24/30), calculus (2/3), caries (2/3), DEH (2/3), abscess (2/30), sockets (6/30). Externally draining, smooth-walled, associated with mandibular left 1st premolar and right maxillary canine.

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	AM	AM	PM	AM	PM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	P	PM	P	P	AM	-	-	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	BF	BF	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	L	L	-	-	-	-	-	-	-	-	-
Caries	-	-	-	SM	-	-	SM	-	-	-	-	-	-	-	-	-
Wear	-	-	-	3	-	2	3	-	-	-	-	-	-	-	-	-
Intrusive bone	Staining at left knee joint															
Comments																

Skeleton Number	1542 (group 1010)
Preservation	2
Completeness	0-20%
Fragmentation	Slight
Age	Adult (18+ years)
Sex	male
Stature	155.74 +/- 4
Non-metric traits	Double calcaneal facet (right), double inferior talar facet (right)
Pathology	DJD: right acetabulum (mild marginal osteophtyes, cysts and porosity); right distal ulna (mild osteophytes).
Dental health	No dentition
Intrusive bone	Two 4th metacarpals, left and right, adult, not a pair
Comments	Coffin wood and iron coffin fitting present

Skeleton Number	1619 (group 1010)
Preservation	2
Completeness	81-100%
Fragmentation	Slight
Age	Prime adult (26-35 years)
Sex	female
Stature	149.3 +/- 4.24 cm
Non-metric traits	Ossicle at lambda, ossicle in lambdoid (left), parietal foramen (left), double atlas facet (left), transverse foramen bipartite (CV4-7, left and right), crowding and rotation of mandibular incisors and canines
Pathology	DJD: right proximal femur (mild porosity).
Dental health	Moderate periodontal disease. AMTL (4/16), calculus (6/12), caries (3/12), DEH (0/12), abscess (0/16), sockets present (14/32).

Right dentition									Left dentition							
Present	-	-	P	-	-	-	-	-	-	-	P	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	LL	-	-	-	-	-	-	-	LB	-	-	-	-	-

Wear	-	-	4	-	-	-	-	-	-	-	3	-	-	-	-	-
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	AM	AM	P	P	P	P	P	P	P	P	P	P	P	AM	AM	P
Calculus	-	-	-	-	-	-	SB ML	SB ML	SB ML	SB ML	SB ML	SB ML	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LA
Wear	-	-	3	3	3	3	3	3	3	3	2	2	2	-	-	2
Intrusive bone	CV2, TV1-2															
Comments	Staining on right parietal. Skeleton 1620 was found in the pelvic cavity of this skeleton.															

Skeleton Number	1620 (group 1010)
Preservation	2
Completeness	0-20%
Fragmentation	Slight
Age	Neonate (40 weeks)
Sex	n/a
Stature	n/a
Non-metric traits	None
Pathology	Metabolic: deposits of irregular and porous grey woven new bone deposits. Skull: Pars basilaris, left and right zygomatics, lateral surface of left pars squama, right greater wing of sphenoid inferior surface, endocranial surface of occipital, porosity on ectocranial surface of occipital, left orbit and Ectocranial surface of frontal, Ectocranial surfaces of left and right parietals. Post-cranial: left scapula trabecular bone present on anterior and posterior surface of blade lateral side, posterior spine and acromion also affected. Left humerus, posterior surface. Right ulna, anterior and lateral surfaces. Left and right ribs, caudal surfaces.
Dental health	No dentition
Intrusive bone	
Comments	Found in pelvic cavity of skeleton 1619

Group 1011

1.5.14 This group comprises four burials (1189, 1205, 1320, and 1373). Skeleton 1373 is a deposit of disarticulated bone. Details can be found under disarticulated human bone below.

Skeleton Number	1189 (group 1011)
Preservation	2
Completeness	0-20%
Fragmentation	Severe
Age	Younger juvenile (2 years +/- 8 months)
Sex	n/a
Stature	n/a
Non-metric traits	Rotation of maxillary left b and c
Pathology	Metabolic: area of increased porosity on right side of palate and on right maxilla, on

	ectocranial surface of right temporal, posterior to root of zygomatic, lesion appears erosive, 15.63 mm (A-P) x 14.32 mm (P-D), also increased porosity at tips of mastoid processes.															
Dental health	AMTL (0/16), calculus (0/12), caries (1/12), DEH (3/12), abscess (0/16), sockets present (16/20). Crown of maxillary right d is chipped.															
Right dentition									Left dentition							
Present			UE	P	P	-	-	-	P	P	P	P	P	UE		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	L	L	L	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			-	1	1	-	-	-	1	1	1	1	-	-		
Maxilla			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Mandible			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Present			UE	P	P	-	PM	PM	PM	PM	P	P	P	UE		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	L	-	-	-	-	-	L	-	-	-		
Caries			-	-	-	-	-	-	-	-	SB	-	-	-		
Wear			-	1	1	-	-	-	-	-	1	1	1	-		
Intrusive bone																
Comments	Pinkish staining on body and wings of sphenoid.															

Skeleton Number	1205 (group 1011)
Preservation	3
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ years)
Sex	Male?
Stature	n/d
Non-metric traits	none
Pathology	none
Dental health	No dentition
Intrusive bone	See disarticulated section
Comments	

Skeleton Number	1320 (group 1011)
Preservation	3
Completeness	21-40%
Fragmentation	moderate
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	Ossicle in lambdoid (right)
Pathology	DJD: left proximal femur (mild porosity)
Dental health	Moderate mandibular periodontal disease. AMTL (3/12), calculus (5/9), caries (4/9), DEH (8/9), abscess (0/12), sockets present (9/12).
Right dentition	Left dentition

Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	X	X	X
Calculus	-	-	-	-	-	SD	SB MD	SB	SB	SB	-	-	-	-	-	-
DEH	-	-	-	-	L	L	L	L	L	L	L	L	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	MR	SD MR	MR	-	-	-
Wear	-	-	-	-	3	2	4	4	4	4	4	2	2	-	-	-
Intrusive bone	Right adult pelvis, right non-adult pelvis															
Comments	Staining on left and right parietals, left mandibular ramus, lateral side															

Group 1012

1.5.15 This group number was assigned to a single burial.

Skeleton Number	1197 (group 1012)
Preservation	2
Completeness	41-60%
Fragmentation	moderate
Age	Adult (18+ years)
Sex	male
Stature	n/d
Non-metric traits	none
Pathology	Spinal OA: 2 cervical vertebrae. DJD: left and right TMJ (mild porosity). Sinusitis: globules of new bone visible in left sinus, right unaffected. Trauma: left femur has healed surgical neck fracture, displacement of femoral head in distal direction, superior margin of the femoral head is only slightly above the horizontal plane of the greater trochanter, prolific production of callus which has obscured the greater and lesser trochanters, no evidence of infection. Surviving fragment of left acetabulum has mild porosity and new bone deposition.
Dental health	Considerable mandibular periodontal disease. AMTL (27/32), calculus (2/4), caries (2/4), DEH (3/4), abscess (0/32), sockets present (5/32).

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	P	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
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	AM	AM	AM	AM	AM	PM	AM	AM	P	P	P	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	SB	SB	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	L	L	L	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	SB	SB	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	5	5	5	-	-	-	-	-
Intrusive bone	Frontal, right temporal, sphenoid, femur, left tibia all adult															
Comments	Staining: distal end of right femur, anterior surface; medial surface of left ilium; posterior surface of right proximal ulna and radius; distal third of right humerus, posterior surface; left humerus, medial and lateral sides of midshaft; midshafts of left radius and ulna; ectocranial surface of left parietal.															

Group 1013

1.5.16 This group comprises five burials (1211, 1381, 1480, 1555, and 1611).

Skeleton Number	1211 (group 1013)
Preservation	2
Completeness	81-100%
Fragmentation	moderate
Age	Older adult (45+ years)
Sex	female
Stature	158.7 +/- 4.24 cm
Non-metric traits	Ossicle at lambda, ossicle in lambdoid (left and right), parietal foramen (left and right), metopic suture, ossicle in coronal (left and right), mastoid foramen extrasutural (right), posterior condylar canal open (right), supracondyloid process (left), septal aperture (right)
Pathology	SDJD: 6 cervical vertebrae, 12 thoracic vertebrae, 5 lumbar vertebrae (osteophtyes, Schmorl's nodes, porosity). CV5 has deposit of irregular new bone covering one third of inferior body, also inferior body of CV6 and inferior body of CV7. Scoliosis in thoracic vertebrae, curvature to the right in the superior section and to the left in the inferior section, curvature is not marked. Spinous process of TV1 and TV2 are deviated to the right side. Fusion of superior and inferior facets of LV2-4, vertebral bodies are not affected. OA: posterior surface of left patella. DJD: left and right feet, right hand, right scapula. Metabolic: slight medial bowing of left and right tibia, right fibula, possible residual rickets. Trauma: slight wedging of TV4 and 5 on right side, possible compression fractures.
Dental health	Considerable mandibular periodontal disease. AMTL (15/20), calculus (2/2), caries (0/2), DEH (0/2) abscess (1/20), sockets present (2/20). Externally draining abscess associated with mandibular left 2nd molar, circular and sharp-walled, max. diameter 6.61 mm.

Right dentition									Left dentition							
Present	-	-	-	-	-	-	AM	AM	AM	AM	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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	AM	AM	AM	P	P	PM	AM	AM	AM	AM	PM	PM	AM	AM	AM	AM
Calculus	-	-	-	SBMD	SM	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	4	5	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	None															
Comments	1 iron nail; animal bone; staining left and right tibia, right styloid process, anterior bodies of CV7-TV2, frontal, right parietal and right temporal															

Skeleton Number	1381 (group 1013)															
Preservation	2															
Completeness	61-80%															
Fragmentation	moderate															
Age	Adult (18+ years)															
Sex	male															
Stature	170.9 +/- 4.32 cm															
Non-metric traits	Ossicle in coronal (left and right), vastus notch (left and right)															
Pathology	DJD: right distal fibula; left medial cuneiform. OA: right hip joint. Non-specific infection: healed periostitis on right tibia and fibula															
Dental health	Considerable mandibular periodontal disease. AMTL (13/24), calculus (7/9), caries (1/9), DEH (0/9), abscess (1/24), sockets present (8/24). Externally draining abscess associated with left 1st maxillary molar, irregular sharp-walled perforation, associated porosity of alveolar bone. Mandibular 2nd right molar is almost out of socket, tooth has moved in anterior direction, chipping of crown of 1st right mandibular molar on mesial side.															
Right dentition									Left dentition							
Present	-	-	P	-	-	-	AM	AM	PM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	P	P	P	P	-	-	-	PM	R	P	P	P	AM	AM	AM
Calculus	-	bs	sd	sb	sb	-	-	-	-	-	sb	sb	mb	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	la	-	-	-	-	-	-
Wear	-	5	6	5	4	-	-	-	-	-	6	6	6	-	-	-
Intrusive bone	none															

Comments	1 animal rib fragment; midshaft of left ulna and right mandibular 1st molar removed for isotope analysis

Skeleton Number	1486 (group 1013)
Preservation	2
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	None
Pathology	DJD: mild osteophytes on upper rim of left patella
Dental health	No dentition
Intrusive bone	none
Comments	

Skeleton Number	1555 (group 1013)
Preservation	3
Completeness	0-20%
Fragmentation	moderate
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	none
Pathology	DJD: moderate osteophytes and porosity around rim of right radial tuberosity
Dental health	No dentition
Intrusive bone	Probable adult distal femur fragment, unsided.
Comments	

Skeleton Number	1611 (group 1013)
Preservation	3
Completeness	0-20%
Fragmentation	Severe
Age	?adult (?18+ years)
Sex	?
Stature	n/d
Non-metric traits	none
Pathology	none
Dental health	No dentition
Intrusive bone	
Comments	Fragmentary leg bones only

Group 1014

1.5.17 This group comprises four burials (1247, 1266, 1396, and 1456).

Skeleton Number	1247 (group 1014)

Preservation	3															
Completeness	41-60%															
Fragmentation	moderate															
Age	Prime adult (26-35 years)															
Sex	male															
Stature	n/d															
Non-metric traits	Ossicle at lambda, parietal foramen (left and right), ossicle in coronal (right), mastoid foramen extrasutural (right), bridging of supraorbital notch (left and right).															
Pathology	Non-specific infection: mild healed periostitis associated with haematoma, located on medial side immediately below midshaft of the right femur. DJD: proximal femora (mild porosity and central osteophtyes) OA: left and right femora															
Dental health	Moderate mandibular and maxillary periodontal disease. AMTL (4/32), calculus (0/26), caries (5/26), DEH (15/26), abscess (0/32), sockets present 28/32), dental chipping (2/26). Crowns of mandibular incisors have broken.															
Right dentition									Left dentition							
Present	AM	P	P	P	P	P	P	PM	PM	P	PM	P	P	P	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	L	L	-	-	-	L	-	-	L	-	L	L	L	-	-
Caries	-	-	-	Ms	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	3	4	3	3	3	3	-	-	2	-	2	3	3	-	-
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	AM	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	L	-	L	L	L	L	-	-	-	-	L	L	L	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	Bm	Bm	-	Bm	Bm Os	-
Wear	3	-	4	3	3	3	-	-	-	-	3	3	3	4	3	3
Intrusive bone	none															
Comments	Right distal radius and mandibular left 1st molar sampled for isotope analysis; staining of left clavicle and right femur															

Skeleton Number	1266 (group 1014)	
Preservation	3	
Completeness	21-40%	
Fragmentation	moderate	
Age	Adult (18+ years)	
Sex	Male?	
Stature	n/d	
Non-metric traits	none	
Pathology	DJD: 3 thoracic vertebrae, 1 lumbar vertebra	
Dental health	Moderate mandibular periodontal disease. AMTL (5/7), calculus (0/2), caries (2/2), DEH (0/2), abscess (0/7), sockets present (2/7).	
Right dentition		Left dentition

Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	CON	AM	AM	AM	-	-	-	-	-	-	-	B	B	AM	AM	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	Bm	Bm	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	5	5	-	-	-
Intrusive bone	Adult frontal and parietals, hair associated. Hair sampled															
Comments	Staining on frontal and right 1st proximal phalange. Very marked muscle insertions on posterior femora, right lesser tuberosity is massive.															

Skeleton Number	1396 (group 1014)
Preservation	3
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ years)
Sex	Male?
Stature	n/d
Non-metric traits	Auditory torus (right)
Pathology	none
Dental health	AMTL (0/1), calculus (1/1), caries (1/1), DEH (1/1), abscess (0/0), sockets present (0/1).

Right dentition									Left dentition							
Present	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	Bs Ms	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	Ds	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	Adult ribs and vertebrae															
Dental health																

Skeleton Number	1456 (group 1014)
Preservation	3

Completeness	0-20%
Fragmentation	Medium
Age	?adult (?18+ years)
Sex	?
Stature	n/d
Non-metric traits	None
Pathology	None
Dental health	No dentition
Intrusive bone	none
Comments	Midshaft of left femur only

Group 1015

1.5.18 This group number was assigned to a single burial (1268).

Skeleton Number	1268 (group 1015)
Preservation	1
Completeness	81-100%
Fragmentation	Slight
Age	Contradictory indicators. Dental attrition 26-35 years, auricular surface 40-44 years – go with auricular
Sex	male
Stature	169.2 +/- 3.27 cm
Non-metric traits	Ossicle in lambdoid (left and right), parietal foramen (left and right), ossicle in coronal (left and right), ossicle at pterion (left and right), mastoid foramen extrasutural (left), accessory supraorbital foramen (right), double atlas facet (left and right), posterior atlas bridging (left and right).
Pathology	SDJD: 1 thoracic vertebra, 1 lumbar vertebra (mild osteophtyes). DJD: left lateral clavicle (mild porosity), right and left acetabulum (mild porosity), left auricular surface (mild osteophytes). Trauma: possible healed fracture on left side of sternum, anterior surface, fracture line runs from articulation for xiphoid to proximal rim of left costal notch; slight thickening of shaft of right 1st metacarpal on medial side
Dental health	Moderate mandibular and maxillary periodontal disease. AMTL (5/29), calculus (0/19), caries (2/19), DEH (0/19), sockets present (24/29). Penetration of right maxillary sinus related to advanced decay of right 2nd maxillary molar, max. diameter of perforation 3.62 mm (A-P), associated porosity and periostitis. Pipe facets on right side of dentition, mesial sides of canines and distal sides of 2nd incisors, wear has created a near circular gap, max. diameter 6.62 mm.

Right dentition									Left dentition							
Present	P	P	AM	PM	P	P	P	PM	PM	P	P	P	P	P	P	P
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	La	-	-	-	-	-	-	-	-	-	-	-	-	Mo	-
Wear	4	-	-	-	4	4	4	-	-	3	4	3	3	4	3	3
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	AM	P	P	P	P	P	P	PM	-	-	PM	P	AM	AM	AM	PM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	5	4	3	3	4	4	-	-	-	-	4	-	-	-	-
Intrusive bone	Adult skull and mandible (no other burials in this stack)															
Comments	Staining on left frontal and left parietal															

Group 1016

1.5.19 This group comprises five burials (1232, 1272, 1276, 1314, and 1439).

Skeleton Number	1232 (group 1016)
Preservation	2
Completeness	81-100%
Fragmentation	minimal
Age	Mature adult (36-45 years)
Sex	male
Stature	172.19 +/- 4
Non-metric traits	Ossicle in coronal (right), open foramen spinosum (left and right), suprascapular foramen (right), circumflex sulcus (right), double anterior calcaneal facet (left and right).
Pathology	SDJD: 6 cervical vertebrae, 8 thoracic vertebrae, 4 lumbar vertebrae, S1 DJD: clavicles, left and right shoulders, left and right elbows, right wrist, left and right hip, left and right ankle. OA: left hand (3rd, 4th, 5th metacarpals) Trauma: healed rib fracture, left 7 or 8, close to sternal end, slight callus surviving on cranial and caudal surfaces, good apposition of ends.
Dental health	Moderate mandibular and maxillary periodontal disease, AMTL (2/32), calculus (23/25), caries (4/25), DEH (8/25), abscess (1/32), sockets present (32/32). Externally draining abscess associated with maxillary left 2nd premolar, located at root tip, circular, max. diameter 3.94 mm, porosity of alveolar bone and active periostitis. Over-eruption of maxillary left 3rd molar, presumably in response to AM loss of mandibular left 3rd molar.

Right dentition									Left dentition							
Present	P	P	P	P	P	P	PM	PM	PM	PM	P	P	P	P	P	P
Calculus	Ms	Ms	Bf	Bm	Bm	Bm	-	-	-	-	Bs	Bs	Bs	Bs	Bs	Bs
DEH	-	-	-	-	-	L	-	-	-	-	L	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	La	Mm	-	-	Ms
Wear	4	4	4	4	4	3	-	-	-	-	-	5	5	5	4	3
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	AM	P	P	P	P	P	P	PM	P	P	P	P	P	P	P	AM
Calculus	-	Bf	Bf	Bs	Bs	Bm	Bs	-	Bm	Bm	Bh	Bm	Bs	Bf	Bf	
DEH	-	-	-	L	L	L	-	-	-	-	L	L	L	-	-	-
Caries	-	-	Ms	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	4	4	4	4	5	5	-	5	5	5	5	5	5	5	-

Intrusive bone	Left proximal 2nd phalange (fully developed)
Comments	Fragment of iron coffin fitting, staining on left parietal, iron concretion on right frontal/parietal (probable coffin fitting), staining on shaft of left and right fibula, staining on talar facet of right navicular, staining on right clavicle. Calculus removed from mandibular right canine; left mandibular 2nd molar and 1st right rib sampled.

