Archaeological watching brief at the new market site, Cleveland Street, Wolverhampton

Worcestershire Archaeology

for

City of Wolverhampton Council

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Archaeological watching brief at the new market site, Cleveland Street, Wolverhampton

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Summary

An archaeological watching brief was undertaken at the new market site on land off Cleveland Street, Snow Hill and Temple Street in Wolverhampton (National Grid Reference SO 91509 98298). The watching-brief commenced as a result of the discovery of human remains by ground crew during the machine excavation of a trench for cable ducting. This was duly reported to the police by the site manager, who confirmed that it was not a police matter.

The remains uncovered were consistent with the use of the area as a cemetery associated with Temple Street Independent Chapel, constructed in 1782 by a small group of non-conformists or 'Protestant Dissenters'. Although there was truncation and damage from the groundworks before the watching brief started, there was partial survival of a total of fourteen individuals, within wooden coffins with associated coffin fittings. Some of the graves contained concentrations of small, square-section iron tacks, probably fine upholstery pins for fabric coverings. The bones of two further individuals were exposed on site but not exhumed. A small collection of disarticulated bone was also recovered. Metallic coffin plates were in poor condition but where visible, appeared to follow a standard pattern in being broadly rectangular with a stamped edge, coated in a black lacquer with white lettering. They were, however, severely corroded and biographical details were not fully legible: only one older adult male burial could be tentatively identified by comparison with the surviving burial records, as that of James Evans, who died aged 50 years in 1794, but this is not certain.

Specialist detailed osteological analysis has been undertaken, revealing that some of the human remains exhibited a rare congenital condition in the feet, and further pathological conditions associated with infection and disease, developmental anomalies, and trauma. The skeletal assemblage offers comparative and supplementary material to previous study of nearby sites containing post-medieval burials, such as St Peter's overflow burial ground.

The watching brief has provided a valuable opportunity to work on the archaeology of burial grounds in Wolverhampton, particularly as this was a non-conformist chapel and the cemetery was in use during a period when Wolverhampton was expanding and developing into a major industrial centre.

Report

1 Background

1.1 Reasons for the project

An archaeological watching brief was undertaken at the new market site on land off Cleveland Street, Snow Hill and Temple Street in Wolverhampton (National Grid Reference SO 91509 98298; Figures 1 and 2). It was commissioned by Speller Metcalfe, currently developing the area on behalf of their client, City of Wolverhampton Council. This involved preparation of a brownfield site for a new market with car parking, public toilets and bin stores, as well as excavation for associated service trenches.

The project commenced as a result of the discovery of human remains by ground crew during the machine excavation of a trench for cable ducting on 10 May 2018. This was duly reported to the police by the Speller Metcalfe site manager, who removed some remains and confirmed that it was not a police. Following on-site discussion and subsequent requirements determined by the Archaeology and Historic Environment Officer for City of Wolverhampton Council (the Curator), Worcestershire Archaeology attended the site and arranged to deal with the damaged and partially removed remains, as well as for an archaeological watching-brief to be conducted on further groundworks in the immediate area.

The site was part of a larger area that had been subject to previous desk-based assessment and a heritage impact assessment during redevelopment proposals over a decade ago (Birmingham Archaeology 2003; Under Construction Archaeology 2005). These both highlighted the presence of numerous post-medieval buildings on the site, including that of a late 18th century independent chapel with associated cemetery, but no archaeological condition was placed on the current project due to past disturbance and the minimal nature of the groundworks identified. As a result of the project inception there was no written brief, but a proposal and written scheme of investigation were prepared by Worcestershire Archaeology which aimed to conform to the generality of project briefs that have been previously issued (Worcestershire Archaeology 2018).

The watching brief was also undertaken in accordance with the industry guidelines presented in *Standard and guidance: Archaeological watching brief* (CIfA 2014a).

1.2 Aims

The project aimed to undertake a controlled watching brief of groundworks within the area of the former chapel in order to observe, investigate and record archaeological deposits, and to determine their extent, state of preservation, date and type, as far as reasonably possible.

It was expected that significant deposits would be defined as those likely to be of post-medieval date, specifically burials associated with the former chapel and dated to the late 18th or early 19th century.

2 The application site

2.1 Topography, geology and current land use

The site has been extensively disturbed and developed, occupying previously terraced and levelled ground located on what was, until recently, a public car park. This is bounded by Cleveland Street, Snow Hill and Temple Street within the centre of modern Wolverhampton, just to the south of the medieval core of the city (Figure 1).

The solid underlying geology comprises fluvially derived sedimentary mudstone and sandstone of the Clent and Enville formation, overlain by superficial deposits of glacial till (British Geological Survey). The predominant soils are not mapped due to the urban location of the site (Ragg *et al* 1984).

2.2 Archaeological context

No archaeological features of prehistoric, Roman or medieval date have been identified either on the site or in the immediate surroundings. During the Saxon and medieval periods the site was probably agricultural land and open fields to the south of the main town (HER ref. 13165), though a series of nearby buildings are shown on later historic mapping that may potentially be medieval in origin, relating to storing wool and folding sheep (HER ref. 13474). Wolverhampton itself developed in the late Saxon period and in AD 985, King Æthelred granted the estate of Hampton to Wulfruna, a Mercian noblewoman (Adams and Driver 2007, 6; HER ref. 13017). Wulfruna endowed some of that land to found a church in AD 994. It has been argued that this church had been preceded by a 7th century minster that needed to be re-established following the impact of various Danish incursions into the area (Slater 1986, 41; HER ref. 6714). The church was originally dedicated to St Mary but by the 12th century it had been changed to St Peter (Adams and Driver 2007, 12).

The Domesday Book of 1086 states that Wolverhampton church held a one hide manor, which was improving its yield, and was known as Heantun or Hantone (Farley 1985). The settlement was at the confluence of several important roads which appears to have led to the development of the town as a centre of trade. It had a market from at least 1179, with a charter for a weekly market and annual fair granted in 1258 (Farley 1985). The booming wool trade increased the prosperity of the town with many of the leading families trading in this material, including the Leveson family who were resident in a moated hall located to the north-east of the current site (Adams and Driver 2007, 6; HER ref. 2557).

The town continued to grow and urban expansion gained momentum in the post-medieval period, largely due to the position of the town in the coal fields of south Staffordshire and within the developing canal system (Birmingham Archaeology 2003). Coal and ironstone were both discovered locally in the 16th century and many small ironworking businesses developed as a result (Adams and Driver 2007, 6). Isaac Taylor's 1750 map shows the extent of the town during the mid-18th century, with a population at this time (according to Taylor) of 7,454 inhabitants living in 1440 houses (Farley 1985). The site itself remained largely open fields, the southern edge being defined by a tree-lined avenue called Great Pea Walk. This later became Temple Street, which was developed from the 1780's and occupied by many small-scale metalwork traders reflecting the general industrial flourishing of Wolverhampton: ironworking, japanning, toy making, buckle making, screw making and lock making were all represented (Adams and Driver 2007, 6). It was at this time that the independent chapel and cemetery was established (HER ref. 15010), perhaps leading to the origin of the present street name.

Cleveland Street and Temple Street maintained their industrial character throughout the 19th century, whereas Snow Hill became more commercial and retail in nature (Under Construction Archaeology 2005). However, the industrial revolution saw many of the existing small-scale traders subsumed into or removed by larger manufacturing enterprises, a result of improved mass production methods. In the vicinity of the site this included businesses such as the nearby Bell (iron) Works and Cleveland (safe and lock) Works (HER ref. 10684), Scarborough (brass) Works (HER ref. 10687), Temple (ship fitting) Works (HER ref. 15007), Clyde (tin and iron) Works (HER ref. 15011), and Temple Street (iron and tin) Works (HER ref. 15009).

2.3 The independent chapel

The chapel was begun by a group of non-conformists or 'Protestant Dissenters' (ie not a member of the Church of England) who had split off from the non-conformist St John's Lane meeting house, following disagreements over Calvinist doctrine. Land for a new chapel was purchased and a plain rectangular brick building, surrounded by a graveyard and brick wall, was constructed and opened in 1782. The inside was simple in appearance, with a pulpit fixed against the back wall (Parker nd). This building is depicted towards the eastern end of Temple Street on Godson of Brailes map of 1788. On the 1842 tithe plan it is clearly identified as an Independent Chapel (HER ref. 15010) and appears to have been approximately 21m by 13m in size.

There were eighteen original members of the chapel, ministered by the popular James Wraith for the first ten years, and a number of these members became trustees when the chapel was put in trust in 1788 (Parker nd). A later minister, John Godwin, remained for around 30 years but the church book describes the chapel as being 'broken up' in 1802 and 'reunited' in 1832 (Mander nd). It is possible that this was because Godwin did not administer the sacrament and he did not consider the congregation to be Christians, which led to a reduction of numbers attending services and the original founders moving elsewhere (later forming the Queen Street Congregational Church). The congregation numbers continued to fall and following Godwin's death the chapel remained without a minister until the appointment of Henry Rogers in 1832. Building improvements were made, particularly to the front of the property, although when Rogers left Wolverhampton in 1843 there were just eleven people attending (Parker nd).

The remaining members of the Temple Street Chapel formed a united fellowship with a new church that was meeting at the Music Hall in Cleveland Street (whose members had already split from the Queen Street Congregational Church following disagreement regarding the settlement for a minister), entering into a covenant in 1845. A decision was made to build a new chapel and in 1847 land was purchased on Snow Hill, with the Snow Hill Congregational Church opening in 1849. The old Temple Street Chapel became a day school (Parker nd).

On the 1880's Ordnance Survey mapping the chapel is shown as a Temperance Hall (Figure 3). It was subsequently converted into a club (Meadows Club), but had been demolished and the site cleared by 1972 and incorporated into the car park (HER ref. 15010).

2.3.1 Burial around the chapel

The surviving register of burials for the 'Protestant Dissenters Burying-Ground' at the chapel in Temple Street indicates that internments took place between March 1786 and April 1799, although one uncertain entry may suggest that burial started in 1784, perhaps even earlier. Registration of burials began in January 1787, although it appears to have been inconsistent and intermittent, with some registration taking place in retrospect. The historic mapping shows that there was space for the cemetery area around three sides of the chapel building, to the west, north and east, with the southern end directly onto Temple Street (Figure 3).

There were twenty men, women and children registered as buried, sixteen of whom were interred before 1792, with the subsequent drop-off potentially a result of the end of the more successful ministership of James Wraith. Only six of the registered burials were adults and the majority of children registered as buried (twelve out of fourteen) had died before the age of three, reflecting the high rate of maternal and infant deaths for the town in this period (Adams and Driver 2007).

The following table presents a transcription of the burial registers held by Wolverhampton City Archives. Uncertainty on spelling and dates due to legibility is shown with the use of italics.

Name	Age at death	Date of burial	Date registered
John Taylor	8 months	14 March 1786	29 January 1787
James ?*Hope*?	42 years	2 September 1786	29 January 1787
Sarah Kendrick	6 years	1 June 1787	5 June 1787
Mary Stephens	49 years	30 March 1788	30 March 1788
Elizabeth Jones	14 months	4 November 1788	7 November 1788
Nancy Kendrick	12 days	14 June *?1784?*	18 March 1789
Mary Walsh	2 years	19 August 1788	18 March 1789
John Taylor	2 years	3 March 1789	18 March 1789
Hannah Smith	2 years 9 months	10 March 1789	18 March 1789
Mary Price	25 years	31 March 1790	2 April 1790
John Smith	1 year	31 March 1790	2 April 1790
Joseph Waters	16 months	24 April 1790	24 April 1790
Joseph Caddack (?*Caddick*?)	15 months	30 April 1790	30 April 1791
Ann Caddack (?*Caddick*?)	3 months	30 April 1791	30 April 1791
Joseph Price	3 years 7 months	20 September 1791	20 September 1791

William Price	1 year 9 months	4 October 1791	4 October 1791
William Jones	44 years	29 September 1793	30 September 1793
Jm *?James?* Evans	50 years	20 April 1794	20 July 1794
William *?Birham?*	9 months	11 August 1794	11 August 1794
Joseph Spencer	36 years	7 April 1799 (died 3 April)	April 1799

Table 1: List of registered burials

3 Methods

3.1 Personnel

The project was led by Richard Bradley (BA (hons.), MA; ACIfA), who has been practicing archaeology since 2005, assisted at by Peter Lovett (BSc (hons.); ACIfA) and Morgan Murphy (BA (hons.); MA). The project manager responsible for the quality of the project was Tom Vaughan (BA (hons. Dunelm); MA; ACIfA).

Rob Hedge (MA (Cantab), PCIfA) prepared the finds report and Elizabeth Pearson (MSc; ACIfA) contributed the environmental report. Osteological analysis of human remains was undertaken by Gaynor Western (BA (hons.); MSc) (Ossafreelance). Illustrations were completed by Carolyn Hunt (BSc (hons.); PG Cert; MCIfA).

3.2 Documentary research

During preparation of previous assessments (Birmingham Archaeology 2003; Under Construction Archaeology 2005), documentary, cartographic and photographic research was undertaken at Wolverhampton City Archives and Local Studies centre, using online sources, and by consulting Wolverhampton Historic Environment Record (HER). Site walkover visits and a level one historic building survey were also undertaken.

On commencement of the current project, the Curator provided Worcestershire Archaeology with up to date HER information and numerous historic maps showing the site area, as well as scanned copies of surviving burial registers for the chapel. A visit was also made to Wolverhampton City Archives to view these burial registers and a transcript of the church book, and to consult other secondary documentary sources relating to the chapel. Further research has not been possible within the confines of this project.

3.3 Fieldwork strategy

Fieldwork (Worcestershire Archaeology project number P5351) was undertaken intermittently, between 21 May and 4 June 2018. This partly reflected the progress of construction team and the requirements of the programme, but Speller Metcalfe also made provision for uninterrupted access for the archaeological investigation alongside use of an 8 tonne 360º tracked excavator under full archaeological control in a fenced and secure area.

A single 2.5m wide trench was excavated along the length of a previously opened service trench, *c* 10m in length, which had disturbed multiple inhumations (Plate 1). Deposits considered not to be significant were removed by the machine, employing a toothless bucket, down to the level at which grave cuts became visible. Subsequent excavation was undertaken by hand. Graves that had been previously disturbed or that were to be impacted upon by the insertion of cable ducting were fully excavated and artefactual material and environmental samples were retained. Deposits were recorded according to standard Worcestershire Archaeology practice (WA 2012).

Further graves that were partially exposed and not at threat from the construction design were recorded in plan, then covered with soil and sheeting and left in situ. On completion of excavation, the laying of the ducting and the reinstatement of the trench was archaeologically monitored and controlled to ensure that there was limited impact upon the unexcavated graves.

3.4 Structural analysis

All fieldwork records were checked and cross-referenced. Analysis was effected through a combination of structural, artefactual and ecofactual evidence, allied to the information derived from other sources.

3.5 Artefact methodology, by Rob Hedge

The finds work reported here conforms with guidance issued for findswork by CIfA (2014b), for pottery analysis by PCRG/SGRP/MPRG (2016), for archive creation by AAF (2011), and for museum deposition by SMA (1993).

3.5.1 Artefact recovery policy

The artefact recovery policy conformed to standard Worcestershire Archaeology practice (WA 2012; appendix 2).

3.5.2 Method of analysis

All hand-retrieved finds and artefacts from environmental samples were examined, identified, quantified and dated to period. Where resource constraints precluded individual quantification — such as with bulk recovery of slags from environmental samples — an estimate based on counting 10% of the weight of the sample was generated. A *terminus post quem* date was produced for each stratified context. The date was used for determining the broad date of phases defined for the site. All information was recorded on a Microsoft Access database with tables generated via Microsoft Excel.

The pottery and ceramic building material was examined under x20 magnification and referenced as appropriate by fabric type and form according to the fabric reference series maintained by Worcestershire Archaeology (Hurst and Rees 1992 and www.worcestershireceramics.org).

Coffin furniture (largely very corroded) was all quantified, and diagnostic pieces discussed with reference to relevant comparable assemblages.

Resource constraints limited analysis of the industrial material to broad categorisation, macroscopic inspection, and brief discussion.

3.5.3 Discard and retention

Discard of finds from post-medieval and earlier deposits will only be instituted with reference to museum collection policy and/or with agreement of the local museum.

3.6 Environmental archaeology methodology, by Elizabeth Pearson

The environmental project conforms to guidance by CIfA (2014a) on archaeological watching briefs and specific guidance issued by English Heritage (2011).

3.6.1 Aims

The aim of the assessment was to determine the state of preservation, type, and quantity of environmental remains recovered from the samples and information provided. This will be used to assess the importance of the environmental remains.

3.6.2 Sampling policy

Samples were taken according to standard Worcestershire Archaeology practice (2012). A total of 17 samples (each of 10 litres) were taken from the site. All residues were scanned. As an initial assessment indicated that the contents of the grave samples were relatively homogenous, only the flots from 10 of the 17 samples were assessed. All flots were, however, checked for human bone fragments. As identifiable remains in the samples were limited, and it was uncertain whether the material was contemporary with the burials due to residuality, no further work was carried out.

