

CONTENTS

SUMMARY	3
ACKNOWLEDGEMENTS.....	5
1. INTRODUCTION.....	6
1.1 Circumstances of the Project	6
1.2 Location, Topography and Geology	6
1.3 Historical and Archaeological Background	7
2. METHODOLOGY.....	9
2.1 Introduction.....	9
2.2 Watching Brief.....	9
2.3 Excavation.....	10
2.4 Recording.....	10
2.5 Processing, Assessment and Analysis of Funerary Remains.....	11
2.6 Archive.....	11
3. RESULTS.....	12
3.1 Introduction.....	12
3.2 Fieldwork Results	12
3.3 Assessment of Coffins	15
3.4 Assessment of Human Remains.....	18
4. CONCLUSION.....	21
4.1 Discussion	21
4.2 Impact	25
4.3 Prospects for Future Archaeological Works	25
5. BIBLIOGRAPHY	26
5.1 Primary and Cartographic Resources.....	26
5.2 Secondary Resources	26
6. FIGURES	28
APPENDIX 1: PROJECT DESIGN.....	29
APPENDIX 2: OSTEOLOGICAL METHODOLOGY	47
APPENDIX 3: CONTEXT LIST.....	50
APPENDIX 4: SKELETAL INVENTORY	54
APPENDIX 5: ARCHIVE INDEX.....	55

SUMMARY

In 2009 Blackpool Borough Council (BBC) undertook the redevelopment of parts of the former burial ground of the church of St John the Evangelist, Church Street/Abingdon Street, Blackpool, Lancashire (centred SD 3490 0303). The development, which aimed to create a pedestrianised area, comprised the localised reduction of parts of the former burial ground by as much as 2m below their existing level, and the installation of paving, retaining walls, a free-standing artwork, and also a fountain (with associated plumbing). At the beginning of the works it was believed by BBC and the church that the churchyard had been completely cleared, and thus no archaeological condition was attached to the development. However, during initial groundworks, a number of funerary remains were revealed, including coffins, burial structures, and human bones. Accordingly, BBC consulted Lancashire County Archaeology Service (LCAS), who recommended that a programme of archaeological investigation should be undertaken in association with any further intrusive groundworks within the former burial ground. Following submission, and LCAS-approval, of a comprehensive project design, Oxford Archaeology North (OA North) was commissioned by BBC to undertake a watching brief of any further negative groundworks and to complete the full excavation and recording of any human remains that would be otherwise disturbed by such a process. The archaeological works were undertaken in March and April 2009 in full accordance with a Ministry of Justice License and a Church of England Faculty (both applied for by the BBC solicitor).

In total, evidence for 73 graves was revealed. Of these, 53 were revealed only as backfilled grave cuts (with the remains lying below the depth of groundworks), but in nine cases coffins were exposed and, in three more instances, both coffins and human remains; all were recorded but left *in situ*, as they lay at the limit of development disturbance. The deepest works, reaching 2m below ground level, encountered, and necessitated the removal of, funerary remains within the footing for a statue. There, the last vestiges of seven individuals were recovered (whom had been previously exhumed during the development of Cedar Square, to the east of the church, in 1927), together with one complete burial. The latter proved most interesting, not least because, unlike its near neighbours, it had avoided the 1927 clearance of the eastern-most end of the churchyard. The burial comprised an exceptionally well-preserved fishtail coffin and the complete skeleton of a 25 to 35-year-old woman whom had suffered a range of medical conditions. Her ornamental coffin plate was illegible, and she could not be identified within the present programme of work. This burial, together with all other human remains recovered from the site, was reburied within consecrated ground during a discrete ceremony at Blackpool Borough's Layton Cemetery.

As well as mitigating the impact of the development, the archaeological works provided some useful information on the graveyard's usage. Although the church history records the clearance of the cemetery in 1927 and the erection of a monument to record these 334 people, the archaeological programme indicated that relatively few of the 1800 interments were actually removed, merely some of those on the churchyard's eastern edge, which was subsumed by the Cedar Square development. The 334 people on the monument are likely to be those furnished with the headstones that were removed under the 1906 Open Spaces Act. Across the reduced area, extensive evidence for burials was found, both within and adjacent to plots marked on

a churchyard plan dating to 1927/54. Often at shallow depth, many of these burials were likely to have been stacked and, given the damp heavy clay burial environment and on-site observations, are likely to include well-preserved organic material.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Derek Greaves and Clare Nolan-Barnes of Blackpool Borough Council (BBC) for commissioning the project and for providing some very useful historical information. OA North is also grateful for all of the on-site assistance and liaison provided by Louise Purdy the BBC Environmental Health Officer, Carmel White the BBC solicitor, Andrew Mounsey the on-site director for Paul Casey Construction, Sandy Griffin the Architect for SPG, Verger Audrey Rawlings, Rev Dan Connolly and Carole Tyler of St John's Church, Suzi Moden, Nikki Hilton and Liz Bienias of Blackpool Cemeteries, Andrew Floyd of D Hollowell and Sons, and all the helpful staff of Paul Casey Construction on site, who provided the necessary survey equipment and mechanical excavation. Further thanks are extended to Doug Moir at Lancashire County Archaeology Service, and Sue Stallibrass of English Heritage for their advice during the works, and to Sonia O'Connor of Bradford University and Dr Jenny Robinson at the University of Central Lancashire.

The archaeological fieldwork was undertaken by Caroline Raynor and John Griffiths, the latter of whom compiled the report and examined the human remains. The fishtail coffin and other artefacts were examined and reported upon by Christine Howard-Davis, and the coffin plate was drawn by Alix Sperr. Otherwise, the report was illustrated by Marie Rowland, and edited by Stephen Rowland, who also managed the project.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 In 2009 Blackpool Borough Council (BBC) undertook the redevelopment of parts of the former burial ground of the church of St John the Evangelist, Church Street/Abingdon Street, Blackpool, Lancashire (centred SD 3490 0303; Fig 1). The development, which aimed to create a pedestrianised area, comprised the localised reduction of parts of the former burial ground by as much as 2m below their existing level, and the installation of paving, retaining walls, a free-standing artwork, and also a fountain (with associated plumbing). At the beginning of the works it was believed by BBC and the church that the churchyard had been completely cleared, and thus no archaeological condition was attached to the development. However, during initial groundworks, a number of funerary remains were revealed, including coffins, burial structures and human bones. Accordingly, BBC consulted Lancashire County Archaeology Service (LCAS) who recommended that a programme of archaeological investigation should be undertaken in association with any further intrusive groundworks within the former burial ground. Following submission, and LCAS-approval, of a comprehensive project design (*Appendix I*), Oxford Archaeology North (OA North) was commissioned by BBC to undertake a watching brief of any further negative groundworks and to complete the full excavation and recording of any human remains that would be otherwise disturbed by such a process. The archaeological works were undertaken in March and April 2009 in full accordance with a Ministry of Justice (MoJ) License and a Church of England (CoE) Faculty (both applied for by the BBC solicitor).

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

1.2.1 Blackpool is located on the Fylde coast and forms part of the littoral of Morecambe Bay. To the east, until the eighteenth century, lay the mosslands of the Fylde and the expanse of Marton Mere. Situated close to Blackpool town centre, St John's Churchyard (Fig 1) is bound to the south by Church Street, to the west by Abingdon Street, to the east by Cedar Square, and to the north by Abingdon Street Market. Prior to the present redevelopment, the churchyard consisted of three walled, raised garden areas to the south of the church and, to the east, another walled garden with the standing gravestones of the first Mayor of Blackpool and the first vicar of the church. A further upstanding monument, bearing the names of individuals recorded on headstones removed from the graveyard in 1927, lay to the south-east of the church. The remaining area was paved with flagstones which were laid five to ten years ago.

1.2.2 The underlying solid geology of the area consists of Permo-Triassic sandstones (Middleton *et al* 1995, 8). These are deeply masked by drift deposits (*op cit*, 7), consisting primarily of post-glacial till and alluvium, and the topsoil is composed of fine sand and gravel.

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 1.3.1 Due to the focused nature of the study, this section concentrates on the known history of St John's church; it is not supposed to be a comprehensive review of the history and archaeology of Blackpool, examples of which are readily available elsewhere.
- 1.3.2 Historically, Blackpool was part of the township of Layton and lay in the parish of Bispham (LCC and Egerton Lea 2005). Although the first reference to Blackpool dates to 1416, there was very little settlement in the area until the mid- to late eighteenth century, when the area became a popular resort for visitors (*ibid*). The textile mills of Lancashire and Yorkshire provided holiday-makers throughout the nineteenth century and, once incorporated into the railway network in 1846, the expansion of the town was rapid. In 1861 the population had grown to 3506 (LCC and Egerton Lea 2005) but by 1901, when it had absorbed the surrounding settlements of Layton and South Shore, Blackpool's population totalled 47,348 (Farrer and Brownbill 1912, 248). Blackpool continued to expand throughout the twentieth century, with tourism remaining the staple industry (McNeil and Newman 2006, 178).
- 1.3.3 Blackpool's Parish Church of St John the Evangelist was founded in 1821 when the town's population numbered a mere 749 souls (www.stjohnsblackpool.org.uk/history.htm). Although the church was augmented on several occasions, Blackpool's rapidly expanding population required a larger church and, after the levelling of the first building, construction of the present church was completed on the site of its predecessor in 1878 (*ibid*). The new church could seat a congregation of 1223, roughly a sixth of Blackpool's contemporary population.
- 1.3.4 The burial register, in two volumes, records some 1800 interments within the churchyard, with the earliest soon after the land was first consecrated. Although the churchyard was closed to new burials in May 1873 (Harbottle 1927a), corresponding with the opening of Layton municipal cemetery (www.stjohnsblackpool.org.uk/history.htm), burial within existing family plots was permitted at St John's until *c* 1917 (Audrey Rawlings *pers comm*). The 1800 recorded burials are in stark contrast to an undated plan of the churchyard produced some time between 1927 and 1954 (when it appears to have been last amended), which shows some 160 burial plots. A catalogue of the inscriptions on these monuments, held by the Blackpool Cemetery Service, lists roughly 360 people (S Moden *pers comm*). Therefore, it can be assumed that the vast majority of the individuals buried in the churchyard did not have a permanent, upstanding monument.
- 1.3.5 In 1927, plans were set in motion to convert, under the 1906 Open Spaces Act, the eastern end of the churchyard to form Cedar Square, and the remainder of the churchyard as a public garden. The original Diocesan faculty is still extant, and stipulates that the removal of memorials and tombstones was compulsory, together with the reinterment of 'any human remains which *may* be removed' (Harbottle 1927b, italics added). Furthermore, a letter written by DL Harbottle, the town clerk, on 1st April 1927 states that:

‘a Faculty ...[enables]... the Corporation to remove the remains of the persons interred in such portion of the above Churchyard as will be added to Cedar Street and to lay out the remaining portion of the Churchyard as an Open Space’ (Harbottle 1927a)

- 1.3.6 Although the church’s history states that 334 burials were exhumed from the churchyard in 1927 (www.stjohnsblackpool.org.uk/history.htm), this tally, which derives from the names recorded on the monument erected following the 1927 works, seems a little unlikely. More accurate evidence is provided by a document held by Blackpool Cemetery Service (anon nd), which represents an estimate for the cost of the removal of memorials from across the churchyard, and of the human remains from the path of Cedar Square. The said document makes provision for 160 memorial stones, and for disinterring remains from 35 graves (together with, perhaps optimistically, 35 coffins for those exhumed remains, and costs for re-interment at Blackpool (Layton) Cemetery). An examination of the 1927/1954 graveyard plan shows exactly 35 graves, shaded orange (as on Fig 2), within the area of the churchyard adjacent to the former route of Cedar Street and thence converted to form Cedar Square. Presumably, these plots are the 35 graves referenced in the estimate. Moreover, only 48 spaces in Layton Cemetery were provided for re-interments (Bateson 1930) and records at the cemetery indicate that 73 named individuals, plus persons unknown, were buried at Layton in the years 1929-1930 (S Moden *pers comm*). The discrepancy between the estimate of cost and the number of individuals buried at Layton no doubt derives from the fact that multiple interments could have been made within individual plots, whilst unmarked, and previously unanticipated, graves may have lain in gaps amongst the 35 known plots.
- 1.3.7 In 1954, human remains were removed from eight further graves along the southern (Church Street) edge of the site: these are represented by grey shading on the burial plot plan (and also on Fig 2). Whilst it is uncertain how many of the 1800 interments were removed from the churchyard in 1927 and 1954, it is likely to have been a lot less than the 334 recorded in the church history. Rather, 334 may represent the number of people that were recorded on the removed memorials and headstones, names which, in accordance with the 1927 faculty (Harbottle 1927b), have been inscribed on the monument upstanding in the churchyard today. It is thus reasonable to assume *in situ* burials occupy the vast majority of the churchyard.

2. METHODOLOGY

2.1 INTRODUCTION

2.1.1 The LCAS-approved project design (*Appendix 1*), the MoJ burial licence, and the Diocesan faculty, were adhered to in full, and all works were consistent with the relevant standards and procedures of the Institute for Archaeologists (IfA), and generally accepted best practice. The archaeological investigation was undertaken in two distinct phases, which will be dealt with separately within the present report. The first comprised a watching brief during ground reduction across the majority of the site and did not involve the excavation and removal of human remains. The majority of this ground reduction was fairly shallow but in two areas, comprising a trench for a wall footing adjoining the south-east corner of the south transept, and another around the base of the monument erected in 1927, excavations were deep enough to contact funerary remains. The second phases involved deeper excavation within the footing trench for the proposed artwork, close to the south-eastern corner of the churchyard.



Plate 1: The site, with St John's Church in the background, looking north

2.2 WATCHING BRIEF

2.2.1 ***Contractors programme and methodology:*** the locations of the groundworks are shown on Figure 2. Prior to the commencement of the watching brief, two 0.5m-wide foundation trenches for retaining walls were excavated. The first lay just outside the south-west corner of the churchyard and was c 30m long but of uncertain depth, due to the fact that it had subsequently been completely filled with concrete. The second, c 40m long and 0.8m deep, ran around the east end of the church, from the north-east corner of the north transept to the

south-east corner of the south transept. The western ends of this trench were recorded before these too were filled with concrete to a depth of roughly 0.4m. The rest of the site, to the east and south of the church, was reduced by c 0.5m and then stoned back over; the portion delineated on Figure 2 was reduced and stoned during the archaeological programme. The upstanding inscribed monument erected in 1927 was excavated around, then removed by a specialist stonemason and erected on a concrete footing to the north-east of the church. All excavations were undertaken by one or two 360° mechanical excavators fitted with toothless ditching buckets.

2.2.2 **Watching brief:** once commissioned, the archaeological watching brief was maintained permanently and sought to examine all exposed soil horizons, preferably during the enactment of their revelation, and to then make as accurate and as comprehensive a record as possible of the nature and location of any archaeological remains. The extent of investigation of archaeological features and funerary remains was limited only to those portions that would be disturbed by the development. Very often, the groundworkers would modify their techniques and working depths to ensure that such disturbance was extremely limited. Thus, when graves were uncovered but were not to be further disturbed by the works, their location was surveyed, using a total station theodolite (TST), and recorded. When coffins and human remains were occasionally encountered, works were stopped until these had been fully exposed to the limit of development impact, and recorded.

