



KENDAL OUTFALL WORKS, KENDAL

CUMBRIA

Archaeological Watching Brief Report



Oxford Archaeology North

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United Utilities

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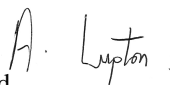
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SUMMARY

In December 2015 Storm Desmond caused significant flood damage to Kendal Wastewater Treatment Works (WwTW). As a result of the storm event, the treated effluent outfall pipe was washed away by flooding and a replacement pipe was required. The replacement pipe route exits the southern end of the WwTW and crosses the River Kent to the east of Watercrock Roman Fort (List Entry Number 1007178). The site is situated within an acute bend of the River Kent, west of Natland Road, south Kendal, Cumbria (SD 35158 49058).

Watercrock Roman Fort includes the remains of a fort and civilian settlement to the north-west of Watercrock Farm. The fort had a long period of occupation (AD90-369) and at least two construction phases.

Although the access route and compound are not located within the scheduled area of the fort, they are located in an area of archaeological sensitivity and the Historic Environment Officer at Cumbria County Council recommended in March 2017, that the works be archaeologically supervised in the form of a watching brief during topsoil stripping as part of the construction of the access route and compound. Topsoil stripping was limited to 300mm below ground level.

Oxford Archaeology North (OA North) was commissioned by United Utilities (UU) in July 2017 to undertake the archaeological watching brief.

Topsoil was stripped by mechanical excavator over a compound area measuring 28m by 26m and a 108m long haul road incorporating an 87m by 60m lagoon. The topsoil was very thin, less than 0.15m deep lying directly on a silty-sand natural till. There were no finds or features recorded during the work.

ACKNOWLEDGEMENTS

Oxford Archaeology North would like to thank Michael Barton of United Utilities for commissioning the project. Thanks are also due to the staff of Laing O'Rourke, Imtec and Atkins (LiMA) for their assistance during the watching brief.

Steve Clarke undertook the watching brief and Mike Birtles wrote the report. The drawings were produced by Mark Tidmarsh. The project was managed by Karl Taylor, who also edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 In December 2015 Storm Desmond caused significant flood damage to Kendal Wastewater Treatment Works (WwTW). As a result of the storm event, the treated effluent outfall pipe was washed away by flooding and a replacement pipe was required. The replacement pipe route exits the southern end of the WwTW and crosses the River Kent to the east of Watercrock Roman Fort (List Entry Number 1007178) (Fig 1).
- 1.1.2 Watercrock Roman Fort includes the remains of a fort and civilian settlement to the north-west of Watercrock Farm. The fort had a long period of occupation (AD90-369) and at least two construction phases.
- 1.1.3 Although the access route and compound are not located within the scheduled area of the fort, they are located in an area of archaeological sensitivity and the Historic Environment Officer at Cumbria County Council recommended in March 2017, that the works be archaeologically supervised in the form of a watching brief during topsoil stripping as part of the construction of the access route and compound. Topsoil stripping was limited to 300mm below ground level.
- 1.1.4 Oxford Archaeology North (OA North) was commissioned by United Utilities (UU) in July 2017 to undertake the archaeological watching brief and this report documents the results and discusses them in their archaeological and historical context.

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

- 1.2.1 The site is situated within an acute bend of the River Kent, west of Natland Road, south Kendal, Cumbria (SD 35158 49058) (Fig 1). The topography of the site is level at approximately 40m above Ordnance Datum (aOD). The solid geology of the site comprises the Dalton limestone formation, below superficial deposits of alluvial clay, sand and gravel (BGS 2017). The soils are classified as freely draining, slightly acid loamy soils (Farewell *et al* 2011).

