



Carleton Road, Penrith, Cumbria

Archaeological Evaluation Report

May 2022

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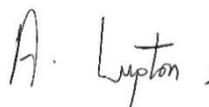
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Carleton Road, Penrith, Cumbria
Archaeological Evaluation Report

Written by Katie Sanderson

*With contributions from Denise Druce and illustrations by
Mark Tidmarsh*

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Summary

In March 2022, Oxford Archaeology (OA) North was commissioned by RPS to undertake an archaeological trial trench evaluation of a proposed residential development site to the south of Carleton Road in Penrith, Cumbria. The work is being undertaken to inform the local planning authority (Eden District Council) in advance of submission of a planning application. This evaluation, completed over three days, 9th – 11th March 2022, comprised the excavation of nine trenches that were proposed by RPS. The locations of trenches were informed by a desk-based assessment produced by RPS which identified potential for prehistoric and Roman activity, and, by geophysical survey of the area undertaken by Magnitude Surveys.

The aim of the archaeological works was to fully record and investigate any remains, in order to inform the planning process prior to the development of the site, and to mitigate any negative impact this development may have upon such remains. The results of the evaluation trenching were limited. Only two out of nine trenches excavated contained archaeological features. Both trenches were targeted on the same ditch that traversed the site; processing of the environmental samples recovered from these features recovered remains of cereals which indicated a medieval or later date, confirmed by two sherds of ceramics, also recovered from the samples, which although heavily abraded appeared to be of post-medieval date. The remaining trenches were either blank or contained natural variations that appeared to relate to the geophysical anomalies observed.

Acknowledgements

Oxford Archaeology (OA) North would like to thank Paul Clark of RPS for commissioning this project. Thanks are also extended to Jeremy Parsons, Historic Environment Officer for Cumbria County Council, who monitored the work on behalf of Eden District Council.

The project was managed for OA North by Paul Dunn. The fieldwork was directed by Katie Sanderson, who was supported by Steve Clarke and Jessica Elleray. Survey and digitising was carried out by Katie Sanderson and Mark Tidmarsh. Thanks are also extended to the teams of OA staff that processed the environmental remains under the supervision of Denise Druce, who also produced the environmental sample report.

1 INTRODUCTION

1.1 Scope of work

- 1.1.1 Oxford Archaeology (OA) North was commissioned by RPS to undertake a trial trench evaluation at the proposed site of a residential development to the south of Carleton Road, Penrith, Cumbria (NGR: NY 53010 29533; Fig 1).
- 1.1.2 The work was undertaken to inform the local planning authority in advance of a submission of a Planning Application. A brief was set by the Historic Environment Officer for Cumbria County Council (CCC) and a proposed trench array was agreed with RPS. OA North were subsequently commissioned to produce a written scheme of investigation detailing the local authority's requirements and to undertake the necessary fieldwork to inform the planning process. This document outlines how OA implemented the specified requirements.

1.2 Location, topography and geology

- 1.2.1 The site lies to the south-east of the town of Penrith on a triangular parcel of land, bounded by Carleton Road to the north and east, Carleton Avenue to the west and the A66 dual carriageway to the south (NGR: NY 53010 29533; Fig 1). The topography of the site has a slight slope from 140m aOD to the west to 132m aOD to the east, occupying a raised tip of land overlooking the River Eamont and its alluvial floodplain.
- 1.2.2 The solid geology of the area is mapped as sandstone of the Penrith Sandstone Formation formed in the Permian Period (BGS 2022). The overlying superficial geology is mapped as Diamicton, Devensian Till formed in the Quaternary Period (*ibid*). The soils of the site are mapped as freely draining slightly acid loamy soils (Cranfield 2022).

1.3 Archaeological and historical background

- 1.3.1 The archaeological and historical background of the site has been described in detail in the desk-based assessment produced by RPS (2019), and will not be reproduced here, although a brief summary is provided.
- 1.3.2 Although there are no recorded heritage assets within the proposed development related to any period, several prehistoric find spots are recorded in the Historic Environment Record (HER) in the vicinity of the site, including: Neolithic flint arrowhead approximately 500m north of the site (HER no: 4298); Bronze Age flint tool approximately 900m east of the site (HER no: 42097); and, a Bronze Age copper tool approximately 350m south-west of the site (HER no: 42307). There is more substantial evidence of prehistoric activity in the form of Early to Middle Bronze Age settlement approximately 850m to the north of the site (HER no: 44039), as well as a series of Late Neolithic henges in the confluence of the River Eamont approximately 1.5km to the south-west of the site.
- 1.3.3 There are two scheduled Roman monuments in the vicinity of the site, one approximately 100m to the east of the site, Roman road and settlement south-east of Frenchfield scheduled monument (SM no: 1007180), and Brougham Roman fort (*Brocavum*) approximately 750m to the south-east of the site, which also incorporated

a thirteenth-century castle (SM no: 1007186). There are also several find spots and features dating to the Roman period in the vicinity.

- 1.3.4 There is little evidence of Early Medieval assets, although there is some evidence for the possible location of Barco Hill Battlefield and several *Grubenhauser* to the east of Brougham Castle. The principal Medieval assets in the vicinity of the site relate to the thirteenth-century Brougham Castle (SM no: 1007186) and a Deserted Medieval Village approximately 850m to the south of the site.

2 AIMS AND METHODOLOGY

2.1 Aims

2.1.1 The project aims and objectives were as follows:

- i. to adhere to and fulfill 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 test the anomalies and 'blank areas' identified on the geophysical survey (Magnitude 2022);
- v. to inform a decision as to whether further archaeological works will be required in advance of development ground works; and
- vi. to compile a professional archival record of any archaeological remains within the excavation works.

2.2 Methodology

2.2.1 The full methodology is outlined in the WSI (*Appendix A*) and was adhered to in full, and, as such, was fully compliant with prevailing guidelines and established industry best practice (ClfA 2020a; 2020b; 2021; Historic England 2015). A programme of field observation accurately recorded the character of the deposits within the excavations.

2.2.2 The topsoil and subsoil were removed by an 8-tonne 360° tracked excavator, fitted with a toothless ditching bucket, to the surface of the first significant archaeological deposit, natural geology or a safe working depth, under direct archaeological supervision at all times. Subsequent cleaning and investigation of all archaeological deposits was undertaken manually, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions. All features of archaeological interest were investigated and recorded.

2.2.3 The trenches were located by use of a differential Global Positioning System (dGPS), accurate to within 0.02-0.03m, and altitude information was established with respect to Ordnance Survey Datum. Prior to excavation, the trenches were scanned using a Cable Avoidance Tool (CAT) and Signal Generator (Genny), to identify any potential services. All trenches were excavated in a stratigraphic manner.

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

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

2.2.6 A full professional archive has been compiled in accordance with the WSI, and in accordance with current ClfA (2020b) and Historic England (2015) guidelines. The archive will be deposited with Tullie House Museum, Carlisle in due course.

3 RESULTS

3.1 Introduction and presentation of results

3.1.1 The results of the evaluation are presented below, and include a stratigraphic description of the trenches that contained archaeological remains. The full details of all trenches with dimensions and depths of all deposits can be found in *Appendix B*. The assessment of the environmental remains recovered from the environmental samples can be found in *Appendix C*.

3.2 General soils and ground conditions

3.2.1 The soil sequence in the trenches was fairly uniform. The natural geology of reddish-brown sandy silt with gravel banding and siltier concentrations, was overlain by a sandy silt subsoil, which was, in turn, overlain by topsoil. The only exception was in Trench 2, where the geophysical anomaly appeared to be a variation in the natural geology, to a brownish red sand layer, likely deposited by colluvial action as this was the lowest area of the site (Plate 1). The clarity of the horizons between the topsoil, subsoil and natural was also very diffuse in Trenches 1 to 3, likely due to the colluvial formation of the deposits.



Plate 1: North-east-facing section of the south-eastern end of Trench 2 showing change in natural

3.2.2 Ground conditions throughout the evaluation were generally good, and the site remained dry throughout. Trench 4, however, deviated from this and was flooded from the north-east end, rapidly covering an area of the geophysical anomaly, but not

before it had been quickly investigated (Plate 2). Archaeological features, where present, were easy to identify against the underlying natural geology.



