



# **Kendal Flood Risk Management Scheme, Kendal, Cumbria Archaeological Watching Brief Report**

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## Kendal Flood Risk Management Scheme, Kendal, Cumbria

### *Archaeological Watching Brief Report*

*Written by Steve Clarke*

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## Summary

Oxford Archaeology (OA) North was commissioned by VolkerStevin Ltd to undertake an archaeological watching brief of hand-excavated test-pits along the River Kent in Kendal. Following a previous phase of ground investigation works undertaken in 2018, a further phase of ground investigation works were planned to aid the design of the flood defences. As part of this phase, 17 test-pits were identified as being within areas of archaeological significance and required an archaeological watching brief by the county archaeologist for Cumbria County Council (CCC) and the Senior Archaeologist for the Environment Agency (EA). OA North were subsequently commissioned to produce a Written Scheme of Investigation and undertake the archaeological watching brief by VolkerStevin Ltd.

The 17 test-pits were hand-excavated by operatives acting on behalf of VolkerStevin Ltd and ranged in size from 0.8m to 3.3m long and 0.8m wide, with depths from 1m to 1.3m. The test-pits were all situated against extant structures, bridges buildings and retaining walls, three of which were scheduled monuments, Stramongate Bridge, Miller Bridge and Nether Bridge.

Apart from elevations and footings of the extant structures, archaeology was revealed in two pits; a surface of stone sets adjacent to Stramongate Bridge, and stone steps adjacent to Holy Trinity Church boundary wall. Throughout the test-pits there was evidence of substantial amounts of made-ground on the banks of the River Kent. The archaeology revealed was likely post-medieval and contemporary with the structures to which they are adjacent. Any earlier archaeology may survive beneath the made-ground.

## Acknowledgements

Oxford Archaeology (OA) North would like to thank Andrew Marshall and Nick Wood of VolkerStevin Ltd for commissioning this project. Thanks are also extended to Jeremy Parsons of Cumbria County Council, Steve Dean of the Environment Agency and Andrew Davison of Historic England who monitored the work.

The project was managed for OA North by Paul Dunn. The watching brief was carried out by Steve Clarke, with illustrations produced by Mark Tidmarsh.

## 1 INTRODUCTION

### 1.1 Scope of work

- 1.1.1 Oxford Archaeology (OA) North was commissioned by VolkerStevin Ltd to undertake a watching brief of hand-excavated test-pits along the River Kent in Kendal, Cumbria (NGR (centred): SD 51585 92754).
- 1.1.2 Following a previous phase of ground investigation works undertaken in 2018, a further phase of ground investigation works were planned to aid the design of the flood defences. As part of this phase, 17 test-pits were identified as being within areas of archaeological significance and required an archaeological watching brief by the county archaeologist for Cumbria County Council (CCC) and the Senior Archaeologist for the Environment Agency (EA). OA North were subsequently commissioned to produce a Written Scheme of Investigation (WSI) and undertake the archaeological watching brief by VolkerStevin Ltd. The archaeological fieldwork was undertaken between 14<sup>th</sup> January and 27<sup>th</sup> February 2020.
- 1.1.3 This document outlines how OA implemented the specified requirements.

### 1.2 Location, topography and geology

- 1.2.1 The test-pits monitored were located along both sides of the River Kent flowing through the town of Kendal, Cumbria (NGR (centred): SD 51500 92500; Fig 1). The monitored test-pits started at Stramongate Bridge extending southwards to Nether Bridge within the town centre.
- 1.2.2 The solid bedrock geology of the northern part of the scheme is mapped as sandstone of the Kirkby Moor formation formed in the Silurian period, whilst in the southern part of the scheme it is mapped as Limestone of the Dalton formation formed in the Carboniferous period (BGS 2020).
- 1.2.3 The superficial deposits are clay, sand and gravel alluvium deposited in the Quarternary period (*ibid*). The soils of the area are identified as freely-draining slightly acid loamy soils (Cranfield 2020).

### 1.3 Archaeological and historical background

- 1.3.1 The archaeological and historical background of the site is discussed in the Historic Environment Assessment produced by ECUS (2018) and the Cultural Heritage Chapter of the Environmental Statement produced by EA (2019) and will not be repeated here.

## 2 WATCHING BRIEF AIMS AND METHODOLOGY

### 2.1 Aims

2.1.1 The project aims and objectives were:

- i. to adhere to and fulfil the agreed programme of works associated with the archaeological potential of the site;
- ii. to determine or confirm the general nature of any remains present;
- iii. to determine or confirm the approximate date or date range of any remains, by means of artefactual or other evidence;
- iv. to undertake post-excavation analysis at a level commensurate with the findings to confidently interpret any archaeological features and phasing identified;
- v. to compile a professional archival record of any archaeological remains within the site.

### 2.2 Methodology

2.2.1 The project methodology, set out in the WSI (*Appendix A*), was adhered to in full, and was fully compliant with current guidelines and industry best practice (CIfA 2014a: 2014b: 2014c: Historic England 2015). The areas to be monitored were surveyed by the Principal Contractor and all service checks were undertaken by the Principal Contractor prior to the commencement of excavation. The test-pits were hand-excavated by the sub-contractors Waitings Ltd. The work monitored by a suitably experienced archaeologist at all times, and cleaning and investigation of any potential archaeological deposits was undertaken manually.

2.2.2 All information identified during the site works was recorded stratigraphically, using a system adapted from that used by the former English Heritage Centre for Archaeology, with an accompanying pictorial record (plans, sections, and digital photographs). Primary records were available for inspection at all times.

2.2.3 Results of all field investigations were recorded on *pro forma* context sheets. The site archive includes a photographic record, and accurate large-scale plans and sections at appropriate scales (1:50, 1:20, 1:10).

2.2.4 A full professional archive was compiled in accordance with the WSI, and with current professional guidelines (CIfA 2014c; Historic England 2015). The archive will be deposited with the Kendal Museums of Natural History and Archaeology.

## 3 RESULTS

### 3.1 Introduction and presentation of results

3.1.1 The results of the watching brief are presented below and include a stratigraphic description of the test-pits excavated which contained archaeological remains. The full details of all test-pits with dimensions and depths of all deposits can be found in *Appendix B*. No finds were retained from the test-pits, however, a brief summary of the finds identified is given in *section 3.6*.

### 3.2 General soils and ground conditions

3.2.1 The majority of deposits identified throughout the watching brief were made-ground, comprising silt and limestone rubble, with discrete deposits of hardcore and aggregates. These were overlain with either flagstones, tarmacadam, or turf. The made-ground usually exceeded the 1.2m depth of the test pits, although a sandy clay natural was revealed in some test-pits.

3.2.2 Ground conditions throughout the watching brief were generally good, although wet due to heavy rain. Archaeological features, where present, were easy to identify being structural.

### 3.3 General description of archaeological features

3.3.1 Apart from the structures that the test-pits were situated against, there were only two archaeological features of interest, stone steps in TD8 and a surface of stone sets in 4AH-TP4.

### 3.4 Test-pits containing archaeological features

3.4.1 **TD8:** was located on the eastern side of Stramongate Bridge, up against the bridge's southern parapet wall (Fig 2). The test-pit was excavated to a length of 2.7m, a width of 0.8m and a maximum depth of 1.2m. The bridge's footings continued to a depth of 1.1m below ground level, being constructed from roughly-hewn limestone blocks and bonded with lime mortar. The earliest deposit identified in the base of the test-pit and deposited following the construction of the bridge, was redeposited natural **104**, identified at a depth of 0.65m below ground level and extending beyond the base of the test-pit. Redeposited natural **104** was overlain by aggregate **103**, 0.3m thick and a levelling layer for stone setts **102**, which were identified as a surface, approximately 0.15m below ground level (Plate 1). The setts comprising surface **102** measured approximately 0.3m by 0.15m by 0.1m, were roughly rectangular and represent an earlier footpath around Stramongate Bridge. Surface **102** was overlain by sand and cement mix bedding layer **101**, which was, subsequently overlain by modern footpath **100**, comprising sandstone paving slabs.



Plate 1: Stone-sett surface in TD8, east side of Stramongate Bridge (scale 0.5m)

3.4.2 **4AH-TP4**: was located to the south of the boundary wall of Kendal Parish Church, Holy Trinity, immediately to the west of an archway in the boundary wall (Fig 2). The test-pit was excavated to a length of 3m, a width of 2m and a maximum depth of 1m. Natural geology **1402** was identified in the base of the test-pit. The boundary wall of the church continued to the base of the test-pit and was constructed on natural geology **1402**. Two stone steps were identified in the eastern section of the test-pit; these appeared to relate to the archway still extant in the boundary wall (Plate 2). The wall was constructed from roughly-hewn limestone blocks and bonded with lime mortar. Natural geology **1402** was overlain by made-ground **1401**, a mid-brown sandy-silt deposit with frequent inclusions of limestone rubble. Made-ground **1401** was overlain by topsoil **1400**. No articulated or disarticulated human remains were encountered during the excavation of this test-pit.



Plate 2: Test-pit 4AH-TP4 looking west, showing sandstone steps in the eastern-section (scale 0.5m)

### 3.5 Test-pits not containing archaeological features

- 3.5.1 The remaining test-pits contained no archaeological remains other than the walls they were excavated up against. The walls either side of Stramongate Bridge (TD8 and TD9; Plate 3) were fairly consistent, continuing to a depth of 1.1m below ground level. The walls investigated in TD10 a, b and c were related to a retaining wall and the north-eastern walls of the Bridge Inn; these walls all had red-brick foundations extending to a depth of approximately 1.2m. The walls of Miller Bridge (4AF-TP5, 4AF-TP8 (Plate 4) and 4AG-TP1), were also fairly consistent, being constructed of roughly-hewn limestone blocks and extending to a depth of approximately 1.2m below ground level.



Plate 3: TD9, foundation of Stramongate Bridge, looking north-west (scale 1m)



Plate 4: 4AF-TP8, foundation of Miller Bridge, looking south-west (scale 1m)

3.5.2 Test-pits TD13 a and b, located to the south of Miller Bridge on Waterside (Fig 2) were excavated up against a retaining wall, constructed from roughly-hewn limestone and bonded with lime mortar. Test-pit 4AG-TP4 was located against the northern boundary wall of Abbott Hall Park (Fig 2), which was constructed from handmade-red brick and cement to a depth of 0.4m. The foundations were constructed from roughly-hewn limestone and lime mortar, extending beyond the depth of the test-pit (Plate 5). The boundary wall to the south of Kendal Parish Church (4AH-TP3 (Plate 6) and 4AH-TP4) was constructed from rubble-filled roughly-hewn limestone blocks capped with limestone flags and reused headstones, and bonded with sandy lime mortar. The footings exceeded the 1.2m depth of the test pits. No human remains were encountered in either of the test-pits excavated to the south of the southern boundary wall of Kendal Parish Church, although they do only represent a small window, there may be the possibility that the churchyard did not extend south beyond this boundary wall.



Plate 5: 4AG-TP4, boundary wall of Abbott Hall Park, looking south (scale 1m)



Plate 6: 4AH-TP3, boundary wall of Holy Trinity Church, looking north (scale 1m)

3.5.3 Test-pit 4AH-TP5 was located to the rear of the Kirkland Centre (Fig 2) and exposed the south-east corner of the building. The wall was constructed from limestone with square-cut quoin stones (Plate 7). At a depth of 0.05m these quoin stones rested on footings constructed from large rough-cut limestone blocks, to a depth of 1m. Test-pit 4AH-TP6 was located to the rear of Nether Hall (Fig 2). The wall of the building was constructed from limestone ashlar blocks and was observed to a depth 0.2m below ground level (Plate 8). The foundations for the wall comprised roughly-hewn rectangular limestone blocks, observed to a depth of 0.78m.



Plate 7: 4AH-TP5, south-east corner of the Kirkland Centre (scale 1m)



Plate 8: 4AH-TP6, north-east corner of Nether Hall (scale 1m)

- 3.5.4 The retaining walls of Nether Bridge (4AH-TP2 (Plate 9) and 4AH-TP7) were also fairly consistent extending beyond the depth of the test-pits on both sides of the river, and being constructed from rectangular roughly-hewn limestone blocks.