1.3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 1.3.1 **Introduction:** the following historical background is a summary of the development of Kendal and the surrounding area of the site.
- 1.3.2 **Prehistory:** there is clear evidence of human activity in Cumbria from the Palaeolithic to the Neolithic, but nothing is known from the site. However, within the township of Kendal there is an account from the 1868 Westmoreland Gazette that seems to describe the uncovering of a burial typical of about 2800 BC, while workmen were digging a drain near the A6 at the southern entrance to the town (Bingham 1995, 30). Other known finds include: flints from Castle Drive (SMR 2468); two separate prehistoric axe finds (SMR 2481, 2486); a stone mace (SMR 2485); and a site known from aerial photographs of a barrow and cairn site at Bradleyfield Barrow (SMR

4160). A Bronze Age burial was found on Sizergh Fell (Fell 1953) and a Bronze Age burnt mound has been found at Sparrowmire Farm to the north of the town (Heawood and Huckerby, 2002). Recent work by OA North on the Levens and Sizergh estates have identified a number of putative Bronze Age mounds and cairns (OA North 2014, 2017). An Iron Age multivallate hillfort of Castlesteads (SM 23684) lies to the south-east of the site on the summit of the Helm, it includes an enclosure *c* 39m long by 17m wide at the southern end, which widens to 25m at the northern end. Three artificially levelled areas within the enclosure are thought to be hut platforms. To the north, the enclosure is defended by two earth and stone banks, both measuring up to 2m high and separated by an 8.5m wide ditch. To the south, the enclosure is defended by a single earth and stone bank that is 6.5m wide and 1m high (OA North 2014, 15).

- 1.3.3 **Roman:** in the years following the Roman invasion of AD43, the army advanced as far as a line between Chester and York, the frontier of the empire was not extended beyond this until the reign of Vespasian (AD 69-79), a main road was established north from Chester, with forts at Low Borrowbridge and Brougham. In *c* AD90, a fort was built at Watercrock, Kendal, in a loop of the River Kent (Potter 1979); the 1.32ha fort area has been excavated and revealed evidence for an extramural settlement to the south and east (Potter 1977). Various accounts of Roman finds from Kendal have been recorded but beyond the immediate area of the fort and vicus, Kendal was not an area of particularly intense Roman occupation (Shotter 2000, 277; Bingham 1995, 40).
- 1.3.4 **Early Medieval:** evidence throughout Cumbria for early medieval activity is extremely limited. Once the administration of the Roman occupation was finally rescinded *c* AD410, the native population reverted to autonomous rule, with the Kendal area perhaps part of the British Kingdom of Rheged (Kirkby 1962). From the early-mid-seventh century onwards, the expanding kingdom of Northumbria began to influence the area. A fragment of an Anglian cross discovered in Trinity Church is one of the few tangible pieces of evidence relating to this period (Collingwood 1904). This is enough to suggest that a pre-Norman church existed in Kendal. During the ninth and tenth centuries, the region was influenced by populations of Hiberno-Norse extraction, place name evidence indicates the presence of these people in the landscape throughout Cumbria (Smith 1967).
- 1.3.5 **Medieval:** the settlement of Kirkland at the southern end of Kendal is recorded in Domesday Book as Chechebi, 1086 (Faull and Stinson 1986). The settlement became the centre of a Norman barony in the later eleventh century (Winchester 1979). There are two castles in Kendal; Castle Howe, to the west of the River Kent, is the remains of an earthwork motte and bailey, probably dating to the twelfth century (*ibid*). Kendal Castle to the east of the River Kent has earthworks and masonry dating to the thirteenth century onwards (Pevsner 1967, 256-7). Kendal was subject to numerous raids from Scotland throughout the fourteenth century (Winchester 1979, 6)
- 1.3.6 **Post-Medieval:** during the sixteenth century, almost half the population had succumbed to plague (Phillips 1994, 140). By the end of the seventeenth

century, the town was showing signs of recovery, particularly in the woollen industry (Marshall 1975). The eighteenth century saw a continued growth, a growth that was further boosted in 1819 following the arrival of the Lancaster Canal (*ibid*).

2. METHODOLOGY

2.1 INTRODUCTION

2.1.1 A Written Scheme of Investigation (WSI; *Appendix 1*) was prepared for UU, in response to a recommendation by the Historic Environment Officer at Cumbria County Council. This was adhered to in full, the work being consistent with the relevant CIfA and Historic England guidelines (Chartered Institute for Archaeologists 2014a - c; Historic England 2015).