Plate 2: Working shot during the excavation of Trench 4 showing flooding in the area of proposed geophysical anomaly

3.3 General distribution of archaeological deposits

3.3.1 Archaeological features were present in trenches 6 and 8 which both targeted the same geophysical anomaly, which was the only feature to be attributed to ‘possible archaeological signal’ on the geophysical survey (Magnitude 2022; Fig 2). The other geophysical anomalies either, could not be found at all, though slots and thorough cleaning was employed to investigate the areas (Plates 3 and 4), or they appeared to be subtle changes to the natural geology, such as gravel banding or siltier patches. In Trench 3, the geophysical anomalies were revealed to be the remnants of a disused hedgerow, identified by the large roots *in situ* (Plate 5) and a change in the natural to a reddish sand deposit (Plate 1).

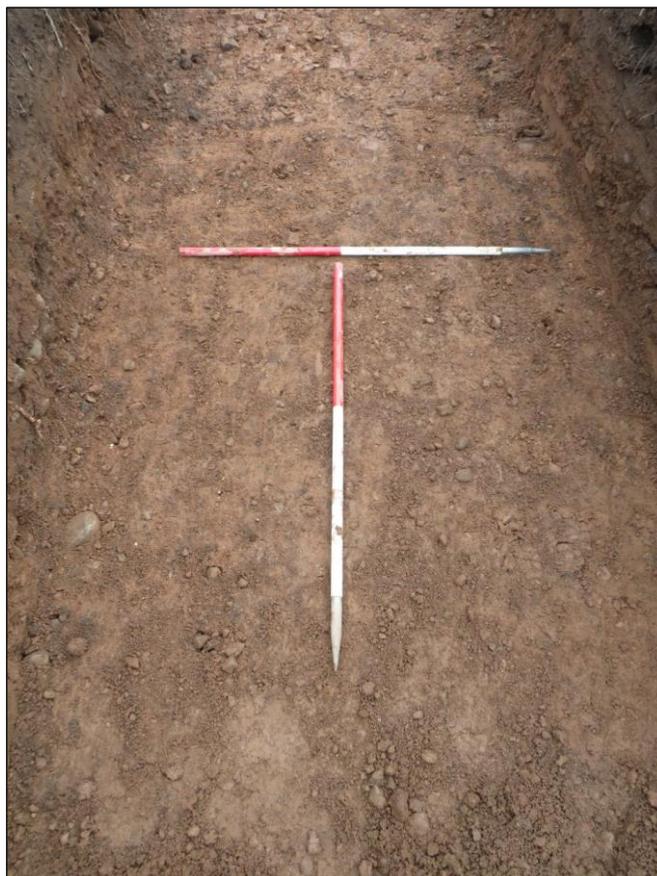


Plate 3: Cleaned area of geophysical anomaly in Trench 4



Plate 4: East-facing section of slot through area of geophysical anomaly in Trench 7



Plate 5: South-west-facing section of Trench 2 showing roots from removed hedgerow

3.4 Trench 6

3.4.1 Trench 6, located in the middle of the proposed development, was aligned north-west/south-east (Fig 3 and Plate 6), and targeted a north-east/south-west-aligned linear anomaly running across the site (Fig 2). Natural geology **602** was encountered throughout the trench and was cut approximately in the middle of the trench by ditch **603**.



Plate 6: Trench 6 looking south-east

3.4.2 Ditch **603** was aligned north-east/south-west, measured 1m wide, survived to a depth of 0.46m, and was filled by a single mid- to light-brown silty sand, **604** (Plate 7). There were no finds identified during excavation, however, two small heavily abraded sherds of undiagnostic ceramic, although likely to be of medieval or post-medieval date, due to their hard firing and colouring, were recovered from environmental samples taken from the deposit. Other plant remains recovered from the deposit suggest that it was likely formed no earlier than the medieval period, but also more likely later. Ditch **603** was sealed by subsoil **601**, approximately 0.24m thick, which was, in turn, overlain by topsoil **600**, approximately 0.39m thick.



Plate 7: South-west-facing section of ditch 603

3.5 Trench 8

3.5.1 Trench 8, located to the north of Trench 6, was aligned north-west/south-east (Fig 4 and Plate 8), and targeted the same north-east/south-west-aligned linear anomaly targeted by Trench 6 (Fig 2). Natural geology **802** was encountered throughout the trench and was cut approximately in the middle of the trench by ditch **803**.



Plate 8: Trench 8 looking south-east

3.5.2 Ditch **803** was aligned north-east/south-west, measured 1.15m wide, survived to a depth of 0.45m, and was filled by a single mid- to light-brown silty sand, **804** (Plate 9). There were no finds identified during excavation, however, a relatively rich assemblage of charred plant remains were recovered, which were suggestive of a medieval or later date. Ditch **803** was sealed by subsoil **801**, approximately 0.2m thick, which was, in turn, overlain by topsoil **800**, approximately 0.3m thick.



Plate 9: South-west-facing section of ditch 803

4 DISCUSSION

4.1 Reliability of field investigation

4.1.1 The ground conditions, in general, did not adversely affect the results as it was largely dry weather for the duration of the excavation. This was not true, however, for Trench 4, which was on a plateau of land mid-way down the general south-western slope of the site. This caused a pooling of water that rapidly filled the north-eastern half of the trench as it was opened. Thus, although during the machine stripping, no features were observed, this hindered the ability to investigate the area of the trench that featured one of the geophysical anomalies.

4.2 Evaluation objectives and results

4.2.1 The principal aims and objectives identified above in *Section 2.1.1* was to obtain sufficient information to establish the presence, absence, character, extent, state of preservation and date of any archaeological deposits within the area of the proposed development, and to provide sufficient information as to the need for and scope of any subsequent mitigation strategy. To meet these aims, the programme of trenching was designed to provide adequate coverage across the site and targeted anomalies identified on the geophysical survey. All of the trenches were successfully excavated, in their intended locations.

4.3 Interpretation

4.3.1 It was determined that the geophysical anomalies that were expected to be the main indication of archaeological remains on the site were largely as a result of variation in the natural geology. The exception to this was the presence of a ditch which was identified in Trenches 6 and 8 (**603** and **803**). Although no finds were recovered on site, two sherds of ceramic were recovered from environmental samples taken from the fill of ditch **603**, and along with the assemblage of charred plant remains recovered from the flots of the environmental samples from both ditches, they suggest that the features likely date to the medieval period or later. This ditch corresponded well with the geophysical anomaly and the initial interpretation of the feature was that it related to some form of field boundary; however, it does not correspond well with the field boundaries depicted on the historic mapping (RPS 2019), suggesting that it likely became disused by the production of the 1849 Penrith tithe map. The environmental assessment states that there is sufficient charcoal to be able to establish a date if required.

4.4 Significance

4.4.1 The results of the evaluation correspond fairly well with the geophysical survey (Fig 2) and confirmed the presence and absence of archaeology on the site, with the majority of anomalies appearing to relate to variation in the natural geology and the only feature identified as possible archaeology being proven to relate to a ditch in Trenches 6 and 8. Consequently, the features identified within the evaluation trenching are considered to be of low local significance and are unlikely to contribute further to our understanding of the area.