3.6.3 Processing and analysis

Decayed plant matter was found around and beneath the skull of skeleton (SK1003) within grave [1005]. As it was thought possible during excavation that this was the remains of a vegetation pillow or plant offering, a sub-sample of 1 litre was processed using the wash-over technique. This is a more suitable method for processing delicate organic remains. The sub-sample was broken up in a bowl of water to separate the light organic remains from the mineral fraction and heavier residue. The water, with the light organic faction was decanted onto a 300mm sieve and the residue washed through a 1mm sieve. The remainder of the bulk sample was retained for further analysis if necessary.

The remainder of the samples were processed by flotation using a Siraf tank. The flots were collected on a 300mm sieve and the residue retained on a 1mm mesh. This allows for the recovery of items such as small animal bones, molluscs and seeds.

The residues were scanned by eye and the abundance of each category of environmental remains estimated. A magnet was also used to test for the presence of hammerscale. The flots were scanned using a low power MEIJI stereo light microscope and plant remains identified using modern reference collections maintained by Worcestershire Archaeology, and a seed identification manual (Cappers *et al* 2012). Nomenclature for the plant remains follows New Flora of the British Isles (Stace 2010).

Coffin wood was examined under a low power MEIJI stereo light microscope in order to determine the wood used.

3.6.4 Discard policy

Remaining sample material and scanned residues will be discarded after a period of three months following submission of this report unless there is a specific request to retain them.

3.7 Reburial of the human remains

A Ministry of Justice licence was issued for the project (MOJ ref 18-0110, dated 16 May 2018), so that human remains could be removed from the site, and their reburial has been arranged as part of the project with City of Wolverhampton Council.

3.8 Statement of confidence in the methods and results

Due to the circumstances of the project, archaeological intervention was limited in scope, with only a small portion of the site and the area around the former chapel explored. Significant damage to multiple burials had already occurred prior to archaeological observation and some human remains had been removed by the police. Discussions with plant operators on site also suggested that sandstone masonry remains in the vicinity of the burials had been removed during recent ground reduction works. The results should be considered in the context of this activity and the limited level of archaeological work and, therefore, be treated with some caution.

4 Results

4.1 Structural analysis

The site area and the features recorded are shown in Figures 2-4 and Plates 1-10. The results of the structural analysis are presented in Appendix 1, with the archive detailed in Appendix 2. Detailed analysis and reporting on the human remains is presented in the specialist report attached as Appendix 3, with summary information integrated into this report.

Archaeological features, deposits and finds represented a series of stages in the use of the site, all dated to the post-medieval and modern period:

- pre–1782, prior to development of the chapel and burial ground when the land was initially open ground, then as industrial expansion began to develop the area;

- the late 18th century burials and associated coffins, fixtures and fittings (*c* 1784–1799). The burials have been shown, using the historic mapping, to have been located at the north-east corner of the chapel (Figures 3 and 4);
- mixed land use post–1799, the date from which no more burials are recorded as having occurred (although the reliability of the written record is not certain), and post-1849, when the chapel is no longer in use for its original purpose;
- late 20th and early 21st century clearance and redevelopment.

Due to the nature of the project and the level of investigation, the natural horizon was not encountered during the groundworks and it remains unknown if archaeology of earlier date than the post-medieval period survived on the site. It is also likely that archaeological deposits and features in the area outside of the trenches could have been previously damaged or removed without record, especially during the clearance works in the late 20th century, although it would be expected that pockets of the cemetery may still survive in the surrounding area.

4.1.1 Phase 1: Post-medieval deposits

The earliest feature observed on site was a 0.47m wide partially collapsed brick drain or culvert (1039), built with hand-made bricks and infilled with dark greyish green loose silt (1038). The brick drain ran east to west, but the full extent and route remains unknown. It clearly pre-dated the development of the site as a chapel and burial ground and the brick sizes suggested that it may have been 16th to 17th century in date.

Overlying the brick drain was a mixed graveyard soil layer, up to 0.30m in depth, comprising disturbed dark brown silty clay and patches of redeposited pinkish-red clay marl (1007). This contained pottery and CBM dating to the 18th century and all of the grave cuts had been dug through this deposit.

The burials

There were thirteen grave cuts visible on the site, all aligned east to west and arranged in a row, although a small amount of stacking and intercutting was evident (Figure 4). One grave was left entirely unexcavated; it was observed in plan but was below the impact depth for the construction programme [1025]. Two of the other grave cuts were only partially exposed — [1023] and [1044] — with both containing coffined burials. As these extended outside of the excavation area and were not already disturbed or due to be impacted upon by site works, these were left in situ after being recorded, and then backfilled. Grave [1023] contained an individual (SK1021) with the head at the eastern end of the grave, as opposed to the traditional placement of the head at the western end (Plate 4). This had a surviving *depositum* (coffin plate) above the chest but no biographical details were legible (Plate 5). A single, fragmentary skull from another individual (SK1012) was present on top of this burial, also at the eastern end, presumably residual from a later grave (Figure 4 overlay plan). This was identified as an adult (Appendix 3).

The other ten graves contained the fragmentary remains of a further thirteen individuals in supine, extended positions, nearly all of which had been buried in wooden coffins. The majority had been damaged by machine truncation through the upper leg, pelvis, lower arms or torso area during excavation of the cable ducting service trench. It is not clear what had happened to the damaged remains (other than a femur, a fibula and some unidentified fragments which were removed by the police and later disposed of by them), but it is likely that these had been crushed by the machine bucket and/or incorporated onto the general spoil heaps around the construction site.

At the northern end of the site area was grave [1005], 1.60m in length and 0.42m wide, which included a well-preserved coffin (1004) made with oak timber in which skeleton (SK1003) had been interred (Plate 2). The human remains were assessed to be those of a young adult female, who had a congenital condition in the feet (Appendix 3). Further human remains (1002) which had been disturbed by the machine excavation were found in the vicinity and have been allocated to this individual.

Around 0.80m to the south was a small grave, 1.13m in length [1011], which had partially truncated the edge of unexcavated grave [1025]. This contained the badly damaged skull of a sub-adult (SK1009), possibly in a coffin, although only some iron staining remained (Figure 4). Adjacent to this was a larger grave [1016], 1.97m in length and 0.46m wide, which included multiple burials. At the eastern end was a small iron-edged coffin containing the co-mingled remains of two sub-adults (SK1013/1 and SK1013/2). One of these was around 1 month old at the time of death (Appendix 3). These were positioned above the lower legs of an extended adult female burial (SK1017) within a larger coffin (Plate 3).

A further 0.30m south of this was a cluster of intercutting graves, the earliest of which, [1044], was undisturbed and therefore not excavated (as noted above). It was cut by grave [1029], containing the lower part of a partially surviving sub-adult skeleton (SK1027) within a decayed coffin (Figure 4). The northern edge of grave [1029] was in turn cut by a small grave [1037] for another sub-adult burial (SK1035) and the western end was cut by grave [1023] containing (SK1021), which was left in situ as it had not been damaged by the site works (as noted above). Immediately adjacent was grave [1033], 1.69m in length and 0.43m in wide, that contained a sub-adult burial (SK1031) thought to have been around 11-14 years old at the time of death (Appendix 3). An illegible *depositum* (coffin plate) survived above the chest (Plate 6).

Additional burials to the south did not intercut and were more evenly dispersed. Grave [1048], 1.93m in length and 0.58m wide, contained a coffin including the remains of a sub-adult (SK1046) aged around 11-16 years old at the time of death (Appendix 3; Plate 7). Around 0.50m away from this was grave [1052], badly damaged by a later construction cut for the insertion of a brick-built well, containing the burial of an adult of indeterminate age or sex (SK1050) in a partially preserved coffin. Slightly further south was grave [1063], 1.86m in length and 0.55m wide. This contained staining from a coffin and the burial of an old adult male (SK1061), who exhibited a number of pathological changes associated with old age (Appendix 3; Plate 8). Additionally, a congenital condition in the feet was present, something also noted in (SK1003), the young adult female found further to the north, suggesting a possible genetic relationship. Above the chest and pelvis areas was a surviving *depositum* (coffin plate): this was partially legible and the forename 'James' could be identified (Plate 9). Within the grave fill (1060) were the partial remains of a sub-adult, probably an infant.

At the southern end of the watching brief trench area was a further partially surviving burial of a sub-adult (SK1054), placed in a small grave cut [1055] that had been damaged by insertion of a modern concrete block (Figure 4). There was no evidence of a coffin having been used for this burial.

The coffins

The coffins survived in varying states of preservation, from barely visible staining to well-preserved pieces of timber. In most examples, there was enough material present to suggest that they had been single-case. Wood samples have shown that oak was used (see Section 4.3 below), but it is not certain if this was standard to all coffins on the site.

Coffin grips and nails were all iron and very corroded, though some fittings were copper alloy (see Section 4.2 below). The coffin plates were also made of iron, possibly tin-dipped: these were in poor condition but where surviving, they appeared to have been rectangular in shape with a stamped rim, covered in a black lacquer with white painted lettering (Plate 9). As noted above, the only legible writing read 'Jame…', identified as 'James', and was found above an older adult male skeleton (see Section 5 and Appendix 3).

Although it was difficult to accurately determine the full and exact outline of the coffins due to decay, collapse and modern damage from the cable ducting trench, some appeared to slightly curve around the torso, taper in along the legs and then exhibit a small amount of splaying out towards the feet (Plate 10). This would suggest that they were versions of the 'fish-tail' design, an apparent regional characteristic of the late 18th to early or mid-19th century, rather than the more common 'single-break' type (see Section 4.2 below).

4.1.2 Phase 2: Modern deposits

At the western edge of the watching brief trench area was a large cut [1059] containing a sub-oval brick-built well structure (1058). This had truncated and damaged part of at least two burials, clearly post-dating use of the area as a cemetery (Figure 4). The infill around the bricks contained clay pipe and a crucible (Plate 11) and the backfill of the well itself, following disuse, was dated to the late 19th or early 20th century. Adjacent to the well was a short part of a brick wall (1065), perhaps associated with the well. This had damaged the edge of one burial.

Sealing the graves was a mixed graveyard soil and made ground layer around 0.28m in depth that contained general rubble and modern detritus (1001). It also included a small amount of disarticulated bone — all from sub-adults (see Appendix 3). Due to the disturbed nature of the site and the resulting incompleteness of the human remains, it is possible that some of these elements originated from the excavated burials below.

Above this made ground horizon, the whole area had been horizontally truncated, then levelled and covered in modern Type 1 aggregate (1000) during recent groundworks on site.

4.2 Artefacts, by Rob Hedge

The artefactual assemblage recovered is summarised in Tables 2 and 3, with site dating presented in Table 4.

The total assemblage retrieved from the excavated area consisted of 1202 artefacts, weighing 8064g. The group came from 24 stratified contexts and could be dated from the medieval period onwards (see Table 2). The majority of the assemblage related to domestic, industrial, and funerary activity in the latter half of the 18th century. Using pottery as an index of artefact condition, this was generally poor with the majority of sherds displaying high levels of abrasion, and the average sherd size, at 5.5g, being below average. The poor condition of the artefacts probably reflects their presence within heavily and frequently disturbed graveyard soils.

The assemblage could broadly be split into five groups as follows:

A. a small quantity of residual material of medieval and early post-medieval date, probably incorporated into the site through agricultural practices such as manuring, whilst the site area was open ground up to the mid-18th century;

B. industrial waste, including slag, kiln/furnace material, hammerscale, and crucible fragments, relating to the development of industrial activity post-1750 in the Temple Street/Cleveland Street area;

C. domestic (e.g. pottery and glass) and building (e.g. brick and tile) material, contemporary with the mid- to late-18th century development of Temple Street;

D. fixtures and fitting relating to the burials, chiefly comprising metal coffin fittings and furniture, and;

E. material associated with mixed land-use post-1849, post-dating when the chapel is no longer in use for its original purpose.

Activity Group	period	material class	object specific type	count	weight(g)
A (residual)	medieval	ceramic	pot	3	8
	medieval/early post-medieval	ceramic	pot	1	4
			roof tile	1	42
Subtotal				**5**	**54**
A/C	medieval/post-medieval	ceramic	brick/tile	67	76
			roof tile	2	92
Subtotal				**69**	**168**
B (industrial)	post-medieval	ceramic	crucible	1	580
			kiln/furnace brick	1	47
		slag	fuel ash slag	298	150
			hammerscale	133	3.2
		slag (undiag.)	undiagnostic ?smithing slag	34	52
		slag(cu)	copper slag	4	4
		slag(fe)	smithing hearth cake	6	193.6
			smithing slag	17	11
		slag(pb)	lead slag	1	6
		limestone	burnt limestone	50	64
Subtotal				**545**	**1110.8**
C (domestic/ building)	post-medieval	ceramic	brick/tile	1	35
			clay pipe	9	10
			pot	43	248
		glass	unident	6	5
			vessel	12	111
			window	11	9
		mortar	lime mortar	6	7
Subtotal				**88**	**425**

Activity Group	period	material class	object specific type	count	weight(g)
D (burial)	post-medieval	copper alloy	pin	1	1
			undiagnostic copper alloy fitting	1	0.2
			coffin furniture stud	1	5
			coffin handle	11	4730
			coffin nail	63	253.8
			coffin nails and furniture fixings	11	4.8
			depositum plate	227	204.1
		iron	gilded tinplate	2	4
			grip plate	1	48
			iron ?upholstery pin	64	6
			nail	1	2.5
			small decorative fitting	1	0.2
			undiagnostic iron fitting fragments	110	556.4
Subtotal				**494**	**5816**
E (post-chapel)	post-medieval/ modern	glass	vessel	1	491
Subtotal				**1**	**491**
			Total	**1202**	**8064.8**

Table 2: Quantification of the assemblage

broad period	fabric code	fabric common name	count	weight(g)
Medieval	99	Miscellaneous medieval wares	4	12
Post-medieval	78	Post-medieval red ware	23	197
Post-medieval	81.3	Nottingham stoneware	4	7
Post-medieval	81.5	White salt-glazed stoneware	2	5
Post-medieval	84	Creamware	6	15
Post-medieval	91	Post-medieval buff wares	6	20

broad period	fabric code	fabric common name	count	weight(g)
Post-medieval	100	Miscellaneous post-medieval wares	1	1
Modern	85	Modern china	1	3
		Totals	**47**	**260**

Table 3: Quantification of the pottery by period and fabric type

4.2.1 Group A: pre-1750

A small quantity of highly-abraded medieval and early post-medieval pottery and ceramic building material was present within the graveyard soils. The pottery comprised three sherds of sandy unglazed earthenware of 12th–14th century date, and a single sherd of green-glazed coarse earthenware with quartz and iron-rich inclusions, of 13th–17th century date. Their poor condition precluded identification to specific fabrics.

This material is likely to have been incorporated into the site through agricultural processes such as manuring, when the site was open land prior to 1750.

4.2.2 Group B: mid- to late-18th century Industrial

The 1788 Godson map shows the site of the chapel bounded to the east and west by U-shaped buildings: the layout suggests industrial use. Industrial slags and by-products were distributed throughout the graveyard soils and incorporated into the backfill of the graves; this indicates that waste from these properties was introduced onto the plot of land prior to the construction of the chapel in 1782, but presumably after the area is shown as undeveloped on Taylor's map of 1750.

The waste included:

- hammerscale;
- iron-rich smithing slags and hearth cakes;
- large quantities of undiagnostic fuel ash slag;
- burnt limestone;
- lead slag;
- copper alloy slag;
- a crucible base (Plate 11) with green residue characteristic of copper alloy working. A purplish tint to the clay may be indicative of the presence of zinc, commonly alloyed with copper to produce brass.

It is possible, therefore, to conclude that a number of different industries were working in the near vicinity, including blacksmiths and copper workers: e.g. local industries included toymaking, buckle-making and lock-making. This activity is likely to have taken place before the construction of the chapel, the slags then being incorporated into the grave fills, as it seems unlikely that the chapel would have tolerated the deposition of industrial waste in the burial ground after its establishment in 1782. Given that the area is mapped as open ground in 1750, this potentially affords the industrial residues quite a tight date of *c* 1750–1782.

4.2.3 Group C: mid- to late-18th century domestic/building

Pottery, vessel glass, and clay pipe were recovered from the graveyard soils. It is not clear whether this refuse relates to the activities of the chapel or to the preceding industrial activity in the vicinity (ie now residual finds), although several sherds such as a transfer-printed whiteware associated with burial SK1009 are likely to post-date the construction of the chapel. A typical range of late-18th

century wares were present (see Table 3), from coarse redwares (fabric 78) to refined tablewares (fabrics 81.5, 84, and 85).

A small quantity of building material including window glass, lime mortar, and tile, was also present.