2.2 WATCHING BRIEF

2.2.1 A permanent archaeological presence was maintained during groundworks. The purpose was to identify, investigate and record any archaeological remains encountered affected by the proposed groundworks.

2.2.2 A daily record of the nature, extent and depths of groundworks was maintained throughout the duration of the project. All archaeological contexts were recorded on OA North *pro-forma* sheets, using a system based on that of the former English Heritage Centre for Archaeology. A digital photographic record was maintained throughout.

2.2.3 No samples suitable for palaeoenvironmental analysis were collected and no finds were recovered.

2.3 ARCHIVE

2.3.1 A full professional archive has been compiled in accordance with the WSI and with current CIfA (CIfA 2014b) and Historic England guidelines (Historic England 2015). The paper and digital archive will be deposited in the Cumbria Historic Environment Record on completion of the project.

3. RESULTS

3.1 INTRODUCTION

3.1.1 The objective of the watching brief was to identify, investigate and record any archaeological remains encountered during the groundworks for the proposed development, and the following is a summary of the findings. The area of the watching brief is plotted on Figure 1.

3.2 RESULTS

3.2.1 Topsoil was stripped by mechanical excavator over a compound area measuring 28m by 26m and a 108m long haul road incorporating an 87m by 60m lagoon. The topsoil was very thin, less than 0.15m deep lying directly on a silty-sand natural till.

3.2.2 There were no finds or features recorded during the work.



Plate 1: General view of the stripped compound and access track, facing south



Plate 2: View of access track, facing north

4. CONCLUSION

4.1 DISCUSSION

- 4.1.1 Despite the proximity to Watercrock Roman fort, no features of archaeological origin were revealed during supervision of the topsoil stripping.

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6. ILLUSTRATIONS

FIGURES

Figure 1: Site Location

PLATES

Plate1: General view of the stripped compound and access track, facing south

Plate 2: View of access track, facing north

APPENDIX 1: WRITTEN SCHEME OF INVESTIGATION

1. INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 United Utilities (UU) (hereafter the 'client') has requested that Oxford Archaeology North (OA North) submit proposals to undertake a programme of archaeological watching brief during installation of an access track and compound to service works to the south of Kendal Waste Water Treatment Plant (SJ 40368 64700, NGR centred). The route lies to the south-west of the Scheduled Monument of Water Crook Roman Fort (List Entry Number 1007178) (Plate 1). The route does not enter the scheduled area although it is in an area of archaeological sensitivity.