Plate 9: 4AH-TP2, retaining wall of Nether Bridge, looking west (scale 0.5m)

### 3.6 Finds summary

- 3.6.1 Post-medieval pottery, tobacco pipe, animal bone and cockle shell, likely domestic waste, were recovered from test-pit 4AH-TP2, and post-medieval pottery from test-pit TD8. This material was recovered throughout the deposits within these test-pits, rather than from discrete dumps or possible features. This material was not retained.



Plate 10: Sample of pottery recovered from 4AH-TP4

## 4 DISCUSSION

### 4.1 Watching Brief objectives and results

4.1.1 The main aim of the watching brief was to determine the character, extent, date, integrity, state of preservation and quality of any archaeological remains present, and therefore ensure their preservation by record. The archaeological remains identified across the various test-pits coincided with the locations of the extant structures alongside which the test-pits were excavated. The archaeological features that were revealed were likely to be nineteenth century in date.

### 4.2 Interpretation

4.2.1 The test-pits revealed that the ground level along the eastern-side of the river, from the boundary wall of Abbot Hall Park southwards to Nether Bridge, had been raised, likely to combat flooding of the River Kent. The excavation of the test-pits revealed the depths and construction of the footings of the structures they were adjacent to, and the stratigraphy of the made-ground along the river's edge. Only two test-pits (TD8 and 4AF-TP4) contained archaeological remains, a cobble sett surface in TD8 and two steps, extending down from an archway in Holy Trinity Churches southern boundary wall, in 4AF-TP4. Archaeological remains may well survive beneath this made-ground.

4.2.2 Natural geology was encountered in only two of the test-pits, 4AH-TP2 and 4AH-TP4, at a depth of 1m and 0.95m below ground level respectively. During the previous watching brief undertaken by OA North (2019), natural geology was identified in the vicinity of several of the test-pits at approximately 1 – 1.3m below ground level. Although there were at least two borehole locations where natural geology was identified almost immediately beneath the topsoil, these were in the vicinity of 4AG-TP1, on the south-eastern side of Miller Bridge, and 4AH-TP4, to the south of Holy Trinity Church. This suggests that generally there is approximately 0.95-1.30m of made-ground in the locations of the excavations to date, with the possibility that earlier remains may survive beneath this depth.