4.2.4 Group D: late 18th early 19th century burial

Coffins

Although the degraded and truncated nature of many of the burials precluded detailed analysis of the coffins, it was noted during excavation that many seemed to be of 'fish-tail' shape. Litten notes that from the mid-18th century coffins were "almost without exception" of the familiar 'single-break' type (Litten 1991). No 'fish-tail' coffins were recorded from the best-studied contemporary burial group in England — that of Christ Church, Spitalfields, London (Reeve and Adams 1993).

However, Hancox (2006) identifies a regional trend: variants on a sinuous fish-tail shape were predominant at St Martin's, Birmingham, from the earliest recorded coffins *c* 1800. They were superseded by single-break types in the late 1860s.

The evidence from Birmingham highlights the dangers of extrapolating national trends from London examples, and the use of fish-tail coffins can be viewed as a regionally-specific practice, although perhaps a tightly temporally-limited one: all of the 18 coffins recorded from St Peter's Collegiate Church, Wolverhampton, thought to date from AD1830–1880, were of single-break type.

Coffin fixings and furniture

Resource limitations precluded radiography (x-ray) of the iron objects. Given the advanced corrosion of most of the ironwork, it has not, therefore, been possible to analyse the coffin furniture in any detail.

A number of grave samples yielded concentrations of small, square-section iron tacks (Plate 12), much smaller than coffin nails. These are probably fine upholstery pins (similar in style to modern gimp pins): the covering of coffins with fabric was common after AD 1750 (Litten 1991, 103).

It was noted during excavation that one coffin in particular, containing SK1013/1 and SK1013/2, appeared to be covered with extensive iron-rich material. Unusually, iron staining extended around the edge of the coffin. One possible explanation may be the use of coffin lace, a 'tin-dipped filigree stamped iron' that could be used to secure fabric and/or to 'edge' the borders of the coffin. Such material, referenced in the 1783 Tuesby and Cooper coffin catalogue, apparently came in a variety of styles and could be fairly utilitarian (Litten 1991, 109).

Coffin handles (or 'grips') are often good stylistic indicators, but unfortunately these were badly corroded. All were in iron and appeared to follow a fairly simple curved form (Plate 13), thickening slightly in the centre, similar to the 'type 1' handle recorded at Spitalfields (Reeve and Adams 1993, appendix D).

Fragments of illegible *depositum* plates were recovered from a number of graves (see Table 4). These seemed to follow a standard pattern: broadly rectangular, with a stamped edge (Plate 14), they appeared to have been coated in a black lacquer (probably through the japanning process for which Wolverhampton was famous), upon which white lettering was superimposed. One fragment, associated with SK1061, exhibited faint traces of gilding (Plate 15). This was the only burial in which gilded coffin furniture was visible.

A number of undiagnostic fragments may reflect the presence of other escutcheons (coffin plates).

There were no clear indications of variability in the treatment of individuals; with the possible exception of the two gilded fragments associated with SK1061 and the coffin lace found with SK1013/1 and SK1013/2, all the burials from which fittings were recovered were comparable. Such uniformity may reflect the beliefs and denomination of the congregation.

4.2.5 Group E: post-1849 land use

The only artefact to conclusively post-date the site's use as a chapel was a 'codd'-type glass bottle from the infill of well [1058] bearing the name of local aerated water firm Fisher Perry Ltd; such bottles were first produced in 1872, and this example is likely to date from *c* 1880-1940.

4.2.6 Summary site dating

The following table presents the artefacts from each context, and suggests a *terminus post quem* range based on dating of the most reliably dateable artefacts (usually the pottery). Where no such refinement is possible, dates in parentheses indicate that the *tpq* date relies on historical sources.

Whilst the finds tend to support the known date range for the burials — indicated by the burial register to be 1786–1799 — there are several burials which could be later. Notably, the backfill (1008) for burial SK1009 contained a sherd of transfer-printed whiteware (fabric 85). A date as early as 1784 is possible, but such wares become more widely distributed after 1800.

context	material class	material subtype	object specific type	count	weight(g)	start date	end date	Suggested TPQ range
1004 *SK(1003)*	metal	iron	coffin handle	2	1398	1784	1849	(1784 - 1849)
1006 *SK(1003)*	ceramic		brick/tile	6	7	1200	1800	1750 - 1800
			pot	2	40	1600	1800	
	glass		vessel	1	90	1725	1780	
	metal	iron	depositum plate	51	77	1784	1849	
	slag		fuel ash slag	20	14	1750	1849	
			hammerscale	2	0.1	1750	1849	
1007	ceramic		pot	1	11	1700	1800	1700 - 1800
			roof tile	1	40	1200	1800	
1008 *SK(1009)*	ceramic		brick/tile	9	13	1200	1800	1784 - 1840
			pot	1	3	1784	1840	
				2	2	1200	1550	
				1	1	1600	1800	
			roof tile	1	52	1200	1800	
	glass		vessel	2	2	1600	1900	
	slag		fuel ash slag	110	28	1750	1849	
			hammerscale	4	0.1	1750	1849	
		slag(cu)	copper slag	1	1	1750	1849	
1010 *SK(1009)*	metal	iron	coffin furniture stud	1	5	1784	1849	(1784 - 1849)
			coffin nail	1	1	1784	1849	
			undiagnostic iron fitting fragments	2	14	1784	1849	
1014 *SK(1013/1), (1013/2)*	metal	iron	coffin nail	8	38	1784	1849	(1784 - 1849)
1015 *SK(1013/1), (1013/2), & (1017)*	ceramic		brick/tile	12	12	1200	1800	1760 - 1820
			pot	1	4	1200	1700	
				1	7	1600	1800	
				1	6	1100	1400	
				1	1	1760	1820	
	glass		vessel	4	4	1600	1900	

context	material class	material subtype	object specific type	count	weight(g)	start date	end date	Suggested TPQ range
	metal	copper alloy	undiagnostic copper alloy fitting	1	0.2	1784	1849	
		iron	depositum plate	15	15	1784	1849	
			iron ?upholstery pin	6	0.8	1784	1849	
			undiagnostic iron fitting fragments	46	28.4	1784	1849	
	slag		fuel ash slag	122	64	1750	1849	
			hammerscale	20	0.5	1750	1849	
	stone	limestone	burnt limestone	2	1	1600	1900	
1018 *SK(1017)*	metal	iron	coffin handle	2	925	1784	1849	(1784 - 1849)
1019	ceramic		pot	1	2	1760	1820	1760 - 1820
	glass		window	2	2	1600	1900	
	metal	iron	nail	1	2.5	1600	1900	
1026 *SK(1027)*	ceramic		brick/tile	10	7	1200	1800	1760 - 1800
			clay pipe	1	2	1600	1910	
			pot	3	26	1600	1800	
				2	5	1760	1790	
				1	2	1720	1770	
	glass		vessel	3	10	1600	1900	
			window	2	2	1600	1900	
	metal	copper alloy	pin	1	1	1600	1900	
		iron	iron ?upholstery pin	4	0.1	1784	1849	
			undiagnostic iron fitting fragments	18	9.6	1784	1849	
	other waste	mortar	lime mortar	5	1	1600	1900	
	slag		fuel ash slag	8	6	1750	1849	
			hammerscale	4	0.1	1750	1849	
		slag(cu)	copper slag	3	3	1750	1849	
	stone	limestone	burnt limestone	5	1	1600	1900	
1028 *SK(1027)*	metal	iron	coffin handle	2	621	1784	1849	(1784 - 1849)
1030 *SK(1031)*	ceramic		brick/tile	11	14	1200	1800	1750 - 1800
			clay pipe	2	1	1600	1800	
			pot	2	8	1600	1800	
				2	2	1690	1790	
	glass		unident	2	2	1600	1900	
			vessel	1	4	1600	1900	

context	material class	material subtype	object specific type	count	weight(g)	start date	end date	Suggested TPQ range
			window	2	1	1600	1900	
	metal	iron	coffin nail	5	2.2	1784	1849	
			coffin nails and furniture fixings	11	4.8	1784	1849	
			depositum plate	126	96	1750	1849	
			grip plate	1	48	1750	1849	
			undiagnostic iron fitting fragments	3	0.1	1784	1849	
	slag		fuel ash slag	8	23	1750	1849	
			hammerscale	8	0.2	1750	1849	
		slag (undiag.)	undiagnostic ?smithing slag	11	10	1750	1849	
		slag(fe)	smithing hearth cake	1	11.6	1750	1849	
			smithing slag	13	6	1750	1849	
		slag(pb)	lead slag	1	6	1750	1849	
	stone	limestone	burnt limestone	30	53	1600	1900	
1032 *SK(1031)*	metal	iron	coffin handle	1	153	1784	1849	(1784 - 1849)
			undiagnostic iron fitting fragments	2	420	1784	1849	
1034 *SK(1035)*	ceramic		brick/tile	1	35	1600	1900	1770 - 1900
				1	4	1200	1800	
			clay pipe	1	1	1600	1910	
			pot	2	27	1700	1800	
				1	2	1600	1800	
				1	1	1770	1900	
	glass		window	1	1	1600	1900	
	metal	iron	coffin nail	1	0.6	1784	1849	
			depositum plate	2	0.1	1784	1849	
			iron ?upholstery pin	9	0.6	1784	1849	
			undiagnostic iron fitting fragments	34	19	1784	1849	
	slag		hammerscale	15	0.4	1750	1849	
		slag (undiag.)	undiagnostic ?smithing slag	15	31	1750	1849	
	stone	limestone	burnt limestone	3	4	1600	1900	
1045 *SK(1046)*	ceramic		pot	2	10	1680	1780	1750 - 1800
				1	1	1600	1800	
				1	4	1670	1795	
	metal	iron	iron ?upholstery	4	1	1784	1849	

context	material class	material subtype	object specific type	count	weight(g)	start date	end date	Suggested TPQ range
			pin					
			undiagnostic iron fitting fragments	2	63	1784	1849	
	slag		hammerscale	30	0.9	1750	1849	
		slag (undiag.)	undiagnostic ?smithing slag	1	1	1750	1849	
		slag(fe)	smithing hearth cake	1	8	1750	1849	
			smithing slag	1	1	1750	1849	
1047 *SK(1046)*	metal	iron	coffin handle	1	298	1784	1849	(1784 - 1849)
1049 *SK(1050)*	ceramic		clay pipe	1	1	1600	1910	1760 - 1800
			kiln/furnace brick	1	47	1600	1900	
			pot	2	34	1700	1800	
				1	5	1760	1790	
				1	3	1720	1770	
				1	2	1680	1780	
				2	4	1600	1800	
			roof tile	1	42	1200	1700	
	glass		unident	2	2	1600	1900	
	metal	iron	coffin nail	10	35	1784	1849	
			iron ?upholstery pin	10	0.4	1784	1849	
			small decorative fitting	1	0.2	1784	1849	
			undiagnostic iron fitting fragments	1	1	1600	1900	
	other waste	mortar	lime mortar	1	6	1600	1900	
	slag		hammerscale	22	0.2	1750	1849	
		slag(fe)	smithing hearth cake	2	172	1750	1849	
			smithing slag	3	4	1750	1849	
1051 *SK(1050)*	metal	iron	coffin handle	2	952	1784	1849	(1784 - 1849)
1053 *SK(1054)*	ceramic		brick/tile	18	19	1200	1800	1750 - 1800
			clay pipe	1	2	1600	1910	
			pot	1	1	1600	1800	
				2	5	1690	1790	
	glass		vessel	1	1	1600	1900	
			window	1	1	1600	1900	
	metal	iron	depositum plate	7	5	1784	1849	
	slag		fuel ash slag	30	15	1750	1849	

context	material class	material subtype	object specific type	count	weight(g)	start date	end date	Suggested TPQ range
		slag (undiag.)	undiagnostic ?smithing slag	2	7	1750	1849	
	stone	limestone	burnt limestone	10	5	1600	1900	
1056 (well fill)	glass		vessel	1	491	1880	1940	1880 - 1940
1057 (well construction)	ceramic		clay pipe	1	1	1600	1910	1750 - 1910
			crucible	1	580	1750	1849	
1060 *SK(1061)*	ceramic		clay pipe	1	1	1600	1910	1760 - 1820
			pot	1	5	1600	1800	
				1	2	1760	1820	
				3	3	1600	1800	
	glass		window	1	1	1600	1900	
				3	2	1600	1900	
	metal	iron	coffin nail	21	32	1784	1849	
			depositum plate	26	11	1784	1849	
			gilded tinplate	2	4	1784	1849	
			iron ?upholstery pin	31	3.1	1784	1849	
			undiagnostic iron fitting fragments	2	1.3	1784	1849	
	slag		hammerscale	28	0.7	1750	1849	
		slag (undiag.)	undiagnostic ?smithing slag	5	3	1750	1849	
		slag(fe)	smithing hearth cake	2	2	1750	1849	
1062 *SK(1061)*	metal	iron	coffin handle	1	383	1784	1849	(1784 - 1849)
			coffin nail	17	145	1784	1849	
1064 (wall construction)	ceramic		clay pipe	1	1	1600	1910	1700 - 1910

Table 4 Summary of context dating based on artefacts

4.3 Recommendations

4.3.1 Further analysis and reporting

The following recommendations are made with regard to further work on the artefacts considered as part of this report:

- Further analysis could be usefully undertaken of the industrial residues encountered;
- Radiographs of the coffin furniture would be beneficial, and allow comparison with other post-medieval funerary assemblages from the region.

4.3.2 Discard and retention

Given the limited scope of the resources available for analysis, it is recommended that the assemblage be retained pending future study, although the final decision rests with the receiving museum.

4.4 Environmental remains, by Elizabeth Pearson

The environmental evidence recovered is summarised in Tables 5 to 7.

context	sample	spit/sub-sample	feature type	fill of	period	sample volume (L)	volume processed (L)	residue assessed	flot assessed
1006	1	feet	Grave	1005	post-medieval	10	10	Yes	No
1006	2	pelvis	Grave	1005	post-medieval	10	10	Yes	No
1006	3	skull	Grave	1005	post-medieval	10	1	Yes	Yes
1008	5	skull	Grave	1011	post-medieval	10	10	Yes	Yes
1015	6	skull/torso	Grave	1016	post-medieval	10	10	Yes	Yes
1015	7	legs/feet	Grave	1016	post-medieval	10	10	Yes	Yes
1026	8	feet	Grave	1029	post-medieval	10	10	Yes	Yes
1030	9	skull/torso	Grave	1033	post-medieval	10	10	Yes	No
1030	10	feet	Grave	1033	post-medieval	10	10	Yes	Yes
1034	11	legs/feet	Grave	1037	Post-medieval	10	10	Yes	Yes
1045	12	skull	Grave	1048	post-medieval	10	10	Yes	No
1045	13	feet	Grave	1048	post-medieval	10	10	Yes	Yes
1049	14	feet	Grave	1052	post-medieval	10	10	Yes	No
1053	15	torso	Grave	1055	post-medieval	10	10	Yes	Yes
1060	16	skull	Grave	1063	post-medieval	10	10	Yes	No
1060	17	legs/feet	Grave	1063	post-medieval	10	10	Yes	No

Table 5: List of bulk samples from the site

Waterlogged and mineralised plant remains were dominant in these samples, mostly made up of unidentified compressed organic material or unidentified wood fragments. The latter are most likely to be the remains of coffin wood. It was difficult to determine to what degree these remains were waterlogged or mineralised. Rather, they are likely to have survived as a result of both modes of preservation.

Identifiable remains included, for example, a grape pip fragment (*Vitis vinifera*), blackberry/bramble (*Rubus sect Glandulosus*), raspberry (*Rubus idaeus*) and elderberry (*Sambucus nigra*) seeds. Considering the presence of compressed, partially mineralised organic matter, the seed/fruit pips are most likely to derive from cess or latrine waste originating from a brick drain/culvert than ran east to west across the site (1039). This was broadly dated to the 16th to 17th century, so pre-dates

the graves. Cess material may have seeped into deposits through which the graves were cut, and so was residual in the grave fills. Alternatively, if the culvert had remained in use during the lifespan of the graveyard, cess waste may have infiltrated the graves, and hence this would have been contemporary with the burials.

Human bone recovered from the samples taken around individual skeletons was amalgamated with the main assemblage of human remains (Appendix 3). A small number of additional bones, however, which included phalanges from a possible neonate and a juvenile, were recovered from the flot from grave fill (1015) <7>.

Other remains include insect remains from flots, whilst the sample residues contained various domestic material including pottery and glass, as well as industrial residues including fired clay, clinker, lime, daub, mortar, iron slag and lime. Coffin remains included fittings and wood. The industrial residues are all consistent with the use of the site for various small-scale metalworking industries pre-dating the burials: these artefacts are reported on in Section 4.2 above.

Only unidentified waterlogged wood fragments and seeds of raspberry or blackberry (*Rubus ideaus/sect Glandulosus*) and redshank (*Atriplex sp*) were identified in sample (1006) from around the skull of skeleton SK1003 in grave [1005]. Though it was thought possible that this material could be the remains of a vegetation pillow or plant offering, these remains are more consistent with the degraded coffin wood and cess or latrine waste in the other grave fills.