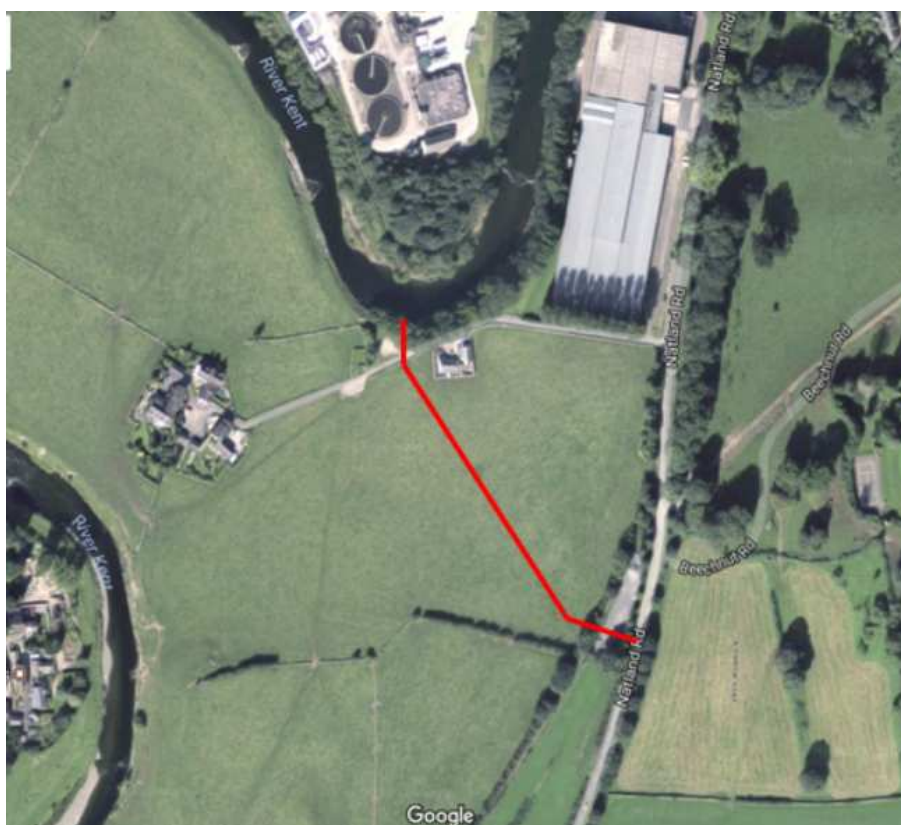


Plate 1: Location of access route

- 1.1.2 Watercrook Roman Fort includes the remains of a fort and civilian settlement to the north-west of Watercrook Farm on the south side of the River Kent. The fort had a long period of occupation (AD90-369) and at least two construction phases.
- 1.1.3 Because the access route and compound are located in an area of archaeological sensitivity, the Historic Environment Officer at Cumbria County Council recommended in March 2017, that the works be archaeologically supervised in the form of a watching brief during topsoil stripping during the construction of the access route and compound followed by a report on the findings. Topsoil stripping is limited to 300mm below ground level.
- #### 1.2 OXFORD ARCHAEOLOGY NORTH
- 1.2.1 OA North has considerable experience of fieldwork and post-excavation, having undertaken a great number of small and large-scale projects during the past 38 years. Such projects have taken place to fulfil the requirements of the clients to rigorous timetables. OA North has the

professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is a Chartered Institute for Archaeologists (CIfA) registered organisation, registration number 17, and all its members of staff operate subject to the CIfA Code of Conduct (2014a).

2. OBJECTIVES

2.1 INTRODUCTION

2.1.1 The following programme has been designed to identify investigate, and record any archaeological deposits affected by the proposed groundworks, in order that they can be preserved by record. To this end, the following programme has been designed to provide a watching brief. The fieldwork will be carried out in line with current Historic England (2015) and CIfA guidelines (2014a – c)

2.1.2 **Watching Brief:** to provide a permanent presence archaeological watching brief during groundworks associated with the construction of the access route and compound. This will aim to determine the quality, extent and importance of any archaeological remains, and record their presence.

2.1.3 **Report and Archive:** a report will be produced for the client within six to eight weeks of completion of the fieldwork. A site archive will be produced to Historic England and CIfA guidelines (2014a and b) and in accordance with the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990).

3. HEALTH AND SAFETY

3.1 RISK ASSESSMENT

3.1.1 OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety in Field Archaeology Manual compiled by the Federation of Archaeological Managers and Employers (FAME, 2006). A written risk assessment will be undertaken in advance of project commencement and copies will be made available on request to all interested parties.

3.2 CONTAMINATION AND SERVICES

3.2.1 During the watching brief, the client/principal is responsible for managing all below ground excavations. However, any known contamination issues or any specific health and safety requirements on site should be made known to OA North by the client to ensure all procedures can be met, and that the risk is dealt with appropriately. Should any presently unknown contamination be discovered during excavation, it may be necessary to halt the works and reassess the risk assessment. Should it be necessary to supply additional PPE or other contamination avoidance equipment this will be costed as a variation.

3.2.2 Similarly, all site investigation reports must be made available to OA North prior to the commencement of any fieldwork. Should site investigation reports not be available, or no such work has been undertaken OA North reserve the right to postpone the watching brief until site investigations have been carried out and reports produced.

3.2.3 All statutory undertakers service plans together with any utility tracing reports and plans must be provided or made available to OA North prior to the commencement of work. However, ensuring the locations of any below ground services are identified remains the responsibility of the client or principal contractor. The client/principal contractor is responsible for scanning the proposed excavation areas with a cable avoidance tool (CAT) and signal generator.