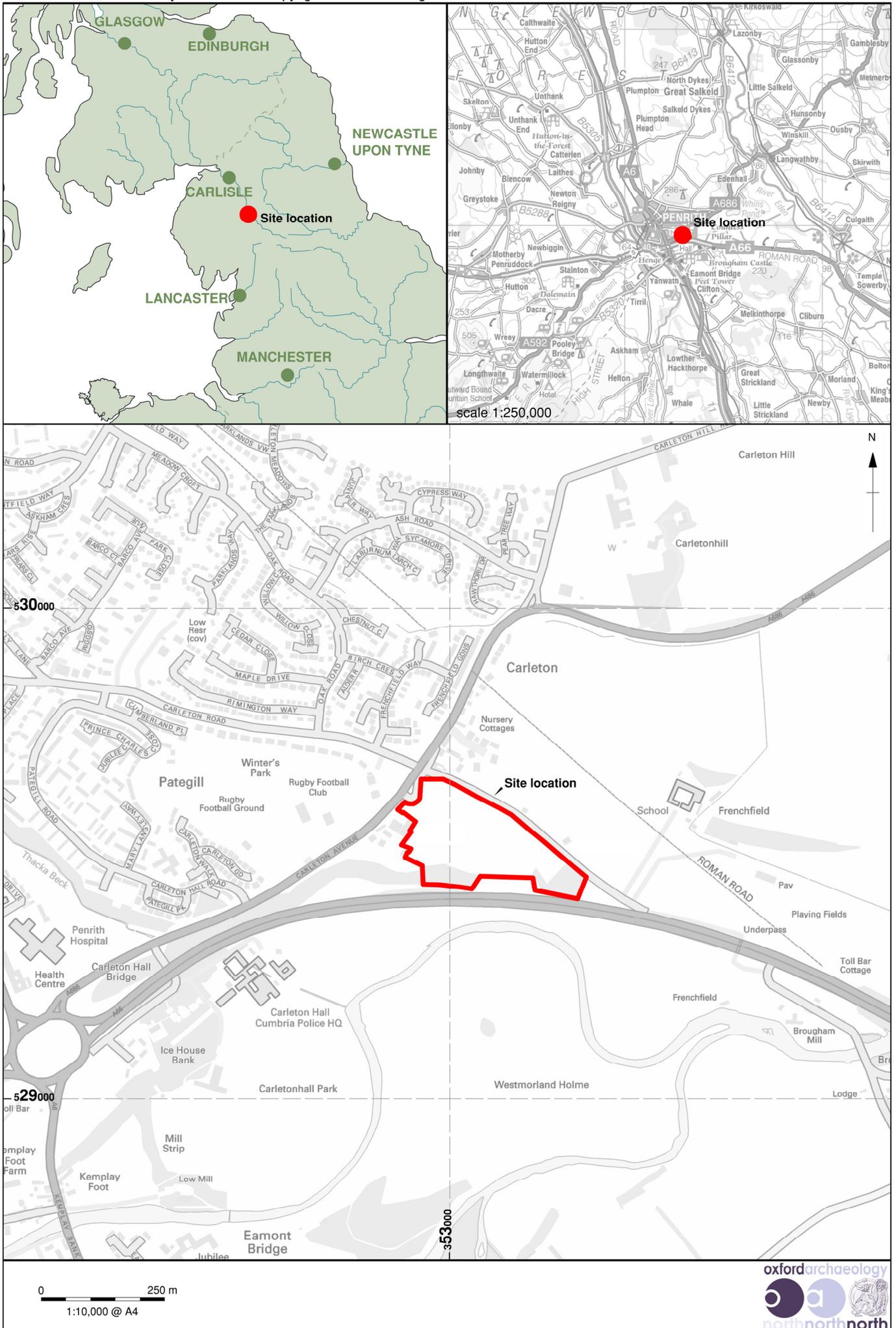


Figure 1: Site location

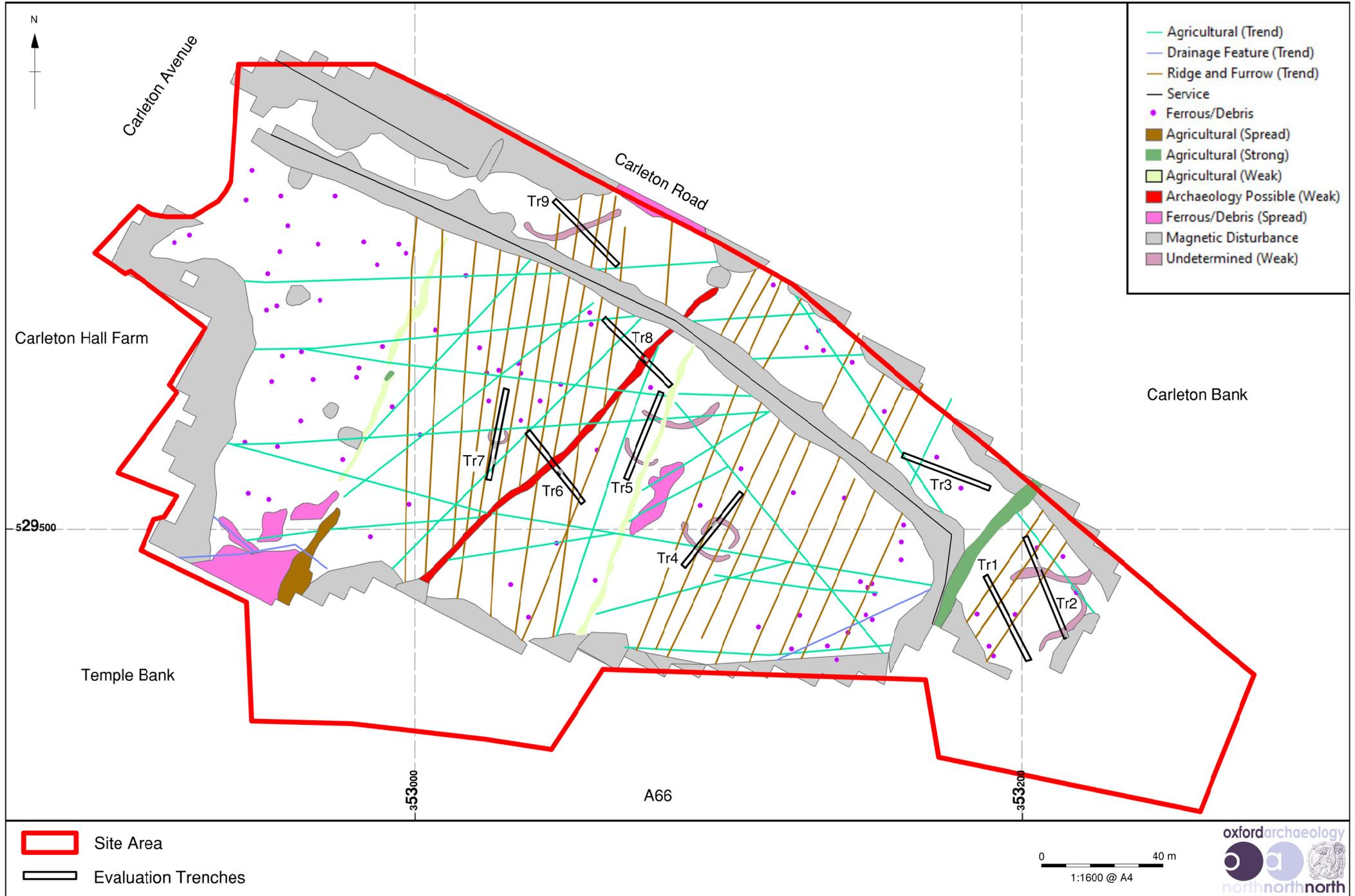


Figure 2: Plan of evaluation trenches superimposed on the results of the geophysical survey