2.3 EXCAVATION

2.3.1 The accommodation of a large standing artwork within Cedar Square necessitated the excavation of a foundation trench to a depth of 2m below ground level. The trench measured 3.6m-square at the base, but for safety reasons was stepped-out around the top to measure 5.1m by 4.5m. This trench lay within the pre-1927 south-eastern corner of the churchyard and, although it was thought to have been cleared of human remains when Cedar Square was laid out, there was a possibility that human remains might be encountered during the current programme of groundworks. Thus, the mechanical excavation of this trench was supervised, rather than simply monitored, by an archaeologist. Once funerary remains were found, their full extents were exposed and cleaned with hand tools and all backfill, coffin wood and skeletal remains recorded and removed. In the case of complete skeletons a 100% sample of the backfill was taken in order to retrieve any small bones. Once all the remains had been recorded and removed, the trench was completed, under archaeological supervision, to formation level depth of 2m below ground level.

2.4 RECORDING

2.4.1 All archaeological features and funerary remains were recorded using OA North's *pro-forma* sheets and utilising a system derived from the English Heritage Centre for Archaeology. Survey data was compiled using a TST and, where appropriate, hand-drawn plans were made at conventional scales. An

indexed monochrome and digital photographic record of all works was maintained throughout.

2.5 PROCESSING, ASSESSMENT AND ANALYSIS OF FUNERARY REMAINS

2.5.1 All exposed articulated human remains underwent rapid on-site osteological assessment, which consisted of full age, sex and stature estimation. The preservation and completeness of the remains was also noted, and any obvious skeletal and dental pathology was recorded and briefly described. Funerary remains (human bones, coffin materials, sediment from coffin fills and grave backfills) recovered from within the zone of impact of the artwork trench were removed to the OA North Offices where they were stabilised, cleaned as appropriate, wrapped, bagged and catalogued. The virtually intact coffin recovered from the artwork foundation trench was recorded descriptively and photographically, and a radiographic and drawn record was made of the metal breast plate. Full analysis of skeleton **117** took place at OA North's offices and comprised a more detailed examination and record of the remains of that individual. The specific methodology for rapid assessment and analysis can be found in *Appendix 2*.

2.5.2 During post-excavation examination, Skeleton **117** was suspected to contain preserved soft tissue. The skull was examined by Dr Jenny Robinson of the University of Central Lancashire (UCLAN), whilst Sonia O'Connor of Bradford University undertook an internal examination utilising endoscopes and a CT scan.

2.6 ARCHIVE

2.6.1 A full archive has been compiled in accordance with the project design (*Appendix 1*), and with current IfA, English Heritage (1991) and UKIC (UK Institute for Conservation - Walker 1990) guidelines. The complete archive (for which an index appears in *Appendix 5*) will be submitted to the Lancashire Record office, Preston, and a copy of this report will be submitted to the Lancashire Historic Environment Record (HER), also in Preston.

2.7 REBURIAL

2.7.1 In accordance with the Diocesan Faculty, all human remains and funerary fixtures and fittings have been reburied within a consecrated plot at Blackpool Borough's Layton cemetery. The discrete ceremony, presided over by the Rev Dan Connolly and conducted by D Holloway and Sons, was attended by representatives of Blackpool Borough Council and OA North, and took place on 25th November 2009.

3. RESULTS

3.1 INTRODUCTION

3.1.1 The following section presents the results of the watching brief and subsequent excavation conducted within the churchyard of St John the Evangelist, Blackpool. Descriptions of the contexts recorded on site can be found in *Appendix 3* which, for the sake of brevity and clarity, are not repeated here. Where burials were encountered, separate numbers were allocated for each of the grave cut/vault, coffin, skeleton and for the backfill. These four numbers were subsequently unified by a single group number. The numbering system for the observed burials is summarised in Table 1, whilst the details of any assessment undertaken are provided in *Appendix 4*.

3.2 FIELDWORK RESULTS

Area of Site	Cut No	Fill No	Coffin No	Skeleton No	Group No	Condition
North-east wall foundation	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	Exposed/ left <i>in situ</i>
North-east wall foundation	<i>6</i>	<i>9</i>	<i>8</i>	<i>7</i>	<i>10</i>	Exposed/ left <i>in situ</i>
North-east wall foundation	<i>92</i>	<i>93</i>	<i>94</i>	<i>95</i>	<i>96</i>	Exposed/ left <i>in situ</i>
Monument area	<i>62</i>	<i>63</i>	<i>64</i>	<i>65</i>	<i>66</i>	Exposed/ left <i>in situ</i>
Monument area	<i>67</i>	<i>68</i>	<i>69</i>	<i>70</i>	<i>71</i>	Exposed/ left <i>in situ</i>
Monument area	<i>72</i>	<i>73</i>	<i>74</i>	<i>75</i>	<i>76</i>	Exposed/ left <i>in situ</i>
Monument area	<i>77</i>	<i>78</i>	<i>79</i>	<i>80</i>	<i>81</i>	Exposed/ left <i>in situ</i>
Monument area	<i>82</i>	<i>83</i>	<i>84</i>	<i>85</i>	<i>86</i>	Exposed/ left <i>in situ</i>
Monument area	<i>87</i>	<i>88</i>	<i>89</i>	<i>90</i>	<i>91</i>	Exposed/ left <i>in situ</i>
Artwork trench	<i>100</i>	<i>101</i>	<i>109</i>	<i>108</i>	<i>110</i>	Excavated/removed
Artwork trench	<i>102</i>	<i>103</i>	<i>112</i>	<i>111</i>	<i>113</i>	Excavated/removed
Artwork trench	<i>104</i>	<i>105</i>	-	-	-	No coffin or skeleton
Artwork trench	<i>114</i>	<i>115</i>	<i>116</i>	<i>117</i>	<i>118</i>	Excavated/removed
Artwork trench	<i>119</i>	<i>106, 107</i>	<i>121</i>	<i>120</i>	<i>122</i>	Excavated/removed
Artwork trench	<i>123</i>	<i>124</i>	<i>126</i>	<i>125</i>	<i>127</i>	Excavated/removed
Artwork trench	<i>128</i>	<i>130</i>	<i>129</i>	<i>131</i>	<i>132</i>	Excavated/removed
Artwork trench	<i>135</i>	<i>136</i>	<i>138</i>	<i>137</i>	<i>139</i>	Excavated/removed
Artwork trench	<i>140</i>	<i>141</i>	<i>142</i>	-	<i>143</i>	Exposed/ left <i>in situ</i>

Table 1: Summary of context numbers allocated to exposed burials

3.2.1 **Ground reduction:** at the commencement of the watching brief, the southern part of the churchyard was occupied by three raised garden areas, defined by brick walls *16*, *50* and *51*. Where not yet stripped, the majority of the site was covered with modern flagstones, *1*, bedded in sand/gravel, *12*. Removal of these surfaces and of the garden soil revealed a thick layer, c 0.4-0.5m deep, of orange clay, *11*, which was likely to have been deposited in around 1927, when the churchyard was converted into an open space. This layer sealed natural clay, *47*, into which a number of graves had been cut. Ground reduction within the south-western part of site was not sufficiently deep to reach natural clay and, therefore, did not reveal, or impact on, grave deposits. In the remaining area south of the church, 55 grave cuts were identified,

surveyed and recorded (Fig 3; Plate 2). Generally, no funerary remains pertaining to these graves were revealed, presumably lying some way below the base of excavation. However, at the south-east corner of the church, the tops of two intact neonatal or infant coffins were exposed (pertaining to burials **40** and **46**) at the base of development groundworks; the visible portions of these were recorded and left *in situ*.



Plate 2: Stripped area beneath layer **16**, showing numerous grave cuts; looking north-west

3.2.2 **North-east wall footing:** although the majority of the trench for the north-east retaining wall had been excavated and filled with concrete before the start of the archaeological watching brief, grave groups **5** (within a brick vault) and **10** were exposed at its north-west and south-west extents, respectively (Fig 2). In each instance, human remains (skeletons **4** and **7**) were exposed by the groundworks, but could be left *in situ* after recording. In similar circumstances, a further infant coffin, **96**, was exposed in the footprint of the wall slightly to the east of **10**. Another three burials were identified, surveyed and covered over prior to archaeological supervision on site; their locations correlate well with graves shown on the 1927/1954 graveyard plan (Figs 2 and 3).

3.2.3 **Monument area:** six further burials, **66**, **71**, **76**, **81**, **86** and **91** (Plate 3) were exposed beneath the original base of the relocated monument erected in 1927. All had coffins, two of which, **86** and **91**, had intact but caved-in lids; the latter had a well-preserved breastplate. Only one of these burials, **66**, was exposed enough to examine the skeleton, which was that of an older child. From their size, however, burials **76**, **81** and **86** were also of children. All six burials were fully recorded and left *in situ*. The cut for one further grave, **193**, was identified just to the north of the original monument base.



Plate 3: Area beneath 1927 monument showing six exposed coffins; looking west



Plate 4: Double brick vault **97**; looking east

3.2.4 *Excavation for the artwork trench*: evidence for a total of one child and nine adult burials was found at depths between 0.5m and 0.8m below ground level; all but one had been exhumed in 1927. Thus burials **110**, **113**, **132** and **139** consisted of small amounts of coffin wood and occasional small bones, whilst burial **104** comprised only a grave cut and backfill, with no coffin wood or bone remaining. Vault **97** was found in the eastern corner of the trench (Plate 4) and consisted of a pair of brick-built chambers, with eight courses left upstanding. Each chamber contained a single grave cut into natural clay beneath the base of the bricks: **127** to the south and **122** to the north. The top of grave **122** was demarcated by a stone slab which had been broken in order to exhume the underlying burial; this slab could have also formed the base for

a burial above **122**, although there was no direct evidence for such an interment. The backfills of the two graves, **107** and **124** respectively, contained a number of fragments of coffin fittings and wood, and the remnants of the exhumed skeletons. Burials **143** and **144** (probably that of a child) were identified within the northern step of the trench, and could be left undisturbed *in situ*, as they lay outside the zone of development impact.

- 3.2.5 The final burial in this area, **118**, was uncovered within the western corner of the trench at a depth of 1.1m bgl (Plate 5). This consisted of a complete, adult-sized fishtail coffin, **116**, with intact head-, breast- and footplates. The coffin was photographed and recorded before the loose lid was lifted to reveal complete skeleton **117**. The skeleton was osteologically assessed *in situ* and, together with the intact coffin, was removed to a secure location.



Plate 5: Coffin **116**, looking north-west

3.3 ASSESSMENT OF COFFINS

- 3.3.1 **Introduction:** the coffins found on site can be placed into one of three categories depending on preservation and retrieval method; those left *in situ*, remnants of those containing exhumed individuals and those removed fully. Each of these will be treated separately here.

- 3.3.2 **In-situ coffins:** in the course of the watching brief, eleven coffins were exposed but not removed. All were of simple single-case wood construction (contemporary coffins could have multiple cases/layers of wood or lead) and nine were single-break coffins, whilst two, **38** and **43**, were rectangular. ‘Single-break’ denotes the familiar coffin shape, which is wider at the shoulders and then tapers towards the feet. The majority of the single-break coffins, **8**, **64**, **79**, **84**, **94** and **142**, had no apparent grips, upholstery studs or escutcheons (decorative plates placed on the coffin lid at either/both the head or feet ends), although the full extent of most of these coffins was not seen. Simple grips were present on coffins for graves **69** and **74** and were located at

the ends rather than the sides of the coffins. Coffin **89** had a shield-shaped brass breastplate on which was etched the following inscription, 'James Wilkie. Died Jan 17th 1871. [A]ged 55 years.'. The shape of the shield is the same as type 2 from St Martin's-in-the-Bull Ring, Birmingham (Brickley *et al* 2006, 159), where such forms date between 1862-1904 (*ibid*, 159).

3.3.3 **Coffins of exhumed individuals:** although burials **110**, **113**, **122**, **127**, **132** and **139** had each been exhumed, all six produced some evidence of coffins (**109**, **112**, **121**, **126**, **129** and **138**, respectively). Four of these coffins, **109**, **112**, **129** and **138**, were represented only by their bottom runners, but a single-break shape was still discernable. Presumably, the rest of the coffin had been removed with the human remains and these thin runners from the base of the coffin had become detached in the heavy clay. The other two coffins were represented only by fragments within the backfill of brick double vault **97**; these included a very corroded, generic D-shaped iron grip and shreds of fabric, possibly signifying that these burials were slightly more elaborate than others exposed on site.

3.3.4 **Fishtail coffin 116:** a complete, and well-preserved wooden single-case coffin was excavated and removed for further study (Plates 6 and 7). Recorded *in situ*, it was *c* 1.73m long and 0.48m across the widest point. Re-measurement in the laboratory suggested that little or no shrinkage had taken place, although there was some warping of the side boards. The coffin, with curving sides, narrowing from the shoulder to the ankle, and then flaring out again to the foot (a so-called fishtail coffin) comprised six separate wooden elements, each cut from single tangentially sawn boards. All joints were butted and screwed or nailed, although this was only visible at the head, where the end board had been displaced and five nails/nail holes could be seen. The vertical edges of the head and foot boards were slightly mitred to ensure a close and neat fit. Both the join between base and sides, and that between sides and lid, were reinforced by the addition of a bead-edged strip *c* 30mm deep and *c* 7mm thick and fixed by small pins, which may well have been intended to hide the screws or nails.



Plates 6 and 7: Coffin **116** (viewed from the head end), and its lid (from the foot end)

- 3.3.5 It is of note that the sides were made from single boards, c 10mm thick, with no joint or kerfing (internal scoring intended to aid bending) at the break, the sinuous curves at shoulder and ankle presumably achieved simply by steaming and bending the timber. It should be noted that subsequent to burial, the upper parts of the sides, immediately below the lid, had begun to bow outwards, tipping the walls of the coffin inwards. A trapezoidal brace (78mm at its widest point, and 14mm thick) had been inserted into the coffin at the notional break (presumably subsequent to the placement of the corpse and immediately prior to its closure), possibly in an attempt to avoid such collapse. The ends of the brace were roughly dovetailed into the coffin sides. The lid was decorated by the addition of a narrow half-round bead c 8mm across, set c 30mm in from its edge. The bead was nailed at approximately 150mm intervals with headless iron brads.
- 3.3.6 In all, there were five items of coffin furniture, all of tinned and embossed iron. None was in good condition, and they could not be examined in any detail. There were no grips or plates on the sides of the coffin, although single grips and grip-plates were observed at the head and foot. Both remained affixed *in situ*, but were too poorly preserved for further description. Interestingly there were also two drilled holes at each end, with the impression, preserved by surviving parts of the original clay matrix, of a perhaps organic decorative strip. The diameter of the holes might suggest an additional cord handle set above the iron grip. There were no metal reinforcements or escutcheons at the joints: their careful mitring perhaps making them more secure, or more visually attractive than the usual butt joints.
- 3.3.7 There was nothing to suggest that the coffin had been upholstered, as was common amongst contemporary caskets, and the use of high-quality oak boards suggests that they were intended to be seen. A small group of coarse organic fibres were noted on the lid (plate 8), and these appeared to have been loosely spun, but nothing suggests that these were part of a lost covering. It seems more likely that they might have been a bast twine, perhaps securing a floral tribute or similar decoration, although these were not introduced until c 1860 (Litten 1991, 170).