Skeleton Number	1272 (group 1016)															
Preservation	4															
Completeness	0-20%															
Fragmentation	Severe															
Age	Younger juvenile (5 years +/- 16 months).															
Sex	n/d															
Stature	n/d															
Non-metric traits	none															
Pathology	Metabolic?: left pars lateralis has porous new bone deposition on endocranial surface.															
Dental health	AMTL (0/9), calculus (0/9), caries (0/9), DEH (0/9), abscess (0/9), sockets present (9/20)															
Right dentition									Left dentition							
Present	-	-	-	P	P	-	UE	UE	UE	UE	UE	UE	P	UE	UE	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	mo	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	1	1	-	-	-	-	-	-	-	1	-	-	-
Maxilla		**7**	**6**	**e**	**d**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**e**	**6**	**7**	
Mandible		**7**	**6**	**5**	**d**	**c**	**b**	**1**	**a**	**b**	**3**	**4**	**e**	**6**	**7**	
Present	-	UE	UE	UE	P	P	P	UE	P	P	UE	UE	P	UE	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	lo	-	-	-
Wear	-	-	-	-	1	1	1	-	1	1	-	-	1	-	-	-
Intrusive bone																
Comments																

Skeleton Number	1276 (group 1016)
Preservation	3
Completeness	81-100%
Fragmentation	Moderate
Age	Older adult (45+ years)
Sex	Female
Stature	160.58 +/- 4
Non-metric traits	Parietal foramen (left and right), bridging of supraorbital notch (right), double anterior calcaneal facet (left), double inferior talar facet (left).
Pathology	SDJD: 2 cervical vertebrae. 8 thoracic vertebrae, 5 lumbar vertebrae, S1.

	DJD: left medial and lateral clavicle, left knee OA: left shoulder, left and right hip, left foot. Maxillary sinusitis: small spicules of bone visible in left maxillary sinusitis, right not visible, although right side of palate has circular perforation with associated periostitis															
Dental health	Considerable mandibular and maxillary periodontal disease, AMTL (10/25), calculus (7/10), caries (0/10), DEH (0/10), abscess (0/25), sockets present (15/25).															
Right dentition									Left dentition							
Present	-	-	-	AM	AM	P	PM	PM	PM	AM	AM	AM	PM	P	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	4	-	-	-	-	-	-	-	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	-	-	PM	PM	P	P	P	P	P	P	P	AM	AM	AM	AM
Calculus	-	-	-	-	-	bs	bs	bs	bs	bs	bs	bs	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	4	-	-	-	-	5	5	5	5	5	4	4	-	-	-	-
Intrusive bone																
Comments	Staining on right humerus, posterior surfaces of CV7 and TV1, left mandibular ramus and frontal. Hair surviving on left parietal.															

Skeleton Number	1314 (group 1016)															
Preservation	4															
Completeness	21-40%															
Fragmentation	Severe															
Age	Older adult (45+ years)															
Sex	Female															
Stature	n/d															
Non-metric traits	none															
Pathology	DJD: left proximal femur (porosity), left talus (porosity), right navicular (marginal osteophtyes). Metabolic: senile osteoporosis, pathological fractures of all surviving long bones and associated periostitis.															
Dental health	No surviving dentition, AMTL (16/16), all sockets completely resorbed (0/16)															
Right dentition									Left dentition							
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone																
Comments	Staining on frontal bone, left femur, right femur, left tibia, left and right 1st metatarsals, right 1st proximal phalanx															

Skeleton Number	1439 (group 1016)
Preservation	3
Completeness	0-20%
Fragmentation	Severe
Age	?
Sex	?
Stature	n/d
Non-metric traits	none
Pathology	none
Dental health	No dentition
Intrusive bone	
Comments	Described as young adult, fragment of right femur recovered. 11 small fragments of probable long bone, 1 rib fragment, adult

Group 1018

1.5.20 This group comprises five burials (1235, 1300, 1329, 1332, and 1495).

Skeleton Number	1235 (group 1018)
Preservation	1
Completeness	61-80%
Fragmentation	Moderate
Age	Neonate (40 weeks)
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	Metabolic: ectocranial and endocranial lesions affect left and right orbits, left and right petrous, left and right mandibular rami, greater wings of sphenoid, occipital, left and right parietals
Dental health	Only a single unerupted tooth crown is present.

Right dentition									Left dentition							
Present				-	-	-	-	-	-	-	-	-	-			
Calculus				-	-	-	-	-	-	-	-	-	-			
DEH				-	-	-	-	-	-	-	-	-	-			
Caries				-	-	-	-	-	-	-	-	-	-			

Wear				-	-	-	-	-	-	-	-	-	-			
Maxilla				**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**			
Mandible				**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**			
Present				PM	PM	PM	UE	PM	-	-	-	-	-			
Calculus				-	-	-	-	-	-	-	-	-	-			
DEH				-	-	-	-	-	-	-	-	-	-			
Caries				-	-	-	-	-	-	-	-	-	-			
Wear				-	-	-	-	-	-	-	-	-	-			
Intrusive bone																
Comments				Staining on medial surface of right ilium.												

Skeleton Number	1300 (group 1018)
Preservation	2
Completeness	81-100%
Fragmentation	Slight
Age	Mature adult (36-45 years)
Sex	Female
Stature	156.9 +/- 3.72 cm
Non-metric traits	Ossicle in coronal (right and left), accessory lesser palatine foramen (right), bridging of supraorbital notch (left), anterior and posterior ethmoid foramen extrasutural (left), posterior atlas bridging (left), double anterior calcaneal facet (left), double inferior talar facet (left).
Pathology	SDJD: 6 cervical vertebrae, 7 thoracic vertebrae, 5 lumbar vertebrae, S1. DJD: right medial clavicle, right and left proximal humerus, right and left hip. Partial bilateral sacro-iliac ankylosis, posterior to auricular surfaces, sacrum is highly fragmented.
Dental health	Considerable mandibular periodontal disease, maxillary sockets almost entirely resorbed. AMTL (26/28), calculus (2/2), caries (2/2), DEH (0/2), sockets present 28/32).

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	P	P	AM	AM	AM	AM	-	-	-	-	AM	AM	AM
Calculus	-	-	-	Sa	Sb	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	3	3	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	Pair of feet, fully developed: right and left calcaneus, right 1st-5th metatarsals, left 1st, 2nd, 3rd and 5th metatarsals.															
Comments	Staining on left humerus, right humerus, left scapula, right mandibular ramus, occipital,															

	right and left parietal, iron concretion on left frontal and right ulna

Skeleton Number	1329 (group 1018)
Preservation	2
Completeness	81-100%
Fragmentation	Slight
Age	Mature adult (36-45 years)
Sex	male
Stature	175.2 +/- 3.27 cm
Non-metric traits	Ossicle in lambdoid (right and left), parietal foramen (left and right), ossicle in coronal (left and right), foramen of Huschke (right), mastoid foramen extrasutural (left), plaque (right).
Pathology	SDJD: 2 cervical vertebrae, 10 thoracic vertebrae, 4 lumbar vertebrae. Spinous processes of TV5 and 7 are deviated towards right. DJD: left TMJ, left and right medial and lateral clavicles, left and right shoulder, left distal ulna, left and right hip, left auricular surface. Left proximal fibula. Trauma: small exostosis on posterior surface of left proximal fibula, projects 14.81 mm.
Dental health	Moderate mandibular and maxillary periodontal disease, AMTL (3/24), calculus (8/18), caries (4/18), DEH (0/18), abscess (1/24), sockets present (21/24). Large gap between left mandibular premolars, 2nd premolar and 2nd molar have migrated in anterior direction; extreme wear on left mandibular dentition, slopes down from lingual to buccal. Externally draining abscess associated with mandibular right 1st premolar, circular sharp-walled perforation, entire root is exposed.

Right dentition									Left dentition							
Present	-	-	-	P	P	P	P	P	P	P	PM	PM	-	-	-	-
Calculus	-	-	-	-	-	-	bf	bf	bf	bf	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	6	4	4	6	7	7	7	-	-	-	-	-	-
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	AM	AM	P	P	P	P	P	P	P	P	PM	P	P	AM	P	CON
Calculus	-	-	Ls	-	-	-	Bf Ls	Bf Ls	Bf Ls	Bs Ds	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	Ds	La	La	-	-	-	-	-	-	-	-	-	La	-
Wear	-	-	5	-	-	4	4	5	5	4	-	6	5	-	-	-

Intrusive bone	Right 3rd proximal hand phalanx (fully formed)
Comments	Left 2nd rib and right 1st mandibular molar sampled for isotope analysis

Skeleton Number	1332 (group 1018)
Preservation	2
Completeness	0-25%
Fragmentation	Slight

Age	Adult (18+ years)
Sex	male
Stature	n/d
Non-metric traits	Ossicle in lambdoid (right), parietal foramen (right), absent zygomaticofacial foramen (right and left), double anterior calcaneal facet (left). Area of circular bossing around lambda.
Pathology	SDJD: 2 thoracic vertebrae. DJD: right shoulder, right and left hip, right distal fibula. Trauma: healed fracture of right distal fibula, poor apposition of ends, surviving callus; right distal tibia has healed fracture, swelling of shaft with porous new bone and callus surviving, probable 4th rib has healed fracture at midshaft, callus surviving, poor apposition of ends.
Dental health	AMTL (25/32), calculus (0/2), caries (0/2), DEH (0/2), abscess (6/32), sockets present (7/32). Six externally draining abscesses: associated with maxillary right canine, 2nd premolar, 2nd and 3rd molar, maxillary left 1st incisor and canine. Max. diameters 12.02-20.95 mm.

Right dentition									Left dentition							
Present	AM	AM	AM	P	AM	AM	AM	PM	PM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	PM	AM	P	AM	AM	AM	AM	PM	PM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
Intrusive bone	none															
Comments	Staining on anterior surface of right proximal tibia															

Skeleton Number	1495 (group 1018)
Preservation	2
Completeness	21-40%
Fragmentation	Moderate
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	Ossicle in lambdoid (right and left), parietal foramen (left).
Pathology	none
Dental health	No dentition
Intrusive bone	none
Comments	

Group 1019

1.5.21 This group comprises three burials (1124, 1504, and 1506). These skeletons were identified by the associated coffin plates. Skeleton 1124 was Rachel Ibbotson, aged around 88 years although records suggest this may be slightly inaccurate. Skeleton 1504 was Thomas Ibbetson (aged 54), and Skeleton 1506 was William Ibbetson (aged 80).

Skeleton Number	1124 (group 1019)
Preservation	2
Completeness	21-40%
Fragmentation	Skull low, post-cranial moderate
Age	Older adult (45+ years)
Sex	female
Stature	n/d
Non-metric traits	Parietal foramen (right), absent zygomaticofacial foramen (right and left).
Pathology	SDJD: 6 cervical vertebrae, 8 thoracic vertebrae, 5 lumbar vertebrae. Spinal OA: 5 cervical vertebrae, 1 thoracic. DJD: left and right TMJ, left proximal femur, right auricular surface. Trauma: compression fracture of LV1 with resulting marked kyphosis of TV7-12, anterior body thickness is 12.37 mm, posterior thickness is 21.60 mm; healed fracture of left 12th rib, located at angle of rib, callus surviving, more on visceral surface. Metabolic: codfish vertebra leading to marked kyphosis of TV7-TV12. Possible osteomalacia and osteoporosis
Dental health	AMTL (32/32), sockets completely resorbed

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive bone	none
Comments	Staining on frontal. This is the skeleton of Rachel Ibbetson who died in 1881 aged 85 years. Rachel was the wife of Thomas Ibbetson (skeleton 1504).

Skeleton Number	1504 (group 1019)
Preservation	2
Completeness	41-60%
Fragmentation	moderate
Age	Adult (18+ years), contradictory indicators
Sex	male

Stature	172.25 +/- 3.94
Non-metric traits	none
Pathology	SDJD: 9 thoracic vertebrae, 3 lumbar vertebrae. DJD: left scapula, left hip, right proximal femur.
Dental health	No dentition
Intrusive bone	none
Comments	This is the skeleton of Thomas Ibbotson who died on the 24th November 1853, aged 54 years. Thomas was the son of William Ibbetson (skeleton 1506) and the husband of Rachel Ibbetson (skeleton 1124).

Skeleton Number	1506 (group 1019)
Preservation	3
Completeness	21-40%
Fragmentation	Slight
Age	Adult (18+ years)
Sex	male
Stature	n/d
Non-metric traits	Ossicle in coronal (right).
Pathology	SDJD: 2 thoracic vertebrae, 5 lumbar, S1. DJD: right auricular surface and right proximal femur.
Dental health	No dentition
Intrusive bone	None
Comments	This is the skeleton of William Ibbetson who died on the 19th December 1848. William was the father of Thomas Ibbetson (skeleton 1504) and the father-in-law of Rachel Ibbetson (skeleton 1124).

Group 1020

1.5.22 This group number was assigned to a single burial (1116).

Skeleton Number	1116 (group 1020)															
Preservation	3															
Completeness	0-20%															
Fragmentation	severe															
Age	Adult (18+ years)															
Sex	?															
Stature	n/d															
Non-metric traits	none															
Pathology	SDJD: 4 cervical vertebrae															
Dental health	AMTL (0/1), calculus (0/1), caries (1/1), DEH (0/1), abscess (0/0), sockets present (0/32).															
Right dentition									Left dentition							
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	Sml*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone																
Comments	Staining on left and right parietals. *2 mesial, 1 lingual.															

Group 1021

1.5.23 This group comprised five burials (1227, 1228, 1283, 1313, and 1337).

Skeleton Number	1227 (group 1021)
Preservation	2
Completeness	0-20%
Fragmentation	moderate
Age	Adult (18+ years)
Sex	female
Stature	n/d
Non-metric traits	Ossicle in lambdoid (right and left), ossicle in coronal (right and left), mandibular torus (right and left).
Pathology	SDJD: 3 cervical vertebrae. DJD: left and right proximal humerus, right 3rd proximal metacarpal. Trauma: healed midshaft fracture of right humerus, bone angulated in anterior direction. Small lytic defect on left side of floor of nasal cavity, max. diameter 7.54 mm.
Dental health	AMTL (19/22), calculus (0/2), caries (0/2), DEH (1/2), abscess (0/22), sockets present (3/32).

Right dentition									Left dentition							
Present	-	-	-	-	-	-	-	-	AM	AM	AM	AM	AM	AM	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	PM	AM	P	AM	AM	P	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	L	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	2	-	-	5	-	-	-	-	-
Intrusive bone	yes															
Comments	Staining on right temporal on mastoid and root of zygomatic arch															

Skeleton Number	1228 (group 1021)
Preservation	2
Completeness	21-40%
Fragmentation	moderate
Age	Neonate (38-40 weeks)
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	Metabolic: diffuse porosity on frontal, left and right temporal, left greater wing of sphenoid, left and right parietals, occipital; right scapula, left and right clavicles, left and right radius, left ulna and left tibia.
Dental health	No dentition
Intrusive bone	None
Comments	

Skeleton Number	1283 (group 1021)
Preservation	2
Completeness	61-80%
Fragmentation	Moderate
Age	Older adult (45+ years)
Sex	male
Stature	n/d
Non-metric traits	Ossicle at lambda, ossicle in lambdoid (right and left), parietal foramen (right), posterior condylar canal open (left), absent zygomaticofacial foramen (left), accessory infraorbital foramen (right), transverse foramen bipartite (CV4, left), double anterior calcaneal facet (left).
Pathology	SDJD: 5 cervical vertebrae, 12 thoracic vertebrae, 5 lumbar vertebrae, S1; anterior fusion of CV4 and 5. DJD: left scapula, right proximal humerus, right proximal radius, right distal ulna, left acetabulum. Trauma: right humerus has healed neck fracture, bone ends have united poorly, collar of bone surviving around circumference of shaft, humeral head is displaced in posterior and lateral direction, large osteophyte on lateral side of humeral shaft projecting 10.96 mm (right glenoid does not survive). Bilateral sacro-iliac ankylosis (sacrum is poorly preserved), Left and right 1st ribs have ossified thyroid cartilage projecting 26.77 mm and 31.31 mm, Non-specific infection: left maxillary sinusitis, right not seen.
Dental health	Moderate mandibular and maxillary periodontal disease, AMTL (12/29), calculus (4/6), caries (0/6), DEH (0/6), abscess (1/29), sockets present (29/29). Externally draining abscess associated with right mandibular 1st premolar, circular sharp-walled perforation, associated new bone and porosity on alveolar bone, max. diameter 13.19 mm (P-D).

Right dentition									Left dentition							
Present	PM	AM	AM	AM	AM	PM	PM	P	P	PM	AM	AM	PM	AM	AM	con
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	5	5	-	-	-	-	-	-	-
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	con	AM	AM	P	PM	PM	PM	PM	PM	PM	P	P	P	AM	AM	con
Calculus	-	-	-	Bsl Lsl Mf dsl	-	-	-	-	-	-	Bm Lm mm	Bm lm	Bs Ls dm	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	4	-	-	-	-	-	-	4	4	5	-	-	-
Intrusive bone	Left and right femora, tibiae and left distal humerus, all adult, infant right ilium															
Comments																

Skeleton Number	1313 (group 1021)
Preservation	3
Completeness	0-20%
Fragmentation	Severe
Age	Older child (7 years +/- 24 months)
Sex	n/d
Stature	n/d
Non-metric traits	none
Pathology	none
Dental health	AMTL (0/12), calculus (0/5), caries (0/5), DEH (0/5), abscess (0/12), sockets present (12/24).

Right dentition									Left dentition							
Present			-	-	-	-	-	-	-	-	-	-	-	-		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			-	-	-	-	-	-	-	-	-	-	-	-		
Maxilla			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Mandible			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Present			P	P	P	PM	PM	PM	PM	PM	PM	PM	P	P		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			1	3	3	-	-	-	-	-	-	-	3	1		
Intrusive bone	Right femur shaft, younger child.															
Comments																

Skeleton Number	1337 (group 1021)
Preservation	3

Completeness	0-20%															
Fragmentation	Severe															
Age	Adult (18+ years)															
Sex	?															
Stature	n/d															
Non-metric traits	none															
Pathology	DJD: mild porosity on left proximal femur															
Dental health	AMTL (1/5), calculus (3/4), caries (0/4), DEH (0/4), abscess (0/0), sockets present (0/32), chipping of left maxillary and mandibular 1st molar (distal and mesial, chip on mesial side of mandibular left 2nd molar.															
Right dentition									Left dentition							
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	bf	-	-
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	AM	P	P	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	lf	lf	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	4	-	4	4	-
Intrusive bone	Skull vault fragments, probable non-adult															
Comments	2 iron coffin nails with wood attached; proximal left ulna and mandibular left 1st molar sampled for isotope analysis															

Group 1022

1.5.24 This group comprised two burials (1240 and 1242) which were exhumed by environmental health operatives and not osteologically examined.

Group 1023

1.5.25 This group comprises a single burial (1125).

Skeleton Number	1125 (group 1023)
Preservation	2
Completeness	0-20%
Fragmentation	Moderate
Age	?
Sex	?
Stature	n/d
Non-metric traits	None
Pathology	None
Dental health	No dentition
Intrusive bone	Fragmented anterior mandible, portion of frontal, infant. Maxillary left 1st incisor has small distal caries.

Comments	Left and right femur shafts only

Group 1024

1.5.26 This group comprises three burials (1215, 1244 and 1282). No bone survived in 1282. Disarticulated bone which was labelled as associated with 1215/1244 has been re-associated with skeleton 1215 or 1214.