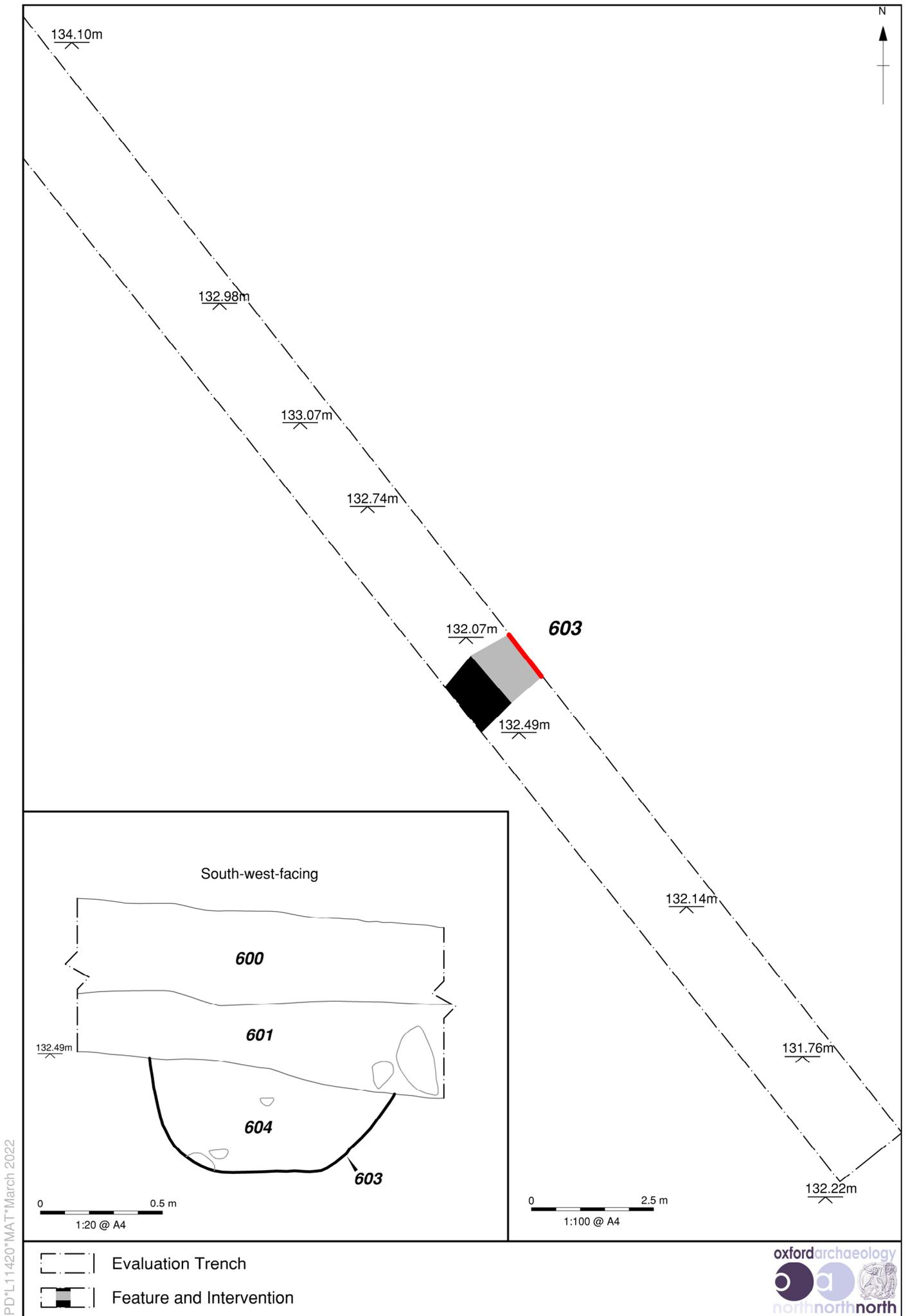


Figure 3: Plan of evaluation Trench 6 and section of the ditch **603**

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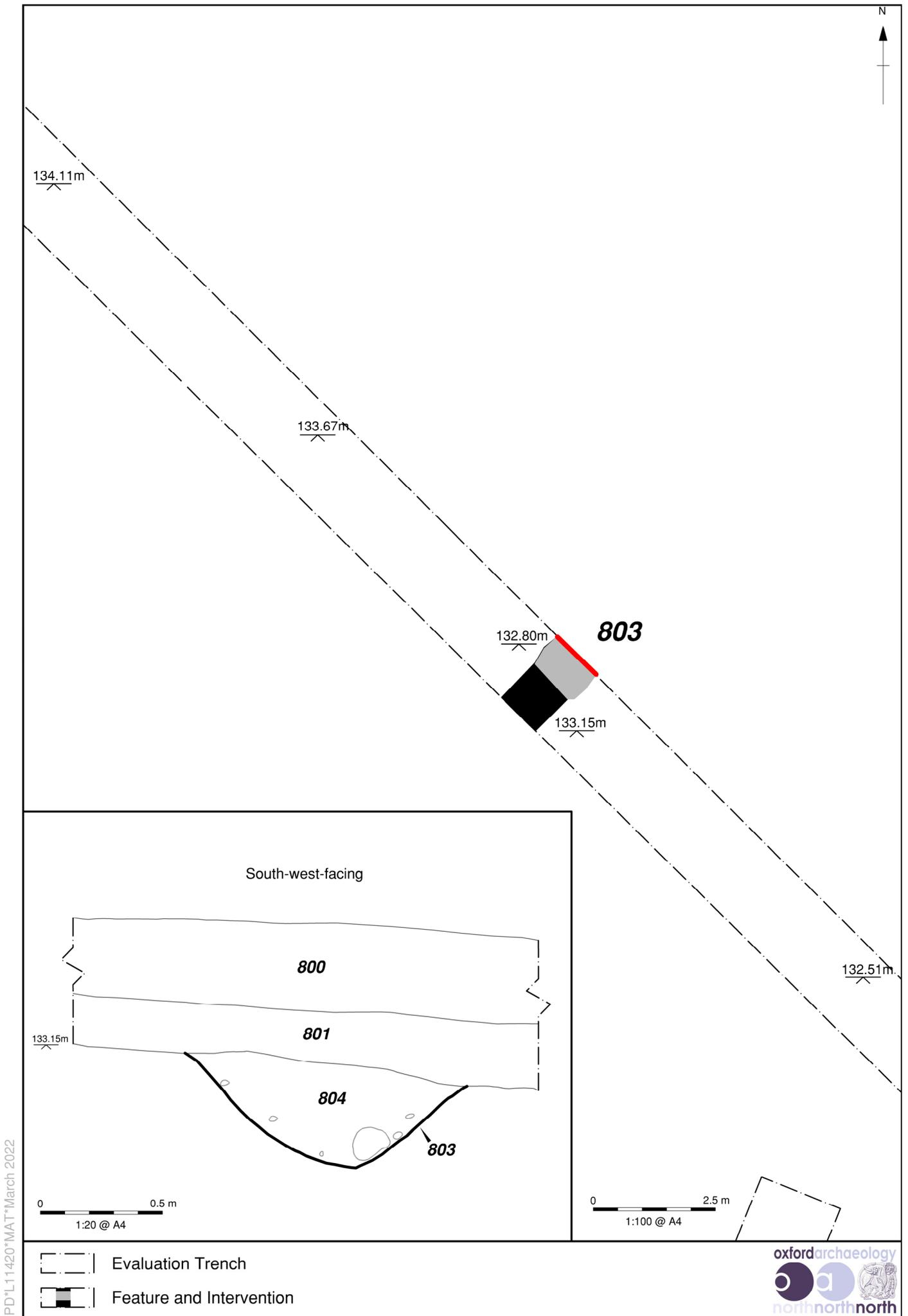


Figure 4: Plan of evaluation Trench 8 and section of the ditch **803**

APPENDIX A WRITTEN SCHEME OF INVESTIGATION



Carleton Road, Penrith, Cumbria

Written Scheme of Investigation Archaeological Evaluation

February 2022

Client: RPS

Issue No: V. 1

OA Reference No:

NGR: NY 53010 29533



Client Name: RPS
Document Title: Carleton Road, Penrith, Cumbria
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Carleton Road, Penrith, Cumbria

Written Scheme of Investigation for an Evaluation

Centred on NY 53010 29533

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1 INTRODUCTION

1.1 Project details

- 1.1.1 Oxford Archaeology (OA) North has been commissioned by RPS to undertake an archaeological trial trench evaluation of the site of a proposed site of a residential development to the south of Carleton Road, Penrith, Cumbria (NGR: NY 53010 29533; Fig 1).
- 1.1.2 The work is being undertaken to inform the Planning Authority (Eden District Council) in advance of submission of a Planning Application. RPS produced a desk-based assessment (RPS 2019), which identified that the site had moderate potential for prehistoric and Roman activity and recommended that a geophysical survey and archaeological evaluation be undertaken of the site. Magnitude Surveys subsequently undertook a magnetometer survey of the site (Magnitude Surveys 2022) and based upon their results RPS produced a proposed trench plan (Fig 2). OA North were subsequently commissioned to produce this written scheme of investigation (WSI) and undertake the necessary fieldwork for the archaeological trial trench evaluation; this document outlines how OA will implement those requirements.
- 1.1.3 All work will be undertaken in accordance with the Chartered Institute for Archaeologists *Code of Conduct* (2019) and relevant *Standards and Guidance* (2020a and 2020b), and local and national planning policies (HE 2015).