Plate 8: Fibres identified on the lid of Coffin **116**

- 3.3.8 There were three tinned and embossed plates on the lid, with the largest, presumably the *depositum* bearing details of the deceased, at the break (Fig 4). X-ray has confirmed this to be approximately shield-shaped, with decorative embossing at the edges. These embossed areas seem to have been gilded or tinned, with the remainder probably painted black, with personal information added in a contrasting colour. Sadly, any such details have been lost to corrosion of the underlying metal. The plates at head and foot, presumably simply decorative, were in very poor condition and, other than the possibility that that at the head end may have been a fleur-de-lis, cannot be further described. There were no internal plates.
- 3.3.9 All contents of the coffin had been removed prior to examination, but several extremely thin wood-shavings survived adhering to the sides and base of the coffin. These are most likely to have been generated by the use of a wood plane, and are probably the last remnant of shavings and sawdust, routinely placed in the base of a coffin as padding and to help deal with the fluids generated by decomposition (Litten 1991, 92). In addition, there was a large area of staining on the base, commensurate with the position of the left thigh of the deceased. This comprised parallel pale stripes, defined by thin, darker lines. Their origin has not been established.
- 3.3.10 Species analysis (by Dr Denise Druce) established all timber used for the coffin to be oak. Elm is regarded as the standard wood used for coffins (Litten 1991, 90) and the use of oak was considerably less common until the second quarter of the nineteenth century, when french polishing came into vogue, and at which point oak became considerably more popular (*ibid*). The presence of beading strips covering the joints also points to a polished finish, serving to hide any screws or nails used to close the coffin (*ibid*). The lack of evidence for any textile covering seems to corroborate this possibility. Oak remained expensive, however, and its use presumably reflects the social status of the deceased and her family.

3.4 ASSESSMENT OF HUMAN REMAINS

- 3.4.1 **Introduction:** of the 73 burials revealed by the groundworks, skeletal remains of only ten were exposed and could be recorded. There were three categories of human remains present on site; those left *in situ*, remnants of individuals exhumed previously, and complete skeletons. Each of these will be treated separately here.
- 3.4.2 **In-situ remains:** the results of on-site rapid assessment of the three individuals examined during the watching brief (skeletons **4**, **7** and **65**) can be found in *Appendix 4*. Only the cranium of skeleton **4** (grave group **5**) was exposed but it was in good condition and complete. All maxillary teeth had been lost *ante-mortem* and a corresponding set of false teeth on a copper-alloy plate had been used to replace them (Plate 9). On-site assessment determined that this individual was a mature female with no obvious skeletal pathology.
- 3.4.3 Skeleton **7** was disturbed quite heavily by machining and submerged in ground water. Only the upper half of the thorax and arms were exposed, with the rest

of this individual in section. Preservation was good and, though the mandible and maxilla had been lost to disturbance, the remains appeared to be those of an adult male with no obvious skeletal pathology. Skeleton **65** was 50-75% complete and exposed within its coffin, **64**. The preservation of the remains was good, although the majority of the vertebrae did not survive. Mandibular dental development, suggested that this individual was an 8 to 9-year-old child without any obvious skeletal or dental pathology.



Plate 9: Skeleton **4**; edentulous maxilla and copper-alloy prosthesis

3.4.4 **Cleared individuals**: the remains of approximately seven previously exhumed individuals were recovered from grave backfill deposits in the artwork foundation trench. All remaining bones, which were disarticulated and not in the correct anatomical position, were lifted and identified. The majority of bones recovered were from the hands and feet (36 out of 55); this is due to the fact that the labile connections of the extremities are the first to degrade and, once detached, these small bones are easy to miss during exhumation. Very little can be said of this limited assemblage; all the bones were those of adults, and neither pathology nor sexual dimorphism was evident.

3.4.5 **Skeleton 117**: the very well preserved and almost entirely complete skeletal remains of this individual were found within coffin **116**. This was a 25 to 35-year-old female and measured 155-160cm tall. The state of dentition was poor, with 16 out of 32 teeth lost *ante-mortem*, including all but two of the molars. The remaining teeth, that had not been lost *post-mortem*, had a high rate of caries, with 4 out of 9 teeth affected. Three abscesses were seen on the maxilla and there was considerable evidence of periodontal disease throughout both dental arches; however, there was a notable lack of calculus on all remaining teeth. There was also a significant amount of skeletal pathology present. The fifth lumbar vertebra was fully sacralised, causing a narrowing of the pelvic inlet and, potentially, complications in childbirth. The right clavicle had an oblique fracture to the mid-shaft that, although well healed, had not been well set, resulting in a significant shortening of this bone (being 119.5mm long compared to the 134mm length of the left clavicle). Further to this, the corresponding epiphysis of the right acromion had not fused. This bone, *os acromiale*, fuses in 94-97% of modern people at between 22 and 25 years old

(Roberts and Manchester 2005, 152). In the case of skeleton **117**, this lack of union could relate to trauma inflicted on the clavicle. The deltoid muscle originates at the lateral clavicle and the acromion, and the tension from this muscle could have kept the unfused acromion from uniting after the clavicle was significantly shortened. This suggests that the fracture to the clavicle occurred before this individual had reached full skeletal maturity.

3.4.6 Further pathology was observed in the spine: from the ninth thoracic vertebra upwards, the spine was slightly rotated to the left. This condition is called scoliosis and affects roughly 2% of today's population (although those chances increase tenfold if a family member is afflicted). Nineteenth-century treatment involved the application of bracing and a plaster jacket (Lovett 1913), and it is likely that this had caused the slight flattening of skeleton **117**'s thoracic spinous processes (plate 10). This has been seen previously in a medieval skeleton from Ripon, where it was hypothesised that treatment by compressing the upper chest cause this flattening (Groves *et al* 2003). In the case of skeleton **117** it is unlikely that a direct compression was the cause; rather, it is possible that an indirect compression due to a brace, plaster jacket or medical corset, put undue pressure on the posterior of the thoracic spine without treating the scoliosis effectively.



Plate 10: splaying of the dorsal end of skeleton **117**'s (left) thoracic spines can be seen clearly when compared to a normal specimen (right)

3.4.7 During the examination of the skeleton **117**, an object was identified within the skull. A physical examination by forensic pathologist Dr Jenny Robinson at the University of Central Lancashire, Preston, indicated that this material was likely to be brain, a hypothesis confirmed by a more detailed examination by Sonia O'Connor at Bradford University. Such preservation is rare, but not unheard of, and would appear to relate to burial soon after death and within a damp environment (S O'Connor *pers comm*).

4. CONCLUSION

4.1 DISCUSSION

4.1.1 **Introduction:** the programme of archaeological works has allowed the investigation and recording of archaeological remains that, despite their comparatively recent date and limited intrusion, are considered highly significant within the North West Regional Research Framework (Brennand 2006; Brennand 2007). Although post-medieval and industrial-period funerary practices have been approached from a historical perspective (ie, Litten 1991; Jupp and Gittings 1999), and there is an increasing body of work pertaining to corresponding archaeological remains (Spitalfields, London (Molleson and Cox 1993), and St Martin's-in-the-Bull Ring, Birmingham (Brickley *et al* 2006), being among the more celebrated examples), very little funerary archaeology, particularly osteology, has been conducted on nineteenth-century remains from the North West (McNeil and Newman 2006; Newman and McNeil 2007). The results of the archaeological works at St John's have thus helped to elucidate various aspects of industrial-period Blackpool's burial practice and some interesting insights into little-studied aspects of the town's social and medical history.

4.1.2 **Burial distribution:** the programme also provided an opportunity to test the accuracy of the 1927/54 graveyard plan. On the whole, there was a reasonable correlation between the identified graves and the burial plots, once the former had been surveyed and superimposed onto the 1927/54 plan of the latter (Fig 2). Certainly, where grave cuts were identified, but do not correspond even remotely with plots marked on the plan, it is possible to infer that this discrepancy arises from the fact that at least some interments might have lost their markers by 1927 (or, indeed, might never have had one). In the reverse situation, where plots are shown but seem unoccupied, it is likely that the grave cuts were obscured by the general level of disturbance or by the fact that the groundworks did not reach natural geology at these points. Overall, the results of the investigation would demonstrate that the horizontal usage of the graveyard was more intense than might be surmised from a rapid perusal of the 1927/54 plan. Most notably this was the case in the area of the artwork trench, where graves pertaining to ten individuals were found in an area apparently occupied by just three plots.

4.1.3 **Burial practice and fashion:** only rather limited observations can be made on the coffins because most of those encountered were either not exposed fully, or had already been removed. However, a general pattern of single-case, single-break wooden coffins is visible, with most having no elaboration whatsoever. The two rectangular coffins may not be so anomalous when it is considered that those observed at St John's were were for small children. Although never the most common of forms, the exceptionally well-preserved fishtail coffin, **116**, is not unique to Blackpool, and a number of lead examples were found at St Martin's-in-the-Bull Ring, Birmingham (it is likely that wooden examples had been deposited at St Martin's, but had since rotted away). There, fishtails tended to be more common in the earlier part of the

nineteenth century, and had fallen out of fashion around the late 1860s to early 1870s (Brickley *et al* 2006, 155). This range fits perfectly with the period that St John's churchyard was open to burials, but does little to refine the date of coffin **116**. However, it would seem from the use of polished rather than painted and upholstered wood that the coffin was likely to have been constructed well after 1825. This coffin would have undoubtedly been more expensive to manufacture than a single-break example and, coupled with the metal fittings, this was a distinctly elaborate burial.

- 4.1.4 Where grips were found, they were made of iron or brass and were found at the ends of the coffin. Iron was commonly used for grips in the nineteenth century but it was usual to have three grips either side of the coffin rather than at the ends coffins (Brickley *et al*, 153). The pattern at Blackpool is thus unusual, and may be a local or regional peculiarity, but its definition as a trend is limited by the small sample size. As with laterally placed handles, those at either end of the coffin are likely to have been more decorative than functional, as suggested by the positioning of holes for slightly more practical rope handles in either end of fishtail coffin **116**.
- 4.1.5 A further variation, or local interpretation, is provided by the brass breastplate from grave **91**. By convention, shield-shaped breastplates were meant to symbolise a boy or young man (Brickley *et al* 2006, 156). However, as is the case here, it was common for nineteenth-century coffin manufacturers not to adhere to conventions (*ibid*, 158), and it is possible that the family of 55-year-old James Wilkie were following their own tastes, or reinterpreting conventions to their own needs (one might speculate, for example, that James had been a bachelor, or been buried by his aged mother).
- 4.1.6 The two burials within the brick double vault had evidence for more elaborate and possibly upholstered coffins. It was common for burials in expensive brick vaults to be more grand than earth-cut graves and Litten (1991, 101) describes the triple shell, wood/lead/wood container, as 'the traditional coffin for the burial vault and brick-lined grave'. In the case of the double vault at St John's, the presence of a non-corruptible lead shell seems unlikely given the number of bones that escaped collection during exhumation. This suggests that the greater amount of airflow in the vault had hastened the degradation of the coffin, making it harder to recover all of the bones.
- 4.1.7 **Evidence from skeletal remains:** analysis of skeletal remains has revealed some very interesting aspects of Victorian medical and social history. Firstly, the poor dental health of two individuals reveals a great deal about people's diet in this period. Both Skeletons **4** and **117** had suffered widespread dental disease, including substantial *ante-mortem* tooth loss. This high degree of tooth decay is not uncommon for this period and it is almost certainly related to a massive increase in sugar consumption through the eighteenth and nineteenth centuries; by 1900, British sugar consumption reached 90 pounds per person per year (Roberts and Manchester 2005, 69). This led to a marked increase in the rate of dental caries from 5.6% in the late medieval period to 11.2% in the post-medieval, an increase of 100% (*ibid*). Therefore, even though skeleton **117** was not very old when she died, it is not surprising that

her dentition was in such a high state of decay; in the dentures of skeleton **4**, one can see the end result of such a sugary diet. Indeed, given the richness of the funeral attributed to burial **118**, it is perhaps surprising that there was no evidence of dental prosthesis on skeleton **117**. One can only assume that a mouthful of cavities, abscesses and, no doubt, inflamed gums, rendered any such substitutes too painful until all the teeth had been lost and a complete set of dentures could be affixed.

- 4.1.8 The treatment of skeleton **117**'s scoliosis is also interesting. Scoliosis is a lateral curvature of the spine in the lumbar or thoracic region, and can range from slight to more severe, and occasionally even double curvature. Problems resulting from this condition include decreased physical capabilities, back pain and, notably amongst young women, poor self image (Asher and Burton 2006, 5-6). Modern treatments include bracing, using thermoplastic moulds, or surgery (*op cit* 6). Before the use of surgery in 1914, all that was available was bracing and, in both modern (*ibid*) and contemporary opinions (Lovett 1913), was considered ineffective. Skeleton **117** could have been subjected to such a treatment with pressure being applied in an antero-posterior rather than a medio-lateral direction, causing flattening of the spinous processes of the thoracic vertebrae. This condition could have had a serious effect on a person's self-esteem and self-image and it is unlikely that any of the cumbersome, restrictive, correction devices of the nineteenth century did anything to resolve either the mental or physical aspects of the scoliosis.
- 4.1.9 **1927 clearance:** the examination of primary documentation has allowed the extent of the 1927 clearance to be discussed in *Sections 1.3.5* and *1.3.6*. Archaeological evidence revealed within St John's churchyard can enhance this discussion. For example, grave **91** contained the sealed coffin and intact burial of James Wilkie, who is recorded on the 1927 clearance monument. This provides proof that, whilst names from the removed gravestones were transcribed to the 1927 memorial, the majority of individuals commemorated remained *in situ*.
- 4.1.10 The methodology employed during the clearance is hinted at by the discovery of burial **118**, the only one of eight investigated graves in the artwork foundation trench not to have been exhumed in 1927. The depth of burial **118** was not substantially greater than that of some of its neighbours, so it seems unlikely that the coffin had lain just below the limit of 1927 development impact and had thus been left *in situ*. Rather, burial **118** seems to have been an omission precipitated by two possible factors. The fishtail coffin was clearly an expensive item and it is very likely that the burial would have been accompanied by a monumental marker. However, it is evident from the proximity of grave **132** that subsequent interments had been made in the plot (likely to be plot 68 recorded on the 1927/58 plan). This activity could have involved the replacement, or amendment, of the original marker, although whether all of the interments were recorded thereon is not definite. It is possible, however, that the 1927 clearance team removed the contents of grave **132** and at that point assumed all human remains had been exhumed from that plot.

- 4.1.11 A second possibility is that the location of Burial **118** was known at the time of the 1927 clearance, but had been purposely left. In a letter to the cemetery registrar, DL Harbottle (1927c) states, as a condition of the Open Spaces Act 1906, that:

'before removing or changing the position of any tombstone or monument the Local Authority shall deliver or send by post a notice to any person known or believed by the Local Authority to be a near relative of any person whose death is recorded on any such tombstone or monument.'

Assuming that these communiqués were issued, it is possible that the family of this individual made a request to prevent the exhumation of these remains.

- 4.1.12 Where evidence for the 1927 exhumation was identified, the process seems to have been fairly thorough: the great majority of the coffins and human remains were removed. Indeed, it seems likely that the majority of the coffins, sharing similar burial conditions that had preserved fishtail coffin **116**, had remained in better condition than the exhumation company had envisaged when they ordered a number of fresh coffins for reburial (*Section 1.3.6*). Those coffin parts that were found (bottom runners and handles) were those that might easily become detached from the rest of the container when levered from the sticky clay, whilst the small bones were generally those that might escape from the ruptured casket. The one exception to this, as discussed above, seems to be the evidence from vault **97**. It is unlikely that the majority of coffins would have been made as well as fishtail coffin **116**, and any warping or cracks to the timbers and their joins would have permitted the seepage of groundwater and coffin liquor. There was plenty of evidence that the exhumation team had sought to combat this unpleasant effluvia by spreading absorbent sawdust on the base of each emptied grave.