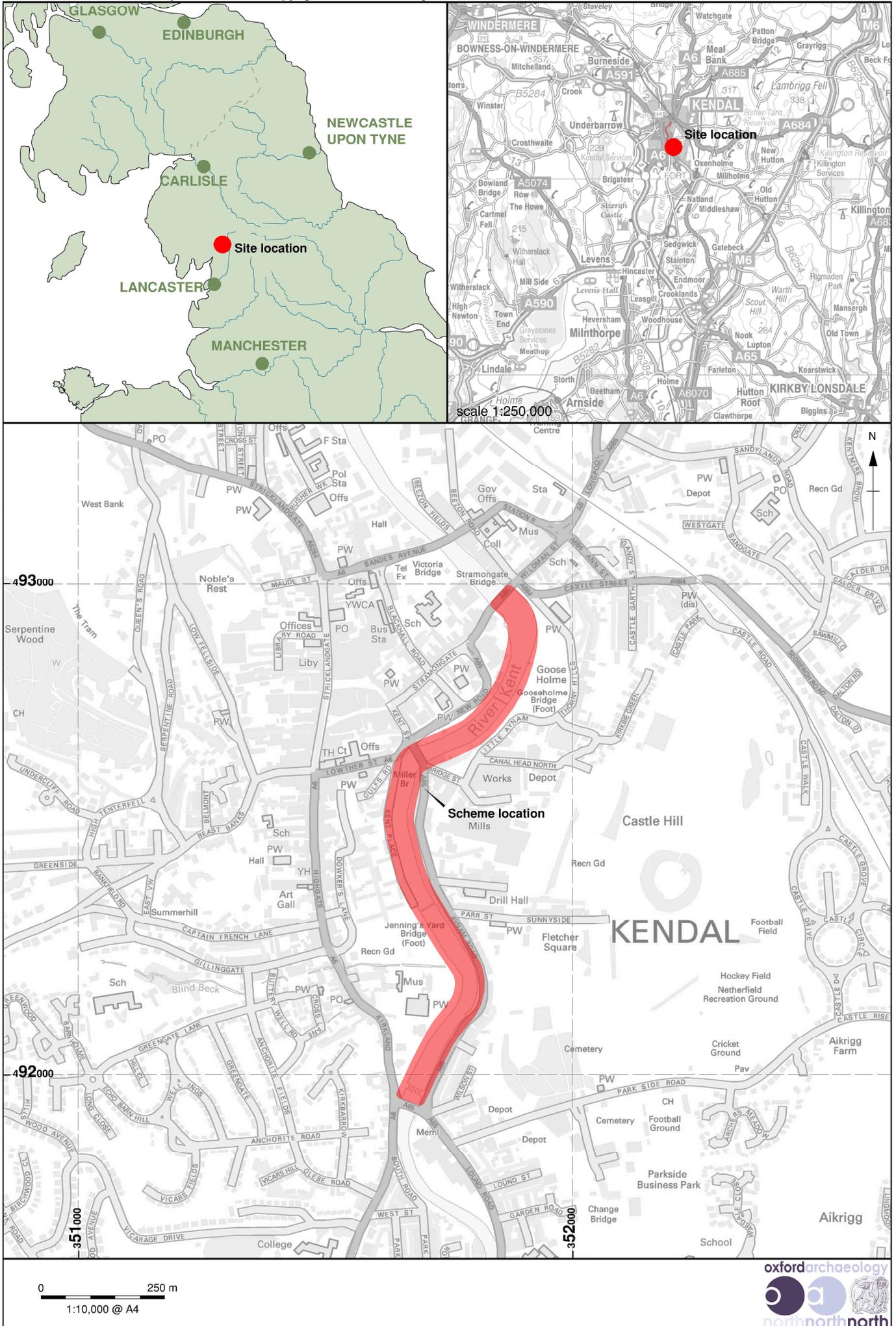


Figure 1: Site location

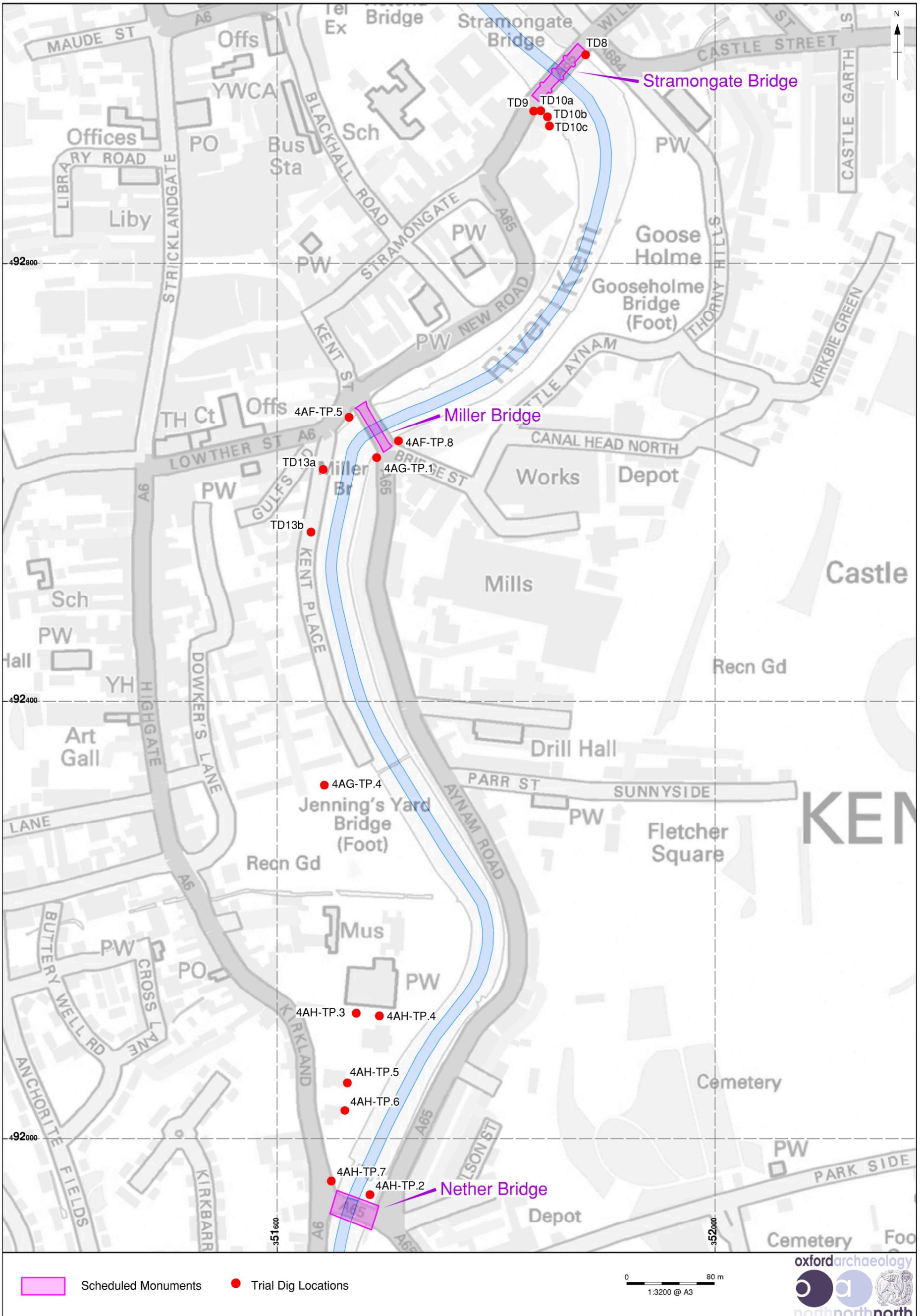


Figure 2: Trial dig locations

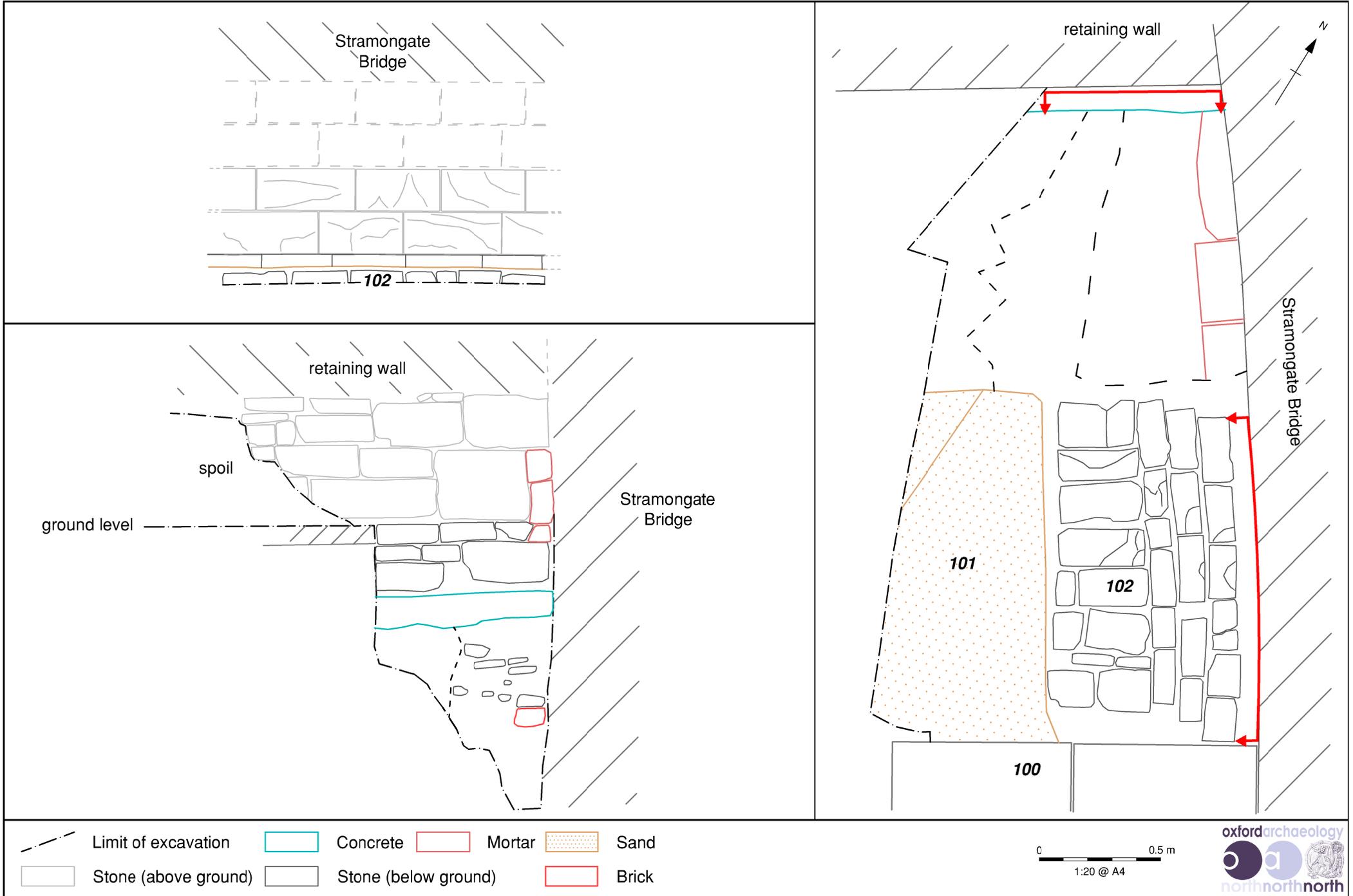
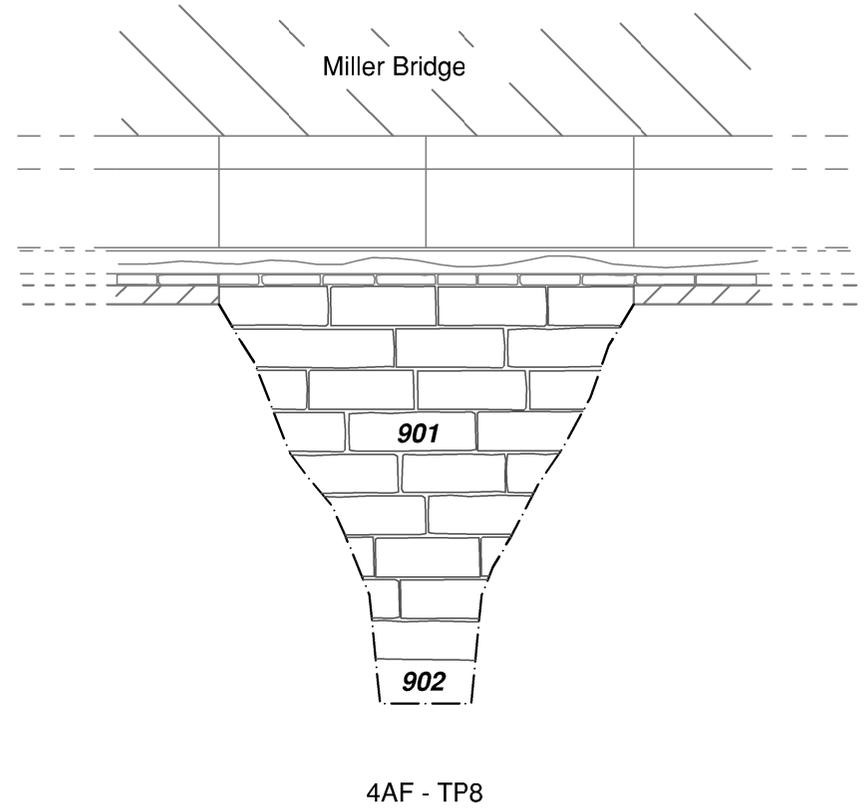
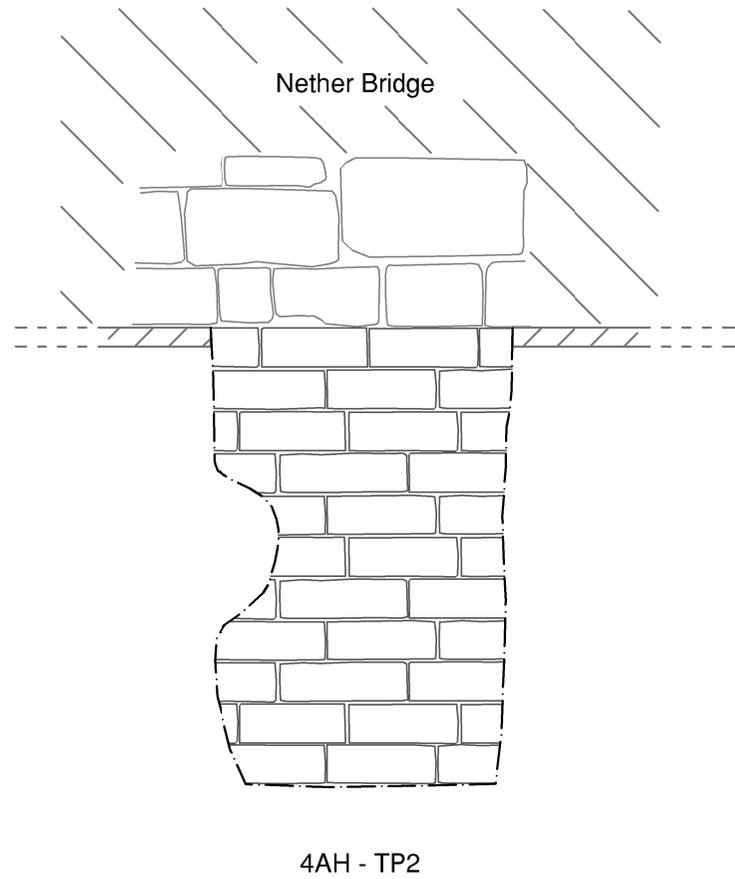


Figure 3: Elevations and plan in test-pit TD8



--- Limit of excavation  
□ Stone (above ground) □ Stone (below ground)

0 0.5 m  
1:20 @ A4

Figure 4: Elevations of Nether Bridge and Miller Bridge in test-pits 4AF-TP8 and 4AH-TP2

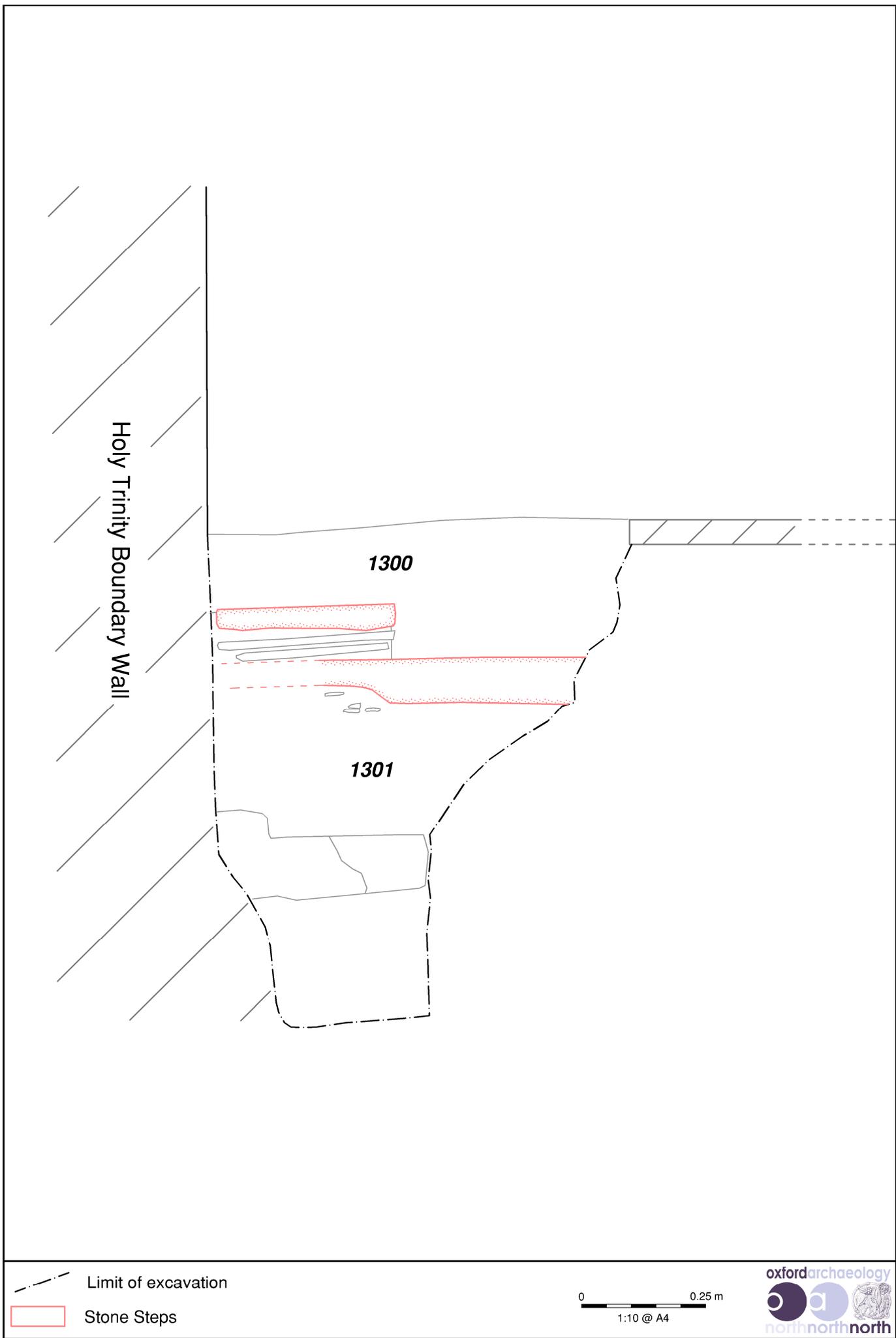


Figure 5: Stone steps in the eastern section of test-pit 4AH-TP4

## **APPENDIX A      WRITTEN SCHEME OF INVESTIGATION**



# Kendal Flood Risk Management Scheme, Cumbria

## Written Scheme of Investigation Archaeological Watching Brief

November 2019

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**Kendal Flood Risk Management Scheme, Cumbria**  
***Written Scheme of Investigation for an Archaeological***  
***Watching Brief***

*Centred on SD 51585 92754*

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## 1 INTRODUCTION

### 1.1 Project details

1.1.1 Oxford Archaeology (OA) North has been commissioned by VolkerStevin Ltd to undertake an archaeological watching brief on the site of Kendal Flood Risk Management Scheme, Cumbria (NGR: SD 51889 93005 to SD 51652 91957).

1.1.2 A programme of Ground Investigation (GI) works was undertaken in 2018 to inform the selection of a preferred route of the flood defences. OA North undertook an archaeological watching brief of the GI works where there was archaeological potential, as highlighted by the county archaeologist for Cumbria County Council (CCC). A further programme of GI works, in the form of test pits has been proposed, to further aid the design of the proposed flood defences. As such, the need for an archaeological watching brief has been identified by the Environment Agency (EA) Senior Archaeologist and the county archaeologist for CCC; this document outlines how OA will implement those requirements.

1.1.3 All work will be undertaken in accordance with current guidelines and industry best practice including:

- Historic England's Management of research projects in the historic environment, or MoRPHE (2015), with specific reference to the tenets of MoRPHE's Project Planning Note 3: archaeological excavation;
- the second edition of English Heritage's (now Historic England's) Management of archaeological projects, or MAP 2 (English Heritage 1991);
- the European Association of Archaeologist's (EAA's) Principles of conduct for archaeologists involved in contract archaeological works (EAA 1998);
- the ClfA's Code of conduct (2014a); Code of approved practice for the regulation of contractual arrangements in field archaeology (2014b); and Standard and guidance for an archaeological watching brief (2014c);
- the National Planning Policy Framework (NPPF; DCLG 2012).

1.1.4 The work will also follow the Environment Agency's Cultural Heritage Minimum Technical Requirements for archaeological watching briefs.