A sample of waterlogged coffin wood (1004) was identified as oak (*Quercus robur/petraea*).

context	sample	large mammal	human remains	Insect remains	charcoal	charred plant	waterlogged plant	artefacts	comments
1006	1	occ					abt*	occ wood, fired clay, mortar, mod cbm	* = mostly indet organic plant material
1006	2 & 3			mod			abt*	abt wood, Fe objects (coffin plate)	
1008	5						occ	occ pot, CBM, Cu alloy slag, glass, unknown waste?	
1015	6						abt*	occ pot (?), Fe objects (coffin furniture?), unknown waste material	* = mostly indet organic plant material
1015	7	occ	mod		abt		occ	occ wood, pot, Fe slag, Fe objects, glass	large mammal=burnt
1026	8						abt*	occ CBM, Fe objects, other slag, glass, mortar, Cu alloy pin, mod clinker.	*mostly indet plant material
1030	10	occ			abt		abt*	abt clinker, coffin furniture, occ pot, CBM, glass, shell (other) clay pipe,. mod Fe objects, Fe slag, lime, mortar	*mostly unidentified wood fragments; mammal bone = burnt

1034	11	occ			mod		occ	occ pot, daub, glass, lime mortar, clay pipe, coffin furniture, mod Fe objects, Fe slag	
1045	12 & 13				mod		abt*	occ shell (other)?, pot, Fe objects, Fe slag	*mostly unidentified wood fragments
1053	15	occ					occ	occ coal/clinker, clay pipe, pot, Fe slag, Fe objects, glass, mortar, mod cbm	
1060	16	occ			mod			occ shell(other)?, Fe slag, pot, glass, Fe objects, mod coffin plate	large mammal=burnt bone
1060	17	occ			abt			occ wood, glass, pot, Fe slag, mod Fe objects	large mammal=burnt

*Table 6: Summary of environmental samples; occ = occasional, mod = moderate, abt = abundant, * = probably modern and intrusive*

context	sample	preservation type	species detail	category remains	quantity/diversity	comment
1004	4	wa	*Quercus robur*/*petraea* wood	misc		coffin wood
1006	3	wa	unidentified wood fragments	weed	++++/low	
1006	3	wa	*Rubus idaeus*/sect *Glandulosus*, *Atriplex* sp	seed	+/low	
1008	5	wa	*Ranunculus acris*/*r*epens/bulbosus, Atriplex sp, *Sambucus nigra*	seed	+/low	
1015	6	min	*Vitis vinifera*, *Rubus* sect *Glandulosus*, unidentified seed	seed	++/low	unidentified seed possible *Vitis vinifera* fragments
1015	6	wa	unidentified	misc	+++/low	
1015	7	min	*Rubus* sect *Glandulosus*, *Ficus carica*, *Stachys sylvatica*	seed	+/low	
1026	8	wa	unidentified wood fragments	misc	+++/low	
1030	10	wa	unidentified wood fragments	misc	+++/low	
1030	10	wa	*Rubus idaeus*, *Rubus* sp, *Atriplex* sp	seed	+/low	

1034	11	wa	*Rubus* sp, unidentified seed	seed	+/low	
1045	13	wa	unidentified wood fragments	misc	+++/low	
1045	13	wa	*Rubus* sect *Glandulosus*, *Atriplex* sp	seed	+/low	
1053	15	wa	*Rubus* sp		+/low	

Table 7: Plant remains from bulk samples

Key:

preservation	quantity
min = mineralised	+ = 1 - 10
wa = waterlogged	++ = 11- 50
	+++ = 51 - 100
	++++ = 101+
	* = probably modern and intrusive

5 Synthesis

The archaeological remains identified during the watching brief, mainly comprising a series of inhumation burials, are consistent with the site use as a cemetery associated with Temple Street Independent Chapel, constructed in 1782. Documentary sources indicate that burials occurred at the end of the 18th century, probably from 1784 until 1799, although the chapel remained in use until 1849.

A minimum of thirteen graves were visible, aligned east to west and arranged in a row, but had been truncated and disturbed by a service trench. From these, the fragmentary but relatively well-preserved remains of fourteen individuals were exhumed. Two further individuals were partially exposed but not lifted, being preserved in situ. Disarticulated bone was also recovered from the site. The majority of burials had been placed in single-case wooden coffins, as is common for lower-status earth-cut burials of this period (Brickely *et al* 2006, 223). Wood samples suggest that oak was used. Although it was difficult to accurately determine the full and exact outline of the coffins due to decay and modern damage, many seemed to be of 'fish-tail' shape, an apparent regional characteristic of the late 18th to early or mid-19th century. Associated coffin fittings had survived, although the metalwork was severely corroded. Coffin plates were also in poor condition but where visible, seemed to follow a standard pattern in being broadly rectangular with a stamped edge, coated in a black lacquer with white lettering. Some of the graves contained concentrations of small, square-section iron tacks, probably fine upholstery pins for fabric coverings.

There was generally good correlation between the artefacts recovered from grave contexts on site and the historically indicated date range for burials, although several finds suggest that some may have taken place in the early 19th century. This provides support for the evidence from the skeletal assemblage that indicates the burial registers for the chapel are incomplete (see discussion below; see also Appendix 3). Other finds from the graveyard soils indicate that prior to the chapel construction a variety of industrial activities were taking place in the near-vicinity of the site, including blacksmithing and copper-alloy working: local industries included toymaking, buckle-making and lock-making, reflective of the industrial flourishing which drove the expansion of Wolverhampton in the later 18th century.

Osteological analysis (see Appendix 3) has shown that there is an overall correlation between the age profile of the skeletal assemblage and the burials recorded in the chapel burial registers (particularly the dominance of sub-adults). It is known that there was a high rate of infant, juvenile and maternal deaths in Wolverhampton in this period, a trait common to many late 18th and 19th century developing urban industrial centres (Adams and Driver 2007). At St Peter's overflow burial ground, an extension from the main church in Wolverhampton consecrated in 1819, 40% of the total individuals had died before the age of eighteen and 76% of these sub-adults had died before

the age of five (Adams and Colls 2007). There are also specific discrepancies between the skeletal assemblage and the burial registers, however: namely, the presence of adolescent skeletal remains but an absence of records for the burial of anyone in this age at death bracket. This suggests that the documents do not provide a complete or consistent record of all the burials that were undertaken at Temple Street Independent Chapel, potentially a reflection of the non-conformist status, the fluctuating success of the chapel and the changes in ministership or perhaps a combination of these factors (see Section 2.3).

The inconsistencies of the burial registers means that allocating skeletal remains to recorded burials has not been possible with any degree of certainty, although one individual could be tentatively identified from the partial preservation of the forename 'James' on a coffin plate. The skeletal remains beneath the plate were of an adult male: the registers record the burial of James Hope in 1786, aged 42 years, and James Evans in 1794, aged 50 years, though there may have been others not recorded. Osteological evidence of joint disease and osteoarthritis in numerous areas of the skeleton indicate that the bones are more likely to be from an older individual and therefore James Evans is a possibility. Of particular interest was the presence of a rare congenital condition in the feet (bipartite medial cuneiform), something also noted in a young adult female found at the northern end of the site area, which suggests a possible familial connection between at least two individuals. The chapel was a small community and many of the family names of the founding members recorded in the church book (see Mander nd) – for example Kendrick, Taylor and Caddick – are present in the burial registers.

The skeletal remains also exhibited further pathological conditions associated with infection and disease, developmental anomalies, and trauma. Cribra orbitalia was present in both adult and sub-adult individuals, indicative of anaemia during childhood, and a high level of caries (tooth decay) were found both in sub-adults and adults, indicating a poor diet that may have relied more heavily on sugar for calorific intake. Dental enamel hypoplastic defects were common in the sub-adult teeth: these are interpreted in archaeological analyses to indicate physiological stress caused by bouts of childhood illness or severe malnutrition, or generally from poor living conditions during development. Evidence for healed childhood trauma was also noted in hand, elbow and collar bones.

Overall, the work has proven a valuable, albeit small-scale, addition to the corpus of work on the archaeology of burial grounds in Wolverhampton. This new information supplements that gained from investigation of nearby and similar sites containing post-medieval burials, especially St Peter's overflow burial ground (Adams and Colls 2007). In the wider area, the potential of post-medieval burial assemblages to contribute to regional research is now well-developed (see Belford 2011, 219). This assemblage is particularly relevant as the site was a non-conformist chapel and the cemetery was in use during a period when Wolverhampton was developing into a major industrial centre. As such, it makes an important contribution towards improving understanding life, death and burial amongst the populace in a key period of Wolverhampton's past.

6 Publication summary

Worcestershire Archaeology has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, Worcestershire Archaeology intends to use this summary as the basis for publication through local or regional journals. The client is requested to consider the content of this section as being acceptable for such publication:

An archaeological watching brief was undertaken at the new market site on land off Cleveland Street, Snow Hill and Temple Street in Wolverhampton (National Grid Reference SO 91509 98298). The watching-brief commenced as a result of the discovery of human remains by ground crew during the machine excavation of a trench for cable ducting. This was duly reported to the police by the site manager, who confirmed that it was not a police matter.

The remains uncovered were consistent with the use of the area as a cemetery associated with Temple Street Independent Chapel, constructed in 1782 by a small group of non-conformists or

'Protestant Dissenters'. Although there was extensive truncation and damage from the groundworks there was partial survival of a total of fourteen individuals, accompanied by wooden coffins and associated coffin fittings. Some of the graves contained concentrations of small, square-section iron tacks, probably fine upholstery pins for fabric coverings. The bones of two further individuals were exposed on site but not exhumed. A small collection of disarticulated bone was also recovered. Coffin plates were in poor condition but where visible, seemed to follow a standard pattern in being broadly rectangular with a stamped edge, coated in a black lacquer with white lettering. They were, however, severely corroded and any biographical details were not fully legible: only one older adult male burial could be tentatively identified as that of James Evans, who died aged 50 years in 1794, but this is not certain.

Detailed osteological analysis has revealed that some of the human remains exhibited a rare congenital condition in the feet, and further pathological conditions associated with infection and disease, developmental anomalies, and trauma. The skeletal assemblage offers comparative and supplementary material to previous study of nearby sites containing post-medieval burials, such as St Peter's overflow burial ground.

The watching brief has provided a valuable opportunity to work on the archaeology of burial grounds in Wolverhampton, particularly as this was a non-conformist chapel and the cemetery was in use during a period when Wolverhampton was expanding and developing into a major industrial centre.

7 Acknowledgements

Worcestershire Archaeology would like to thank the following for their kind assistance in the successful conclusion of this project: Ed Mandrell (Speller Metcalfe), Rob Eastman (Faithful and Gould), Clair Walters (Wolverhampton City Council), andEleanor Ramsey (Archaeology and Historic Environment Officer, Wolverhampton City Council).

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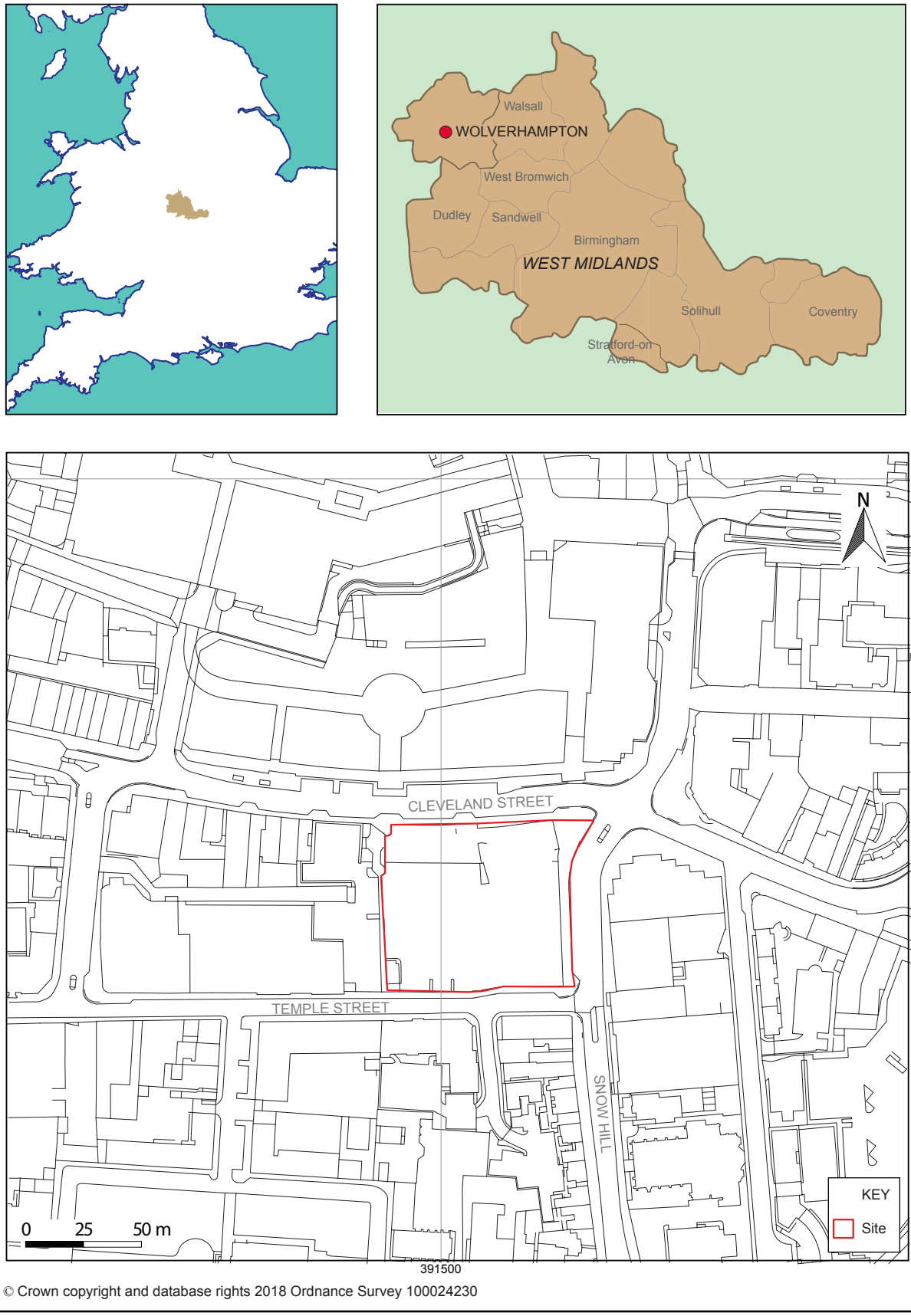
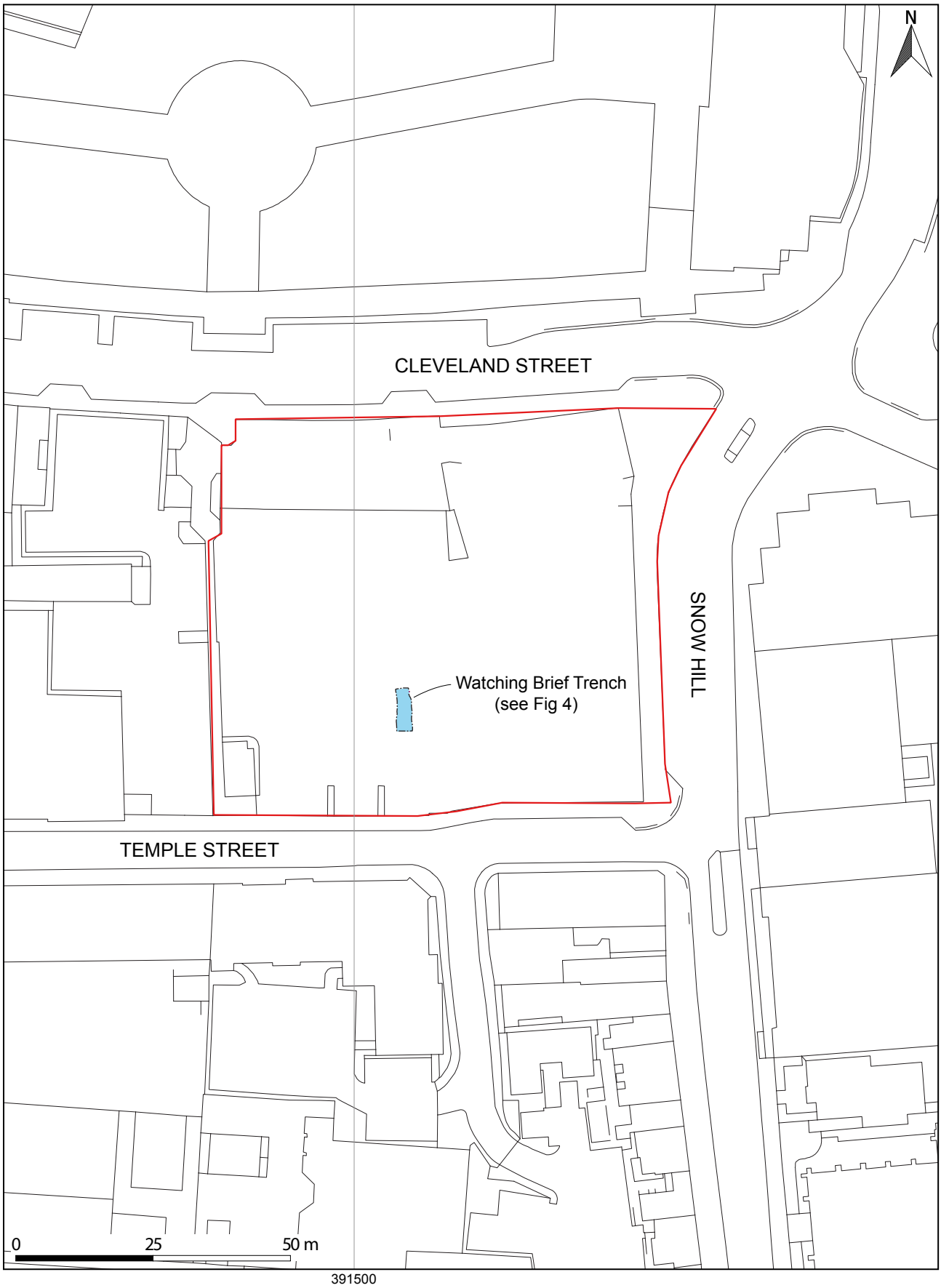
Figures