- 4.1.13 *The identity of the human remains*: with the exception of James Wilkie, none of the human remains were accompanied by any legible means of identification. However, the plot numbers on the 1927/58 graveyard plan were quite clearly used during the exhumation and subsequent reburial at Layton Cemetery. Suzi Moden, the cemetery manager, was able to establish from cemetery records that Plot 75, that occupied by twin vault **97**, had been used for Martha Barrett (died 4th October 1872, aged 50) and Hannah Barrett (died 19th March 1882, aged 32). Both were apparently removed to Layton Cemetery where they have a recorded grave. Hannah, in particular, demonstrates the continued utilisation of a family plot some time after the churchyard had been closed to new interments. Only one burial, that of Sarah Barnabas Billington (died 15th December 1869, aged 46 years) is recorded as having been exhumed from Plot 68, that which contained burials **118** and **132**. Sarah again has a documented grave at Layton Cemetery (S Moden *pers comm*). One could assume from this that Sarah was the only individual recorded on this plot's gravestone, or, that at the time of her exhumation, her coffin plate was still legible.

- 4.1.14 Although it might be considered likely that Burial **118** should share with Sarah Barnabas Billington a familial relationship, as well as her burial plot, examination of the burial register finds no others of that name, save a 20-

month child. It seems highly unlikely that, had the child been placed in Sarah's grave subsequent to her own burial, that it would have been mistaken for her by the exhumation contractors in 1927. The physical relationship between burials **118** and **132** suggests that the former was earlier, and must, therefore, have been interred prior to 1869. However, examination of the burial register provided the names of many women in the 25-35 age bracket buried between 1825 and 1869 and, whilst other avenues of documentary research may prove fruitful, the identity of the 'fishtail lady' must, for now, remain a mystery.

4.2 IMPACT

4.2.1 Overall, the impact of the development groundworks completed to date was not particularly severe. Only one previously undisturbed burial had to be removed and all other complete burials that were exposed remained *in situ*. Following the commencement of the watching brief, all exposed archaeological remains were recorded, and great efforts were made by the groundwork contractors to revise the depth of excavation and limit disturbance.

4.3 PROSPECTS FOR FUTURE ARCHAEOLOGICAL WORKS

4.3.1 The present programme of fieldwork and research has demonstrated the strong likelihood that the majority of burials within the churchyard remain *in situ* and have not been disturbed previously; this includes remains within plots marked on the 1927/54 churchyard plan, and a number of unmarked graves that occupy the spaces between. Moreover, it cannot be assumed that all human remains within those plots nominally cleared in 1927 and 1954 have been removed; both intact burials and disarticulated skeletal material may remain in these areas. It should also be noted that the burials that were found were at a fairly shallow depth and are thus likely to represent the uppermost examples of stacks. In addition, several of the plots would appear to contain burials placed side by side. Overall then, the density of burial is likely to be much greater than suggested by the plan, particularly in those less well-appointed parts of the churchyard where paupers were likely to have been buried with only minimal spacing. No further groundworks are presently planned for St John's Churchyard, but it is clear that any future works should be accompanied by an appropriate and well-considered programme of archaeological works.

5. BIBLIOGRAPHY

5.1 PRIMARY AND CARTOGRAPHIC RESOURCES

Anon, nd, *Estimate for the cost of removal of monuments and selected burials in advance of the Cedar Square Development*

Bateson, H, 1930 *Letter outlining space made available in Layton cemetery and the cost*, written by H Bateson, Borough Treasurer, on 29th January 1930

Harbottle, DL, 1927a *Letter to the cemetery registrar concerning requests for providing new vaults for families whose vaults still have sufficient space for interments*, written by DL Harbottle, Town Clerk, on 1st April 1927

Harbottle, DL 1927b *Faculty granted by the Church for the 1927 removal of headstones and human remains*, written by DL Harbottle, Town Clerk, and dated 17th November 1927

Harbottle, DL 1927c *Letter to the cemetery registrar concerning contacting the relatives of the individuals whose memorials/tombstones were being removed*, written by DL Harbottle, Town Clerk, on 19th August 1927

5.2 SECONDARY RESOURCES

Asher, MA, and Burton, DC, 2006 Adolescent Idiopathic scoliosis: natural history and long term treatment effects. *Scoliosis* 1:2. Published online at <http://www.scoliosisjournal.com/content/pdf/1748-7161-1-2.pdf>. Consulted 01/05/09.

Brennand, M (ed), 2006 The archaeology of North West England, an archaeological research framework for North West England: Volume 1 Resource Assessment, *Archaeology North West* Vol 8:18

Brennand, M (ed), 2007 Research and Archaeology in North West England, an archaeological research framework for North West England: Volume 2 Research Agenda and Strategy, *Archaeology North West* Vol 9: 19

Brickley, M, Buteux, S, Adams, J, and Cherrington, R 2006 *St Martin's Uncovered. Investigations in the Churchyard of St. Martin's-in-the-Bull Ring, Birmingham 2001*, Oxford

English Heritage, 1991, *The Management of Archaeological Projects*, second edition, London

Farrer, W, and Brownbill, J, 1912 *The Victoria County History of the County of Lancaster*, 7, London

Groves, SE, Roberts, CA, Johnstone, C, Hall, R, and Dobney, K, 2003 'A high status burial from Ripon Cathedral, North Yorkshire: differential diagnosis of a chest deformity, *International Journal of Osteoarchaeology* **13**: 358-368

Jupp, PC, and Gittings, C, 1999 *Death in England, an Illustrated History*, Manchester

Lancashire County Council (LCC) and Egerton Lea Consultancy, 2005 *Blackpool Historic Town Assessment Report*, Lancashire Historic Town Survey Programme, Preston

Litten, J, 1991 *The English Way of Death: the Common Funeral since 1450*, New York: Robert Hale.

Lovett, RW, 1913 'The History of Scoliosis,' *The Journal of Bone and Joint Surgery*. s2-11: 54-62.

McNeil, R, and Newman, R, 2006 The Industrial and Modern Period Resource Assessment, in M Brennand (ed), 165-94

Middleton, R, Wells, C, and Huckerby, E, 1995, *The Wetlands of North Lancashire*, Lancaster Imprints **4**, Lancaster

Molleson, T, and Cox, M, 1993 *The Spitalfields Project: the Middling Sort*, London

Newman, R, and McNeil, R, 2007 The Industrial and Modern Period Resource Agenda, in M Brennand (ed), 133-58

Roberts, C, and Manchester, K, 2005 *The Archaeology of Disease*, Third Edition, Stroud

Walker, K 1990 *Guidelines for the preparation of excavation archives for long-term storage*, London: United Kingdom Institute for Conservation Archaeology Section

www.stjohnsblackpool.org.uk/history.htm, consulted March - May 2009

6. FIGURES

Figure 1: Site Location

Figure 2: Overall plan of development groundworks and archaeological investigations, combined with the 1927/54 graveyard plan

Figure 3: Plan of recorded funerary features

Figure 4: Scale drawing of the Coffin *116* breastplate

APPENDIX 1: PROJECT DESIGN

ST JOHN THE EVANGELIST CHURCHYARD, CHURCH STREET, BLACKPOOL, LANCASHIRE

**Archaeological
Watching Brief:**

Project Design; V2



Oxford Archaeology North

March 2009

Blackpool Borough Council

OA North Job No: t10504

NGR: SD 3490 0303

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Blackpool Borough Council (hereafter the ‘Client’) has submitted proposals for the redevelopment of parts of the former burial ground of the church of St John the Evangelist, Church Street/Abingdon Street, Blackpool, Lancashire (centred SD 3490 0303). The present development comprises the localised reduction of parts of the former burial ground by as much as 1.2m below their existing level and the installation of paving, a retaining wall a statue, and also a fountain (with associated plumbing). There will also be a programme of drain-laying within narrow deep trenches. Developmental groundworks have revealed a number of funerary remains, including coffins, burial monuments and human remains and, accordingly, Lancashire County Archaeology Service (LCAS) has recommended that a programme of archaeological works should be undertaken in association with any intrusive groundworks within the former burial ground. The nature of the remains requires a specific mitigatory response, and the following written scheme of investigation (WSI) has been prepared by Oxford Archaeology North (OA North) at the request of the Client and following guidance from LCAS. The document has been compiled in preparation for a range of eventualities and as such seeks to be as comprehensive as possible. However, the relevance of some of the sections contained herein, particularly those concerned with detailed analysis, may be discounted as the project progresses and more is known about the site and the number of skeletons that will be revealed or disturbed. It is recommended that regular liaison should be maintained during the course of the works, so that all appropriate parties are aware of the quantity of human remains revealed, and whether this will lead to a reduction or escalation to the scope of archaeological works. The document includes:

- a methodology for undertaking a watching brief during groundworks within the area of the former burial ground, together with the careful removal of any skeletonised remains encountered by this process;
- a methodology for undertaking rapid osteological analysis during the fieldwork, and for detailed laboratory analysis following the completion of the fieldwork, including provisional strategies for biochemical analysis; the propriety for these techniques will be determined by the results of the rapid analysis, and a more detailed methodology can be provided subsequently.

1.2 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

1.2.1 The following represents a very brief overview of the present state of knowledge pertaining to the site, and will be augmented further, as necessary. St John the Evangelist is Blackpool’s Parish Church, founded in 1821 when the town’s population numbered a mere 749 souls (www.stjohnsblackpool.org.uk/history.htm). Although the building was augmented on several occasions, Blackpool’s rapidly expanding population required a larger church and, in 1878, construction of the present building, was completed on the site of its predecessor (*ibid*). The church could seat a congregation of 1223, roughly a sixth of Blackpool’s contemporary population. The earliest burials within the present burial ground would appear to have followed soon after the completion of the first church; it is not unthinkable that some of these early burials lay within the area subsequently occupied by the present, larger church, and that they may then have been moved to other parts of the churchyard, were replaced within the foundations of the existing building, or lie, intact, within its footprint. The burial ground seems to have been closed to new burials in 1870, corresponding with the opening of Layton municipal cemetery (*ibid*), although it seems that another 40 burials were added to existing family plots over the ensuing years (Audrey Rawlings pers comm).

1.2.2 Although the present whereabouts of the church burial register is not known specifically, two pieces of primary documentation held by the manager for Blackpool’s cemeteries and crematoria are of some use in helping to ascertain the rough number of interments that were made within the churchyard. The first is an undated plan of the churchyard produced some time between 1927 and 1954 (when it appears to have been last amended) which shows some

160 burial monuments, whilst the second, not necessarily contemporary, document, is a catalogue of the information inscribed on those monuments. In 1927 334 bodies were exhumed from the churchyard (www.stjohnsblackpool.org.uk/history.htm); an examination of the burial monument plan would suggest that these derived from graves at the eastern end of the churchyard, as around 20 graves associated with monuments are shaded pink on the plan. Although the monument catalogue records as many as six or seven interments within some of these graves, 334 burials is too great a number to have come from those shaded pink on the plan. It must be concluded either that more of the marked graves were emptied than shown, or, that a number of burials from unmarked graves were exhumed. In 1954, eight further bodies were exhumed (www.stjohnsblackpool.org.uk/history.htm), likely to correspond with several graves along the southern edge of the churchyard that had been shaded blue on the plan. As a result of these processes, the church history (*ibid*) records that only the graves of Dr WH Cocker, the first Mayor of Blackpool and of Revd WH Thornber, a past vicar of St John's and a noted historian were retained at the eastern end of the church.

- 1.2.3 The recent discoveries would, however, throw these assertions into some considerable doubt. Indeed, when it is considered that the churchyard is likely to have accommodated a significant proportion of the town's deceased, the tally of 342 burials might very easily have been reached within the space of a single decade (even allowing for a fairly low death rate of 30/1000/annum). It is not unreasonable, therefore, to assume that several, if not many, times that number of burials remain interred within the churchyard.
- 1.2.4 **Nature of the buried remains:** the site has not been evaluated, and has not been the subject of a geophysical survey. As such, any estimate of the nature of the funerary and ecclesiastical remains that might be encountered within the development area must be considered rather conjectural. The distribution of burials, aside from those shown on the monument plan, is also hard to ascertain, and it is possible that, rather than an even spread, there may be concentrations, both vertically and horizontally. There is also the possibility of encountering extensive chanel deposits associated with the relocation of bones disturbed by expansion of the first church and the construction of the second.
- 1.2.5 The burials are likely to be in a typical supine posture. Given that the congregation was likely to represent a cross section of the community, there is likely to be a mixture of coffin styles, and even examples of burials without such housings. Considering the number of burial monuments that were once extant, representative of the more wealthy parishioners, it is not unreasonable to surmise that there is good potential for recovery of fittings such as name plates as well as other decorative elements. Complex funerary structures, such as vaults, brick-lined tombs or shafts, and also lead coffins, may also have been used.

1.3 OXFORD ARCHAEOLOGY

- 1.3.1 **Oxford Archaeology North:** formerly Lancaster University Archaeology Unit, OA North has been the northern office of Oxford Archaeology (OA) since 2002. Based in Lancaster, the company has considerable experience of excavation of sites of all periods, having undertaken a great number of small- and large-scale projects throughout Northern England during the past 25 years. Evaluations, desk-based assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables. OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an **Institute of Field Archaeologists (IFA) registered organisation, registration number 17**, and all its members of staff operate subject to the IFA Code of Conduct.
- 1.3.2 **Heritage Burial Services:** based in Oxford, Heritage Burial Services (HBS) is OA's dedicated burial archaeology department, and was formed four years ago in response to the rising demand for burial archaeology. Under the directorship of Dr Louise Loe, a human osteologist and a specialist in many areas of burial archaeology, the department employs four fully-qualified and experienced osteoarchaeologists to undertake a range of projects including desk-based assessments, project designs, evaluation, excavation and watching briefs, often successfully utilising new and innovative methodologies. HBS has excavated funerary sites from virtually all periods of human history, and has particular experience with post-medieval

and industrial period churchyard excavation and church crypt clearance, such as St Luke's church, Islington, where more than a thousand eighteenth- and nineteenth-century burials were successfully recorded and removed. Another example comprises the Royal Naval Hospital, Greenwich, where the graves of more than a hundred retired sailors were revealed. Osteological analysis has revealed extraordinary rates of trauma, deficiency diseases (such as scurvy and rickets) and infections (such as TB, syphilis and yaws). A monograph publication is in preparation. Similar works have been undertaken at St Bartholomew's Church, Penn, Wolverhampton, and the crypt of St George's church, Bloomsbury, during which time the methodology was developed that is held as the gold standard for crypt clearance by the Diocesan Advisor to the Church of England in London. The recent excavation within the eighteenth- to nineteenth-century churchyard of St Hilda, South Shields, Tyne and Wear, recovered over 200 burials from a shored trench reaching more than 5m below ground level.

2 LEGAL, ETHICAL AND RELIGIOUS CONSIDERATIONS

2.1 LEGAL CONSIDERATIONS

2.1.1 Parts of the burial ground remain consecrated and there is thus a requirement for the Parochial Church Council (hereafter the PCC) to ensure that appropriate Faculty permissions have been granted (Care of Churches and Ecclesiastical Jurisdiction Measure 1991, Faculty Jurisdiction Measure 1964). Furthermore, no intrusive groundworks, or removal of human remains can take place within the area of the former burial ground until written correspondence has been received from the Ministry of Justice, either a licence in compliance with the strictures of the Burial Act 1857 (section 25), or a directions letter under the Town and Country Planning Act 1990.

2.1.2 It is the responsibility of the site management to ensure that the local Environmental Officer, is informed of the proposed exhumation and to provide a Risk Assessment and this methodology for the works. The site currently falls under CDM (Construction Design and Management) regulations and, as a secondary contractor, OA North will comply with all necessary legislation and reasonable requirements of the principal contractor by operating under the principal contractor's safe system of works, by providing a specific risk assessment which will accompany the corporate health and safety policy and ensuring the maintenance of a safe working environment within OA working areas. OA North will ensure that all employees and authorised visitors are fully-instructed in appropriate risk avoidance and approved on-site procedures (Public Health (Control of Diseases) Act 1984). The Health and Safety at Work Act 1974 under which the Personal Protective Equipment at Work Regulations are made will be complied with at all times by the Archaeological Contractor. Evidence of appropriate procedures will be detailed in the Risk Assessment.