### 1.2 Location, topography and geology

1.2.1 The proposed test pits to be excavated as part of the GI works are located along both banks of the River Kent flowing through the town of Kendal, Cumbria (Fig 1). The programme of test pits starts around Stramongate Bridge (NGR: SD 51889 93005) to the north and continues down to Nether Bridge (NGR: SD 51652 91957) in the south.

1.2.2 The solid bedrock geology of the scheme is mapped as sandstone of the Kirkby Moor formation formed in the Silurian period (BGS 2019). The superficial deposits are clay, sand and gravel alluvium deposited in the Quarternary period (*ibid*). The soils of the area are identified as freely draining slightly acid loamy soils (Cranfield 2019).

## 2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND AND POTENTIAL

### 2.1 Archaeological and historical background

2.1.1 The archaeological and historical background of the site has been discussed in the historic environment assessment produced by ECUS (2018) and in the cultural heritage chapter of the environmental statement produced by the EA (2019), and will not be reproduced here.

### 2.2 Potential

2.2.1 A total number of 38 test pits are to be excavated during this phase of GI, with sixteen test pits throughout the scheme being identified as requiring monitoring by an archaeological watching brief due to their archaeological potential (Fig 2). The potential of each location is detailed in table 1, originally produced by Jacobs Consultancy Ltd (2019).

Test pit	Location	Archaeological Interest
TD8	Downstream of Stramongate Bridge, left bank	Adjacent to a Scheduled Monument
TD9	Downstream of Stramongate Bridge, right bank	Adjacent to a Scheduled Monument
TD10 a-c	The Bridge Inn Pub (3 test pits)	Area of archaeological potential
TD13a and b	Right bank downstream of Miller Bridge (2 test pits)	Area of archaeological potential
4AF-TP.5	Miller Bridge north-east wing wall	Adjacent to a Scheduled Monument
4AF-TP.8	Miller Bridge north-west wing wall	Adjacent to a Scheduled Monument
4AG-TP.1	Miller Bridge south-east wing wall	Adjacent to a Scheduled Monument
4AG-TP.4	Abbot Hall Park Playground north boundary wall	Area of archaeological potential
4AH-TP.3	Kendal Parish Church, south boundary wall	Area of archaeological potential
4AH-TP.4	Kendal Parish Church, south boundary wall, existing historic doorway	Area of archaeological potential
4AH-TP.5	The Kirkland Hall, green area on east side of Hall	Area of archaeological potential
4AH-TP.6	The Nether Hall, green area on east side of hall	Area of archaeological potential
4AH-TP.7	Kirkland Road, entrance to riverside footpath, next to Nether Bridge	Area of archaeological potential

Table 1: Test pit locations with archaeological interest (Jacobs 2019)

## **3 PROJECT AIMS**

### **3.1 General**

3.1.1 The general aims of the project can be summarised as follows:

- to adhere to and fulfil the agreed programme of works associated with the archaeological potential of the site, and consequently to successfully discharge the conditions, in whole, or in part, dependent on results;
- to inform a decision as to whether further archaeological investigation will be required in advance of further works on the Kendal FRMS;
- to compile a professional archival record of any archaeological remains within the test pits.

### **3.2 Specific aims and objectives**

3.2.1 The specific aims and objectives of the watching brief are:

- i. To determine or confirm the general nature of any remains present.
- ii. To determine or confirm the approximate date or date range of any remains, by means of artefactual or other evidence.

## 4 PROJECT SPECIFIC EXCAVATION AND RECORDING METHODOLOGY

### 4.1 Scope of works

4.1.1 The works will involve monitoring and recording sixteen test pits excavated to 1.2m deep along the route of the scheme, in areas of archaeological potential. Where test pits are located near to a Scheduled Monument (Stramongate Bridge, number 1004592; Miller Bridge, number 1007109; and Nether Bridge, number 1007110), Scheduled Monuments Consent will be required prior to commencement. As there is potential for human remains to be encountered in the vicinity of Kendal Parish Church, a burials license from the Ministry of Justice will be obtained prior to commencement (*Appendix E*). The spoil will be scanned by metal detector, when undertaken near a Scheduled Monument a Section 42 license will be required prior to commencement, and visually checked for finds and if significant material is detected this will be retained. Where archaeological deposits are encountered, the archaeologist will be afforded the opportunity to clean, investigate, record and sample all archaeological remains to an appropriate degree. If potentially significant archaeological remains are identified, the archaeologist will stop works to enable consultation with the EA Senior Archaeologist and the County Archaeologist for CCC.

### 4.2 Programme

4.2.1 Where test pits are located adjacent to scheduled monuments, Scheduled Monuments Consent (SMC) will be required prior to commencement on site. The North West Monuments Inspector at Historic England (HE) will be liaised with prior to the submission of the application. The archaeological fieldwork will be programmed to tie-in with the clients programme, with sufficient time being allowed for the archaeological fieldwork to be completed. It is anticipated that the fieldwork will take up to four weeks to complete, by a team consisting of a Project Archaeologist, Steve Clarke, under the management of Paul Dunn, Project Manager.

4.2.2 All fieldwork undertaken by OA North is overseen by the Operations Manager, Alan Lupton MCIfA.

### 4.3 Site specific methodology

4.3.1 A summary of OA's general approach to excavation and recording can be found in *Appendix A*. Standard methodologies for Geomatics and Survey, Environmental evidence, Artefactual evidence and Burials can also be found below (*Appendices B, C, D and E* respectively).

4.3.2 Site specific methodologies will be as follows:

- i. the Project Archaeologist will maintain a watching brief during the excavation of the sixteen test pits identified in table 1;
- ii. the Project Archaeologist will be afforded the opportunity to clean, investigate, record and sample all archaeological remains to an appropriate degree. If potentially significant remains are identified, the Project Archaeologist will stop excavation works. Where the test pit is located in the vicinity of one of the Scheduled Monuments, the Historic England North West Monuments Inspector

- will be consulted, in other locations the County Archaeologist for CCC will be consulted. The client and the EA Senior Archaeologist will also be informed;
- iii. a photographic and textual record will be made of the stratigraphy within the test pits, with measurements *etc*;
  - iv. spoil arisings from the excavations will be scanned for finds and palaeoenvironmental evidence, which will be collected if deemed significant;
  - v. at all times, the archaeologist will work under the Health and Safety directions of the site contractor.

## **5 PROJECT SPECIFIC REPORTING AND ARCHIVE METHODOLOGY**

### **5.1 Programme**

- 5.1.1 The grey literature report will be completed within four to six weeks of the completion of the fieldwork.
- 5.1.2 A copy of the report in Adobe Acrobat (.pdf) format will be provided to VolkerStevin Ltd and, via them, to the EA Project Manager and EA Senior Archaeologist. Once approved a copy will be provided to the County Archaeologist for CCC and the Inspector of Monuments at HE. Paper copies can also be provided on request.

### **5.2 Content**

- 5.2.1 The content of this report will be as defined in *Appendix F*.

### **5.3 Specialist input**

- 5.3.1 OA has a large pool of internal specialists, as well as a network of external specialists with whom OA have well established working relationships. A general list of these specialists is presented in *Appendix G*; in the event that additional input should be required, an updated list of specialists can be supplied.

### **5.4 Archive**

- 5.4.1 The site archive will be deposited with Kendal Museum of Natural History and Archaeology following completion of the project.
- 5.4.2 A summary of OA's general approach to documentary archiving can be found in *Appendix H*.

## **6 HEALTH AND SAFETY**

### **6.1 Roles and responsibilities**

- 6.1.1 The Project Manager, Paul Dunn, has responsibility for ensuring that safe systems of work are adhered to on site. Elements of this responsibility will be delegated to the Project Archaeologist, Steve Clarke, who implements these on a day to day basis. Paul Dunn and Steve Clarke are supported by OA North's Health and Safety Advisor, Fraser Brown
- 6.1.2 The Director with responsibility for Health and Safety at OA is Dan Poore Tech IOSH (Chief Business Officer).

### **6.2 Method statement and risk assessment**

- 6.2.1 A summary of OA's general approach to health and safety can be found in *Appendix I*. A risk assessment has also been undertaken and approved and will be kept on site, along with OA's standard Health and Safety file, which will contain all relevant health and safety documentation.
- 6.2.2 The Health and Safety file will be available to view at any time.

### **6.3 Monitoring of works**

- 6.3.1 At least two to three weeks' notice of the commencement of the watching brief will be given to the Historic England North West Monuments Inspector (for test pit locations in the vicinity of Scheduled Monuments) and the County Archaeologist for CCC. They will have free access to the site (subject to Health and Safety considerations) and all records to ensure the works are being carried out in accordance with this WSI and all other relevant standards.

## 7 BIBLIOGRAPHY

British Geological Survey (BGS), 2019, *Geology of Britain viewer* [Online], available at: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (accessed November 2019)

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CIfA, 2014b *Standard and guidance for archaeological watching brief*, Reading

CIfA, 2014c *Standard and guidance for the creation, preparation, transfer and deposition of archaeological archives*, Reading

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Historic England, 2015 *Management of research projects in the historic environment* (re-issue), London

Jacobs, 2019, *Memorandum: Archaeological Monitoring of GI Trial Pits, Kendal FRMS Phase 1*, unpubl rep

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## OA STANDARD FIELDWORK METHODOLOGY APPENDICES

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The following methods and terms will apply, where appropriate, to all OA fieldwork unless varied by the accompanying detailed Written Scheme of Investigation.

Copies of all OA internal standards and guidelines referred to below are available on request.

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### APPENDIX A GENERAL EXCAVATION AND RECORDING METHODOLOGY

#### A.1 Standard methodology – summary

##### *Mechanical excavation*

- A.1.1 An appropriate mechanical excavator will be used for machine excavation. This will normally be a JCB or 360° tracked excavator with a 1.5 m to 2 m wide toothless ditching bucket. For work with restricted access or working room a mini excavator may be used.
- A.1.2 All mechanical excavation will be undertaken under direct archaeological supervision.
- A.1.3 All undifferentiated topsoil or overburden of recent origin will be removed down to the first significant archaeological horizon, in successive, level spits.
- A.1.4 Following mechanical excavation, all areas that require examination or recording will be cleaned using appropriate hand tools.
- A.1.5 Spoil heaps will be monitored in order to recover artefacts to assist in the analysis of the spatial distribution of artefacts. Modern artefacts will be noted but not retained.
- A.1.6 After recording, evaluation trenches and test pits will usually be backfilled with excavated material in reverse order of excavation, and compacted as far as is practicable with the mechanical excavator. Area excavations will not normally be backfilled.

##### *Hand excavation*

- A.1.7 All investigation of archaeological levels will usually be by hand, with cleaning, examination and recording both in plan and section.
- A.1.8 Within significant archaeological levels the minimum number and proportion of features required to meet the aims of the excavation will be hand excavated. Pits and postholes will usually be subject to a 50% sample by volume. Linear features will be sectioned as appropriate. More complex features such as those associated with funerary activity will usually be subject to 100% hand excavation.
- A.1.9 In the case of evaluations, it is not necessarily the intention that all trial trenches will be fully excavated to natural stratigraphy, but the depth of archaeological deposits across the site will be assessed. The stratigraphy of a representative sample of the evaluation trenches will be recorded even where no archaeological deposits have been identified. Any excavation, both by machine and by hand, will be undertaken with a view to avoiding damage to any archaeological features or deposits, which appear to be worthy of preservation in situ.

## **Recording**

- A.1.10 Written descriptions will be recorded on proforma sheets comprising factual data and interpretative elements.
- A.1.11 Where stratified deposits are encountered a Harris matrix will be compiled during the course of the excavation.
- A.1.12 Plans will normally be drawn at 1:100, but on urban or deeply stratified sites a scale of 1:50 or 1:20 will be used. Detailed plans will be at an appropriate scale. Burials will be drawn at scale 1:10 or recorded using geo-referenced digital photography.
- A.1.13 The site grid will be accurately tied into the National Grid and located on the 1:2500 or 1:1250 map of the area.
- A.1.14 A register of plans will be kept.
- A.1.15 Long sections of showing layers will be drawn at 1:50. Sections of features or short lengths of trenches will be drawn at 1:20.
- A.1.16 A register of sections will be kept.
- A.1.17 Generally, all sections will be tied in to Ordnance Datum.
- A.1.18 A full photographic record, illustrating in both detail and general context the principal features and finds discovered will be maintained. The photographic record will also include working shots to illustrate more generally the nature of the archaeological work.
- A.1.19 Photographs will be recorded on OA Photographic Record Sheets.