Skeleton Number	1215 (group 1024)
Preservation	2
Completeness	21-40%
Fragmentation	moderate
Age	Adult (18+ years)
Sex	Male
Stature	n/d
Non-metric traits	Mandibular torus (left), crowding of mandibular incisors, microdontia of maxillary right 2nd incisor
Pathology	DJD: right proximal femur (mild porosity).
Dental health	Moderate mandibular and maxillary periodontal disease, AMTL (7/28), calculus (11/22), caries (4/22), DEH (0/22), abscess (0/28), tooth positions present (21/28).

Right dentition									Left dentition							
Present	AM	AM	AM	P	P	P	P	P	PM	P	P	AM	P	R	P	P
Calculus	-	-	-	bf	bf	bf	bf	-	-	-	-	-	-	-	bs	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	rs	-	-	-	-	-	-	-	-	-	la	-	-
Wear	-	-	-	3	4	4	4	4	-	3	3	-	3	-	3	3
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	AM	AM	P	P	P	P	P	P	P	P	P	P	AM	-	-
Calculus	-	-	-	-	-	-	bls	bls	bls	bls	bls	bls	bls	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	bl	-	-	-	rs	-	-	-	-	-	-	-	-	-	-	-
Wear	3	-	-	3	4	4	4	4	4	4	4	3	3	-	-	-

Intrusive bone	Left adult femur, tibia and patella
Comments	Preservation of tarsals is very poor in comparison with the remainder of the skeleton and may therefore not be associated

Skeleton Number	1244 (group 1024)
Preservation	2
Completeness	21-40%
Fragmentation	Low
Age	Adult (18+ years)
Sex	Male
Stature	158.1 +/- 3.27
Non-metric	Ossicle in lambdoid (right and left), ossicle in coronal (right and left), double condylar facet

traits	(right and left), open foramen spinosum (right), plaque (right and left), double anterior calcaneal facets (right and left), double inferior talar facet (left)
Pathology	SDJD: 3 lumbar, S1. DJD: right hip, left proximal femur, right talus and navicular, left 2nd metacarpal, proximal end. Bilateral sacro-iliac ankylosis, joint space visible on right side at anterior portion, left side badly damaged.
Dental health	Moderate mandibular and maxillary periodontal disease, AMTL (16/29), calculus (5/29), caries (3/9), DEH (0/9), abscess (2/29), tooth positions (19/29). Two externally draining abscesses, associated with mandibular left canine and maxillary left 2nd premolar, both are circular and smooth walled, max. diameters 5.27 and 3.99 mm.

Right dentition									Left dentition							
Present	am	am	am	am	r	p	p	p	p	pm	p	am	am	am	am	am
Calculus	-	-	-	-	-	bf	bf	bf	bf	-	bf	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	la	-	-	-	-	-	lm	-	-	-	-	-
Wear	-	-	-	-	-	5	5	5	5	-	5	-	-	-	-	-
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	am	am	am	pm	pm	p	p	pm	-	-	-	p	am	am	am	am
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	l	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	bs	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone																
Comments	1 iron coffin nail; right femur has staining on anterior surface, distal third; staining on right proximal ala, left talus has staining on medial side of articulation for tibia; right 2nd and 3rd metatarsals have staining on medial side of shafts at distal end; staining on distal articulation of right 2nd metacarpal.															

Group 1025

1.5.27 This group comprises nine burials (1349, 1351, 1356, 1357, 1365, 1384, 1408, 1417, and 1419) and is the largest of the stacks. Skeleton 1365 was mixed with skeleton 1357. Skeleton 1419 was mixed with skeleton 1417.

Skeleton Number	1349 (group 1025)
Preservation	1
Completeness	0-20%, skull and mandible only
Fragmentation	Slight
Age	Older child (8 years +/- 24 months)
Sex	n/d
Stature	n/d
Non-metric traits	Ossicles in lambdoid suture (left and right), bridging of supraorbital notch (left and right),
Pathology	Metabolic?: ectocranial and endocranial lesions (diffuse porosity, irregular new bone

	deposition combined with some destruction). Irregular new bone deposition on lateral side of left frontal close to coronal suture, Left greater wing of sphenoid has porous appearance with some destruction on ectocranial surface, Ectocranial and endocranial surfaces of left squamous, greater wings of sphenoid also affected. Both orbits have porous appearance.
Dental health	Rotation of mandibular left 2nd incisor; slight crowding of mandibular right 1st and 2nd incisor; maxillary right 2nd incisor has oddly elongated shape and crown is angled laterally; DEH (4/17), caries (4/17)

Right dentition									Left dentition							
Present		UE	P	P	P	UE	P	PM	PM	P	UE	P	P	P	UE	
Calculus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH		-	-	-	-	-	L	-	-	-	-	-	-	-	-	
Caries		-	bm	-	-	-	-	-	-	-	-	-	-	bs	-	
Wear		-	1	1	1	-	1	-	-	1	-	1	1	1	-	
Maxilla		**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**d**	**e**	**6**	**7**	
Mandible		**7**	**6**	**e**	**d**	**3**	**2**	**1**	**1**	**2**	**3**	**d**	**e**	**6**	**7**	
Present		UE	P	P	P	UE	P	P	PM	P	UE	P	P	P	UE	
Calculus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH		-	-	-	-	-	L	L	-	L	-	-	-	-	-	
Caries		-	bs	-	-	-	-	-	-	-	-	-	-	bs	-	
Wear		-	1	1	1	-	1	1	-	1	-	1	1	1	-	
Intrusive bone		yes														
Comments																

Skeleton Number	1351 (group 1025)
Preservation	1
Completeness	0-20%
Fragmentation	Moderate
Age	Younger juvenile (6-8 years)
Sex	n/a
Stature	n/a
Non-metric traits	None
Pathology	None
Dental health	AMTL (0/24), calculus (0/4), caries (0/4), DEH (0/4), abscess (0/24), sockets present (28/28)

Right dentition									Left dentition							
Present		-	UE	P	P	PM	PM	PM	PM	PM	PM	P	P	UE	-	
Calculus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Caries		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Wear		-	-	1	1	-	-	-	-	-	-	1	1	-	-	
Maxilla		**7**	**6**	**e**	**d**	**3**	**2**	**1**	**1**	**2**	**3**	**d**	**e**	**6**	**7**	
Mandible		**7**	**6**	**e**	**d**	**3**	**2**	**1**	**1**	**2**	**3**	**d**	**e**	**6**	**7**	
Present		-	-	P	P	PM	PM	PM	PM	PM	PM	P	P	UE	UE	

Calculus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Caries		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Wear		-	-	1	1	-	-	-	-	-	-	1	1	-	-	
Intrusive bone	Right radius and left patella, adult.															
Comments	1 iron coffin nail; staining on medial surface of right ilium immediately anterior to acetabular rim, distal third of left femur on medial side															

Skeleton Number	1356 (group 1025)															
Preservation	4															
Completeness	61-80%															
Fragmentation	Slight															
Age	Older juvenile (6-8 years)															
Sex	n/a															
Stature	n/a															
Non-metric traits	None															
Pathology	Circular lytic defect on posterior surface of right tibia, immediately below proximal articulation, max. diameter 1.84 mm (medial-lateral) a linear defect extends medially from it; not to be confused with post-mortem insect damage to right distal femur, left medial tibia and left fibula shaft.															
Dental health	AMTL (0/24), calculus (0/4), caries (0/4), DEH (0/4), abscess (0/24), sockets present (24/24)															
Right dentition									Left dentition							
Present		-	UE	P	P	PM	PM	PM	PM	PM	PM	P	P	UE	-	
Calculus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Caries		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Wear		-	-	1	1	-	-	-	-	-	-	1	1	-	-	
Maxilla		**7**	**6**	**e**	**d**	**3**	**2**	**1**	**1**	**2**	**3**	**d**	**e**	**6**	**7**	
Mandible		**7**	**6**	**e**	**d**	**3**	**2**	**1**	**1**	**2**	**3**	**d**	**e**	**6**	**7**	
Present		-	-	P	P	PM	PM	PM	PM	PM	PM	P	P	UE	UE	
Calculus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Caries		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Wear		-	-	1	1	-	-	-	-	-	-	1	1	-	-	
Intrusive bone	Right radius and left patella, adult															
Comments	1 iron coffin nail; staining on medial surface of right ilium immediately anterior to acetabular rim, distal third of left femur on medial side. This skeleton was identified by the associated coffin plate as Emma Briggs, aged 6 years.															

Skeleton Number	1357 (group 1025)
Preservation	1
Completeness	81-100%
Fragmentation	slight

Age	Prime adult (26-35 years)
Sex	female
Stature	156.61 +/- 3.72 cm
Non-metric traits	Ossicle in lambdoid (left and right), absent zygomaticofacial foramen (left and right), supracondyloid process (right), Poirier's facet (left), double anterior calcaneal facet (left)
Pathology	SDJD: 5 cervical vertebrae. Congenital: cervical rib on the right side of CV7, complete rib extends from the right lateral body and attaches to the transverse process; the rib forms the anterior margin of the right transverse foramen. Non-specific infection: active periostitis on anterior surface of distal third of left radius, immediately above distal articulation, measures 20.05 mm (M-L) x 17.95 mm (P-D).
Dental health	Moderate maxillary periodontal disease, AMTL (6/15), calculus (5/5), caries (5/5), DEH (0/5), abscess (3/15), sockets present (9/15). Massive externally draining abscess associated with sockets for maxillary right 1st and 2nd premolars and 1st molar, smooth-walled semi-circular perforation, max. diameter 22.63 mm (M-L), perforation of right maxillary sinus is linked to abscess.

Right dentition									Left dentition							
Present	R	P	AM	AM	AM	AM	R	PM	PM	PM	PM	PM	R	AM	P	CON
Calculus	df	df	-	-	-	-	df	-	-	-	-	-	df	-	df	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	La	Sm	-	-	-	-	La	-	-	-	-	-	La	-	La	-
Wear	-	3	-	-	-	-	-	-	-	-	-	-	-	-	?	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive bone	Yes
Comments	Manubrium and sternum are fused. 1 iron coffin nail with wood attached; staining on distal third of left humerus, lateral side; posterior neck of left humerus; posterior neck of right humerus; anterior surface of manubrium and sternum; left orbit and root of left zygomatic

Skeleton Number	1365 (group 1025)
Preservation	1
Completeness	0-20%
Fragmentation	Minimal
Age	Younger juvenile (5-7 years)
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	none
Dental health	No dentition
Intrusive bone	Non-specific infection: active periostitis encircles proximal end of left ulna, extends up to 41.91 mm from proximal end; possible circular lytic defect on medial side, max.

	diameter 2 mm diameter, periosteal new bone is slightly darker and thicker around this defect. See Disease in London
Comments	Staining on posterior surface of midshaft of left radius

Skeleton Number	1384 (group 1025)
Preservation	2
Completeness	61-80%
Fragmentation	Slight
Age	Young adult (18-25 years)
Sex	male
Stature	162.48 +/- 4.32 cm
Non-metric traits	Ossicles in lambdoid (left and right), absent zygomaticofacial foramen (left and right).
Pathology	DJD: Mild porosity on costal notches on left side of sternum.
Dental health	AMTL (1/30), calculus (10/28), caries (2/28), DEH (0/28), abscess (1/30), sockets present (29/30). The maxillary left 1st molar has only a single lingual root surviving and is associated with an externally draining abscess which is semi-circular and sharp walled with associated porosity of the alveolar bone. The sinus measures 11 mm (A-P) x 13.50 mm (P-D). Maxillary left 2nd molar is impacted; its crown is facing in a posterior direction. Crowding of mandibular incisors. Maxillary right canine is rotated in medial direction.

Right dentition									Left dentition							
Present	Con	PM	P	P	P	P	P	P	P	P	P	P	P	P	P	Con
Calculus	-	-	Fb	-	-	-	-	-	Slb	Slb	Slb	Slb	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	3	2	2	1	3	3	3	3	1	2	2	-	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	AM	P	P	P	P	P	P	P	P	P	P	P	P	P	E
Calculus	-	-	-	-	-	-	Fb	Fb	Fb	Fb	Fb	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	Smd	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	3	-	3	3	3	1	3	3	3	3	1	2	2	2	2	1

Intrusive bone	Adult ribs, right side, periosteal lesions; adult right talus; adolescent vertebrae.
Comments	Left 2nd rib and maxillary right 1st molar sampled for isotope analysis.

Skeleton Number	1408 (group 1025)
Preservation	2
Completeness	0-20%
Fragmentation	Slight
Age	Infant (3-4 months) on basis of dental development and fusion of petro-mastoid and squamo-tympanic ring. Measurements of mandible indicate 38-40 weeks.
Sex	n/a
Stature	n/a

Non-metric traits	none
Pathology	Porous and irregular new bone deposition on left mandibular ramus, both medial and lateral surfaces are affected, more severe on medial surface where both condyle and coronoid process are affected. Extends throughout alveolar bone. Other elements affected comprise left orbit and ectocranial surface of frontal bone. All surfaces of the maxilla are affected. Here the bone is greyer in appearance. Nasal aperture and nasal floor. Diffuse and less severe on right greater wing of sphenoid. Ecto- and endocranial surfaces of occipital. Both ecto-and endocranial surfaces of left and right temporals in their entirety.
Dental health	AMTL (0/20), calculus (0/1), caries (0/1), DEH (0/1), abscess (0/20), sockets present (20/20).

Right dentition									Left dentition							
Present				PM	PM	PM	PM	PM	PM	PM	PM	PM	PM			
Calculus				-	-	-	-	-	-	-	-	-	-			
DEH				-	-	-	-	-	-	-	-	-	-			
Caries				-	-	-	-	-	-	-	-	-	-			
Wear				-	-	-	-	-	-	-	-	-	-			
Maxilla				**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**			
Mandible				**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**			
Present				PM	PM	PM	PM	P	PM	PM	PM	PM	PM			
Calculus				-	-	-	-	-	-	-	-	-	-			
DEH				-	-	-	-	-	-	-	-	-	-			
Caries				-	-	-	-	-	-	-	-	-	-			
Wear								0								
Intrusive bone																
Comments																

Skeleton Number	1417 (group 1025)
Preservation	2
Completeness	0-20%
Fragmentation	Slight
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	None
Pathology	SDJD: 4 thoracic vertebrae (Schmorl's nodes)
Dental health	No dentition
Intrusive bone	
Comments	Found with skeleton 1419.

Skeleton Number	1419 (group 1025)
Preservation	1
Completeness	81-100%
Fragmentation	Slight

Age	Older child or adolescent. Contradictory age indicators: dental eruption and development (14-15 years); long bone measurements (10-11 years).																
Sex	n/a																
Stature	n/a																
Non-metric traits	None																
Pathology	None																
Dental health	AMTL (1/16), calculus (0/12), caries (3/12), DEH (6/12), abscess (0/16), sockets present (14/16). Increased porosity of alveolar bone in region of left mandibular 1st molar.																
Right dentition									Left dentition								
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	UE	P	P	P	P	P	PM	PM	PM	P	P	P	P	P	AM	UE	
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
DEH	-	-	-	L	L	L	-	-	-	L	L	L	-	-	-	-	
Caries	-	La	-	-	-	-	-	-	-	-	-	-	La	La	-	-	
Wear	-	-	1	1	1	1	-	-	-	1	1	1	-	-	-	-	
Intrusive bone	Adult ribs, vertebrae, manubrium and skull; infant mandible and femur																
Comments	1 iron coffin nail. Staining on left femur, lateral shaft, distal third. Left and right clavicles, anterior surfaces, midshafts.																

Group 1026

1.5.28 This group comprises five burials (1290, 1294, 1303, 1304, and 1535).

Skeleton Number	1290 (group 1026)
Preservation	2
Completeness	0-20%
Fragmentation	Moderate. Post-mortem compression of skull. No skull measurements taken.
Age	Prime adult (26-35 years)
Sex	Male
Stature	n/d
Non-metric traits	Ossicle in lambdoid (right), parietal foramen (right), ossicle in coronal (left and right), accessory infraorbital foramen (left and right)
Pathology	SDJD: left inferior process of CV7 has mild porosity. Left transverse foramen of CV7 is partially filled by new bone. Non-specific infection: two areas of active periostitis on left radius: at midshaft, medial side, posterior to interosseous crest, 19.35 mm (P-D) x 10.45 mm (M-L); just below midshaft, lateral side, 38.68 mm, (P-D) x 16.01 mm (M-L).
Dental health	Slight periodontal disease. AMTL (11/32), calculus (12/12), caries (4/12), DEH (0/12), abscess (0/32), sockets (32/32).

Right dentition									Left dentition							
Present	AM	AM	AM	PM	AM	PM	PM	PM	PM	PM	PM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
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	PM	PM	P	AM	AM	P	P	P	P
Calculus	Bdsl	Bsl	Bsl	Bsl	Bsl	Bsl	Bsl Lm	-	-	Bsl Lm	-	-	Bsl	Bsl	Bsl	Bsl
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	Dm La	Dl	-	-	-	-	-	-	-	-	-	La	-	-	-
Wear	3	4	5	3	3	4	3	-	-	5	-	-	-			
Intrusive bone	Adult mandible possibly associated with skeleton 1294 or 1535.															
Comments	Skeleton truncated below pelvis. Staining on anterior surface of midshaft of right clavicle. Staining across right side of lambdoid suture. Staining on left occipital immediately posterior to mastoid process.															

Skeleton Number	1294 (group 1026)
Preservation	1
Completeness	0-20%
Fragmentation	Slight
Age	Adult (18+ years)
Sex	?
Stature	male 181 +/- 4.05 cm; female 178.6 +/- 4.45 cm
Non-metric traits	None
Pathology	SDJD: 5 thoracic vertebrae. DJD: left and right clavicles, right proximal humerus. Trauma: compression fracture of body of TV6. Slight post-mortem damage to bone but clear compression on right side and probably anteriorly. Vertebral body is wedge-shaped. Bodies of TV7 and 8 are fused on left side and anteriorly. This has caused a slight scoliosis to the left side with an increase in the disc shape between the vertebrae. The vertebral facets are not fused. The scoliosis is likely to have occurred as a result of the compression fracture of TV6. Fusion of sternum and xiphoid.
Dental health	No dentition.
Intrusive bone	Intrusive mandible with 1290 could be associated with this skeleton
Comments	Staining on posterior surface of sternum, on left side, close to xiphoid.

Skeleton Number	1303 (group 1026)
Preservation	2
Completeness	0-20%
Fragmentation	moderate
Age	Adult (18+ years)

Sex	Female?
Stature	n/d
Non-metric traits	Ossicle at lambda, ossicle in lambdoid (right), parietal foramen (left and right), ossicle at asterion (right), bridging of supraorbital notch (left), suprascapular foramen (right)
Pathology	SDJD: 1 thoracic vertebra. DJD: left and right shoulders. Marked arterial grooving on endocranial surface of right parietal, measures 2.33 mm in diameter, 3 mm in depth. Two large arachnoid granulations, left and right parietals, max diameters 11.21-12.94 mm. TV2 has accessory articular facet located at midpoint of posterior surface of spinous process. Facet has mild porosity and osteophtyes. Spinous process is bent TV1 and 3 do not survive. Endocranial lesions follow the line of the coronal suture. There is also some post-mortem erosion. The lesions comprise a mixed deposit of pitted and capillary style impressions within a layer of light? new bone (see Disease in London, p. 273, fig. 437). Lesions may equate to Lewis's Type I and Type III lesions indicating non-specific haemorrhage or infection at time of death (see Lewis 2004). Periosteal lesions on visceral surfaces of heads and necks of left ribs 4-9. The lesions comprise thick deposits of pitted lamellar bone which are covered by thin layers of finely pitted grey woven bone. In isolation these lesions suggest chronic bilateral pulmonary infection which was in an active phase at the time of death (see Disease in London, p. 39). A possible causative link between the rib and endocranial lesions is tuberculoid meningitis.
Dental health	Moderate periodontal disease. AMTL (6/8), calculus (0/2), caries (2/2), DEH (0/2), abscess (0/8), sockets present (8/8).