2.2 ETHICAL AND RELIGIOUS CONSIDERATIONS

2.2.1 All staff involved in the exhumation and recording of the remains will be expected to behave with due care and attention, showing respect for the dead at all times. The burials represent the remains of past parishioners and thus particular consideration will be afforded to the sensitivities of the current parishioners and residents in all exhumation and archaeological works. The excavation and osteological analysis of human remains will be screened from the public at all times.

2.2.2 It is anticipated that all human remains (both disarticulated and articulated) and associated coffins and fittings will be reburied following osteological analysis. The municipal cemetery has been proposed, but it is recommended that this matter be discussed with all interested parties and that there is an agreement with the Ministry of Justice.

3 STANDARDS

3.1 OA shall conform to the standards of professional conduct outlined in the Institute of Field Archaeologists' *Code of Conduct*, the IFA *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* (1990, revised 1997), the IFA *Standards and Guidance for Excavations and Watching Briefs* (1994) and the British Archaeologists and Developers' Liaison Group *Code of Practice*.

3.2 OA is a member of the Institute of Environmental Assessment and the Council for British Archaeology. All osteologists are members of the IFA and BABAO, and subscribe to standards of excavation of human remains (McKinley and Roberts 1993) and methodologies of osteological analysis (Brickley and McKinley 2004) set out by these organisations, and to English Heritage's *Guidance for best practice for the treatment of human remains excavated from Christian burial grounds in England* (Mays 2005). Full archaeological recording and excavation, according to the Institute's Standard for archaeological excavation, will be followed for all structures and non-burial deposits.

4 RESEARCH AIMS

4.1 THE POTENTIAL VALUE OF THE BURIAL ASSEMBLAGE

4.1.1 The aim of this archaeological project design is to ensure that as much detail as possible is recorded by the archaeological project team prior to and following the removal of burials from the Study Area. To this end, the archaeological team will be in constant attendance on the main contractor. Within the North West, very little work has been undertaken on human remains dating to the industrial period, and such studies are recognised as an important avenue of research within the *Archaeological Research Framework for North West England* (Brennand 2007; Newman and McNeil 2007, 147)

4.1.2 Unlike so many churchyards where burials span several centuries, those lying within the Study Area date to a relatively short time period (1821-1870), and hence, have great potential to offer a 'snapshot' of the population of Blackpool in the early Victorian period. This has considerable implications for exploring aspects of the social demographics of the Blackpool population and disease prevalence in that community in that specific period in time. Indeed, very little work of this nature has been undertaken in the North West, and no large assemblages have been analysed (Newman and McNeil 2007, 149); the St John's assemblage thus represents an extremely rare opportunity to trace the physical affect of industrialisation within the heartland of the revolution. The importance of such material is recognised within the *Archaeological Research Framework for North West England* (Brennand 2007):

Recover and analyse eighteenth- and nineteenth-century skeletal assemblages where they are to be disturbed through burial ground redevelopment (Newman and McNeil 2007, 150)

4.1.3 These demographics can then be compared with statistics deriving from studies of contemporary assemblages, such as that from Redearth, Darwen (OA North, forthcoming) and from other parts of the country, such as those from St George's, Bloomsbury (Boston *et al* in prep), St Martin's, Birmingham (Brickley *et al* 2007), Newcastle (Nolan 1997), the Quaker burial ground in Kingston-upon-Thames (Bashford and Pollard 1998; Start and Kirk 1998), the Carver Street Methodist Church, Sheffield, and from Hammersmith (OA forthcoming). Most importantly, if a significant assemblage is recovered from St John's, it is likely to represent the first such data from a conformist churchyard in the North West, and the manner in which it is treated will set the standard and basis for comparison for future works in the region.

4.1.4 Similarly, the short duration of burial in this area offers potential in studying aspects of funerary archaeology specific to this 50 year span. Whilst breastplates of well-preserved and more wealthy coffins do offer specific dating evidence of this class of coffin, many questions lie unanswered regarding changing burial fashions and practices amongst the less affluent. Although few memorials are visible on the surface of the site, fragments of any such monuments recovered during the groundworks represent an important resource, and their study is included as a research initiative within the *Archaeological Research Framework for North West England* (Brennand 2007):

7.30 Record and analyse burial memorials and establish a regional database (Newman and McNeil 2007, 150)

4.2 HUMAN OSTEOLOGY

- 4.2.1 The later eighteenth and nineteenth centuries were characterised by rapid urbanisation, as large numbers of rural people moved from the countryside to the industrialised towns and cities in search of employment. Under such conditions, Blackpool expanded rapidly through a variety of planned and less formal developments, generally characterised by poor public health amenities, and a high prevalence of infectious diseases. Poor air quality, overcrowding, malnutrition and poor working conditions amongst the working classes led to very high rates of mortality and morbidity. St John's is thought to have served the religious requirements of a cross section of Blackpool's population, and to include members of the labouring and middling classes. As such, a study of the human remains from the burial ground provides an excellent opportunity to study the manner in which the longevity and general health of the congregation may have been affected by varying living and working conditions and access to resources.
- 4.2.2 **Rapid osteological analysis:** it is proposed that all articulated skeletons will undergo rapid osteological analysis to gain basic demographic and physical anthropological information, and to assess their potential for full analysis (*Section 4.2.3*). A detailed description of this methodology is presented in *Appendix 1*. It is proposed that during the main phase excavation this work will be undertaken onsite; however, during the watching brief, at which time OA staff may not be able to establish facilities within the work timetable, it will be more efficient to undertake this phase of the works in the laboratory following the completion of the watching brief. By examining the entire assemblage, rather than a sample, the demography of the assemblage (such as age and sex distribution, and stature estimation) will be best understood. Although not exhaustive, a good general understanding of the demography and the general health and diseases afflicting this group will be established.
- 4.2.3 **Full osteological analysis:** an appropriate sample of the recovered assemblage will be selected for full osteological analysis, as outlined in *Appendix 1*. This recording will follow the same ageing, sexing and stature methodology undertaken in rapid osteological analysis, but will also include a detailed skeletal inventory, true prevalence, metrical analyses, and more systematic recording of pathological conditions and non-metric traits. Where specific research questions could be addressed, the full analysis would also include full consideration of scientific techniques, such as the use of ancient biomolecules for determining the gender of child skeletons and for examining evidence of pathogens; chemical analysis of isotopes for helping to examine diet and geographic origins and also heavy metal analysis where this might help to provide evidence of occupations and involvement with industrial processes. Consideration would also be given to the use of root translucency as a technique for providing a more accurate age to individuals.
- 4.2.4 As indicated, full analysis would be undertaken on a sample of the remains; selection criteria for this sample will be subject to change in the course of excavation, as new research questions arise. These criteria will aim to best represent the total assemblage both temporally, and in terms of social composition, and will aim to represent the following:
- A range of earlier and later burials (determined from the relative stratigraphic relationships of burials to one another, and through dating from breastplate inscriptions)
 - Spatial layout of burials both in the vertical and horizontal planes
 - Named individuals (so that biological and biographical data may be compared and integrated). Named individuals tend to be buried in more elaborate coffins and generally represent the more affluent of the population.
 - An equal proportion of unnamed individuals interred without, or in more simple coffins (to best represent the less affluent sector of the population)

- Skeletons displaying unusual pathological conditions (as a means of furthering understanding of the prevalence and epidemiology of diseases in the past) and heritable non-metric traits (as a means of assessing familiarity between skeletons)
- Skeletons that show evidence of medical and/or dental interventions both pre- or post-mortem (as a means of furthering the history of medicine and dentistry)
- Skeletons of individuals buried in a manner uncharacteristic of the time period (who may either be earlier or later burials, or who were marked out for different treatment in death).
- It is hoped that many research questions and trends noted during rapid osteological analysis may be explored more fully in this sample.

4.3 FUNERARY ARCHAEOLOGY

4.3.1 **Coffin recording:** coffined burials became increasingly popular in the post-medieval period, particularly from the late seventeenth to early eighteenth centuries onwards. The plain rectangular and trapezoid wooden boxes comprising early coffins gradually were replaced by elaborately decorated and upholstered single break varieties (Litten 1991).

4.3.2 During the eighteenth and early nineteenth centuries, it was regarded as paramount to one's social standing and very respectability to give the dead as good a 'send off' as one could possibly afford. In the highly stratified society of eighteenth- and nineteenth-century England, the socio-economic status of the deceased and their family was thus reflected in the elaboration of the coffin. The poorest comprised a single thickness wooden case decorated with few fittings (usually just iron grips), whilst coffins of the middle and upper classes comprised a double thickness of wood; an outer wooden case and inner lead shell; a lead shell and inner wooden coffin; or a triple layer of a wood-metal-wood (most commonly lead). The upholstered exterior was decorated with elaborate studwork, punched metal plates: escutcheons, lid motifs and *departum* plates (breastplates, footplates and headplates), which were inscribed with the name of the deceased, their age and date of death and other particulars.

4.3.3 The systematic recording of coffin fitting styles was first undertaken at Christ Church, Spitalfields (Reeve and Adams 1993). The associated catalogue formed the basis to Oxford Archeology's coffin fitting recording methodology, by which matching types were categorised. In this way it has been possible to refine many date ranges of the Spitalfields material. Numerous previously unrecorded styles have also been encountered on OA churchyard sites, including St George's Church, Bloomsbury (Boston *et al* in prep); St Luke's Church, Islington (Boyle *et al* 2005); St Nicholas', Sevenoaks (Boyle 1995); Rycote Chapel, Oxon (Boston 2008); St Bartholomew's, Penn, Wolverhampton (Boyle 2004a and b); the Baptist and Quaker burial grounds, Kings Lynn, Norfolk (Mahoney and Boston in press), and the Quaker burial ground, Hemingford Greys, Cambs (Clough 2007). These styles were illustrated and dated. Using this material and that of Christ Church, Spitalfields, OA is currently compiling a master catalogue, which it hopes will soon be widely available to field archaeologists as a valuable reference.

4.3.4 Given the known nineteenth-century date of burial at the site, and the it is highly probable that the remnants of at least some coffins and their fittings will be recovered, even if such practice was not universal. Indeed, present evidence suggests that certainly the uppermost burials, perhaps by dint of their later interment, or due to lesser amounts of soil pressure, are contained within extremely well-preserved coffins. From the details of the coffins, it should be possible to make a number of inferences about the social standing of individual burials thus equipped, providing a valuable basis of comparison for the osteological material. Any new coffin fitting types will be drawn and recorded on *pro-forma* context sheets, and added to the master catalogue currently being compiled.

4.3.5 Although the potential for the preservation of *departum* plates is low, any biographical details obtained from legible inscriptions will be recorded and further documentary research will be made. In this way, biographies of some of the individuals interred at St John's may be explored. This has considerable value to local and regional history and to genealogy.

- 4.3.6 **Extramural vaults and brick shaft graves:** in the eighteenth and nineteenth centuries, concern over disturbance of the remains of family members (either through grave robbing or by later burials), and the increasing use of death ritual for social display led to the establishment of subterranean brick-built family vaults and shaft graves for the interment of multiple burials. A vault traditionally has a vaulted roof, the entrance to the interior commonly being through a doorway in one of the sidewalls (often with a set of steps leading down to it). A brick shaft grave is essentially a rectangular or single break grave cut lined with a single or double layer of bricks and mortar. Brick shaft graves may be of single or double width. The top of the grave is covered by horizontal ledger stones (often sandstone or limestone slabs), which may be removed for subsequent interments. Coffins were stacked vertically one above the other within the grave, sometimes resting on metal racks. Vault and brick shaft graves were originally surmounted by above-ground memorials.
- 4.3.7 **Extramural above-ground memorials:** features such as head and foot stones, ledgers and other recumbent memorials, became increasingly common in the post-medieval period and are often associated with specific burials or family plots. Recent work by Mytum (2002) and Tarlow (1999) has traced changing traditions in the shapes, iconography and text inscribed on these memorials. Headstones also offer valuable biographic information on individuals interred in the graveyard. Any memorials will be described according to Mytum's criteria, and the inscription recorded. The record of these memorials will be a valuable addition to this new and developing field. As with named coffins, the biographical details gleaned from these memorials are of local and regional interest and to genealogists throughout the world.

5 SCOPE OF ARCHAEOLOGICAL FIELDWORK

- 5.1 The following programme has been designed to identify the presence of any human remains within those parts of the former burial ground that will be impacted upon by the development, and to investigate, record and remove those remains where they would be effected by groundworks, together with as much supporting information concerning the depth, orientation, burial furniture and dating as the circumstances within the service trenches allow. The archaeological fieldwork will comprise:
- A watching brief during all intrusive groundworks within the site of the former burial ground, including general ground reduction, wall footings and service runs.
 - Any Coffins revealed during this process will be recorded. Where they are intact, they will not be opened.
 - Any skeletonised burials encountered during this process will be recorded, rapidly analysed in the ground (or in an appropriate place free from public view and intrusion) and rapidly excavated, making use of onsite survey equipment. Additional staff will be deployed as necessary.

6 METHOD STATEMENT

6.1 WATCHING BRIEF

- 6.1.1 **Methodology:** all machining within the area of the former burial ground should be undertaken by 360 mechanical excavator fitted with a toothless ditching bucket and operated by an experienced and careful driver. Below the level of the topsoil, the removal of material in long shallow spits of 0.05m – 0.1m will be monitored by a suitably experienced osteoarchaeologist, who will direct the machine when necessary. Such a methodology will minimise damage to any human burials or other archaeological remains. The programme of field observation will record the location, extent, and character of any surviving archaeological features and/or deposits as accurately as possible within the area of proposed ground disturbance. Where health and safety considerations allow, any human remains revealed by the machining and lying within the zone of impact, would be screened from public view, recorded *in situ* and removed from the trench. For the trench to be considered safe for entry, it must be at least twice as wide as it is deep, and no unsecured vertical section may

exceed 1m in height. Given the looseness of the material, any trench edges should be battered back to a safe angle of repose. If a shoring system is to be used, it should be installed by a specialist contractor, and the principal contractor should ensure that all necessary standards are maintained and equipment, including a gas detector, is provided.

- 6.1.2 it would be preferable for spoil deriving from initial excavation of sterile layers surfaces and their make-up and from each separate burial strata could be kept separate in order that such material can be systematically searched for human remains and any other artefacts as soon as it is safe to do so. The rough location of such remains would be recorded as accurately as possible to allow this material to be tied in with the field observations. Dependent on the frequency of disarticulated human remains within overburden deposits, and whether spoil is to be removed from site, it may be prudent to assign a second archaeologist to the task of sorting through this material. As required, additional archaeologists could be supplied to the site to deal with greater numbers of *in situ* burials if these were safely accessible given the probable limited space within the shored trench. The investigation and excavation of human remains would be undertaken in accordance with the methodology outlined in *Section 6.2*, with the main exception being that rapid analysis/assessment will be undertaken offsite following the completion of the watching brief. For health and safety reasons, it will not be viable to ‘chase’ burials that extend beyond the limit of excavation.
- 6.1.3 Putative non-burial archaeological features and/or deposits identified during the observation of groundworks, together with the immediate vicinity of any such features, will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions and, where appropriate, sections will be studied and drawn. Any such features will be sample excavated (ie. selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal).
- 6.1.4 **Recording:** all recording will be undertaken in accordance with national guidelines (English Heritage Guidelines for the treatment of human remains excavated from Christian burial grounds) and OA guidelines, wherever possible, and in the case of human remains, will be undertaken in accordance with *Section 6.2* of this project design. It will be necessary to record the three-dimensional location of burials. If a total station is useable on site, this will be utilised, otherwise, the burials will be recording in the horizontal plane by offsetting measurements from known fixed points, with the vertical plane recorded though the use of a dumpy level. Recording would take the form of indexed monochrome print and colour digital photography, appropriately-scaled plans and sections on permanent drafting film together with detailed written notes on *pro-forma* recording sheets.