## **A.2 Relevant industry standards and guidelines**

- A.2.1 The Chartered Institute for Archaeologists Standard and Guidance notes relevant to fieldwork are:
- Standard and Guidance for Archaeological Field Evaluation
  - Standard and Guidance for Archaeological Excavation
  - Standard and Guidance for an Archaeological Watching Brief.
- A.2.2 These will be adhered to at all times.

## **A.3 Relevant OA manual and other supporting documentation**

- A.3.1 All fieldwork will be undertaken in accordance with the requirements of the OA Field Manual (ed. D Wilkinson 1992), and the revised OA fieldwork manual (publication forthcoming).
- A.3.2 Further guidance is provided to all excavators in the form of the OA 'Fieldwork Crib Sheets - a companion guide to the Fieldwork Manual'. These have been issued ahead of formal publication of the revised Fieldwork Manual.

## APPENDIX B GEOMATICS AND SURVEY

### B.1 Standard methodology - summary

- B.1.1** The aim of OA methodology is to provide comprehensive survey cover of all investigation areas. Additionally, it is designed to provide coverage for any areas, beyond the original scope of the project, which arise as a result of further work. It provides digital plans of all required elements of the project and locates them within an overall grid.
- B.1.2** It also maintains all necessary survey data and ensures that the relevant information is copied into the primary record, in order to ensure the integrity of the project archive. Furthermore, it ensures that all core data is securely stored and backed up. It establishes accurate project reference systems utilising a series of control stations and permanent base lines.
- B.1.3** The survey will be conducted using a combination of Total Station Theodolite (TST) survey utilising Reflectorless Electronic Distance Measurement (REDM) where appropriate, hand-measured elements and GPS (Global Positioning System), or photogrammetry.
- B.1.4** Before the main work commences, a network of control stations will be laid out encompassing the area. Control stations will be tied in to known points or existing features using rigorous metric observation. The control network will be set in using a TST to complete a traverse or using techniques as appropriate to ensure sufficient accuracy. A GPS, or other appropriate method, will be used to orientate the control network to National Grid or other recognised coordinate system.
- B.1.5** All control stations will be checked by closed traverse and/or GPS, as appropriate. The accuracy of these control stations will be accessed on a regular basis and re-established accordingly. All stations will be recorded on Survey Control Station sheets.
- B.1.6** Each control station will be marked with a PGM (Permanent Ground Marker). Witness diagrams will include the full 3-D co-ordinates generated, a sketch diagram and measurements to at least three fixed details, written description of the mark and a photograph of the control point in its environs.
- B.1.7** Prior to entry into the field all equipment will be checked, and all pre-survey information will be logged onto the field computer and uploaded onto survey equipment as appropriate. The software in the field computer will be verified and all cabling between the GPS and/or TST and computer will be checked. Prior to conducting the survey, the site will be reconnoitred for locations for a viable control network and check the line of sight and any possible hindrance to survey. Daily record sheets will be kept to record daily tasks and conditions.
- B.1.8** All spatial data will be periodically downloaded onto a field computer, and backed up onto CD, or DVD. It will be cleaned, validated and inspected.
- B.1.9** All survey data will be documented on daily survey record sheets. Information entered on these sheets includes key set up information (Instrument height etc.) as well as daily variables and errors/comments. All survey data will be digitally recorded in a raw

format and translated during the download process this shall allow for any errors to be cross referenced with the daily survey record and corrected accordingly.

- B.1.10** A weekly summary of survey work will be produced to access development and highlight problems. This information also will be recorded on the weekly survey journal. Technical support for the survey equipment and download software shall be available at all times. In those instances, where sites are remotely operated, all digital data will be backed up regularly and a copy returned to Oxford on a weekly basis.
- B.1.11** A site plan will initially be created by a rapid survey of relevant archaeological features by mapping their extent using a combination of TST and GPS. This will form the basis for deciding excavation strategy and will be updated as the excavation clarifies the extent of, and relationships between, archaeological features.
- B.1.12** Excavated archaeological interventions and areas of complex stratigraphy will be hand drawn. At least two Drawing Points (DPs) will be set in as a baseline and measurements taken off this by tape and offset. The hand drawn plans will be referenced to the digitally captured pre-site plan by measuring in the DPs with a TST or GPS. These hand drawn elements will then be scanned in, geo-referenced using the DPs as reference points and digitised following OA's digitising protocols. For further details on hand planning procedure please refer to the fieldwork guidelines.
- B.1.13** Where appropriate photogrammetry or rectified photography may be used to record standing structures or burials. This will be carried out in line with Standard OA procedures for photogrammetry or rectified photography.
- B.1.14** Survey data recorded in the field will be downloaded using appropriate downloading software, and saved as an AutoCAD Map DWG file, or an ESRI Shapefile. These files will be regularly updated and backed up with originals being stored on an OA server in Oxford.
- B.1.15** All drawings will be composed of closed polygons, polylines or points in accordance with the requirements of GIS construction and OA Geomatics protocols. Once created, additional GIS/CAD work will normally be carried out at the local OA central office or at on-site remote locations when appropriate. Support for all GIS/CAD work will be available from OA's Oxford Office during normal office hours. The aim of the GIS/CAD work is to produce workable draft plans, which can be produced as stand-alone products, or can be readily converted to GIS format. Any hand-drawn plans will be scanned and digitised on site in the first instance. Subsequent plans will be added to the main drawing as it develops.
- B.1.16** All plan scans will be numbered according to their plan site number. Digital plans will be given a standard new plan number taken out from the site plan index.
- B.1.17** All digital data will be backed up incrementally on CD or DVD. On each Friday the entire data directory will be backed up and returned to Oxford where it will be copied onto the OA projects server. Each CAD drawing will contain an information layout which will include all the relevant details appertaining to that drawing. Information (metadata) on all other digital files will be created and stored as appropriate. At the end of the survey all raw measurements will be made available as hard copy for archiving purposes.

## **B.2 Relevant industry standards and guidelines**

- B.2.1 Historic England (2007) Understanding the Archaeology of Landscapes A Guide to Good Recording Practice.
- B.2.2 Historic England (2015), Metric Survey Specifications for Cultural Heritage.
- B.2.3 Historic England (2016), Understanding Historic Buildings A Guide to Good Recording Practice.
- B.2.4 Historic England (2017), Photogrammetric Applications for Cultural Heritage. Guidance for Good Practice.

## **B.3 Relevant OA manual and other supporting documentation**

- B.3.1 OA South Metric Survey, Data Capture and Download Procedures
- B.3.2 OA South Digitising Protocols
- B.3.3 OA South GIS Protocols
- B.3.4 These will be superseded by the OA South Geomatics Manual (in progress).

## APPENDIX C ENVIRONMENTAL EVIDENCE

### C.1 Standard methodology – summary

- C.1.1 Different environmental and geoarchaeological sampling strategies may be employed according to established research targets and the perceived importance of the strata under investigation. Where possible an environmental specialist(s) will visit the site to advise on sampling strategies. Sampling methods will follow guidelines produced by Historic England and Oxford Archaeology. A register of samples will be kept. Specialists will be consulted where non-standard sampling is required (e.g. TL, OSL or archaeomagnetic dating) and if appropriate will be invited to visit the site and take the samples.
- C.1.2 Geoarchaeological sampling methods are site specific, and methodologies will be designed in consultation with the geoarchaeological manager on a site by site basis.
- C.1.3 Bulk soil samples, where possible of 40 litres or 100% of a deposit if less is available, will be taken from potentially datable features and layers for flotation for charred plant remains and for the recovery of small bones and artefacts. Larger soil samples (up to 100L) may be taken for the complete recovery of animal bones, marine shell and small artefacts from appropriate contexts. Smaller bulk samples (general biological samples) of 10-20 litres will be taken from any waterlogged deposits present for the recovery of macroscopic plant remains and insects. Series of incremental 2L samples may be taken through buried soils and deep feature fills for the recovery of snails and/or waterlogged plant remains, depending on the nature of the stratigraphy and of the soils and sediments. Columns will be taken from buried soils, peats and waterlogged feature fills for pollen and/or phytoliths, diatoms, ostracods and foraminifera if appropriate. Soil samples will be taken for soil investigations (particle size, organic matter, bulk chemistry, soil micromorphology etc.) and possibly for metallurgical analysis in consultation with the appropriate specialists.
- C.1.4 Bulk samples from dry deposits will be processed by standard water flotation using a modified Siraf-style machine and meshes of 0.25mm (flot) and 0.5 or 1mm depending on sediment type and like modes of preservation (residue). Heavy residues will be wet sieved, air dried and sorted. Samples taken exclusively for the recovery of bones, marine shell or artefacts will be wet sieved to 2mm. Waterlogged samples (1L sub-sample) and snail samples (2L) will be processed by hand flotation with flots and residues collected to 0.25mm (waterlogged plants) and 0.5mm (snails) respectively; these flots and residues will be sorted by the specialist. Samples specifically taken for insects, pollen, other microflora and microfauna, metallurgy and soil analysis will be submitted as whole earth to the appropriate specialists or processed following their instructions.

### C.2 Relevant industry standards and guidelines

- C.2.1 Historic England 2010. Waterlogged Wood: Guidelines on the recording, sampling, conservation and curation of waterlogged wood.
- C.2.2 Historic England 2011. Environmental Archaeology. A guide to the theory and practice of methods, from sampling and recovery to post excavation, (2nd ed)

- C.2.3 Historic England 2004. Dendrochronology: Guidelines on Producing and Interpreting Dendrochronological Dates (revision due 2020).
  - C.2.4 University of Bradford 2019 Archaeomagnetism: Magnetic Moments in the Past <https://www.brad.ac.uk/archaeomagnetism/>
  - C.2.5 Historic England 2008. Luminescence Dating. Guidelines on Using Luminescence Dating in Archaeology (revision due 2020).
  - C.2.6 Historic England 2008. Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains (currently being revised).
  - C.2.7 Historic England 2015. Archaeometallurgy. Guidelines for Best Practice.
  - C.2.8 Historic England 2015 Geoarchaeology. Using Earth Sciences to Understand the Archaeological Record.
  - C.2.9 Historic England 2017. Organic Residue Analysis and Archaeology.
  - C.2.10 Baker, P and Worley, F 2019. Animal Bones and Archaeology: Recovery to Archive. Historic England
- C.3 Relevant OA manual and other supporting documentation**
- C.3.1 Oxford Archaeology 2017. Environmental Sampling Guidelines, 4th ed.

## APPENDIX D ARTEFACTUAL EVIDENCE

### D.1 Standard methodology - summary

- D.1.1 Before a site begins arrangements concerning the finds will be discussed with the Finds Team Leader. Information will be provided by the project manager about the nature of the site, the expected size and make-up of the finds assemblage and any site specific finds retrieval strategies. On-site requirements will be discussed and a conservator appointed who can be called on to make site visits if required. Special requirements regarding particular categories of material will be raised at this early stage for instance the likelihood of recovering assemblages of waterlogged material, large timbers, quantities of structural stone or ceramic building material. Specialists may be required to visit sites to discuss retrieval strategies.
- D.1.2 The project manager will supply the Finds Team Leader with contact details of the landowner of the site so that consent to deposit any finds resulting from the investigation can be sought.
- D.1.3 The on-site retrieval, lifting and short term packaging of bulk and small finds will follow the detailed guidelines set out in the OA Finds Manual (sections 2 and 3), First Aid for Finds and the UKIC conservation guidelines No.2.
- D.1.4 All finds recovered from site will be transported to an OA regional office for processing; local sites will return finds at the end of each day, away based sites at the end of each week. Special arrangements can be discussed for certain sites with the Team Leader before the start of a project. Larger long running sites may in some instances set up on-site processing units to deal with the material from a particular site.
- D.1.5 All finds qualifying as Treasure will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act (1996), and the Treasure (Designation) Order 2002. Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.
- D.1.6 Each box of finds will be accompanied by a finds context checklist itemising the finds within each box. The number of bags of finds from each context and individual small find from each context will be recorded. A member of the processing team will check the list when it arrives in the department. There are separate forms for finds recovered from fieldwalking.
- D.1.7 The processing programme is reviewed on a weekly basis and priorities are worked out after discussions with the Fieldwork Team Leader and the Post-excavation Team Leader. Project managers will keep the Finds Team Leader informed of any pressing deadlines that they are aware of. All finds from evaluations are dealt with as a matter of priority.
- D.1.8 All bulk finds are washed (where appropriate), marked, bagged and boxed by the processing team according to the guidelines set out in section 4 and 5 of the OA Finds Manual, First-aid for finds and the UKIC guidelines No.2. They must also take into account the requirements of the receiving museum. Primary data recording count and weight of fragments by material from each context is recorded on the site database.