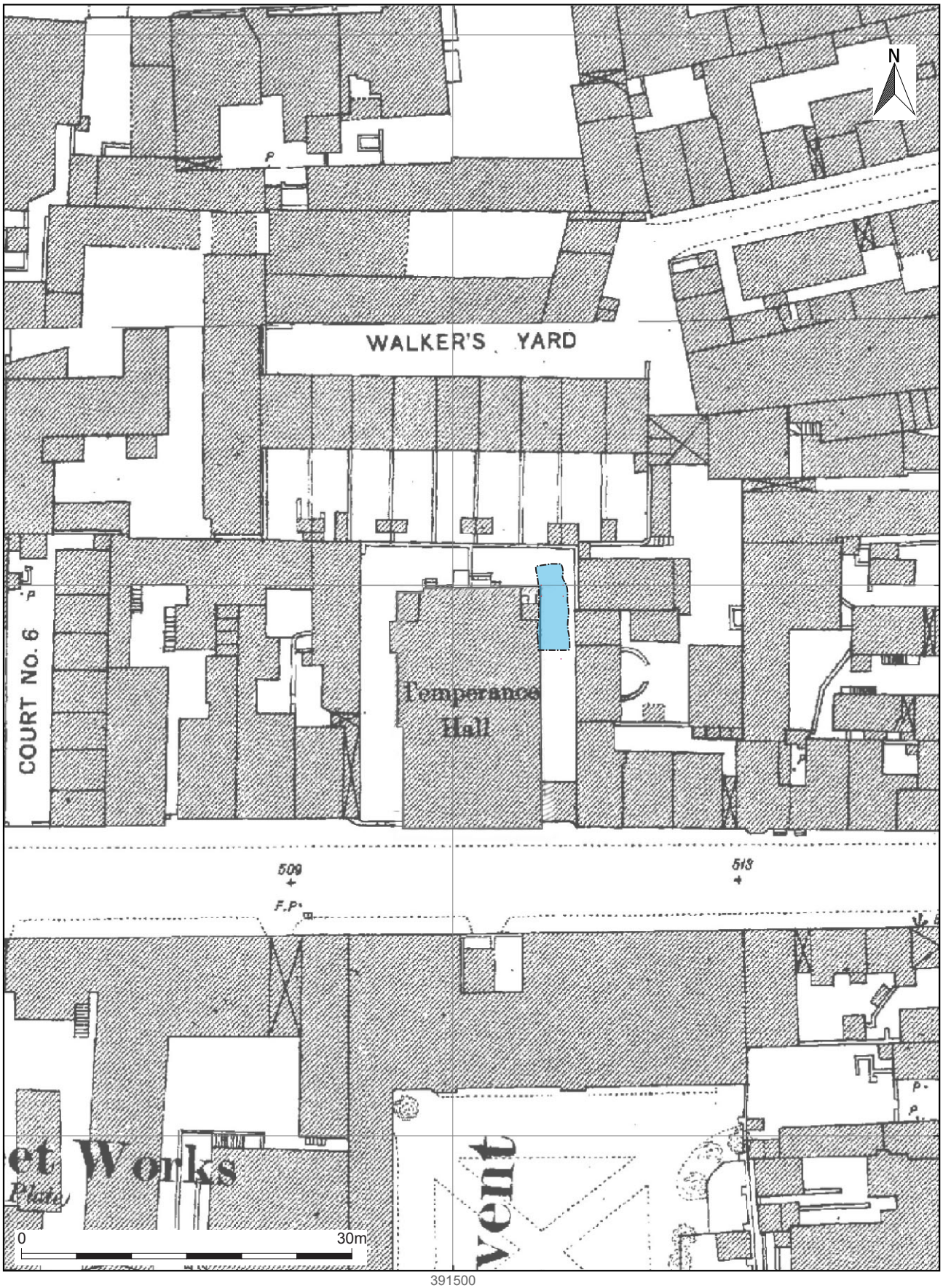


Location of the new market

Figure 1



Trench location plan *Figure 2*



1st edition OS map with location of Watching Brief Trench *Figure 3*

ducting cut
electric cable
trench
modern
truncation
153.72
1003
153.71
coffin base
1004
skull
iron stain
1004
collapsed lid
iron handle?
collapsed lid
1003
grave cut
1025
undisturbed grave
1024
grave cut
1025
1011
1007
1010
skull 1009
153.85
153.89
1011
handle
iron stain
153.92
1017
A
coffin stain
handle
1017
B
coffin
1018
153.84
153.83
153.82
1015
grave cut
1016
handle
handle
coffin
1018
grave cut
1016
cut 1029
service trench
truncation
coffin
1036
153.65
1037
iron
plate
1035
153.67
1044
1023
iron
1020
not excavated
coffin1022
1021
handle
grave cut
1029
153.85
153.86
depositum
D
1027
153.86
C
1027
coffin 1028
handle
cut 1029
handle
1028
1031
1044
153.62
depositum
coffin 1032
1031
153.64
153.72
cut 1033
handle
coffin 1032
cut 1033
1007
1007
1048
1046
154.02
coffin 1047
153.91
well cut
1059
1046
153.89
1057
1058
1048
well
backfill
1056
well cut
1059
handle
154.02
nails
153.87
153.90
1050
1057
grave cut
1052
1066
handle
coffin
1051
1064
1065
service trench
truncation
1066
nails
154.03
depositum
coffin
1062
154.04
154.11
154.09
nails
1063
handle
skeleton
1061
154.23
154.22
154.16
large block
of concrete
removed
cut 1055
1054
0
1m
Detail plan of the graves

A
B
cut 1016
nails
nails
153.92
skeleton
1013/1
1013/2
iron
stain
153.94
coffin
1014
service trench
truncation
D
skull
1012
154.00
C
0
1m
Overlay plan

Figure 4

Plates

Plate 1: General view of the site area during the watching brief, facing north, with the cut for the cable ducting trench visible running through the middle

Plate 2: Young adult female burial SK1003 in coffin. This was the first burial discovered and was badly damaged by the cable ducting trench (scale 0.5m)

Plate 3: Adult female burial SK1017 in coffin, with sub-adults SK1013/1 and SK1013/2 in a smaller coffin at the east end, above the feet (scale 0.5m)

Plate 4: SK1021 in coffin, with a depositum (coffin plate) above the chest. This burial was not disturbed by the cable ducting trench and was left in situ (scale 0.5m)

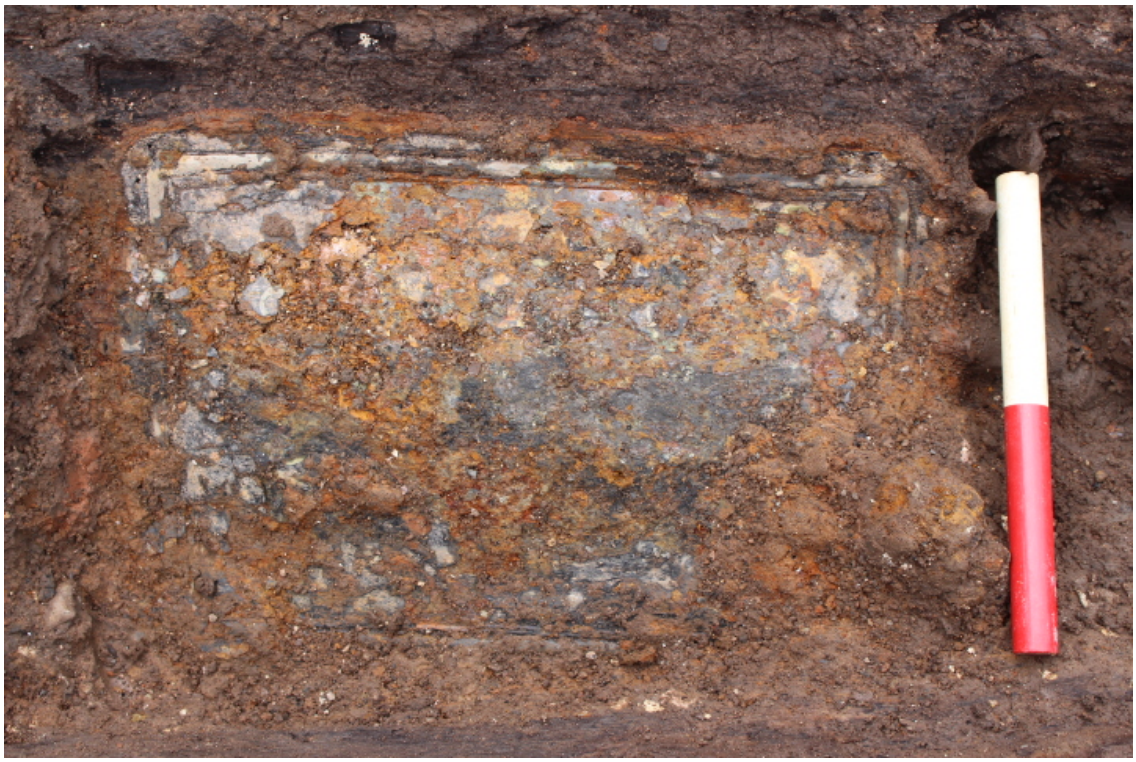


Plate 5: Detail of depositum (coffin plate) above SK1021, which was left in situ (scale 0.2m)

Plate 6: Upper half of surviving sub-adult burial SK1031 in coffin, with a depositum (coffin plate) above the chest (scale 0.3m)

Plate 7: Sub-adult burial SK1046 in coffin, with construction cut for well close to the skull (scale 0.5m)

Plate 8: Old adult male burial SK1061 with a depositum (coffin plate) above the chest (scale 0.5m)

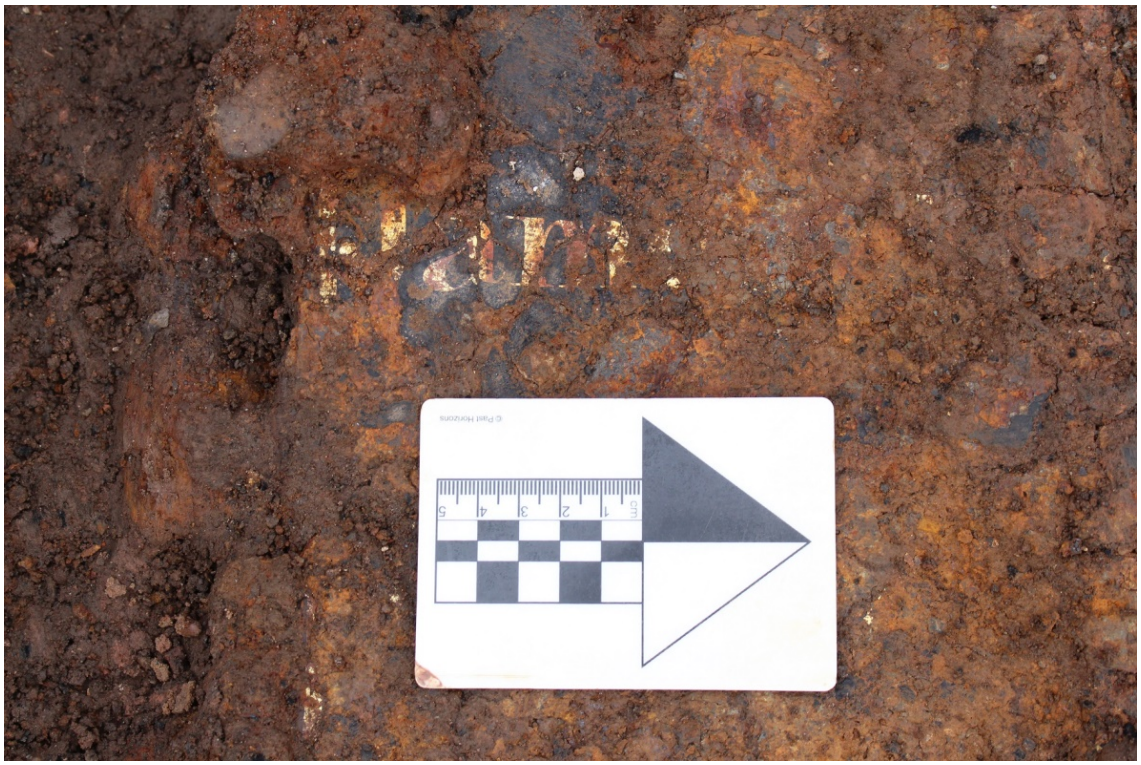


Plate 9: Detail of depositum (coffin plate) above old adult male burial SK1061, with possible 'James' name visible (scale 0.05m)

Plate 10: Coffin staining in grave 1048, with grave 1033 also visible (scale 0.05m)