6.2 EXCAVATION AND RECORDING OF FUNERARY REMAINS

- 6.2.1 Each burial will be recorded in terms of burial position, any grave goods, and the coffin and its fittings. Burials will be characterised and their location recorded. The human remains and coffins will be exhumed and contained within lidded cardboard boxes or opaque burial sacks with attached identification/location tags, and removed from the immediate vicinity for storage prior to their analysis and reburial. This process will continue down to impact level at a depth of approximately 1.2m below the modern ground level.
- 6.2.2 In accordance with recommendations set out in the English Heritage and Church of England (2005) document *Guidance for best practice for treatment of human remains excavated from Christian burial grounds in England*, elements of a skeleton that extend well beyond the external limits of the trench will not be removed. If there is any scope for the extension of the excavation, those elements that extend beyond the internal limit of the trench will be left *in situ* in this phase, but tagged to aid later identification.
- 6.2.3 A single context recording system is usually employed in traditional burial excavation using separate context sheets for the grave cut, fill, coffin and skeleton. Experience on similar church burial grounds, however, has shown that this is not necessarily informative (cf Bashford and Pollard 1998, 155). For example, grave cuts vary only in their dimensions, and grave fills are generally of a fairly uniform character. It is considered more useful to record the grave and its

contents on a single burial sheet, with additional sheets for recording osteology and coffins. Thus, the grave cut, fill, coffin and skeleton of a burial will be assigned a single group number. Specialised recording forms will be available for the recording of both coffins and skeletons.

6.2.4 Should any brick vaults or shaft graves be present, a scaled plan of each vault or shaft grave will be produced. Location, dimensions and method of construction will be noted. Any memorials discovered beneath the present ground surface in the course of excavation and watching brief will need archaeological recording. Each buried memorial will be accorded an individual context number. They will also be included as part of the grave group, if the association with the burial is clear. It is important to note that many tombstones have been moved from their original position, and care in establishing an association with a specific burial should be made. Such buried memorials will be recorded on *pro-forma* context sheets, based on and following the guidelines set out by Mytum (2002) and will include details of

- Shape
- Dimensions
- Type of stone used
- Iconography (an illustration may best describe these features)
- Inscription (*verbatim* record of inscription; font of the lettering)
- Stylistic type

Following recording, the memorial will be carefully removed by the mechanical excavator, and relocated.

6.2.5 The site grid will be accurately tied into the National Grid and located on the 1:2500 or 1:1250 map of the area. A register of plans will be kept. Plans will be drawn at a scale of 1:20 or 1:50 as appropriate. The location, depth and orientation of each articulated burial will be recorded using EDM, by noting the relative position of the skull and feet. More detailed plans of individual burials will not be routinely undertaken, as this is not particularly informative. OA believes that this level of recording is appropriate to post-medieval burial archaeology, which is characterised by considerable uniformity in body position (supine and extended). Atypical burial positions will be planned in more detail. Long sections of trenches showing layers will be drawn at 1:10 or 1:20 as appropriate. A register of sections will be kept. All sections will be tied in to Ordnance Datum.

6.2.6 OA has developed a specific CAD programme (Crossbones) into which survey data may be entered. A three-dimensional image of the spatial distribution of the burials may thereby be generated. This has proved particularly useful in the analysis of complex burial stratigraphy, and may be utilised if similar conditions are encountered at St John's. A demonstration of the Crossbones programme is available on the OA website (www.thehumanjourney.net). If the sequence of burial in the Study Area proves very complex, the Crossbones programme may be implemented to assist interpretation in the excavation and post-excavation phase.

6.2.7 A monochrome print and colour digital photographic record, illustrating in both detail and general context the principal features and finds discovered, will be maintained. Routine archaeological photography of each skeleton will not be undertaken, however. A representative sample of burials will be photographed. The photographic record will also include working shots to illustrate more generally the nature of the archaeological work. Photographs will be recorded on OA Photographic Record Sheets.

6.2.8 Following archaeological recording, each skeleton will be removed and placed within an opaque plastic bag and marked with its unique burial number. These will be removed and stored in a secure locked room or container on site.

- 6.2.9 Provisional rapid osteological analysis will take place on site during the ongoing fieldwork, out of sight of the general public. This analysis will comprise rapid osteological analysis of all articulated skeletons, as detailed below. During this phase, a representative sample of skeletons will be set aside for full osteological analysis.
- 6.2.10 Charnel will be collected for reburial but will not undergo systematic osteological analysis. The assemblage will be rapidly scanned to broadly characterise the assemblage. Particularly unusual osteological features (such as pathology and non-metric traits) will be digitally photographed on site. Like the articulated skeletons, charnel will be retained on site in a secure location pending reburial.
- 6.2.11 **Sampling for biochemical analysis:** during the fieldwork it will be necessary to excavate some skeletal elements in a manner that allows them to be sampled for biochemical analysis. It is important that such samples are not washed, and that efforts are made to minimise cross contamination in the case of DNA. Because it is considered that DNA would be a useful tool in the establishment of the gender of child burials, it is proposed that the mandibles (or maxillae where no mandible is present) from child burials should be bagged separately from the rest of the skeleton, leaving the dirt adhering. Staff should wear clean gloves when undertaking this work. Staff should take a 1 litre sample of the soil from around each burial that has been sampled for biochemical analysis. The same procedure should be enacted upon a generous cross section of the adult burials, in order to test for the DNA of pathogens. No further examination of the samples would be permissible, as it is likely that the DNA specialist would wish to extract teeth under laboratory conditions, before returning the remainder of the skeletal material for osteological analysis. Where hair is preserved that would be appropriate for heavy metal analysis, this should be collected with gloved hands and bagged with any adhering soil. Samples of teeth and bone for the analysis of isotopes can be collected during the analysis stage, and certainly after any similar elements for the DNA analysis have been taken.
- 6.2.12 **Recent burials and fleshed or partially-fleshed bodies:** no recent burials are known to lie within the development area but, should mechanical excavation reveal the presence of fleshed or partially-fleshed burials, or coffins containing liquor or other corruption products, it would be necessary to inform the Environmental Health Officer and agree a suitable strategy for their recovery and disposal; all further works would conform to any requirements that the EHO may set. Detailed archaeological recording of recent burials is not desirable, and only their location will be noted. OA does not remove recent or fleshed human remains, but will be happy to recommend a recognised exhumation company who will undertake this work on behalf of the client at a cost agreed with the Client and charged as a variation. Any lead coffins would not be opened, but would need to be removed, stored and deposited by a specialist contractor, the costs of which would be agreed with the Client as a variation.
- 6.2.13 **Treatment of finds:** all finds will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines. All identified finds and artefacts will be retained, although certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained on advice from the recipient museum's archive curator.
- 6.2.14 **Coffins:** dependent on local or differential preservation conditions, coffins appear to survive in varying degrees of completeness, ranging from entire to mere fragments of wood. Intact coffins will be recorded but will not be opened; they will need to be removed by a specialist contractor with suitable lifting gear. Remains of damaged coffins containing fully skeletonised remains will be recovered as part of the fieldwork programme, and subsamples will be taken for species identification. Where large timbers are well-preserved, and identified as being of suitable material, these will be assessed for their potential for dendrochronology, particularly if there is evidence that these timbers may have been reused to make coffins. Cathy Tyers at Sheffield University will be consulted to establish whether any such timbers are suitable for the study of industrial period timber origins and.

- 6.2.15 **Treasure:** any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.
- 6.2.16 **Contingency plan:** in the event of significant non-burial archaeological features being encountered during the watching brief, discussions will take place with the Client and LCAS as to the extent of further works to be carried out. All further works would be subject to a variation to this project design. In the event of environmental/organic deposits being present on site, it would be necessary to discuss and agree a programme of palaeoenvironmental sampling and/or dating with the Planning Archaeologist.

6.3 OSTEOLOGICAL ANALYSIS

- 6.3.1 All skeletons will undergo rapid osteological analysis on site during Stage 1 and 2. Of these, an appropriate sample will be selected for more detailed analysis. These skeletons will be removed to OA headquarters in Oxford, where they will be washed, and fully analysed in the laboratory. Following osteological analysis they will be taken straight to the reburial site.
- 6.3.2 **Rapid osteological analysis:** rapid skeletal analysis of the entire articulated assemblage will allow the most accurate and representative reconstruction of the demography of the buried population, including age, sex and stature. To include the entire assemblage is preferable to selecting a sample, however representative it is judged to be. Rapid osteological analysis will be undertaken on all articulated skeletons by a suitably qualified osteologist from OA's specialist burials department, Heritage Burial Services. Curricula vitae of these osteoarchaeologists can be supplied on request.
- 6.3.3 It is envisioned that this analysis will be undertaken within a screened area on site. In this way, unnecessary transportation of human remains will be avoided. Rapid skeletal analysis employs the same osteological methods set out by the IFA and BABAO (Brickley and McKinley 2004), and is described more fully in *Appendix 1*. Wherever bone survival permits, this analysis will include:
- Minimum number of individuals
 - Preservation and completeness (including dental inventory)
 - Full age and sex estimation
 - Stature estimation
 - Gross skeletal pathology
- 6.3.4 In addition to this palaeodemographic data, an inventory of the dentition of each skeleton will be made. The presence of pathological conditions, such as caries, peri-apical abscesses, calculus, dental enamel hypoplasia and ante-mortem tooth loss, will be recorded so that the true prevalence of these conditions may be calculated. In addition, the skeletons will be rapidly scanned for pathological conditions, and the location and general appearance of the lesions described. Due consideration will be given to the use of biochemical analysis within a legitimate research framework, and will be undertaken by a recognised specialist, including:
- Ancient DNA analysis to establish the gender of children, allowing them to be considered more closely within a demographic context and to allow similar comparative analysis to adults in a way that would not be possible in non-dimorphic skeletal material
 - Biochemical evidence of pathogens, including tuberculosis, which would allow a better understanding of endemic and epidemic diseases, as well as a study of members of the population who either carried or succumbed to the disease
 - Tooth root translucency for the aging of individuals

- Examination of Harris Lines and other radiometric techniques
- Carbon and Nitrogen isotope analysis to aid an understanding of diet and nutrition, particularly when combined with demographic information, occupation-related pathology and documentary study
- Oxygen and Strontium isotope analysis as an aid to understanding the origins and movement of typically mobile industrial period populations.
- Heavy metal analysis that might provide information on the industrial processes with which members of the congregation may have been involved

6.3.5 **Full osteological analysis:** during the rapid analysis process described above, a sample of burials will be selected for more detailed or full osteological analysis. A summary of this methodology is presented in *Appendix 1*. This analysis will take place after the completion of fieldwork and will be enacted within a clear research framework outlined within a revised project design. The selected skeletons and any samples for biochemical analysis will be transported to OA headquarters in Oxford, where they will be processed (washed or brushed, but not marked). They will then undergo full appropriate analysis in the laboratory, before being reburied.

6.4 STORAGE OF REMAINS AND REINTERMENT

6.4.1 OA will be responsible for the individual bagging or boxing of skeletons. Bones, grave goods and associated coffins and fittings will be placed within a secure locked store on site pending analysis. It is likely that, following completion of the fieldwork, the excavated assemblage will be transported to OA's offices at either Lancaster or Oxford, where they will reside whilst detailed analysis is undertaken. If the results of the rapid analysis indicate that the remains are completely unsuitable for any form of detailed analysis, this strategy may be reviewed, to minimise movement of the remains and to expedite their reinterment. Personal effects, such as wedding rings and dentures, will be recorded but reburied with the associated skeleton. Artefacts from within the grave will not be retained.

6.4.2 Disturbed human remains and coffins will be reburied in accordance with directions of the client, but it is important that all interested parties are consulted on this matter. The location of the final resting place will require agreement from the Ministry of Justice and with the all genuine stakeholders. It is envisioned that reburial of skeletonised remains will be undertaken soon after any analysis is complete, although it should be considered that the length of time for undertaking biochemical analyses may mean the extension of the timetable.

6.5 ARCHIVE, REPORTING AND PUBLICATION

6.5.1 **Archive:** the site archive (paper and photographic record) will be prepared for long-term storage with the Lancashire Record Office, Preston, in accordance with standard guidelines (Walker 1990). No artefacts associated with burials will be retained for archiving. Agreement will be sought for the full indexed archive of the project to be deposited as a publicly accessible collection with the Lancashire Record Office, Preston, having been first offered to the RCHME for security copying. The detailed report of the results will be part of this archive.

6.5.2 **Assessment report:** following completion of the fieldwork and of the rapid osteological analysis, an assessment report in accordance with English Heritage MoRPHE (2007) guidelines will be compiled. This illustrated document will synthesise the results of the project, summarising the salient results of the rapid analysis and assessing the significance of the recovered data within a local, regional and national context. The document will then provide a revised project design for detailed analysis to address valid questions posed within the framework of the *North West Regional Research Agenda* (Brennand 2007). This report will be submitted to the client and to LCAS in hard copy and digital form for inclusion in the County record, and will form the basis for all further work to be undertaken upon the excavated assemblage.

- 6.5.3 **Publication:** it is envisaged that the results of the osteological programme, comprising fieldwork, assessment and analysis, will be worthy of publication. The scale of this publication will be dependent upon the size and significance of the assemblage, and may take the form of an article published in a relevant journal (e.g. *Church Archaeology* or *Post-Medieval Archaeology*), or, where information is sufficient, as a monograph.

7 HEALTH AND SAFETY

- 7.1 OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All work will be carried out to the requirements of *Health and Safety at Work, etc. Act 1974*, *The Management of Health and Safety Regulations 1992*, the SCAUM (Standing Conference of Archaeological Unit Managers) H & S manual *Health and Safety in Field Archaeology 1991*, the OA Health and Safety Policy, and any main contractors requirements. A copy of the OA's Health and Safety Policy is available on request. OA will require copies of the H & S policies of all other contractors and operators present on site in compliance with *The Manual of H & S Regulations 1992*. A risk assessment will be completed in advance of any on-site works and copies will be made available on request to all interested parties.

- 7.2 **Infectious diseases:** funerary archaeology presents a specific and complex range of hazards. The risk of anyone contracting smallpox is remote but the potential threat to the population at large is such that it must be taken seriously. Staff will wear protective clothing including disposable suits and gloves where the survival of coffin liquor and soft tissue is suspected. Full protective suits, gloves and dust masks will also be worn if working in enclosed spaces, such as vaults, where there is a danger of inhalation of lead dust from coffins. In the presence of working machinery, high visibility vests and hard hats will be worn at all times.

- 7.3 Where lead coffins were used there may be an increased risk of infection due to the good preservation of bodies and other materials. The highest risk category is that of the sealed lead coffin. If any soft tissue remains are encountered, the hazard presented will be treated as potentially severe and suitable protective systems will be used. It is not only the human remains themselves that present a risk but also the coffin linings and pads, and the result of the body's decomposition, a viscous black liquid. The greatest potential risk presented by this activity is that of contracting anthrax, although the risk associated with working with the remains of a recorded anthrax death are thought to be small. A higher risk is gained from the well-preserved horsehair or woollen materials used in the coffin pads, pillows and packing. Minimum precautions are to wear the correct level of protective equipment. On site washing facilities will be provided for all staff.