- D.1.9 Unstable and sensitive objects are recorded onto the database and then packaged and stored in controlled environments according to their individual requirements. The advice of a conservator will be sought for sensitive objects in need of urgent conservation. All metalwork will be x-rayed prior to assessment (and to meet the requirements of most receiving museums).
- D.1.10 Finds recovered from the environmental sample processing will be incorporated into the main assemblage and added to the database.
- D.1.11 On completion of the processing and data entry a finds file for each archaeological investigation will be produced, a summary of which is available for the project manager. The assemblage is allocated an OA number for storage purposes. Bulk finds are stored on a roller racking system, metals in a secure controlled storage and organic finds are refrigerated where possible.
- D.1.12 The movement of finds in and out of the storage areas is strictly monitored and recorded. Carbon copy transit forms exist to record this information. Finds will not be removed from storage without the prior knowledge of the Finds Team Leader.
- D.1.13 Finds information summarised in the finds compendium is used to assess the finds requirements for the post excavation stages of the project. The Team Leader holds a list of all specialists used by OA (see below) both internal and external.
- D.1.14 On completion of the post excavation stage of the project the team prepares the finds assemblage for deposition with the receiving museum. Discussions will be held with the museum, the excavator and the Finds Team Leader to finalise any selection, retention or discard policy. Most museums issue strict guidelines for the preparation of archives for deposition with their individual labelling, packaging and recording requirements.

## **D.2 Relevant industry standards and guidelines**

- D.2.1 UKIC, 1983, Packaging and Storage of Freshly-Excavated Artefacts from Archaeological Sites. Conservation Guidelines No.2. Archaeology Section, United Kingdom Institute for Conservation.
- D.2.2 UKIC, 1988, Excavated Artefacts and Conservation: UK sites Revised Edition. Conservation Guidelines No.1. Archaeology Section, United Kingdom Institute for Conservation.
- D.2.3 Society of Museum Archaeologists, 1993, Selection, retention and dispersal of Archaeological Collections. Download available via <http://www.socmusarch.org.uk/publica.htm>)
- D.2.4 Watkinson, D E & Neal, V, 1998, First Aid for Finds (3rd edition). RESCUE & UKIC

## **D.3 Relevant OA manual and other supporting documentation**

- D.3.1 Allen, L, and Cropper, C (internal publication only) Oxford Archaeology Finds Manual.

## APPENDIX E HUMAN REMAINS

### E.1 Standard methodology - summary

- E.1.1 Human remains will not be excavated without a relevant licence/faculty and, where applicable (for example, a post medieval cemetery), a risk assessment from the local environmental officer.
- E.1.2 All human remains will be treated with due care and regard to the sensitivities involved, and will be screened from the public throughout the course of the works.
- E.1.3 Excavation will be undertaken in accordance with ClfA (Roberts and McKinley 1993), Historic England (2018) and the Advisory Panel on the Archaeology of Burials in England (APABE, 2015, 2017). For crypts and post-medieval burials, the recommendations set out by the ClfA (Cox 2001) and by the Association of Diocesan and Cathedral Archaeologists and APABE (2010) are also relevant.
- E.1.4 In accordance with recommendations set out in the Historic England and Church of England (2005) and updated by the Advisory Panel on the Archaeology of Burials in England (2017), skeletons will not be excavated beyond the limits of the trench, unless they are deemed osteologically or archaeologically important.
- E.1.5 Where any soft tissue survives and/or materials (for example, inner coffins, mattresses and other paddings) soaked in body liquor, no excavation or handling of the remains will take place until an appropriate risk assessment has been undertaken. Relevant protocols (i.e. Cox 2001) for their excavation, recording and removal will be adhered to.
- E.1.6 OA does not excavate or remove modern burials (those less than 100 years old) and does not remove or open sealed lead coffins. Appropriate PPE (e.g. chemical suit, latex gloves) will be worn by all staff when working with lead coffins.
- E.1.7 Graves and their contents will be hand excavated in plan. Each component (for example, skeleton, grave cut, coffin (or remains of), grave fill) will be assigned a unique context number from a running sequence. A group number will also be assigned to all of these, and small finds numbers to features such as coffin nails, hobnails and other grave goods (as appropriate).
- E.1.8 Soil samples will be normally taken during the excavation of inhumations, usually from the region of the skull, chest, right hand, left hand, abdomen and pelvis, right foot and left foot. Infants (circa. less than 5 years) will normally be recovered as bulk samples. Soil samples will also be taken from graves that appear to contain no human bone.
- E.1.9 Burials (including the skeleton, cremation, coffin fittings, coffin, urn, grave goods / other) will be recorded by photographic and written record using specialised pro forma context sheets, although these records may only include schematic representations of the location and position of the skeletons, depending on the nature and circumstances of the burial.
- E.1.10 Where necessary, hand drawn plans (usually at 1:10, sometimes 1:5) will be made, especially of contexts where required details cannot be adequately seen using photography (for example, urned cremations; undisturbed hob nails).

- E.1.11 Levels will be taken. For inhumations this will be on the skull, pelvis and feet as a minimum.
- E.1.12 Human remains that are exhumed will be bagged and labelled according to skeletal region and carefully packed into suitable containers (for example, acid free cardboard boxes) and transported to a suitable storage location. Any associated coffins and coffin fittings will be contained with the human remains wherever possible.
- E.1.13 Unurned cremations will not usually be half sectioned, but excavated in spits and/or quadrants (i.e. large deposits or spreads), or recovered as a bulk sample.
- E.1.14 Wherever possible, urned cremations will be carefully bandaged, recovered whole and will be excavated in spits in the laboratory, as per the recommendations of McKinley (2004, 2017).
- E.1.15 Unless deemed osteologically or archaeologically important disarticulated bone / charnel will be collected and reserved for re-burial if immediate re-internment as close to its original position is not practicable. In some instances, a rapid scan of this material may be undertaken by a qualified osteologist, if deemed relevant.
- E.1.16 If undisturbed, pyre sites will normally be excavated in quadrants, at the very least in 0.5 m blocks of 0.5 m spits.
- E.1.17 Pyre debris dumps will be half sectioned or quadrant and will be subject to 100% sampling.
- E.1.18 Wooden and lead coffins and any associated fittings, including fixing nails will be recorded on a pro forma coffin recording sheet. All surviving coffin fittings will be recorded by reference to Reeve and Adams (1993) and the unpublished master catalogue that is being compiled by OA. Where individual types cannot be paralleled, they will be drawn and/ or photographed and assigned a style number. Biographical details obtained from legible departum plate inscriptions will be recorded and further documentary research will be made.
- E.1.19 Funerary structures, such as brick shaft graves and/or vaults will be recorded by photogrammetry or hand-drawn at a scale of 1:10 or 1:20, as appropriate. Location, dimensions and method of construction will be noted, and the structure added to the overall trench plan.
- E.1.20 Memorials, including headstones, revealed within the areas of development will be recorded irrespective of whether they are believed to be in situ.
- E.1.21 Where required, memorials will be accorded an individual context number and will also be included as part of the grave group, if the association with a burial is clear.
- E.1.22 Memorials will be recorded on pro-forma context sheets, based on and following the guidelines set out by Mytum (2002), and will include details of:
- Shape
  - Dimensions
  - Type of stone used

- Condition, completeness and fragmentation of stones, no longer in original positions
- Iconography (an illustration may best describe these features)
- Inscription (verbatim record of inscription; font of the lettering)
- Stylistic type

## **E.2 Relevant industry standards and guidelines**

- E.2.1 Advisory Panel on the Archaeology of Burials in England, 2013, Science and the Dead. A guideline for the destructive sampling of archaeological human remains for scientific analysis. English Heritage Publishing.
- E.2.2 Advisory Panel on the Archaeology of Burials in England, 2017 Guidance for Best Practice for the Treatment of Human Remains Excavated from Christian Burial Grounds in England
- E.2.3 Advisory Panel on the Archaeology of Burials in England, 2015 Large Burial Grounds. Guidance on sampling in archaeological fieldwork projects
- E.2.4 Association of Diocesan and Cathedral Archaeologists and APABE. 2010 Archaeology and Burial Vaults. A guidance note for churches. Guidance Note 2
- E.2.5 British Association of Biological Anthropology and Osteoarchaeology. 2010a Code of Practice
- E.2.6 British Association of Biological Anthropology and Osteoarchaeology. 2010b Code of Ethics
- E.2.7 Cox, M, 2001 Crypt archaeology. An approach. ClfA Paper No. 3
- E.2.8 English Heritage, 2002 Human Bones from Archaeological Sites. Guidelines for producing assessment documents and analytical reports
- E.2.9 Historic England, 2018 The Role of the Human Osteologist in an Archaeological Fieldwork Project. Swindon, Historic England
- E.2.10 McKinley, J, and Roberts, C, 1993 Excavation and post-excavation treatment of cremated and inhumed human remains, ClfA Technical Paper No. 13
- E.2.11 McKinley, J, 2004 Compiling a skeletal inventory: cremated human bone. In Brickley, M, and McKinley, J (eds) Guidelines to the Standards for Recording Human Remains, ClfA Technical Paper No. 7. 9-13
- E.2.12 McKinley, J, 2017 Compiling a skeletal inventory: cremated human bone. In Mitchell P, and Brickley, M (eds) Updated Guidelines to the Standards for Recording Human Remains, ClfA 14-19
- E.2.13 Mitchell P, and Brickley, M (eds) Updated Guidelines to the Standards for Recording Human Remains, CIFA 2017
- E.2.14 Mytum, H, 2000 Recording and Analysing Graveyards. CBA Handbook No. 15.
- E.2.15 Reeve, J, and Adams, M, 1993 The Spitalfields Project. Volume I – The Archaeology Across the Styx. CBA Research Report No. 85

E.2.16 The Human Tissue Act 2004

**E.3 Relevant OA manual and other supporting documentation**

- E.3.1 Loe, L, 2008 The Treatment of Human Remains in the Care of Oxford Archaeology. Oxford Archaeology internal policy document
- E.3.2 Excavating and recording of buried human remains. Oxford Archaeology internal guidelines document

## APPENDIX F REPORTING

### F.1 Standard methodology - summary

F.1.1 For Watching Briefs and Evaluations, the style and format of the report will be determined by OA, but will include as a minimum the following:

- A location plan of trenches and/or other fieldwork in relation to the proposed development.
- Plans and sections of features located at an appropriate scale.
- A section drawing showing depth of deposits including present ground level with Ordnance Datum, vertical and horizontal scale.
- A summary statement of the results.
- A table summarising the features, classes and numbers of artefacts contained within, spot dating of significant finds and an interpretation.
- A reconsideration of the methodology used, and a confidence rating for the results.
- An interpretation of the archaeological findings both within the site and within their wider landscape/townscape setting.

F.1.2 For Excavations, a Post-Excavation Assessment and Project Design will generally be prepared, as prescribed by Historic England Management of Research Projects in the Historic Environment (MoRPHE) 2006, Section 2.3. This will include a Project Description containing:

- A summary description and background of the project.
- A summary of the quantities and assessment of potential for analysis of the information recovered for each category of site, finds, dating and environmental data. Detailed assessment reports will be contained within appendices.
- An explicit statement of the scope of the project design and how the project relates to any other projects or work preceding, concurrent with or following on from it.
- A statement of the research aims of the fieldwork and an illustrated summary of results to date indicating to what extent the aims were fulfilled.
- A list of the project aims as revised in the light of the results of fieldwork and the current post-excavation assessment process.