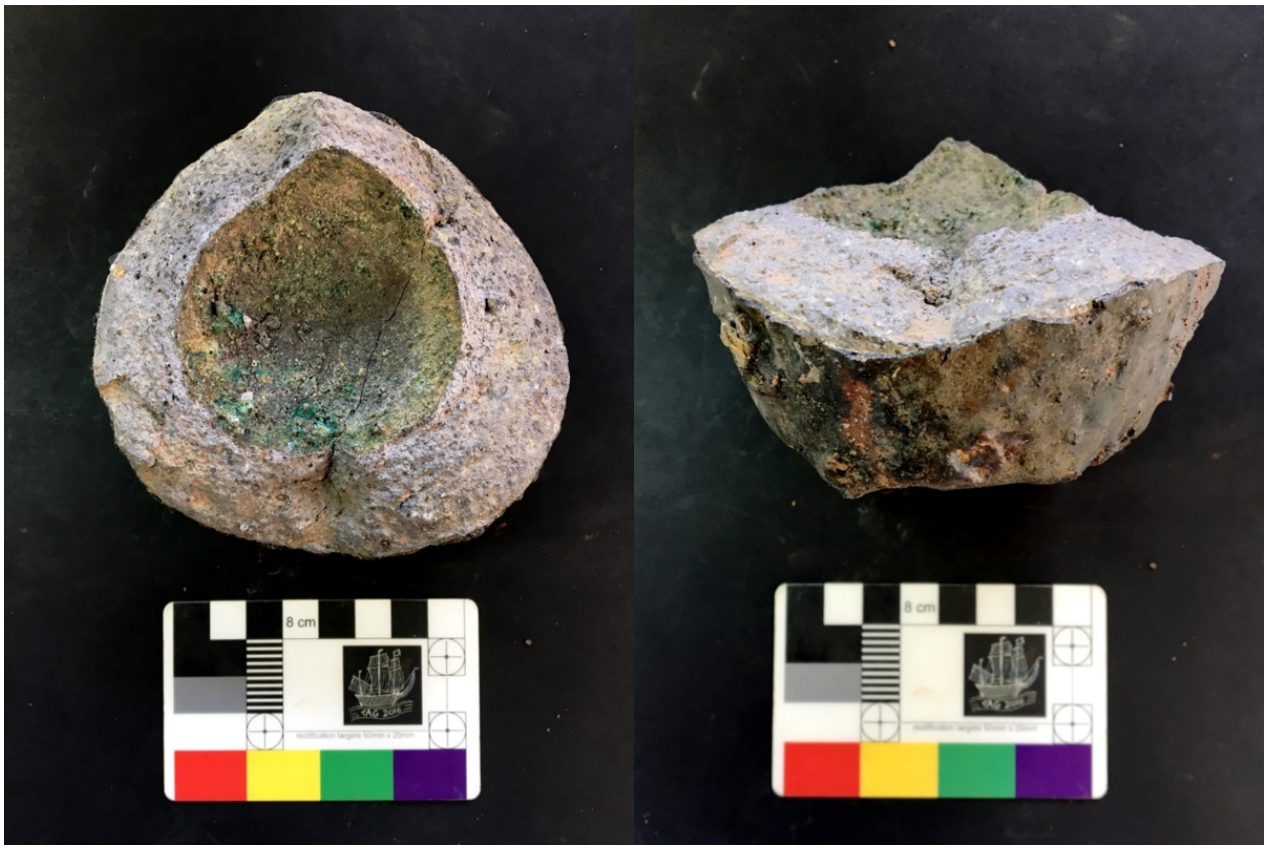


Plate 11: Copper-stained crucible found in backfill (1057) for well construction

Plate 12: Small (possible upholstery) tacks associated with burial SK1061

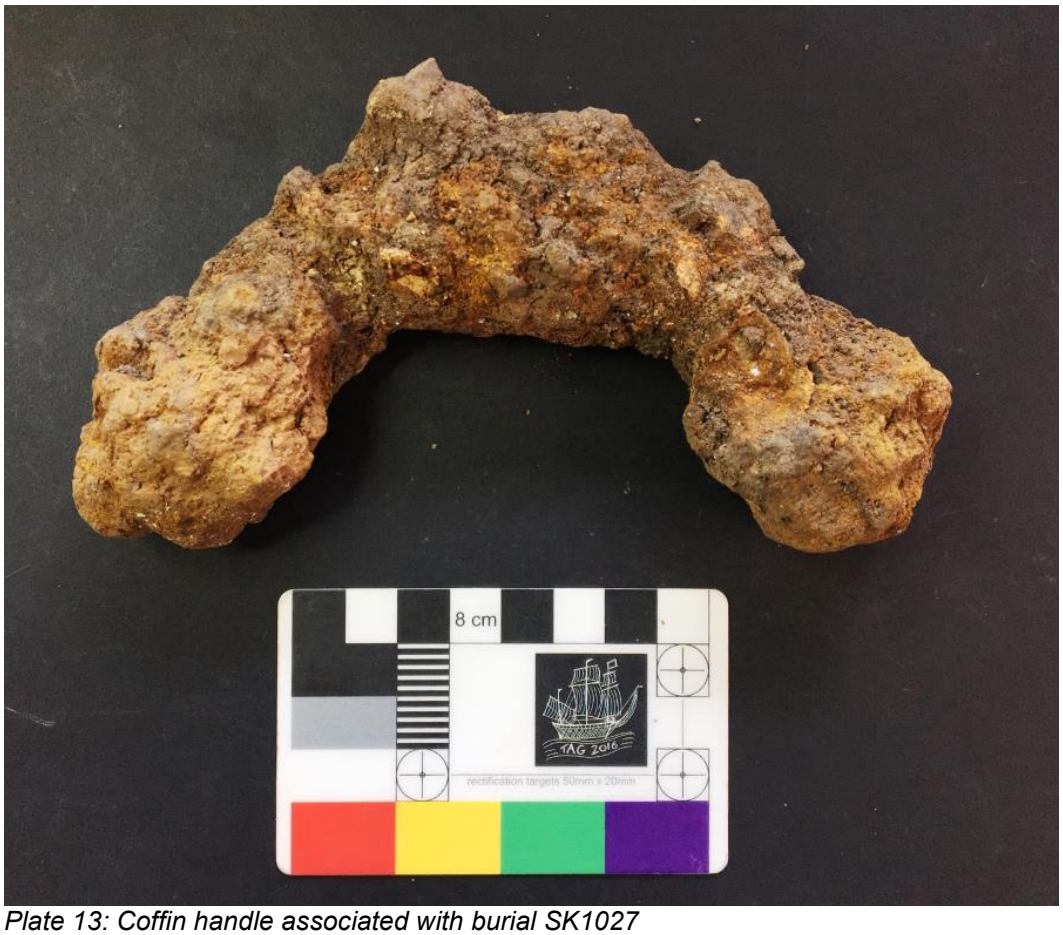


Plate 13: Coffin handle associated with burial SK1027

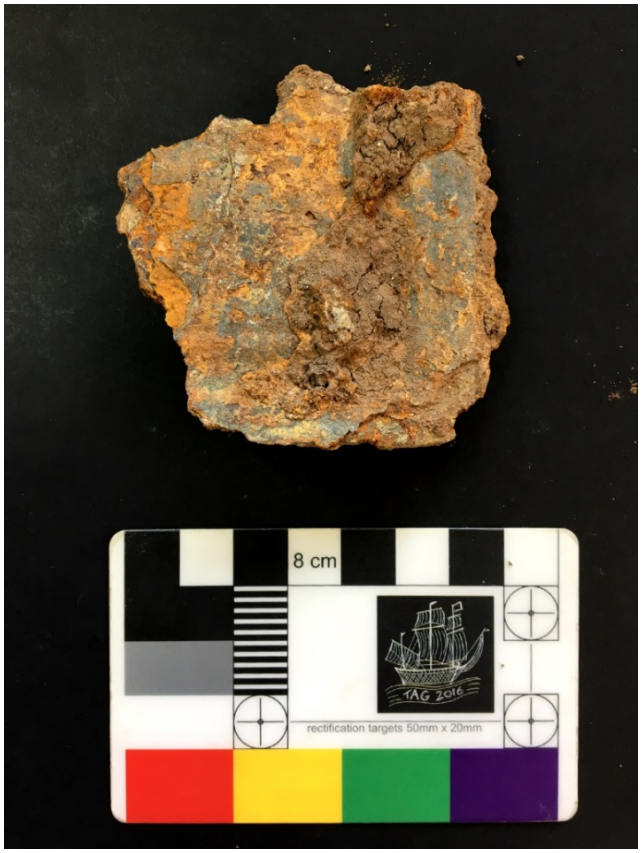


Plate 14: Depositum plate fragment associated with burial SK1031

Plate 15: Gilded plate fragment associated with burial SK1061

Appendix 1 Summary context descriptions

Area 1 – ducting trench

Maximum dimensions: Length: 7m+ Width: 2.5m

Context	Context type	Feature type	Description	Height/depth	Interpretation
1000	Layer	Modern Layer	Loose grey hard-core	0.30m	Loose, type 1 hardcore of variable depth, modern made ground (AD2018)
1001	Layer	Modern Layer	Firm greyish brown silty clay	0.28m	Made ground graveyard soil, seals graves, contains brick rubble etc
1002	Arbitrary number	Arbitrary	Finds ref.		Finds ref no. for area disturbed by service trench, contains loose human bone
1003	Fill	Burial			Human remains, supine extended burial, badly damaged by truncation
1004	Fill	Burial			Timber coffin, could be 'fish tail' shape, contains human remains 1003. Coffin handle
1005	Cut	Grave		0.17m	Rectangular grave cut
1006	Fill	Grave	Firm grey silty clay	0.15m	Mixed backfill in grave, includes body decay and collapse of coffin
1007	Layer	Layer	Moderately compact brownish grey silty clay	unexc.	Post-med graveyard soil layer, through which burials have been cut
1008	Fill	Grave	Moderately compact brownish grey silty clay	0.11m	Mixed backfill in grave
1009	Fill	Burial			Human remains, skull only, badly damaged by truncation
1010	Fill	Grave			Iron staining around area of skull 1009
1011	Cut	Grave		0.11m	Rectangular grave cut
1012	Fill	Burial			Human remains, skull only
1013	Fill	Burial			Human remains, supine extended burial, badly damaged by truncation. Juvenile, with neonatal remains as well?
1014	Fill	Burial			Wood staining of timber coffin, poor preservation, nails around edge
1015	Fill	Grave	Moderately compact greyish brown silty clay	0.12m	Mixed backfill in grave

Context	Context type	Feature type	Description	Height/depth	Interpretation
1016	Cut	Grave		0.12m	Rectangular grave cut
1017	Fill	Burial			Human remains, supine extended burial, badly damaged by truncation
1018	Fill	Burial			Wood staining of timber coffin, poor preservation, possible 'fish-tail' shape
1019	Fill	Grave	Firm brownish grey silty clay	0.06m	Mixed backfill, transposed into underlying grave through coffin collapse
1020	Fill	Grave	Firm brownish grey silty clay	0.23m+	Mixed backfill in grave
1021	Fill	Burial			Human remains, partially exposed but left in situ, west facing (possible clergy??)
1022	Fill	Burial			Wood staining of timber coffin, partially exposed, left in situ
1023	Cut	Grave		0.23m+	Rectangular grave cut
1024	Fill	Grave	Moderately compact blackish grey silty clay	unexc.	Mixed backfill in grave, unexcavated
1025	Cut	Grave		unexc.	Grave cut, unexcavated
1026	Fill	Grave	Soft orangey brown sandy silt	0.15m	Mixed backfill in grave
1027	Fill	Burial			Human remains, pelvis and feet only, badly damaged by truncation
1028	Fill	Burial			Wood staining of timber coffin, poor preservation
1029	Cut	Grave		0.15m	Rectangular grave cut
1030	Fill	Grave	Firm blackish grey silty clay	0.16m	Mixed backfill in grave
1031	Fill	Burial			Human remains, supine extended burial, badly damaged by truncation
1032	Fill	Burial			Wood staining of timber coffin, poor preservation, but with handles and chest *depositum*
1033	Cut	Grave		0.16m	Rectangular grave cut
1034	Fill	Grave	Soft orangey brown sandy silt	0.08m	Mixed backfill in grave
1035	Fill	Burial			Human remains, half of child burial, badly damaged by truncation

Context	Context type	Feature type	Description	Height/depth	Interpretation
1036	Fill	Burial			Wood staining of timber coffin, poor preservation
1037	Cut	Grave		0.08m	Rectangular grave cut
1038	Fill	Drain	Loose greenish grey sandy silt	0.10m+	Fill of brick drain that pre-dates the cemetery
1039	Structure	Drain			Collapsed drain/culvert
1040	Cut	Drain		0.10m+	Cut for drain/culvert
1041	Fill	Grave	Soft greyish brown sandy silt	unexc.	Mixed backfill in grave, unexcavated
1042	Fill	Burial		unexc.	Human remains only partially visible, not excavated
1043	Fill	Burial		unexc.	Wood staining of timber coffin, partially visible, not excavated
1044	Cut	Grave		unexc.	Rectangular grave cut, extends beyond LOE, not excavated
1045	Fill	Grave	Compact blackish grey silty clay	0.24m	Mixed backfill in grave
1046	Fill	Burial			Human remains, supine extended burial, badly damaged by truncation
1047	Fill	Burial			Wood staining of timber coffin, poor preservation, possible 'fish-tail' shape
1048	Cut	Grave		0.24m	Rectangular grave cut
1049	Fill	Grave	Moderately compact pink red clay		Mixed backfill in grave
1050	Fill	Burial			Human remains, supine extended burial, legs and feet only, badly damaged by truncation
1051	Fill	Burial			Wood staining of timber coffin, poor preservation, but with handles
1052	Cut	Grave		0.24m	Rectangular grave cut
1053	Fill	Grave	Firm blackish grey silty clay	0.05m	Mixed backfill in grave, very shallow
1054	Fill	Burial			Human remains only partially surviving, badly damaged, clearly a child
1055	Cut	Grave		0.05m	Sub-rectangular grave cut, very shallow

Context	Context type	Feature type	Description	Height/depth	Interpretation
1056	Fill	Well	Loose black ash	unexc.	Backfill on closure of well
1057	Fill	Well	Soft blackish brown sandy silt	unexc.	Backfill around bricks of well, in construction cut
1058	Structure	Well		unexc.	Brick structure of well, cut through cemetery
1059	Cut	Well		unexc.	Large circular cut for well structure. Truncates burials
1060	Fill	Grave	Firm blackish grey silty clay	0.20m	Mixed backfill in grave
1061	Fill	Burial			Human remains, supine extended burial, good condition despite truncation
1062	Fill	Burial			Wood staining of timber coffin, poor preservation, but with handles and chest *depositum* that appears to read 'James'
1063	Cut	Grave		0.20m	Sub-rectangular grave cut
1064	Fill	Wall	Firm greyish brown silty clay	unexc.	Fill around stub of brick wall
1065	Structure	Wall		unexc.	Small section of damaged brick wall, cuts edge of grave
1066	Cut	Wall		unexc.	Cut for brick wall

Appendix 2 Technical information

The archive (site code P5351)

The archive consists of:

41	Context records AS1
4	Field progress reports AS2
2	Photographic records AS3
261	Digital photographs
1	Drawing number catalogues AS4
5	Scale drawings
1	Context number catalogues AS5
14	Skeleton records AS6
1	Sample number catalogues AS18
11	Wood record sheets AS49
3	Boxes of finds
1	Bag of flots and sorted remains from residues
1	Copy of this report (bound hard copy)

The project archive is intended to be placed at:

Wolverhampton Archives and Local Studies Centre
Molineux Hotel Building
Whitmore Hill
Wolverhampton
West Midlands, WV1 1SF

A copy of the report will be deposited with the Historic Environment Record (HER) and the National Monuments Record (NMR) as appropriate.

Appendix 3 Human remains analysis

Specialist report by Gaynor Western (Ossafreelance)

Osteological Analysis of the Human Remains from Temple Street Chapel, Wolverhampton, Staffordshire.

A Report for Worcestershire Archaeology

September 2018

Project OA1102

1. Introduction

The aim of this report is to present the data obtained from the osteological analysis of human skeletal remains recovered from the new market site on land off Cleveland Street, Snow Hill and Temple Street in Wolverhampton (NGR: SO91509 98298). Human skeletal remains were found unexpectedly on site by construction workers and the discovery was subsequently deemed of archaeological significance, leading to excavation of a small area by Worcestershire Archaeology in May and June 2018.

This location on Temple Street had been identified from documentary research as the site of a former independent chapel established in 1782 off Grey Pea Walk, which was furnished with a small burial ground. Burials are recorded as having taken place from 1784. At peak attendance at the chapel, the burial register indicates that between 3 and 4 interments took place each year, though numbers in the congregation dwindled for periods of its history. The chapel remained in use as a place of worship until 1849 when the Snow Hill Congregational Church was opened and the Temple Street Chapel was subsequently used as a day school.

The archaeological excavations resulted in the exhumation of the remains of a total of 14 individuals, some accompanied by evidence for coffins and coffin fittings. A small collection of disarticulated bone was also recovered. The remains of two further individuals were exposed on site but were not exhumed. The remains of any coffin plates that may have contained biographical details were severely corroded and none were fully legible. A small number of animal bone fragments and one fragment of burnt animal bone were also present.

Osteoarchaeological analysis was undertaken to assess the condition and completeness of the elements recovered as well as to record any osteological evidence for age, sex, stature, non-metric traits and pathology in the assemblage.

2. The Articulated Human Bone

2.1 Reasons for the Analysis

Osteological analysis was carried out to ascertain:

- Inventory of the skeletal material

- Condition of bone present
- Completeness of the elements present
- Age Assessment
- Sex Determination
- Non-metric Traits
- Stature and Morphometric Data
- Skeletal Pathology
- Dental Pathology

2.2 Methods and Process

The skeletal material was analysed according to the standards laid out in the guidelines recommended by the British Association of Biological Anthropologists and Osteologists in conjunction with the CIfA (Guidelines to the Standards for Recording Human Remains, Brickley and McKinley 2004; Updated Guidelines to the Standards for Recording Human Remains, Mitchell and Brickley 2018) as well as by English Heritage (Human Bones from Archaeological Sites: Guidelines for producing assessment documents and analytical reports, Centre for Archaeology Guidelines, 2002).

Recording of the material was carried out using the recognised descriptions contained in Standards for Data Collection from Human Skeletal Remains by Buikstra and Ubelaker (1994). Full recording forms are supplied separately to be archived with any other archaeological recording forms. All skeletal data has been recorded using an MS-Access database.

The material was analysed macroscopically and where necessary with the aid of a magnifying glass for identification purposes. Where relevant, digital photographs have been used for

illustration and a full image archive of all pathologies and any other features of interest has been provided in digital format.

The material was analysed without prior knowledge of associated artefacts so that the assessment remained as objective as possible.

Comparison of the results was made with published osteological data from contemporary skeletal populations, including:

- *St. Martin's-in-the-Bull Ring, Birmingham*. A large late Georgian and early Victorian period assemblage consisting of 505 analysed individuals interred in both vault and earth-cut graves (Brickley, Berry and Western 2006).
- *St. Peter's overflow burial ground, Wolverhampton.* An assemblage of 150 articulated skeletons dating to between 1819 and c. 1850 (Arabaolaza *et al*. 2007).

2.3 Skeletal Inventory

An inventory of the skeletal elements present is undertaken to assess the completeness of the skeletal remains and identify the number of individuals present. An inventory also provides information on the specific elements within the skeleton that are present and can be assessed for pathological changes. Each element is recorded as present or absent. The long bones are recorded according to the presence or absence of the proximal (upper), middle and distal (lower) sections as well as the proximal and distal joint surfaces. The completeness of the bones of the axial skeleton (with the exception of the spine) is recorded according to the categories of <25%, 25-50%, 50-75% and 75%>.