- 7.4 Protective clothing will remain within the area of the site for the duration of the work. Overalls, gloves and disposable respirators will be sealed in opaque plastic bags and disposed of in accordance with statutory requirements.

- 7.5 **Lead coffins:** although lead coffins will be recorded, OA does not undertake their removal or disposal, but is happy to recommend a reputable exhumation company who are willing to undertake this work.

8 INSURANCE

- 8.1 Apart from this specification which defines many of the site working methods and practices the indication Method Statement will be reused and reissued by the appointed Main Contractor and Archaeological Contractor in consultation with the PCC and Archaeological Consultant. This will form the basis of the working relationship between all parties involved.

- 8.2 OA holds Employers Liability Insurance, Public Liability Insurance and Professional Indemnity Insurance. Details will be supplied on request. OA will not be liable to indemnify the client against any compensation or damages for or with respect to:

- The use or occupation of land (which has been provided by the Client) by the Project or for the purposes of completing the Project (including consequent loss of crops) or interference whether temporary or permanent with any right of way, light, air or water or other easement

or quasi easement which are the unavoidable result of the Project in accordance with the Agreement;

- Any other damage which is the unavoidable result of the Project in accordance with the Agreement;
- Injuries or damage to persons or property resulting from any act or neglect or breach of statutory duty done or committed by the client or his agents, servants or their contractors (not being employed by the Oxford Archaeological Unit) or for or in respect of any claims demands proceedings damages costs charges and expenses in respect thereof or in relation thereto.

9 TIMETABLE AND RESOURCES

9.1 TIMETABLE

9.1.1 The duration of the watching brief will be dependent upon that of the the scale of the groundworks. No exhumations or other below ground works should take place unless an archaeologist is in attendance. The timetable for the for the completion of the open area excavation is dependent upon a review of the finalised development plans within this area. At present it is estimated that works will take between 3 and 6 weeks. It is anticipated that fieldwork would be able to commence following approval of the WSI by LCAS.

9.2 RESOURCES

9.2.1 The watching brief will initially be undertaken by a single osteoarchaeologist, with additional team members supplied as required. The team for the open area excavation will initially comprise two osteologists and two archaeologist, one to monitor the machine, and the other to undertake the survey. Additional team members will be supplied depending on the demands of the task. A mechanical excavator, storage for c 100 burials (a single lock-up), mess facilities (toilets with running water, canteen and drying room), a secure tool store and an office within which the burials can be rapidly analysed will be required throughout the excavation phase.

9.2.2 The fieldwork will be under the direct management of **Stephen Rowland** (OA North project manager) to whom all correspondence should be addressed. The programme of osteological assessment and analysis would be managed by **Louise Loe** (OA Head of Heritage Burial Services). It is likely that the watching brief will be undertaken by Caroline Raynor (OA North Project Officer) and John Griffiths (OA North Osteologist); Caroline and John have undertaken a number of similar projects, including recording and recovery of human remains and *in situ* burials from a shored sewer trench in South Shields. Present scheduling commitments preclude allocation of a specific team member to the maintenance of the watching brief, but OA North will ensure that a suitably experienced member of staff is supplied.

9.3 GENERAL CONSIDERATIONS

9.3.1 The programme of work outlined in this document will be met in full where reasonably practicable. Any significant variations to the proposed methodology will be agreed with the local authority's archaeological representative in advance.

9.3.2 The scope of work detailed in the main part of the Written Scheme of Investigation is aimed at meeting the aims of the project in a cost-effective manner. OA attempts to foresee possible site-specific problems and resource these. However, there may be unusual circumstances that have not been included in the costing and programme.

- Unavoidable delays due to extreme bad weather, vandalism, etc.
- Complex structures or objects, including those in waterlogged conditions, requiring specialist removal.

- Extensions to specified trenches or feature sample sizes requested by the archaeological curator.

9.4 PROJECT MONITORING

- 9.4.1 **Access:** liaison for site access during the evaluation will be arranged with the client and principal contractor unless otherwise instructed prior to commencement of the archaeological investigation.
- 9.4.2 Whilst the work is undertaken for the Client, OA North will ensure that LCAS are kept fully informed of the work and its results, and will be notified a week in advance of the commencement of the fieldwork. Any proposed changes to the project design will be agreed with LCAS in consultation with the Client.

10 COPYRIGHT AND CONFIDENTIALITY

- 10.1 The client holds copyright of all drawings and other records produced as part of this work.
- 10.2 Oxford Archaeology will retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide an exclusive licence to the client in all matters directly relating to the project as described in the Written Scheme of Investigation.
- 10.3 OA will assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988 (Chapter IV, s.79).
- 10.4 OA will advise the client of any such materials supplied in the course of projects, which are not OA's copyright.
- 10.5 OA undertakes to respect all requirements for confidentiality about the client's proposals provided that these are clearly stated. It is expected that such conditions shall not unreasonably impede the satisfactory performance of the services required. OA further undertake to keep confidential any conclusions about the likely implications of such proposals for the historic environment. It is expected that clients respect OA's general ethical obligations not to suppress significant archaeological data for an unreasonable period.

11. BIBLIOGRAPHY

Bashford, L, and Pollard, T, 1998 'In the burying place'' – the excavation of a Quaker burial ground in *Grave Concerns: death to burial in post-medieval England, 1700-1850*, (ed. M Cox), CBA Research Report No. 113, York

Boston 2008 *Rycote chapel, Rycote, Thame, Oxfordshire: coffin recording in the crypt*, unpublished Oxford Archaeology watching brief report

Boston, C, Boyle, A and Witkin, A, (in prep) 'In the vaults beneath'- an archaeological recording action at St George's church, Bloomsbury Way, London, Oxford Archaeology Burials Series

Boyle, A, 1995 *A catalogue of coffin fittings from St Nicholas, Sevenoaks*, unpublished archive report

Boyle, A, 1999 A grave disturbance: archaeological perceptions of the recently dead in *The loved body's corruption: archaeological contributions to the study of human mortality* (ed J Downes and A Pollard) Cruithne Press

Boyle, A, 2004a *St Bartholomew's church, Penn, Wolverhampton- results of an excavation in the churchyard*, unpublished archive report

- Boyle, A, 2004b What price compromise, Archaeological investigations at St Bartholomew's church, Penn, Wolverhampton, *Church Archaeology* Vol. 5 and 6
- Boyle, A, Boston, C, and Witkin, A, 2005 *The archaeological experience at St Luke's church, Old Street, Islington*, unpublished archive report, Oxford Archaeology
- Boyle, A and Keevill, G 1998 "To the praise of the dead, and anatomie". The analysis of the post-medieval burials at St Nicholas, Sevenoaks, in *Grave Concerns: death to burial in post-medieval England, 1700-1850*, CBA Research Report No. 113, York
- Brickley, M, Buteux, S, Adams, J and Cherrington, R 2006 *St Martin's uncovered- investigations in the churchyard of St Martin's-in-the-Bullring, Birmingham, 2001*, Oxbow Books
- Brickley, M, Miles, A and Stainer, H, 1999 *The Cross Bones burial ground, Redcross Way, Southwark, London, archaeological excavations (1991-1998) for the London Underground Limited Jubilee Line Extension Project*, MoLAS Monograph 3, London
- Brickley, M and McKinley, J 2004 *Guidelines to the standards for recording human remains*, IFA Paper No. 7
- Cowie, R, Bekvalac, J, and Kausmally, T, in press *Late 17th to 19th-century burial and earlier occupation at All Saints, Chelsea Old Church, Royal Borough of Chelsea and Westminster*, MoLAS publications
- Clough, S 2007 *Archaeological investigations in the Quaker burial ground, Hemingford Greys, St Ives, Cambridgeshire*, unpublished archive report, Oxford Archaeology
- Geotechnical and Environmental Associates 2005 *Ground investigation report St Paul's Church, Queen Caroline Street, Hammersmith, London, W6*, unpublished client report
- English Heritage, 1991 *Management of Archaeological Projects*, 2nd edn, London
- Institute of Field Archaeologists (IFA), 1992, *Guidelines for data collection and compilation*
- Litten, J 1991 *The English way of death- the common funeral since 1450*
- Mahoney, D, and Boston, C in press, The Quaker burial ground, in Brown, R, *Excavations at the Vancouver Centre and Clough Lane Car Park, Kings Lynn*, East Anglian Archaeology Monograph Series
- Mays, S 2005 *Guidance for best practice from the treatment of human remains excavated from Christian burial grounds in England*, The Church of England and English Heritage
- McKinley, J and Roberts, C 1993 *Excavation and post-excavation treatment of cremated and inhumed human remains*, IFA Technical Paper No. 13
- Molleson, T, Cox, M, Waldron, A H and Whittaker, D, K 1993 *The Spitalfields Project. Volume 2-The Anthropology. The Middling Sort*, CBA Research Report No. 86, York
- Mytum, H 2002 *Recording and analysing graveyards*, Practical Handbook in Archaeology 15, CBA in association with English Heritage
- Nolan, J, 1997 *The international centre for life: The archaeology and history of the Newcastle Infirmary*, Newcastle City Archaeology Unit unpublished client report
- Powers, N 2005 *Evaluation of disarticulated remains recovered from the Royal London Hospital, Whitechapel*, unpublished assessment report

Powers, N 2006 Assessment of human remains excavated from the Church of St George-the-Martyr, Southwark, Westminster, unpublished report, MoLAS

Powers, N, and Walker, D, 2006 *Report on the human bone from St Marylebone, Westminster, London*, MoLAS unpublished archive report

Reeve, J and Adams, A 1993 *The Spitalfields Project. Volume 1 – The Archaeology. Across The Styx*, CBA Research Report No. **85**, York

Scheuer, L 1998 Age at death and cause of death of the people buried in St Bride's Church, Fleet Street, London, in *Grave Concerns. Death and burial in England 1700-1850* (ed. M Cox CBA Research Report No **113**, York

Start, H, and Kirk, L 1998 'The bodies of Friends' – the osteological analysis of a Quaker burial ground, in *Grave Concerns. Death and burial in England 1700-1850* (ed. M Cox, CBA Research Report No 113, York

SCAUM (Standing Conference of Archaeological Unit Managers), 1997, *Health and Safety Manual*, Poole

Tarlow, S 1999 *Bereavement and commemoration. An archaeology of mortality*

United Kingdom Institute for Conservation (UKIC), 1998, *First Aid for Finds*, London

Walker, K 1990 *Guidelines for the preparation of excavation archives for long-term storage*, London: United Kingdom Institute for Conservation Archaeology Section

APPENDIX 2: OSTEOLOGICAL METHODOLOGY

Introduction

Osteological methodology will be undertaken using two different levels of detail: rapid osteological analysis and full osteological analysis. Both will use the same ageing, sexing and stature methodologies described below, as set out by the IFA and BABAO (Brickley and McKinley 2004).

Rapid osteological analysis

It is proposed that the entire assemblage of articulated burials will undergo rapid osteological analysis. This analysis will take place in a designated area on site, and will be performed on unwashed material, although judicious washing of specific skeletal features will be undertaken as the osteology requires. Rapid osteological analysis comprises full age, sex and stature estimation that is set out below.

Except in the cases where samples have been taken from unwashed material for biochemical analysis, a full dental inventory will be made, and dental pathologies fully recorded, making calculation of true prevalence possible. A skeletal inventory will not be made, although completeness and preservation of the skeleton will be recorded. The bones will be rapidly scanned for pathological changes, and their site and location will be recorded. From this crude prevalence will be calculated.

Full osteological analysis

An appropriate sample of the assemblage will be selected during rapid analysis, according to the demographic profile and also to the criterion set out above, in order to achieve a representative cross section of the buried population in terms of demography and burial treatment. The type and intensity of analysis will be dependent upon the results of the MoRPHE assessment, which will consider the significance of the assemblage within a local and regional research framework.

Except for those elements selected for biochemical analysis, these skeletons will be washed, but not marked, and will undergo full osteological analysis, as set out by Brickley and McKinley (2004). This will be a more detailed analysis than the above, including the same ageing, sexing and stature techniques and dental inventory, but also a detailed skeletal inventory, metrical analysis, recording of non-metric traits, and more detailed description of pathological lesions.

General terminology and equipment used

The anatomical terminology used in this report will be in accordance with international nomenclature. The descriptive teeth formula used will be based on the Zsigmondy system (Zsigmondy 1861 in Hillson 2003, 8-9). All bones and teeth will be analysed macroscopically.

Preservation and completeness

Bone preservation and completeness of the assemblage will be rated on a four-point scale, ranging from 1 (poor) to 4 (excellent). Likewise, skeletal completeness will be scored on a scale of 1 - 4 : 1 (< 25 %); 2 (25- 50 %); 3 (50- 75 %); and 4 (> 75 %). Possible causes of the differential bone survival and diagenesis on the site will be discussed.

Estimation of age at death

Diaphyseal long bone lengths will be used as the basis for ageing fetuses and neonates using methods developed by Fazekas and Kósa (as adapted in Scheuer and Black 2000). Subadults will be aged by the stage of dental eruption (Mooreess *et al.* 1963a and b)), stage of epiphyseal fusion (Scheuer and Black 2000) and diaphyseal length of the major long bones (Maresh 1970).

The adult skeletons will be aged by degeneration of the auricular surface of the pelvis (Lovejoy *et al.* 1985), the sternal end of the ribs (İşcan and Loth 1986 a and b) and the pubic symphysis (Brooks and Suchey 1990; Todd 1921a and b); epiphyseal fusion of the medial clavicle (Scheuer and Black 2000); dental attrition (Miles 1962), and suture obliteration (Meindl and Lovejoy 1985).

All individuals will be assigned a suitable precise age group as defined in Table 1.

Age group	Age range
Foetus	< 0 years
Neonate	0-1 months
Infant	0-1 years
Young child	2-5 years
Older child	6-12 years
Adolescent	13-17 years
Young adult	18-25 years
Prime adult	26-35 years
Mature adult	36-45 years
Older adult	> 45 years
Child	2-12 years
Subadult	< 18 years
Adult	> 18 years

Table 1. Age groups employed in analysis

Estimation of sex

Sexually dimorphic features of the pelvis and cranium will be used to diagnose osteological sex based on standards set out in Buikstra and Ubelaker (1994) and Schwartz (1995).

Estimation of stature

Calculation of body stature will be estimated from the maximum length of the major long bones will be based on the method for Caucasians developed by Trotter and Gleser (Trotter 1970). Combined measurements of the femur and tibia will be utilised wherever possible, and in the absence of one of these bones the femur and then the tibia will be used. The major bones of the upper limb will be used if no lower limb bones are present. The left side will be used preferentially in keeping with standard osteological practice.

For comparative studies on stature between populations, it is recommended to use the actual bone measurement rather than the calculated estimates (Brothwell and Zakrzewski 2004, 33). The raw long bone lengths will be given as an appendix to the specialist report.

Skeletal and dental pathologies

The terminology and descriptions of the skeletal pathologies used in the report will be based largely upon palaeopathology texts, such as Ortner (2003) and Aufderheide and Rodríguez-Martín (1998).

Dental pathologies will be described in accordance with Hillson (2003), Ortner (2003) and others. Dental calculus will be recorded according to Brothwell's methods (1981), and dental enamel hypoplasia according to Hillson (2005). The location on the tooth and severity of the carious lesions will also be described in the primary record.

Reporting

The results of the full analysis will be detailed within a report or publication draft, detailing the demography of the burial population, prevalence of skeletal and dental disease limited osteometrics. The data will be considered in its archaeological context, taking into account phasing and burial practices.

The osteological analysis will be compared with osteological work undertaken on contemporary skeletal assemblages, such as those listed in *Section 4.1.3*. The prevalence of pathologies will also be compared to rates calculated for the period by Roberts and Cox (2003).