	Right dentition								Left dentition							
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	R	-	-	-	-	-	-	-	-	R	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	La	-	-	-	-	-	-	-	-	La	-	-	-
Wear	-	-	-	5	-	-	-	-	-	-	-	-	5	-	-	-

Intrusive bone	Non-adult remains. Renumbered as skeleton 1304.
Comments	Staining on anterior surface of blade of left scapula, anterior surface of manubrium and anterior mandible.

Skeleton Number	1304 (group 1026)
Preservation	2
Completeness	0-20%

Fragmentation	moderate
Age	Infant (<1 year)
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	none
Dental health	No dentition.
Intrusive bone	Infant femur found with 1535 may belong with this skeleton.
Comments	These remains were found among skeleton 1303. Staining on ectocranial surface of left and right parietals.

Skeleton Number	1535 (group 1026)
Preservation	1
Completeness	0-20%
Fragmentation	Slight
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	none
Pathology	SDJD: superior right facets and inferior left and right facets of TV6-12 have mild porosity. Superior body of TV12 has Schmorl's nodes.
Dental health	No dentition.
Intrusive bone	none
Comments	

Group 1027

1.5.29 This group number was assigned to a single burial (1220) which was not excavated.

Group 1028

1.5.30 This group comprises a single burial (1449).

Skeleton Number	1449 (group 1028)
Preservation	3
Completeness	0-20%
Fragmentation	Moderate
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	None recordable
Pathology	none
Dental health	No dentition
Intrusive bone	Fragmented leg bones only.
Comments	

Group 1029

1.5.31 This group number was assigned to a single burial (1324).

Skeleton Number	1324 (group 1029)
Preservation	5
Completeness	0-20%
Fragmentation	moderate
Age	?adult (?18+ years)
Sex	?
Stature	n/d
Non-metric traits	None recordable
Pathology	none
Dental health	No dentition
Intrusive bone	
Comments	Right tibia shaft only

Group 1030

1.5.32 This group comprises two burials (1340, 1354).

Skeleton Number	1340 (group 1030)
Preservation	2
Completeness	21-40%
Fragmentation	moderate
Age	Adult (18+ years)
Sex	Female?
Stature	n/d
Non-metric traits	None
Pathology	Small bony exostosis on right distal tibia, medial surface, measures 25.62 (P-D) x (15.27 mm (A-P).
Dental health	AMTL (8/10), calculus (0/0), caries (0/0), DEH (0/0), abscess (0/10), sockets present (2/10).

	Right dentition								Left dentition							
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	-	-	-	-	-	-	PM	PM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive bone	Unidentified fragments labelled as right foot, 1 frontal, 1 right zygomatic, adult. Probably belong to skeleton 1354.
Comments	

Skeleton Number	1354 (group 1030)

Preservation	3
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ years)
Sex	Male
Stature	n/d
Non-metric traits	None
Pathology	Very large arachnoid granulation on endocranial surface of left parietal, max. diameter 23.10 mm.
Dental health	No dentition.
Intrusive bone	Fragment of unfused proximal epiphysis of right humerus, non-adult.
Comments	

Group 1031

1.5.33 This group comprises two burials (1347, 1530).

Skeleton Number	1347 (group 1031)
Preservation	3
Completeness	41-60%
Fragmentation	Severe
Age	Adult (18+ years)
Sex	Female??
Stature	n/d
Non-metric traits	None
Pathology	None
Dental health	Moderate periodontal disease. AMTL (3/14), calculus (4/10), caries (1/10), DEH (0/10), abscess (0/14), sockets present (10/14). Left maxillary 2nd molar has cementosis. Wear on maxillary left 1st premolar is extreme and slopes down from buccal to lingual.

Right dentition									Left dentition							
Present	CON	P	P	P	R	AM	AM	PM	P	P	AM	P	P	P	P	CON
Calculus	-	bm	bm	bs	bs	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	La	-	-	-	-	-	-	-	-	-	-	-
Wear	-	4	4	5	7	-	-	-	5	3	-	6	3	3	3	-
Maxilla	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Mandible	**8**	**7**	**6**	**e**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**e**	**6**	**7**	**8**
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intrusive bone	Adult mandible and frontal, probably associated with skeleton 1350.
Comments	Hair present

Skeleton Number	1530 (group 1031)

Preservation	3
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	none
Pathology	none
Dental health	No dentition
Intrusive bone	
Comments	

Group 1032

1.5.34 This group comprises five burials (1361, 1377, 1392, 1525, and 1550).

Skeleton Number	1361 (group 1032)
Preservation	2
Completeness	61-80%
Fragmentation	Slight
Age	Foetus (32-34 weeks)
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	Metabolic?: Porous and irregular new bone deposition on shafts of left and right humeri, right radius and ulna, left and right femora, right tibia, both surfaces of right ilium, right scapula, right pars lateralis, ectocranial surface of right frontal, right orbit, ectocranial and endocranial surfaces of right mandible, left greater wing of sphenoid, Ectocranial and endocranial surfaces of right petrous and right squamous.
Dental health	No dentition
Intrusive bone	Left and right ulna, left femur, adult.
Comments	1 iron coffin nails

Skeleton Number	1377 (group 1032)
Preservation	1
Completeness	61-80%
Fragmentation	Slight
Age	Young adult (18-25 years)
Sex	female
Stature	163.61 +/- 3.66
Non-metric traits	Ossicle in coronal (left and right), bridging of supraorbital notch (right), plaque (left and right), double anterior calcaneal facet (left and right).
Pathology	SDJD: 1 lumbar vertebra.
Dental health	Slight mandibular periodontal disease, moderate maxillary periodontal disease, AMTL (5/25), calculus (0/18), caries (6/18), DEH (6/18), abscess (1/25), sockets present (20/25). Maxillary left 1st molar socket has an externally draining abscess which is sharp-

	walled, semi-circular, max. diameter 5.37 mm (M-L).															
Right dentition									Left dentition							
Present	-	P	-	-	-	P	R	PM	PM	R	AM	AM	P	AM	P	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	Sm	-	-	-	-	La	-	-	La	-	-	Ld/o	-	Sm	-
Wear	-	2	-	-	-	2	2	-	-	2	-	-	2	-	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	CON	P	AM	P	P	P	P	P	P	P	P	P	P	AM	P	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	L	L	L	L	L	L	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SI MI	-
Wear	-	2	-	2	2	2	2	2	2	2	2	2	2	-	2	-
Intrusive bone	Yes															
Comments	Staining on dorsal surfaces of shafts of left 4th and 5th metacarpals. Left 2nd rib and mandibular left 2nd molar sampled for isotope analysis.															

Skeleton Number	1392 (group 1032)
Preservation	2
Completeness	61-80%
Fragmentation	Slight
Age	Young adult (18-25 years)
Sex	Male?
Stature	168.39 +/- 4.05 cm
Non-metric traits	Ossicle in lambdoid (left and right), ossicle in coronal (right), ossicle at pterion (left), ossicle at asterion (right), absent zygomaticofacial foramen (left), bridging of supraorbital notch (left).
Pathology	Cribra orbitalia on right orbit only (type 1), healed. SDJD: 1 cervical, 3 thoracic, 1 lumbar
Dental health	Moderate periodontal disease, AMTL (3/31), calculus (0/26), caries (2/26), DEH (0/26), abscess (0/31), sockets present (28/31). All three surviving 2nd molars are displaced in lingual direction.

Right dentition									Left dentition							
Present	E	P	AM	P	P	P	P	PM	PM	P	P	P	P	R	P	E
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	La	Lm	-
Wear	0	3	-	3	3	3	3	-	-	3	3	3	3	3	3	0
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	CON or UE	P	AM	P	P	P	P	P	P	P	P	P	P	P	P	E

Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	3	-	3	3	3	3	3	3	3	3	3	3	3	3	0

Intrusive bone	Yes, infant.
Comments	Post-mortem distortion of skull. Staining on anterior surface of neck of left femur and distal third of shaft; medial surface of left fibula just above distal articulation; lateral surface of left tibia immediately below nutrient foramen and anterior surface just above distal articulation; anterior surface of right humerus, immediately below proximal articulation and anterior midshaft; ectocranial surface of left parietal.

Skeleton Number	1525 (group 1032)
Preservation	2
Completeness	61-80%
Fragmentation	Slight
Age	Young adult (18-25 years)
Sex	Female
Stature	165.37 +/- 4.24
Non-metric traits	Metopic suture, ossicle in coronal (left and right), absent zygomaticofacial foramen (left and right), bridging of supraorbital notch (left).
Pathology	None
Dental health	No periodontal disease. AMTL (1/30), calculus (3/25), caries (1/25), DEH (0/25), abscess (1/30), sockets present (29/30). Abscess associated with maxillary left canine socket is circular, sharp-walled, measures 3.01 mm (M-L) x 4.75 mm (P-D). Maxillary left 3rd molar is impacted within alveolar bone, approximately 5.8 mm above other teeth in the dental arch. The tooth is angled slightly in a lateral direction.

Right dentition									Left dentition							
Present	E	P	P	P	P	P	P	PM	PM	P	AM	P	P	P	P	UE
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	Lb	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	2	2	2	2	1	1	-	-	1	-	2	2	2	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	CON	P	P	P	P	P	P	P	PM	P	PM	P	P	P	E	CON
Calculus	-	-	-	-	-	-	Bf	-	-	Bf	-	-	-	-	Ls	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	2	2	2	2	1	1	1	-	2	-	2	2	2	2	-

Intrusive bone	Right lateral femoral condyle, three fragmented metacarpal shafts, all adult.
Comments	Staining on left tibia, anterior surface immediately above distal articulation; anterior surface of proximal third of shaft of left and right humeri; lateral surface of right ilium; Ectocranial surface of left and right parietals and frontal, extending across bregma.

Skeleton Number	1550 (group 1032)
Preservation	2

Completeness	41-60%
Fragmentation	Moderate
Age	Adult (18+ years)
Sex	Female?
Stature	n/d
Non-metric traits	Ossicle in lambdoid (left), metopic suture, ossicle in coronal (left and right).
Pathology	DJD: left distal fibula (mild porosity)
Dental health	No dentition
Intrusive bone	None
Comments	Staining on anterior surface of left and right femora at neck; dorsal surface of right 3rd metacarpal shaft; Ectocranial surfaces of left and right frontal and parietals. Brown hair surviving on left frontal. Sampled.

Group 1033

1.5.35 This group comprises three burials (1400, 1464, and 1624).

Skeleton Number	1400 (group 1033)
Preservation	1
Completeness	81-100%
Fragmentation	Slight
Age	Mature adult (36-45 years)
Sex	Male
Stature	154.85 +/- 3.94
Non-metric traits	Ossicle in lambdoid (left and right), parietal foramen (left and right), mastoid foramen extrasutural (left and right), third trochanter (left), double anterior calcaneal facet (left and right), double inferior talar facet (left and right).
Pathology	SDJD: 3 cervical vertebrae; 8 thoracic vertebrae; 1 lumbar vertebra. DJD: left and right radial tuberosities have mild osteophytes encircling rim. Right 1st proximal hand phalanx has a small circular lytic defect on the dorsal-lateral shaft, max. diam. 2.35 mm (M-L). Trauma: healed fracture of right clavicle at medial end, poor apposition of bone ends with marked shortening, at the lateral end of the break the bone is angulated downwards in distal and posterior direction, joint surfaces are normal; there is no sign of infection or swelling of shaft. Possible depressed fracture on right parietal: a linear depression extending from sagittal suture, running downwards diagonally in a posterior direction. Right tibia has marked muscle insertions along the popliteal line.
Dental health	Moderate periodontal disease. AMTL (9/26), calculus (0/9), caries (0/9), DEH (0/9), abscess (0/26), sockets present (17/26). Maxillary left 1st incisor is chipped.

Right dentition									Left dentition							
Present	CON	P	AM	PM	AM	P	P	PM	P	P	PM	AM	-	-	P	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	4	-	-	-	4	4	-	-	5	-	-	-	-	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	CON	AM	AM	P	P	PM	P	PM	PM	PM	AM	AM	PM	AM	AM	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	3	3	-	4	-	-	-	-	-	-	-	-	-
Intrusive bone		Feet; left mandibular ramus lateral surface														
Comments		Staining on ossified cartilage, anterior and posterior, left side; right mandibular condyle														

Skeleton Number	1464 (group 1033)
Preservation	2
Completeness	41-60%
Fragmentation	low
Age	Mature adult (36-45 years)
Sex	Female
Stature	154.1 +/- 3.72 cm
Non-metric traits	Ossicle in lambdoid (left and right), parietal foramen (left and right), ossicle in coronal (left and right), ossicle at asterion (left), sutural mastoid foramen (left and right), bridging of supraorbital notch (left and right), double anterior calcaneal facet (left and right).
Pathology	SDJD: 3 thoracic vertebrae. DJD: left clavicle, right scapula, right lunate, right auricular surface, right proximal femur, left calcaneus. Extremely marked muscle insertions on left tibia which run the length of the popliteal line and almost obscure the nutrient foramen.
Dental health	AMTL (28/28), calculus (0/0), caries (0/0), DEH (0/0), abscess (0/28), sockets present (0/28).

Right dentition									Left dentition							
Present	AM	AM	AM	AM	AM	AM	-	-	-	-	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	4 1st ribs, skull, left tibia, all adult															
Comments	Staining proximal third of right femur shaft, anterior surface; left femur anterior surface of neck. 1 iron coffin nail, 1 fragment of iron coffin plate.															

Skeleton Number	1624 (group 1033)
Preservation	2
Completeness	0-20%
Fragmentation	medium
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	Ossicle in lambdoid (left and right), parietal foramen (left and right), ossicle at parietal notch (right), sutural mastoid foramen (left).
Pathology	DJD: right TMJ
Dental health	No dentition
Intrusive bone	Left and right parietal, left and right frontal, metopic suture, adult.
Comments	Staining on ectocranial surface left and right parietal across sagittal suture.

Group 1035

1.5.36 This group comprises three burials (1411, 1415, and 1615).

Skeleton Number	1411 (group 1035)															
Preservation	3															
Completeness	0-20%															
Fragmentation	Moderate															
Age	Mature adult (36-45 years)															
Sex	Female															
Stature	n/d															
Non-metric traits	Ossicle in coronal (left and right), bridging of supraorbital notch (right).															
Pathology	Possible ectocranial lesions on frontal, left and right parietals in vicinity of coronal suture, obscured by post-mortem erosion.															
Dental health	Considerable periodontal disease, AMTL (6/18), calculus (0/4), caries (3/4), DEH (0/4), abscess (0/18), sockets present (12/18).															
Right dentition									Left dentition							
Present	-	-	P	AM	PM	PM	PM	PM	PM	-	-	AM	AM	AM	P	PM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Sd	-
Wear	-	-	6	-	-	-	-	-	-	-	-	-	-	-	5	-
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	-	-	-	-	-	-	-	-	-	-	PM	PM	R	P	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	La	Mmb	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-
Intrusive bone	Yes															
Comments	Staining on left mandibular ramus															

Skeleton Number	1415 (group 1035)
Preservation	4
Completeness	21-40%
Fragmentation	moderate
Age	Adult (18+ years)
Sex	Male
Stature	n/d
Non-metric traits	Ossicle in coronal (left and right).
Pathology	SDJD, spinal OA: anterior surface of odontoid peg has mild osteophytes and porosity, and moderate eburnation.
Dental health	Considerable maxillary periodontal disease, moderate mandibular periodontal disease. Crowding of mandibular incisors, slight rotation of mandibular left canine. AMTL (10/31), calculus (9/14), caries (6/14), DEH (2/14), abscess (2/31), sockets present (21/31). Abscess associated with maxillary right 2nd premolar is located at root tip, circular and smooth-walled with max. diameter of 12.55 mm, increased porosity of alveolar bone. Abscess associated with maxillary left 2nd premolar is located at root tip, circular and smooth-walled with max. diameter of 15.10 mm.

Right dentition									Left dentition							
Present	AM	P	AM	R	R	PM	PM	PM	PM	PM	R	AM	PM	P	AM	CON
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	Mb Sm m	-	La	La	-	-	-	-	-	La	-	-	Sm	-	-
Wear	-	4	-	-	-	-	-	-	-	-	-	-	-	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	AM	AM	AM	PM	P	P	P	P	P	P	P	P	P	AM	AM	AM
Calculus	-	-	-	-	Sb	Sbl	Sbl	Sbl	Sb	Sb	Sb	Sb	Sb	-	-	-
DEH	-	-	-	-	-	L(3)	-	-	-	-	L(3)	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	5	4	5	5	4	4	4	4	4	-	-	-
Intrusive bone																
Comments	Staining on proximal third of right femur, anterior surface; proximal third of left tibia, posterior surface; distal third of right humerus, anterior surface; Ectocranial surfaces of right orbit, left and right frontal, left temporal.															

Skeleton Number	1615 (group 1035)

Preservation	2
Completeness	0-20%
Fragmentation	Severe
Age	?adult (?18+ years)
Sex	?
Stature	n/d
Non-metric traits	Metopic suture
Pathology	none
Dental health	No dentition
Intrusive bone	none
Comments	Incomplete skull vault only, frontal, left and right parietal, abraded.

Group 1036

1.5.37 This group number was assigned to a single burial (1443).

Skeleton Number	1443 (group 1036)
Preservation	2
Completeness	0-20%
Fragmentation	Moderate
Age	Younger juvenile (1-2 years)
Sex	n/a
Stature	n/a
Non-metric traits	None
Pathology	Metabolic?: Porous and irregular new bone deposition on anterior surface of proximal shaft of right humerus. Left nasal floor is porous. Irregular new bone deposition on lateral and medial surfaces of right mandibular ramus. Right temporal has new bone deposition on endo- and ectocranial surfaces of squamous portion, sphenoid, pars basilaris, lateralis and parietals are also affected.
Dental health	AMTL (0/14), calculus (0/3), caries (0/3), DEH (0/3), abscess (0/14), sockets present (14/14).

Right dentition									Left dentition							
Present			-	PM	PM	PM	-	-	-	PM	PM	PM	P	UE		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			-	-	-	-	-	-	-	-	-	-	0	-		
Maxilla			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Mandible			**6**	**e**	**d**	**c**	**b**	**a**	**a**	**b**	**c**	**d**	**e**	**6**		
Present			UE	PM	P	E	PM	PM	PM	PM	-	-	-	-		
Calculus			-	-	-	-	-	-	-	-	-	-	-	-		
DEH			-	-	-	-	-	-	-	-	-	-	-	-		
Caries			-	-	-	-	-	-	-	-	-	-	-	-		
Wear			-	-	0	-	-	-	-	-	-	-	-	-		
Intrusive bone	None															

Comments	Staining on visceral surfaces of two rib shaft fragments. 1 iron coffin nail or fitting.

Group 1038

1.5.38 This group number was assigned to a single burial (1492).

Skeleton Number	1492 (group 1038)
Preservation	2
Completeness	0-20%
Fragmentation	Severe
Age	Non-adult
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	none
Dental health	No dentition
Intrusive bone	Yes – probably two burials
Comments	Fragmented right tibia and fibula only. Proximal ends are unfused. Staining on posterior surface of right tibia.