3.3 STAFF ISSUES

- 3.3.1 All project staff will be CSCS qualified, proof of which can be provided in the form of CSCS cards.
- 3.3.2 All project staff will wear full basic PPE whilst on site, to include safety helmets, safety boots and high-visibility jackets. Noise defenders, eye protectors, gloves and masks will be made available to staff as necessary.
- 3.3.3 It is assumed that OA North staff will be able to use the Principal Contractors welfare facilities during the course of the watching brief.

4. METHOD STATEMENT

4.1 WATCHING BRIEF

- 4.1.1 A programme of field observation will accurately record the location, extent, and character of surviving archaeological features and/or deposits within the excavations, including any remains associated with burials. For such purposes the on-site contractor should use a toothless bucket for excavating purposes (toothed buckets inhibit observation of archaeological features and their recording). Any approach to the excavator will be made from the front of the machine (i.e. facing the driver) after signalling to the driver and being acknowledged.
- 4.1.2 The work will comprise observation during the groundworks, the systematic examination of any subsoil horizons exposed, and all archaeological features and horizons, and any artefacts identified during observation will be accurately recorded. Any resultant spoil will also be systematically examined during the course of the operation. The excavation area will only be entered by OA North staff if it is considered safe to do so.
- 4.1.3 The discovery of archaeological remains will require stoppage of the excavation to allow the OA North archaeologist sufficient time to undertake firstly an assessment for the requirement of further work and then the adequate recording under safe conditions. This will be carried out as efficiently as possible in order to minimise disruption. Depending on the deposits revealed, it is anticipated that the average time for the suspension of works will be approximately 2-4 hours. Clearance will be given for excavation to proceed once the archaeologist is satisfied that either no remains are present, or that they have been adequately recorded, or that the level of impact will not disturb any deeper remains that can be preserved *in situ*.
- 4.1.4 Putative archaeological features and/or deposits identified by the machining process, together with the immediate vicinity of any such features, will be quickly cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions, and where appropriate sections will be studied and drawn. Any such features will be sample excavated (i.e. selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal).
- 4.1.5 Recording will comprise a full description and preliminary classification of features or materials revealed, and their accurate location (either on plan and/or section, and as grid co-ordinates where appropriate). Features will be planned accurately at appropriate scales and annotated on to a large-scale plan, together with heights OD.
- 4.1.6 A photographic record (using high-resolution digital SLR or mirrorless cameras) will be undertaken simultaneously of features and finds, and of general working shots.
- 4.1.7 A plan will be produced of the area of groundworks showing the location and extent of the ground disturbance and one or more dimensioned sections will be produced.

4.1.8 **Contingency plan:** in the event of significant archaeological features being encountered during the watching brief, discussions will take place with the client and the HER Officer as to the extent of further works to be carried out. All further works would be subject to a variation to this project design.

4.2 GENERAL PROCEDURES

4.2.1 **Human remains:** although it is not anticipated, should any human remains be discovered they will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. The HER Officer and the local Coroner will be informed immediately. If removal is essential the exhumation of any funerary remains will require the provision of a Home Office license, under section 25 of the Burial Act of 1857. An application will be made by OA North for the study area on discovery of any such remains and the removal will be carried out with due care and sensitivity under the environmental health regulations. Any delays caused by unforeseen and complex excavation of inhumations may be subject to a variation to the cost of the contract and will be agreed with the client.

4.2.2 **Environmental Sampling:** samples (bulk samples of approximately 30-60 litres volume, to be sub-sampled at a later stage) will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches). Monolith samples will be collected from freshly exposed sections through all buried soils/old ground surfaces by trained staff. These will be returned to OA North's offices for processing.

4.2.3 Deposits of particular interest may incur additional sampling, on advice from the appropriate in-house specialist.

4.2.4 The location of all samples will be recorded on drawings and sections with heights OD etc.

4.2.5 Between 50%-100% of bulk samples shall be selected for processing, based on the advice from OA North's in-house environmental manager. An assessment of the environmental potential would include soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features. In addition, the samples would be assessed for plant macrofossils, insect, molluscs and pollen from waterlogged deposits.

4.2.6 It may be required to obtain dating evidence through radiocarbon dating, dendrochronological or other such techniques. This would only be undertaken in consultation with the client and the HER Officer.