F.1.3 A section on Resources and Programming will also be produced, containing:

- A list of the personnel involved indicating their qualifications for the tasks undertaken, along with an explanation of how the project team will communicate, both internally and externally.
- A list of the methods which will be used to achieve the revised research aims.

- A list of all the tasks involved in using the stated methods to achieve the aims and produce a report and research archive in the stated format, indicating the personnel and time in days involved in each task. Allowance should be made for general project-related tasks such as monitoring, management and project meetings, editorial and revision time.
- A cascade or Gantt chart indicating tasks in the sequence and relationships required to complete the project. Due allowance will be made for leave and public holidays. Time will also be allowed for the report to be read by a named academic referee as agreed with the County Archaeological Officer, and by the County Archaeological Officer.
- A report synopsis indicating publisher and report format, broken down into chapters, section headings and subheadings, with approximate word lengths and numbers and titles of illustrations per chapter. The structure of the report synopsis should explicitly reflect the research aims of the project.

F.1.4 The Project Design will be submitted to the County Archaeological Officer or equivalent for agreement.

F.1.5 Under certain circumstances (e.g. with very small mitigations), and as agreed with the County Archaeological Officer or equivalent, a formal Assessment and Project Design may not be required and either the project will continue straight to full analysis, or a simple Project Proposal (MoRPHE 2006 Section 2.1) will be produced prior to full analysis. This proposal may include:

- A summary of the background to the project
- Research aims and objectives
- Methods statement outlining how the aims and objectives will be achieved
- An outline of the stages, products and tasks
- Proposed project team
- Estimated overall timetable and budget if appropriate.

F.1.6 Once the post-excavation Project Design or Project Proposal has been accepted, the County Archaeological Officer or his appointed deputy will monitor the progress of the post-excavation project at agreed points. Any significant variation in the project design will be agreed with the County Archaeological Officer.

F.1.7 The results of the project will be published in an appropriate archaeological journal or monograph. The appropriate level of publication will be dependent on the significance of the fieldwork results and will be agreed with the County Archaeological Officer. An OASIS (Online Access to the Index of Archaeological Investigations) form will be completed for each project as per Historic England guidelines.

## F.2 Relevant industry standards and guidelines

F.2.1 Oxford Archaeology (OA) adheres to the national standards in post-excavation procedure as outlined in Historic England's Management of Research Projects in the Historic Environment (MoRPHE; EH 2006). Furthermore, all post-excavation projects

take into account the appropriate regional research frameworks as well as national research agendas such as the Framework for Historic Environment Activities & Programmes in Historic England (SHAPE; EH 2008).

## APPENDIX G LIST OF SPECIALISTS REGULARLY USED BY OA

G.1.1 Below are two tables, one containing 'in-house' OA specialists, and the other containing a list of external specialists who are regularly used by OA.

### Internal archaeological specialists used by OA

Specialist	Specialism	Qualifications
John Cotter	Medieval and Post Medieval pottery, Clay Pipe and CBM	BA (Hons), MCIfA
Dr Alex Davies	Prehistoric Pottery	BA (Hons), MA, PhD, ACIfA
Edward Biddulph	Roman Pottery	BA (Hons), MA, MCIfA
Kate Brady	Roman Pottery	BA, ACIfA
Cynthia Poole	CBM and Fired Clay	BA (Hons), MSc
Ian Scott	Metalwork and Glass	BA (Hons)
Leigh Allen	Metalwork and worked bone	BA (Hons), PGDip
Dr Ruth Shaffrey	Worked stone artefacts	BA, PhD, MCIfA
Julian Munby	Architectural Stone	BA, FSA
Dr Rebecca Nicholson	Fish and Bird Bone	BA (Hons), MA, D.Phil, MCIfA, FSA Scot
Dr Lee Broderick	Animal bone	BA (Hons), MA, MSc, FZG, SAC Dip (ecology), PhD
Dr Mairead Rutherford	Pollen	BSc, MSc
Ian Smith	Animal Bone	BA (Hons), MSc, PCIfA
Dr Denise Druce	Charred plant remains, charcoal and pollen	BA (Hons), PhD, MCIfA
Sharon Cook	Charred plant remains	BSc, MSc, ACIfA
Elizabeth Stafford	Geoarchaeology and land snails	BA (Hons), MSc
Carl Champness	Geoarchaeology	BA (Hons), MSc, ACIfA
Nicola Scott	Archaeological archive deposition	BA (Hons Dunelm)
Mike Donnelly	Flint	BSc, MCIfA
Dr Louise Loe	Human Bone	D.Phil, BA, MCIfA
Helen Webb	Human Bone	MSc, BSc
Mark Gibson	Human Bone	MSc, BA
Dr Lauren McIntyre	Human Bone	D.Phil, MSc, BSc

### External archaeological specialists regularly used by OA

Specialist	Specialism	Qualifications
Lynne Keys	Slag	BA (Hons)
Quita Mould	Leather	BA, MA

<b>Specialist</b>	<b>Specialism</b>	<b>Qualifications</b>
Penelope Walton Rogers, The Anglo Saxon Laboratory	Identification of Medieval Textiles	FSA, Dip.Acc
Dana Goodburn-Brown	Conservation	BSc (Hons), BA, MSc
Steve Allen, York Archaeological Trust	Conservation	BA, MA, MAAIS
Dr Richard Macphail	Soils, especially Micromorphology	BA (Hons), MSc, PhD
Dana Challinor	Charcoal	MA, MSc
Dr Nigel Cameron	Diatoms	BSc, MSc, PhD
Dr David Smith	Insects	BA (Hons), MA, PhD
Professor Adrian Parker	Phytoliths and pollen	BSc (Hons), D.Phil
Dr David Starley	Metalworking Slag	BSc (Hons), PhD
Wendy Carruthers	Charred and waterlogged plant remains	BA (Hons)
Dr John Whittaker	Ostracods and Foraminifera	BA (Hons), PhD
Dr John Crowther	Soil Chemistry	MA, PhD
Dr Martin Bates	Geoarchaeology	BSc, PhD
Dr Dan Miles	Dendrochronology	D.Phil, FSA
Dr Jean-Luc Schwenninger	Optically Stimulated Luminescence Dating	PhD
Dr David Higgins	Clay Pipe	BA, PhD, MCIfA
Dr Hugo Anderson- Wymark	Flint	BSc, PhD, FSA Scot, MCIfA
Dr Damian Goodburn- Brown	Ancient Woodwork	BA, PhD

## APPENDIX H DOCUMENTARY ARCHIVING

### Standard methodology – summary

- H.1.1 The documentary archive constitutes all the written, drawn, photographic and digital records relating to the set up, fieldwork and post-excavation phases of the project. This documentary archive, together with the artefactual and environmental ecofact archive collectively forms the record of the site. The report is part of the documentary archive, and the archive must provide the evidence that supports the conclusions of the report, but the archive may also include data which exceeds the limitations of research parameters set down for the report and which could be of significant value to future researchers.
- H.1.2 At the outset of the project OA Archive manager will contact the relevant local receiving museum or archive repository to notify them of the imminent start of a new fieldwork project in their collecting area. Relevant local archiving guidelines will be observed and site codes, which integrate with the receiving repository, will be agreed for labelling of archives and finds.
- H.1.3 Where there is currently no receiving museum for the project archive, although responsibility for the archive ultimately lies with the client, OA will hold the archive on their behalf for a period of up to 3 years after completion of the report, after which time (in the event that a suitable depository has not been secured) provision for further storage of the archive will be made in agreement with Oxford Archaeology, the client and the relevant planning archaeologist.
- H.1.4 During the course of the project the Archive team will assist the Project Manager in the management of the archive including the cataloguing and development technique suitable for photographic archive requirements.
- H.1.5 The hard copy site archive will be security copied by scanning to PdFA and a copy of this will be housed on the OA Archive Server. A full digital copy of the archive, including scanned hard copy and born digital data, will be deposited with and made publicly available on-line through the ADS. A further copy will be maintained on the OA server and if requested a copy on disk will also be sent to the receiving museum with the hard copy. This will act as a safeguard against the accidental loss and the long-term degeneration of paper records and photographs.
- H.1.6 Born digital data will only be printed to hard copy for the receiving museum where practical. Archive elements that need maintaining in digital form will be sent to ADS in accordance with Arches Standard and ADS guidelines. A copy will be sent to the receiving museum by CD and back-up copies will be stored on the OA digital network. In most cases a digital copy of the report will be included in the OASIS project library hosted by ADS.
- H.1.7 Prior to deposition the Archive team will contact the museum regarding the size and content of the archive and discuss any retention and dispersal policies which may be applicable in line with local and SMA Guidelines ' Selection, Retention & Dispersal of Archaeological Collections' 1993.

- H.1.8 The site archive will then be deposited with the relevant receiving museum or repository at the earliest opportunity unless further archaeological work on the site is expected. The documentary archive will include correspondence detailing landowner consent to deposit the artefacts and any copyright licences in accordance with the receiving museum guidelines. Deposition charges will be required from the client as part of the project costs but the level of the fee is set by the receiving body, and may be subject to change during the lifespan of the project. Changes to archiving charges beyond OA's control will be passed across to the client.
- H.1.9 Oxford Archaeology will retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide the receiving repository or museum for the archive with a full licence for use to the client in all matters directly relating to the project as described in the Written Scheme of Investigation, and in line with the relevant receiving body guidelines.
- H.1.10 OA will advise the receiving repository or museum for the archive of 3<sup>rd</sup> party materials supplied in the course of projects which are not OA's copyright.
- H.1.11 OA undertakes to respect all requirements for confidentiality about the client's proposals provided that these are clearly stated. It is expected that such conditions shall not unreasonably impede the satisfactory performance of the services required. Archaeological findings and conclusions can be kept confidential for a limited period but will be made publicly available in line with the above procedure either after a specified time period agreed with the client at the outset of the project, or where no such period is agreed, after a reasonable period of time. It is expected that clients respect OA's general ethical obligations not to suppress significant archaeological data for an unreasonable period.

## **H.2 Relevant industry standards and guidelines**

- H.2.1 At the end of the project the site archive will be ordered, catalogued, labelled and conserved and stored according to the following national guidelines:
- H.2.2 The 2014 EAC Guidelines A Standard and Guide to the Best Practice for Archaeological Archiving in Europe (GB) Perrin K, Brown E et al.
- H.2.3 The 2014 CIFA Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives.
- H.2.4 The 2011 AAF guide Archaeological Archives A Guide to Best Practice in Creation, Compilation, Transfer and Curation. Brown D.
- H.2.5 The UKIC's Guidelines for the preparation of excavation archives for long-term storage.
- H.2.6 The MGC's Standards in the museum care of archaeological collections.
- H.2.7 Local museum guidelines such as Museum of London Guidelines: (<http://www.museumoflondonarchaeology.org.uk/English/ArchiveResearch/DeposRe> source) will be adopted where appropriate to the archive collecting area.
- H.2.8 The site archive will be prepared to at least the minimum acceptable standard defined in Management of Archaeological Projects 2, Historic England 1991.

## **H.3 Relevant OA manual and other supporting documentation**

### **H.3.1 The OA Archives Policy.**

## **APPENDIX I                    HEALTH AND SAFETY**

### **I.1        Standard Methodology - summary**

- I.1.1 All work will be undertaken in accordance with the current OA Health and Safety Policy, the OA Site Safety Procedures Manual, a site-specific Risk Assessment and, if required, Safety Plan or Method Statement. Copies of the site-specific documents will be submitted to the client or their representative for approvals prior to mobilisation, and all relevant H and S documentation will be available on site at all times. The Health and Safety documentation will be read in conjunction with the project WSI.
- I.1.2 Where a project falls under the Construction (Design and Management) Regulations (2015), all work will be carried out in accordance with the Principal Contractor's Construction Phase Plan (CPP).