Group 1039

1.5.39 This group comprises three burials (1452, 1470, and 1509).

Skeleton Number	1452 (group 1039)
Preservation	2
Completeness	21-40%
Fragmentation	Slight
Age	Prime adult (26-35 years). Based solely on dental attrition. 3rd molar roots are incomplete
Sex	?
Stature	n/d
Non-metric traits	Posterior condylar canal open (left and right), double anterior calcaneal facet (left and right)
Pathology	SDJD: 1 thoracic vertebra, 1 lumbar vertebra. DJD: left proximal femur
Dental health	Slight periodontal disease. AMTL (0/18), calculus (1/17), caries (8/17), DEH (8/17), abscess (1/18), sockets present (17/18). Externally draining abscess associated with mandibular left 1st molar, located at root tips, circular and sharp-walled, max. diameter 6.98 mm. Rotation of maxillary right 2nd incisor.

Right dentition									Left dentition							
Present	-	-	P	P	P	/	P	P	P	P	P	P	P	P	-	P
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	Sb	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	Sd	-	-	-	Sbm	-	Md	-	-	-	Ms Md	-	-	-
Wear	-	-	4	3	3	-	2	2	2	2	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	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	La	La	-	-
Wear	-	-	-	-	-	2	2	-	-	-	-	-	-	-	2	-
Intrusive bone																
Comments	Staining on proximal half of shaft of right humerus, anterior surface.															

Skeleton Number	1470 (group 1039)
Preservation	2
Completeness	61-80%
Fragmentation	Slight
Age	Mature adult (36-45 years)
Sex	Male
Stature	169.6 +/- 3.29 cm
Non-metric traits	None
Pathology	SDJD: 5 thoracic and 4 lumbar vertebrae. DJD: left and right medial clavicle, left scapula, left and right acetabulum, left and right auricular surface. Trauma: haematoma located at midshaft of right femur associated with healed periostitis, 86.07 mm (P-D) x 13.69 mm (A-P). Healed fracture of nasal bone: line of fracture is running horizontally across nasal bones, c 13 mm below glabella, there is marked deviation of bone below fracture line towards the right, 3 comminuted fragments have fused together.
Dental health	Moderate maxillary periodontal disease, slight mandibular periodontal disease. AMTL (3/32), calculus (26/28), caries (1/28), DEH (0/28), abscess (0/32), sockets present (29/32). Pipe facets are present on left maxillary 2nd incisor, canine and mandibular canine, creating a circular gap measuring 5.68 mm in diameter. Crowding and rotation of mandibular incisors and canines.

Right dentition									Left dentition							
Present	AM	P	P	P	P	P	P	PM	P	P	P	PM	P	AM	P	R
Calculus	-	Fb	Fb	Slb	Mb	Slb	-	-	Slb	Slb	Slb	-	Slb	-	Slb	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	La
Wear	-	4	5	4	4	3	3	-	3	3	3	-	4	-	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	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Calculus	Slb Fl	Sll	Slb Fl	Slb Fl	Slb	Slb Ml	Slb	Mb	Slb	Slb	Slb	Fb Sll	Fb Sll	Mb Slb	Sll	Slbl
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	4	4	5	3	3	3	3	3	3	3	4	4	4	5	4	3

Intrusive bone	Frontal and humerus shaft
Comments	Staining on posterior surface of left femur head, medial right ischium, lateral left ilium immediately anterior to acetabulum, frontal and parietals overlying bregma.

Skeleton Number	1509 (group 1039)
Preservation	2
Completeness	21-40%
Fragmentation	Slight
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	Ossicle in coronal (left and right), sutural mastoid foramen (left and right), double anterior calcaneal facet (left and right).
Pathology	DJD: right scapula, right distal femur, right distal fibula. Left and right petrous each have an area of porosity on the anterior surface close to the squamous portion, left measures 5.74 mm (A-P), right measures 5.36 mm (A-P). Small irregular lytic defect immediately below right glenoid, max. length 6 mm (P-D). Right femur, medial epicondyle anterior surface, irregular erosive lesion, max. length 14.10 mm (P-D). Two smaller lesions on lateral epicondyle, measure 2.24 and 2.5 mm
Dental health	No dentition
Intrusive bone	
Comments	

Group 1042

1.5.40 This group number was assigned to a single burial (1533).

Skeleton Number	1533 (group 1042)
Preservation	1
Completeness	61-80%
Fragmentation	slight
Age	Mature adult (36-45 years)
Sex	Male
Stature	165.9 +/- 3.29
Non-metric traits	Ossicle in lambdoid (left and right), parietal foramen (right), ossicle in coronal (left and right), mastoid foramen extrasutural (left), sternal foramen, double anterior calcaneal facet (right).
Pathology	SDJD: 2 cervical and 6 thoracic vertebrae. DJD: left and right clavicles, right auricular surface, left proximal femur, right proximal tibia. Left and right radial tuberosities have mild osteophytes on medial side. Moderate osteophytes on lateral side of calcaneus, proximal rim of facet for cuboid. Non-specific infection: left and right tibia, healed periostitis, distal end, anterior, medial and posterior surfaces are affected. Slightly more diffuse on right tibia, max. length 65.41 mm (P-D) from distal end. Left tibia, max. length 29.24 mm (P-D). Trauma: four healed rib fractures: midshaft of left 2, right 3, right 6 and 7. Callus and

	healed periostitis present on caudal surface of right 7. Marked muscle insertions left and right femora, linea aspera.															
Dental health	AMTL (30/30), calculus (0/0), caries (0/0), DEH (0/0), abscess (2/30), sockets present (0/30). Circular defects at root tips of maxillary right canine and maxillary left 1st premolar, both are smooth-walled with associated porosity of the alveolar bone, max. diameters 3.98 mm and 6.63 mm (M-L).															
Right dentition									Left dentition							
Present	-	-	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	Odontoid peg, adult.															
Comments	Staining on medial shaft of right humerus just below midshaft; posterior surface of right calcaneus.															

Group 1043

1.5.41 This group comprises two burials (1513, 1546).

Skeleton Number	1513 (group 1043)
Preservation	2
Completeness	0-20%
Fragmentation	Severe
Age	Adult (18+ years)
Sex	?
Stature	n/d
Non-metric traits	None
Pathology	SDJD: 2 thoracic and 4 lumbar vertebrae. DJD: right auricular surface and right proximal femur.
Dental health	No dentition
Intrusive bone	None
Comments	Staining of midshaft of left femur. Rib and maxillary right 1st molar sampled for isotope analysis.

Skeleton Number	1546 (group 1043)
Preservation	3
Completeness	21-40%
Fragmentation	Moderate
Age	Young adult (18-25 years)

Sex	Male															
Stature	n/d															
Non-metric traits	Ossicle in coronal (left and right).															
Pathology	DJD: right acetabulum and right auricular surface. Small circular lytic defect n base of right nasal aperture, trabecular bone visible, max. diameter 3.91 mm (M-L)															
Dental health	Slight periodontal disease. AMTL (0/16), calculus (0/16), caries (5/16), DEH (6/16), abscess (0/16), sockets present (16/32).															
Right dentition									Left dentition							
Present	E	P	P	P	P	P	P	P	P	P	P	P	P	P	P	E
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	L	L	L	L	L	L	-	-	-	-	-
Caries	So	-	So	Sm	-	-	-	-	-	-	-	-	-	So	-	Sl
Wear	3	3	3	2	2	2	2	3	3	1	2	2	2	2	2	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone	Deciduous dentition, all molars and right maxillary canine															
Comments	Right 2nd rib and maxillary left 1st molar sampled for isotope analysis.															

Skeleton 1435

1.5.42 Originally identified as disarticulated material, during osteological analysis, this deposit was identified as a partial skeleton.

Skeleton Number	1435
Preservation	2
Completeness	21-40%
Fragmentation	Moderate
Age	Young adult (18-25 years)
Sex	Female
Stature	n/d
Non-metric traits	Ossicle in lambdoid (left), parietal foramen (left and right), ossicle in coronal (left and right)
Pathology	none
Dental health	No dentition
Intrusive bone	Two fragments of parietal, adult. Eight fragments of non-adult frontal and parietal with staining on frontal.
Comments	

Partial skeletons described as disarticulated from 1611

Skeleton Number	1611a
Preservation	1
Completeness	21-40%

Fragmentation	moderate															
Age	40-44 years (mature adult)															
Sex	male															
Stature	n/d															
Non-metric traits	none															
Pathology	DJD: right glenoid (mild porosity), left lateral clavicle (mild porosity). Non-specific infection: periostitis on visceral surfaces of three rib shaft fragments.															
Dental health	AMTL (2/2), calculus (0/0), caries (0/0), DEH (0/0), abscess (0/2), tooth positions present 2.															
Right dentition									Left dentition							
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-			-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-	AM	AM	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Intrusive bone																
Comments	All surviving bone is a distinctive light colour. Staining on anterior and posterior surfaces of right pubis.															

Skeleton Number	1611b
Preservation	2
Completeness	21-40%
Fragmentation	moderate
Age	Neonate (36-38 weeks)
Sex	n/a
Stature	n/a
Non-metric traits	none
Pathology	Lytic lesion on lateral surface of right ilium, circular, max. diameter 1.72 mm (A-P). Irregular and porous new bone deposition: patchy on anterior and posterior surface of left and right humeral shafts; entire caudal surface of a 2nd right rib; right half of mandible, severe on entire lateral surface, more diffuse on medial surface.
Dental health	No surviving dentition.

1.6 Appendix 5: Disarticulated human bone catalogue

Context	Bone element	Bone	Side	% of bone	Surface preservation	No. of fragments	Age	Sex	Other
27	mandible	complete	n/a	100	3	1	infant	n/a	no surviving dentition, mental symphysis fused
27	cranium	frontal	left	80	3	1	infant	n/a	metopic suture fused
27	maxillary deciduous I1	complete	left	1	3	1	infant	n/a	small distal caries
40	patella	complete	left	100	4	1	adult	?	
40	Radius	midshaft	right	50	4	1	adult?	?	
40	CV1	complete	n/a	100	2	1	adult	?	
40	CV2	complete	n/a	100	2	1	adult	?	
40	CV3	complete	n/a	100	2	1	adult	?	
40	CV4	complete	n/a	100	2	1	adult	?	
40	CV5	complete	n/a	100	2	1	adult	?	
40	TV1	complete	n/a	100	2	1	adult	?	
40	mandible	missing condyles	n/a	80	3	1	adult	female	wear grade 1, large buccal caries, AMTL (4/13), caries (1/4), calculus (0/4), DEH (0/4), abscess (0/15)
55	cranium	frontal, parietal, occipital		70	3	1	adult	female?	
58	ox coxae	pubis	right	100	3	1	infant	n/a	
63	cranium	frontal	left	100	3	1	young adult	?	
92	cranium	parietal	?	40	4	3	non-adult	n/a	
96	Ulna	proximal, shaft and distal	left	100	3	1	neonate	n/a	
1109	1st sacral body	partial body and arch	n/a	50	3	1	adult	?	
1109	LV5	arch fragment	n/a	50	3	1	adult	?	
1128	Femur	midshaft	left	40	4	1	adult	?	
1128	Femur	midshaft	left	50	4	1	adult	?	
1128	Femur	midshaft	right	40	4	1	adult	?	
1128	Femur	midshaft	right	40	4	1	adult	?	
1128	Femur	proximal articulation	right	20	4	1	adult	?	mild porosity and osteophtyes
1128	Tibia	midshaft	left	30	4	1	adult	?	
1128	Tibia	distal articulation	left	20	4	1	adult	?	
1128	Tibia	distal articulation	left	20	4	1	adult	?	
1128	ox coxae	complete	right	60	3	1	adult	?	
1128	ox coxae	ilium	left	40	3	1	adult	?	
1128	TV11-12	bodies and arches	n/a	90	3	1	adult	?	compression fracture of TV11
1128	Rib	shaft fragments	?	20	4	13	adult	?	
1128	Radius	shaft and distal	right	50	4	1	adult	?	

		articulation							
1128	Radius	complete	left	100	3	2	adult	?	
1128	Ulna	shaft and distal articulation	right	50	3	1	adult	?	
1128	Ulna	slight damage to ends	left	90	3	1	adult	?	
1128	humerus	midshaft	left	60	5	1	adult	?	
1128	cranium	frontal	left	70	2	1	non-adult	n/a	unfused metopic suture
1128	cranium	frontal	left and right	80	4	3	adult	male?	
1128	cranium	temporal	left	70	4	1	adult	male?	
1128	LV5	body and right arch	n/a	80	4	1	adult	?	moderate osteophtyes on superior body
1128	TV12	body	n/a	60	4	1	adult	?	mild osteophytes on superior body
1128	TV11	body	n/a	30	4	1	adult	?	mild osteophytes on inferior body
1128	cranium	occipital	n/a	90	3	3	younger juvenile	n/a	pars basilaris and pars lateralis are unfused
1128	cranium	parietal	left	80	3	1	non-adult	n/a	
1128	cranium	frontal	left	100	2	1	infant	n/a	PHOTO unfused metopic suture, endocranial and ectocranial lesions, entire bone affected with exception of orbit
1128	vertebrae	3 upper thoracic bodies	n/a	30	4	1	adult	?	anterior fusion of bodies, disc space maintained
1142	humerus	midshaft	left	75	3	1	adult	?	
1142	Radius	distal end	left	50	3	1	adult	?	
1142	cranium	frontal rim	left	60	3	1	adult	male	
1142	Tibia	midshaft	right	60	3	1	adult	?	
1142	2nd metacarpal	complete	right	100	3	1	adult	?	articulates with bone below
1142	3rd metacarpal	complete	right	100	3	1	adult	?	
1142	cranium	parietal	right	70	2	1	non-adult	n/a	
1142	Tibia	midshaft	left	70	3	1	adult	?	
1142	Fibula	midshaft	left	70	3	1	adult	?	
1142	humerus	shaft and distal articulation	left	50	3	1	adult	?	
1142	CV1	complete	n/a	100	3	1	adult	?	articulates with bone below
1142	CV1	complete	n/a	100	3	1	adult	?	
1142	1st metatarsal	complete	right	100	3	1	adult	?	articulates with 2nd and 3rd below
1142	2nd metatarsal	complete	right	100	3	1	adult	?	
1142	3rd metatarsal	complete	right	100	3	1	adult	?	
1142	1st proximal hand phalanx	complete	right	100	3	1	adult	?	articulates with 2nd-4th below
1142	2nd proximal hand phalanx	complete	right	100	3	1	adult	?	

1142	3rd proximal hand phalanx	complete	right	100	3	1	adult	?	
1142	4th proximal hand phalanx	complete	right	100	3	1	adult	?	
1161	Rib	2 shaft, 1 sternal end	right	30	2	3	adult?	?	all three fragments have periosteal lesions on visceral surfaces, light grey, woven bone, sternal fragment has lytic lesions which is irregular in shape, measures 13.46 (M-L) x 3.44 (P-D)
1166	cranium	parietal	right	60	3	2	adult	?	
1166	scapula	right	glenoid	30	3	2	adult	?	
1166	cranium	petrous	left	100	3	1	adult	?	
1166	trapezium	complete	left	100	3	1	adult	?	
1166	scapula	blade fragments	left	50	3	3	?	?	
1166	cranium	squamous portion	left	40	3	1	adult	?	
1178	Rib	midshaft	right	30	3	2	adult	?	
1178	Rib	midshaft	left	20	3	2	?	?	
1178	Rib	shaft	?	10	3	3	?	?	
1178	patella	complete	right	100	2	1	adult	?	
1178	patella	complete	right	100	2	1	adult	?	
1178	scapula	missing portion of glenoid	right	90	3	1	adult	?	mild marginal osteophtyes
1178	ox coxae	proximal pubic symphysis	left	40	3	1	adult	?	
1178	clavicle	midshaft	left	50	3	2	adult	?	
1178	Ulna	midshaft	right	40	3	1	adult	?	
1178	Femur	distal shaft and articulation	left	30	3	1	adult	?	
1178	Femur	distal shaft and articulation	right	30	3	1	adult	?	
1178	calcaneus	complete	right	100	3	1	adult	?	
1178	Talus	complete	left	100	3	1	adult	?	
1178	1st metacarpal	distal articulation	left	50	3	1	adult	?	
1178	1st metacarpal	complete	right	50	3	1	adult	?	
1178	5th metacarpal	complete	left	100	2	1	adult	?	
1178	3rd metacarpal	proximal articulation	left	50	3	1	adult	?	articulates with bone below
1178	2nd metacarpal	complete	left	100	3	1	adult	?	
1178	4th metacarpal	complete	left	100	2	1	adult	?	
1178	2nd metacarpal	proximal articulation and shaft	right	70	3	1	adult	?	
1178	CV2	complete	n/a	100	3	1	adult	?	moderate osteophytes on odontoid peg
1178	CV3	complete	n/a	100	3	2	adult	?	left transverse foramen

1178	CV4	body	n/a	50	3	1	adult	?	
1178	CV5	body and left side of arch	n/a	70	3	1	adult	?	
1178	Femur	midshaft	left	60	3	1	adult	?	
1178	Tibia	midshaft	left	60	3	1	adult	?	
1179	cranium	petrous	right	100	3	1	adult	?	
1190	cranium	parietal	?	20	3	1	adult?	?	
1190	3rd intermediate hand phalanx	complete	right	100	2	1	?	?	
1190	Radius	shaft and distal articulation	right	50	3	1	infant	n/a	
1190	maxillary canine	complete	left	100	2	1	XXXXX	?	2 small mesial caries, mild lingual and distal calculus
1190	mandibular canine	complete	right	100	2	1	XXXXX	?	gross caries, most of mesial and distal crown destroyed
1190	mandibular PM2	complete	left	100	2	1	XXXXX	?	corrosion products adhering
1191	Rib	midshaft unidentified	left	30	4	1	adult?	?	
1191	vertebra	unidentified	n/a	25	4	1	adult	?	
1191	deciduous maxillary M1	complete	right	100	3	1	non-adult	n/a	
1191	deciduous mandibular PM1	complete	right	100	3	1	non-adult	n/a	
1191	deciduous mandibular I2	complete	right	100	3	1	non-adult	n/a	
1191	permanent mandibular I1	crown	right	50	3	1	non-adult	n/a	
1191	permanent mandibular I1	crown	left	50	3	1	non-adult	n/a	
1191	permanent mandibular I2	crown	left	50	3	1	non-adult	n/a	
1191	permanent mandibular C	crown	left	50	3	1	non-adult	n/a	
1198	cranium	frontal	n/a	40	3	1	adult	?	
1198	cranium	temporal	right	90	3	1	adult	?	
1198	cranium	sphenoid	n/a	60	3	1	adult	?	
1198	Tibia	midshaft	left	70	3	1	adult	?	
1200	deciduous mandibular M1	complete tooth	left	100	3	1	non-adult	n/a	

1200	permanent mandibular M1	complete tooth	right	100	3	1	adult	?	grade 4 wear
1206	mandible	ramus and posterior teeth	right	35	3	1	young adult	male	right PM2, M1, M2, M3 in sockets, grade 2 wear
1206	cranium	temporal	right	90	2	1	adult	?	not associated with mandible above
1206	1st metacarpal	distal articulation	right	30	2	1	?	?	
1206	humerus	shaft and distal articulation	right	70	3	1	adult	?	
1206	Rib	midshaft	right	30	3	10	adult	?	
1206	humerus	proximal articulation and shaft	left	60	3	1	adult	?	
1206	TV12?	complete	n/a	100	3	1	adult	?	
1206	humerus	proximal articulation and shaft	right	60	3	1	infant?	n/a	
1227	mandible	complete	n/a	100	3	1	adult	male?	AMTL 16/16), complete resorption of sockets
1227	clavicle	midshaft	left	40	3	1	adult?	?	
1227	Talus	complete	right	100	3	1	adult	?	
1262	patella	complete	left	100	2	1	adult	?	
1262	Femur	proximal end missing, damage to distal articulation	left	80	2	1	adult	?	meric index 79.3
1262	Tibia	complete	left	100	2	1	adult	?	cnemic index 75.4, max. length 355, staining on lateral side of midshaft
1262	Fibula	shaft and distal articulation	left	50	2	1	adult	?	
1267	cranium	frontal and parietals		90	3	1	adult	?	hair surviving
1268	cranium	frontal, parietals, occipital, left temporal	n/a	80	3	1	adult	male	
1268	mandible	complete	left and right	100	3	1	adult	male	32 tooth positions present, AMTL (5/16), no teeth surviving
1281	Ilium	complete	right	100	2	1	infant	n/a	
1281	humerus	shaft and distal articulation	left	70	2	1	infant	n/a	
1298	calcaneus	complete	left	100	2	1	adult	?	
1298	1st metatarsal	complete	left	100	2	1	adult	?	
1298	2nd metatarsal	complete	left	100	2	1	adult	?	
1298	3rd metatarsal	complete	left	100	2	1	adult	?	
1298	5th metatarsal	complete	left	100	2	1	adult	?	
1298	calcaneus	complete	right	100	2	1	adult	?	