4.2.7 **Finds:** all finds recovered during the watching brief will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) guidelines.

4.2.8 Finds recovery and sampling programmes will be in accordance with best practice (current ClfA guidelines) and subject to expert advice. Neither artefacts nor ecofacts will be collected systematically during the mechanical excavation of the topsoil unless significant deposits are encountered. In such an eventuality, material will be sampled in such a manner as to provide data to enhance present knowledge of the production and dating of such artefacts. Other finds recovered during the removal of overburden will be retained only if of significance to the dating and/or interpretation of the site. It is not anticipated that ecofacts (e.g. unmodified animal bone) will be collected during this procedure.

4.2.9 All finds will be treated in accordance with OA standard practice, which is cognisant of ClfA and UKIC Guidelines. In general this will mean that (where appropriate or safe to do so) finds are washed, dried, marked, bagged and packed in stable conditions; no attempt at conservation will be made unless special circumstances require prompt action. In such case guidance will be sought from OA North's consultant conservator. Where possible, spot dates will be obtained on pottery and other finds recovered from the site. Artefacts will be examined and commented upon by OA North in-house specialists. Initial artefact dating shall be integrated into the site matrix.

4.2.10 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the

Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

4.3 REPORT

4.3.1 A hard copy and a digital copy on CD of the report will be submitted to the client, and a further hard copy and digital copy supplied as pdf files will be submitted to the Cumbria Historic Environment Record (HER). A copy of the report will also be forwarded to the Cumbria Record Office within four-six weeks of completion of fieldwork. The report will include;

- a site location plan related to the national grid
- a front cover to include the planning application number, where relevant, and the NGR
- a concise, non-technical summary of the results
- the circumstances of the project and the dates on which the fieldwork was undertaken
- description of the methodology, including the sources consulted
- a summary of the historical background of the study area
- appropriate plans showing the location and position of features located
- photographs as appropriate
- a copy of this project design, and indications of any agreed departure from that design
- the report will also include a complete bibliography of sources from which data has been derived, and a list of any further sources identified but not consulted

4.3.2 **Confidentiality:** all internal reports to the client are designed as documents for the specific use of the client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

4.4 ARCHIVE

4.4.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current Historic England guidelines (Historic England 2015). This archive will be provided in the former English Heritage Centre for Archaeology format and a synthesis will be submitted to the HER (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects (paper, magnetic and plastic media) with the County Record Office and a full copy of the record archive (microform or microfiche) together with the material archive (artefacts, ecofacts, and samples) with the Kendal Museum.

4.4.2 **OASIS:** as part of OA North's standard archiving process, the OASIS form will be completed within three months of completion of the work.

5. OTHER MATTERS

5.1 PROJECT MONITORING

5.1.1 Monitoring of this project will be undertaken by the HER Officer at Cumbria County Council, who will be informed of the start date of the work.

5.2 WORK TIMETABLE

- 5.2.1 **Archaeological Watching Brief:** the duration of the archaeological presence for the watching brief will be dictated by the client's schedule of works.
- 5.2.2 **Report:** the client report will be completed within approximately four to six weeks following completion of all assessment elements, subject to any outstanding specialist reports.
- 5.2.3 **Archive:** the archive will be deposited within six months following completion of the site work.
- 5.3 STAFFING**
- 5.3.1 The project will be under the direct management of **Karl Taylor BSc ACIfA** (OA North Project Manager) to whom all correspondence should be addressed.
- 5.3.2 The fieldwork will be undertaken by an OA North supervisor or assistant supervisor experienced in this type of project, who will be responsible for liaison with the site contractors and the client, and other relevant interested parties with regards to on-site work and procedures. The archaeologist who will attend site is not presently known due to time-tabling constraints.
- 5.3.3 The site archaeologist will be supported by specialist staff both on site and in the office in Lancaster. Finds management will be undertaken by **Christine Howard-Davis** who will also provide specialist input on certain finds categories. Environmental management will be undertaken by **Denise Druce**, who will also provide specialist input on charred remains and pollen. Elizabeth will advise on site sampling procedures and co-ordinate the processing of samples and organise internal and external specialist input as required.