### **I.2        Relevant industry standards and guidelines**

- I.2.1 All work will be carried out according to the requirements of all relevant legislation and guidance, including, but not exclusively:
  - I.2.2 The Health and Safety at Work Act (1974).
  - I.2.3 Management of Health and Safety at Work Regulations (1999).
  - I.2.4 Manual Handling Operations Regulations 1992 (as amended).
  - I.2.5 The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (2013).
  - I.2.6 The Construction (Design and Management) Regulations (2015).
  - I.2.7 Relevant OA manual and other supporting documentation
  - I.2.8 The OA Health and Safety Policy.
  - I.2.9 The OA Site Safety Procedures Manual.
  - I.2.10 The OA Risk Assessment templates.
  - I.2.11 The OA Method Statement template.
  - I.2.12 The OA Construction Phase Plan template.



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## APPENDIX B DESCRIPTIONS AND CONTEXT INVENTORY

Test Pit TD8						
General description					Orientation	N-S
Situated adjacent to the parapet of Stramongate Bridge. Stone-sets sealed by a levelling deposit, overlain by stone paving slabs. The parapet footings revealed at 1.1m depth					Length (m)	2.7
					Width (m)	0.8
					Depth (m)	1.2
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
100	Surface	-	0.10	Paving Slabs	-	-
101	Deposit	-	0.05	Sharp sand and cement	-	-
102	Surface	-	0.10	Stone Setts	-	-
103	Deposit	-	0.3	Stone Rubble/Soil/aggregate	Post-med ceramics	c. 19 <sup>th</sup> Century
104	Deposit	-	>0.65m	Redeposited Natural	-	-

Test Pit TD9						
General description					Orientation	N-S
Situated adjacent to Stramongate Bridge. Topsoil over made ground which was in excess of 1.1m deep. The footings of the bridge were 0.8m in depth					Length (m)	3
					Width (m)	1
					Depth (m)	0.30
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
200	Layer	-	0.30	Topsoil	-	-
201	Deposit	-	>0.8	Soil and limestone rubble.	-	-

Test Pit TD10a						
General description					Orientation	E-W
Situated adjacent to the external steps of the Bridge Inn. Made-ground deposits 301 and 302 overlain by modern paving slabs.					Length (m)	1.2
					Width (m)	0.9
					Depth (m)	1.3
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
300	Layer	-	0.1	Paving Slabs	-	-
301	Deposit	-	0.9	Soil and limestone rubble	-	-
302	Deposit	-	>0.3	Type 1 Aggregate	-	-

Test Pit TD10b						
General description					Orientation	E-W
Situated adjacent to the north wall of the Bridge Inn. The test-pit revealed the backfilled cut of a service pipe running parallel with wall at 0.9m depth. Footings of wall >1.2m in depth.					Length (m)	0.9
					Width (m)	0.6
					Depth (m)	1.2
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
400	Surface	-	0.1	Paving Slabs	-	-
401	Deposit	-	>0.9	Soil, clinker, limestone and slate rubble	-	-

Test Pit TD10c						
General description					Orientation	E-W
Situated adjacent to the east wall of the Bridge Inn. The test-pit revealed the backfilled cut of a service pipe running parallel with wall at 0.35m depth. Footings of wall >1m in depth.					Length (m)	0.9
					Width (m)	0.6
					Depth (m)	1
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
500	Surface	-	0.15	Paving Slabs	-	-
501	Deposit	-	0.35	Soil, clinker, limestone and slate rubble	-	-
502	Deposit	-	0.5m	Soil, clinker, limestone and slate rubble	-	-

Test Pit TD13a						
General description					Orientation	E-W
Situated adjacent to the retaining wall. Tarmac path over backfill. West section revealed very large, >1.5 wide, cast concrete culvert. Depth of wall exceed TP.					Length (m)	1.2
					Width (m)	0.8
					Depth (m)	1.2
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
600	Surface	-	0.3	Tarmacadam	-	-
601	Deposit	-	0.45	Type 1 Aggregate	-	-
602	Deposit	-	>0.45	Limestone rubble, soil	-	-

Test Pit TD13b						
General description					Orientation	E-W
Situated adjacent to the retaining wall. Tarmac path over made-ground with 0.5m cast iron outflow pipe at depth of 0.4m. The retaining wall extended beyond the depth of the test-pit.					Length (m)	1.2
					Width (m)	0.8
					Depth (m)	1.2
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
700	Surface	-	0.30	Tarmacadam	-	-
701	Deposit	-	>0.9	Type 1 Aggregate with deposits of limestone rubble	-	-

Test Pit 4AF-TP5						
General description					Orientation	N-S
Situated adjacent to a parapet of Miller Bridge, topsoil overlying made-ground. Foundations of parapet exceed depth of the test-pit.					Length (m)	0.8
					Width (m)	0.75
					Depth (m)	1.2
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
800	Layer	-	0.5	Topsoil	-	-
801	Deposit	-	>0.7	Mix of soil and limestone rubble	-	-

Test Pit 4AF-TP8						
General description					Orientation	E-W
Situated adjacent to the retaining wall. Layer of topsoil over clean stone above made ground of limestone and brick rubble. Base of the wall foundations identified at 1m					Length (m)	1.1
					Width (m)	0.8
					Depth (m)	1.1
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
<b>900</b>	Layer	-	0.15	Topsoil	-	-
<b>901</b>	Deposit	-	0.2	20mm clean stone over Terram	-	-
<b>902</b>	Deposit	-	>0.75	Limestone rubble, brick and soil	-	-

Test Pit 4AG-TP1						
General description					Orientation	N-S
Situated at the end of the bridge parapet, adjacent to retaining wall on north side. Topsoil overlying redeposited silty-clay, with inclusions of river stone and limestone rubble. Base of wall foundations exceeded the depth of the test-pit					Length (m)	0.85
					Width (m)	0.8
					Depth (m)	0.1.2
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
<b>1000</b>	Layer	-	0.3	Topsoil	-	-
<b>1001</b>	Deposit	-	>0.9	Made Ground	-	-

Test Pit 4AG-TP4						
General description					Orientation	E-W
Situated adjacent to the boundary wall, constructed from red brick on stone footings, which continued below the maximum depth of the test-pit.					Length (m)	0.8
					Width (m)	0.8
					Depth (m)	1.2m
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
<b>1100</b>	Layer	-	0.3	Topsoil	-	-
<b>1011</b>	Deposit	-	>0.9	Slightly clayish sandy-silty soil, moderate inclusion of small to medium sub-rounded stone	-	-

Test Pit 4AH-TP2						
General description					Orientation	E-W
Situated adjacent to the eastern retaining wall of Nether Bridge which exceeded the maximum depth of the test-pit. Tarmac surface overlying made-ground. Made-ground <b>1202</b> contained a substantial amount of domestic debris.					Length (m)	1.2
					Width (m)	0.8
					Depth (m)	1.2
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
<b>1200</b>	Surface	-	0.12	Tarmacadam	-	-
<b>1201</b>	Deposit	-	0.15	Concrete rubble and aggregate	-	-

<b>1202</b>	Deposit	-	0.83	Redeposited topsoil, clinker and slag	Pottery sherds, clay pipe, animal bones and shell	c. 19 <sup>th</sup> Century
<b>1203</b>	Natural		>0.1	Yellowish orange sand, occasional sub-rounded stone	-	-

**Test Pit 4AH-TP3**

<b>General description</b>					<b>Orientation</b>	<b>E-W</b>
South of Holy Trinity Church's boundary wall, the footings exceeded the depth of the test-pit. Topsoil overlying made-ground. A service pipe at 0.35m depth, in the western end of the test-pit					<b>Length (m)</b>	1.6
					<b>Width (m)</b>	0.8
					<b>Depth (m)</b>	1.2
<b>Context No.</b>	<b>Type</b>	<b>Width (m)</b>	<b>Depth (m)</b>	<b>Description</b>	<b>Finds</b>	<b>Date</b>
<b>1300</b>	Layer	-	0.05	Topsoil	-	-
<b>1301</b>	Deposit	-	>1.15	Limestone rubble and soil	-	-

**Test Pit 4AH-TP4**

<b>General description</b>					<b>Orientation</b>	<b>E-W</b>
South of Holy Trinity Church's boundary wall with archway on east side. Depth of footings 0.9m. Topsoil overlying made-ground, natural geology identified at 0.95m. Stone steps from archway revealed in the eastern-section to depth of 0.62m.					<b>Length (m)</b>	3
					<b>Width (m)</b>	2
					<b>Depth (m)</b>	1
<b>Context No.</b>	<b>Type</b>	<b>Width (m)</b>	<b>Depth (m)</b>	<b>Description</b>	<b>Finds</b>	<b>Date</b>
<b>1400</b>	Layer	-	0.15	Topsoil	-	-
<b>1401</b>	Deposit	-	0.80	Limestone rubble and soil	-	-
<b>1402</b>	Layer	-	>0.05	Natural geology	-	-

**Test Pit 4AH-TP5**

<b>General description</b>					<b>Orientation</b>	<b>N-S</b>
West of Kirkland Hall and it's boundary wall. Foundations for Hall identified as large roughly-hewn blocks 0.45m high, to depth of 1.3m, foundations for boundary wall at depth of 0.75m					<b>Length (m)</b>	1.25
					<b>Width (m)</b>	1
					<b>Depth (m)</b>	1.3
<b>Context No.</b>	<b>Type</b>	<b>Width (m)</b>	<b>Depth (m)</b>	<b>Description</b>	<b>Finds</b>	<b>Date</b>
<b>1500</b>	Layer	-	0.05	Topsoil	-	-
<b>1501</b>	Layer	-	0.15	Tarmacadam and sand	-	-
<b>1502</b>	Deposit	-	0.4	Soil and limestone rubble	-	-
<b>1503</b>	Layer	-	0.7	Firm orangey brown slightly sandy clay, occasional small to medium sub-rounded stone	-	-

Test Pit 4AH-TP6						
General description					Orientation	E-W
West of Nether Hall and its boundary wall. Foundations for the hall identified as two courses of roughly-hewn stone, to depth of 0.8m. Boundary wall foundations to depth of 0.25m					Length (m)	1.25
					Width (m)	1
					Depth (m)	1
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
1600	Layer	-	0.1	Topsoil	-	-
1601	Deposit	-	0.15	Stoney soil and deposits of limestone rubble	-	-
1602	Layer	-	-	Firm orangey brown slightly sandy-clay, occasional small to medium sub-rounded stone	-	-

Test Pit 4AH-TP7						
General description					Orientation	N-S
Adjacent to the western retaining wall of Nether Bridge, of which the foundations exceed depth of the test-pit. Topsoil overlying made-ground, which subsequently overlay the backfill of the cut for the boundary wall					Length (m)	1
					Width (m)	0.8
					Depth (m)	1
Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
1700	Layer	-	0.25	Topsoil	-	-
1701	Deposit	-	0.65	Soil and limestone rubble	-	-
1702	Deposit	-	0.3	Redeposited natural	-	-

## APPENDIX C      BIBLIOGRAPHY

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**APPENDIX D****SITE SUMMARY DETAILS / OASIS REPORT FORM**

<b>Site name:</b>	Kendal Flood Risk Management Scheme, Kendal, Cumbria
<b>Site code:</b>	KFR19
<b>Grid Reference</b>	SD 51585 92754
<b>Type:</b>	Watching Brief
<b>Date and duration:</b>	17 <sup>th</sup> January – 27 <sup>th</sup> February 2020; 17 days
<b>Location of archive:</b>	The archive is currently held at OA North, Mill 3, Moor Lane, Lancaster, LA1 1QD, and will be deposited with the Kendal Museum of Natural History and Archaeology
<b>Summary of Results:</b>	<p>The 17 test-pits which were hand-excavated by operatives acting on behalf of VolkerStevin Ltd and ranged in size from 0.8m to 3.3m long and 0.8m wide, with depths from 1m to 1.3m. The test-pits were all situated against extant structures, bridges buildings and retaining walls, three of which were scheduled monuments, Stramongate Bridge, Miller Bridge and Nether Bridge.</p> <p>Apart from elevations and footings of the extant structures, archaeology was revealed in two pits; a surface of stone sets adjacent to Stramongate Bridge, and stone steps adjacent to the church boundary wall. Throughout the test-pits there was evidence of substantial amounts of made-ground on the banks of the River Kent. The archaeology revealed was likely post-medieval and contemporary with the structures to which they are adjacent. Any earlier archaeology may survive beneath the made-ground.</p>





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