1.2 Location, topography and geology

- 1.2.1 The site lies to the south-east of the town of Penrith on a triangular parcel of land, bounded by Carleton Road to the north and east, Carleton Avenue to the west and the A66 dual carriageway to the south (NGR: NY 53010 29533; Fig 1). The topography of the site has a slight slope from 140m aOD to the west to 132m aOD to the east, occupying a raised tip of land overlooking the River Eamont and its alluvial floodplain.
- 1.2.2 The solid geology of the area is mapped as sandstone of the Penrith Sandstone Formation formed in the Permian Period (BGS 2022). The overlying superficial geology is mapped as Diamicton, Devensian Till formed in the Quaternary Period (*ibid*). The soils of the site are mapped as freely draining slightly acid loamy soils (Cranfield 2022).

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 described in detail in the desk-based assessment produced by RPS (2019), and will not be reproduced here, although a brief summary is provided.
- 2.1.2 There are no recorded heritage assets within the proposed development related to any period. Although several prehistoric find spots are recorded in the Historic Environment Record (HER) in the vicinity of the site, including: Neolithic flint arrowhead approximately 500m north of the site (HER no: 4298); Bronze Age flint tool approximately 900m east of the site (HER no: 42097); and, Bronze Age copper tool approximately 350m south-west of the site (HER no: 42307). There is more substantial evidence of prehistoric activity in the form of Early to Middle Bronze Age settlement approximately 850m to the north of the site (HER no: 44039). Also with evidence of Late Neolithic henges in the confluence of the River Eamont approximately 1.5km to the south-west of the site.
- 2.1.3 There are two scheduled Roman monuments in the vicinity of the site, one approximately 100m to the east of the site, Roman road and settlement south-east of Frenchfield scheduled monument (SM no: 1007180), and Brougham Roman fort (*Brocavum*) approximately 750m to the south-east of the site, which also incorporated a thirteenth-century castle (SM no: 1007186). There are also several find spots and features dating to the Roman period in the vicinity.
- 2.1.4 There is little evidence of Early Medieval assets, although there is some evidence for the possible location of Barco Hill Battlefield and several *Grubenhauser* to the east of Brougham Castle. The principal Medieval assets in the vicinity of the site relate to the thirteenth-century Brougham Castle (SM no: 1007186) and a Deserted Medieval Village approximately 850m to the south of the site.

2.2 Potential

- 2.2.1 The desk-based assessment (RPS 2019) highlighted the moderate potential for encountering previously unidentified prehistoric and Roman period archaeological evidence. With low to nil potential of other periods. This moderate potential has been ascribed due to the evidence within the HER and also the proximity of the two Roman scheduled monuments to the site.

3 PROJECT AIMS

3.1 General

3.1.1 The general project aims and objectives can be summarised as follows:

- to adhere to and fulfil the agreed programme of works associated with the archaeological potential of the site;
- to inform a decision as to whether further archaeological works will be required in advance of development ground works; and
- to compile a professional archival record of any archaeological remains within the excavation works.

3.2 Specific aims and objectives

3.2.1 The specific aims and objectives of the archaeological evaluation are:

- to determine or confirm the general nature of any remains present;
- to determine or confirm the approximate date or date range of any remains, by means of artefactual or other evidence; and
- to test the anomalies and 'blank' areas identified by the geophysical survey.

4 PROJECT SPECIFIC EXCAVATION AND RECORDING METHODOLOGY

4.1 Scope of works

- 4.1.1 The trial trench evaluation is to consist of the excavation of nine trenches within the proposed development area, with the principal aim of testing the anomalies and 'blank' areas identified on the geophysical survey (Fig 2). Eight of the trenches will be 30m long by 1.8m wide, whilst the ninth trench will be 35m long by 1.8m wide. Prior to the excavation of the trenches photographs will be taken showing the condition of the site and service checks will be undertaken utilising service plans and a cable avoidance tool (CAT and Genny).
- 4.1.2 The trenches will be excavated by mechanical excavator fitted with a toothless ditching bucket, under direct supervision of a suitably experienced and qualified archaeologist at all times. Topsoil and subsoil will be excavated from the trenches in stratigraphic order to natural geology, significant archaeological remains or a safe working depth of 1.2m, whichever is encountered first. The topsoil and subsoil will be kept separate, with topsoil stockpiled on one side of the trench and subsoil the other, they will also be systematically checked, both by eye and metal detector, and any finds will be retained.
- 4.1.3 Upon completion of the mechanical excavation of the trenches, they will be hand cleaned and any archaeological features will be investigated and recorded. Any finds or environmental material recovered will be returned to OA North's office in Lancaster for processing and assessment. If potentially significant archaeological remains are identified, the archaeologist will inform the client and their representative.
- 4.1.4 Upon completion of the recording of the trenches, the client and the local curator will be given the opportunity to view the trenches. Once they are satisfied with the works the trenches will be backfilled by the mechanical excavator. Once the trenches have been backfilled, photographs will be taken to show the condition of the site.

4.2 Programme

- 4.2.1 It is anticipated that the fieldwork will take three days to complete, by a team consisting of a Project Officer/Project Supervisor, directing up to two Project Archaeologists, under the management of Paul Dunn, Senior 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:
- the evaluation trenches will be set-out by dGPS, accurate to 0.02m, based upon the proposed trench plan (Fig 2). They will then be scanned using a CAT and

Genny, operated by a suitably qualified and experienced person, the position of any potential services will be marked out and demarcated, with the trenches being potential repositioned depending on the location of the services. Once the location of the trenches are identified as clear, mechanical excavation can commence;

- the topsoil and subsoil will be banded on opposite sides of the trenches, a safe working distance from the trench edges, approximately 1m. The trenches will not be entered if they exceed a safe working depth of 1.2m;
- once the mechanical excavation of the trenches has reached natural geology, significant archaeology or a safe working depth, the trenches will be cleaned by hand where necessary. The hand excavation and recording methodology can be found in *Appendix A*;
- if features of significance are identified during the evaluation, the client will be informed as soon as possible. A decision as to whether to continue the trench or stop at that level will then be made;
- all information identified during the course of the fieldwork will be 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). Results of all field investigations will be recorded on *pro forma* context sheets. The site archive will also include a photographic record and accurate large-scale plans and sections at appropriate scales (1:50; 1:20; and 1:10);
- once the trenches are fully recorded and the client and local archaeological curator have had the opportunity to view the trenches, they will be backfilled by mechanical excavator, in the reverse order they were excavated, i.e. subsoil first and the topsoil. The spoil will then be compacted by the weight of the mechanical excavator provided and not by any other type of plant (*Appendix A*); and
- following completion of the fieldwork an archaeological report detailing the results of the evaluation and an interpretation of their significance will be produced (*Section 5*).

5 PROJECT SPECIFIC REPORTING AND ARCHIVE METHODOLOGY

5.1 Programme

5.1.1 The final grey literature report will be produced within 4 to 6 weeks of completion of the fieldwork. An interim report can be provided within a week of completion of the fieldwork to assist in ongoing discussions relating to the proposed development if required. A copy of the report in Adobe Acrobat (.pdf) format will be provided to the client and their representative, paper copies can 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 following completion of the project. An Online Access to Index of Archaeological Investigations (OASIS) record will be established at the beginning of the project and finalised upon completion of the project. A digital copy of the report will be supplied to the Archaeological Data Service (ADS).