1298	1st metatarsal	complete	right	100	2	1	adult	?	
1298	2nd metatarsal	complete	right	100	2	1	adult	?	
1298	3rd metatarsal	complete	right	100	2	1	adult	?	
1298	4th metatarsal	complete	right	100	2	1	adult	?	
1298	5th metatarsal	complete	right	100	2	1	adult	?	
1311	cranium	vault fragment	?	20	3	1	non-adult	n/a	
1320	Ilium	missing auricular surface	right	70	4	1	non-adult	n/a	
1320	Femur	shaft only	right	70	4	1	non-adult	n/a	
1320	ox coxae	ilium	right	30	4	1	adult	?	
1326	3rd proximal hand phalanx	complete	right	100	3	1	adult	?	
1341	Femur	midshaft	right	70	3	1	adult	?	meric index 82.1
1341	Tibia	midshaft	right	70	3	1	adult	?	
1341	Fibula	midshaft	right	70	3	1	adult	?	
1341	humerus	midshaft	left	60	4	2	adult	?	
1341	Radius	midshaft	right	60	4	1	adult	?	
1341	cranium	frontal	right	80	3	2	adult	?	metopic suture, staining above glabella
1341	cranium	zygomatic	right	100	3	1	adult	?	
1341	Rib	shaft fragments	right	40	4	11	adult	?	
1346	mandible	missing right condyle	n/a	90	3	1	adult	prime adult	Moderate periodontal disease, AMTL (2/14), calculus (11/11), caries (0/11), DEH (0/11), abscess (0/14), retention of deciduous M1s
1362	Femur	midshaft	left	50	4	6	adult	?	
1362	Ulna	proximal articulation and shaft	right	40	3	1	adult	?	
1362	Ulna	midshaft	left	30	3	2	adult	?	
1373	Femur	proximal articulation	right	20	4	1	adult	?	
1378	cranium	temporal	right	100	2	1	younger juvenile	n/a	porous and woven new bone deposition covers mastoid process, similar endocranial lesions posterior to petrous
1378	1st metatarsal	proximal articulation and shaft	left	80	3	1	?	?	
1378	5th metatarsal	proximal articulation and shaft	left	80	3	1	?	?	
1383	Talus	complete	right	100	3	1	adult	?	
1383	Femur	proximal epiphysis	right	100	3	1	non-adult	n/a	
1383	TV7	arch	n/a	50	3	1	adolescent	n/a	unfused annular rings
1383	TV8	whole arch, right	n/a	60	3	1	adolescent	n/a	unfused annular rings

		side of body							
1383	TV9	whole arch, right side of body	n/a	60	3	1	adolescent	n/a	unfused annular rings
1383	TV10	whole arch, right side of body	n/a	60	3	1	adolescent	n/a	unfused annular rings
1383	TV11	virtually complete	n/a	90	3	1	adolescent	n/a	unfused annular rings
1383	TV12	virtually complete	n/a	90	3	1	adolescent	n/a	unfused annular rings
1383	Ribs	ribs 2-8, all missing sternal ends	right	80	3	1	adult	?	All visceral surfaces have very thick deposits of periosteal new bone deposition, covered by thin layers of finely pitted grey woven bone
1383	Talus	complete	right	100	2	1	adult	?	
1388	Rib	2nd missing sternal end	right	80	2	1	neonate		porous and woven new bone deposition on caudal surface
1388	Rib	midshaft	?	30	2	1	neonate		
1388	Ilium	complete	right	100%	2	1	neonate	34-36 w	porous and woven new bone deposition covers all of lateral surface and anterior half of medial surface, max. length 30.23 mm, max. width 24.92 mm
1388	cranium	temporal	right	100%	2	1	neonate		porous and woven new bone deposition, entire ectocranial and endocranial surfaces are affected
1388	Radius	complete	left	100%	2	2	adult		healed Colles fracture, shaft is thickened, good apposition of ends
1388	cranium	zygomatic	right	100%	4	1	adult	?	
1388	cranium	occipital	n/a	70%	2	3	non-adult	n/a	
1388	cranium	temporal	left	60%	2	1	non-adult	n/a	
1388	cranium	temporal	right	60%	2	1	non-adult	n/a	
1388	cranium	frontal	left	40%	3	1	non-adult	n/a	active cribra orbitalia type 4
1388	cranium	parietal	left	100%	2	7	non-adult	n/a	
1388	cranium	parietal	right	100%	2	6	non-adult	n/a	
1388	Rib	shaft	left?	30%	3	3	non-adult	n/a	
1388	vertebra	lumbar arch	n/a	50%	3	1	non-adult	n/a	
1388	Femur	proximal half	left	60	3	1	adult	?	meric index 78
1388	Radius	complete	left	100	3	2	adult	?	
1388	Ulna	proximal half	left	50	3	1	adult	?	
1388	Radius	proximal half	right	50	3	1	adult	?	
1388	Fibula	shaft	?	40	3	3	adult	?	
1388	cuboid	?	left	60	3	1	adult	?	
1388	5th metacarpal	damage to proximal and distal articulations	right	90	3	1	adult	?	
1388	4th metacarpal	damage to proximal and distal articulations	left	90	3	1	adult	?	

1393	Rib	missing sternal end	left	80	2	1	infant	n/a	
1394	Rib	sternal end	?	20	2	1	infant	n/a	
1394	Radius	proximal half	right	50	2	1	infant	n/a	
1401	humerus	midshaft	right	40	2	1	adult	?	
1401	Rib	shaft fragment	?	10	2	1	?	?	
1401	Rib	2nd complete	right	100	2	1	infant	n/a	
1401	maxilla	complete	left	100	2	1	younger juvenile	n/a	18 months +/- 6 months, AMTL (1/5), calculus (0/3), caries (0/3), DEH (1/3), abscess (1/5)
1401	Tibia	midshaft	right	40	2	1	adult	?	
1401	Rib	2nd head end	left	30	2	1	adult	?	
1401	cranium	frontal, parietals, occipital	n/a	60	2	1	adult	female	
1401	Rib	1st head end	right	40	2	1	adult	?	
1401	cranium	frontal	left and right	100	2	1	non-adult	n/a	metopic suture fused
1401	cranium	zygomatic	right	100	2	1	non-adult	n/a	
1401	cranium	parietal	left	40	2	2	non-adult	n/a	staining
1401	cranium	temporal	right	60	2	1	non-adult	n/a	
1401	calcaneus	complete	left	100	3	1	adult	?	
1401	Talus	complete	left	100	3	1	adult	?	
1435	cranium	parietal	?	40	2	2	adult	?	
1435	cranium	frontal	left and right	60	2	3	non-adult	n/a	staining on ectocranial surface
1435	cranium	parietal	left	70	2	5	non-adult	n/a	
1463	cranium	temporal	right	70	4	1	adult	?	
1463	cranium	petrous	left	80	4	1	adult	?	
1467	Rib	shaft fragments	?	30	3	1	non-adult	n/a	
1467	Rib	shaft	?	20	3	1	adult	?	
1467	humerus	midshaft	left	30	3	2	adult	?	
1467	Radius	midshaft	left	30	3	4	adult	?	
1467	Ulna	midshaft	left	30	3	1	adult	?	
1467	Pelvis	ilium	left	60	3	6	adult	?	
1467	Femur	proximal articulation and shaft	left	80	3	3	adult	?	
1467	S1	missing right ala	n/a	65	2	1	adult	?	
1471	cranium	frontal	left and right	90	3	1	adult	female?	
1474	cranium	parietal	left	50	3	1	adult	?	
1474	cranium	parietal	right	50	3	1	adult	?	
1474	cranium	frontal	right	40	4	1	adult	male?	
1474	cranium	temporal	left	45	4	1	adult	?	
1474	cranium	temporal	right	50	3	1	non-adult	n/a	

1474	cranium	zygomatic	right	50	3	1	non-adult	n/a	
1474	cranium	frontal	right	30	3	1	non-adult	n/a	
1483	patella	complete	left	100	3	1	adult	?	
1483	1st proximal foot phalanx	complete	right	100	4	1	adult	?	
1483	3rd metacarpal	complete	right	100	4	1	adult	?	
1483	2nd metacarpal	complete	right	100	4	1	adult	?	articulates with bone below
1483	2nd proximal hand phalanx	complete	right	100	4	1	adult	?	
1483	CV1	complete	n/a	100	4	1	adult	?	
1483	CV2	complete	n/a	100	4	1	adult	?	articulates with bone below
1516	Tibia	shaft and distal articulation	right	80	2	3	adult	F?	bagged with skeleton 1517 but clearly not associated, cnemic index 71.2
1516	Fibula	shaft and distal articulation	right	90	2	1	adult	?	bagged with skeleton 1517 but clearly not associated, area of healed periostitis on lateral surface above malleolus, 17.77 (A-P) x 34.19 (P-D)
1516	patella	complete	left	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	humerus	complete	right	100	2	1	adult	F	bagged with skeleton 1517 but clearly not associated, max. length 285, midshaft diameter 18.37, epicondylar 52.98, humeral head 41.72, mild porosity on humeral head, lytic defect on posterior rim of head
1516	Ulna	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated, max. length 250
1516	Radius	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated, max. length 229, radial head 19.55
1516	capitate	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	hamate	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	Lunate	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	scaphoid	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	trapezoid	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	trapezium	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	triquetral	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	1st metacarpal	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated

1516	2nd metacarpal	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	3rd metacarpal	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	4th metacarpal	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	5th metacarpal	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	3rd proximal hand phalanx	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	4th proximal hand phalanx	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	5th proximal hand phalanx	complete	right	100	2	1	adult	?	bagged with skeleton 1517 but clearly not associated
1516	navicular	complete	left	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517, mild porosity on tubercle
1516	medial cuneiform	complete	left	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	lumbar vertebra	arch fragment	n/a	40	3	1	adult		labelled as disarticulated (1516) associated with skeleton 1517
1516	lumbar vertebra	body	n/a	30	2	1	?	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	1st proximal hand phalanx	complete	right	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	2nd proximal hand phalanx	complete	right	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	2nd intermediate hand phalanx	complete	right	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	4th intermediate hand phalanx	complete	right	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	5th distal hand phalanx	complete	right	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	5th proximal foot phalanx	complete	right	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	scapula	missing most of blade	right	50	2	1	adult	?	glenoid length 50.67
1516	5th proximal foot phalanx	complete	left	100	2	1	adult	?	labelled as disarticulated (1516) associated with skeleton 1517
1516	Femur	shaft and distal articulation	right	80	2	1	adult	?	bagged with skeleton 1517 but clearly not associated. meric index 89.3, epicondylar width 63.58
1526	Femur	lateral condyle	right	10	3	1	adult	?	

1534	CV2	odontoid peg	n/a	10	3	1	?	?	
1541	4th metacarpal	complete	right	100	2	1	adult	?	
1541	4th metacarpal	complete	left	100	2	1	adult	?	
1547	maxillary deciduous M1	complete	left	100	3	1	non-adult	n/a	
1547	maxillary deciduous m1	complete	right	100	3	1	non-adult	n/a	
1547	mandibular deciduous M1	complete	right	100	3	1	non-adult	n/a	
1547	mandibular deciduous M1	complete	left	100	3	1	non-adult	n/a	
1547	maxillary deciduous canine	complete	right	100	3	1	non-adult	n/a	
1556	Femur	distal shaft	?	30	3	1	adult?	?	
1619	cranium	petrous	right	90	3	1	infant	?	
1625	cranium	frontal	right	60	3	2	adult	male	
1625	cranium	parietal	left	45	3	1	adult	?	
1625	cranium	parietal	right	50	3	2	adult	?	
1625	CV2	complete	n/a	100	3	1	adult	?	mild osteophtyes and eburnation on left inferior facet
1625	CV2	left half	left	50	3	1	adult	?	
1625	CV3	complete	n/a	100	3	1	adult	?	mild osteophtyes and eburnation on left superior facet
1625	Ulna	proximal shaft	right	30	3	1	adult	?	
1625	mandible	missing condyles	n/a	80	2	1	younger juvenile	n/a	AMTL (0/10), calculus (0/3), caries (0/3), DEH (0/3), abscess (0/10), tooth positions present 10
1625	Rib	unidentified	?	40	2	1	non-adult	n/a	
1626	clavicle	midshaft	left	30	2	1	non-adult	n/a	
1626	humerus	shaft and distal articulation	right	70	2	1	non-adult	n/a	
1626	humerus	midshaft	left	60	2	1	non-adult	n/a	
1911	deciduous maxillary M1	complete	left	100	3	1	non-adult	n/a	
U/S	cranium	frontal	left	60	3	1	adult	male?	metopic suture, ossicles in coronal (left)
U/S	Radius	complete	left	100	3	1	adult	female?	max. length 236, radial head diameter 19.2
U/S	Radius	proximal half	right	50	3	1	adult	?	
U/S	Ulna	shaft and distal articulation	right	60	3	1	adult	?	
U/S	Radius	midshaft	right	30	4	1	adult	?	
U/S	Tibia	midshaft	left	30	3	1	adult	?	
U/S	mandible	missing rami	n/a	90	3	1	younger juvenile	n/a	18 months +/- 6 months, AMTL (0/10), calculus (0/3), caries (0/3), DEH (0/3), abscess (0/10)

1.7 Appendix 7: Grip and grip plate catalogue

Context No.	Sk. No.	Grip	Material	Pattern	CCS Type	Other Typology	Max. length (mm)	Notes	Grip plate	Material	pattern	CCS Type	Other typology
40		grip	Fe	no	CCS2a								
40		grip	Fe	no	CCS2a								
40		grip	Fe	no	CCS2a		c. 124						
40		grip	Fe	yes		SCH 1	c. 98						
40		grip	Fe	yes		SCH 1							
40		grip	Fe	yes		SCH 1	c. 100		grip plate	Fe	unid.	unid.	
40		grip	Fe	yes		SCH 1	c. 100		grip plate	Fe	unid.	unid.	
40		grip	Fe	yes		SCH 1	c. 100		grip plate	Fe	unid.	unid.	
40		grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	beaded curved chain pattern at base
40		grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1025		grip	Fe	yes	CCS2a		c. 124						
1025		grip	Fe	yes	CCS4		c. 130		grip plate	Fe	yes	unid.	
1025		grip	Fe	yes		SCH 1	c. 98	Painted black					
1101	1138	grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1101	1138	grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1109		grip	Fe	No	CCS2a or b								
1109		grip	Fe	No	CCS2a or b				grip plate	Fe	yes	unid.	
1109	1140	grip	Fe	Yes	unid.		<160		grip plate	Fe	unid.	unid.	
1109	1140	grip	Fe	Yes	unid.		<160		grip plate	Fe	unid.	unid.	
1109	1140	grip	Fe	Yes	unid.		<160		grip plate	Fe	unid.	unid.	
1113	1146	grip	Fe	Plain	CCS2a								

					or b								
1113	1146	grip	Fe	Plain	CCS2a or b								
1113	1146	grip	Fe	Plain	CCS2a or b		c. 125						
1113	1146	grip	Fe	Plain	CCS2a or b		c. 100						
1113	1146	grip	Fe	Plain	CCS2a or b								
1113	1146	grip	Fe	Plain	CCS2a or b								
1113	1146	grip	Fe	plain	CCS2a or b								
1113	1146	grip	Fe	plain	CCS2a or b			small					
1113	1146	grip	Fe	plain	CCS2a or b								
1113	1146	grip	Fe	plain	CCS2a or b								
1113	1146	grip	Fe	plain	CCS2a or b								
1113	1146	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1113	1146	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1113	1146	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1113	1146	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1113	1146	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1113	1146	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1113	1146	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1117		grip	Fe	yes	CCS4		150.38		grip plate	Fe	yes	unid.	
1117		grip	Fe	yes		SCH 6	105 mm	Diameter not length	grip plate	Fe	yes	unid.	no complete version found
1117		grip	Fe	yes		SCH 6	outer diameter = 105 mm		grip plate	Fe	yes	unid.	no complete version found

1117		grip	Fe	yes		SCH 6	outer diameter = 105 mm		grip plate	Fe	yes	unid.	no complete version found
1117		grip	Fe	yes		SCH 6	outer diameter = 105 mm		grip plate	Fe	yes	unid.	no complete version found
1117		grip	Fe	yes		SCH 6	outer diameter = 105 mm		grip plate	Fe	yes	unid.	no complete version found
1117		grip	Fe	yes		SCH 6	outer diameter = 105 mm; painted black		grip plate	Fe	yes	unid.	no complete version found
1117		grip	Fe	yes		SCH 6	outer diameter = 105 mm		grip plate	Fe	yes	unid.	no complete version found
1117		grip	Fe	no	unid.			painted black	grip plate	Fe	yes	unid.	
1117		grip	Fe	yes	CCS4 - 6				grip plate	Fe	yes	unid.	plain ovoid in centre but rest of pattern undeterminable
1117		grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1117		grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	plain ovoid in centre but rest of pattern undeterminable
1118		grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1118		grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1128		grip	Fe	yes	CCS4 - 6				grip plate	Fe	yes	unid.	
1128		grip	Fe	yes	CCS4 - 6				grip plate	Fe	yes	unid.	
1142		grip	Fe	no	CCS2a		c. 120						

1142		grip	Fe	no	CCS2b		c. 120						
1142		grip	Fe	yes		SCH 6							
1147	1150	grip	Fe	yes	Unid.		c. 160		grip plate	Fe	yes	unid.	
1147	1150	grip	Fe	yes	Unid.		c. 160		grip plate	Fe	yes	unid.	
1147	1150	grip	Fe	yes	Unid.		c. 160		grip plate	Fe	yes	unid.	obscured by mud and wood
1151	n/a	grip	Fe	no	CCS2a or b		132		grip plate	Fe	yes	??	curved border as seen on cherubs BBM 3
1151	n/a	grip	Fe	unid.	Unid.			>122.50	grip plate	Fe	yes	unid.	
1151	n/a	grip	Fe	unid.	Unid.			>117.98	grip plate	Fe	yes	unid.	
1151	n/a	grip	Fe	unid.	Unid.			>107	grip plate	Fe	yes	unid.	
1151	n/a	grip	Fe	unid.	Unid.			>103.70					
1151	n/a	grip	Fe	unid.	Unid.			>145	grip plate	Fe	yes	unid.	
1151	n/a	grip	Fe	unid.	Unid.			>110, small					
1151	n/a	grip	Fe	unid.	Unid.		127		grip plate	Fe	yes	unid.	
1151	n/a	grip	Fe	unid.	unid.			>106.00	grip plate	Fe	yes	unid.	
1151	n/a	grip	Fe	unid.	Unid.		130		grip plate	Fe	yes	unid.	
1151	n/a	grip	Fe	unid.	Unid.			>114	grip plate	Fe	yes	unid.	
1161	1190	grip	Fe	yes	CCS 4-6		c115.00						
1161	1190	grip	Fe	yes	CCS 4-6			painted black					
1161	1190	grip	Fe	no	CCS2a		115.56	painted black	grip plate	Fe	yes	unid.	
1161	1190	grip	Fe	no	CCS2a		120	painted black					
1161	1190	grip	Fe	no	CCS2a		120	painted black					
1161	1190	grip	Fe	no	CCS2a			painted black					