A full inventory can be found on the MS Access database provided.

2.4 Condition of the Bone Present

The condition of the bone was assessed macroscopically according to the categories and descriptions provided by the Guidelines to the Standards for Recording Human Remains (Brickley and McKinley 2004). Since most skeletons exhibit more than one grade of state of preservation, these categories are simplified into 4 main groups of preservation: Good (grades 0-2), Fair (grades 2-4), Poor (grades 4-5+) and Varied (more than 4 grades of condition). The condition of

human bone can be influenced by both extrinsic (i.e. taphonomic conditions) and intrinsic (i.e. robustness) factors (Henderson 1987).

The majority of skeletal remains were in 'good' condition, with nine individuals (64.3%) being scored as grades 1-2. The remaining five individuals (35.7%) were scored grades 2-4 and were therefore categorised as being of 'fair' preservation. Age at death was not a contributory factor to skeletal preservation with adults and sub-adults being found in both 'good' and 'fair' categories of preservation.

2.5 Completeness of Skeletal Remains

This is a guide to the overall completeness of the individual's skeletal remains and is calculated according to the percentage of the bones present in relation to the total number of bones in a complete human skeleton. Completeness of remains is gauged through an assessment of the amount of material representing different areas of the body. A complete skeleton comprises of:

Skull = 20%

Torso = 40%

Arms = 20%

Legs = 20%

Each area of the skeleton was assessed and then placed into the following four categories of completeness: <25%, 25-50%, 50-75% and 75%> (Buikstra and Ubelaker 1994).

Recording the completeness of the individual can allow an insight to be gained into how much post-depositional activity has occurred as well as to assess how much information can potentially be gained from the remains.

A significant proportion of the skeletal remains had suffered post-mortem disturbance and were less than 50% complete. Six individuals (42.9%) were less than 25% complete and a further three individuals (21.4%) were only 25-50% complete. Five individuals, however, had remained relatively intact and were more than 50% complete; three (21.4%) of these were more than 75% complete and two (14.3%) were 50-75% complete.

2.6 Age Assessment

Establishing the age and sex of individuals from an archaeological assemblage not only provides an insight into the demographic profile of the population but can also be used to inform us of patterns in pathological distributions in a skeletal assemblage.

The age of sub-adults is assessed using both dental development (Smith 1991) and eruption (Ubelaker 1989) as well as long bone lengths (Schaefer *et al*. 2009) and epiphyseal fusion (Scheuer & Black 2004). These methods can usually provide reasonably accurate age estimation due to a relatively narrow range of variation in normal sub-adult development. Thus, sub-adults can be placed into the following age categories: Foetal (<36 weeks), Neonate (0-1 month), Young Infant (1-6 months), Older Infant (6-12 months), Child (1-5 years), Juvenile (6-12 years) and Adolescent (13-17 years).

Assessment of adult age at death, unfortunately, results in much less specific age estimates due to a much greater individual variation in the features exhibited by the examined elements at particular ages (Cox 2000). Age estimation of adults was assessed from analysis of the auricular surface (Lovejoy *et al*. 1985) and the pubic symphysis (Brooks and Suchey 1990). Each of these methods examines the deterioration of these surfaces and categorises them accordingly. This deterioration is due in part to due to the health status of the individual but can also be influenced by lifestyle and so the variation produced by these factors results in much wider age categories: Very Young Adult (18-24), Young Adult (25-34), Middle Adult (35-49) and Old Adult (50+) (Buikstra and Ubelaker 1994). Grading of dental attrition was not used as an age assessment technique on this occasion due to the lack of its applicability to post-medieval populations.

Nine of the individuals present in the skeletal assemblage were sub-adults (64.3%) compared to only five of the individuals being adults (35.7%).This correlates well with evidence from the burial records available, which indicate that for burials taking place between 1784 and 1799, 70.0% were sub-adult (n=14) compared to 30.0% being adult (n=6) (Figure 1).

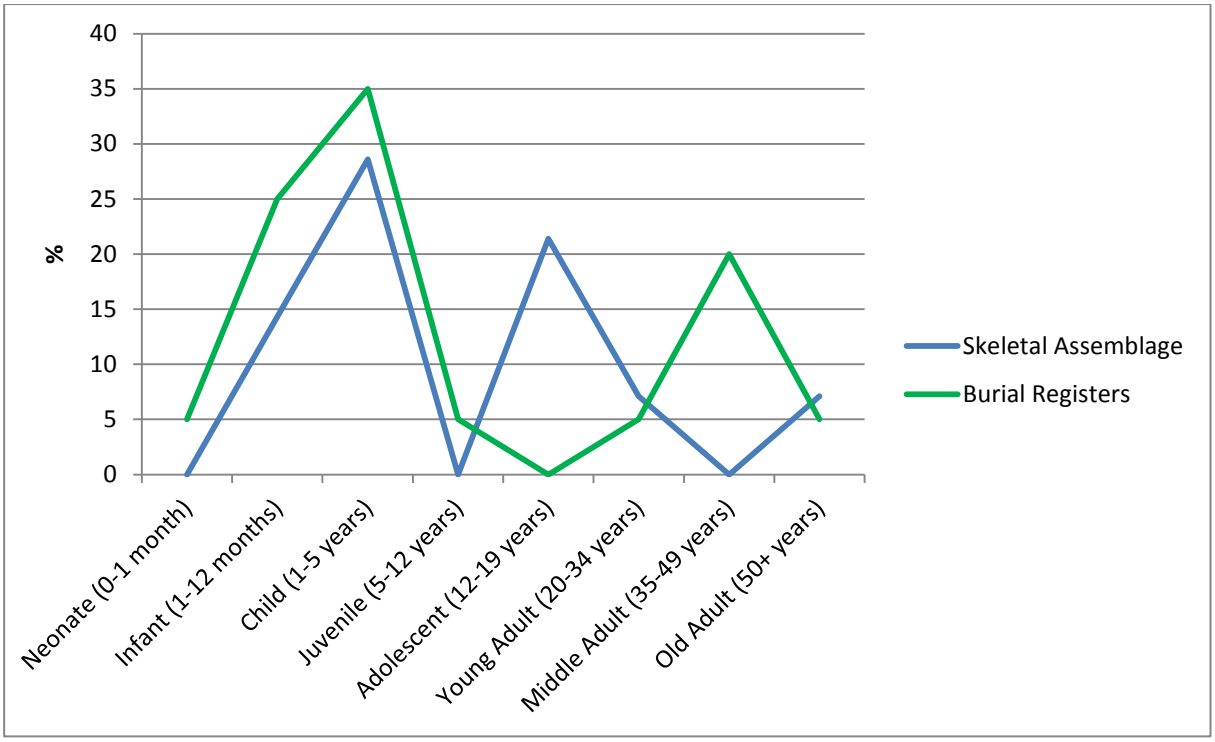


Figure 1: *Comparison of the Age Profiles of the skeletal assemblage and the (incomplete) Burial Registers*

Despite the overall correlation between the age profiles of the skeletal assemblage and the burial registers, it is clear that there are discrepancies between the relative representations of the age categories within the sub-adult groups. In the sub-adult group from the skeletal assemblage, two infants, four children and three adolescents were present. No burials of adolescents are recorded in the burial registers. The osteological evidence suggests, therefore, that the burial registers are not a complete record of burials undertaken at the Temple Street Chapel.

Three of the five adults could not be assessed for age at death due the incomplete nature of the skeletal remains. Only one adult could be identified as a 'young adult' and one adult as an 'old adult'. This lack of skeletal preservation therefore prevents a fair comparison with the burial registers for the age profiles of the adults, particularly as the registers appear to be incomplete.

2.7 Sex Determination

Sex is assessed using the criteria laid out by Buikstra and Ubelaker (1994) in the analysis of morphological features of the skull and pelvis. In addition, metric data is also used where possible, taking measurements of sexually dimorphic elements such as the femoral and humeral head (Bass 1995). Categories ascribed to individuals on the basis of this data were 'Male', Possible Male', 'Indeterminate', 'Possible Female', 'Female' and 'Unobservable'. Sex may be

ascribed on the basis of metrics alone where no sexually dimorphic traits are observable. Where sex was not observable be either metric or morphological observations, it was recorded as 'Unobservable'. No sexing of sub-adult material is attempted due to the lack of reliable criteria available.

Only three of the five individuals identified as adult could be assessed for sex. Two individuals, one a young adult (SK1003) and one that could not be ascribed a more specific age category than 'adult' (SK1017) were assessed as female, whereas, SK(1061), an old adult, was identified as male. Interestingly, a partially preserved coffin plate or 'depositum' was associated with this individual, on which the name 'James' as a forename could be read and one 'James Evans', aged 50 years at his death in 1794, is recorded in the burial records. However, the incomplete nature of both the coffin plate and the records makes it impossible to identify this individual with any certainty.

Four of the six adults listed in the burial registers for the Temple Street Chapel are male and two are female. A similarly higher number of male (n=8) than female (n=6) sub-adults were recorded.

2.8 Non-Metric Traits

Non-metric traits are morphological features that occur both in bone and dentition. These features have no specific functional purpose and occur in some individuals and not in others. The origins of non-metric traits have now been shown to be highly complex, each having its own aetiology and each being influenced to differing extents by genetics, the environment and by physical activity. A review of the current literature suggests that the undetermined specific origins of these traits and the fact that there is more genetic variation within populations than between them can prevent useful conclusions regarding their presence or absence in skeletal remains from being drawn (Tyrell 2000).

The presence of any non-metric traits is noted in the skeletal inventory on the MS Access database. Of note was the presence of a bipartite inca bone in SK(1003), a young female adult (Figure 2, arrowed).

Figure 2: *Bipartite Inca Bone, SK(1003).*

2.9 Stature and Morphometric Analysis

Stature of adult individuals can be reconstructed from measurements of long bones of the skeleton. Since the long bones of sub-adults have not yet fully developed it is not possible to provide an estimate of stature for immature remains. Stature is the result of many factors including genetics and environmental influences (Floud *et al*. 1990), such as malnutrition and poor health. Height can be used as an indicator of health status and there is a wide range of literature on the relationships between height, health and social status. Estimated stature was calculated by taking the measurements of the individual long bones and using the formula provided by Trotter (1970). Variation in estimated stature can be up to 3cm.

Metric analysis of the long bones, cranium and mandible may also be undertaken on adult remains to provide comparative information on morphological variability.

Stature could only be estimated for three individuals. A stature of 1.70m was estimated for SK(1050), an individual of unknown age and sex. SK(1061), the old adult male, was estimated as being of 1.73m in stature whereas SK(1003), the young adult female, was estimated as being considerably shorter at 1.55m. This compares well to the range of stature estimates from St. Peter's overflow burial ground, Wolverhampton for males (mean = 1.71m, range = 1.61m – 1.81m) and females (mean = 160.6m, range = 1.50m – 1.73m) as well as for males (mean = 1.71m range 1.65m – 1.76m) and females (mean = 1.59m, range = 1.54m – 1.64m) from St. Martin's-in-the-Bullring, Birmingham.

2.10 Skeletal Pathology

Palaeopathology is the study of diseases of past peoples and can be used to infer the health status of groups of individuals within a population as well as indicate the overall success of the adaptation of a population to its surrounding environment. Pathologies are categorised according to their aetiologies; e.g. congenital, metabolic, infectious, traumatic, neoplastic etc. Any pathological modifications to the bone are described. The size and location of any lesion is also noted.

Due to the fact that the majority of the skeletal pathological changes occurred within the small number of adults present, pathology is reported here on an individual basis and prevalence rates have not been calculated.

Not only must be the condition of skeletal remains be taken into account when considering evidence for pathology in archaeological populations but also the fact that more skeletal pathologies are likely to be present in older individuals, who have lived long enough to sustain chronic disease processes. This relates to the phenomenon known as the 'osteological paradox' whereby those exhibiting skeletal lesions are thought, in actual fact, to represent comparatively 'healthier' individuals in life than those individuals exhibiting no lesions who may well have succumbed to either more virulent diseases that leave no trace in the skeleton or to have died before a potentially observable disease affected the skeleton (Wood *et al.* 1992).

Several pathological changes were noted in SK(1061), an old adult male. The most notable was a rare case of bilateral bipartite medial cuneiforms in the feet (Figure 3). This is a congenital condition whereby during embryogenesis, two or more ossification centres appear to form the

medial cuneiform, rather than the more common single ossification centre. Alternatively, the mesenchymal primordium may divide into two separate dorsal and plantar halves during development (Carroll 2013). In this individual, ossification in the right medial cuneiform was multicentric, forming three separate ossicles to make up a composite bone, whereas the left cuneiform was bipartite and formed by two ossicles. The anatomic variant is rare, reported clinically to occur in approximately 0.3% of the population and is generally more common in males. Since it is often an incidental finding of little clinical significance, however, modern rates may be underestimated. Of interest here, however, is that it is believed that there may be a familial connection. In this assemblage, a second individual SK(1003), a young adult female, was also observed with an incomplete bipartite right medial cuneiform, the left medial cuneiform not being present (Figure 4). Given the reported rarity of the condition, it is therefore a possibility that there is a genetic relationship between SK(1061) and SK(1003).

Figure 3: *Bilateral bipartite medial cuneiforms (arrowed) (SK1061)*

Figure 4: *Partial bipartite medial cuneiform SK(1003)*

SK(1061) also exhibited pathological changes associated with old age, such as joint disease and osteoarthritis in the cervical (neck) and thoracic (mid spine) vertebrae (Figure 5) as well as in the left wrist and in the left temporo-mandibular joint. Also present was the ossification of some of the rib cartilages, which tends to occur more often in old age adults.

Figure 5: *Extensive joint disease in the cervical vertebrae, manifest as macroporosity and osteophytic lipping (arrowed)*

Healed trauma was present in the right elbow joint on the capitulum of the distal humerus. Here a rounded lesion of irregular lamellar bone was present indicating a condition known as osteochondiritis dissecans (Figure 6). This tends to be the result of repeated trauma or stress to the joint during childhood or adolescence when necrosis of a small area of bone occurs following the loss of blood supply to it (Salter 1999). Pressure joints such as the distal femur and humerus are the most commonly affected between the ages of 10-15 years and 11-21 years respectively (Chambers 2018). Robust muscle attachments were noted throughout the skeleton, suggesting this individual was physically robust and active for a long period of time. Minor cribra orbitalia (Grade 1) was also noted in both eye orbits, which is a condition that is frequently associated with chronic haemolytic or megaloblastic anaemia in childhood (Walker *et al*. 2009).

Figure 6: *Osteochondritis dissecans (arrowed) SK(1061)*

Lesions that were active around the time of death in SK(1061) were present on the endocranial surface of the cranium, consisting of remodelling bone deposits along the meningeal groove in the area of the bregma as well as along the transverse sinus of the occipital bone on the left side (the right side was not present) (Figure 7). The deposit consisted of smooth brown coloured bone that was porotic and exhibited vascular impressions. This bone deposition suggests

inflammation of meninges of the brain around the time of death, possibly as the result of infection.

Figure 7: *Bone deposition in the transverse occipital sinus (arrowed)*

Trauma was also noted in SK(1003), the young adult female, who exhibited possible evidence for a green stick fracture of the right clavicle that would have occurred during childhood (Figure 8). Irregular large exostoses were present, protruding anteriorly from the middle/proximal junction region of the diaphysis with a raised oblique line of bone running across the surface of the bone at this site on the inferior surface. The affected area appears flattened superior-inferiorly compared to the left clavicle, though there was no macroscopically observable overlap or angulation of the diaphysis present. Fractures of the clavicle occur following a hard fall onto the shoulder or an outstretched hand (Salter 1999) and generally heal well without surgical intervention. Further evidence of trauma was also seen in this individual in two left metacarpals in the form of similar bony exostoses, possibly representing a second greenstick fracture in the second metacarpal and soft tissue trauma in the third (Figure 9). In the modern clinical setting, fractures of the metacarpals account for 10-39% of all hand fractures in children, particularly amongst young adolescents (Cornwall 2006). They are a relatively common injury, resulting from

a fall onto a hand with flexed fingers, often during sport in older children or from crushes, more common in younger children.

Figure 8: *Possible greenstick fracture of the right clavicle (arrowed), SK(1003)*

Figure 9: *Possible greenstick fracture of the left second metacarpal (arrowed) and soft tissue trauma of left third metacarpal, SK(1003)*

Skeletal pathology was rare in the sub-adults. Only one individual, SK(1031), an adolescent aged between 11 and 14 years at death, exhibited minor cribra orbitalia (grade 2).

2.11 Dental Pathology

Dentition was only present in 5 of the individuals in the skeletal assemblage, two of which were adults and three of which were sub-adults.