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 Senior 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 Officer/Supervisor, who implements these on a day to day basis. Paul Dunn and the Project Officer/Supervisor 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 one weeks' notice of the commencement of the fieldwork will be given to Jeremy Parsons, Historic Environment Officer for Cumbria County Council.
- 6.3.2 Jeremy 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), 2022 *Geology of Britain Viewer* [Online] available at <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (accessed 25th February 2022)

Chartered Institute for Archaeologists (CIfA), 2019 *Code of Conduct*, Reading

CIfA, 2020a *Standard and guidance for field evaluation*, Reading

CIfA, 2020b *Standard and guidance for the creation, preparation, transfer and deposition of archaeological archives*, Reading

Cranfield Soil and Agrifood Institute, 2022 National Soil Resources Institute's *Soilscapes of Britain Map* [Online], available at: <http://www.landis.org.uk/soilscapes>, Cranfield University (accessed 25th February 2022)

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

Magnitude Surveys, 2022 *Geophysical survey report, Land off Carleton Road, Penrith, Cumbria*, unpubl rep

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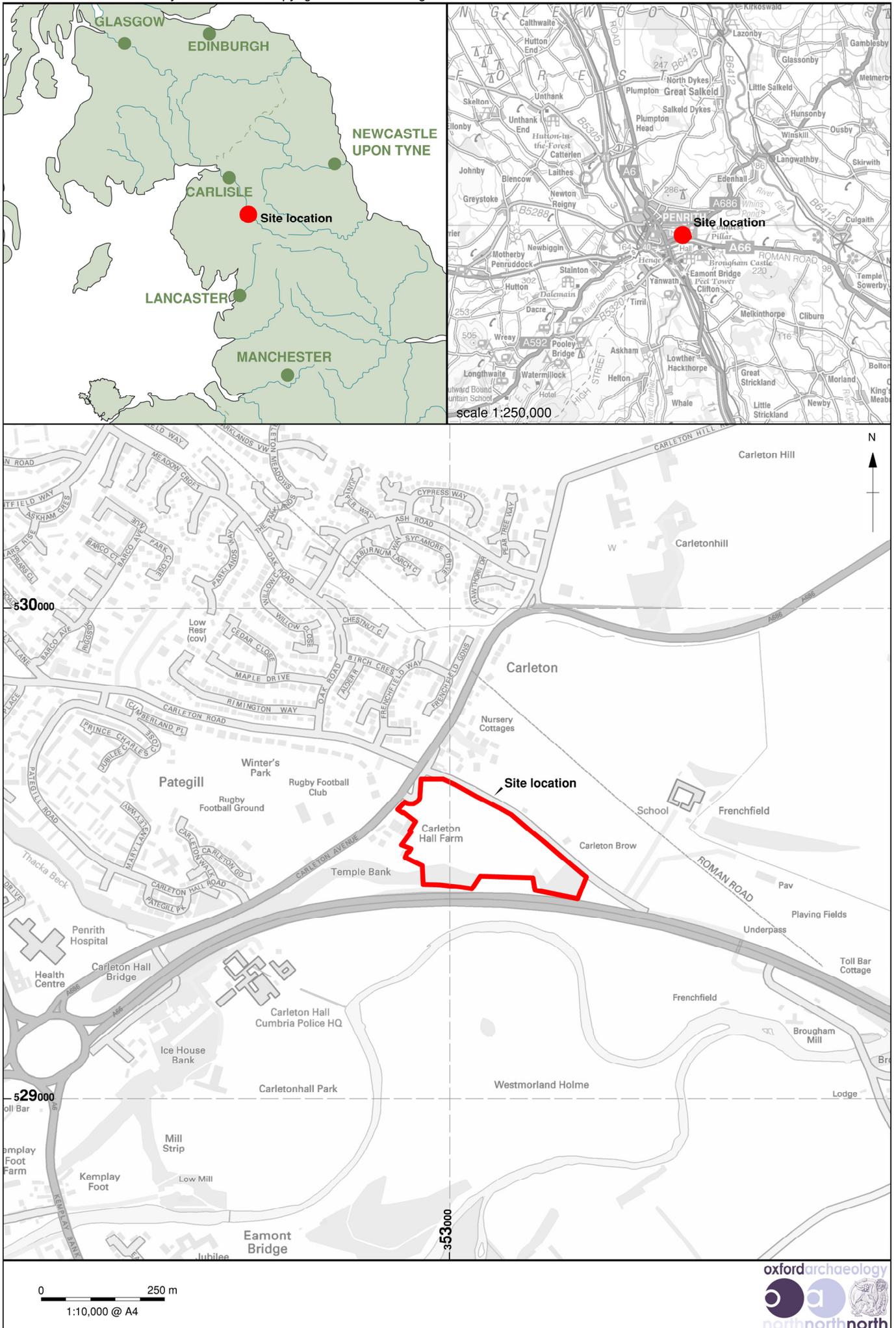


Figure 1: Site location



Figure 2: Proposed trenches superimposed on the results of the geophysical survey

OA STANDARD FIELDWORK METHODOLOGY APPENDICES

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.

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 (CIfA) Standard and Guidance notes relevant to fieldwork are:
- Standard and guidance for archaeological field evaluation, 2014 (updated 2020)
 - Standard and guidance for archaeological excavation, 2014 (updated 2020)
 - Standard and guidance for an archaeological watching brief, 2014 (update 2020)
- 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 GPS/GNSS (Global Positioning System/Global Navigation Satellite System), hand-measured elements, Total Station Theodolite (TST) survey utilising Reflectorless Electronic Distance Measurement (REDM), or photogrammetry where appropriate.
- B.1.4** Before the main work commences, a network of control stations will be laid out encompassing the area as necessary. 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 GNSS, or other appropriate method, will be used to orientate the control network to National Grid or other recognised coordinate system.
- B.1.5** Control stations will be checked by closed traverse and/or GNSS, as appropriate. The accuracy of these control stations will be accessed on a regular basis and re-established accordingly. Control 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 uploaded onto survey equipment as appropriate. 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 recording daily tasks and conditions as appropriate.
- B.1.8** All spatial data will be periodically downloaded uploaded and backed up to our central servers via ftp. It will be cleaned, validated and inspected.
- B.1.9** All survey data will be documented on daily survey record sheets as necessary. 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 summary of survey work will be produced as needed to access development and highlight problems. 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 via ftp to Oxford on a regular 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 GNSS. 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 Areas of complex stratigraphy will be hand drawn or recorded by photogrammetry as appropriate. Where 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 GNSS. 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 Photogrammetry may also be used to record standing structures or burials. This will be carried out in line with Standard OA procedures for photogrammetry.
- 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 Information (metadata) on all other digital files will be created and stored as appropriate. At the end of the survey all data recorded will be made available for archiving purposes.

B.2 Relevant industry standards and guidelines

- B.2.1 Historic England, 2017 Understanding the Archaeology of Landscapes A Guide to Good Recording Practice
- B.2.2 Historic England, 2015 Metric Survey Specifications for Cultural Heritage (3rd edn)

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, 2018 Waterlogged Organic Artefacts: Guidelines on their Recovery, Analysis and Conservation.