1161	1190	grip	Fe	unid.	Unid.		>122		grip plate	Fe	yes	unid.	curved border as seen on cherubs
1161	1190	grip	Fe	unid.	Unid.		>125		grip plate	Fe	yes	unid.	curved border as seen on cherubs
1161	1190	grip	Fe	no	unid.		>85.00						
1166		grip	Fe	yes	CCS 4-6		c. 125	Painted black	grip plate	Fe	yes	unid.	Leafy edge
1166		grip	Fe	yes	CCS 4-6			Painted black					
1166		grip	Fe	unid.	Unid.	obscured			grip plate	Fe	yes	unid.	obscured by wod
1170	1169	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1170	1169	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1170	1169	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1179		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	beaded curved chain pattern at base.
1179		grip	Fe	yes	Unid.		c. 120		grip plate	Fe	yes	unid.	loose
1179		grip	Fe	unid.	Unid.	small							
1191		grip	Fe	unid.	Unid.		c.135						
1198	1197	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1200		grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1210	1211	grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1210	1211	grip	Fe	no	unid.								
1214		grip	Fe	unid.	unid.				grip plate	Fe	unid.	unid.	
1214		grip	Fe	unid.	unid.								
1225	1228	grip	Fe	unid.	unid.				grip plate	Fe	unid.	unid.	
1267		grip	Fe	unid.	unid.			Painted black	grip plate	Fe	yes	unid.	curving double band as in CCS 3, 7, 28

													etc.
1295	1294	grip	Fe	no	CCS2a		c.128		grip plate	Fe	yes	unid.	
1298	1300	grip	Fe	no	CCS2a		c. 115		grip plate	Fe	yes	unid.	
1298	1300	grip	Fe	no	CCS2a		unid.		grip plate	Fe	yes	unid.	
1298	1300	grip	Fe	no	CCS2a		unid.		grip plate	Fe	yes	unid.	
1298	1300	grip	Fe	no	CCS2a		c. 115		grip plate	Fe	yes	unid.	
1298	1300	grip	Fe	unid.	unid.								
1304	1303	grip	Fe	unid.	unid.			Painted black					
1311		grip	Fe	no	CCS2a								
1311		grip	Fe	no	CCS2a			Painted black					
1311		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1311		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1311		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1311	1377	grip	Fe	unid.	Unid.								
1316	1314	grip	Fe	no	CCS2a								
1316	1314	grip	Fe	no	CCS2a				grip plate	Fe	yes	unid.	
1316	1314	grip	Fe	no	CCS2a								
1316	1314	grip	Fe	no	CCS2a or b								
1316	1314	grip	Fe	unid.	unid.								
1316	1314	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	Border similar to CCS 3, 7, 28
1326	1329	grip	Fe	no	CCS2a or b				grip plate	Fe	yes	unid.	
1346		grip	Fe	no	CCS2a				grip plate	Fe	unid.	unid.	
1346		grip	Fe	no	CCS2a or b				grip plate	Fe	yes	unid.	
1346		grip	Fe	unid.	unid.								

1378	1377	grip	Fe	unid.	Unid.								
1393	1392	grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1393	1392	grip	Fe	unid.	unid.		c. 130		grip plate	Fe	yes	unid.	curving double band as in CCS 3, 7, 28 etc.
1412	1411	grip	Fe	yes	unid.		c. 128						
1416	1415	grip	Fe	no	CCS2a or b		c. 128		grip plate	Fe	yes	unid.	
1416	1415	grip	Fe	unid.	Unid.		c. 150						
1417	1419	grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1417	1419	grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1417	1419	grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1417	1419	grip	Fe	unid.	unid.				grip plate	Fe	yes	unid.	
1435		grip	Fe	unid.	Unid.								
1448	1447	grip	Fe	no	CCS2a		c.123	Painted black	grip plate	Fe	yes	unid.	
1448	1447	grip	Fe	no	CCS2a		c.125	Painted black					
1448	1447	grip	Fe	no	CCS2a		c.123	Painted black					
1448	1447	grip	Fe	yes		SCH 2	c. 150	Painted black					
1448	1447	grip	Fe	yes		SCH 2	c. 150	Painted black					
1465		grip	Fe	no	CCS2a		c. 124	Painted black					
1465		grip	Fe	no	CCS2a		c. 129	Painted black					
1465		grip	Fe	unid.	Unid.								
1467		grip	Fe	no	CCS2a		110						
1467		grip	Fe	unid.	Unid.								
1467		grip	Fe	unid.	Unid.								
1467		grip	Fe	unid.	Unid.								

1473		grip	Fe	no	CCS2a		c. 125						
1473		grip	Fe	no	CCS2a								
1473		grip	Fe	no	CCS2a				grip plate	Fe	yes	unid.	curved border pattern design as seen at CCS
1473		grip	Fe	no	CCS2a				grip plate	Fe	yes	unid.	curved border pattern design as seen at CCS
1473		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	painted black; curved border pattern design as seen at CCS
1473		grip	Fe	unid.	Unid.								
1483	1482	grip	Fe	no	CCS2a			associated with Sk 1482, but may be asscіated with sk 1533 (fill 1534) or fill of cut 1520					
1483	1482	grip	Fe	yes		SCH 3	c. 145	variation of CCS8 and SCH 2; difficult to determine because centre is obscured; painted black					
1483	1482	grip	Fe	yes	Unid.								
1487		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1518		grip	Fe	unid.	Unid.								

1518		grip	Fe	unid.	Unid.								
1518		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1534	1533	grip	Fe	no	CCS2a		c. 120						
1534	1522	grip	Fe	yes		SCH 4	c. 150						
1551	1550	grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1612		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1612		grip	Fe	unid.	Unid.		c. 130						
1618		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	plain centre attached and 2 loose fragments
1618		grip	Fe	unid.	Unid.				grip plate	Fe	yes	unid.	
1626		grip	Cu	no		SCH 4	97		grip plate	Cu	no	SCH 4	plain; top = 193 bottom = 154; height = 87; 1mm thick
1626		grip	Cu	no		SCH 4	97		grip plate	Cu	no	SCH 4	plain; top = 193 bottom = 154; height = 87; 1mm thick
1626		grip	Cu	no		SCH 4	97		grip plate	Cu	no	SCH 4	plain; top = 193 bottom = 154; height = 87; 1mm thick
1626		grip	Cu	no		SCH 4	97		grip plate	Cu	no	SCH 4	plain; top = 193 bottom = 154; height = 87; 1mm thick
1626		grip	Cu	no		SCH 4	97		grip plate	Cu	no	SCH 4	plain; top = 193 bottom = 154; height = 87; 1mm thick
1626		grip	Cu	no		SCH 4	97		grip plate	Cu	no	SCH 4	plain; top = 193 bottom = 154; height = 87; 1mm thick
1626		grip	Cu	no		SCH 5	109		grip	Cu	no	SCH 5	plain; top = 186

									plate				bottom = 173; height = 87; 1mm thick
1626		grip	Cu	no		SCH 5	109		grip plate	Cu	no	SCH 5	plain; top = 186 bottom = 173; height = 87; 1mm thick
1626		grip	Cu	no		SCH 5	109		grip plate	Cu	no	SCH 5	plain; top = 186 bottom = 173; height = 87; 1mm thick
1626		grip	Cu	no		SCH 5	109		grip plate	Cu	no	SCH 5	plain; top = 186 bottom = 173; height = 87; 1mm thick
1626		grip	Cu	no		SCH 5	109		grip plate	Cu	no	SCH 5	plain; top = 186 bottom = 173; height = 87; 1mm thick
79	1125	grip	Cu	yes		SCH 7	150	Floral	grip plate	Cu	no	SCH 7	max. width 20.5 cm; max height 15.0 cm; plain shield shape
79	1125	grip	Cu	yes		SCH 7	150	Floral	grip plate	Cu	no	SCH 7	max. width 20.5 cm; max height 15.0 cm; plain shield shape

1.8 Appendix 8: Depositum plates

Context No.	Skeleton No.	Shape	Material	Punched Pattern	CCS Type	Inscription	Maximum height (cm)	Maximum width (cm)
1626	1506	shield	Cu alloy	No	N/A	William Ibbetson/DIED/19th Decr 1848/Aged 80 years	30.0	25.0
1626	1504	rectangle	Cu alloy	No	N/A	Thomas Ibbetson/DIED/24th November 1853/ AGED 54 YEARS	25.5 cm	30.5
0001		shield	Cu alloy	No	N/A	Baxter/--ED/184-/-EARS	28.0	N/A
1363	1356	shield	Cu alloy	No	N/A	Emma Briggs/DIED/April 25th 18--/Aged 6 ---	N/A	10.5
0079	1124	shield	Cu alloy	No	N/A	Rachel Ibbotson/BORN/10th November 1797/DIED/21st April 1885	38.0	30.0
1120	1240	trapezoid	Cu alloy	No	N/A	MARY ANNE WHITLEY/DIED/JAN 14th 1872/AGED/49 YEARS	36 cm	30.0

1.9 Appendix 9: Environmental data

Samples				Flot								
Feature	Context	Sample	Vol. (ml)	Flot (ml)	% roots	Charred Plant Remains				Charcoal >4/2mm	Other	Analysis
						Grain	Chaff	Other	Comments			
1163	1166	1	400	4	0					0/0	Vitrified charcoal	
1112	1113	2	100	<1	0					0/0	Vitrified charcoal	
1167	1170	3	300	1	0					0/9	Vitrified charcoal	
1177	1178	4	300	3	0					0/2	Vitrified charcoal	
1195	1198	5	800	3	20					0/7	Vitrified charcoal	
1162	1161	6	100	<1	0					0/2	Vitrified charcoal	
1177	1178	7	300	5	10					0/1	Vitrified charcoal	
1203	1206	8	500	1	0					0/2	Vitrified charcoal	
1209	1210	9	200	1.5	0					0/1	Vitrified charcoal. Hair.	
1245	1248	10	500	4	10					0/0	Vitrified charcoal	
1264	1267	11	400	2	10					0/1	Vitrified charcoal	
1280	1281	12	100	<1	0					0/0	Vitrified charcoal	
1263	1262	13	400	<1	0					0/7	Vitrified charcoal. Hair.	
1274	1273	14	300	2	5					1/6	Vitrified charcoal	
1297	1298	15	400	<1	0					1/3	Vitrified charcoal. Hair	
1328	1326	16	200	1	50					0/0	Vitrified charcoal	
1317	1316	17	400	2	5					0/7	Vitrified charcoal	
1333	1331	18	200	<1	0					1/0	Vitrified charcoal	
1345	1346	19	100	<1	0					0/0	Vitrified charcoal. Hair	
1375	1378	20	700	2	20					0/5	Vitrified charcoal	
1390	1393	22	400	<1	0					0/0	Vitrified charcoal	
1398	1401	23	500	1	5					1/4	Vitrified charcoal	
1413	1416	24	1000	1	5					0/17	Vitrified charcoal	
1450	1453	25	100	<1	0					0/1	Vitrified charcoal	
1445	1448	26	700	2	5					1/3	Vitrified charcoal	
1468	1471	27	200	1	20					0/2	Vitrified charcoal	
1480	1483	28	200	1	5					0/0	Vitrified charcoal	
1523	1526	29	200	1	5					2/1	Vitrified charcoal	
1531	1534	30	400	1	5					0/4	Vitrified charcoal	
1548	1551	31	100	<1	0					0/2	Vitrified charcoal	
1553	1556	32	200	1	5					0/2	Vitrified charcoal	
1617	1618	33	300	3	50					0/11	Vitrified charcoal	

Key: A*** = exceptional, A** = 100+, A* = 30-99, A = >10, B = 9-5, C= < 5.

Samples			Nematode gut parasite eggs	
Feature	Context	Sample	*Trichuris*	*Ascaris*
1163	1166	1		
1112	1113	2		
1167	1170	3	C	
1177	1178	4		
1195	1198	5		
1162	1161	6		
1177	1178	7		
1203	1206	8		
1209	1210	9		A**
1245	1248	10		
1264	1267	11	C	
1280	1281	12		
1263	1262	13		
1274	1273	14	A**	A
1297	1298	15		
1328	1326	16		
1317	1316	17	C	A
1333	1331	18		
1345	1346	19		C
1375	1378	20		C
1390	1393	22		
1398	1401	23		
1413	1416	24		
1450	1453	25		
1445	1448	26	A*	
1468	1471	27		
1480	1483	28		
1523	1526	29	C	
1531	1534	30		
1548	1551	31	C	C
1553	1556	32		
1617	1618	33		

Key: A*** = exceptional, A** = 100+, A* = 30-99, A = >10, B = 9-5, C= < 5.

1.10 Appendix 10: OASIS form

OASIS ID: wessexar1-277430

Project details

Project name	Cornerstone, Halifax, West Yorkshire
Short description of the project	Wessex Archaeology was commissioned by Mouchel Advisory and Project Services on behalf of the Square Chapel Centre for the Arts (hereafter 'the Client') to undertake mitigation works in the form of a strip and record at the Square Chapel, Halifax, West Yorkshire. This phase of excavation has facilitated osteological recording of 122 skeletons from Halifax dating from around 1772 until at least 1885. This evidence adds to an existing corpus of 203 skeletons excavated in 2014 (Williams 2016). The skeletons recovered from the Square Chapel represent a reasonably healthy population with low rates of osteoarthritis, infection and metabolic disease, who are likely to have avoided the worst overcrowding of the period. High rates of sinusitis and pulmonary conditions (and a possible case of tuberculoid meningitis) may have been promoted by air pollution. Rates for all dental pathologies among the adults were higher than the averages for the period. Rates of ante-mortem tooth loss were particularly high. A diet rich in sugar and other cariogenic foods combined with poor oral hygiene is likely. Trauma and degenerative joint disease were common among the adults from this group. Two families were traced using information from depositum plates. The contrasting lives of these two families highlight both the inequalities of the industrial revolution and the egalitarian nature of religious practice of the period, particularly of non-conformism. The foundations of the early 19th century former sunday school were also recorded.
Project dates	Start: 29-09-2015 End: 20-11-2015
Previous/future work	Yes / Yes
Any associated project reference codes	100243 - Contracting Unit No.
Any associated project reference codes	09/00287/FUL - Planning Application No.
Type of project	Recording project
Site status	Listed Building
Current Land use	Other 4 - Churchyard
Monument type	GRAVES Post Medieval
Monument type	SUNDAY SCHOOL Post Medieval
Significant Finds	COFFIN FITTING Post Medieval
Investigation type	"Open-area excavation","Part Excavation"
Prompt	Direction from Local Planning Authority - PPG16

Project location

Country	England
Site location	WEST YORKSHIRE CALDERDALE HALIFAX Square Chapel
Study area	0 Hectares
Site coordinates	SE 09620 25039 53.721446291701 -1.854198200268 53 43 17 N 001 51 15 W Point
Height OD / Depth	Min: 120m Max: 130m

Project creators

Name of Organisation	Wessex Archaeology
Project brief originator	Mouchel Consulting
Project design originator	Wessex archaeology
Project director/manager	Andrew Norton
Project supervisor	Phil Weston
Project supervisor	Andy Swann
Type of sponsor/funding body	Developer
Name of sponsor/funding body	The Square Chapel Centre for the Arts

Project archives

Physical Archive Exists?	No
Digital Archive recipient	West Yorkshire Archive Service: Calderdale Office
Digital Archive ID	2013.11
Digital Contents	"none"
Digital Media available	"Images raster / digital photography","Text"
Paper Archive recipient	West Yorkshire Archive Service: Calderdale Office
Paper Archive ID	2013.11
Paper Contents	"Ceramics","Glass","Human Bones","Metal"
Paper Media available	"Context sheet","Correspondence","Diary","Drawing","Notebook - Excavation',' Research',' General Notes","Photograph","Plan","Report","Section"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Cornerstone, Halifax, West Yorkshire: Archaeological Mitigation Report
Author(s)/Editor(s)	Ashley Tuck
Author(s)/Editor(s)	Angela Boyle
Author(s)/Editor(s)	Alex Cassels
Other bibliographic details	100243.03
Date	2017
Issuer or publisher	Wessex Archaeology
Place of issue or publication	Sheffield

Description	A4 laser printed report
Entered by	Ashley Tuck (a.tuck@wessexarch.co.uk)
Entered on	24 February 2017

1.11 Appendix 11: Index to Archive

1.11.1 The following index lists the archive for both this phase of work (100243) and the Wessex Archaeology evaluation at Square Chapel (100240 and 100241)

Site Code: 100240, 100241, 100243
Site Name: Cornerstone, Halifax, West Yorkshire (Square Chapel)
Accession Number: 2013.11
Grid Ref: 409623 425039

Box no.	NAR/ RCHME categories	Details	Format	No. Sheets
1	-	Index to Archive	A4	2
	-	Index to Digital Archive	A4	Not yet prepared
	-	Finds Index	A4	Not yet prepared
	100240 – Evaluation			
	-	Introduction – "West Yorkshire Archaeology Advisory Service (WYAAS): Specification for Trial Trenching to Evaluate and Record Archaeological Remains in Advance of Development at Square Chapel, Halifax"	A4	34
	A	Final Report – "Cornerstone, Halifax, West Yorkshire: Archaeological Evaluation Report"	A4	64
	B	Site Data – Day Register	A4	1
	B	Site Data – Note on Trench Sizes	A4	1
	B	Site Data – Context Indices	A4	9
	B	Site Data – Trench Records	A4	5
	B	Site Data – Matrices (on permatrace)	A4/A3	5
	B	Site Data – Primary Context Records (include Structure and Inhumation Records)	A4	153
	B	Site Data – Graphics Register	A4	1
	B	Site Data – Primary Drawings	A4/A3	18
	D	Photographic Register	A4	10
	D	Photographs Colour Slides	A4	4
	D	Photographs CD Containing Digitised Colour Slides	A4	1
	D	Photographs Black and White Index Print	-	2
	D	Photographs Negatives	A4	2
	D	Photographic Digital Index Print	A4	Not yet prepared
	100241 – Evaluation			
	B	Site Data – Day Book and Site Diary	A4	2
	B	Site Data – Trench Records	A4	2
	B	Site Data – Primary Context Records	A4	7
	B	Site Data – Annotated Plan	A4	1
	B	Site Data – Primary Drawings	A4	2
	D	Photographic Register	A4	1
	D	Photographic Digital Index Print	A4	Not yet prepared
	100243 – Mitigation			
	-	Introduction – "Cornerstone, Halifax, West Yorkshire: Written Scheme of Investigation for Archaeological Mitigation"	A4	10
	A	Final Report – "Cornerstone, Halifax, West Yorkshire: Archaeological Mitigation Report"	A4/A3	Not yet finalised
	B	Site Data - Day Register	A4	39
	B	Site Data – Context Index	A4	23
	B	Site Data – Primary Context Records sorted by Group	A4	552

Box no.	NAR/ RCHME categories	Details	Format	No. Sheets
		including Group Records and Inhumation Records		
	B	Site Data - Graphics Register	A4	2
	B	Site Data - Primary Drawings	A4	38
	D	Photographic Registers	A4	17
	D	Photographic Black and White Index Print	A4	3
	D	Photographic Black and White Negatives	A4	3
	D	Photographic Digital Index Print	A4	Not yet prepared
	E	Environmental – Sample Index	A4	2
	E	Environmental – Sample Records	A4	33
	G	Correspondence – Finds Donation Form	A4	Not yet prepared
	H	Miscellaneous – Oasis Form	A4	2
	H	Miscellaneous - CD containing Full Digital Archive	CD	Not yet prepared

1.12 Appendix 12: Confirmation from museum of acceptance of archive

From: Jeff Wilkinson [mailto:Jeff.Wilkinson@calderdale.gov.uk]
Sent: 08 August 2013 13:00
To: Jess Tibber
Subject: RE: Square Chapel Accession Number

Hi Jess,
The accession number is 2013.11.
Let me know of further progress.
Best regards
Jeff

From: Jess Tibber [mailto:j.tibber@wessexarch.co.uk]
Sent: 05 August 2013 16:55
To: Jeff Wilkinson
Subject: Square Chapel Accession Number

Hello,

I understand that my predecessor emailed you regarding getting an accession number for our recent project at the Square Chapel in Halifax.