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APPENDIX 2: CONTEXT LIST

Context	Category	Form	Description
001	Deposit	Layer	Topsoil
002	Deposit	Layer	Natural

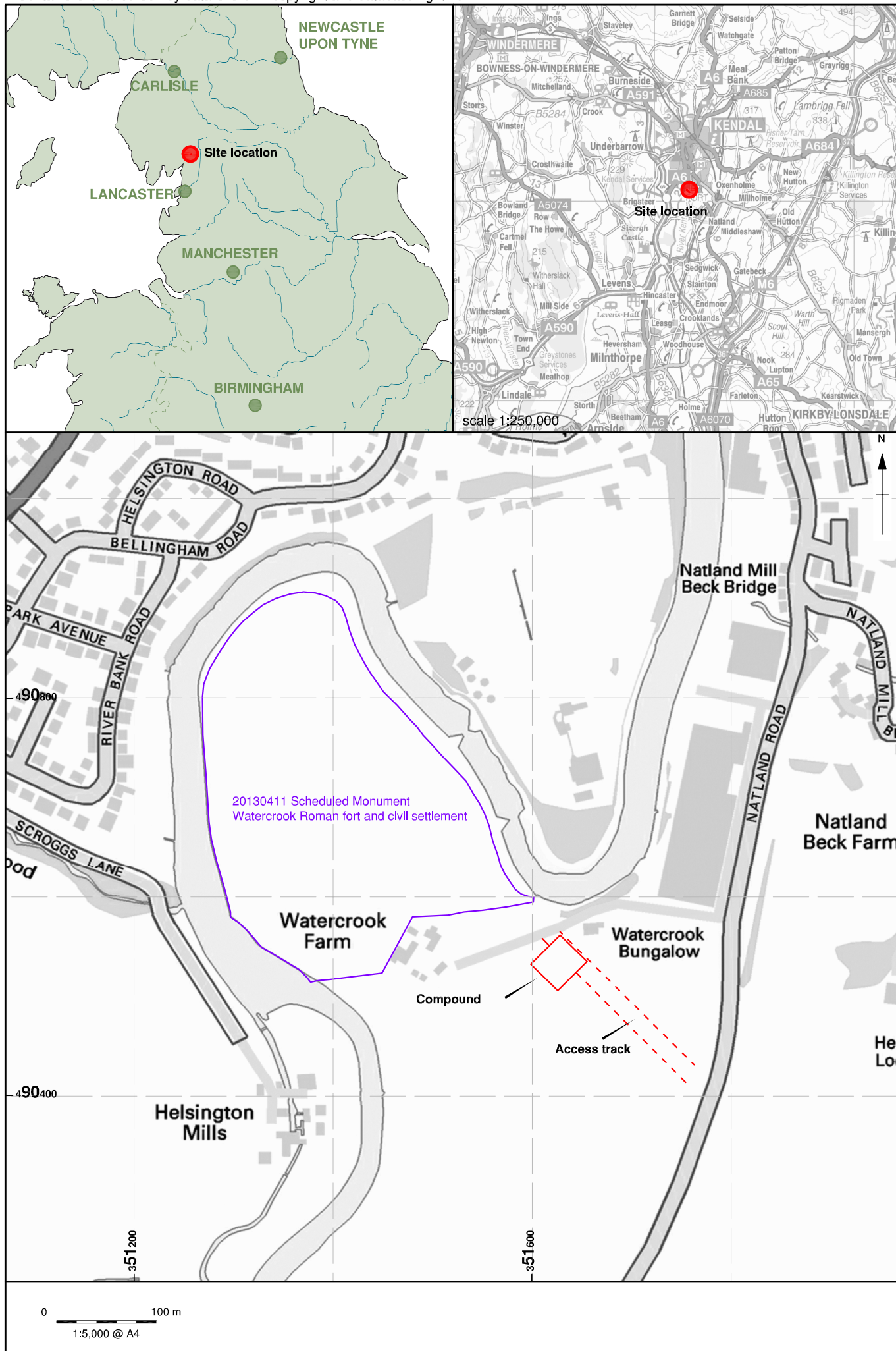


Figure 1: Site location



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