- C.2.3 Historic England, 2011 Environmental Archaeology. A guide to the theory and practice of methods, from sampling and recovery to post excavation, (2nd ed)
 - C.2.4 Historic England, 2004 Dendrochronology: Guidelines on Producing and Interpreting Dendrochronological Dates (revision due 2020).
 - C.2.5 University of Bradford, 2019 Archaeomagnetism: Magnetic Moments in the Past <https://www.brad.ac.uk/archaeomagnetism/>
 - C.2.6 Historic England, 2008 Luminescence Dating. Guidelines on Using Luminescence Dating in Archaeology (revision due 2020).
 - C.2.7 Historic England, 2008 Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains (currently being revised).
 - C.2.8 Historic England, 2015 Archaeometallurgy. Guidelines for Best Practice.
 - C.2.9 Historic England, 2015 Geoarchaeology. Using Earth Sciences to Understand the Archaeological Record.
 - C.2.10 Historic England, 2017 Organic Residue Analysis and Archaeology.
 - C.2.11 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 ClfA, 2014 (updated 2020) Standard and guidance for the collection, documentation, conservation and research of archaeological materials
- D.2.2 Society of Museum Archaeologists, 1993 Selection, retention and dispersal of Archaeological Collections. Download available via <http://www.socmusarch.org.uk/publica.htm>
- D.2.3 UKIC, 1983 Packaging and Storage of Freshly-Excavated Artefacts from Archaeological Sites. Conservation Guidelines No.2. Archaeology Section, United Kingdom Institute for Conservation.
- D.2.4 UKIC, 1988 Excavated Artefacts and Conservation: UK sites Revised Edition. Conservation Guidelines No.1. Archaeology Section, United Kingdom Institute for Conservation.
- D.2.5 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), the Advisory Panel on the Archaeology of Burials in England (APABE, 2015, 2017) and British Association of Biological Anthropology and Osteoarchaeology Code of Practice (2019) and Code of Ethics (2019). 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 digital imaging is used it will be done in accordance with the British Association of Biological Anthropology and Osteoarchaeology Recommendations on the Ethical Issues Surrounding 2D and 3D Digital Images of Human Remains (2019).
- E.1.11 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.1.12 Levels will be taken. For inhumations this will be on the skull, pelvis and feet as a minimum.
- E.1.13 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.1.14 Urned 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.1.15 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.1.16 Unless deemed osteologically or archaeologically important disarticulated bone / chanel 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.1.17 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.1.18 Pyre debris dumps will be half sectioned or quadrant and will be subject to 100% sampling.
- E.1.19 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.1.20 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.1.21 Memorials, including headstones, revealed within the areas of development will be recorded irrespective of whether they are believed to be in situ.
- E.1.22 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.1.23 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. 2019a Code of Practice (<http://www.babao.org.uk/index/ethics-and-standards>)
- E.2.6 British Association of Biological Anthropology and Osteoarchaeology. 2019b Code of Ethics (<http://www.babao.org.uk/index/ethics-and-standards>)
- E.2.7 British Association of Biological Anthropology and Osteoarchaeology, 2019c Recommendations on the Ethical Issues Surrounding 2D and 3D Digital Images of Human Remains (<http://www.babao.org.uk/index/ethics-and-standards>)
- E.2.8 Cox, M, 2001 Crypt archaeology. An approach. ClfA Paper No. 3
- E.2.9 English Heritage, 2002 Human Bones from Archaeological Sites. Guidelines for producing assessment documents and analytical reports
- E.2.10 Historic England, 2018 The Role of the Human Osteologist in an Archaeological Fieldwork Project. Swindon, Historic England
- E.2.11 McKinley, J, and Roberts, C, 1993 Excavation and post-excavation treatment of cremated and inhumed human remains, ClfA Technical Paper No. 13

- E.2.12 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.2.13 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.2.14 Mitchell P, and Brickley, M (eds) Updated Guidelines to the Standards for Recording Human Remains, ClfA 2017
- E.2.15 Mytum, H, 2000 Recording and Analysing Graveyards. CBA Handbook No. 15
- E.2.16 Reeve, J, and Adams, M, 1993 The Spitalfields Project. Volume I – The Archaeology Across the Styx. CBA Research Report No. 85
- E.2.17 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 Oxford Archaeology 2018 *Fieldwork Manual Human Remains* unpublished

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) 2015, 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 2015 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 their 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; HE 2015). 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
Leigh Allen	Metalwork and worked bone	BA (Hons), PGDip
Anni Byard	Metalwork, coins and glass	MSx, MCIfA
Dr Ruth Shaffrey	Worked stone artefacts	BA, PhD, MCIfA
Dr Rebecca Nicholson	Fish and Bird Bone	BA (Hons), MA, D.Phil, MCIfA, FSA Scot
Dr Mairead Rutherford	Pollen	BSc, MSc
Ian Smith	Animal Bone	BA (Hons), MSc, PCIfA
Dr Martyn Allen	Animal Bone	BA (Hons), MA, PhD
Adrienne Powell	Animal Bone	BA (Hons), MA
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	BA PhD, MCIfA, BABAO
Helen Webb	Human Bone	BSc, MSc, MCIfA, BABAO
Mark Gibson	Human Bone	BA, MSc, ACIfA, BABAO
Dr Lauren McIntyre	Human Bone	BSc, MSc, PhD, MCIfA, BABAO
Zoe Ui Choileain	Human Bone	Pg Dip, MA, Msc, BABAO
Natasha Dodwell	Human Bone	BA, MSc, BABAO

External archaeological specialists regularly used by OA

Specialist	Specialism	Qualifications
Lynne Keys	Slag	BA (Hons)
Quita Mould	Leather	BA, MA
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
Dr David Dungworth	Archaeometallurgy and Glassworking	BA (Hons), 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 3rd 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 EAC, 2014 A Standard and Guide to Best Practice for Archaeological Archiving in Europe (EAC Guidelines 1)
- H.2.3 Cifa, 2014 (Updated 2020) Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives
- H.2.4 Brown, D, 2011 Archaeological Archives A Guide to Best Practice in Creation, Compilation, Transfer and Curation. AAF
- H.2.5 UKIC, 1990 Guidelines for the preparation of excavation archives for long-term storage
- H.2.6 SMA, 2020 Standards and Guidance in the 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 TRENCH DESCRIPTIONS AND CONTEXT INVENTORY

Trench 1						
General description					Orientation	NW-SE
Trench devoid of archaeology. Consists of sandy silt topsoil 100 and sandy silt subsoil 101 overlying natural geology of silty sand.					Length (m)	40
					Width (m)	1.8
					Avg depth (m)	0.58
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
100	Layer	-	0.29	Topsoil	-	-
101	Layer	-	0.29	Subsoil	-	-
102	Layer	-	-	Natural	-	-

Trench 2						
General description					Orientation	NW-SE
Trench devoid of archaeology, geophysical anomalies appeared to be hedgerow and change in natural. Consists of topsoil 200 and subsoil 201 overlying natural geology sandy silt 202 , which in turn overlay a reddish-brown sand 203 at the southeastern end of the trench.					Length (m)	30
					Width (m)	1.8
					Avg depth (m)	0.6
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
200	Layer	-	0.2	Topsoil	-	-
201	Layer	-	0.2	Subsoil	-	-
202	Layer	-	0.2	Natural	-	-
203	Layer	-	-	Natural	-	-

Trench 3						
General description					Orientation	NW-SE
Trench targeted blank area and was devoid of archaeology. Consists of topsoil 300 and subsoil 301 overlying natural geology of silty sand 302 .					Length (m)	30
					Width (m)	1.8
					Avg depth (m)	0.7
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
300	Layer	-	0.4	Topsoil	-	-
301	Layer	-	0.3	Subsoil	-	-
302	Layer	-	-	Natural	-	-

Trench 4						
General description					Orientation	NE-SW
Trench targeting two geophysical anomalies however is devoid of archaeology. Consists of topsoil 400 and subsoil 401 overlying natural geology of silty sand with gravel banding 402 that appears to be the cause of the geophysical anomalies.					Length (m)	30
					Width (m)	1.8
					Avg depth (m)	0.82
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
400	Layer	-	0.35	Topsoil	-	-
401	Layer	-	0.47	Subsoil	-	-
402	Layer	-	-	Natural	-	-

Trench 5						
General description					Orientation	NE-SW
Trench targeting two geophysical anomalies, however, trench devoid of archaeology. Consists of topsoil 500 and subsoil 501 overlying natural geology of silty sand 502 .					Length (m)	30
					Width (m)	1.8
					Avg depth (m)	0.7
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
500	Layer	-	0.3	Topsoil	-	-
501	Layer	-	0.4	Subsoil	-	-
502	Layer	-	-	Natural	-	-

Trench 6						
General description					Orientation	NW-SE
Trench targets a geophysical anomaly. Contexts consist of topsoil 600 and subsoil 601 overlying the fill of a ditch 604 which fills ditch 603 that cuts the natural 602 .					Length (m)	30
					Width (m)	1.8
					Avg depth (m)	0.63
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
600	Layer	-	0.39	Topsoil	-	-
601	Layer	-	0.24	Subsoil	-	-
602	Layer	-	-	Natural	-	-
603	Cut	1.0	0.46	Ditch	-	Medieval – post-medieval
604	Fill	1.0	0.46	Fill of 603	Two small sherds of ceramics	Medieval – post-medieval

Trench 7						
General description					Orientation	NE-SW
Trench targets geophysical anomalies which were not observed upon excavation. Consists of topsoil 700 and subsoil 701 overlying natural geology of sandy silt 702 .					Length (m)	30
					Width (m)	1.8
					Avg depth (m)	0.7
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
700	Layer	-	0.45	Topsoil	-	-
701	Layer	-	0.45	Subsoil	-	-
702	Layer	-	-	Natural	-	-