Bibliography

Aufderheide, A C, and Rodríguez-Martin, C, 1998 *Cambridge encyclopaedia of palaeopathology*, Cambridge

- Brooks, S, and Suchey, J M, 1990 Skeletal age determination based on the os pubis: a comparison of the Acsádi-Nemeskéri and Suchey-Brooks methods, *Human Evolution* **5**, 227-238
- Brothwell, D, 1981 *Digging up bones*, Oxford University Press, Oxford
- Brothwell, D. and Zakrzewski, S. 2004 Metric and non-metric studies of archaeological human bone, *Guidelines to the Standards for Recording Human Remains, IFA Paper No 7*, Reading
- Buikstra, J E, and Uberlaker, D H, 1994 *Standards for data collection from human skeletal remains*, Arkansas Archaeological Survey Research Series No. **44**
- Hillson, S, 2003 *Dental Anthropology*; Cambridge University Press, Cambridge
- Hillson, S, 2005 *Teeth*, Cambridge Manuals in Archaeology, Second Edition, Cambridge
- İşcan, M Y, and Loth, S R, 1986a Determination of age from the sternal in white females, a test of the phase method, *Journal of Forensic Science* **31**, 990-999
- İşcan, M Y, and Loth, S R , 1986b Determination of age from the sternal in white males, a test of the phase method, *Journal of Forensic Science* **31**, 122-132
- Lovejoy, C O, Meindl R S, Pryzbeck, T R, and Mensforth, R P, 1985 Chronological metamorphosis of the auricular surface of the ilium: a new method for the determination of adult skeletal age at death, *American Journal of Physical Anthropology* **68**, 15-28
- Maresh, M M, 1970 Measurements from roentgenograms, in *Human Growth and Development* (ed. R W McCammon), 157-200
- McKinley, J, and Roberts, C, 1993 *Excavation and post-excavation treatment of cremated and inhumed human remains*, IFA Technical Paper No.13
- Meindl, R S and Lovejoy, C O, 1985 Ectocranial suture closure: a revised method for the determination of skeletal age at death based on the lateral-anterior sutures, *American Journal of Physical Anthropology* **68**, 29-45
- Miles, A E W, 1962 Assessment of the ages of a population of Anglo-Saxons from their dentitions, *Proceedings of the Royal Society of Medicine* **55**, 881-886
- Moorees, C F A, Fanning E A, and Hunt, E E, 1963a Age variation of formation stages for ten permanent teeth, *Journal of Dental Research* **42**, 1490-1502
- Moorees, C F A, Fanning E A, and Hunt, E E, 1963b Age variation of formation and resorption of three deciduous teeth, *American Journal of Physical Anthropology* **21**, 205-213
- Ortner, D J, 2003 *Identification of pathological conditions in human skeletal remains*. 2nd edition, New York
- Roberts, C, and Cox, M, 2003 *Health and disease in Britain from prehistory to the present day*, Sutton Publishing UK, Stroud
- Scheuer, L, and Black, S, 2000 *Developmental Juvenile Osteology*, London
- Schwartz, J F, 1995, *Skeleton keys*, Oxford University Press
- Todd, T W, 1921a, Age changes to the pubic bone: 1 The male white pubis, *American Journal of Physical Anthropology* **3** (3), 285-334
- Todd, T W, 1921b, Age changes in the pubic bone, *American Journal of Physical Anthropology* **4** (1), 1-70
- Trotter, M, 1970, Estimation of stature from intact long limb bones, in *Personal Identification in Mass Disasters* (ed T.D. Steward), Washington

APPENDIX 3: CONTEXT LIST

Context	Group No.	Description
1	5	Brick crypt containing skeleton 4.
2	5	Fill of grave 1, light brown/orange sandy clay.
3	5	Coffin for 4, simple single-case wood.
4	5	Skeleton, only head exposed. Mature female.
5	5	Grave group for 1, 2, 3 and 4.
6	10	Grave cut.
7	10	Skeleton, upper half exposed. Adult male.
8	10	Coffin for 7, simple single-case wood.
9	10	Fill of grave 6, mid orange-brown sandy clay.
10	10	Grave group for 6, 7, 8 and 9.
11	-	Make-up layer deposited after public realm remodelling in 1927. Orange sandy clay roughly 0.4m thick.
12	-	Bedding for stone flags. Light yellowish grey mix of sand, pebbles and clinker 0.08m thick.
13	-	Modern flagstone surface of Cedar Square
14	-	Foundation cut for walled garden area 16.
15	-	Fill of cut 14. Dark grey black silty clay.
16	-	Most easterly garden wall erected as part of public realm works in 1927.
17	-	Construction cut running along side S side of St. John's church.
18	-	Fill of cut 17. Mid grey-orangey brown sandy clay rich in debris from the original demolished church.
19	-	Unexcavated grave cut.
20	-	Fill of grave 19.
21	-	Unexcavated grave cut.
22	-	Fill of grave 21.
23	-	Unexcavated grave cut.
24	-	Fill of grave 23.
25	-	Unexcavated grave cut.
26	-	Fill of grave 25.
27	-	Unexcavated grave cut.
28	-	Fill of grave 27.
29	-	Unexcavated grave cut.
30	-	Fill of grave 29.
31	-	Unexcavated grave cut.
32	-	Fill of grave 31.
33	-	Unexcavated grave cut.
34	-	Fill of grave 33.
35	-	Unexcavated grave cut.
36	-	Fill of grave 35.
37	40	Grave cut for neonatal burial.
38	40	Neonatal coffin, simple single-case wood.
39	40	Fill of grave 37.
40	40	Grave group for 37, 38, 39 and 40.
41	40	Skeleton in grave 37, not observed.
42	46	Grave cut for neonatal burial.
43	46	Neonatal coffin, simple single-case wood.
44	46	Skeleton in grave 42, not observed.
45	46	Fill of grave 42.
46	46	Grave group for 42, 43, 44 and 45.
47	-	Natural clay.
48	-	Mixed clay deposit beneath 12 and south-west corner of church.
49	-	Concrete footing for wall 50 and 51.
50	-	Middle garden wall.
51	-	Most westerly garden wall.

Context	Group No.	Description
52	-	Cut for 49, 50 and 51.
53	-	Fill of 52, same as 15.
54	-	Unexcavated grave cut.
55	-	Fill of grave 54.
56	-	Unexcavated grave cut.
57	-	Fill of grave 56.
58	-	Unexcavated grave cut.
59	-	Fill of grave 58.
60	-	Unexcavated grave cut.
61	-	Fill of grave 60.
62	66	Grave cut.
63	66	Fill of grave 62, greyish- orange/brown clay backfill.
64	66	Coffin for 65, single-case wood single-break.
65	66	Skeleton in 62, 50-75% complete and well preserved older child, no obvious pathology. Left <i>in situ</i> .
66	66	Grave group for 62, 63, 64 and 65.
67	71	Grave cut.
68	71	Fill of grave 67, greyish-orange/brown clay backfill.
69	71	Coffin for 70, single-case wood.
70	71	Skeleton in grave 67, not observed.
71	71	Grave group for 67, 68, 69 and 70.
72	76	Grave cut.
73	76	Fill of grave 72, greyish-orange/brown clay backfill.
74	76	Coffin for 75, single-case wood single-break with two simple brass grips on west end.
75	76	Skeleton in grave 72, not observed but most likely an infant due to the size of the coffin.
76	76	Grave group for 72, 73, 74 and 75.
77	81	Grave cut.
78	81	Fill of grave 77, grey orangey brown clay backfill.
79	81	Coffin for 80, single-case wood single-break.
80	81	Skeleton in grave 77, not observed but most likely a neonate due to the size of the coffin.
81	81	Grave group for 77, 78, 79 and 80.
82	86	Grave cut.
83	86	Fill of grave 82, orange/brown sandy clay backfill.
84	86	Coffin for 85, single-case wood single-break, lid still on but split.
85	86	Skeleton in grave 82, not observed but most likely a younger child due to the size of the coffin.
86	86	Grave group for 82, 83, 84 and 85.
87	91	Grave cut
88	91	Fill of grave 87, grey orangey brown clay backfill.
89	91	Coffin for 90, single-case wood single-break, shield shaped tin breastplate with inscription 'James Wilkie. Died JAN 17th 1871. [A]ged 55 Years.'
90	91	Skeleton in grave 87, not observed.
91	91	Grave group for 87, 88, 89 and 90.
92	96	Grave cut.
93	96	Fill of grave 92, mid-brown sandy clay backfill.
94	96	Coffin for 95, single-case wood single-break.
95	96	Skeleton in grave 92, not observed but most likely an infant/young child due to the size of the coffin.
96	96	Grave group 92, 93, 94 and 95.
97	-	Double brick crypt.
98	-	Construction cut for 97.
99	-	Fill of 97, pinkish-orange/brown clay backfill.
100	110	Grave cut.

Context	Group No.	Description
101	110	Fill of grave 100, greyish-orange/brown clay backfill.
102	113	Grave cut.
103	113	Fill of grave 102, mid-brown sandy clay backfill.
104	-	Grave cut.
105	-	Fill of grave 104, mid-brown sandy clay backfill.
106	122	Upper fill of grave 119, orange/brown clay backfill.
107	122	Lower fill of grave 119, blackish-brown peaty backfill.
108	110	Skeleton in grave 100, remnants of exhumed individual. Adult, sex unknown.
109	110	Coffin for 108, only runner around base of coffin remains.
110	110	Grave group for 100, 101, 108 and 109.
111	113	Skeleton in grave 102, remnants of exhumed individual. Adult, sex unknown.
112	113	Coffin for 111, only runner around base of coffin remains.
113	113	Grave group for 102, 103, 111 and 112.
114	118	Grave cut.
115	118	Fill of grave 114, greyish- orange/brown sandy clay backfill.
116	118	Coffin for 118, single-case wood fishtail coffin with head, foot and breastplates as well as grips at west and east ends.
117	118	Skeleton in grave 114, well preserved and almost complete. Young adult female with various pathologies.
118	118	Grave group for 114, 115, 116 and 117.
119	122	Grave cut. Most northerly of double brick crypt 97.
120	122	Skeleton in grave 119, remnants of exhumed individual. Adult, sex unknown.
121	122	Coffin for 120, fragmented pieces of wood and grips.
122	122	Grave group for 106, 107, 119, 120 and 121.
123	127	Grave cut. Most southerly of double brick crypt 097.
124	127	Fill of grave 123, orange/brown clay backfill.
125	127	Skeleton in grave 123, remnants of exhumed individual. Adult, sex unknown.
126	127	Coffin for 125, fragmented pieces of wood and grips.
127	127	Grave group for 123, 124, 125 and 126.
128	132	Grave cut.
129	132	Coffin for 131, fragmentary.
130	132	Fill of grave 128, orange/brown clay backfill
131	132	Skeleton in grave 128, remnants of exhumed individual. Adult, sex unknown.
132	132	Grave group for 128, 129, 130 and 131.
133	-	Square pit cut.
134	-	Fill of pit 133, 6A ballast.
135	139	Grave cut.
136	139	Fill of grave 135, greyish-orange/brown sandy clay backfill.
137	139	Skeleton in grave 135, remnants of exhumed individual. Adult, sex unknown.
138	139	Coffin for 137, only runner around base of coffin remains, also one iron grip found in backfill.
139	139	Grave group for 135, 136, 137 and 138.
140	143	Unexcavated grave cut
141	143	Fill of grave 140.
142	143	Coffin within grave 140. Not excavated.
143	143	Grave group for 140, 141 and 142.
144	-	Grave cut.
145	-	Grave cut.
146	-	Grave cut.
147	-	Grave cut.
148	-	Grave cut.

Context	Group No.	Description
149	-	Grave cut.
150	-	Grave cut.
151	-	Grave cut.
152	-	Grave cut.
153	-	Grave cut.
154	-	Grave cut.
155	-	Grave cut.
156	-	Grave cut.
157	-	Grave cut.
158	-	Grave cut.
159	-	Grave cut.
160	-	Grave cut.
161	-	Grave cut.
162	-	Grave cut.
163	-	Grave cut.
164	-	Grave cut.
165	-	Grave cut.
166	-	Grave cut.
167	-	Grave cut.
168	-	Grave cut.
169	-	Grave cut.
170	-	Grave cut.
171	-	Grave cut.
172	-	Grave cut.
173	-	Grave cut.
174	-	Grave cut.
175	-	Grave cut.
176	-	Grave cut.
177	-	Grave cut.
178	-	Grave cut.
179	-	Grave cut.
180	-	Grave cut.
181	-	Grave cut.
182	-	Grave cut.
183	-	Grave cut.
184	-	Grave cut.
185	-	Grave cut.
186	-	Grave cut.
187	-	Grave cut.
188	-	Grave cut.
189	-	Grave cut.
190	-	Grave cut.
191	-	Grave cut.
192	-	Grave cut.
193	-	Grave cut.

APPENDIX 4: SKELETAL INVENTORY

In the interests of brevity the following abbreviations have been employed in the dental summaries below: 1=tooth present; /=*post-mortem* tooth loss; X=*ante-mortem* tooth loss; -= tooth not present; M=bone and tooth not present; A=dental abscess; C=caries; k=calculus; L=left; R=right

Skeleton No	Inventory	Age	Sex	Pathology
4	Cranium	Mature Adult	Female	None
7	Cranium, atlas, axis, two cervical vertebrae, both clavicles, both humeri and four ribs.	Adult	Male	None
66	Near complete skeleton without majority of vertebrae and ribs.	Older Child	?	None
108	R metacarpal V, L metatarsal V and two rib frags.	Adult	?	None
111	Skull frags, rib frag, humeral head, two metacarpal frags, a intermediate manual phalanx and a distal tibia frag.	Adult	?	None
120	An axis, a cervical vertebra, a rib frag, a right capitate, both metacarpal III, R metacarpals IV + V, a proximal manual phalanx and a L metatarsal II.	Adult	?	None
125	An axis, two cervical vertebrae, a manubrium, both metacarpal IV, R metacarpals II, III, V, a L lateral cuneiform and all L metatarsals.	Adult	?	None
131	A L talus, calcaneus and cuboid.	Adult	?	None
137	Two cervical vertebrae, two thoracic vertebrae, a R clavicle, a R capitate, a L talus, a L intermediate cuneiform, both medial cuneiforms, four metatarsals and a distal pedal phalanx.	Adult	?	None

Skeleton number: 117

Completeness: 95%

Preservation: excellent

Age: 25-35 yrs

Sex: female

Stature: 155-160cm

Dental inventory:

		A			C	C			C	C		A		A		
X	X	X	X	X	3	2	X		1	2	3	/	X	X	X	X
/	X	X	X	4	3	2	/		/	/	/	4	X	X	X	/

Dental Pathology: DEH 0/9; calculus 0/9; AMTL 16/32; caries 4/9

Skeletal pathology: Sacralisation of L5, oblique fracture to midshaft of R clavicle, well healed but poorly set, thoracic scoliosis, slight flattening of thoracic spinous processes, partly ossified thyroid and cricoid cartilage.

Metrical indices:

Non-metric traits: Incomplete foramen spinosum, double condylar and atlas facets.

APPENDIX 5: ARCHIVE INDEX

Record group	Contents	Comments	Box/File Number
	Introduction Project Design		1
A	Report Final Report		1
B	Primary Fieldwork Records Context Records & Indices Watching Brief Records		1
C	Primary Drawings Developers Plans Annotated Plans Plans/Sections		1
D	Finds Box and Bag Lists		1
E	Environmental Records		1
F	Photographic Record Photographic Indices Monochrome Digital		1
G	Electronic Media		1