SK(1017), an adult of unknown age, had lost 11 teeth ante-mortem and only 9 teeth were present, possibly indicating that this individual was an older aged adult, since ante-mortem tooth loss is associated with increasing age. Three teeth were carious and one had minor lingual calculus. No abscesses were present and only one tooth exhibited a minor linear enamel hypoplastic defect. Periodontal disease was unobservable due to the post mortem damage to the alveolar bone.

Only seven teeth were present in SK(1003), the young adult female, due to post-mortem damage to the skull. One tooth had been extensively damaged by a large carious lesion and changes to the bone indicated that a periapical abscess had developed at the site (Figure 10).

Two further teeth were carious. Only minor calculus was observed on one tooth and there was no periodontal disease.

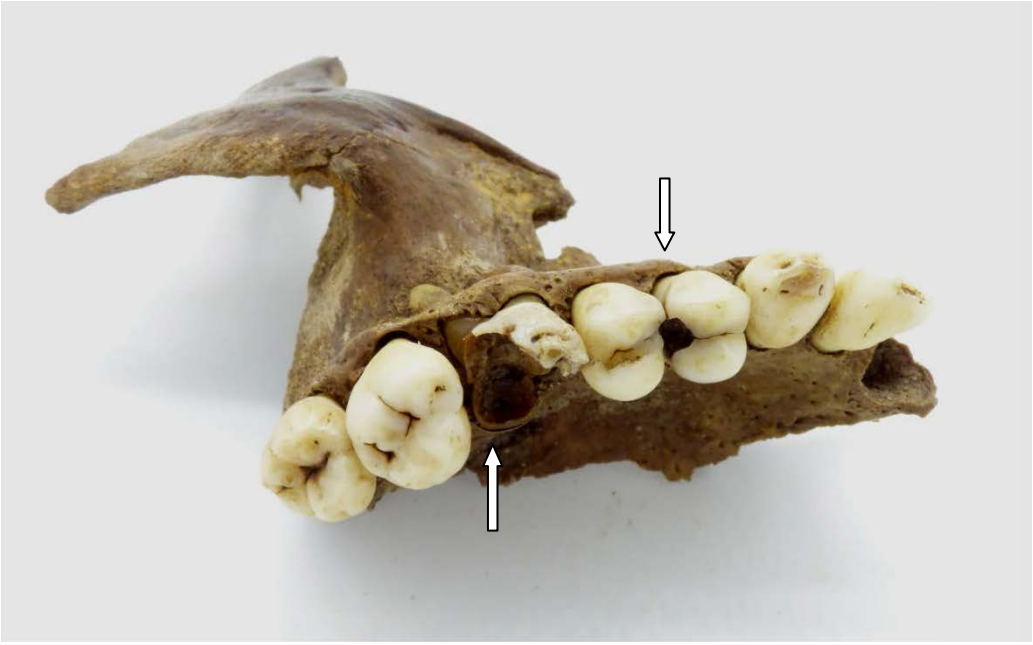


Figure 10: *Large carious lesion (left) and interproximal caries (right) in SK(1003)*

Amongst the sub-adults, SK1013/1 was only approximately 1 month old at death and therefore all the deciduous dentition present was still developing and was unerupted, being unobservable for dental disease. Two adolescent individuals, SK(1031) and SK(1046), aged between 11 and 14 years and 11 and 16 years at death respectively, both had observable dentition.

A total of 27 teeth were present in SK(1031), all of which had minor if not moderate calculus deposits. Four teeth were carious and 15 of the teeth exhibited dental enamel hypoplastic defects. However, there were no dental abscesses nor was there any evidence for periodontal disease.

Only seven teeth were present in SK(1046), five of which displayed enamel hypoplastic defects. There was no evidence of dental abscesses, caries or periodontal disease and only one tooth had a minor deposit of calculus.

Overall, taking into account the number of observable teeth and tooth sockets present, enamel hypoplasia was higher among the sub-adult group compared to the adult group, while caries,

abscess and ante-mortem tooth loss were higher in prevalence among the adults (Table 1). Enamel hypoplastic defects are interpreted in archaeological analyses to indicate physiological stress during development. Hypoplastic defects in the teeth, usually more common in the anterior dentition, are caused by bouts of childhood illness or severe malnutrition and are often used as an indicator of stress to health in childhood (Goodman and Armelagos 1985). These defects appear to occur most often around the age of three years (Dobney and Goodman 1991) and it is believed that only one person in 14,000 is affected by a hereditary hypoplastic condition (Hillson 1986). Many ethnographic studies have found correlations between low socio-economic status and a higher rate of hypoplastic defects (eg Dobney and Goodman 1991) and diachronic increases in observations of such defects have also been observed in archaeological populations thought to be related to lifestyle changes and increased stress following colonisation (Hutchinson and Larsen 1988).

The overall prevalence rate of enamel hypoplastic defects of 42.0% amongst the population from the Temple Street Chapel is higher than that recorded at both St. Peter's overflow burial ground, Wolverhampton (15.6%) and at St. Martin's-In-The-Bullring (31%). This is also true of the prevalence rate of 58.8% among sub-adults (compared to 7.5% and 40.0% respectively), though the rate amongst adults of 6.3% is consistently lower (compared to 19.2% and 29.7% respectively). Some of this difference is likely to be due to variance and composition of the comparative samples, given that the Temple Street Chapel assemblage comprises only a small number of individuals with observable dentition. The higher rate of this health stress defect amongst the sub-adult population at Temple Street Chapel compared to contemporary sub-adult populations from other skeletal assemblages in the West Midlands, however, may tentatively suggest that the health and survival rates of the children in this population from Wolverhampton may have been relatively poor.

The comparatively low social status of at least some of the population may also be reflected in the prevalence rates of dental caries observed, which at 20.0% overall and at 11.8% amongst sub-adults is higher than at St. Martin's-In-The-Bullring (9.9% and 2.8% respectively). The overall rate is also higher than that of St. Peter's overflow burial ground (12.3%), though unfortunately no comparative rate of sub-adult caries including all dentition is available.

Dental Disease	*Adults*			*Sub-adults*	*N*	*%*	*Total*	*N*	*%*
	n	*N*	*%*	*n*			*n*		
Abscess	1	30	3.3	0	41	0	1	71	1.4
Caries	6	16	37.5	4	34	11.8	10	50	20.0
Calculus	2	16	12.5	28	34	82.4	30	50	60.0
Enamel Hypoplasia	1	16	6.3	20	34	58.8	21	50	42.0
Periodontal Disease	0	7	0	0	27	0	0	34	0
Ante-mortem Tooth Loss	11	30	36.7	0	41	0	11	71	15.5

Table 1: *Dental disease rates according to observable teeth and sockets*

Roberts and Cox (2003) report an increase in caries from the medieval to the post-medieval period when considering True Prevalence Rates (TPR). The adoption of sugar into the diet was swift throughout the country, following British involvement in the development of Caribbean plantations in the 17th century, though the actual quantities of sugar consumed were still low during the early post-medieval period compared to today (Mintz 1985). The high calorific content lent itself as a prop to the diet of lower status labouring individuals and their children, supplementing and sometimes replacing other foodstuffs. The high TPR rate could also reflect poor dental hygiene routines in general; interproximal caries were frequently observed and may have developed from food particles lodged between neighbouring teeth, causing a build-up of calculus and eventually leading to caries. The overall rate of calculus at Temple Street Chapel was 60%, with a much lower rate of 12.5% amongst adults compared to 82.4% amongst sub-adults. The overall rate at St. Peter's overflow burial ground was 27.0%, with a rate of 32.2% amongst the adults and 3% amongst sub-adults, compared to an overall rate at St. Martin's-In-The-Bullring of63%, with 68.7% adults and 24% sub-adults affected. The rates of calculus in the three populations vary greatly and this may be due to differences in comparative sample sizes. It was also not possible to compare rates of abscesses since they occur most frequently in adults in skeletal populations and the sample of adults from Temple Street Chapel was too small to make any useful comparative observations.

3. The Disarticulated Human Bone

3.1 Methods and Process

The disarticulated assemblage was analysed macroscopically and recorded using a Microsoft Access database, which can be found on the CD-Rom enclosed. Each element recorded was given a unique identification number and recorded by context. In each instance, the identification, side and portion of the bone was noted, along with completeness, taphonomy and observable joint surfaces. Any metrics that could be used to provide estimation of sex or of stature were taken where possible. The pelvic or skull bones were also analysed for sexually dimorphic traits where preservation allowed, using the criteria set out by Buikstra and Ubelaker (1994). Age determination was carried out using epiphyseal fusion, analysis of the pubic symphysis and of the auricular surface, where appropriate, and classified according to Brooks and Suchey (1990) and Lovejoy *et al.* (1985). Age of sub-adults was assessed using dental development (Smith 1991) and eruption (Ubelaker 1989) as well as long bone lengths (Schaefer *et al*. 2009) and epiphyseal fusion (Scheuer and Black 2004). The same methods of assessment were applied to the disarticulated as to the articulated assemblage so that fair comparisons could be made between the two samples.

The minimum number of individuals (MNI) represented by the assemblage was calculated according to the number of repeated elements or parts of elements in tandem with observations of age at death according to development.

3.2 Observations

A total number of five identifiable bone fragments in addition to one fragmented cranium and one loose permanent tooth were recovered as disarticulated elements from two contexts.

The bone present was either in ‘good’ or ‘fair’ condition. Preservation was sufficient to allow elements complete with the epiphyseal ends of bone to be assessed for age, fused epiphyses being classified as ‘adult’ and unfused as ‘sub-adult’. Those elements containing dentition were also assessed for age according to dental development, eruption and attrition.

3.3 Results

The number of fragments according to context and age are presented below in Table 2 along with the minimum number of individuals represented in each context. Only one disarticulated element was classified as adult. Six elements were sub-adult, two being identified as 'young child'.

Context	*Total Element Count*	*Adult*	*Sub-adult*	*Unobs.*	*MNI*
1001	6	0	6	0	**2**
1019	1	1	0	0	**1**
Total	**7**	**1**	**6**	**0**	**3**

Table 2: *Summary of the MNI by context*

A minimum of two sub-adult individuals were represented in context (1001) based on a count of the left tibia. Given the disturbed nature of some of the burials on site and the resulting incompleteness of the interred human remains, it is possible that some of the elements recovered as disarticulated skeletal elements originated from the excavated burials and that they do not represent additional individuals present. It was noted, however, that some of the elements within each context may have originally been associated. For example, context 1001 contained what appeared to be a pair of sub-adult (possibly infant or young child) tibiae.

Only one fragment exhibited pathological change. The left eye orbit of the fragmented cranium [1] of a young child present in context (1001) exhibited a thin layer of woven bone with porosity throughout as might be seen in scurvy or inflammation (Figure 11) (Klaus 2017). However, the condition of the bone and the lack of the remainder of the skeleton made it difficult to determine if the thin bone deposit was part of normal bone development via intramembranous ossification.

Figure 11: *Porotic bone deposit, left eye orbit, cranium [1]*

4. Conclusion

Analysis of the human remains discovered during the excavation of a service trench has confirmed that this incomplete but relatively well-preserved small assemblage consists primarily of sub-adult individuals, as indicated by the burial records, but that the age profile of the sub-adult population does not entirely match that of the documentary evidence. The tangible evidence provided by the human remains therefore demonstrates that the existing burial records are not complete and that at least some individuals buried at the Temple Street Chapel burial ground were not recorded in the registers. This is perhaps not surprising given the non-conformist status of the chapel and the early date of the burials in relation to the requirement for keeping burial registers at such chapels: several burials dating to before 1787 have been registered in retrospect.

The osteological analysis identified the presence of one rare anatomic variant, bipartite medial cuneiform, in two individuals SK(1061), an old adult male with the first name of 'James', and SK(1003), a young adult female. Given the assumed familial link in its aetiology, this could suggest a genetic link between the two. Further documentary research is required to assess whether these individuals can be identified from the known recorded congregational members. Evidence for diseases associated with old age and trauma likely sustained as a child were present

in two adult individuals as well as metabolic diseases such as cribra orbitalia in both adult and sub-adult individuals, indicative of anaemia during childhood.

The osteological evidence tentatively suggests that poor health and high mortality during childhood was experienced by the chapel's population, since higher levels of dental enamel hypoplasia, an indicator of health stress during childhood, were found in the sub-adult population than in two closely contemporary post-medieval sub-adult populations from Wolverhampton and Birmingham. However, the evidence was limited to a small number of individuals. The higher presence of stress indicators in the sub-adult population than the adult population underlines the fact that children here undergoing health stress were less likely to survive into adulthood. High levels of caries were also found both in the sub-adults and adults compared to other populations, indicating poor diet that may have relied more heavily on sugar for calorific intake. In London, analysis has demonstrated that low status individuals from the post-medieval period have significantly higher rates of caries than wealthier contemporaries (Bekvalac and Western forthcoming). The low incomes of some of the congregation of the Chapel is perhaps reflected in the documentary evidence, which illustrates their inability to raise sufficient funds for the payment of the pastor's salary in 1815, following the economic and agricultural depression at this time (Parker n.d.).

Temple Street was also positioned close to the Bilston Brook and suffered high mortality rates during the cholera epidemic of 1832, with 37 of its residents dying from the disease (Wolverhampton City Council 2005). The Brook was identified as the source of local pollution in 1848 and 1849 by members of the local board of health, being described as 'with its 'animal and vegetable matter'...foul smelling and a potential danger in the event of a recurrence of cholera' and 'Instead of being conducive to good health, [it] is the receptacle of all manner of impurities and loathsome filth disseminating disease and death in all directions' (Wolverhampton City Council 2005). The most common causes of identified infant deaths in Wolverhampton between 1851 and 1860 were diseases of the brain (24.6%), diseases of the lungs (22.2%) and cholera/diarrhoea/dysentery (13.3%), with infectious diseases such as measles and scarlatina playing a more important role between the ages of 1 and 4 years.

Although only a small sample, the analysis of the Temple Street Chapel skeletal remains has provided a rare opportunity to examine the health of a small non-conformist group from Wolverhampton, consisting of a high proportion of well-preserved sub-adult individuals, which in

larger cemeteries can often be under-represented. It is highly likely the area contains more burials and any future excavations at the site will provide scope for further comparative osteological analysis, as well as possible identification of the individuals buried there.

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THE ARCHIVE

Type	No	Type	No
Skeleton Recording Form A	14	Skeleton Recording Form L	1
Skeleton Recording Form B	5	Skeleton Recording Form P	10
Skeleton Recording Form D	5	Skeleton Recording Form Q	10
Skeleton Recording Form E	7	Skeleton Recording Form R	9
Skeleton Recording Form F	7	Skeleton Recording Form S	0
Skeleton Recording Form G	4	Skeleton Recording Form V	0
Skeleton Recording Form H	5	Skeleton Recording Form W	2
Skeleton Recording Form I	5	Articulated Inhumated Db	0
Skeleton Recording Form J	4	Disarticulated Assemblage Db	1
Skeleton Recording Form K	3		

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Appendix A

SK	Completeness	Preservation	Sex	Age Category	Stature (M)	No. of Deciduous Teeth	No. of Permanent Teeth	Alveolar Resorption (No.)	Calculus (No.)	Caries (No.)	Abscess (No.)	Enamel hypoplasia (No.)	Pathology
1003	75>%	Good	Female	Young Adult	1.54-5m	0	7	0	1	3	1	0	Partial bipartite medial cuneiform; Possible greenstick fracture right clavicle and 2nd left metacarpal, exostosis 3rd left metacarpal
1009	<25%	Good	Unobservable	Child	n/a	0	0	0	0	0	0	0	
1012	<25%	Good	Unobservable	Adult	0.00	0	0	0	0	0	0	0	
1017	50-75%	Fair	Female	Adult	0.00	0	9	0	1	3	0	1	
1027	<25%	Good	Unobservable	Adolescent	n/a	0	0	0	0	0	0	0	
1031	50-75%	Fair	Unobservable	Adolescent	n/a	0	27 (+4 unerupted)	0	23	4	0	15	Cribra Orbitalia
1035	25-50%	Fair	Unobservable	Child	n/a	0	0	0	0	0	0	0	
1046	25-50%	Fair	Unobservable	Adolescent	n/a	0	7	0	2	0	0	5	
1050	<25%	Good	Indeterminate	Adult	1.70	0	0	0	0	0	0	0	
1054	25-50%	Fair	Unobservable	Child	n/a	4 (erupting)	0	0	0	0	0	0	
1060	<25%	Good	Unobservable	Infant	n/a	0	0	0	0	0	0	0	
1061	75>%	Good	Male	Old Adult	1.73	0	0	0	0	0	0	0	Bipartite medial cuneiforms; Osteoarthritis cervical and thoracic vertebrae, left wrist (carpals); TMJD; Osteochondritis Dissecans; Cribra Orbitalia; Endocranial Inflammation.
1013/1	75>%	Good	Unobservable	Infant	n/a	13 (unerupted)	0	0	0	0	0	0	
1013/2	<25%	Good	Unobservable	Child	n/a	0	0	0	0	0	0	0	.