Trench 8						
General description					Orientation	NW-SE
Trench targeting geophysical anomaly which was observed to be a ditch 803 . Consists of topsoil 800 and subsoil 801 overlying the fill 804 of ditch 803 , which cuts the natural geology of sandy silt 802 .					Length (m)	30
					Width (m)	1.8
					Avg depth (m)	0.5
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
800	Layer	-	0.3	Topsoil	-	-
801	Layer	-	0.2	Subsoil	-	-
802	Layer	-	-	Natural	-	-
803	Cut	1.15	0.45	Ditch	-	Medieval – post-medieval
804	Fill	1.15	0.45	Fill of 803	-	Medieval – post-medieval

Trench 9						
General description					Orientation	NW-SE
Trench targeting geophysical anomaly which appeared to be siltier variation of the natural geology. Consists of topsoil 900 and subsoil 901 overlying natural geology of silty sand 902 .					Length (m)	30
					Width (m)	1.8
					Avg depth (m)	0.53
Context No	Type	Width (m)	Depth (m)	Description	Finds	Date
900	Layer	-	0.29	Topsoil	-	-
901	Layer	-	0.24	Subsoil	-	-
902	Layer	-	-	Natural	-	-

APPENDIX C ENVIRONMENTAL REPORTS

C.1 Environmental Samples

By Denise Druce

Introduction

C.1.1 A targeted programme of palaeoenvironmental sampling was implemented in accordance with Historic England recommendations (EH 2011) and the Oxford Archaeology *Environmental Sampling Guidelines* (OA 2017), which resulted in the retrieval of two 40 litre samples for the recovery of archaeobotanical material. The samples were assessed for their potential to provide information on the local environment, cultivation practices, and fuel use. Any remains were also assessed for their potential for providing suitable material for radiocarbon dating if warranted. Both the samples comprised charcoal-rich ditch fills, recorded in both Trenches 6 and 8 of the excavations.

Methodology

C.1.2 Given the dry nature of the deposits, processing followed standard flotation where the flots were captured in a 250 µm mesh, and air dried. The retents of the floated samples were washed through 2mm and 500 µm meshes, air dried, and checked for residual charred remains, and finds. For the assessment, the samples were scanned using a *Leica* stereo-microscope and any plant material, including fruits, seeds, and charcoal was quantified. Other remains, such as bone, small artefacts, ceramic building material (cbm), industrial/metal waste, and coal/heat-affected vesicular material (havm) were also quantified. Quantification was based on a scale of 1 to 4 where 1 is rare (one to five items); 2 is frequent (6 to 50 items); 3 is common (51–100 items); and 4 is abundant (greater than 100 items). The assessment results were recorded on a *pro-forma*. Plant nomenclature follows Stace (2010).

C.1.3 Wood and charcoal fragments over 2mm in size were quantified and scanned to assess preservation and wood diversity. Wood maturity was also noted to assess wood type (ie heart wood, sap wood, or round wood) and to identify suitable material for radiocarbon dating. Alder (*Alnus glutinosa*) and hazel (*Corylus avellana*), which are anatomically similar in transverse section were not separated during assessment. Similarly, the anatomical structure of wood of the hawthorn-type family (Maloideae) cannot be separated, and may include hawthorn, apple, whitebeam, rowan and wild service tree, and heather (*Calluna vulgaris*) and heath (*Erica* sp) cannot be separated. Identification and classification of the charcoal was aided by Hather (2000).

Results

C.1.4 The results of the archaeobotanical assessment are presented in Table 1, which also shows potential for radiocarbon dating. Although both samples contained rare to frequent roots and seeds, the primary form of preservation was through charring. Both samples contained rare charred cereal grains, including wheat (*Triticum* sp) and probable cultivated oat (*Avena sativa*) in ditch **803**, and barley (*Hordeum vulgare*) and

possible rye (*Secale cereale*) in ditch **603**. Although varieties of wheat and barley have been grown in Britain throughout prehistory until modern times, both oat and rye became common crops from the medieval period onwards (Greig 1991, Carruthers and Hunter Dowse 2019). Both samples contained several charred seeds from weeds typically found growing amongst cereal crops, including black-bindweed (*Polygonum convolvulus*) in **603**, and brome (*Bromus* sp) and wild grass (Poaceae) in **803**. The presence of sedge (*Carex* sp) in ditch **803** suggests some of the soils under cultivation were prone to waterlogging (Stace 2010).

C.1.5 Both samples contained abundant charcoal fragments comprising a mixture of ash (*Fraxinus excelsior*), alder/hazel, and abundant heather/heath twig fragments. Rare fragments of field maple (*Acer campestre*) and hawthorn-type were also recorded in ditch **603**. Other notable remains included common coal fragments and heat-affected vesicular material (havm), most likely representing coal ash. Other habitation waste included rare hammerscale and rare calcined bone in ditch **603**. Two fragments of probable building material or coarse pottery were also recovered from this ditch.

Sample No	Context No	Trench No	Feature	Flot size (ml)	Charred plant remains	Charcoal	Other remains	Radiocarbon dating potential
100	604	6	Ditch 603	70	Cereals (1) <i>Hordeum vulgare</i> , cf <i>Secale cereale</i> . Weed seeds (1) <i>Polygonum convolvulus</i>	<2mm (4), >2mm charcoal (3). <i>Acer campestre</i> , <i>Fraxinus excelsior</i> , Maloideae, and <i>Calluna vulgaris/Erica</i> sp twig fragments	Coal (3), havm (4), hammerscale (1), calcined bone (1), cbm/pot (1)	Yes
101	804	8	Ditch 803	50	Cereals (1) <i>Triticum</i> sp, <i>Avena sativa</i> . Weed seeds (1) <i>Bromus</i> sp, Poaceae, <i>Carex</i> sp	<2mm (4), >2mm charcoal (3). <i>Fraxinus excelsior</i> , <i>Alnus/Corylus</i> , and <i>Calluna vulgaris/Erica</i> sp twig fragments	Coal (3), havm (4)	yes

Table 1: Archaeobotanical assessment results

Remains are quantified on a scale of 1–4 where (1) is rare (one to five items); 2 is frequent (6 to 50 items); 3 is common (51–100 items); and 4 is abundant (greater than 100 items). Havm = heat affected vesicular material, cbm = ceramic building material

C.1.6 The deposits from both ditches are likely to represent dumped settlement waste comprising rare cereal processing waste and fuel in the form of both wood charcoal and possible coal. Other settlement waste was also incorporated into the deposit dumped in ditch **603**. The nature of the charcoal assemblages suggests that a range of wood was utilised as fuel, however a large component was provided by heather/heath

round wood. The similarity of the charcoal assemblages indicates that both ditches may be contemporary; the presence of both cultivated oat and rye indicating a possible medieval or later date for the deposits.

Statement of potential

- C.1.7 Although of some interest, the relatively low amount and limited diversity of the charred plant remains and charcoal from the site means that further analyses of these remains would not contribute significantly to the archaeobotanical record provided by this assessment.

Retention and disposal

- C.1.8 The assessment *pro-formas* will be kept with the site archive. Flots not required for further analysis and/or radiocarbon dating will be disposed of on completion of the project.

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APPENDIX E SITE SUMMARY DETAILS

Site name:	Carleton Road, Penrith
Site code:	CRP22
Grid Reference	NY 53010 29533
Type:	Evaluation
Date and duration:	March 2022
Area of Site	54,640m ²
Location of archive:	The archive is currently held at OA North, Mill 3, Moor Lane Mills, Moor Lane, Lancaster, LA1 1QD, and will be deposited with Tullie House Museum, Carlisle, in due course.
Summary of Results:	The aim of the archaeological works was to fully record and investigate any remains, in order to inform the planning process prior to the development of the site, and to mitigate any negative impact this development may have upon such remains. The results of the evaluation trenching were limited. Only two out of nine trenches excavated contained archaeological features. Both trenches were targeted on the same ditch that traversed the site, processing of the environmental samples recovered from these features recovered remains of cereals which indicated a medieval or later date, confirmed by two sherds of ceramics, also recovered from the samples, which although heavily abraded appeared to be of post-medieval date. The remaining trenches were either blank or contained natural variations that appeared to be resulting in the geophysical anomalies observed.



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