Are you still happy to accept the archive when the work is completed? Do you have any deposition guidelines for us to follow or are you content with the NAR guidelines?

If you are happy could you issue me an accession number as soon as possible? Also, if you need any further information then please don't hesitate to contact me.

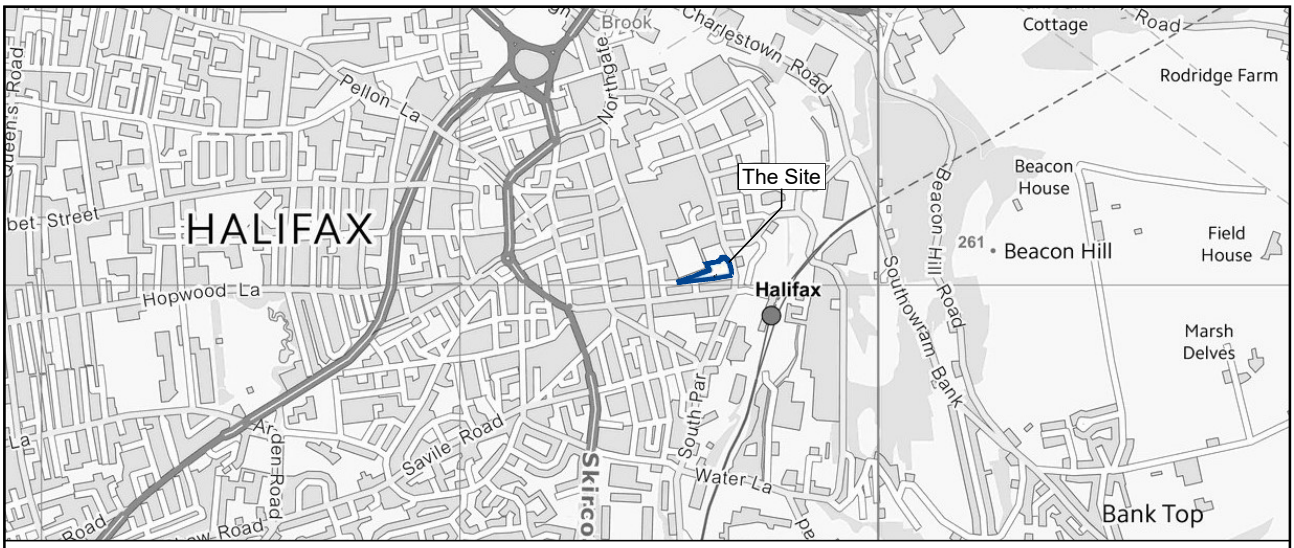
Many thanks,

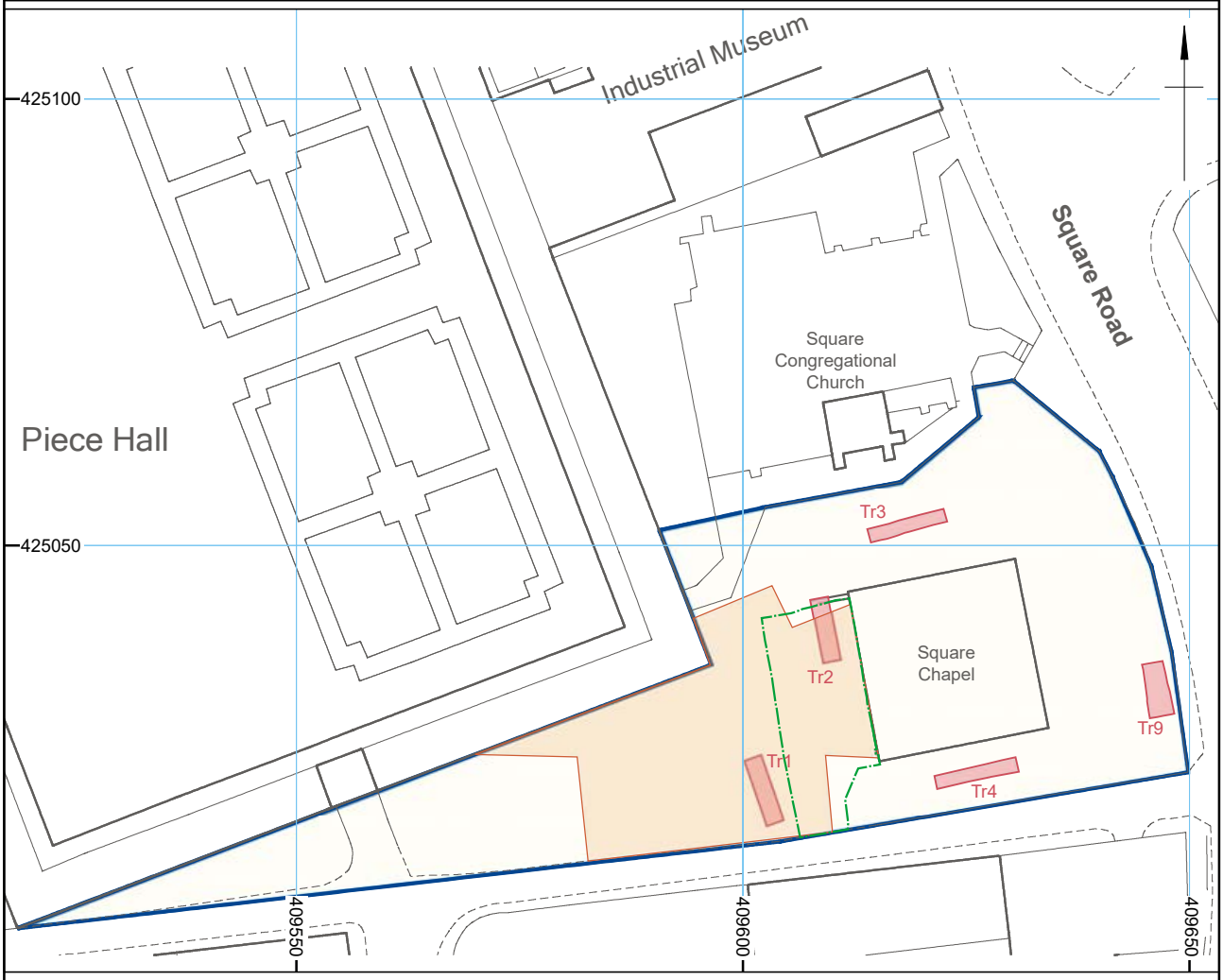
Jess

Jessica Tibber
Finds and Archives Officer

Wessex Archaeology
Unit R6, Sheaf Bank Business Park, Prospect Road, Sheffield S2 3EN
Tel: 0114 255 9774

j.tibber@wessexarch.co.uk
http://www.wessexarch.co.uk





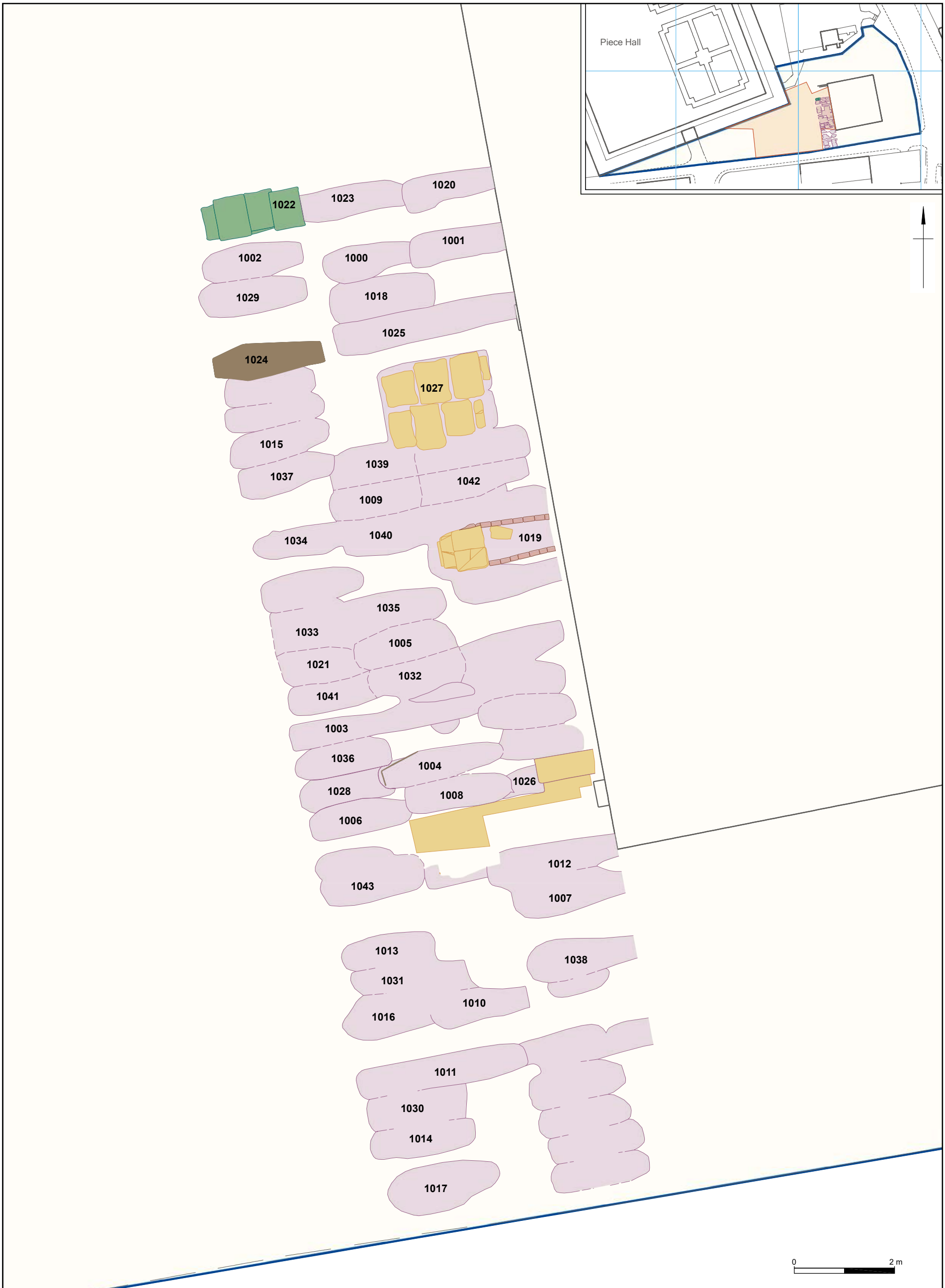
Site boundary
Evaluation trench
Footprint of proposed extension
Extent of excavation

0 25 m

Date:	08/03/2016	Revision Number:	0
Scale:	Main graphic - 1:800 @ A4	Illustrator:	CS/ APS
Path:	Y:\Projects\100243\Graphics_Office\Rep figs\WSI\2017_03_10		

Site location

Figure 1

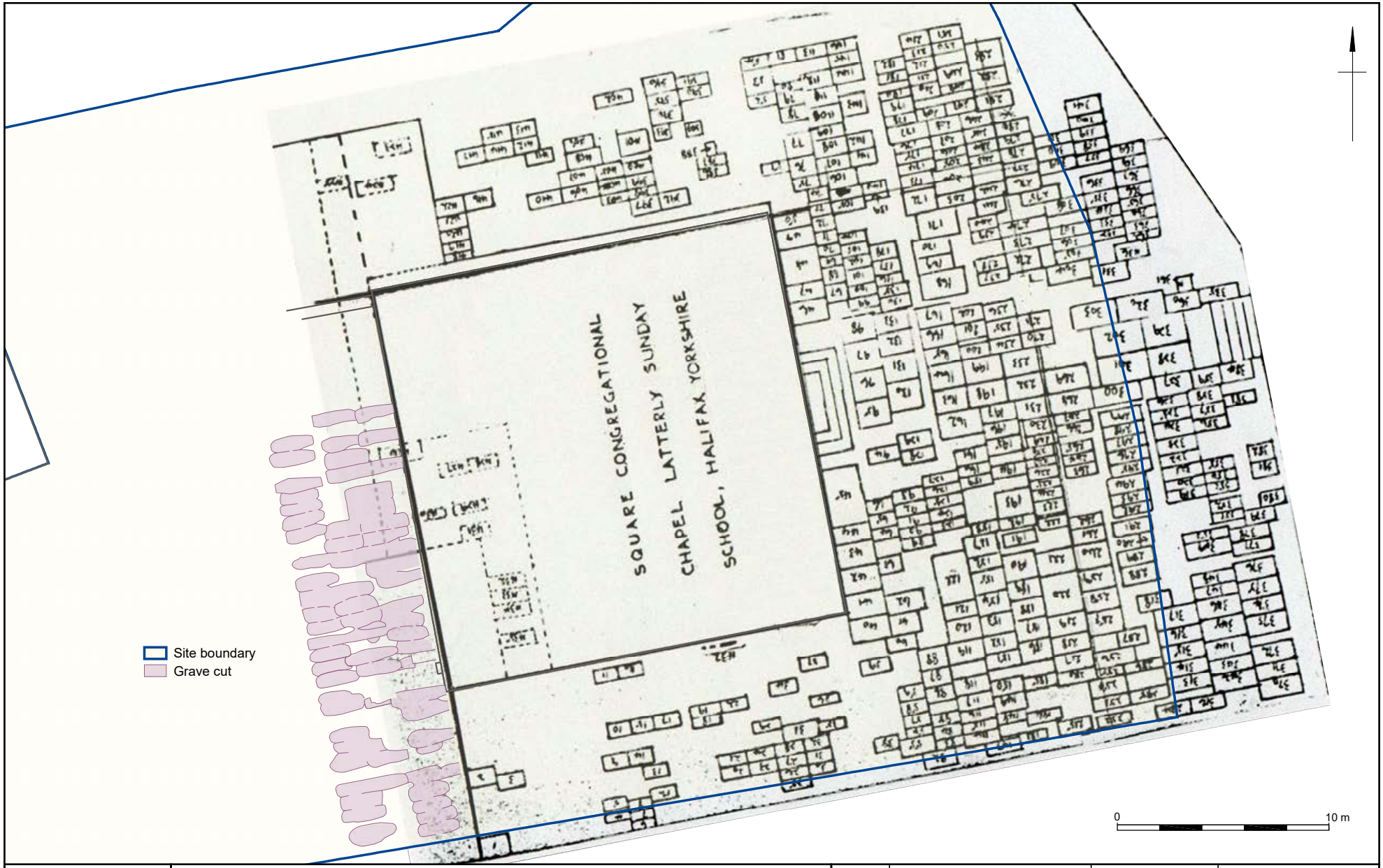


Grave cut
Wooden coffin remains
Lead coffin remains
Sandstone
Brick

Date:	08/03/2016	Revision Number:	0
Scale:	Main graphic - 1: 75 @ A3	Illustrator:	APS
Path:	Y:\Projects\100243\Graphics_Office\Rep figs\WSI\2017_03_10		

Plan of graves

Figure 2



Date:	08/03/2016	Revision Number:	0
Scale:	1: 250 @ A4	Illustrator:	APS
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Graves overlain on 1980s graveyard plan

Figure 3

Brick
Sandstone
Concrete

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Plan of Sunday School foundations

Figure 4

Plate 1: Brick Shaft Grave 1121 (Rachel Ibbotson's grave, group 1019)

Plate 2: Working shot recording ledger stone inscriptions reused as floor of Sunday school

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Scale:	N/A	Illustrator:	APS
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Plate 14: Grip SCH 1 cherub motif with sunburst on reverse side

Plate 15: Grip SCH 2

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Plate 16: Grip SCH 3 (1483)

Plate 17:Grip and grip plate SCH 4

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Plate 18: Grip and grip plate SCH 5

Plate 19: Grip and grip plate SCH 6

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Plate 20: Grip SCH 6 reverse detail

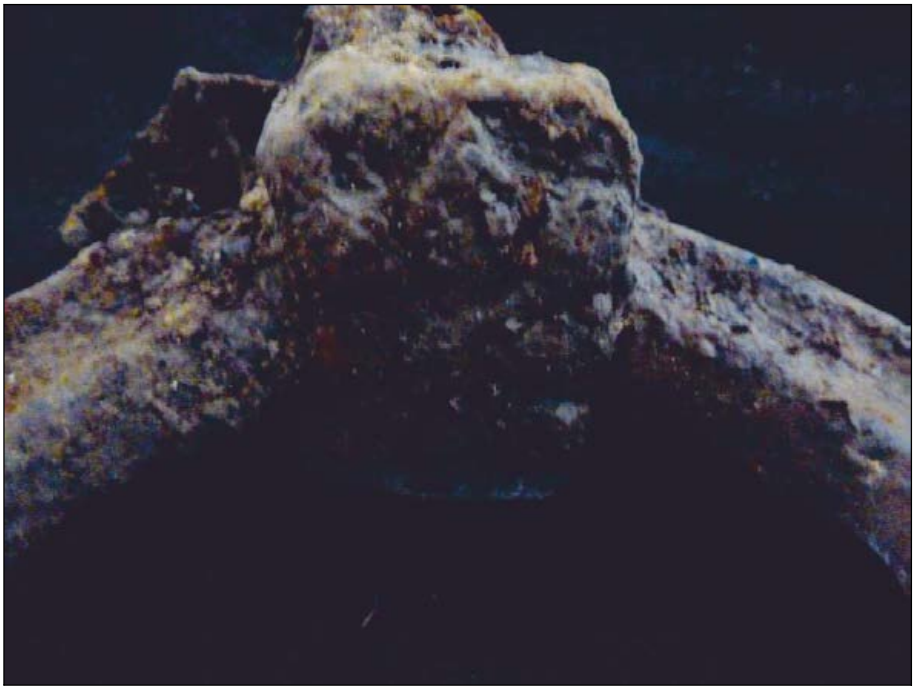

Plate 21: Detail of flower motif on bracket for grip SCH 6

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Plate 22: Grip and plate SCH 7 and coffin wood

Plate 23: Detail of grip and grip plate SCH 7

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Plate 24: William Ibbetson depositum plate

Plate 25: Thomas Ibbetson depositum plate

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Plate 26:Baxter depositum plate

Plate 27: Emma Briggs depositum plate

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Plate 28: Rachel Ibbotson depositum plate

Plate 29: Mary Anne Whitley depositum plate

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Plate 30: Copper alloy stud

Plate 31: Copper alloy object

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Plate 32: Copper alloy object with clasp (skeleton 1175)

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